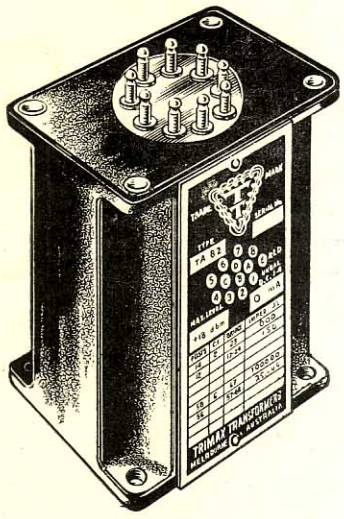
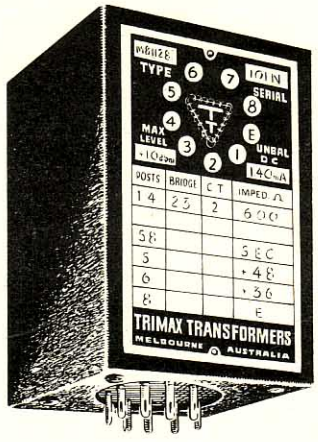
HIGH QUALITY TRANSFORMERS
LOW LEVEL TYPES

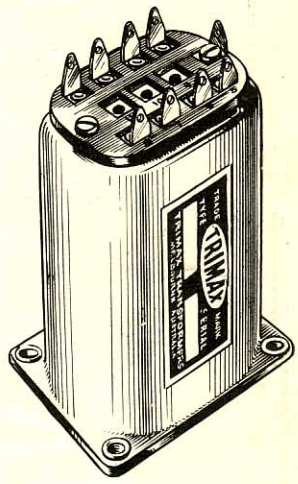


TYPE M66—Reversible Mounting, Die-cast Case.
Base, $2\frac{3}{4}$" x $2\frac{1}{8}$".
Mounting, $2\frac{1}{4}$" x $1\frac{5}{8}$".
Overall Height, $3\frac{1}{2}$".



TYPE M191 — Light steel case
Base, $2\frac{1}{2}$" x $1\frac{13}{16}$".
Mounting, $1\frac{15}{16}$" x $1\frac{1}{4}$".
Overall Height, $3\frac{3}{4}$".

TYPE M143 — Light steel case
Base, 2" x $1\frac{5}{8}$".
Mounting, $1\frac{1}{2}$" x $1\frac{1}{8}$".
Overall Height, $3\frac{1}{4}$".



TYPE M8—Drawn-steel Case.
Base, 2-9/16" x 1-15/16".
Mounting, $2\frac{1}{4}$" x $1\frac{5}{8}$".
Overall Height, $3\frac{5}{8}$".

TYPE M17—Drawn-steel Case.
Base, $4\frac{1}{2}$" x $2\frac{5}{8}$".
Mounting, 3-13/16" x 2-3/16".
Overall Height, $4\frac{5}{8}$".

The development of modern communication and broadcast equipment has reached the stage where the performance is governed mainly by the frequency response and freedom from distortion of the transformers used. The most important transformer requirements are: (1) Low insertion loss. (2) Uniform frequency response. (3) Negligible wave form distortion and freedom from intermodulation effects. (4) Reliability. (5) When used at low levels additional features required are: (a) Freedom from electro-magnetic and electrostatic pick-up. (b) Effective shielding against longitudinal currents. (c) Balance of windings.

The types of transformer listed in this sheet were designed with these factors in mind, and the soundness of the basic design is indicated, as many of the listed types have been manufactured since 1938 without any major changes being made.

GENERAL SPECIFICATIONS:

Frequency characteristics: Every unit is guaranteed to have a frequency variation not exceeding $\pm$ 1 db from 30 to 10,000 cycles when used under correct conditions. To keep within guaranteed variation at high frequencies, it is essential to reduce external secondary capacities to a minimum. Actual production units usually give performances far better than this. The transformers are designed for use with secondary loaded, and the frequency characteristic is, therefore, a function of power, not of voltage transfer, obtained by careful design without making use of winding resonances. For the best high-frequency response, it is desirable to keep the capacity across the secondary of high impedance input transformers to a minimum, and for this reason pentodes are preferable to triodes because of the large difference in input capacity.

Shielding: (a) Electro-magnetic: All types listed employ an astatic hum balancing structure with primary and secondary coils each in two separate sections. Improvement of this type

over ordinary shell cores is of the order of 40 to 50 db. depending on the uniformity of the interfering field. An additional advantage of this construction is the great improvement in symmetry and balance of coil sections. Outer cases of mild steel or high conductivity non-ferrous metal also give additional shielding. For particularly low-level operation, where freedom from hum pick-up is absolutely essential, special types are offered which, in addition to the above, incorporate triple shields of high permeability nickel iron alloy. The additional improvement is approximately 40 db.

(*b*) Electro-static: Transformers are guarded against this type of external interference by the use of an efficient outer case. The high conductivity, non-ferrous case is best for this purpose.

(*c*) Longitudinal currents: The transfer of longitudinal currents from primary to secondary is attentuated to a considerable degree by the provision of high-conductivity shields between windings. These shields also improve the balance to ground of the windings.

Coils are carefully layer-wound on precision machines with high-quality paper interlayer insulation. Interwinding insulation normally used is a plastic material of very low moisture absorption characteristics. After winding, the coils are vacuum impregnated with a micro-crystalline wax, offering the maximum resistance to moisture, and finally the complete transformer is sealed in the case with a bituminous compound. This treatment ensures long, trouble-free life under any Australian conditions.

Cores are constructed of high-grade silicon steel, or correctly heat-treated, high-permeability nickel-iron alloy laminations, the type of alloy being selected to suit the conditions of operation.

Electrical Efficiency has been kept high by the liberal use of high-grade materials, correctly employed. The insertion loss for most types is well under 1db. and is only exceeded on those designs made to carry unbalanced dc.

IMPORTANT NOTICE: "Trimax" transformers are subject to continuous improvements, and we reserve the right to supply a revised or substituted type if the transformer ordered has been discontinued.

WHEN ORDERING, IF ALTERNATIVE CASE TYPES ARE LISTED, PLEASE STATE CASE REQUIRED.

SPECIAL TRANSFORMERS: We are equipped to design and manufacture transformers of characteristics differing from those listed, and correspondence is invited in cases where standard types are unsatisfactory. It must be remembered, however, that usually the price is higher and the delivery period longer for special types.

TYPE	CASE	APPLICATION	IMPEDANCE-OHMS (See Notes 1, 2, 3, 4.) Primary	Secondary	TURNS RATIO	MAXIMUM LEVEL dbm. (See Note 5)	FREQUENCY VARIATION db/cycles	Unbalanced D.C. in Primary M.A.
MIXING (LINE TO LINE) TRANSFORMERS								
TA636	M91-M8-M66	Line, Microphone or	50	200	1-2	+18	± 0.5/30—40,000	0
TA406A	" " "	Pick-up Matching	50	600	1-3.46	"	" "	0
TA101	" " "	Balanced or	200	200	1-1	"	" "	0
TA168A	" " "	Unbalanced.	200	600	1-1.73	"	" "	0
TA37A	" " "		600	600	1-1	"	" "	0
TA793	M17	See Note 7.	600	600	1-1	+36	± 0.5/30—15,000	0
TA1094A	M17		600	1,200	1-1.41	+33	± 1.0/30—15,000	0
MIXING (LINE TO LINE) TRANSFORMERS — MULTI-SHIELDED								
MS944	M143-M66	Line, Microphone or	50	200	1-2	+10	± 0.5/30—40,000	0
MS866	" "	Pick-up Matching	50	600	1-3.46	"	" "	0
MS945	" "	Balanced or	200	200	1-1	"	" "	0
MS946	" "	Unbalanced.	200	600	1-1.73	"	" "	0
MS896	" "		600	600	1-1	"	" "	0
INPUT (BRIDGING) TRANSFORMERS								
TA17	M91-M8-M66	Input from 50-600 ohm Line to Single or Push-Pull Grids.	10,000	100,000	1-3.16	+18	± 0.5/30—12,000	0
INPUT (LINE TO GRID) TRANSFORMERS								
TA61	M91-M8-M66	Line, Microphone or	50	100,000	1-44.7	+18	± 0.5/30—12,000	0
TA47	" " "	Pick-up to Single or	200	100,000	1-22.4	"	" "	0
TA82	" " "	Push-Pull Grids.	600	100,000	1-12.9	"	" "	0
TA1076	" " "	" External Sec. Capacity Must Not Exceed 30 Pf.	600	50,000	1-9.2	"	± 1.0/20—50,000	0
INPUT (LINE TO GRID) TRANSFORMERS — MULTI-SHIELDED								
MS860	M143-M66	Line, Microphone or	50	100,000	1-44.7	+10	± 1.0/30—10,000	0
MS837	" "	Pick-up to Single or	200	100,000	1-22.4	"	" "	0
MS878	" "	Push-Pull Grids.	600	100,000	1-12.9	"	" "	0
MS977	" M91 "	Microphone to Grid With Secondary Winding Unterminated.	50	60,000	1-34.8	+18	± 1.0/30—15,000	0
INTERSTAGE TRANSFORMERS								
TA3	M91-M8-M66	Single or Push-Pull 10,000 ohm Plates to Push-Pull Grids.	40,000	160,000	1-2	Whole Sec. 120 v.p.	± 1.0/30—10,000	0
OUTPUT (PLATE TO LINE) TRANSFORMERS								
TA835	M91-M8-M66	Single 7,000-10,000	20,000	50	20-1	+24	± 1.0/30—12,000	6.5
TA833	" " "	ohm Plate to Line.	20,000	200	10-1	"	" "	6.5
TA733B	" " "		20,000	600	5.8-1	"	" "	6.5
TA947	" " "	Push-Pull 7,000-10,000	30,000	50	24.5-1	+27	" "	1.0
TA948	" " "	ohm Plates to Line.	30,000	200	12.3-1	"	" "	1.0
TA710A	" " "		30,000	600	7.1-1	"	" "	1.0

HIGH QUALITY TRANSFORMERS
LOW LEVEL TYPES

NOTE:

1. The above transformers are designed for use with secondary winding terminated unless otherwise stated. For use unterminated the low frequency variation would increase by approximately 1 to 2 db.
2. Both primary and secondary windings are in two sections. Impedances shown are for the series connection in which a centre tap is available. If coils are connected in parallel, impedances are equal to 25% of those shown, and no centre tap is available.
3. Most of the above transformers are usable in circuits with impedances differing ± 25% of the values shown, without exceeding guaranteed response. (Both primary and secondary impedances would be altered in the same ratio).
4. If either primary or secondary is terminated in the rated impedance, the impedance measured on the other side will be higher than the value shown, due to the dc. resistance of the transformer windings. This increase is negligible in all types with the exception of output transformers and line transformer, type TA. 793.
5. dbm. equals decibels referred to 1 milli-watt.
6. If transformers specified with unbalanced dc. of zero, in actual use, have unbalanced dc. present, low-frequency response will drop. On removal of unbalance the response will revert to normal.
7. Type TA.793 and TA.1094A transformers have extremely accurate balance of coil sections and are suitable for phantom working. The transformers will also handle 17 cycles ringing current in telephone circuits. An electrostatic shield between windings is not provided in these types.

TYPICAL RESPONSE CURVES