

RADFORD TECHNICAL INSTRUCTIONS

CIRCUIT ABBREVIATIONS AND SYMBOLS

T I(A)1
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Radford Technical Instructions (T.I.'s.) are issued to convey information on the use and maintenance of Radford equipment. Three forms are issued; 'A'T.I.'s. which contain technical information of a general nature, 'B'T.I.'s. which are concerned with installation, and 'C'T.I.'s. containing maintenance information for specific equipment or articles. They are available on request

GENERAL

The purpose of this technical instruction is to detail the abbreviations used on circuit diagrams issued in the form of T.I.'s for the maintenance of RADFORD equipment. Most of the abbreviations are in common usage, and no difficulty should be experienced in obtaining all information required for maintenance purposes from the diagrams, after an initial study, without reference to parts lists, tables, etc.

This instruction concerns:

1. Component specification detail.
2. Voltage measurements.
3. Component termination - circuit identification.
4. Component identification in equipment.
5. Printed wiring boards.
6. Circuit diagram example.

1. COMPONENT SPECIFICATION DETAIL

1:1 Circuit references - General

Components shown on circuit diagrams are designated by a letter as detailed below, and are numbered from left to right of the circuit diagram. The parts list correlates the stores part number against the circuit references.

Capacitors = 'C'	Potentiometers = 'P'
Signal diodes = 'D'	Resistors = 'R'
Fuses = 'F'	Power rectifier diodes = 'RD'
Meters = 'M'	Switches = 'S'
Transistors = 'Ts'	Transformers and Inductors = 'T'
Valves = 'V'	Zener diodes = 'ZD'

1:2 Capacitors

1:2:1 Value

Suffix p = Numerical value, picofarads (pF).
No suffix = Numerical value, microfarads (μF).

1:2:2 Rating

Suffix No. = Numerical value, voltage working.
(Below capacitance value.)

1:2:3 Tolerance

Suffix No. = Numerical value, per cent.
No suffix = Commercial production standard for the relevant type of capacitor.

1:2:4 Type

Suffix Pr = Polyester type.
Suffix Pn = Polystyrene type.
Electrolytic type capacitors are designated by conventional drawing symbol.
No suffix = Any commercial type suitable for application.

Suffixes follow in the above order, for example:—

C15, 270p 2.pn. = Capacitor, circuit reference C15, value 125 270 picofarads, 125v. wkg. voltage rating, 2% tolerance, polystyrene type.

1:3 Resistors (These details also apply to Potentiometers where relevant.)

1:3:1 Value

Suffix M = Megohms (1,000,000 ohms).
Suffix K = Kilohms (1,000 ohms).
No suffix = Numerical value, ohms.

1:3 Resistors (cont.)

1:3:2 Rating

Suffix No. = Numerical value, watts.
(Below resistance value.)
No suffix = 0.5 watts rating.

1:3:3 Tolerance

Suffix No. = Numerical value, per cent.
No suffix = 5% tolerance.

1:3:4 Type

Suffix W.W. = Wirewound.
Suffix M.O. = Metal oxide film.
Suffix I = Instrument quality, high stability carbon.
Suffix C = Commercial quality moulded carbon.
No suffix = Commercial quality high stability carbon.

Suffixes follow in the above order, for example:—

R3, 22K 2.WW = Resistor, circuit ref. R3, 22,000 ohms, 4 watts rating, 2% tolerance, wirewound type.

1:4 Transformers and Inductors

It is not advisable to replace these components except by the correct type, and no details are therefore given. Replacements may be obtained by specifying the circuit reference and the equipment, or the part number. (Printed on the actual component.)

1:5 Fuses

1:5:1 Type

Suffix B = $\frac{3}{8}$ " x $\frac{1}{8}$ ".
No suffix = Standard $1\frac{1}{4}$ " x $\frac{1}{4}$ ".

1:5:2 Rating

Numerical rating in amperes or milliamperes.
Example F2, 3A = Fuse, standard $1\frac{1}{4}$ " x $\frac{1}{4}$ " type, 3 amp rating.

1:6 Potentiometers (The details applicable to resistors also apply to potentiometers where relevant.)

1:6:1 Designation of Sections

P1A, P1B, etc. from mounting face.

1:6:2 Type

Suffix C = Moulded carbon.
Suffix S = Sprayed surface, carbon film.
Suffix W.W. = Wirewound.

1:6:3 Resistance Law

The resistance law will be indicated after other suffixes.

Suffixes follow in the above order, for example:—

P1A, 250K 10.C.log. = Potentiometer, 250,000 ohms, 2 watts rating, 10% tolerance moulded carbon track.

1:7 Switches

1:7:1 Function

Function is specified as follows—2p.4w.2b., i.e. 2 pole, 4 way, 2 bank. Replacements may be obtained by specifying circuit reference and the equipment, or by part number.

1:7:2 Designation of poles

S1A, S1B, etc., from mounting face.

1:8 Miscellaneous

Component parts having no circuit reference are shown only on the PARTS LIST of stores. A PARTS LIST is not supplied except with construction kits. Component parts having a circuit reference not covered by this T.I. will be specified in the individual 'C' T.I.

2. VOLTAGE MEASUREMENTS

2:1 Circuit Reference

AC potentials have the suffix 'V' (upper case type face), i.e. 220V.

DC potentials have no suffix, i.e. 200.

Signal potentials (r.m.s.) have the suffix 'v' (lower case type face) and in OBLIQUE characters, i.e. 0.5v.

2:2: Measurement Reference Points

The numerical value in volts (+ or —) is shown on the circuit diagram adjacent to the point of measurement. The chassis is taken as zero voltage except where a zero voltage is shown in the particular circuit as OV.

Signal potentials shown are those existing when the equipment is delivering its rated voltage or power output.

2:3 Measurement Standard, meters

A Model 8 Avometer is used to obtain all static potentials, A.C. and D.C. The range used is that which provides the maximum practical deflection. A Valve - mV/Voltmeter is used to read r.m.s. signal potentials. If a laboratory instrument is not available, a 'Heathkit' type is adequate providing it has been checked against a reference meter on each range.

3. COMPONENT TERMINATIONS - CIRCUIT IDENTIFICATION

3:1 Circuit Reference

Circuit reference numbers for the identification of component terminations are shown on the circuit diagram with a dot above the number, i.e. 8.

3:2 Transformers

Termination identification numbers are printed adjacent to the tag on the bobbin jacket.

3:3 Valveholders

By convention valve pins are numbered clockwise from the spigot or space as seen from the underside.

3:4 Plugs, Sockets, etc.

As viewed from wiring side unless otherwise specified, numbered clockwise.

3:5 Other Component Terminations

Where it is not practical to give sufficient information on the circuit diagram to identify component terminations, additional diagrams will be included in the relevant Technical Instruction.

4. COMPONENT IDENTIFICATION IN EQUIPMENT

4:1 Small Components

Small components are identified by the circuit reference numbers printed on the component board below or adjacent to the component. Where printed wiring boards are used, and space is not available for printing circuit references, a key diagram is provided with the circuit.

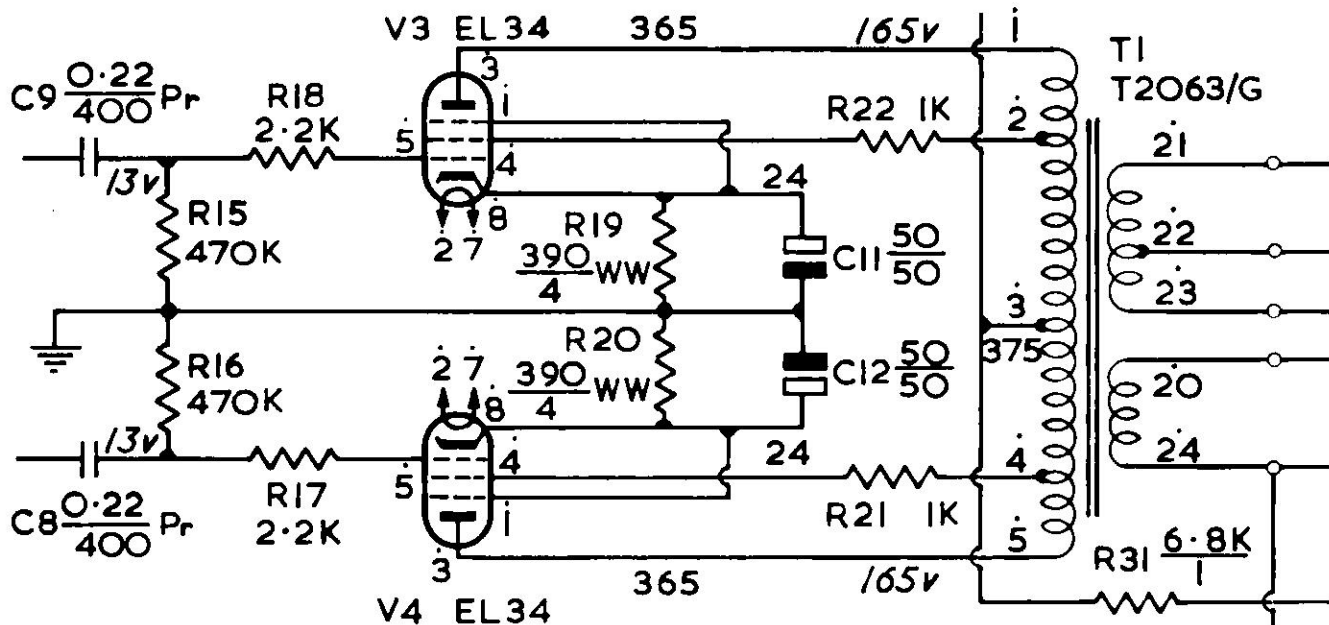
5. PRINTED WIRING BOARDS

5:1 Modifications

Printed wiring boards have a basic part number which is shown on the circuit diagram and engraved on the board. Modifications amend the part number with a numerical suffix, i.e. 2468/1, 2468/2, etc.

6. CIRCUIT EXAMPLE

A portion of a typical circuit diagram is illustrated below to show the application of the principles outlined in this T.I.



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