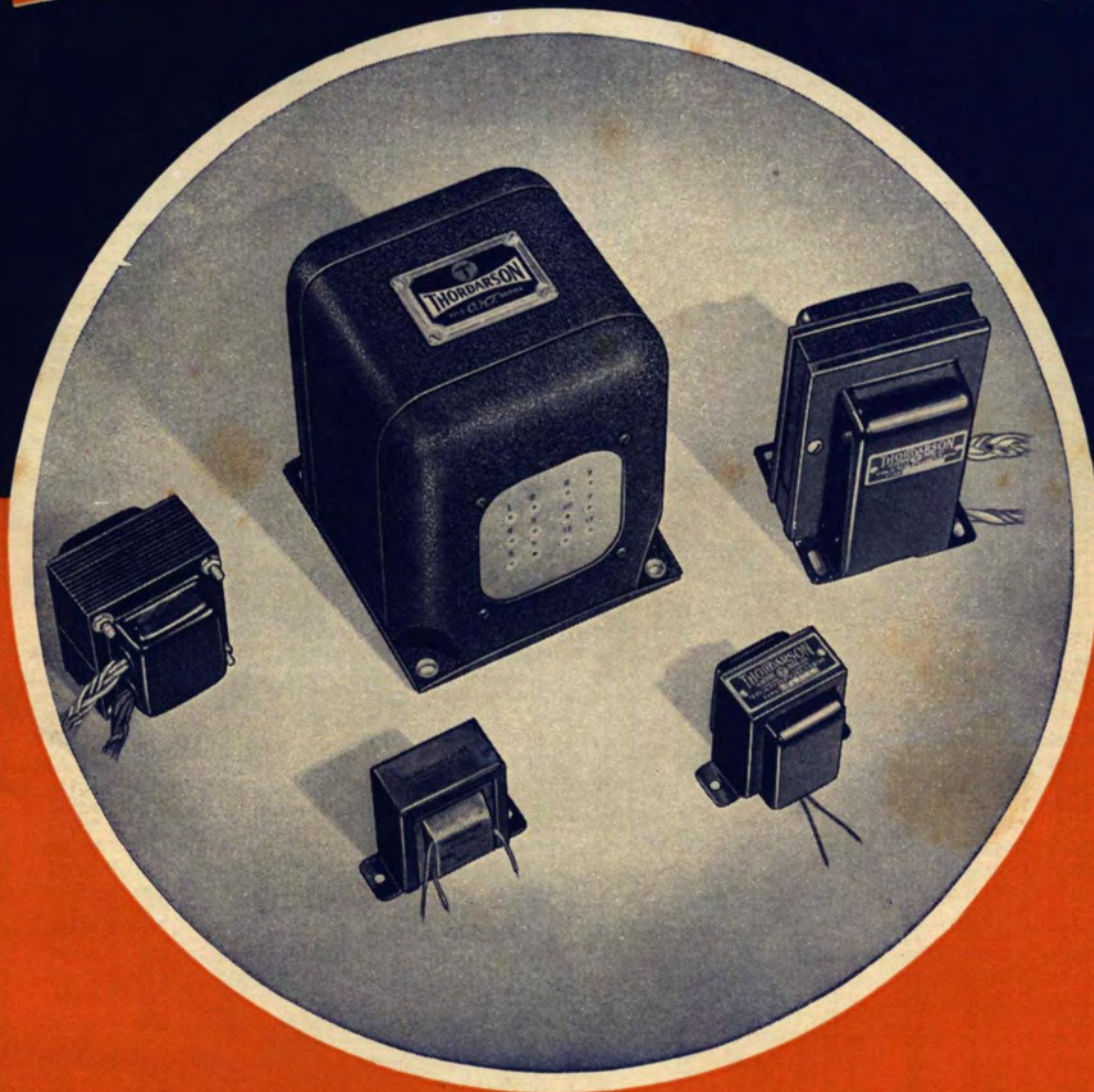


# Transformers by **THORDARSON**



**COMPLETE TRANSFORMER CATALOG**

**No. 400-FX 1942**



**THORDARSON ELECTRIC MFG. CO., CHICAGO, ILL., U. S. A.**

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# INDEX

## EFFECTIVE OCTOBER 15, 1941

Catalog prices are list, subject to trade discount and change without notice. Add 100% for 25 cycle 115 v. primary; 60% for 230 v. 60 cycle primary; 100% for 230 v. 25 cycle primary.

The letter separating the first two digits of the type number from the last two indicates the classification of the unit. The following legend will further explain:  
 A = Audio, D = Driver, K = Foundation Unit, P = Plate, S = Output or Speaker, W = Wired Amplifier.  
 C = Choke, F = Filament, M = Modulation, R = Power, V = Voltage Changer,

| Type No. | Page No. | List Price | Type No. | Page No. | List Price | Type No.  | Page No. | List Price | Type No. | Page No. | List Price | Type No.  | Page No. | List Price | Type No. | Page No. | List Price |
|----------|----------|------------|----------|----------|------------|-----------|----------|------------|----------|----------|------------|-----------|----------|------------|----------|----------|------------|
| T-1A50   | 6        | \$17.40    | T-13R15  | 20       | \$6.90     | T-15C37   | 9        | \$15.00    | T-18V03  | 27       | \$8.70     | T-19F92   | 14       | \$4.20     | T-67M74  | 16       | \$5.40     |
| T-1A51   | 6        | 17.40      | T-13R16  | 20       | 7.80       | T-15C38   | 9        | 18.00      | T-18V04  | 27       | 10.80      | T-19F93   | 14       | 3.00       | T-67D78  | 11       | 3.60       |
| T-1A52   | 6        | 18.60      | T-13R17  | 20       | 5.10       | T-15C39   | 9        | 27.00      | T-18V05  | 27       | 16.20      | T-19F94   | 14       | 3.60       | T-67A91  | 4        | 4.20       |
| T-1A53   | 6        | 18.60      | T-13R18  | 20       | 6.00       | T-15C41   | 9        | 33.00      | T-18V06  | 27       | 7.50       | T-19F95   | 14       | 3.30       | T-67S92  | 24       | 4.80       |
| T-1A54   | 6        | 16.80      | T-13R19  | 20       | 3.60       | T-15C45   | 9        | 10.80      | T-18V07  | 27       | 16.20      | T-19F96   | 14       | 4.20       | T-67R97  | 21       | 5.10       |
| T-1A55   | 6        | 17.40      | T-13R20  | 20       | 4.50       | T-15C46   | 9        | 15.00      | T-18V10  | 26       | 3.60       | T-19F97   | 14       | 2.10       | T-68S06  | 24       | 3.00       |
| T-1A56   | 6        | 18.00      | T-13C26  | 9        | 1.10       | T-15C47   | 9        | 18.00      | T-18V20  | 27       | 7.20       | T-19F98   | 14       | 3.30       | T-68C07  | 9        | 2.40       |
| T-1A57   | 6        | 16.80      | T-13C27  | 9        | 1.30       | T-15C48   | 9        | 27.00      | T-18V21  | 27       | 8.40       | T-19F99   | 14       | 4.20       | T-68C08  | 8        | 2.10       |
| T-1A59   | 6        | 16.80      | T-13C28  | 9        | 1.45       | T-15C50   | 9        | 33.00      | T-18V22  | 27       | 10.80      | T-26V04   | 27       | 5.70       | T-68R26  | 21       | 8.70       |
| T-1A60   | 6        | 16.80      | T-13C29  | 9        | 1.90       | T-15C52   | 8        | 6.60       | T-18V23  | 27       | 15.00      | T-29C27   | 8        | 2.10       | T-69R35  | 21       | 8.10       |
| T-1C62   | 6        | 12.00      | T-13C30  | 9        | 2.40       | T-15C53   | 8        | 6.90       | T-18V24  | 15       | 2.70       | T-29A99   | 4        | 2.40       | T-70R20  | 20       | 3.90       |
| T-1C63   | 6        | 12.00      | T-13A34  | 4        | 1.60       | T-15C54   | 8        | 7.50       | T-18V25  | 15       | 4.80       | T-33A91   | 4        | 2.40       | T-70R21  | 20       | 5.40       |
| T-2A36   | 7        | 21.00      | T-13A35  | 4        | 1.80       | T-15C55   | 8        | 9.00       | T-18V26  | 27       | 6.90       | T-33S99   | 24       | 1.80       | T-70R61  | 21       | 5.70       |
| T-2A66   | 7        | 21.60      | T-13A36  | 4        | 2.40       | T-15C56   | 8        | 12.00      | T-18C92  | 8        | 1.80       | T-37C36   | 8        | 2.40       | T-70R62  | 21       | 7.50       |
| T-2A68   | 7        | 22.80      | T-13S37  | 24       | 1.50       | T-15R60   | 19       | 23.40      | T-19D01  | 10       | 7.50       | T-37R70-C | 21       | 9.00       | T-70R78  | 21       | 5.10       |
| T-3S16   | 26       | 45.00      | T-13S38  | 25       | 1.80       | T-15R61   | 19       | 21.00      | T-19D02  | 10       | 7.50       | T-43C92   | 9        | 2.00       | T-70A82  | 5        | 4.20       |
| T-3S17   | 26       | 54.00      | T-13S39  | 24       | 1.50       | T-15R62   | 19       | 23.40      | T-19D03  | 10       | 7.50       | T-44C02   | 9        | 1.80       | T-70A83  | 5        | 4.20       |
| T-3S21   | 26       | 21.60      | T-13S40  | 24       | 1.80       | T-15A66   | 5        | 9.60       | T-19D04  | 10       | 7.50       | T-47V01   | 27       | 9.00       | T-72S58  | 24       | 2.00       |
| T-3S22   | 26       | 22.80      | T-13S41  | 25       | 3.30       | T-15A67   | 5        | 9.60       | T-19D05  | 10       | 7.50       | T-47V02   | 27       | 13.20      | T-72A59  | 5        | 2.00       |
| T-3S23   | 26       | 45.00      | T-13S42  | 25       | 1.80       | T-15A68   | 5        | 9.60       | T-19D06  | 11       | 3.30       | T-47V03   | 27       | 26.10      | T-73M52  | 16       | 27.00      |
| T-3A32   | 7        | 21.00      | T-13S43  | 24       | 1.60       | T-15A69   | 5        | 9.60       | T-19M13  | 17       | 5.70       | T-47V04   | 27       | 42.00      | T-73F60  | 14       | 4.80       |
| T-5A1    | 7        | 12.60      | T-14A29  | 4        | 3.00       | T-15A70   | 5        | 9.60       | T-19M14  | 17       | 9.90       | T-47C07   | 9        | 2.00       | T-74F23  | 14       | 6.00       |
| T-5A2    | 7        | 13.20      | T-14R32  | 19       | 9.00       | T-15A71   | 5        | 9.60       | T-19M15  | 17       | 14.40      | T-47A25   | 4        | 2.70       | T-74F24  | 14       | 10.20      |
| T-5A3    | 7        | 11.40      | T-14R33  | 20       | 3.60       | T-15A72   | 5        | 9.60       | T-19M16  | 17       | 20.40      | T-49C91   | 9        | 2.10       | T-74R28  | 21       | 8.10       |
| T-5A4    | 7        | 10.50      | T-14R34  | 20       | 4.20       | T-15A73   | 4        | 9.00       | T-19M17  | 17       | 33.00      | T-50R03   | 20       | 3.90       | T-74C29  | 9        | 4.80       |
| T-5A5    | 7        | 9.60       | T-14R35  | 20       | 4.50       | T-15A74   | 4        | 8.40       | T-19M21  | 16       | 8.40       | T-50V11   | 27       | 9.00       | T-74C30  | 8        | 1.80       |
| T-5A7    | 7        | 12.00      | T-14R36  | 20       | 5.70       | T-15A75   | 4        | 8.70       | T-19M22  | 16       | 12.00      | T-50F61   | 14       | 2.10       | T-74A31  | 4        | 4.20       |
| T-5A8    | 7        | 12.60      | T-14R37  | 20       | 6.00       | T-15D76   | 10       | 10.80      | T-19R30  | 21       | 9.60       | T-52C98   | 8        | 2.40       | T-74D32  | 11       | 3.90       |
| T-5A9    | 7        | 12.60      | T-14R38  | 20       | 6.90       | T-15D77   | 10       | 10.80      | T-19R31  | 19       | 11.40      | T-53C19   | 9        | 1.80       | T-75R47  | 20       | 5.70       |
| T-6A0    | 7        | 12.60      | T-14R39  | 20       | 3.30       | T-15D78   | 10       | 10.80      | T-19R32  | 19       | 15.00      | T-53S81   | 25       | 5.70       | T-75C49  | 9        | 1.80       |
| T-6A1    | 7        | 12.60      | T-14R40  | 20       | 9.00       | T-15D79   | 10       | 10.80      | T-19C35  | 9        | 4.80       | T-54D63   | 11       | 2.70       | T-75R50  | 21       | 9.30       |
| T-6A3    | 7        | 11.40      | T-14M49  | 16       | 21.60      | T-15D82   | 10       | 10.80      | T-19C36  | 9        | 8.40       | T-55A16   | 5        | 3.30       | T-75C51  | 9        | 6.00       |
| T-6A4    | 7        | 12.00      | T-14C61  | 9        | 1.20       | T-15D83   | 10       | 18.00      | T-19C37  | 9        | 15.00      | T-56R01   | 21       | 6.90       | T-75A74  | 4        | 3.30       |
| T-9V30   | 26       | 51.00      | T-14C62  | 9        | 1.20       | T-15D85   | 11       | 9.60       | T-19C38  | 9        | 18.00      | T-56R02   | 21       | 5.10       | T-75S75  | 24       | 4.80       |
| T-9V31   | 26       | 78.00      | T-14C63  | 9        | 1.20       | T-15D86   | 11       | 10.80      | T-19C39  | 9        | 3.90       | T-56R03   | 21       | 8.10       | T-76S74  | 25       | 4.50       |
| T-9V32   | 26       | 120.00     | T-14C64  | 9        | 1.20       | T-15S90   | 25       | 12.00      | T-19C42  | 9        | 4.80       | T-56R05   | 21       | 8.10       | T-78D46  | 11       | 1.80       |
| T-9V33   | 26       | 210.00     | T-14C70  | 8        | 3.00       | T-15S91   | 25       | 15.00      | T-19C43  | 9        | 8.40       | T-57S01   | 25       | 2.40       | T-79F84  | 15       | 5.70       |
| R-1068   | 8        | 3.00       | T-14A75  | 4        | 17.40      | T-15S92   | 25       | 18.00      | T-19C44  | 9        | 15.00      | T-57S02   | 25       | 2.40       | T-81S01  | 24       | 1.80       |
| T-11F50  | 15       | 10.80      | T-14A76  | 4        | 17.40      | T-15S93   | 25       | 21.00      | T-19C45  | 9        | 18.00      | T-57A36   | 4        | 2.70       | T-81C15  | 8        | 2.40       |
| T-11F51  | 15       | 13.20      | T-14S80  | 25       | 2.40       | T-15S94   | 25       | 24.00      | T-19C46  | 9        | 3.90       | T-57A38   | 4        | 3.60       | T-81D42  | 11       | 3.90       |
| T-11F52  | 15       | 15.90      | T-14S81  | 24       | 1.50       | T-15S96   | 25       | 15.00      | T-19P54  | 18       | 7.20       | T-57A39   | 4        | 3.00       | T-81D52  | 11       | 3.90       |
| T-11F53  | 14       | 10.20      | T-14S82  | 24       | 1.50       | T-15S97   | 25       | 19.20      | T-19P55  | 18       | 7.80       | T-57A40   | 4        | 3.90       | T-82V11  | 27       | 18.00      |
| T-11F54  | 14       | 24.00      | T-14S83  | 24       | 1.50       | T-15S98   | 25       | 12.00      | T-19P56  | 18       | 8.40       | T-57A41   | 4        | 4.20       | T-82V12  | 27       | 24.00      |
| T-11F55  | 14       | 15.00      | T-14S84  | 24       | 1.50       | T-15S99   | 25       | 12.00      | T-19P57  | 18       | 10.20      | T-57A42   | 4        | 4.20       | T-82V13  | 27       | 36.00      |
| T-11F57  | 15       | 16.50      | T-14S85  | 25       | 1.80       | T-16C07   | 9        | 2.70       | T-19P58  | 18       | 18.00      | T-57C51   | 9        | 1.80       | T-82M25  | 16       | 51.00      |
| T-11F58  | 15       | 18.00      | T-14A90  | 5        | 3.00       | T-17C00-B | 9        | 3.30       | T-19P59  | 18       | 21.00      | T-57C52   | 9        | 2.10       | T-83D21  | 11       | 4.20       |
| T-11F59  | 14       | 9.00       | T-14A91  | 5        | 3.00       | T-17D01   | 11       | 2.40       | T-19P60  | 18       | 25.20      | T-57C53   | 9        | 2.40       | T-83M22  | 16       | 13.80      |
| T-11F60  | 14       | 9.60       | T-14A92  | 4        | 1.60       | T-17A02   | 4        | 3.00       | T-19P61  | 18       | 27.00      | T-57C54   | 9        | 2.70       | T-83A78  | 5        | 2.70       |
| T-11F61  | 14       | 27.00      | T-14D93  | 11       | 2.10       | T-17D03   | 11       | 5.40       | T-19P62  | 18       | 32.10      | T-58A37   | 5        | 2.70       | T-83R82  | 21       | 12.00      |
| T-11F62  | 14       | 10.20      | T-14A94  | 5        | 3.00       | T-17D04   | 11       | 5.40       | T-19P63  | 18       | 30.90      | T-58A70   | 4        | 4.50       | T-83R85  | 21       | 15.00      |
| T-11F63  | 14       | 11.40      | T-15R00  | 21       | 15.00      | T-17S10   | 24       | 3.60       | T-19P64  | 18       | 35.70      | T-58S72   | 24       | 4.50       | T-83S87  | 24       | 10.80      |
| T-11F64  | 14       | 12.00      | T-15R01  | 21       | 21.00      | T-17S11   | 24       | 5.40       | T-19P65  | 18       | 37.20      | T-60S48   | 25       | 3.60       | T-84S58  | 24       | 7.20       |
| T-11M69  | 17       | 10.80      | T-15R02  | 21       | 15.90      | T-17S12   | 24       | 5.40       | T-19P66  | 18       | 49.80      | T-60R49   | 20       | 3.60       | T-84D59  | 11       | 3.90       |
| T-11M70  | 17       | 15.00      | T-15R03  | 21       | 16.50      | T-17S13   | 24       | 7.20       | T-19P67  | 18       | 60.00      | T-61S25   | 25       | 3.90       | T-84P60  | 18       | 9.00       |
| T-11M71  | 17       | 18.00      | T-15R04  | 21       | 9.00       | T-17S14   | 24       | 7.20       | T-19P68  | 18       | 70.20      | T-61S26   | 25       | 4.20       | T-84M70  | 16       | 12.00      |
| T-11M74  | 17       | 13.20      | T-15R05  | 21       | 15.90      | T-17S15   | 24       | 7.80       | T-19P69  | 18       | 18.00      | T-61F85   | 14       | 2.70       | T-86A02  | 5        | 2.70       |
| T-11M75  | 17       | 15.30      | T-15R06  | 21       | 14.70      | T-17S16   | 24       | 18.00      | T-19P70  | 18       | 13.80      | T-61A94   | 5        | 3.90       | T-86A03  | 4        | 2.70       |
| T-11M76  | 17       | 27.00      | T-15R07  | 21       | 15.90      | T-17S17   | 25       | 7.80       | T-19P71  | 18       | 16.80      | T-63R63   | 20       | 3.90       | T-87R85  | 21       | 9.00       |
| T-11M77  | 17       | 36.00      | T-15R08  | 21       | 19.20      | T-17S18   | 25       | 4.50       | T-19F75  | 14       | 2.70       | T-63F99   | 14       | 3.90       | T-89R28  | 21       | 13.80      |
| T-11M78  | 17       | 72.00      | T-15P11  | 19       | 16.80      | T-17R30   | 21       | 10.20      | T-19F76  | 15       | 5.70       | T-64F14   | 14       | 6.00       | T-89S68  | 24       | 7.80       |
| T-11K99  | 16       | 18.00      | T-15P12  | 19       | 19.20      | T-17R31   | 21       | 15.00      | T-19F77  | 15       | 9.90       | T-64M26   | 16       | 7.20       | T-89S74  |          |            |

# INTRODUCTION

THIS catalog presents the complete Thordarson line of transformers and chokes for radio replacement, amplifier, amateur transmitter, commercial laboratory and experimental use. Several choices are offered in mounting style, coil impregnation and electrical characteristics. Each unit, is built by highly skilled Thordarson craftsmen, and of finest quality materials is the result of experience gained in over 46 years of transformer design and manufacture.

## THORDARSON AIR COOLED TRANSFORMERS AND CHOKES

These units are compact and comparatively light in weight. They are designed for consistent performance at rated characteristics. Open frame styles are 2B, 3B, 2C, 3C, 2E, and 3E. Mounting styles 3A, 2D, 4D, 4E, 2F, 2G, 4G, 2H, 2J, 2K, 2M, 2N, 2V, and 2W are mechanically shielded. Cases 2Q and 3V are compound filled for complete coil protection.

## THORDARSON C.H.T. TRANSFORMERS AND CHOKES

A premium quality line offering these outstanding advantages: *Uniform case design, conservative ratings, extended frequency range, humbucking coils in audio and driver types, plug-in jack terminal board, compound filled cases for complete coil protection against humidity.*

## THORDARSON TRU-FIDELITY TRANSFORMERS

Tru-Fidelity transformers, as the name implies, make possible better audio response. Superior coil and core materials, the result of metallurgical research, are used throughout. Every Tru-Fidelity unit is engineered and manufactured to precision standards. A representative listing of Incher, Bantam and Major types is included in the Audio listing. Major output units are catalogued in the Output transformer section. For information on the complete line of Thordarson Tru-Fidelity components see Catalog No. 500.

## COIL IMPREGNATION



Salt air and high humidity are formidable enemies of transformer life. A very minute absorption of salt laden moisture by a fine wire audio coil may result in fatal electrolytic action and corrosion. This is especially true of fine wire audio coils which operate with direct current voltage above ground, since this polarizing voltage in combination with an extremely minute salt concentration will drive electrolytic currents from the copper wire to ground.

While this current may be much less than a micro-ampere it will, over a period of time, take enough copper from the fine wire to cause an open circuit. Radio receiver power transformers and the larger amateur type transformers are not nearly so subject to the electrolytic and corrosive action as the small fine wire audio transformers. This is due partly to the fact that the coils on these transformers do not have a direct current voltage applied between them and the ground. The alternating current voltage present is not nearly as effective in driving electrolytic current as a direct current potential. The wire sizes used on these transformers are ordinarily so large that even though a minute electrolytic current might be present it would take a very long time (years in most cases) for enough copper to be taken to open the coil or cause trouble. Then, too, there is usually enough heat generated in these transformers, since they are power operating units, to drive out moisture which might otherwise be absorbed.

It has been found that many common impregnating compounds, while for most purposes considered waterproof, are yet hygroscopic enough to permit a fatal amount of moisture absorption if it is accompanied with salt. Complete enclosure of the core and coil in cases filled with moisture-proof high melting compounds as used in Thordarson C.H.T. and Tru-Fidelity components is the best protection against such action.

## TROPEX



Space and weight considerations are often as important as coil protection; here an open frame mounting is most desirable. Thordarson Tropex coating was developed for full protection on such mountings. The Tropex coating is *entirely* impervious to moisture and fully protects the coil against salt moisture conditions. Tropex is a special process which may be applied to any Thordarson open mounting type transformer or choke. It is especially adaptable to fine wire audio transformers and chokes and is not ordinarily recommended for power transformers nor for encased types.

The additional cost for Thordarson Tropex transformers is surprisingly small. The following table has been compiled to enable you to easily determine this price increase by referring to the weight of the transformer as listed. When ordering Tropex add an "X" to the regular type number. For example, T-13S38-X is the Tropex equivalent of T-13S38.

| WEIGHT OF TRANSFORMER              | ADD TO LIST PRICE |
|------------------------------------|-------------------|
| Up to $\frac{1}{8}$ lb.            | \$ .40            |
| From 1 lb. to $1\frac{1}{8}$ lbs.  | .50               |
| From 2 lbs. to $2\frac{7}{8}$ lbs. | .70               |
| From 3 lbs. to $4\frac{7}{8}$ lbs. | .85               |
| From 5 lbs. to $6\frac{7}{8}$ lbs. | 1.00              |
| Over 7 lbs.                        | 18c per lb.       |



3U



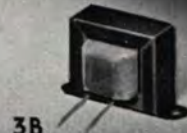
2C



2B



2F

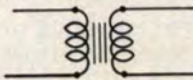


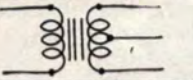
3B

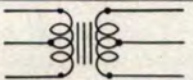
## AUDIO (A) INTERSTAGE TRANSFORMERS

For coupling the plate or plates of an amplifier stage to the grid or grids of the next stage where grid current is not drawn.

C. H. T. interstage audio transformers have hum-bucking coil construction and balanced windings. Frequency response, using parallel feed in the primary winding, is flat within  $\pm 1\frac{1}{2}$  db from 60 to 8,000 c.p.s.

| Type No.                                                                                                                                                                                                  | List Price | Classification    | Turns Ratio | Ohms Impedance |             | Pri. M.A. | Mtg. Fig. | Mtg. Centers    |                 | Dimensions      |                 |                 | Wt. Lbs.        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------------------|-------------|----------------|-------------|-----------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                                                                                                                                                                                                           |            |                   |             | Pri.           | Sec.        |           |           | Width           | Depth           | W.              | D.              | H.              |                 |
| <div></div> <div><b>Single Plate To Single Grid</b><br/>*Maximum Signal Level + 15 db. †Parallel feed recommended.</div> |            |                   |             |                |             |           |           |                 |                 |                 |                 |                 |                 |
| T-13A34                                                                                                                                                                                                   | \$1.60     | RECEIVER (midget) | 3:1         | 10,000         | 90,000      | 8         | 3B        | 2 $\frac{3}{8}$ |                 | 2 $\frac{5}{8}$ | 1 $\frac{5}{8}$ | 1 $\frac{5}{8}$ | $\frac{3}{4}$   |
| T-29A99                                                                                                                                                                                                   | 2.40       | RECEIVER          | 3:1         | 10,000         | 90,000      | 8         | 2B        | 2 $\frac{3}{8}$ |                 | 2 $\frac{7}{8}$ | 2 $\frac{1}{8}$ | 2 $\frac{3}{8}$ | 1 $\frac{1}{4}$ |
| T-57A36                                                                                                                                                                                                   | 2.70       |                   |             |                |             |           | 2F        | 2 $\frac{3}{8}$ | 1 $\frac{1}{2}$ | 2 $\frac{7}{8}$ | 2 $\frac{1}{8}$ | 2 $\frac{3}{8}$ | 1 $\frac{1}{2}$ |
| T-47A25                                                                                                                                                                                                   | 2.70       |                   |             |                |             |           | 2C        | 1 $\frac{1}{8}$ |                 | 2 $\frac{1}{8}$ | 2 $\frac{1}{4}$ | 2 $\frac{3}{8}$ | 1               |
| T-75A74                                                                                                                                                                                                   | 3.30       | RECEIVER          | 2:1         | 10,000         | 40,000      | 8         | 2F        | 2 $\frac{3}{8}$ |                 | 2 $\frac{7}{8}$ | 2 $\frac{1}{8}$ | 2 $\frac{3}{8}$ | 1 $\frac{1}{2}$ |
| For super-regenerative detector; has static shield between windings.                                                                                                                                      |            |                   |             |                |             |           |           |                 |                 |                 |                 |                 |                 |
| T-57A38                                                                                                                                                                                                   | 3.60       | AMPLIFIER         | 3:1         | 10,000         | 90,000      | 8         | 2F        | 2 $\frac{5}{8}$ |                 | 3 $\frac{3}{8}$ | 2 $\frac{1}{2}$ | 3               | 2 $\frac{1}{4}$ |
| T-15A73—*                                                                                                                                                                                                 | 9.00       | C.H.T.            | 2:1         | 10000/2500     | 40000/10000 | 10†       | 3U        | 2 $\frac{3}{8}$ | 2 $\frac{1}{2}$ | 3               | 3               | 3 $\frac{5}{8}$ | 2 $\frac{1}{2}$ |

|                                                                                                                                                                                      |        |                   |     |              |               |     |    |                 |                 |                 |                 |                 |                 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------|-----|--------------|---------------|-----|----|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|  <b>Single Plate To Push-Pull Grids</b><br>*Max. signal level + 15 db. †Parallel feed recommended. |        |                   |     |              |               |     |    |                 |                 |                 |                 |                 |                 |
| T-14A92                                                                                                                                                                              | \$1.60 | RECEIVER (midget) | 3:1 | 10,000       | 90,000        | 8   | 3B | 2               |                 | 2 $\frac{3}{8}$ | 1 $\frac{5}{8}$ | 1 $\frac{3}{8}$ | $\frac{1}{2}$   |
| ★ T-13A35                                                                                                                                                                            | 1.80   | RECEIVER (midget) | 3:1 | 10,000       | 90,000        | 8   | 3B | 2 $\frac{3}{8}$ |                 | 2 $\frac{5}{8}$ | 1 $\frac{5}{8}$ | 1 $\frac{3}{8}$ | $\frac{3}{4}$   |
| ★ T-33A91                                                                                                                                                                            | 2.40   | RECEIVER          | 3:1 | 10,000       | 90,000        | 8   | 2B | 2 $\frac{3}{8}$ |                 | 2 $\frac{7}{8}$ | 2 $\frac{1}{8}$ | 2 $\frac{3}{8}$ | 1 $\frac{1}{4}$ |
| T-86A03                                                                                                                                                                              | 2.70   |                   |     |              |               |     | 3B | 2 $\frac{3}{4}$ |                 | 3 $\frac{3}{8}$ | 2 $\frac{1}{8}$ | 2               | 1 $\frac{1}{2}$ |
| T-14A29                                                                                                                                                                              | 3.00   |                   |     |              |               |     | 2C | 1 $\frac{1}{2}$ | 1 $\frac{1}{2}$ | 2               | 1 $\frac{5}{8}$ | 2 $\frac{3}{8}$ | 1 $\frac{1}{4}$ |
| T-57A39                                                                                                                                                                              | 3.00   |                   |     |              |               |     | 2F | 2 $\frac{3}{8}$ |                 | 2 $\frac{7}{8}$ | 2 $\frac{1}{8}$ | 2 $\frac{3}{8}$ | 1 $\frac{1}{2}$ |
| T-57A40                                                                                                                                                                              | 3.90   | AMPLIFIER         | 3:1 | 10,000       | 90,000        | 8   | 2B | 2 $\frac{5}{8}$ |                 | 3 $\frac{3}{8}$ | 2 $\frac{1}{8}$ | 3               | 2               |
| ★ T-57A41                                                                                                                                                                            | 4.20   |                   |     |              |               |     | 2F | 2 $\frac{5}{8}$ |                 | 3 $\frac{3}{8}$ | 2 $\frac{1}{2}$ | 3               | 2 $\frac{1}{4}$ |
| T-74A31                                                                                                                                                                              | 4.20   | AMPLIFIER         | 1:1 | 10,000       | 10,000        | 8   | 2F | 2 $\frac{5}{8}$ |                 | 3 $\frac{3}{8}$ | 2 $\frac{1}{2}$ | 3               | 2 $\frac{1}{4}$ |
| T-57A42                                                                                                                                                                              | 4.20   | RECEIVER (large)  | 3:1 | 10,000       | 90,000        | 8   | 2B | 2 $\frac{5}{8}$ |                 | 3 $\frac{3}{8}$ | 2 $\frac{1}{8}$ | 3               | 2               |
| For coupling screen grid or power detector (Clarion AC-60).                                                                                                                          |        |                   |     |              |               |     |    |                 |                 |                 |                 |                 |                 |
| ★ T-15A74*                                                                                                                                                                           | 8.40   | C.H.T.            | 2:1 | 10,000/2,500 | 40,000/10,000 | 10† | 3U | 2 $\frac{3}{8}$ | 2 $\frac{1}{2}$ | 3               | 3               | 3 $\frac{5}{8}$ | 2 $\frac{1}{2}$ |

|                                                                                                                                                                              |        |                      |       |              |               |     |    |                 |                 |                 |                 |                 |                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------|-------|--------------|---------------|-----|----|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|  <b>Push-Pull Plates To Push-Pull Grids</b><br>*Maximum signal level + 15 db. †Each side. |        |                      |       |              |               |     |    |                 |                 |                 |                 |                 |                 |
| T-13A36                                                                                                                                                                      | \$2.40 | RECEIVER (midget)    | 1:1   | 20,000       | 20,000        | 8†  | 3B | 2 $\frac{1}{2}$ |                 | 3 $\frac{1}{8}$ | 1 $\frac{3}{4}$ | 2               | 1               |
| T-67A91                                                                                                                                                                      | 4.20   | AMPLIFIER            | 1.5:1 | 20,000       | 45,000        | 10† | 2B | 2 $\frac{5}{8}$ |                 | 3 $\frac{3}{8}$ | 2 $\frac{1}{8}$ | 3               | 2               |
| ★ T-58A70                                                                                                                                                                    | 4.50   | Has split Secondary. |       |              |               |     | 2F | 2 $\frac{5}{8}$ |                 | 3 $\frac{3}{8}$ | 2 $\frac{1}{2}$ | 3               | 2 $\frac{1}{4}$ |
| T-15A75*                                                                                                                                                                     | 8.70   | C.H.T.               | 1.5:1 | 20,000/5,000 | 45,000/11,250 | 10† | 3U | 2 $\frac{3}{8}$ | 2 $\frac{1}{2}$ | 3               | 3               | 3 $\frac{5}{8}$ | 2 $\frac{1}{2}$ |

## Universal Interstage Replacement Transformer

Will couple single plate to single grid, single plate to push-pull grids or push-pull plates to push-pull grids. Has split secondary.

|           |        |          |     |           |    |    |                 |  |  |                 |                 |                 |                 |
|-----------|--------|----------|-----|-----------|----|----|-----------------|--|--|-----------------|-----------------|-----------------|-----------------|
| ★ T-17A02 | \$3.00 | RECEIVER | 3:1 | Universal | 10 | 2F | 2 $\frac{3}{8}$ |  |  | 2 $\frac{7}{8}$ | 2 $\frac{1}{8}$ | 2 $\frac{3}{8}$ | 1 $\frac{1}{2}$ |
|-----------|--------|----------|-----|-----------|----|----|-----------------|--|--|-----------------|-----------------|-----------------|-----------------|

## MICROPHONE CABLE TRANSFORMERS

Permit quick and efficient change from high to low impedance microphone input on any amplifier. Hum pick-up is reduced to a minimum through the use of magnetic shielding. As the illustration shows, these Microphone Cable transformers, exclusively

Thordarson, are connected in series with the microphone cable and the amplifier input connector and are small and inconspicuous. Frequency Response  $\pm 1\frac{1}{2}$  db from 30 to 15,000 c.p.s.

| Type No. | List Price |  | Ohms Impedance |        | Turns Ratio | Mtg. Fig. | Dimensions |    |                 | Wt. Lbs.      |
|----------|------------|--|----------------|--------|-------------|-----------|------------|----|-----------------|---------------|
|          |            |  | Pri.           | Sec.   |             |           | W.         | D. | H.              |               |
| T-14A75  | \$17.40    |  | 30-50          | 50,000 | 1:31.6      | 3Z        | 1          | 1  | 2 $\frac{1}{2}$ | $\frac{3}{4}$ |
| T-14A76  | 17.40      |  | 200-250        | 50,000 | 1:14.14     | 3Z        | 1          | 1  | 2 $\frac{1}{2}$ | $\frac{3}{4}$ |





3Z



2B



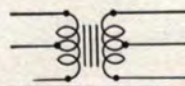
2F



3U

## AUDIO (A) INPUT TRANSFORMERS

For coupling a signal source to the grid or grids of a Class A amplifier stage. Frequency range of C. H. T. types is flat within  $\pm 1\frac{1}{2}$  db from 60 to 8,000 c.p.s. Other features include hum-bucking coil construction and balanced windings.

| Type No.                                                                                                                                                     | List Price | Application                                                      | Ohms Impedance                |                              | Turns Ratio    | Mtg. Centers |                 |                                       | Dimensions      |                 |                 | Wt. Lbs.        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------------------------------------------------------------|-------------------------------|------------------------------|----------------|--------------|-----------------|---------------------------------------|-----------------|-----------------|-----------------|-----------------|
|                                                                                                                                                              |            |                                                                  | Pri.                          | Sec.                         |                | Mtg. Fig.    | Width           | Depth                                 | W.              | D.              | H.              |                 |
| <div></div> <b>Low Impedance Source (Microphone, Line or Mixer) to Grid</b> |            |                                                                  |                               |                              |                |              |                 |                                       |                 |                 |                 |                 |
| T-65A73                                                                                                                                                      | \$3.60     | DB mike to grid                                                  | 200/50                        | 100,000                      | 1:22.2         | 2F           | 2 $\frac{5}{8}$ |                                       | 3 $\frac{3}{8}$ | 2 $\frac{1}{2}$ | 3               | 2               |
| T-58A37                                                                                                                                                      | 2.70       | DB mike to grid                                                  | 200/50                        | 100,000                      | 1:22.2         | 2F           | 2 $\frac{3}{8}$ |                                       | 2 $\frac{7}{8}$ | 2 $\frac{1}{8}$ | 2 $\frac{3}{8}$ | 1 $\frac{1}{2}$ |
| T-83A78                                                                                                                                                      | 2.70       | Single button mike to                                            | 100                           | 400,000 Ct.                  | 1:64           | 2F           | 2 $\frac{3}{8}$ |                                       | 2 $\frac{7}{8}$ | 1 $\frac{7}{8}$ | 2 $\frac{3}{8}$ | 1 $\frac{1}{4}$ |
| T-86A02                                                                                                                                                      | 2.70       | single or P-P grids                                              |                               |                              |                | 2B           | 2 $\frac{3}{8}$ |                                       | 2 $\frac{7}{8}$ | 1 $\frac{3}{4}$ | 2 $\frac{3}{8}$ | 1               |
| T-55A16                                                                                                                                                      | 3.30       | Dyn. mike, line or mixer to single or P-P grids                  | 200/50                        | 100,000 Ct.                  | 1:22.3         | 2F           | 2 $\frac{3}{8}$ |                                       | 2 $\frac{7}{8}$ | 2 $\frac{1}{8}$ | 2 $\frac{3}{8}$ | 1 $\frac{1}{2}$ |
| T-61A94                                                                                                                                                      | 3.90       | Line to single or P-P C.I.A grids                                | 500/125                       | 100,000 Ct.                  | 1:14.1         | 2F           | 2 $\frac{5}{8}$ |                                       | 3 $\frac{3}{8}$ | 2 $\frac{1}{2}$ | 3               | 2 $\frac{1}{4}$ |
| T-72A59                                                                                                                                                      | 2.00       | Plate and Single Button microphone to grid                       | 5,000<br>200                  | 100,000                      | 1:3.25<br>1:35 | 2B           | 2 $\frac{1}{8}$ |                                       | 2 $\frac{5}{8}$ | 1 $\frac{5}{8}$ | 2               | $\frac{3}{4}$   |
| T-14A94                                                                                                                                                      | 3.00       | Voice Coil to grid                                               | 4-8                           | 100,000                      | 1:112          | 2B           | 2 $\frac{3}{8}$ |                                       | 2 $\frac{7}{8}$ | 2 $\frac{1}{8}$ | 2 $\frac{3}{8}$ | 1               |
| T-15A66                                                                                                                                                      | 9.60       | C.H.T. Low Impedance to grid                                     | 500/333/250/<br>200/125/50    | 60,000/15,000<br>Single Grid | 1:10.95        | 3U           | 2 $\frac{3}{8}$ | 2 $\frac{1}{2}$                       | 3               | 3               | 3 $\frac{5}{8}$ | 2 $\frac{1}{4}$ |
| T-15A67                                                                                                                                                      | 9.60       | C.H.T. Low Impedance P-P grids                                   | 500/333/250/<br>200/125/50    | 120,000/30,000<br>P-P Grids  | 1:15.5         | 3U           | 2 $\frac{3}{8}$ | 2 $\frac{1}{2}$                       | 3               | 3               | 3 $\frac{5}{8}$ | 2 $\frac{1}{4}$ |
| T-15A68                                                                                                                                                      | 9.60       | C.H.T. Low Impedance to single grid                              | 60/38/30/22/<br>15/10/5.5/2.5 | 60,000/15,000<br>Single Grid | 1:31.6         | 3U           | 2 $\frac{3}{8}$ | 2 $\frac{1}{2}$                       | 3               | 3               | 3 $\frac{5}{8}$ | 2 $\frac{1}{2}$ |
| T-17A42                                                                                                                                                      | 12.00      | C.H.T. With Triple Telescopic High-Permeability Magnetic Shields | 500†/333/250/<br>200†/125/50  | 50,000<br>Single Grid        | 1:10           | 3U           | 2 $\frac{3}{8}$ | 1 $\frac{7}{8}$<br>Min. level —20 db. | 3               | 2 $\frac{1}{2}$ | 3 $\frac{1}{8}$ | 1 $\frac{1}{4}$ |
| Microphone or Line to Mixer or Line                                                                                                                          |            |                                                                  |                               |                              |                |              |                 |                                       |                 |                 |                 |                 |
| T-70A82                                                                                                                                                      | \$4.20     | DB mike to line                                                  | 200/50                        | 500/125                      | 1:1.68         | 2F           | 2 $\frac{5}{8}$ |                                       | 3 $\frac{3}{8}$ | 2 $\frac{1}{2}$ | 3               | 2 $\frac{1}{4}$ |
| T-70A83                                                                                                                                                      | 4.20       | Crystal mike to line or mixer                                    | 100,000                       | 200/50                       | 1:22.4         | 2F           | 2 $\frac{5}{8}$ |                                       | 3 $\frac{3}{8}$ | 2 $\frac{1}{2}$ | 3               | 2 $\frac{1}{4}$ |
| T-15A69                                                                                                                                                      | 9.60       | C.H.T. Low Impedance to mixer or line                            | 500/333/250/<br>200/125/50    | 500/333/250/<br>200/125/50   | 1:1            | 3U           | 2 $\frac{3}{8}$ | 2 $\frac{1}{2}$                       | 3               | 3               | 3 $\frac{5}{8}$ | 2               |
| T-15A70                                                                                                                                                      | 9.60       | C.H.T. Dyn. mike to mixer or line                                | 60/38/30/22/<br>15/10/5.5/2.5 | 500/333/250/<br>200/125/50   | 1:2.88         | 3U           | 2 $\frac{3}{8}$ | 2 $\frac{1}{2}$                       | 3               | 3               | 3 $\frac{5}{8}$ | 2               |
| Tube to Line or Mixer (Low Level)                                                                                                                            |            |                                                                  |                               |                              |                |              |                 |                                       |                 |                 |                 |                 |
| T-14A90                                                                                                                                                      | \$3.00     | Sgl. or P-P Plates to line or mixer                              | 20,000 Ct.                    | 500/125                      | 8*             | 2F           | 2 $\frac{3}{8}$ |                                       | 2 $\frac{7}{8}$ | 2 $\frac{1}{8}$ | 2 $\frac{3}{8}$ | 1 $\frac{1}{2}$ |
| T-14A91                                                                                                                                                      | 3.00       | Sgl. or P-P Plates to line or mixer                              | 20,000 Ct.                    | 200/50                       | 8*             | 2F           | 2 $\frac{3}{8}$ |                                       | 2 $\frac{7}{8}$ | 2 $\frac{1}{8}$ | 2 $\frac{3}{8}$ | 1 $\frac{1}{2}$ |
| T-72A59                                                                                                                                                      | 2.00       | Plate and sgl. button mike to grid                               | 5,000 and 200                 | 100,000                      | 10*            | 2B           | 2 $\frac{1}{8}$ |                                       | 2 $\frac{5}{8}$ | 1 $\frac{5}{8}$ | 2               | $\frac{3}{4}$   |
| T-15A71                                                                                                                                                      | 9.60       | C.H.T. single plate to line or mixer.                            | 20,000/5,000<br>Single Plate  | 500/333/250/<br>200/125/50   | 8*             | 3U           | 2 $\frac{3}{8}$ | 2 $\frac{1}{2}$                       | 3               | 3               | 3 $\frac{5}{8}$ | 1 $\frac{3}{4}$ |
| T-15A72                                                                                                                                                      | 9.60       | C.H.T. P-P plates to line or mixer.                              | 20,000/5,000<br>P-P Plates    | 500/333/250/<br>200/125/50   | 0*             | 3U           | 2 $\frac{3}{8}$ | 2 $\frac{1}{2}$                       | 3               | 3               | 3 $\frac{5}{8}$ | 1 $\frac{3}{4}$ |
| T-17A43                                                                                                                                                      | 12.00      | C.H.T. With Triple Telescopic High-Permeability Magnetic Shields | 10,000 to<br>15,000           | 500†/333/250/<br>200†/125/50 | 0*             | 3U           | 2 $\frac{3}{8}$ | 1 $\frac{7}{8}$                       | 3               | 2 $\frac{1}{2}$ | 3 $\frac{1}{8}$ | 1 $\frac{1}{4}$ |

†Indicates balanced center tap. \*Indicates Primary M.A.



C5



R1



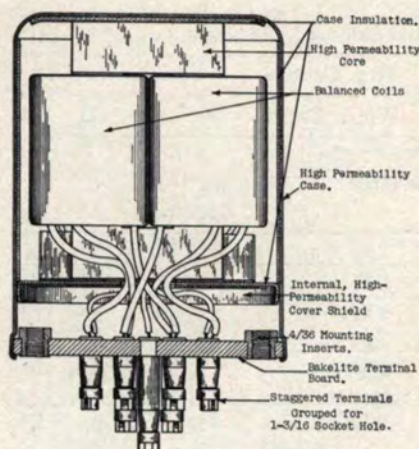
R2



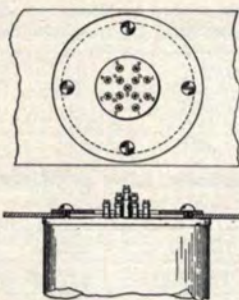
3T



### TRU-FIDELITY BANTAM SERIES



Cross sectional view, Bantam Transformer



Bottom view, illustrating ring mounting as used in Bantam and Major Series Transformers

- One piece drawn high permeability alloy case. Case style R2.
- Maximum operating level + 10 db.
- Uniform frequency response  $\pm 1$  db from 30 to 15,000 c.p.s. (Except where otherwise noted).
- Balanced (humbucking) coil construction.
- Electrostatic shields. (Except Interstage types.)
- Relative hum reduction 67 db.
- High permeability alloy laminations.
- Moisture-proof compound filled case.
- One-hole ring mounting, permitting rotation of transformers for maximum hum reduction.
- Grey enamel finish. (Chrome plated case \$1.25 list extra.)
- Sturdy solder lugs, machined from solid brass and tinned for quick soldering.
- Terminals arranged circularly to fit within standard tube socket hole.

#### R2 CASE DIMENSION—BANTAM

|                              |         |
|------------------------------|---------|
| Diameter.....                | 1%      |
| Height (Including lugs)..... | 2%      |
| Height (Case alone).....     | 2%      |
| Mounting centers.....        | 1% x 1% |

| Type No. | List Price | Application                                      | Ohms Impedance               |                                | Primary Max. D.C. Per Side | M.A. Unbalance |
|----------|------------|--------------------------------------------------|------------------------------|--------------------------------|----------------------------|----------------|
|          |            |                                                  | Primary                      | Secondary                      |                            |                |
| T-1A50   | \$17.40    | Low impedance mixer, pick-up or multiple line    | 50/125/200*/250<br>333/500*  | 50,000                         | 75                         | .5             |
| T-1A51   | 17.40      | Low impedance mixer, pick-up or multiple line    | 2.5/5.5/10*/22*/30<br>38/60* | 50,000                         | 75                         | .5             |
| T-1A52   | 18.60      | Dynamic Microphone                               | 30*/7.5                      | 50,000 overall in two sections | 0                          | 0              |
| T-1A53   | 18.60      | Low impedance pick-up, microphone or line        | 50/125/200*/250<br>333/500*  | 80,000 overall in two sections | 75                         | .5             |
| T-1A54   | 16.80      | Single plate to multiple line No D.C. in primary | 10,000 to 15,000             | 50/125/200*/250<br>333/500*    | 0                          | 0              |
| T-1A55   | 17.40      | Single plate to multiple line D.C. in primary †  | 10,000                       | 50/125/200*/250<br>333/500*    | 4                          | 4              |
| T-1A56   | 18.00      | Single triode 6F6 etc. to line D.C. in primary † | 4,000                        | 50/125/200*/250<br>333/500*    | 25                         | 25             |
| T-1A57   | 16.80      | PP low level plates to multiple line             | 10,000 to 15,000 each side   | 50/125/200*/250<br>333/500*    | 8                          | 0              |
| T-1A59   | 16.80      | Single plate to single grid Ratio 1:2            | 10,000 to 15,000             | 60,000                         | 0                          | 0              |
| T-1A60   | 16.80      | Single plate to push-pull grids Ratio 1:2.31     | 10,000 to 15,000             | 80,000* overall in 2 sections  | 0                          | 0              |

\* Indicates balanced c.t. \$Max. + 22 db. †60 to 15,000 c.p.s.

### TRU-FIDELITY BANTAM AUDIO REACTORS

| Type No. | List Price | Application   | Inductance |            | M.A. D.C. | Ohms Res. D.C. |
|----------|------------|---------------|------------|------------|-----------|----------------|
|          |            |               | No D.C.    | Rated D.C. |           |                |
| T-1C62   | \$12.00    | Parallel feed | 475        | 320/80     | 2/4       | 6,000/1,500    |
| T-1C63   | 12.00      | Parallel feed | 450        | 200/50     | 4/8       | 5,000/1,250    |



## TRU-FIDELITY INCHER SERIES

- Especially small and lightweight —  $\frac{15}{16}$ " diameter,  $1\frac{1}{8}$ " high and wt.  $1\frac{1}{4}$  oz. Case style R1.
- Maximum operating level 0 db (6 milliwatts).
- Uniform frequency response  $\pm 1\frac{1}{2}$  db from 30 to 15,000 c.p.s. (Except where otherwise noted.)
- Single coil shell type construction.
- Electrostatic shields. (Except Interstage types.)
- Minimum hum pick-up.
- High permeability alloy laminations.
- Moisture-proof compound filled case.
- Grey enamel finish. (Chrome plated case 75c list extra.)
- Sturdy solder lugs machined from solid brass and tinned for quick soldering.

### CASE DIMENSIONS

|                               | R1                 | 3T             | C5             |
|-------------------------------|--------------------|----------------|----------------|
| Diameter.....                 | $\frac{15}{16}$    |                |                |
| Width.....                    |                    | $3\frac{1}{2}$ | $3\frac{1}{2}$ |
| Depth.....                    |                    | $2\frac{1}{2}$ | $2\frac{1}{2}$ |
| Height.....                   | $1\frac{1}{4}$     |                | $3\frac{3}{4}$ |
| Height (Including lugs).....  | $1\frac{1}{4}$     | $4\frac{1}{4}$ | $4\frac{3}{4}$ |
| Mounting Centers (Width)..... | $\frac{3}{8}$      | $2\frac{1}{2}$ | $2\frac{1}{2}$ |
| Mounting Centers (Depth)..... |                    | $1\frac{1}{4}$ | $2\frac{1}{4}$ |
| Weight.....                   | $1\frac{1}{4}$ oz. | $4\frac{1}{4}$ | $4\frac{3}{4}$ |

| Type No. | List Price | Application                                                 | Ohms Impedance             |              | Primary Max. D.C. Per Side | M.A. Unbalance |
|----------|------------|-------------------------------------------------------------|----------------------------|--------------|----------------------------|----------------|
|          |            |                                                             | Primary                    | Secondary    |                            |                |
| T-5A1    | \$12.60    | Mike, Line or Pick-up to Single Grid                        | 50/200*/500*               | 50,000       | 25                         | .5             |
| T-5A2    | 13.20      | Mike, Line or Pick-up to P-P Grids                          | 50/200*/500*               | 80,000*      | 25                         | .5             |
| T-5A3    | 11.40      | Dynamic Microphone to Single Grid                           | 7.5/30*                    | 50,000       | 0                          | 0              |
| T-5A4    | 10.50      | Single Plate to Single Grid Ratio 1:2                       | 10,000 to 15,000           | 60,000       | 0                          | 0              |
| T-5A5    | 9.60       | ★Single Plate to Single Grid, D.C. in Primary, Ratio 1 to 2 | 10,000 to 15,000           | 60,000       | 2                          | 2              |
| T-5A7    | 12.00      | ★Single Plate to P-P Grids, D.C. in Primary, Ratio 1 to 2.5 | 10,000 to 15,000           | 95,000*      | 2                          | 2              |
| T-5A8    | 12.60      | P-P Plates to P-P Grids, Ratio 1 to 1.5                     | 10,000 to 15,000 each side | 67,500*      | 2                          | .25            |
| T-5A9    | 12.60      | Single Plate to Line                                        | 10,000 to 15,000           | 50/200*/500* | 0                          | 0              |
| T-6A0    | 12.60      | ★Single Plate to Line, D.C. in Primary                      | 10,000 to 15,000           | 50/200*/500* | 2                          | 2              |
| T-6A1    | 12.60      | Push-pull Plates to Line                                    | 10,000 to 15,000 each side | 50/200*/500* | 2                          | .25            |
| T-6A3    | 11.40      | Matching and Mixing                                         | 50/200*/500*               | 50/200*      | 25                         | .5             |
| T-6A4    | 12.00      | ★50:1 Mike or Line to Single Grid                           | 200                        | 500,000      | 10                         | 10             |

★ Voice Frequencies Only, 150 to 6000 cycles. \*Center tapped.

## TRU-FIDELITY MAJOR SERIES

- High operating level.
- Uniform frequency response  $\pm \frac{1}{2}$  db from 30 to 15,000 c.p.s.
- Balanced (hum-bucking) coil construction.
- Electrostatic shields. (Except Interstage Types.)
- High permeability alloy laminations.
- Moisture-proof compound filled case.
- One-hole ring mounting, permitting rotation of transformers for maximum hum reduction.
- Grey enamel finish cast case.
- Sturdy solder lugs machined from solid brass and tinned for quick soldering.
- Terminals circularly arranged to fit within standard socket hole.

Special Major transformers to meet other audio requirements will be quoted on application.

| Type No. | List Price | Ohms Impedance |           | Primary Max. D.C. Per Side | M.A. Unbalance | Max. Sig. Level DB | Case Style |
|----------|------------|----------------|-----------|----------------------------|----------------|--------------------|------------|
|          |            | Primary        | Secondary |                            |                |                    |            |

### CRYSTAL MICROPHONE OR PHOTO CELL TO LINE

|          |         |                |                  |   |   |     |    |
|----------|---------|----------------|------------------|---|---|-----|----|
| T-90A06- | \$20.40 | 250,000/62,500 | 500*/125/200*/50 | 0 | 0 | +10 | 3T |
|----------|---------|----------------|------------------|---|---|-----|----|

### PLATE TO LINE (LOW LEVEL)

|          |       |                                   |                  |    |   |     |    |
|----------|-------|-----------------------------------|------------------|----|---|-----|----|
| T-90A02- | 20.40 | 20,000/5000 Single Plate          | 500*/125/200*/50 | 8  | 8 | +15 | 3T |
| T-3A32   | 21.00 | 20,000/5000 Single† or P-P Plates | 500*/125/200*/50 | 10 | 0 | +20 | C5 |

### MIXER

|          |       |                  |                  |     |    |     |    |
|----------|-------|------------------|------------------|-----|----|-----|----|
| T-90A10- | 20.40 | 500*/125/200*/50 | 500*/125/200*/50 | 100 | .5 | +10 | 3T |
|----------|-------|------------------|------------------|-----|----|-----|----|

### LINE TO GRID

|        |       |                  |                           |     |    |     |    |
|--------|-------|------------------|---------------------------|-----|----|-----|----|
| T-2A66 | 21.60 | 500*/125/200*/50 | 75,000/18,750 Single Grid | 100 | .5 | +10 | C5 |
| T-2A68 | 22.80 | 500*/125/200*/50 | 100,000*/25,000 P-P Grids | 100 | .5 | +20 | C5 |

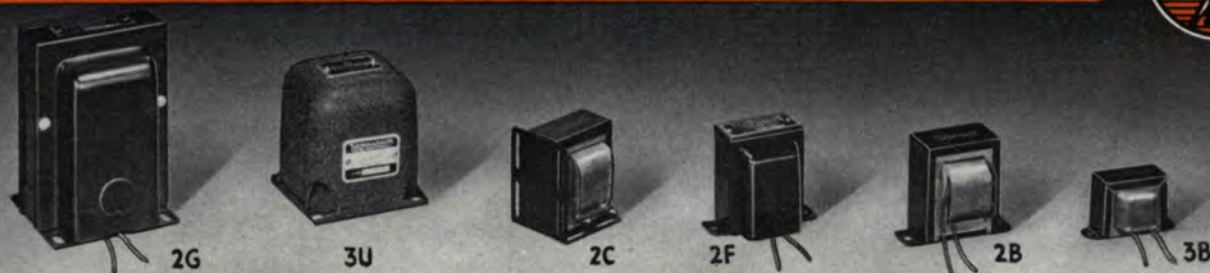
### INTERSTAGE

|          |       |                                               |                           |    |   |     |    |
|----------|-------|-----------------------------------------------|---------------------------|----|---|-----|----|
| T-90A03- | 20.40 | 10,000/2500 Ratio overall Single Plate 1 to 2 | 40,000/10,000 Single Grid | 0  | 0 | +15 | 3T |
| T-2A36   | 21.00 | 10,000/2500 Ratio overall Single Plate 1 to 2 | 40,000/10,000 P-P Grids   | 0  | 0 | +15 | C5 |
| T-90A05- | 20.40 | 20,000/5000 Ratio overall P-P Plates 1 to 1.5 | 45,000/11,250 P-P Grids   | 10 | 0 | +20 | 3T |

### PLATE REACTOR

| Type No. | List    | Connection | Henries | M.A. | D.C. Ohms | Case Style |
|----------|---------|------------|---------|------|-----------|------------|
| T-90C09- | \$15.00 | Series     | 300     | 8    | 4,000     | 3T         |
|          |         | Parallel   | 75      | 16   | 1,000     |            |

\* Indicates inductive and capacitive balance to center tap for use on balanced transmission lines.  
† With single tube use parallel feed with resistor or T-90C09.



## CHOKES AND REACTORS (C)

It is well known that as the D.C. current in a choke increases, there is a corresponding decrease in inductance. Thordarson chokes are rated at actual inductance, measured under full operating load conditions.  
R. M. S. test volts rating as shown is approximately 2 times the operating D.C. voltage recommended.



### Parallel Feed Audio Reactors

For supplying plate current to a vacuum tube where it is desirable to isolate plate current from the transformer primary or where the voltage drop caused by a resistor load is objectionable.

| Type No.  | List Price | Application                     | Typical Tubes           | Induct. Hen. | Cur. M.A. | D.C. Ohms | R.M.S. Test Volts | Mtg. Fig. | Mtg. Centers Width Depth | Dimensions W. D. H. | Wt. Lbs. |
|-----------|------------|---------------------------------|-------------------------|--------------|-----------|-----------|-------------------|-----------|--------------------------|---------------------|----------|
| ★ T-37C36 | \$2.40     | Plate Impedance                 | 56-30-76-6C5-           | 300          | 5         | 6470      | 1600              | 2F        | 2 3/8                    | 2 7/8 2 1/8 2 3/8   | 1 1/2    |
| ★ T-67C46 | 2.10       |                                 | 55-85, etc.             |              |           |           |                   | 2B        | 2 3/8                    | 2 7/8 2 1/8 2 3/8   | 1 1/4    |
| T-52C98   | 2.40       | Plate Impedance for screen Grid | 24-57-56-76-6C5-6F5-6J7 | 500          | .5        | 6150      | 1600              | 2F        | 2 3/8                    | 2 7/8 1 7/8 2 3/8   | 1 1/4    |
| ★ T-29C27 | 2.10       | detector or as grid impedance   |                         |              |           |           |                   | 2B        | 2 3/8                    | 2 7/8 1 3/4 2 3/8   | 1        |
| T-68C08   | 2.10       | Plate Impedance                 | 45-46-10, etc.          | 22           | 35        | 405       | 1600              | 2F        | 2 3/8                    | 2 7/8 2 1/8 2 3/8   | 1 1/2    |
| ★ T-18C92 | 1.80       | or Filter                       |                         |              |           |           | 1100              | 3B        | 2 3/4                    | 3 3/8 2 1/8 2       | 1 1/2    |

### Tuned Audio Circuit Reactors

|           |        |                                |  |     |    |      |  |    |       |                   |       |
|-----------|--------|--------------------------------|--|-----|----|------|--|----|-------|-------------------|-------|
| T-81C15   | \$2.40 | Tuned Audio Circuits           |  | .75 | .5 | 30   |  | 2B | 2 1/8 | 2 5/8 1 5/8 2     | 3/4   |
| T-93C20   | 3.30   | Tuned Audio Circuits           |  | 250 | .5 | 6400 |  | 2B | 2 3/8 | 2 7/8 2 1/8 2 3/8 | 1 1/4 |
| ★ T-74C30 | 1.80   | Tuned Audio Circuits or Filter |  | 42  | 15 | 2100 |  | 3B | 2 3/8 | 3 1/8 1 3/4 2     | 1     |

## DUAL TONE CONTROL COMPONENTS

As illustrated and described in Amplifier Guide 346D

|           |        |                                 |    |   |     |  |  |    |       |                   |       |
|-----------|--------|---------------------------------|----|---|-----|--|--|----|-------|-------------------|-------|
| ★ T-14C70 | \$3.00 | Tone Control, hum-bucking type  | 22 | 0 | 220 |  |  | 3Y | 1 7/8 | 1 7/8 1 7/8 2 1/4 | 1 1/2 |
| ★ R-1068  | 3.00   | Dual tone control potentiometer |    |   |     |  |  |    |       |                   |       |

## C. H. T. SPEECH FILTER

This hi-pass filter with a cut-off below 200 c.p.s. provides a definite increase in effective side band power and corresponding reduction

of hum pick-up. It may be used instead of an interstage audio transformer to couple a single plate to single or push-pull grids.

|         |         |                               |  |  |  |  |  |    |       |                   |  |
|---------|---------|-------------------------------|--|--|--|--|--|----|-------|-------------------|--|
| T-15C34 | \$10.80 | Plate to Single or P.P. tubes |  |  |  |  |  | 3U | 2 3/8 | 2 1/8 3 2 3/4 4 3 |  |
|---------|---------|-------------------------------|--|--|--|--|--|----|-------|-------------------|--|

## C. H. T. SPLATTER CHOKES

These tapped chokes are used between any Class B modulator and any Class C stage for eliminating objectionable side band splatter due to excessive audio distortion. Full instructions for operation are furnished.

|         |        |                          |            |     |    |      |    |       |       |                         |  |
|---------|--------|--------------------------|------------|-----|----|------|----|-------|-------|-------------------------|--|
| T-15C30 | \$6.00 | Elimination of side band | .025 to .8 | 150 | 54 | 3000 | 3U | 2 3/8 | 1 7/8 | 3 2 1/2 3 1/8 2 1/4     |  |
| T-15C31 | 7.20   | Splatter                 | .025 to .8 | 300 | 20 | 5000 | 3U | 2 3/8 | 2 3/4 | 3 3 3 3/8 4 5/8 4 1/2   |  |
| T-15C32 | 9.60   |                          | .025 to .8 | 500 | 14 | 7500 | 3U | 3 3/8 | 3 1/8 | 4 5/8 3 3/4 4 5/8 5 3/4 |  |



## C.H.T. AMPLIFIER CHOKES

Two inductance ratings are shown, one for parallel connection of the two windings and the other for series connection. Cases are compound filled for complete coil protection.

| Type No.  | List Price | Inductance Henries        | Current M.A. | D.C. Res.   | R.M.S. Test Volts | Mtg. Fig. | Mtg. Centers Width Depth | Dimensions W. D. H. | Wt. Lbs. |
|-----------|------------|---------------------------|--------------|-------------|-------------------|-----------|--------------------------|---------------------|----------|
| ★ T-15C52 | \$6.60     | 30 Parallel<br>120 Series | 35<br>17     | 675<br>2700 | 1,600             | 3U        | 2 3/8 2 1/2              | 3 3 3 3/8           | 3        |
| T-15C53   | 6.90       | 12 Parallel<br>50 Series  | 100<br>50    | 272<br>1090 | 1,600             | 3U        | 2 3/8 2 1/2              | 3 3 3 3/8           | 3 1/4    |
| ★ T-15C54 | 7.50       | 8 Parallel<br>32 Series   | 150<br>75    | 184<br>735  | 1,600             | 3U        | 2 3/8 2 3/4              | 3 3 3 3/8           | 3 1/2    |
| T-15C55   | 9.00       | 2 Parallel<br>8 Series    | 500<br>250   | 32<br>130   | 1,600             | 3U        | 3 5/8 3 1/8              | 4 5/8 3 3/4 4 5/8   | 7 1/2    |
| T-15C56   | 12.00      | 2 Parallel<br>8 Series    | 700<br>350   | 27<br>107   | 1,600             | 3U        | 3 5/8 3 7/8              | 4 5/8 4 1/8 5 7/8   | 9 3/4    |

## Television Filter Reactor

|         |        |      |   |        |        |    |       |                   |       |
|---------|--------|------|---|--------|--------|----|-------|-------------------|-------|
| T-17C40 | \$6.60 | 1500 | 3 | 12,000 | 10,000 | 2F | 3 3/8 | 3 5/8 3 1/8 3 1/2 | 2 1/4 |
|---------|--------|------|---|--------|--------|----|-------|-------------------|-------|

**FILTER AND INPUT CHOKES**  
**Replacement Filter Chokes**

| Type No.  | List Price | Inductance   |               | Current Rating M.A. | D.C. Res. Ohms | R.M.S. Test Volts | Mtg. Fig. | Mtg. Centers |       | Dimensions |       |       | Wt. Lbs. |
|-----------|------------|--------------|---------------|---------------------|----------------|-------------------|-----------|--------------|-------|------------|-------|-------|----------|
|           |            | At Zero D.C. | At Rated D.C. |                     |                |                   |           | Width        | Depth | W.         | D.    | H.    |          |
| ★ T-13C26 | \$1.10     | 21           | 8             | 40                  | 530            | 1600              | 3B        | 2            |       | 2 3/8      | 1 5/8 | 1 3/8 | 1 1/2    |
| ★ T-13C27 | 1.30       | 22           | 10            | 40                  | 475            | 1600              | 3B        | 2 3/8        |       | 2 3/8      | 1 5/8 | 1 5/8 | 3/4      |
| ★ T-13C28 | 1.45       | 20           | 10            | 65                  | 460            | 1600              | 3B        | 2 1/2        |       | 3 1/8      | 1 3/4 | 2     | 1        |
| ★ T-43C92 | 2.00       | 24           | 10            | 75                  | 260            | 1600              | 2C        | 1 1/2        | 1 1/2 | 2 1/8      | 2     | 2 3/8 | 1 1/4    |
| ★ T-47C07 | 2.00       | 20           | 12            | 75                  | 410            | 1600              | 3B        | 3 1/8        |       | 3 3/8      | 2     | 2 1/4 | 1 1/4    |
| ★ T-44C02 | 1.80       | 31           | 12            | 80                  | 405            | 1600              | 3B        | 2 3/4        |       | 3 3/8      | 2 1/8 | 2     | 1 1/4    |
| ★ T-57C51 | 1.80       | 15           | 6             | 80                  | 138            | 1600              | 2B        | 2 3/8        |       | 2 7/8      | 2 1/8 | 2 3/8 | 1 1/4    |
| ★ T-13C29 | 1.90       | 20           | 9             | 85                  | 250            | 1600              | 3B        | 2 3/4        |       | 3 3/8      | 2 1/8 | 2     | 1 1/2    |
| ★ T-68C07 | 2.40       | 32           | 15            | 85                  | 375            | 1600              | 2B        | 2 5/8        |       | 3 3/8      | 2 1/2 | 3     | 2        |
| ★ T-57C53 | 2.40       | 27           | 10            | 110                 | 200            | 1600              | 2B        | 2 5/8        |       | 3 3/8      | 2 1/2 | 3     | 2 1/4    |
| ★ T-75C49 | 1.80       | 22           | 8             | 120                 | 290            | 1600              | 3B        | 2 3/4        |       | 3 3/8      | 2 1/8 | 2     | 1 1/2    |
| ★ T-53C19 | 1.80       |              |               |                     |                |                   | 2B        | 2 3/8        |       | 2 7/8      | 2 1/8 | 2 3/8 | 1 1/2    |
| ★ T-13C30 | 2.40       | 25           | 8             | 150                 | 200            | 1600              | 2B        | 2 5/8        |       | 3 3/8      | 2 1/8 | 3     | 2 1/4    |

**Filter Chokes for Replacement in AC-DC Receivers**

|           |        |    |    |    |     |      |    |       |  |       |       |       |     |
|-----------|--------|----|----|----|-----|------|----|-------|--|-------|-------|-------|-----|
| T-14C61   | \$1.20 | 14 | 7  | 55 | 200 | 1600 | 3B | 2 3/8 |  | 2 3/8 | 1 5/8 | 1 5/8 | 3/4 |
| ★ T-14C62 | 1.20   | 16 | 8  | 55 | 250 | 1600 | 3B | 2 3/8 |  | 2 3/8 | 1 5/8 | 1 5/8 | 3/4 |
| ★ T-14C63 | 1.20   | 19 | 8  | 55 | 300 | 1600 | 3B | 2 3/8 |  | 2 3/8 | 1 5/8 | 1 5/8 | 3/4 |
| ★ T-14C64 | 1.20   | 21 | 10 | 55 | 350 | 1600 | 3B | 2 3/8 |  | 2 3/8 | 1 5/8 | 1 5/8 | 3/4 |

**Filter Chokes for Amplifiers and Small Transmitters**

|             |        |    |    |     |     |      |    |       |       |       |       |       |       |
|-------------|--------|----|----|-----|-----|------|----|-------|-------|-------|-------|-------|-------|
| T-57C52     | \$2.10 | 15 | 5  | 80  | 138 | 1600 | 2F | 2 3/8 |       | 2 7/8 | 2 1/8 | 2 3/8 | 1 1/2 |
| ★ T-16C07   | 2.70   | 32 | 15 | 85  | 375 | 1600 | 2F | 2 5/8 |       | 3 3/8 | 2 1/2 | 3     | 2 1/4 |
| ★ T-57C54   | 2.70   | 27 | 10 | 110 | 200 | 1600 | 2F | 2 5/8 |       | 3 3/8 | 2 1/2 | 3     | 2 1/4 |
| T-49C91     | 2.10   | 12 | 4  | 120 | 160 | 1600 | 2F | 2 3/8 |       | 2 7/8 | 1 7/8 | 2 3/8 | 1 1/4 |
| ★ T-17C00-B | 3.30   | 28 | 12 | 150 | 231 | 1600 | 2F | 3 3/8 |       | 3 3/8 | 3     | 3 1/2 | 3 3/4 |
| ★ T-74C29   | 4.80   | 29 | 15 | 150 | 200 | 2000 | 2G | 2 1/2 | 2 3/8 | 3 5/8 | 3 3/8 | 4 5/8 | 5 1/4 |
| ★ T-67C49   | 3.30   | 12 | 5  | 200 | 80  | 1600 | 2F | 3 1/2 |       | 3 5/8 | 3 1/8 | 3 1/2 | 3 3/4 |
| ★ T-75C51   | 6.00   | 24 | 13 | 250 | 121 | 1600 | 2G | 3     | 2 5/8 | 3 3/4 | 3 5/8 | 4 7/8 | 8     |

**TRANSMITTER INPUT AND FILTER CHOKES**

Matched input and smoothing chokes for amateur, amplifier or experimental applications.

| Type<br>No.              | List<br>Price | Inductance<br>Henries | Current<br>D.C.<br>M.A. | D.C. Res.<br>Ohms | R.M.S.<br>Test<br>Volts | Mtg.<br>Fig. | Mtg. Centers |       | Dimensions |       |       | Wt.<br>Lbs. |
|--------------------------|---------------|-----------------------|-------------------------|-------------------|-------------------------|--------------|--------------|-------|------------|-------|-------|-------------|
|                          |               |                       |                         |                   |                         |              | Width        | Depth | W.         | D.    | H.    |             |
| Input Chokes "19" Series |               |                       |                         |                   |                         |              |              |       |            |       |       |             |
| ★ T-19C39                | \$3.90        | 5-20                  | 150                     | 215               | 3000                    | 2F           | 3 3⁄8        |       | 3 5⁄8      | 3 1⁄8 | 3 1⁄2 | 3 3⁄4       |
| ★ T-19C35                | 4.80          | 5-20                  | 200                     | 130               | 3000                    | 2D           | 3 1⁄4        | 2 1⁄8 | 3 3⁄4      | 3 3⁄8 | 4     | 5 1⁄2       |
| ★ T-19C36                | 8.40          | 5-20                  | 300                     | 105               | 5000                    | 2D           | 2 3⁄4        | 3 1⁄8 | 3 5⁄8      | 4 7⁄8 | 4 5⁄8 | 10 3⁄4      |
| ★ T-19C37                | 15.00         | 5-20                  | 400                     | 90                | 5000                    | 2J           | 3 1⁄4        | 3 7⁄8 | 4 1⁄4      | 5 1⁄2 | 6     | 19 1⁄2      |
| ★ T-19C38                | 18.00         | 5-20                  | 500                     | 75                | 5000                    | 2J           | 3 7⁄8        | 3 3⁄4 | 5          | 5 1⁄2 | 6 5⁄8 | 25 1⁄4      |

**Smoothing Chokes "19" Series**

|           |        |    |     |     |      |    |       |       |       |       |       |        |
|-----------|--------|----|-----|-----|------|----|-------|-------|-------|-------|-------|--------|
| ★ T-19C46 | \$3.90 | 12 | 150 | 215 | 3000 | 2F | 3 3/8 |       | 3 5/8 | 3 1/8 | 3 1/2 | 3 3/4  |
| ★ T-19C42 | 4.80   | 12 | 200 | 130 | 3000 | 2D | 3 1/4 | 2 1/8 | 3 3/4 | 3 3/8 | 4     | 5 1/2  |
| ★ T-19C43 | 8.40   | 12 | 300 | 105 | 5000 | 2D | 2 3/4 | 3 1/8 | 3 5/8 | 4 7/8 | 4 5/8 | 10 3/4 |
| T-19C44   | 15.00  | 12 | 400 | 90  | 5000 | 2J | 3 1/4 | 3 7/8 | 4 1/4 | 5 1/2 | 6     | 19 3/4 |
| ★ T-19C45 | 18.00  | 12 | 500 | 75  | 5000 | 2J | 3 7/8 | 3 3/4 | 5     | 5 1/2 | 6 5/8 | 25 1/4 |

**C.H.T. Input Chokes**

Conservatively designed for continuous and quiet operation. Cases are compound filled for complete coil protection.

|         |         |      |        |     |        |    |       |       |       |       |       |        |
|---------|---------|------|--------|-----|--------|----|-------|-------|-------|-------|-------|--------|
| T-15C36 | \$10.80 | 5-25 | 200-20 | 105 | 4,000  | 3U | 3 5/8 | 3 7/8 | 4 5/8 | 4 1/8 | 5 1/8 | 10     |
| T-15C37 | 15.00   | 5-25 | 300-30 | 78  | 4,000  | 3U | 4 3/8 | 4 1/8 | 5 3/8 | 4 5/8 | 6 3/8 | 22     |
| T-15C38 | 18.00   | 5-25 | 400-30 | 95  | 4,000  | 3U | 4 3/8 | 4 3/4 | 5 3/8 | 5 1/2 | 6 3/8 | 24     |
| T-15C39 | 27.00   | 5-25 | 500-30 | 86  | 10,000 | 3U | 6 5/8 | 5 7/8 | 7 5/8 | 6 7/8 | 8     | 38 1/2 |
| T-15C41 | 33.00   | 5-25 | 650-50 | 46  | 10,000 | 3U | 6 5/8 | 5 7/8 | 7 5/8 | 6 7/8 | 8     | 51     |

**C.H.T. Smoothing Chokes**

|         |         |    |     |     |        |    |       |       |       |       |       |        |
|---------|---------|----|-----|-----|--------|----|-------|-------|-------|-------|-------|--------|
| T-15C45 | \$10.80 | 12 | 200 | 105 | 4,000  | 3U | 3 5/8 | 3 7/8 | 4 5/8 | 4 1/8 | 5 1/8 | 10     |
| T-15C46 | 15.00   | 12 | 300 | 78  | 4,000  | 3U | 4 3/8 | 4 1/8 | 5 3/8 | 4 5/8 | 6 3/8 | 22     |
| T-15C47 | 18.00   | 12 | 400 | 95  | 4,000  | 3U | 4 3/8 | 4 3/4 | 5 3/8 | 5 1/2 | 6 3/8 | 24     |
| T-15C48 | 27.00   | 12 | 500 | 86  | 10,000 | 3U | 6 5/8 | 5 7/8 | 7 5/8 | 6 7/8 | 8     | 38 1/2 |
| T-15C50 | 33.00   | 12 | 650 | 46  | 10,000 | 3U | 6 5/8 | 5 7/8 | 7 5/8 | 6 7/8 | 8     | 51     |



3H



4U



4D



## UNIVERSAL AND MULTI-MATCH DRIVER (D) TRANSFORMERS

Through the use of five or ten ratios on each transformer, these transformers will handle all driver requirements usually encountered in amateur transmitter circuits. See complete table of Driver and Modulator combinations on pages 12 and 13.

| Type No.                                  | List Price | Cap. Watts | Max. Pri. M.A. Per Side  | Ratio Pri. to ½ Sec.                                                      | Mtg. Fig. | Mtg. Centers |       | Dimensions |       |       | Wt. Lbs. |
|-------------------------------------------|------------|------------|--------------------------|---------------------------------------------------------------------------|-----------|--------------|-------|------------|-------|-------|----------|
|                                           |            |            |                          |                                                                           |           | Width        | Depth | W.         | D.    | H.    |          |
| Universal Driver Transformers "19" Series |            |            |                          |                                                                           |           |              |       |            |       |       |          |
| T-19D01                                   | \$7.50     | 15         | 60                       | 1:1, 1.2:1, 1.4:1, 1.6:1, 1.8:1                                           | 4D        | 3 3⁄8        |       | 3 3⁄8      | 3 3⁄8 | 3 1⁄2 | 3 1⁄2    |
| T-19D02                                   | 7.50       | 15         | 60                       | 2:1, 2.2:1, 2.4:1, 2.6:1, 2.8:1                                           | 4D        | 3 3⁄8        |       | 3 3⁄8      | 3 3⁄8 | 3 1⁄2 | 3 1⁄2    |
| T-19D03                                   | 7.50       | 15         | 60                       | 3:1, 3.2:1, 3.4:1, 3.6:1, 3.8:1                                           | 4D        | 3 3⁄8        |       | 3 3⁄8      | 3 3⁄8 | 3 1⁄2 | 3 1⁄2    |
| T-19D04                                   | 7.50       | 15         | 60                       | 4:1, 4.5:1, 5:1, 5.5:1, 6:1                                               | 4D        | 3 3⁄8        |       | 3 3⁄8      | 3 3⁄8 | 3 1⁄2 | 3 1⁄2    |
| T-19D05                                   | 7.50       | 15         | Primary for 500 ohm line | 1:3.15, 1:2.75, 1:2.5, 1:2.25, 1:2, 1:1.75, 1:1.4, 1:1.25, 1:1.85, 1:1.75 | 4D        | 3 3⁄8        |       | 3 3⁄8      | 3 3⁄8 | 3 1⁄2 | 3 1⁄2    |

## C.H.T. Multi-Match Driver Transformers

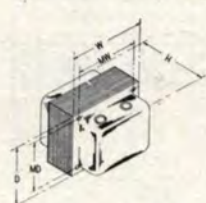
### Feature Convenient Switchboard Plug-In Terminal Board and Compound Filled Cases

|           |         |    |                          |                                                                           |    |       |       |       |       |       |       |
|-----------|---------|----|--------------------------|---------------------------------------------------------------------------|----|-------|-------|-------|-------|-------|-------|
| T-15D76*- | \$10.80 | 15 | 60                       | 1:1, 1.2:1, 1.4:1, 1.6:1, 1.8:1                                           | 3H | 3 3/8 | 3 3/8 | 4 1/8 | 4 3/8 | 4 3/4 | 7 1/2 |
| T-15D77*- | 10.80   | 15 | 60                       | 2:1, 2.2:1, 2.4:1, 2.6:1, 2.8:1                                           | 3H | 3 3/8 | 3 3/8 | 4 1/8 | 4 3/8 | 4 3/4 | 6     |
| T-15D78*  | 10.80   | 15 | 60                       | 3:1, 3.2:1, 3.4:1, 3.6:1, 3.8:1                                           | 4U | 3 3/8 | 3 3/8 | 4 3/8 | 4 3/8 | 4 3/4 | 6     |
| T-15D79*  | 10.80   | 15 | 60                       | 4:1, 4.5:1, 5:1, 5.5:1, 6:1                                               | 4U | 3 3/8 | 3 3/8 | 4 3/8 | 4 3/8 | 4 3/4 | 6     |
| T-15D82   | 10.80   | 15 | Primary for 500 ohm line | 1:3.15, 1:2.75, 1:2.5, 1:2.25, 1:2, 1:1.75, 1:1.4, 1:1.25, 1:1.85, 1:1.75 | 4U | 3 3/8 | 3 3/8 | 4 3/8 | 4 3/8 | 4 3/4 | 5 3/4 |
| T-15D83   | 18.00   | 30 | Primary for 500 ohm line | 1:3.15, 1:2.75, 1:2.5, 1:2.25, 1:2, 1:1.75, 1:1.4, 1:1.25, 1:1.85, 1:1.75 | 4U | 3 3/8 | 3 3/8 | 4 3/8 | 4 3/8 | 4 3/4 | 8 1/2 |

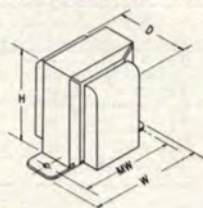
\*P.P. 45 or 2A3, 6B4G.

†P.P. Par. 2A3 or 6B4G.

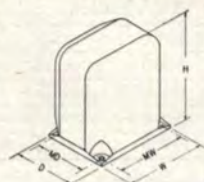
## Chart for Determining Overall Physical Dimensions and Mounting Centers



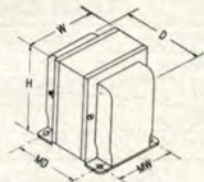
3A



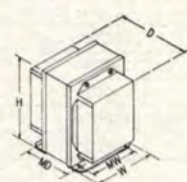
2F, 4D



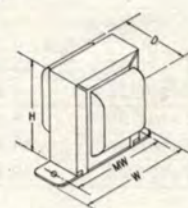
3U, 4U



2G



2J



All Open Frame Types

These drawings illustrate the method of determining overall dimensions and mounting centers. MD indicates mounting centers depth, MW indicates mounting

centers width. Characteristics are similar wherever mounting styles are somewhat similar.

## Beginners Hand Book and Guide—Amateur Radio

### AMATEUR RADIO

#### A Beginners Guide

By J. DOUGLAS FORTUNE

This text-book was carefully prepared and edited to make learning of radio by all beginners easy and interesting. In addition to presenting fundamental theory, instructions are given for constructing and operating oscillators, receivers and transmitters. The subjects covered include: Learning the Code, Receiver Theory and Construction, Crystal Oscillator Transmitter, Two-stage Trans-



mitter, Three-Stage Transmitter, Construction of the Modulator, and reference notes on receivers, inductance, capacity and many other electrical and radio terms. It is a book recommended to all experimenters, beginning amateurs and even to amateurs of long experience. Profusely illustrated with over 100 comprehensive photographs and drawings. Heavy cover finished in wear-resistant blue cloth, with attractive gold stamping. This is a cloth cover, case bound text-book of approximately 160 pages. Amateur net price 75c.



# Driver (D) Transformers

THORDARSON



3B



2B



2F



3U

## DRIVER (D) TRANSFORMERS

For coupling single or push-pull plates to the grids of an amplifier stage in which grid current is drawn during a part of the audio cycle.

| Type No. | List Price | Driver Tubes | Output Tubes | Class | Ratio Pri. to 1/2 Sec. | Pri. M.A. | Mtg. Fig. | Mtg. Centers Width Depth | Dimensions W. D. H. | Wt. Lbs. |
|----------|------------|--------------|--------------|-------|------------------------|-----------|-----------|--------------------------|---------------------|----------|
|----------|------------|--------------|--------------|-------|------------------------|-----------|-----------|--------------------------|---------------------|----------|

### DRIVER TRANSFORMERS FOR SPECIFIC APPLICATIONS

These driver transformers have the correct primary to secondary ratio for the tubes specified, which assures good regulation and minimum driver distortion on the positive grid peaks. The first three types are specifically designed for replacement requirements.

|   |          |        |                                             |                                          |                   |                         |                       |    |       |       |       |       |       |       |       |
|---|----------|--------|---------------------------------------------|------------------------------------------|-------------------|-------------------------|-----------------------|----|-------|-------|-------|-------|-------|-------|-------|
| ★ | T-78D46  | \$1.80 | 1-30                                        | 1-1J6G, 19<br>2-30                       | B<br>B            | 2.4:1                   | 7                     | 2B | 2 1/8 | 2 5/8 | 1 5/8 | 2     | 3/4   |       |       |
| ★ | T-17D01  | 2.40   | 1-6F6 Triode<br>1-42 Triode, 1-2A5 Triode   | 2-6F6, 6L6, etc.                         | AB                | 1.7:1<br>1.5:1, 1.3:1   | 31                    | 3B | 2 3/4 | 3 3/8 | 2 1/8 | 2     | 1 1/2 |       |       |
|   | T-14D93  | 2.10   | 1-76 Triode                                 | 1-6A6, 6N7                               | B                 | 4:1                     | 8                     | 3B | 2 3/8 | 2 5/8 | 1 5/8 | 1 5/8 | 3/4   |       |       |
| ★ | T-19D06  | 3.30   | 1-6A6, 1-6N7, 1-6C5                         | 1-6A6, 6N7                               | B                 | 5:1, 4:1, 3:1, 2.5:1    | 10                    | 2F | 2 3/8 | 2 7/8 | 2 1/8 | 2 3/8 | 1 1/2 |       |       |
|   | T-54D63  | 2.70   | 1-30, 1-49, 1-6C5                           | 1-1J6G, 19, 2-49, 2-6V6 B, AB2           | 2.4:1             |                         | 7                     | 2F | 2 3/8 | 2 7/8 | 1 7/8 | 2 3/8 | 1 1/4 |       |       |
|   | T-67D50  | 3.30   | 1-89 Triode                                 | 1-79                                     | B                 | 2:1                     | 32                    | 2F | 2 3/8 | 2 7/8 | 2 1/8 | 2 3/8 | 1 1/2 |       |       |
|   | T-67D47  | 3.00   | 1-6N7, 6A6, 53                              | 1-6N7, 6A6, 53                           | B                 | 5.25:1                  | 10                    | 2F | 2 3/8 | 2 7/8 | 2 1/8 | 2 3/8 | 1 1/2 |       |       |
|   | T-81D52  | 3.90   | 1-6C5, 76<br>1-56                           | 2-6F6 Triode<br>2-42, 2A5 Triode         | AB<br>AB          | 1.82:1<br>1.67:1        | 8                     | 2F | 2 5/8 | 3 3/8 | 2 1/2 | 3     | 2 1/4 |       |       |
| ★ | T-84D59* | 3.90   | 2-6C5, 6N7<br>2-6A6, 53                     | 2-6L6, 6V6<br>2-6N7, 6A6, 53             | AB2<br>B          | 5:1                     | 10                    | 2F | 2 5/8 | 3 3/8 | 2 1/2 | 3     | 2 1/4 |       |       |
| ★ | T-74D32  | 3.90   | 2-6C5, 76, 56                               | 2-6F6, 42, 2A5<br>4-2A3, 6B4G            | AB2<br>AB         | 3:1                     | 10                    | 2F | 2 5/8 | 3 3/8 | 2 1/2 | 3     | 2 1/4 |       |       |
| ★ | T-81D42  | 3.90   | 1-6F6 Triode<br>1-42 Triode<br>1-2A5 Triode | 2-6F6 Triode<br>2-42 or<br>2-2A5 Pentode | AB2<br>AB2<br>AB2 | 1.7:1<br>1.5:1<br>1.3:1 | 31                    | 2F | 2 5/8 | 3 3/8 | 2 1/2 | 3     | 2 1/4 |       |       |
| ★ | T-17D03* | 5.40   | 1-6F6 Triode                                | 2-6L6                                    | AB2               | 1.4:1                   | 40                    | 2F | 3 3/8 | 3 5/8 | 3 1/8 | 3 1/2 | 3 1/2 |       |       |
| ★ | T-17D04* | 5.40   | 2-6F6                                       | 4-6L6                                    | AB2               | 2.6:1                   | 32                    | 2F | 3 3/8 | 3 5/8 | 3 1/8 | 3 1/2 | 3 1/2 |       |       |
| ★ | T-67D78  | 3.60   | 1-46, 59, 6F6,<br>42, 2A5 Triode            | 2-46, 59<br>2-6L6                        | B<br>AB2          | 2.2:1                   | 32                    | 2F | 2 5/8 | 3 3/8 | 2 1/2 | 3     | 2 1/4 |       |       |
|   | T-15D85  | 9.60   | Sgl. 6F6, 42,<br>2A5 Triode                 | C. H. T. hum-bucking coils               | P.P. 6L6          | AB2                     | 1.4:1, 1.3:1<br>1.2:1 | 40 | 3U    | 2 3/8 | 2 1/2 | 3     | 3     | 3 5/8 | 2 1/2 |
|   | T-15D86  | 10.80  | P.P. 6F6, 42,<br>2A5 Triode                 | C. H. T. hum-bucking coils               | P.P. Par. 6L6     | AB2                     | 2.6:1                 | 32 | 3U    | 2 3/8 | 2 1/2 | 3     | 3     | 3 5/8 | 2 1/2 |

### Line-to-Grid Driver Transformers (High Level)

|         |        |               |                             |    |            |    |       |               |       |
|---------|--------|---------------|-----------------------------|----|------------|----|-------|---------------|-------|
| T-83D21 | \$4.20 | Line 500 ohms | 2-6L6, 50 12,500/5,100 Ohms | AB | 1.3:2, 1:5 | 2F | 2 5/8 | 3 3/8 2 1/2 3 | 2 1/4 |
|---------|--------|---------------|-----------------------------|----|------------|----|-------|---------------|-------|

\*Split secondary as required for inverse feedback and separate power tube bias.

## THORDARSON AMPLIFIERS (Factory Wired and Tested)



The finest amplifiers are built by Thordarson — pioneers in producing quality audio components. High fidelity is assured by accurate laboratory design and rigid inspection during production. The new catalog No. 600F contains complete information on amplifiers from a one watt dry battery amplifier to preamplifiers and boosters large enough to cover the largest amplifier requirement. New rack and panel equipment; 6 volts DC, 115 volt AC models; a loud speaker field supply and other modern equipment also included.

### No. 346—Amplifier Guide 15c Postpaid

P. A. men and experimenters interested in building high quality amplifiers find the Thordarson Amplifier Guide No. 346 a worthwhile source of information. It contains laboratory designed and tested circuits of amplifiers from 8 to 120 watts output. Complete parts list, mechanical chassis drawings, and comprehensive illustrations enable the constructor to obtain superior results with matched transformer and choke components. Data are included for pre-amplifiers, dual tone controls, speaker impedance matching and testing.





| P-P<br>Tube Class B<br>Type Tubes                  | MODULATOR STAGE          |                |               |                            |                        | DRIVER STAGE           |                                      |                          |                               |                                        |
|----------------------------------------------------|--------------------------|----------------|---------------|----------------------------|------------------------|------------------------|--------------------------------------|--------------------------|-------------------------------|----------------------------------------|
|                                                    | Power<br>Output<br>Watts | Plate<br>Volts | Bias<br>Volts | Pl. to Pl.<br>Load<br>Ohms | Use Mod.<br>Trans. No. | P-P<br>Driver<br>Tubes | Trans.<br>Ratio, Pri.<br>to 1/2 Sec. | Use Driver<br>Trans. No. | Trans. for<br>500 Ohm<br>Line | \$Ratio 500<br>Ohm Line<br>to 1/2 Sec. |
| Where T-15D82 appears<br>T-19D05 may also be used. |                          |                |               |                            |                        |                        |                                      |                          |                               |                                        |
| R. 46                                              | 30                       | 400            | 0             | 5,600                      | T-11M74 or T-19M14     | *45                    | 5:1                                  | T-15D79 or T-19D04       | T-15D82                       | 1:85                                   |
| C. 46                                              | 40                       | 500            | 0             | 8,000                      | T-11M75 or T-19M14     | *45                    | 5:1                                  | T-15D79 or T-19D04       | T-15D82                       | 1:85                                   |
| A. 46                                              | 50                       | 600            | 0             | 9,600                      | T-11M75 or T-19M15     | *45                    | 5:1                                  | T-15D79 or T-19D04       | T-15D82                       | 1:85                                   |
| 4-46                                               | 56                       | 400            | 0             | 2,800                      | T-11M75 or T-19M15     | *45                    | 5:1                                  | T-15D79 or T-19D04       | T-15D82                       | 1:85                                   |
| 4-46                                               | 96                       | 600            | 0             | 4,800                      | T-11M76 or T-19M16     | *45                    | 5:1                                  | T-15D79 or T-19D04       | T-15D82                       | 1:85                                   |
| 203A                                               | 200                      | 1000           | -35           | 6,900                      | T-11M77 or T-19M17     | †2A3                   | 2.2:1                                | T-15D77 or T-19D02       | T-15D82                       | 1:1.5                                  |
| 203A                                               | 200                      | 1000           | -35           | 6,900                      | T-11M77 or T-19M17     | **6L6                  | 3.5:1                                | T-15D84                  | T-15D82                       | 1:1.25                                 |
| 203A                                               | 260                      | 1250           | -45           | 9,000                      | T-11M77 or T-19M17     | †2A3                   | 2:1                                  | T-15D77 or T-19D02       | T-15D82                       | 1:1.5                                  |
| 203A                                               | 260                      | 1250           | -45           | 9,000                      | T-11M77 or T-19M17     | **6L6                  | 3.5:1                                | T-15D84                  | T-15D82                       | 1:1.25                                 |
| 4-203A                                             | 400                      | 1000           | -35           | 3,450                      | T-11M78                | †4-2A3                 | 2.25:1                               | T-15D81                  | T-15D83                       | 1:1.25                                 |
| 4-203A                                             | 400                      | 1000           | -35           | 4,500                      | T-11M78                | **6L6                  | 3:1                                  | T-15D84                  | T-15D83                       | 1:1.25                                 |
| 4-203A                                             | 520                      | 1250           | -45           | 3,450                      | T-11M78                | †4-2A3                 | 2:1                                  | T-15D80                  | T-15D83                       | 1:1.25                                 |
| 4-203A                                             | 520                      | 1250           | -45           | 4,500                      | T-11M78                | **6L6                  | 3:1                                  | T-15D84                  | T-15D83                       | 1:1.25                                 |
| 211                                                | 200                      | 1000           | -77           | 6,900                      | T-11M77 or T-19M17     | 2A3                    | 2:1                                  | T-15D77 or T-19D02       | T-15D82                       | 1:1.75                                 |
| 211                                                | 260                      | 1250           | -100          | 9,000                      | T-11M77 or T-19M17     | 2A3                    | 1.8:1                                | T-15D76 or T-19D01       | T-15D82                       | 1:2                                    |
| 800                                                | 90                       | 750            | -40           | 6,400                      | T-11M76 or T-19M16     | 2A3                    | 2.6:1                                | T-15D77 or T-19D02       | T-15D82                       | 1:1.25                                 |
| 800                                                | 100                      | 1000           | -55           | 12,500                     | T-11M76 or T-19M16     | 2A3                    | 2.8:1                                | T-15D77 or T-19D02       | T-15D82                       | 1:1.25                                 |
| 800                                                | 100                      | 1000           | -55           | 12,500                     | T-11M76 or T-19M16     | 45                     | 2.2:1                                | T-15D77 or T-19D02       | T-15D82                       | 1:1.2                                  |
| 801                                                | 45                       | 600            | -75           | 10,000                     | T-11M74 or T-19M14     | 2A3                    | 2.6:1                                | T-15D77 or T-19D02       | T-15D82                       | 1:1.25                                 |
| 801                                                | 45                       | 600            | -75           | 10,000                     | T-11M74 or T-19M14     | 45                     | 2:1                                  | T-15D77 or T-19D02       | T-15D82                       | 1:2.25                                 |
| 801                                                | 75                       | 750            | -80           | 11,000                     | T-11M75 or T-19M16     | 45                     | 1.8:1                                | T-15D76 or T-19D01       | T-15D82                       | 1:2.25                                 |
| 801                                                | 75                       | 750            | -80           | 11,000                     | T-11M75 or T-19M16     | 2A3                    | 2.4:1                                | T-15D77 or T-19D02       | T-15D82                       | 1:1.4                                  |
| 805                                                | 300                      | 1250           | 0             | 6,700                      | T-11M77                | 2A3                    | 3.4:1                                | T-15D78 or T-19D03       | T-15D82                       | 1:1.25                                 |
| 805                                                | 370                      | 1500           | -16           | 8,200                      | T-11M78                | 2A3                    | 3:1                                  | T-15D78 or T-19D03       | T-15D82                       | 1:1.25                                 |
| 806                                                | 500                      | 2000           | -150          | 11,500                     | T-11M78                | 4-2A3                  | 1.25:1                               | T-15D80                  | T-15D83                       | 1:2                                    |
| 806                                                | 500                      | 2000           | -150          | 11,500                     | T-11M78                | **6L6                  | 1.5:1                                | T-15D84                  | T-15D83                       | 1:2.5                                  |
| 808                                                | 190                      | 1250           | -15           | 12,700                     | T-11M77 or T-19M17     | 2A3                    | 3.4:1                                | T-15D78 or T-19D03       | T-15D82                       | 1:1.25                                 |
| 809                                                | 60                       | 500            | 0             | 5,200                      | T-11M75 or T-19M15     | 2A3                    | 6:1                                  | T-15D79 or T-19D04       | T-15D82                       | 1:1.75                                 |
| 809                                                | 60                       | 500            | 0             | 5,200                      | T-11M75 or T-19M15     | 45                     | 4:1                                  | T-15D79 or T-19D04       | T-15D82                       | 1:1.25                                 |
| 809                                                | 100                      | 750            | -5            | 8,400                      | T-11M76 or T-19M16     | 2A3                    | 6:1                                  | T-15D79 or T-19D04       | T-15D82                       | 1:1.75                                 |
| 809                                                | 100                      | 750            | -5            | 8,400                      | T-11M76 or T-19M16     | 45                     | 4:1                                  | T-15D79 or T-19D04       | T-15D82                       | 1:1.25                                 |
| 810                                                | 510                      | 1500           | -30           | 6,600                      | T-11M78                | 4-2A3                  | 2.25:1                               | T-15D81                  | T-15D83                       | 1:1.25                                 |
| 811                                                | 175                      | 1250           | 0             | 15,000                     | T-11M77 or T-19M17     | 2A3                    | 5:1                                  | T-15D79 or T-19D04       | T-15D82                       | 1:85                                   |
| 811                                                | 225                      | 1500           | -9            | 18,000                     | T-11M77 or T-19M17     | 2A3                    | 4.5:1                                | T-15D79 or T-19D04       | T-15D82                       | 1:1.25                                 |
| 830B                                               | 175                      | 1000           | -35           | 7,600                      | T-11M77 or T-19M17     | 2A3                    | 3:1                                  | T-15D78 or T-19D03       | T-15D82                       | 1:1.25                                 |
| 838                                                | 200                      | 1000           | 0             | 6,900                      | T-11M77 or T-19M17     | 2A3                    | 3.8:1                                | T-15D78 or T-19D03       | T-15D82                       | 1:85                                   |
| 838                                                | 260                      | 1250           | 0             | 9,000                      | T-11M77 or T-19M17     | 2A3                    | 3.8:1                                | T-15D78 or T-19D03       | T-15D82                       | 1:85                                   |
| 4-838                                              | 400                      | 1000           | 0             | 3,450                      | T-11M78                | 4-2A3                  | 3.25:1                               | T-15D81                  | T-15D83                       | 1:1.75                                 |
| 4-838                                              | 400                      | 1000           | 0             | 3,450                      | T-11M78                | **6L6                  | 3.5:1                                | T-15D84                  | T-15D83                       | 1:1.25                                 |
| 4-838                                              | 520                      | 1250           | 0             | 4,500                      | T-11M78                | 4-2A3                  | 3.25:1                               | T-15D81                  | T-15D83                       | 1:1.75                                 |
| 4-838                                              | 520                      | 1250           | 0             | 4,500                      | T-11M78                | **6L6                  | 3.5:1                                | T-15D84                  | T-15D83                       | 1:1.25                                 |
| 1608                                               | 50                       | 425            | -15           | 4,800                      | T-11M75 or T-19M15     | *45                    | 4:1                                  | T-15D79 or T-19D04       | T-15D82                       | 1:1.25                                 |
| <b>TAYLOR</b>                                      |                          |                |               |                            |                        |                        |                                      |                          |                               |                                        |
| T-20                                               | 50                       | 600            | -30           | 8,100                      | T-11M75 or T-19M15     | *45                    | 2.2:1                                | T-15D77 or T-19D02       | T-15D82                       | 1:2                                    |
| T-20                                               | 70                       | 800            | -40           | 12,000                     | T-11M75 or T-19M16     | *45                    | 2:1                                  | T-15D77 or T-19D02       | T-15D82                       | 1:2.25                                 |
| TZ-20                                              | 70                       | 800            | 0             | 12,000                     | T-11M75 or T-19M16     | *45                    | 3.2:1                                | T-15D78 or T-19D03       | T-15D82                       | 1:1.4                                  |
| TZ-40                                              | 175                      | 1000           | 0             | 6,800                      | T-11M77 or T-19M17     | 2A3                    | 4:1                                  | T-15D79 or T-19D04       | T-15D82                       | 1:85                                   |
| TZ-40                                              | 175                      | 1000           | 0             | 6,800                      | T-11M77 or T-19M17     | 45                     | 2.6:1                                | T-15D77 or T-19D02       | T-15D82                       | 1:1.5                                  |
| TZ-40                                              | 100                      | 750            | 0             | 6,000                      | T-11M76 or T-19M16     | 2A3                    | 4.5:1                                | T-15D79 or T-19D04       | T-15D82                       | 1:1.75                                 |
| TZ-40                                              | 100                      | 750            | 0             | 6,000                      | T-11M76 or T-19M16     | 45                     | 3:1                                  | T-15D78 or T-19D03       | T-15D82                       | 1:1.4                                  |
| T-55                                               | 175                      | 1000           | -40           | 6,900                      | T-11M77 or T-19M17     | 2A3                    | 2.8:1                                | T-15D77 or T-19D02       | T-15D82                       | 1:1.25                                 |
| T-55                                               | 225                      | 1250           | -50           | 9,400                      | T-11M77 or T-19M17     | 2A3                    | 2.6:1                                | T-15D77 or T-19D02       | T-15D82                       | 1:1.4                                  |
| T-55                                               | 275                      | 1500           | -60           | 12,000                     | T-11M77                | 2A3                    | 2.4:1                                | T-15D77 or T-19D02       | T-15D82                       | 1:1.4                                  |
| T-155                                              | Same as HD-203A          |                |               |                            |                        |                        |                                      |                          |                               |                                        |
| 203-A                                              | Same as RCA 203A         |                |               |                            |                        |                        |                                      |                          |                               |                                        |
| 4-203A                                             |                          |                |               |                            |                        |                        |                                      |                          |                               |                                        |
| HD-203A                                            | 300                      | 1500           | -50           | 9,600                      | T-11M77                | 2A3                    | 2.6:1                                | T-15D77 or T-19D02       | T-15D82                       | 1:1.25                                 |
| HD-203A                                            | 300                      | 1750           | -67.5         | 13,000                     | T-11M77                | 2A3                    | 2.6:1                                | T-15D77 or T-19D02       | T-15D82                       | 1:1.25                                 |
| HD-203A                                            | 400                      | 1750           | -67.5         | 10,000                     | T-11M78                | 2A3                    | 2.2:1                                | T-15D77 or T-19D02       | T-15D82                       | 1:1.75                                 |
| HD-203A                                            | 400                      | 2000           | -75           | 12,500                     | T-11M78                | 2A3                    | 2.2:1                                | T-15D77 or T-19D02       | T-15D82                       | 1:1.75                                 |
| HD-203A                                            | 500                      | 2000           | -75           | 10,000                     | T-11M78                | 2A3                    | 2:1                                  | T-15D77 or T-19D02       | T-15D82                       | 1:1.75                                 |
| HD-203A                                            | 500                      | 1500           | -50           | 6,400                      | T-11M78                | 4-2A3                  | 2:1                                  | T-15D80                  | T-15D83                       | 1:1.25                                 |
| HD-203A                                            | 500                      | 1500           | -50           | 6,400                      | T-11M78                | **6L6                  | 3:1                                  | T-15D84                  | T-15D83                       | 1:1.4                                  |
| HD-203A                                            | 600                      | 1750           | -67.5         | 7,600                      | T-11M78                | 4-2A3                  | 1.75:1                               | T-15D80                  | T-15D83                       | 1:1.4                                  |
| HD-203A                                            | 600                      | 1750           | -67.5         | 7,600                      | T-11M78                | **6L6                  | 2.5:1                                | T-15D84                  | T-15D83                       | 1:1.75                                 |
| 203B                                               | 300                      | 1250           | -45           | 7,900                      | T-11M77                | †2A3                   | 1.8:1                                | T-15D76 or T-19D01       | T-15D82                       | 1:2                                    |
| 4-203B                                             | 600                      | 1250           | -45           | 3,900                      | T-11M78                | †4-2A3                 | 1.75:1                               | T-15D80                  | T-15D83                       | 1:1.4                                  |
| 4-203B                                             | 600                      | 1250           | -45           | 3,900                      | T-11M78                | **6L6                  | 2.5:1                                | T-15D84                  | T-15D83                       | 1:1.75                                 |
| 203Z                                               | 200                      | 1000           | 0             | 6,900                      | T-11M77 or T-19M17     | 2A3                    | 4.5:1                                | T-15D79 or T-19D04       | T-15D82                       | 1:1.75                                 |
| 203Z                                               | 260                      | 1100           | 0             | 6,700                      | T-11M77                | †2A3                   | 3.8:1                                | T-15D78 or T-19D03       | T-15D82                       | 1:85                                   |
| 203Z                                               | 300                      | 1250           | 0             | 7,900                      | T-11M77                | †2A3                   | 3.8:1                                | T-15D78 or T-19D03       | T-15D82                       | 1:85                                   |
| <b>211</b>                                         |                          |                |               |                            |                        |                        |                                      |                          |                               |                                        |
| Same as RCA 211                                    |                          |                |               |                            |                        |                        |                                      |                          |                               |                                        |
| T-756                                              | 100                      | 850            | -25           | 9,400                      | T-11M76 or T-19M16     | 2A3                    | 3:1                                  | T-15D78 or T-19D03       | T-15D82                       | 1:1.25                                 |
| T-756                                              | 125                      | 850            | -25           | 7,500                      | T-11M76 or T-19M17     | 2A3                    | 2:1                                  | T-15D77 or T-19D02       | T-15D82                       | 1:1.75                                 |
| T-814                                              | 500                      | 2000           | -150          | 11,500                     | T-11M78                | 4-2A3                  | 1.25:1                               | T-15D80                  | T-15D83                       | 1:2                                    |
| T-814                                              | 500                      | 2000           | -150          | 11,500                     | T-11M78                | **6L6                  | 1.5:1                                | T-15D80                  | T-15D82                       | 1:3.15                                 |
| T-822                                              | Same as HD-203A          |                |               |                            |                        |                        |                                      |                          |                               |                                        |



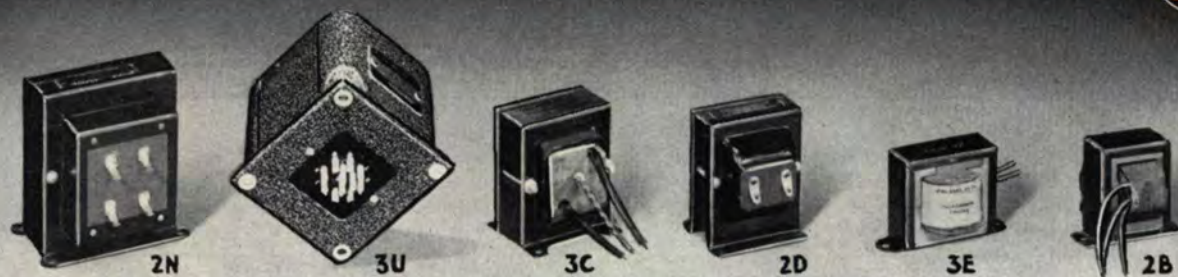
# Driver and Modulator Combinations

THORDARSON

| MODULATOR STAGE                                    |                             |                |               |                            |                        | DRIVER STAGE           |                                      |                          |                               |                                      |         |        |
|----------------------------------------------------|-----------------------------|----------------|---------------|----------------------------|------------------------|------------------------|--------------------------------------|--------------------------|-------------------------------|--------------------------------------|---------|--------|
| P-P<br>Tube Class B<br>Type Tubes                  | Power<br>Output<br>Watts    | Plate<br>Volts | Bias<br>Volts | Pl. to Pl.<br>Load<br>Ohms | Use Mod.<br>Trans. No. | P-P<br>Driver<br>Tubes | Trans.<br>Ratio, Pri.<br>to 1/2 Sec. | Use Driver<br>Trans. No. | Trans. for<br>500 Ohm<br>Line | Ratio 500<br>Ohm Line<br>to 1/2 Sec. |         |        |
| Where T-15D82 appears<br>T-19D05 may also be used. |                             |                |               |                            |                        |                        |                                      |                          |                               |                                      |         |        |
| E I M A C                                          | 35T                         | 150            | 1000          | -22                        | 7,200                  | T-11M77 or T-19M17     | 2A3                                  | 2.6:1                    | T-15D77 or T-19D02            | T-15D82                              | 1:1.4   |        |
|                                                    | 35T                         | 200            | 1250          | -30                        | 9,600                  | T-11M77 or T-19M17     | 2A3                                  | 2.4:1                    | T-15D77 or T-19D02            | T-15D82                              | 1:1.5   |        |
|                                                    | 100TH                       | 210            | 1000          | 0                          | 5,200                  | T-11M77 or T-19M17     | 2A3                                  | 3.4:1                    | T-15D78 or T-19D03            | T-15D82                              | 1:1.25  |        |
|                                                    | 100TH                       | 260            | 1250          | 0                          | 7,200                  | T-11M77                | 2A3                                  | 3.6:1                    | T-15D78 or T-19D03            | T-15D82                              | 1:1.25  |        |
|                                                    | 100TH                       | 300            | 1500          | -10                        | 9,600                  | T-11M77                | 2A3                                  | 3.6:1                    | T-15D78 or T-19D03            | T-15D82                              | 1:1.25  |        |
|                                                    | 100TH                       | 380            | 2000          | -20                        | 16,000                 | T-11M78                | 2A3                                  | 3.8:1                    | T-15D78 or T-19D03            | T-15D82                              | 1:1.85  |        |
|                                                    | 100TL                       | 170            | 1000          | -90                        | 5,200                  | T-11M77 or T-19M17     | **6L6                                | 2:1                      | T-15D84                       | T-15D82                              | 1:2     |        |
|                                                    | 100TL                       | 230            | 1250          | -112                       | 7,200                  | T-11M77                | **6L6                                | 1.5:1                    | T-15D84                       | T-15D82                              | 1:2.5   |        |
|                                                    | 100TL                       | 270            | 1500          | -140                       | 9,600                  | T-11M77                | **6L6                                | 1.5:1                    | T-15D84                       | T-15D82                              | 1:2.5   |        |
|                                                    | 100TL                       | 350            | 2000          | -185                       | 16,000                 | T-11M78                | **6L6                                | 1.5:1                    | T-15D84                       | T-15D82                              | 1:2.5   |        |
|                                                    | 150T                        | 500            | 2000          | -150                       | 11,500                 | T-11M78                | 4-2A3                                | 1.25:1                   | T-15D80                       | T-15D83                              | 1:2     |        |
|                                                    | 150T                        | 600            | 2500          | -195                       | 14,000                 | T-11M78                | 4-2A3                                | 1.25:1                   | T-15D80                       | T-15D83                              | 1:2     |        |
|                                                    | 150T                        | 500            | 2000          | -150                       | 11,500                 | T-11M78                | **6L6                                | 1.5:1                    | T-15D84                       | T-15D83                              | 1:2.5   |        |
|                                                    | 150T                        | 600            | 2500          | -195                       | 14,000                 | T-11M78                | **6L6                                | 1.5:1                    | T-15D84                       | T-15D83                              | 1:2.5   |        |
|                                                    | 250TH                       | 300            | 1000          | 0                          | 4,000                  | T-11M77                | **6L6                                | 3.5:1                    | T-15D84                       | T-15D83                              | 1:1.25  |        |
| 250TH                                              | 400                         | 1250           | 0             | 5,200                      | T-11M78                | **6L6                  | 3.5:1                                | T-15D84                  | T-15D83                       | 1:1.25                               |         |        |
| 250TH                                              | 500                         | 1500           | -22.5         | 6,400                      | T-11M78                | **6L6                  | 3:1                                  | T-15D84                  | T-15D83                       | 1:1.4                                |         |        |
| R A Y T H E O N                                    | RK-12                       | 100            | 750           | 0                          | 8,700                  | T-11M76 or T-19M16     | 2A3                                  | 6:1                      | T-15D79 or T-19D04            | T-15D82                              | 1:1.75  |        |
|                                                    | RK-18                       | 100            | 1000          | -50                        | 12,000                 | T-11M76 or T-19M16     | *45                                  | 2.4:1                    | T-15D77 or T-19D02            | T-15D82                              | 1:1.75  |        |
|                                                    | RK-18                       | 100            | 1000          | -50                        | 12,000                 | T-11M76 or T-19M16     | 2A3                                  | 4:1                      | T-15D79 or T-19D04            | T-15D82                              | 1:1.85  |        |
|                                                    | RK-31                       | 110            | 1000          | 0                          | 13,600                 | T-11M76 or T-19M17     | *45                                  | 4:1                      | T-15D79 or T-19D04            | T-15D82                              | 1:1.25  |        |
|                                                    | RK-31                       | 140            | 1250          | 0                          | 17,000                 | T-11M77 or T-19M17     | *45                                  | 4:1                      | T-15D79 or T-19D04            | T-15D82                              | 1:1.25  |        |
|                                                    | RK-31                       | 110            | 1000          | 0                          | 13,600                 | T-11M76 or T-19M17     | 2A3                                  | 6:1                      | T-15D79 or T-19D04            | T-15D82                              | 1:1.75  |        |
|                                                    | RK-31                       | 140            | 1250          | 0                          | 17,000                 | T-11M77 or T-19M17     | 2A3                                  | 6:1                      | T-15D79 or T-19D04            | T-15D82                              | 1:1.75  |        |
|                                                    | RK-52                       | 200            | 1000          | 0                          | 7,200                  | T-11M77 or T-19M17     | 2A3                                  | 4:1                      | T-15D79 or T-19D04            | T-15D82                              | 1:1.85  |        |
|                                                    | RK-52                       | 250            | 1250          | 0                          | 10,000                 | T-11M77 or T-19M17     | 2A3                                  | 4:1                      | T-15D79 or T-19D04            | T-15D82                              | 1:1.85  |        |
|                                                    | RK-57                       | 300            | 1250          | 0                          | 6,700                  | T-11M77                | 2A3                                  | 3.4:1                    | T-15D78 or T-19D03            | T-15D82                              | 1:1.25  |        |
|                                                    | RK-57                       | 370            | 1500          | -16                        | 8,200                  | T-11M78                | 2A3                                  | 3:1                      | T-15D78 or T-19D03            | T-15D82                              | 1:1.25  |        |
|                                                    | RK-58                       | 200            | 1000          | 0                          | 6,900                  | T-11M77 or T-19M17     | 2A3                                  | 3.8:1                    | T-15D78 or T-19D03            | T-15D82                              | 1:1.85  |        |
|                                                    | RK-58                       | 260            | 1250          | 0                          | 9,000                  | T-11M77 or T-19M17     | 2A3                                  | 3.8:1                    | T-15D78 or T-19D03            | T-15D82                              | 1:1.85  |        |
|                                                    | H Y T R O N                 | HY-25          | 75            | 800                        | -9                     | 9,000                  | T-11M75 or T-19M16                   | 2A3                      | 5:1                           | T-15D79 or T-19D04                   | T-15D82 | 1:1.75 |
|                                                    |                             | HY-40          | 140           | 800                        | -28                    | 5,800                  | T-11M77 or T-19M17                   | 2A3                      | 3.4:1                         | T-15D78 or T-19D03                   | T-15D82 | 1:1.25 |
| HY-40                                              |                             | 175            | 1000          | -37.5                      | 7,000                  | T-11M77 or T-19M17     | 2A3                                  | 3.4:1                    | T-15D78 or T-19D03            | T-15D82                              | 1:1.25  |        |
| HY-57                                              |                             | 110            | 800           | -9                         | 9,000                  | T-11M76 or T-19M17     | 2A3                                  | 5:1                      | T-15D79 or T-19D04            | T-15D82                              | 1:1.75  |        |
| HY-51A                                             |                             | 180            | 1000          | -35                        | 7,000                  | T-11M77 or T-19M17     | 2A3                                  | 4:1                      | T-15D79 or T-19D04            | T-15D82                              | 1:1.85  |        |
| HY-51B                                             |                             | 180            | 1000          | -35                        | 7,000                  | T-11M77 or T-19M17     | 2A3                                  | 4:1                      | T-15D79 or T-19D04            | T-15D82                              | 1:1.85  |        |
| A M P E R E X                                      | HF-100                      | 260            | 1500          | -52                        | 12,000                 | T-11M77                | 2A3                                  | 3.2:1                    | T-15D78 or T-19D03            | T-15D82                              | 1:1.25  |        |
|                                                    | HF-100                      | 350            | 1750          | -62                        | 16,000                 | T-11M78                | 2A3                                  | 2.4:1                    | T-15D77 or T-19D02            | T-15D82                              | 1:1.4   |        |
|                                                    | ZB-120                      | 150            | 750           | 0                          | 4,800                  | T-11M77 or T-19M17     | 2A3                                  | 4:1                      | T-15D79 or T-19D04            | T-15D82                              | 1:1.85  |        |
|                                                    | ZB-120                      | 200            | 1000          | 0                          | 6,900                  | T-11M77 or T-19M17     | 2A3                                  | 4:1                      | T-15D79 or T-19D04            | T-15D82                              | 1:1.85  |        |
|                                                    | ZB-120                      | 245            | 1250          | 0                          | 9,000                  | T-11M77 or T-19M17     | 2A3                                  | 4.5:1                    | T-15D79 or T-19D04            | T-15D82                              | 1:1.75  |        |
|                                                    | ZB-120                      | 300            | 1500          | -9                         | 11,200                 | T-11M77                | 2A3                                  | 4:1                      | T-15D79 or T-19D04            | T-15D82                              | 1:1.85  |        |
|                                                    | HF-200                      | 500            | 2000          | -100                       | 11,200                 | T-11M78                | 2A3                                  | 1.8:1                    | T-15D76 or T-19D01            | T-15D82                              | 1:1.75  |        |
|                                                    | HF-200                      | 500            | 2500          | -130                       | 16,000                 | T-11M78                | 2A3                                  | 2:1                      | T-15D77 or T-19D02            | T-15D82                              | 1:1.75  |        |
|                                                    | HF-200                      | 600            | 2500          | -130                       | 16,000                 | T-11M78                | 2A3                                  | 1.8:1                    | T-15D76 or T-19D01            | T-15D82                              | 1:1.75  |        |
|                                                    | HF-200                      | 500            | 2000          | -100                       | 11,200                 | T-11M78                | **6L6                                | 2.5:1                    | T-15D84                       | T-15D82                              | 1:1.75  |        |
|                                                    | HF-200                      | 600            | 2500          | -130                       | 16,000                 | T-11M78                | **6L6                                | 2.5:1                    | T-15D84                       | T-15D82                              | 1:1.75  |        |
|                                                    | H E I N T Z & K A U F M A N | HK-24          | 45            | 500                        | 0                      | 6,400                  | T-11M75 or T-19M15                   | 2A3                      | 4.5:1                         | T-15D79 or T-19D04                   | T-15D82 | 1:1.75 |
| HK-24                                              |                             | 105            | 1000          | -29                        | 15,000                 | T-11M76 or T-19M16     | 2A3                                  | 3.2:1                    | T-15D78 or T-19D03            | T-15D82                              | 1:1.25  |        |
| HK-54                                              |                             | 170            | 1250          | -35                        | 12,500                 | T-11M77 or T-19M17     | 2A3                                  | 2.4:1                    | T-15D77 or T-19D02            | T-15D82                              | 1:1.4   |        |
| HK-54                                              |                             | 200            | 1500          | -45                        | 16,800                 | T-11M77 or T-19M17     | 2A3                                  | 2.4:1                    | T-15D77 or T-19D02            | T-15D82                              | 1:1.4   |        |
| HK-154                                             |                             | 200            | 1000          | -155                       | 7,500                  | T-11M77 or T-19M17     | 2A3                                  | 1.4:1                    | T-15D76 or T-19D01            | T-15D82                              | 1:2.25  |        |
| HK-154                                             |                             | 223            | 1250          | -210                       | 11,400                 | T-11M77 or T-19M17     | 2A3                                  | 1.2:1                    | T-15D76 or T-19D01            | T-15D82                              | 1:2.75  |        |
| HK-254                                             |                             | 240            | 1500          | -40                        | 10,000                 | T-11M77 or T-19M17     | 2A3                                  | 2:1                      | T-15D77 or T-19D02            | T-15D82                              | 1:1.75  |        |
| HK-254                                             |                             | 328            | 2000          | -65                        | 16,000                 | T-11M78                | 2A3                                  | 2:1                      | T-15D77 or T-19D02            | T-15D82                              | 1:1.75  |        |
| HK-254                                             |                             | 418            | 2500          | -80                        | 22,000                 | T-11M78                | 2A3                                  | 1.8:1                    | T-15D76 or T-19D01            | T-15D82                              | 1:1.75  |        |
| HK-354                                             |                             | 100            | 1000          | -60                        | 15,000                 | T-11M76 or T-19M16     | 2A3                                  | 2.6:1                    | T-15D77 or T-19D02            | T-15D82                              | 1:1.25  |        |
| HK-354                                             |                             | 220            | 1500          | -100                       | 15,000                 | T-11M77 or T-19M17     | 2A3                                  | 2.2:1                    | T-15D77 or T-19D02            | T-15D82                              | 1:1.75  |        |
| HK-354                                             |                             | 400            | 2000          | -150                       | 15,000                 | T-11M78                | 2A3                                  | 1.4:1                    | T-15D76 or T-19D01            | T-15D82                              | 1:2.25  |        |
| 354E                                               |                             | 319            | 1500          | -25                        | 10,000                 | T-11M77                | 4-2A3                                | 2.25:1                   | T-15D81                       | T-15D83                              | 1:1.25  |        |
| 354E                                               |                             | 472            | 2000          | -37.5                      | 11,000                 | T-11M78                | 4-2A3                                | 2:1                      | T-15D80                       | T-15D83                              | 1:1.25  |        |
| 354E                                               |                             | 595            | 2500          | -50                        | 16,000                 | T-11M78                | 4-2A3                                | 1.75:1                   | T-15D80                       | T-15D83                              | 1:1.4   |        |
| 354F                                               |                             | 290            | 1500          | -15                        | 12,000                 | T-11M77                | 4-2A3                                | 2.75:1                   | T-15D81                       | T-15D83                              | 1:1.85  |        |
| 354F                                               |                             | 445            | 2000          | -22.5                      | 12,000                 | T-11M78                | 4-2A3                                | 2.5:1                    | T-15D81                       | T-15D83                              | 1:1.85  |        |

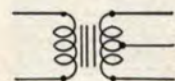
W-E 242A, 261A, 276A Same as R.C.A. 211

NOTE: This ratio is correct only when the tubes supplying power to the 500 ohm line are of the same type and operated under the same conditions as the driver tubes listed under "P-P Driver Tubes." 2A3 driver tubes are operated with 300 plate volts, self biased, unless preceded by †. 45 driver tubes are operated with 275 plate volts, self biased, unless preceded by \*. †2A3 driver tubes are operated with 300 plate volts, fixed bias. \*45 driver tubes are operated with 250 plate volts, self biased. \*\*6L6's with 16.6% feed-back, 400 volts plate, 300 volts screen.



## FILAMENT (F) TRANSFORMERS

| Type No. | List Price | Primary Volts | Secondary Volts | Sec. Amps. | Pri. V.A. | R.M.S. Test Volts | Mtg. Fig. | Mtg. Centers |       | Dimensions |    |    | Wt. Lbs. |
|----------|------------|---------------|-----------------|------------|-----------|-------------------|-----------|--------------|-------|------------|----|----|----------|
|          |            |               |                 |            |           |                   |           | Width        | Depth | W.         | D. | H. |          |



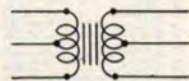
## SINGLE SECONDARY

Improved voltage regulation and minimum heat rise have been given prime consideration in the design of these units. Ratings given are for continuous operation at full load.

|           |        |             |             |      |      |       |    |       |        |        |       |       |       |
|-----------|--------|-------------|-------------|------|------|-------|----|-------|--------|--------|-------|-------|-------|
| ★ T-50F61 | \$2.10 | 115         | 2.5 Ct.     | 3.5  | 10   | 1600  | 2B | 2 3/8 |        | 2 7/8  | 1 3/4 | 2 3/8 | 1     |
| ★ T-19F88 | 2.40   | 115         | 2.5 Ct.     | 5.25 | 15   | 1600  | 2B | 2 3/8 |        | 2 7/8  | 2 1/8 | 2 3/8 | 1 1/4 |
| T-19F75   | 2.70   | 115         | 2.5 Ct.     | 5    | 12.5 | 7500  | 2B | 2 5/8 |        | 3 3/8  | 2 1/8 | 3     | 2     |
| T-19F89   | 2.70   | 115         | 2.5 Ct.     | 10   | 25   | 1600  | 2B | 2 5/8 |        | 3 3/8  | 2 1/8 | 3     | 2     |
| ★ T-19F90 | 3.60   | 115         | 2.5 Ct.     | 10   | 25   | 7500  | 3C | 2     | 1 3/4  | 2 9/16 | 2 1/4 | 3 1/4 | 2 1/4 |
| T-64F33   | 7.20   | 105/110/115 | 2.5 Ct.     | 10   | 25   | 7500  | 2N | 3 1/4 | 2 1/8  | 3 3/4  | 3 1/4 | 4     | 4 1/2 |
| T-19F82   | 6.00   | 115         | 2.5 Ct.     | 15   | 45   | 10000 | 3C | 3 1/4 | 1 5/8  | 3 3/4  | 2 7/8 | 4     | 4     |
| T-63F99   | 3.90   | 115         | 5 Ct.       | 4    | 20   | 1600  | 2D | 2 1/8 | 1 9/16 | 2 7/8  | 3     | 3 1/8 | 2 1/4 |
| ★ T-19F83 | 2.70   | 115         | 5 Ct.       | 5    | 30   | 1600  | 2B | 2 5/8 |        | 3 3/8  | 2 1/8 | 3     | 2     |
| T-19F84   | 3.30   | 115         | 5 Ct.       | 8    | 45   | 1600  | 3C | 2     | 1 3/4  | 2 9/16 | 2 1/4 | 3 1/4 | 2 3/4 |
| ★ T-19F85 | 4.80   | 115         | 5 Ct.       | 13   | 75   | 1600  | 3C | 3 1/4 | 1 5/8  | 3 3/4  | 2 7/8 | 4     | 4     |
| T-19F86   | 6.60   | 115         | 5 Ct.       | 21   | 120  | 1600  | 3C | 3 1/4 | 2 7/8  | 3 3/4  | 2 5/8 | 4     | 4 1/2 |
| T-74F23   | 6.00   | 105/110/115 | 5 Ct.       | 13   | 75   | 1600  | 2D | 3 1/4 | 1 7/8  | 3 3/4  | 3 1/4 | 4     | 4 1/4 |
| ★ T-74F24 | 10.20  | 105/110/115 | 5 Ct.       | 21   | 125  | 1600  | 2D | 2 3/4 | 1 9/16 | 3 7/8  | 3 5/8 | 4 3/8 | 5 1/4 |
| T-19F91   | 3.00   | 115         | 5.25 Ct.    | 4    | 25   | 1600  | 3C | 2     | 1 3/4  | 2 9/16 | 2 1/4 | 3 1/4 | 2 1/4 |
| T-19F92   | 4.20   | 115         | 5.25 Ct.    | 13   | 75   | 1600  | 3C | 3 1/4 | 1 5/8  | 3 3/4  | 2 7/8 | 4     | 4     |
| ★ T-19F80 | 1.60   | 115         | 6.3 Ct.     | 1    | 7    | 1600  | 2B | 2     |        | 2 5/8  | 1 3/4 | 1 5/8 | 3/4   |
| ★ T-19F81 | 1.80   | 115         | 6.3 Ct.     | 2    | 14   | 1600  | 2B | 2 3/8 |        | 2 7/8  | 1 3/4 | 2 3/8 | 1     |
| ★ T-19F97 | 2.10   | 115         | 6.3 Ct.     | 3    | 21   | 1600  | 2B | 2 3/8 |        | 2 7/8  | 2 1/8 | 2 3/8 | 1 1/2 |
| T-61F85   | 2.70   | 115         | 6.3, 5, 2.5 | 2.5  | 18   | 1600  | 3E | 3 1/8 |        | 3 5/8  | 2 3/8 | 2 1/4 | 1 1/2 |
| T-73F60   | 4.80   | 105/110/115 | 6.3 Ct.     | 5    | 36   | 1600  | 2D | 2 1/8 | 1 3/4  | 2 7/8  | 2 5/8 | 3 1/4 | 3 1/4 |
| ★ T-19F98 | 3.30   | 115         | 6.3 Ct.     | 6    | 47   | 1600  | 3C | 2     | 1 7/8  | 2 9/16 | 2 3/8 | 3 1/4 | 2 3/4 |
| ★ T-19F99 | 4.20   | 115         | 6.3 Ct.     | 10   | 73   | 1600  | 3C | 3 1/4 | 1 5/8  | 3 3/4  | 2 7/8 | 4     | 4     |
| ★ T-19F93 | 3.00   | 115         | 7.5 Ct.     | 4    | 34   | 1600  | 3C | 2     | 1 3/4  | 2 9/16 | 2 1/4 | 3 1/4 | 2 1/4 |
| ★ T-19F94 | 3.60   | 115         | 7.5 Ct.     | 8    | 67   | 1600  | 3C | 2 1/4 | 2 1/4  | 3      | 2 7/8 | 3 3/8 | 4     |
| T-92F20-  | 6.30   | 115         | 7.5 Ct.     | 8    | 68   | 1600  | 2D | 3 1/4 | 2      | 3 3/4  | 3 3/8 | 4     | 4 3/4 |
| T-19F95   | 3.30   | 115         | 10 Ct.      | 4    | 48   | 1600  | 3C | 2     | 1 3/4  | 2 9/16 | 2 1/4 | 3 1/4 | 2 3/4 |
| ★ T-19F96 | 4.20   | 115         | 10 Ct.      | 8    | 92   | 1600  | 3C | 2 1/4 | 2 1/4  | 2 9/16 | 2 7/8 | 3 3/8 | 4     |
| T-64F14   | 6.00   | 105/110/115 | 10 Ct.      | 8    | 90   | 1600  | 2D | 3 1/4 | 2      | 3 3/4  | 3 3/8 | 4     | 5     |
| T-19F87   | 7.50   | 115         | 10 Ct.      | 12   | 140  | 1600  | 3C | 3 1/4 | 2 1/8  | 3 3/4  | 3 3/8 | 4     | 6 3/4 |

## FOR EXCITER LAMP

|         |        |             |     |   |    |      |    |       |       |   |       |       |       |
|---------|--------|-------------|-----|---|----|------|----|-------|-------|---|-------|-------|-------|
| T-64F38 | \$7.20 | 110/115/120 | 8.5 | 4 | 35 | 1600 | 3C | 2 1/4 | 1 7/8 | 3 | 2 1/2 | 3 1/8 | 3 1/2 |
|---------|--------|-------------|-----|---|----|------|----|-------|-------|---|-------|-------|-------|



## SINGLE SECONDARY—C.H.T. SERIES

C.H.T. filament transformers are conservatively designed to operate continuously at full rated load with superior voltage regulation and minimum temperature rise.

|         |        |         |          |    |     |        |    |        |       |       |       |       |       |
|---------|--------|---------|----------|----|-----|--------|----|--------|-------|-------|-------|-------|-------|
| T-11F59 | \$9.00 | 105/115 | 5 Ct.    | 5  | 30  | 2000   | 3U | 2 3/8  | 2 1/2 | 3     | 3     | 3 5/8 | 5     |
| T-11F63 | 11.40  | 105/115 | 5 Ct.    | 13 | 70  | 2000   | 3U | 3 5/8  | 3 1/8 | 4 3/8 | 3 3/4 | 4 5/8 | 7 1/2 |
| T-11F55 | 15.00  | 105/115 | 5.25 Ct. | 22 | 130 | 2000   | 3U | 3 5/8  | 3 7/8 | 4 3/8 | 4 1/8 | 5 7/8 | 14    |
| T-11F60 | 9.60   | 105/115 | 6.3 Ct.  | 5  | 35  | 2000   | 3U | 2 3/8  | 2 1/2 | 3     | 3     | 3 5/8 | 5 3/4 |
| T-11F62 | 10.20  | 105/115 | 7.5 Ct.  | 8  | 65  | 2000   | 3U | 3 5/8  | 3 1/8 | 4 3/8 | 3 3/4 | 4 5/8 | 6 1/2 |
| T-11F64 | 12.00  | 105/115 | 10 Ct.   | 10 | 110 | 2000   | 3U | 3 5/8  | 3 7/8 | 4 3/8 | 4 1/8 | 5 7/8 | 9 3/4 |
| T-11F53 | 10.20  | 105/115 | 2.5 Ct.  | 10 | 25  | 7500   | 3U | 3 5/8  | 3 1/8 | 4 3/8 | 3 3/4 | 4 5/8 | 8 1/2 |
| T-11F61 | 27.00  | 105/115 | 2.5 Ct.  | 20 | 55  | 15,000 | 3U | 4 9/16 | 4 3/4 | 5 3/8 | 6 1/2 | 6 3/8 | 14    |
| T-11F54 | 24.00  | 105/115 | 5 Ct.    | 20 | 110 | 10,000 | 3U | 4 9/16 | 4 3/4 | 5 3/8 | 6 5/8 | 6 3/8 | 15    |



# Filament (F) Transformers

THORDARSON



2E



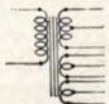
2G



3K



3U



## FILAMENT (F) TRANSFORMERS

Recommended for complete filament requirements of transmitters or amplifiers. Improved appearance and protection of coils from mechanical injury are afforded by mechanical shields.

| Type<br>No.                          | List<br>Price | Primary<br>Volts | Sec. Volts                                                         | Sec.<br>Amps.         | Pri.<br>V.A. | R.M.S.<br>Test<br>Volts | Mtg.<br>Fig. | Mtg. Centers    |                 | Dimensions      |                 |                 | Wt.<br>Lbs.      |
|--------------------------------------|---------------|------------------|--------------------------------------------------------------------|-----------------------|--------------|-------------------------|--------------|-----------------|-----------------|-----------------|-----------------|-----------------|------------------|
|                                      |               |                  |                                                                    |                       |              |                         |              | Width           | Depth           | W.              | D.              | H.              |                  |
| MULTIPLE SECONDARIES — "19" SERIES   |               |                  |                                                                    |                       |              |                         |              |                 |                 |                 |                 |                 |                  |
| T-19F76                              | \$5.70        | 115              | Sec. 1-5 V.<br>Sec. 2-7.5/6.3/5                                    | 3<br>6                | 67           | 1600<br>1600            | 2G           | 2 $\frac{1}{8}$ | 2 $\frac{5}{8}$ | 3 $\frac{5}{8}$ | 3 $\frac{1}{8}$ | 4 $\frac{5}{8}$ | 4 $\frac{3}{4}$  |
| T-19F77                              | 9.90          | 115              | Sec. 1-5 V.<br>Sec. 2-2.5 V. Ct.<br>Sec. 3-10/7.5/6.3/5            | 3<br>10<br>8          | 133          | 1600<br>7500<br>1600    | 2G           | 3               | 2 $\frac{7}{8}$ | 3 $\frac{3}{4}$ | 3 $\frac{5}{8}$ | 4 $\frac{7}{8}$ | 7                |
| T-19F78                              | 6.90          | 115              | Sec. 1-2.5 V. Ct.<br>Sec. 2-5 V.                                   | 10<br>3               | 45           | 7500<br>1600            | 2G           | 2 $\frac{1}{8}$ | 2 $\frac{9}{8}$ | 3 $\frac{5}{8}$ | 3 $\frac{3}{8}$ | 4 $\frac{5}{8}$ | 5                |
| T-19F79                              | 8.10          | 115              | Sec. 1-6.3 V. Ct.<br>Sec. 2-10/7.5/6.3/5                           | 3<br>10               | 133          | 1600<br>1600            | 2G           | 2 $\frac{1}{8}$ | 2 $\frac{9}{8}$ | 3 $\frac{5}{8}$ | 3 $\frac{5}{8}$ | 4 $\frac{5}{8}$ | 6                |
| T-79F84                              | 5.70          | 115              | Sec. 1-2.5 V. Ct.<br>Sec. 2-5 V. Ct.<br>Sec. 3-6.3 V. Ct.          | 3.5<br>3<br>3         | 48           | 1600<br>1600<br>1600    | 2G           | 2 $\frac{1}{8}$ | 2 $\frac{5}{8}$ | 3 $\frac{5}{8}$ | 3 $\frac{1}{8}$ | 4 $\frac{5}{8}$ | 4 $\frac{3}{4}$  |
| MULTIPLE SECONDARIES—C. H. T. SERIES |               |                  |                                                                    |                       |              |                         |              |                 |                 |                 |                 |                 |                  |
| T-11F57-                             | \$16.50       | 105/115          | Sec. 1- 10 Ct.<br>Sec. 2- 10 Ct.<br>Sec. 3-6.3 Ct.<br>Sec. 4-5 Ct. | 8<br>4<br>3<br>3      | 170          | 2000                    | 3K           | 3 $\frac{5}{8}$ | 4 $\frac{1}{8}$ | 5 $\frac{3}{8}$ | 5 $\frac{9}{8}$ | 6 $\frac{3}{4}$ | 15               |
| T-11F58-                             | 18.00         | 105/115          | Sec. 1-7.5 Ct.<br>Sec. 2-7.5 Ct.<br>Sec. 3-6.3 Ct.<br>Sec. 4-5 Ct. | 6.5<br>3.25<br>3<br>3 | 120          | 2000                    | 3K           | 3 $\frac{9}{8}$ | 4 $\frac{1}{8}$ | 5 $\frac{3}{8}$ | 5 $\frac{9}{8}$ | 6 $\frac{3}{4}$ | 13 $\frac{1}{4}$ |
| TAPPED SECONDARIES—C. H. T. SERIES   |               |                  |                                                                    |                       |              |                         |              |                 |                 |                 |                 |                 |                  |
| T-11F50                              | \$10.80       | 105/115          | 7.5/6.3/5*/2.5 Ct.                                                 | 6.5                   | 55           | 2000                    | 3U           | 3 $\frac{5}{8}$ | 3 $\frac{1}{8}$ | 4 $\frac{5}{8}$ | 3 $\frac{3}{4}$ | 4 $\frac{9}{8}$ | 6 $\frac{1}{4}$  |
| T-11F51                              | 13.20         | 105/115          | 10/7.5/6.3 Ct.                                                     | 8                     | 90           | 2000                    | 3U           | 3 $\frac{5}{8}$ | 3 $\frac{1}{8}$ | 4 $\frac{5}{8}$ | 3 $\frac{3}{4}$ | 4 $\frac{9}{8}$ | 7 $\frac{3}{4}$  |
| T-11F52                              | 15.90         | 105/115          | 11/10/7.5 Ct.                                                      | 10                    | 125          | 2000                    | 3U           | 3 $\frac{5}{8}$ | 3 $\frac{7}{8}$ | 4 $\frac{5}{8}$ | 4 $\frac{1}{8}$ | 5 $\frac{7}{8}$ | 13 $\frac{1}{2}$ |
| *Not center tapped.                  |               |                  |                                                                    |                       |              |                         |              |                 |                 |                 |                 |                 |                  |

\*Not center tapped.

## FILAMENT CORRECTOR AUTOTRANSFORMERS

To compensate for variations in line voltage or for drop in filament leads. Correct filament voltage at the tube is made possible.

| Type No. | List Price | Capacity Filament Power Watts | Primary Taps          | Mtg. Fig. | Mtg. Centers |       | Dimensions |       |       | Wt. Lbs. |
|----------|------------|-------------------------------|-----------------------|-----------|--------------|-------|------------|-------|-------|----------|
|          |            |                               |                       |           | Width        | Depth | W.         | D.    | H.    |          |
| T-18V24  | \$2.70     | 60                            | 105/110/115/120/125V. | 2E        | 2 3/8        |       | 2 7/8      | 2 1/8 | 2 3/8 | 1        |
| T-18V25  | 4.80       | 150                           | 105/110/115/120/125V. | 2E        | 2 5/8        |       | 3 3/8      | 2 1/2 | 3     | 1 3/4    |

### No. 344E—Transmitter Guide 15c Postpaid

Another Thordarson publication produced for the amateur operator. Complete description and details on practical types of transmitters and short wave apparatus. Schematic diagrams, pictures and parts lists of 12 new, modern transmitters from 10 to 1000 watts including an all-band A.C.-battery, emergency portable unit and a 5-10 meter mobile transmitter. Also ask for free catalog sheet SD464 describing 6 new, modern and economical to build, transmitter kits.



### No. 340—Complete Transformer Manual . . . 35c Postpaid

The Thordarson Transformer Manual is a complete book, containing the Replacement Transformer Encyclopedia and Servicing Guide, the Transmitter Guide, and the Sound Amplifier Guide, plus current Thordarson catalogs. It is bound in a strong, attractive blue and orange cover with loose leaf arrangement, giving the user opportunity to keep the Manual up-to-date by adding later Thordarson releases. This book has proven to be most popular in the technical library.





## MODULATION (M) TRANSFORMERS

To couple the plate or plates of an audio output stage to a Class C R.F. load.

| Type No. | List Price | Tube Type | Class | Ohms Impedance |      | Max.D.C. Sec.M.A. | Max.Audio Pwr. Watts | Mtg. Centers |       |       | Dimensions |    |    | Wt. Lbs. |
|----------|------------|-----------|-------|----------------|------|-------------------|----------------------|--------------|-------|-------|------------|----|----|----------|
|          |            |           |       | Pri.           | Sec. |                   |                      | Mtg. Fig.    | Width | Depth | W.         | D. | H. |          |

## MODULATION TRANSFORMERS FOR SPECIFIC APPLICATIONS

High efficiency, quiet operation and good frequency characteristics have been attained in this series of transformers by thorough engineering and careful construction. These units are designed for specific tube types. Larger modulation transformers are available on special order. Please consult the Thordarson Sales Engineering Department concerning special requirements.

|           |        |                         |              |        |                         |                   |     |    |       |       |       |       |        |        |
|-----------|--------|-------------------------|--------------|--------|-------------------------|-------------------|-----|----|-------|-------|-------|-------|--------|--------|
| T-67M69   | \$3.30 | 1-19                    | B            | 10,000 | 2,700                   | 50                | 10  | 2F | 2 3/8 |       | 2 7/8 | 2 1/8 | 2 3/8  | 1 1/2  |
| ★ T-17M59 | 3.30   | 1-6A6, 6N7 or 53        | B            | 10,000 | 3,000<br>3,750/4,500    | 100               | 10  | 2F | 2 5/8 |       | 3 3/8 | 2 1/2 | 3      | 2      |
| T-64M26   | 7.20   | 2-46 or 59<br>2-250     | B<br>AB      | 5,800  | 5,000<br>10,000         | 100               | 40  | 2D | 3 1/4 | 2     | 3 3/4 | 3 3/8 | 4      | 5      |
| T-19M21-  | 8.40   | 2-TZ-20                 | B            | 10,000 | 3,750<br>6,600          | 200<br>150        | 75  | 2N | 3 1/4 | 2 5/8 | 3 3/4 | 3 5/8 | 4      | 7      |
| T-19M22-  | 12.00  | 2-809<br>2-RK-12        | B<br>B       | 8,400  | 5,000<br>7,850          | 200<br>160        | 100 | 2N | 3 1/4 | 2 3/4 | 4 3/8 | 4 1/2 | 6 1/8  | 13 1/4 |
| T-84M70   | 12.00  | 2-6L6<br>2-35T<br>4-210 | AB<br>B<br>B | 3,800  | 2,500<br>5,000<br>7,500 | 250<br>200<br>150 | 75  | 2D | 2 3/4 | 2 5/8 | 3 7/8 | 4 5/8 | 4 9/16 | 10     |
| T-14M49   | 21.60  | 2-TZ-40                 | B            | 6,900  | 2,850<br>4,500<br>6,500 | 350<br>300<br>235 | 175 | 2Q | 6 3/4 | 3 3/8 | 7 1/2 | 5 5/8 | 6 3/8  | 20     |
| T-82M25   | 51.00  | 2-805,<br>HD-203A, 822  | B            | 9,000  | 4,000<br>6,000/8,000    | 500               | 650 | 2Q | 8 5/8 | 4 1/8 | 9 1/8 | 7 1/2 | 7 3/4  | 47     |

## GRID MODULATION TRANSFORMERS

|          |        |                         |    |       |       |    |    |    |       |        |       |       |       |       |
|----------|--------|-------------------------|----|-------|-------|----|----|----|-------|--------|-------|-------|-------|-------|
| T-67M73- | \$4.20 | 1-42, 46, 6F6, Triode A |    | 6,300 | 5,400 | 32 | 10 | 2D | 2 1/8 | 1 9/16 | 2 7/8 | 2 5/8 | 3 1/8 | 2 1/4 |
| T-67M74- | 5.40   | P.P. 45-2A3             | AB | 5,000 | 5,000 | 60 | 20 | 2D | 2 1/8 | 1 3/4  | 2 7/8 | 2 5/8 | 3 5/8 | 3 1/2 |

## MATCHING LINE TO R. F. LOAD MODULATION TRANSFORMERS

This popular series is designed for direct connection to 500 ohm output terminals of a receiver or amplifier. 200 ohm tap is also provided on type T-83M22.

| Type No. | List Price | Pri. Ohms | Secondary Ohms Load                  | Max. D.C. Sec. M.A. | Max. Watts | Mtg. Fig. | Mtg. Centers |       | Dimensions |       |       | Wt. Lbs. |
|----------|------------|-----------|--------------------------------------|---------------------|------------|-----------|--------------|-------|------------|-------|-------|----------|
|          |            |           |                                      |                     |            |           | Width        | Depth | W.         | D.    | H.    |          |
| T-73M52  | \$27.00    | 500       | 5,000/6,000/7,000/8,000/9,000/10,000 | 215                 | 80         | 2Q        | 6 3/4        | 3 3/8 | 7 1/2      | 5 5/8 | 6 3/8 | 21       |
| T-83M22  | 13.80      | 500/200   | 5,000/6,000/7,000/8,000/9,000/10,000 | 150                 | 30         | 2N        | 2 3/4        | 2 3/8 | 3 7/8      | 3 5/8 | 4 1/8 | 8        |

## THORDARSON OSCILLOSCOPE KIT

Accurately designed circuit uses a 913 tube. Magnifying lens gives clear 2" image and small over all size of unit makes it ideal for relay rack of servicemen and for amateur and experimental uses. Circuit diagram, description and complete parts list given in catalog bulletin SD-266.

| Type No. | List Price | Description                                                                                                                                                                                                                                                                                                                                       |
|----------|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| T-11K99  | \$18.00    | Foundation Unit (Consists of punched chassis, panel, light shield, etched panel, ventilated cabinet and 2" magnifying lens with retainer ring, also complete circuit, constructional and operating data.) In addition to the foundation unit, one T-92R33 power transformer (see page 19) and one T-74C30 filter choke (see page 8) are required. |





# Modulation (M) Transformers

THORDARSON



4D



3G



4U



2Q

## UNIVERSAL AND MULTI-MATCH MODULATION (M) TRANSFORMERS

The radio amateur or experimenter regularly makes changes in equipment to take advantage of new circuits and tubes. To enable quick and accurate matching of various tube loads without changing transformers, and to assure peak transformer performance while testing new tubes or making circuit changes, these Universal and Multi-Match transformers are made available. A complete table

of driver and modulator combinations on pages 12 and 13 makes easy the selection of the proper driver or modulation transformer. Larger modulation transformers are available on special order. Please consult the Thordarson Sales Engineering Department concerning special requirements.

### "19" SERIES UNIVERSAL MODULATION TRANSFORMERS

| Type No.  | List Price | Capacity Watts | Pri. M.A. Each Side | Secondary M.A. |          | Mtg. Fig. | Mtg. Centers |        | Dimensions |       |       | Wt. Lbs. |
|-----------|------------|----------------|---------------------|----------------|----------|-----------|--------------|--------|------------|-------|-------|----------|
|           |            |                |                     | Series         | Parallel |           | Width        | Depth  | W.         | D.    | H.    |          |
| ★ T-19M13 | \$5.70     | 15             | 50                  | 50             | 100      | 4D        | 2 5/8        |        | 3 3/8      | 2 1/2 | 3     | 2        |
| ★ T-19M14 | 9.90       | 30             | 75                  | 75             | 150      | 2N        | 3 1/4        | 1 5/8  | 3 3/4      | 3 1/8 | 4     | 4 1/2    |
| T-19M15   | 14.40      | 60             | 125                 | 125            | 250      | 2N        | 3 1/4        | 2 9/16 | 3 3/4      | 3 1/8 | 4     | 6 1/2    |
| T-19M16   | 20.40      | 100            | 175                 | 175            | 350      | 2N        | 3 1/4        | 2 3/4  | 4 1/4      | 4 1/4 | 6 1/8 | 12 1/2   |
| T-19M17   | 33.00      | 250            | 225                 | 225            | 450      | 2Q        | 7 3/4        | 3 3/8  | 8 1/2      | 5 3/4 | 6 7/8 | 30 3/4   |

### C. H. T. MULTI-MATCH MODULATION TRANSFORMERS

\*Feature Thordarson Switchboard Plug-in terminal board for quick and accurate matching of tube loads.

|           |         |     |     |     |     |     |        |        |       |        |       |       |
|-----------|---------|-----|-----|-----|-----|-----|--------|--------|-------|--------|-------|-------|
| ★ T-11M74 | \$13.20 | 40  | 100 | 80  | 160 | 4U* | 3 5/8  | 3 1/8  | 4 5/8 | 4 3/8  | 4 3/4 | 7 3/4 |
| ★ T-11M75 | 15.30   | 75  | 145 | 145 | 290 | 4U* | 3 5/8  | 3 5/8  | 4 5/8 | 4 3/8  | 4 3/4 | 9     |
| ★ T-11M76 | 27.00   | 125 | 210 | 160 | 320 | 4U* | 4 9/16 | 4 3/4  | 5 5/8 | 5 1/2  | 6 3/8 | 18    |
| ★ T-11M77 | 36.00   | 300 | 250 | 250 | 500 | 4U* | 5 3/8  | 6 1/8  | 6 3/8 | 7 5/8  | 7 7/8 | 30    |
| ★ T-11M78 | 72.00   | 500 | 320 | 320 | 640 | 3P  | 3 1/8  | 10 3/8 | 5 3/8 | 13 1/4 | 6 7/8 | 54    |

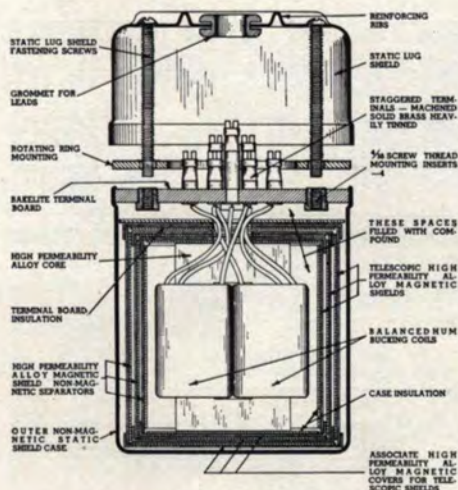
### C. H. T. MULTI-MATCH CATHODE MODULATION TRANSFORMERS

Audio power is 10% of the Class C input. R. F. efficiency is 44%. With the exclusive Thordarson Switchboard Plug-in Terminal Board.

|         |         |     |                      |             |     |    |       |       |       |       |       |    |
|---------|---------|-----|----------------------|-------------|-----|----|-------|-------|-------|-------|-------|----|
| T-11M69 | \$10.80 | 15  | 5,000, 7,000, 10,000 | 80 to 2,000 | 300 | 4U | 3 5/8 | 3 1/8 | 4 5/8 | 3 3/4 | 3 5/8 | 3  |
| T-11M70 | 15.00   | 40  | 3,000, 6,600, 10,000 | 80 to 2,000 | 400 | 4U | 3 5/8 | 4 1/4 | 4 5/8 | 4 5/8 | 5 7/8 | 7  |
| T-11M71 | 18.00   | 100 | 6,000, 8,000, 10,000 | 80 to 2,000 | 600 | 4U | 3 5/8 | 4 1/4 | 4 5/8 | 4 7/8 | 5 3/8 | 10 |

## THORDARSON BROADCAST UNITS

CATALOG No. 500-F



Cross section view  
Multi-shield Audio Transformer



The same high quality transformers that have been made to the special requirements of discriminating engineers; broadcast stations and laboratories are now available as stock catalog items. Thordarson offers a complete line of transformers and chokes for broadcast use, each capable of meeting and surpassing the most rigid broadcast tolerances. Audio transformers perfectly designed and manufactured to assure uniform frequency response are listed. Filters, line equalizers, many types of filament transformers and filter reactors, plate transformers, modulation transformers and reactors round out an unusually complete line of broadcast components. Station engineers, experimentors, laboratories or air-craft equipment manufacturers and engineers are urged to secure a copy of catalog 500-F — FREE.

See Bantam, Incher and Major Series listed on pages 6 and 7.



2K

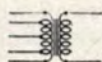


2F



2G

## PLATE SUPPLY (P) TRANSFORMERS — "19" SERIES



Supply the voltage potential between cathode and anodes of vacuum tubes in a rectifier circuit. Thordarson plate transformers are rated in D.C. voltages from a two section filter which includes the voltage drop through the rectifier tubes. Designed especially for Amateur Short Wave or experimental equipment. Electrostatic shielding is provided between primary and secondary windings.

| Type No.  | List Price | Primary Volts | Sec. A.C. Load Volts       | D.C. Volts   | Bias Tap | D.C. M.A.  | Pri. V.A. | Mtg. Fig. | Mtg. Centers |       | Dimensions |       |       | Wt. Lbs. |
|-----------|------------|---------------|----------------------------|--------------|----------|------------|-----------|-----------|--------------|-------|------------|-------|-------|----------|
|           |            |               |                            |              |          |            |           |           | Width        | Depth | W.         | D.    | H.    |          |
| T-19P54   | \$7.20     | 115           | 560-0-560                  | 400          |          | 150        | 115       | 2G        | 3            | 2 5/8 | 3 3/4      | 3 3/8 | 4 7/8 | 7        |
| ★ T-19P55 | 7.80       | 115           | 660-0-660<br>550-0-550     | 500<br>400   | 30 V.    | 250        | 200       | 2G        | 3            | 3 1/8 | 3 3/4      | 4 3/8 | 4 7/8 | 8        |
| T-84P60   | 9.00       | 115           | 515-0-515                  | 400          | 30 V.    | 250        | 190       | 2G        | 3            | 4     | 3 3/4      | 4 3/4 | 4 7/8 | 11 3/4   |
| T-19P70   | 13.80      | 115           | 900-0-900<br>605-0-605     | 750*<br>400  |          | 100<br>225 | 260       | 2G        | 3            | 3 7/8 | 3 3/4      | 4 3/8 | 4 7/8 | 11 1/2   |
| ★ T-19P57 | 10.20      | 115           | 1075-0-1075<br>500-0-500   | 1000*<br>400 |          | 125<br>150 | 245       | 2G        | 3            | 3 3/4 | 3 3/4      | 4 1/2 | 4 7/8 | 10 1/2   |
| ★ T-19P58 | 18.00      | 115           | 1200-0-1200<br>900-0-900   | 1000*<br>750 |          | 200<br>150 | 500       | 2G        | 3 1/4        | 3 1/8 | 4 3/8      | 5 3/8 | 6 1/8 | 19       |
| T-19P71   | 16.80      | 115           | 1325-0-1325<br>595-0-595   | 1250*<br>400 |          | 125<br>200 | 320       | 2G        | 3            | 4 1/8 | 3 7/8      | 5 1/8 | 4 5/8 | 18       |
| ★ T-19P56 | 8.40       | 115           | 900-0-900<br>800-0-800     | 750<br>600   |          | 225        | 260       | 2G        | 3            | 3 1/2 | 3 3/4      | 4 1/4 | 4 7/8 | 10       |
| T-19P69   | 18.00      | 115           | 1180-0-1180<br>900-0-900   | 1000<br>750  |          | 300        | 430       | 2G        | 3 3/4        | 3 5/8 | 5 1/8      | 6 1/4 | 6 3/4 | 20       |
| ★ T-19P59 | 21.00      | 115           | 1560-0-1560<br>1250-0-1250 | 1250<br>1000 |          | 300        | 550       | 2K        | 4 3/8        | 3 5/8 | 5 7/8      | 7 5/8 | 6 1/8 | 26 1/2   |
| ★ T-19P60 | 25.20      | 115           | 1875-0-1875<br>1560-0-1560 | 1500<br>1250 |          | 300        | 620       | 2K        | 5 3/4        | 4 3/8 | 6 1/8      | 7 1/8 | 6 3/4 | 29 1/4   |
| T-19P61   | 27.00      | 115           | 2125-0-2125<br>1875-0-1875 | 1750<br>1500 |          | 300        | 745       | 2K        | 5 3/4        | 4 5/8 | 6 1/8      | 7 3/8 | 6 3/4 | 31 1/2   |
| ★ T-19P62 | 32.10      | 115           | 2420-0-2420<br>2125-0-2125 | 2000<br>1750 |          | 300        | 860       | 2K        | 5 3/4        | 5     | 6 1/8      | 7 3/4 | 6 3/4 | 34 1/2   |
| T-19P65   | 37.20      | 115           | 3000-0-3000<br>2420-0-2420 | 2500<br>2000 |          | 300        | 1195      | 2K        | 5 3/4        | 6     | 6 1/8      | 9 1/8 | 6 3/4 | 44       |
| ★ T-19P63 | 30.90      | 115           | 1560-0-1560<br>1265-0-1265 | 1250<br>1000 |          | 500        | 925       | 2K        | 5 3/4        | 5 1/4 | 6 1/8      | 8 5/8 | 6 3/4 | 38       |
| ★ T-19P64 | 35.70      | 115           | 1875-0-1875<br>1560-0-1560 | 1500<br>1250 |          | 500        | 1130      | 2K        | 5 3/4        | 6     | 6 1/8      | 9 1/8 | 6 3/4 | 43 1/4   |
| T-19P66   | 49.80      | 115           | 2125-0-2125<br>1875-0-1875 | 1750<br>1500 |          | 500        | 1185      | 2K        | 5 3/4        | 4 3/8 | 6 1/8      | 7 1/4 | 9 5/8 | 45 1/2   |
| T-19P67   | 60.00      | 115           | 2450-0-2450<br>2125-0-2125 | 2000<br>1750 |          | 500        | 1380      | 2K        | 5 3/4        | 4 3/8 | 6 1/8      | 7 1/2 | 9 5/8 | 51       |
| T-19P68   | 70.20      | 115           | 3000-0-3000<br>2450-0-2450 | 2500<br>2000 |          | 500        | 1760      | 2K        | 5 3/4        | 5 5/8 | 6 1/8      | 8 1/2 | 9 5/8 | 61       |

\*These transformers designed for double rectifiers and will deliver both secondary ratings simultaneously. If only the lower voltage taps are used the current rating is equal to the current rating of both windings.

## POWER (R) TRANSFORMERS

### TELEVISION POWER TRANSFORMERS

| Type<br>No. | List<br>Price | Kinescope<br>Tubes | Secondary                                                    |          | R.M.S.<br>Test<br>Volts | Mtg.<br>Fig. | Mtg. Centers     |                  | Dimensions       |                 |                 | Wt.<br>Lbs.     |
|-------------|---------------|--------------------|--------------------------------------------------------------|----------|-------------------------|--------------|------------------|------------------|------------------|-----------------|-----------------|-----------------|
|             |               |                    |                                                              |          |                         |              | Width            | Depth            | W.               | D.              | H.              |                 |
| T-17R32     | \$12.30       | 5"                 | No. 1 — 2300V AC<br>No. 2 — 2.5V at 2A<br>No. 3 — 2.5V at 2A | 3000V DC | 7500                    | 2G           | 2 $\frac{7}{16}$ | 2 $\frac{5}{16}$ | 3 $\frac{5}{16}$ | 3 $\frac{1}{8}$ | 4 $\frac{5}{8}$ | 4 $\frac{1}{2}$ |
| T-17R33     | 20.40         | 9"                 | No. 1 — 4500V AC<br>No. 2 — 2.5V at 5A<br>No. 3 — 2.5V at 2A | 6000V DC | 10,000                  | 2G           | 2 $\frac{7}{16}$ | 3 $\frac{1}{16}$ | 3 $\frac{5}{16}$ | 3 $\frac{7}{8}$ | 4 $\frac{5}{8}$ | 6 $\frac{1}{2}$ |

For suitable filter reactor, see listing of chokes on page 8.

(See T-17C40)



# Plate (P) — Power (R) Transformers

THORDARSON

2N



4U



3U



3P



## PLATE SUPPLY (P) TRANSFORMERS — C. H. T. SERIES

Will operate continuously under full rated load conditions with excellent regulation and with minimum temperature rise. Cases are compound filled for complete coil protection.

| Type No.  | List Price | Primary Volts | Sec. A.C. Load Volts                                     | D.C. Volts                   | D.C. M.A. | Pri. V.A. | Mtg. Fig. | Mtg. Centers    |                  | Dimensions      |                  |                 | Wt. Lbs.         |
|-----------|------------|---------------|----------------------------------------------------------|------------------------------|-----------|-----------|-----------|-----------------|------------------|-----------------|------------------|-----------------|------------------|
|           |            |               |                                                          |                              |           |           |           | Width           | Depth            | W.              | D.               | H.              |                  |
| T-15P11   | \$16.80    | 115-230       | 665-0-665<br>535-0-535                                   | 500<br>400                   | 200       | 160       | 3U        | 3 $\frac{5}{8}$ | 3 $\frac{7}{8}$  | 4 $\frac{5}{8}$ | 4 $\frac{1}{8}$  | 5 $\frac{1}{8}$ | 15 $\frac{3}{4}$ |
| T-15P12   | 19.20      | 115-230       | 835-0-835<br>655-0-655                                   | 650<br>500                   | 200       | 200       | 3U        | 4 $\frac{9}{8}$ | 4 $\frac{1}{8}$  | 5 $\frac{3}{8}$ | 4 $\frac{5}{8}$  | 6 $\frac{3}{8}$ | 19 $\frac{1}{2}$ |
| T-15P13   | 28.80      | 115-230       | 945-0-945<br>770-0-770                                   | 750<br>600                   | 300       | 315       | 3U        | 5 $\frac{3}{8}$ | 5 $\frac{5}{8}$  | 6 $\frac{3}{8}$ | 7 $\frac{5}{8}$  | 7 $\frac{7}{8}$ | 31 $\frac{3}{4}$ |
| T-15P14   | 36.00      | 115-230       | 1225-0-1225<br>945-0-945                                 | 1000<br>750                  | 300       | 427       | 3U        | 5 $\frac{3}{8}$ | 5 $\frac{5}{8}$  | 6 $\frac{3}{8}$ | 6 $\frac{5}{8}$  | 7 $\frac{7}{8}$ | 41               |
| T-15P15   | 42.00      | 115-230       | 1450-0-1450<br>1190-0-1190                               | 1250<br>1000                 | 300       | 520       | 3U        | 6 $\frac{5}{8}$ | 6 $\frac{1}{4}$  | 7 $\frac{5}{8}$ | 7 $\frac{1}{8}$  | 8               | 51 $\frac{1}{4}$ |
| T-15P17   | 45.00      | 115-230       | 1815-0-1815<br>1535-0-1535                               | 1500<br>1250                 | 300       | 665       | 3U        | 6 $\frac{5}{8}$ | 6 $\frac{1}{4}$  | 7 $\frac{5}{8}$ | 8 $\frac{1}{8}$  | 8               | 55               |
| ★ T-15P19 | 81.00      | 115-230       | 2950-0-2950<br>2365-0-2365                               | 2500<br>2000                 | 300       | 1160      | 3P        | 3 $\frac{1}{4}$ | 10 $\frac{1}{8}$ | 6 $\frac{3}{8}$ | 12 $\frac{3}{4}$ | 9               | 85               |
| T-15P16   | 63.00      | 115-230       | 1540-0-1540<br>1255-0-1255                               | 1250<br>1000                 | 500       | 875       | 3P        | 3 $\frac{1}{4}$ | 9 $\frac{5}{8}$  | 6 $\frac{3}{8}$ | 12 $\frac{1}{4}$ | 9               | 81               |
| T-15P18   | 84.00      | 115-230       | 2130-0-2130<br>1845-0-1845                               | 1750<br>1500                 | 500       | 1210      | 3P        | 3 $\frac{1}{4}$ | 10 $\frac{7}{8}$ | 6 $\frac{3}{8}$ | 13 $\frac{1}{2}$ | 9               | 96               |
| ★ T-15P21 | 114.00     | 115-230       | 3440-0-3440<br>2980-0-2980<br>2340-0-2340<br>1815-0-1815 | 3000<br>2500<br>2000<br>1500 | 500       | 2180      | 3P        | 4 $\frac{1}{4}$ | 11 $\frac{1}{8}$ | 7 $\frac{9}{8}$ | 11 $\frac{7}{8}$ | 9 $\frac{5}{8}$ | 129              |
| T-15P20   | 120.00     | 115-230       | 2960-0-2960<br>2390-0-2390                               | 2500<br>2000                 | 650       | 2380      | 3P        | 4 $\frac{1}{4}$ | 11 $\frac{7}{8}$ | 7 $\frac{9}{8}$ | 14 $\frac{5}{8}$ | 9 $\frac{5}{8}$ | 140              |

## POWER (R) TRANSFORMERS

### Universal Bias Transformers — "19" Series

| Type No. | List Price | Pri. V.A. | Secondary D.C. Volts             | Filament       |    |    | Mtg. Fig. | Mtg. Centers    |                 | Dimensions      |                 |                 | Wt. Lbs.        |
|----------|------------|-----------|----------------------------------|----------------|----|----|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|          |            |           |                                  | Secondary M.A. | V. | A. |           | Width           | Depth           | W.              | D.              | H.              |                 |
| T-19R31  | \$11.40    |           | 10 to 100 in app. 5 volt steps   | 200            |    |    | 2N        | 3 $\frac{1}{4}$ | 2 $\frac{1}{8}$ | 3 $\frac{3}{4}$ | 3 $\frac{3}{8}$ | 4               | 4               |
| T-19R32  | 15.00      |           | 100 to 400 in app. 15 volt steps | 200            |    |    | 2N        | 2 $\frac{3}{4}$ | 2 $\frac{1}{8}$ | 3 $\frac{9}{8}$ | 4 $\frac{1}{8}$ | 4 $\frac{5}{8}$ | 9 $\frac{1}{4}$ |

### C. H. T. Multi-Volt Bias Transformers

Have the convenient feature of Switchboard plug-in terminal board facilitating changes of voltage.

|         |         |     |                         |     |   |   |    |                 |                 |                 |                 |                 |                  |
|---------|---------|-----|-------------------------|-----|---|---|----|-----------------|-----------------|-----------------|-----------------|-----------------|------------------|
| T-15R60 | \$23.40 | 65  | 150/135/120/110/100/90  | 200 | 5 | 3 | 4U | 3 $\frac{5}{8}$ | 3 $\frac{7}{8}$ | 4 $\frac{5}{8}$ | 4 $\frac{3}{8}$ | 4 $\frac{3}{4}$ | 6 $\frac{3}{4}$  |
| T-15R61 | 21.00   | 100 | 275/250/225/200/175/150 | 200 | 5 | 3 | 4U | 3 $\frac{5}{8}$ | 3 $\frac{7}{8}$ | 4 $\frac{5}{8}$ | 4 $\frac{3}{8}$ | 4 $\frac{3}{4}$ | 8 $\frac{1}{2}$  |
| T-15R62 | 23.40   | 155 | 500/450/400/350/300/275 | 200 | 5 | 3 | 4U | 3 $\frac{5}{8}$ | 4 $\frac{1}{4}$ | 4 $\frac{5}{8}$ | 4 $\frac{7}{8}$ | 5 $\frac{3}{8}$ | 15 $\frac{1}{4}$ |

## POWER TRANSFORMERS FOR CATHODE RAY TUBES

| Type No.     | List Price | Volts D.C. | M.A. | Rect. Fil.         | Filament Windings |                             | Mtg. Fig. | Mtg. Centers    |                 | Dimensions      |                 |                 | Wt. Lbs.        |
|--------------|------------|------------|------|--------------------|-------------------|-----------------------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|              |            |            |      |                    | Fil. No. 1        | Fil. No. 2                  |           | Width           | Depth           | W.              | D.              | H.              |                 |
| T-92R33      | \$5.40     | **500      | 3    | 6.3V—.9A           | 6.3V—.6A          | 6.3V—.6A                    | 2F        | 3 $\frac{1}{2}$ |                 | 3 $\frac{9}{8}$ | 3 $\frac{1}{8}$ | 3 $\frac{1}{2}$ | 3 $\frac{1}{4}$ |
| For 913 tube |            | tap—400    | 15   |                    |                   | (No. 3 2.5V—1.4A)           |           |                 |                 |                 |                 |                 |                 |
| T-14R32—     | 9.00       | 400        | 15   | 5V—2A<br>5V—2A Ct. | 6.3V—.6A          | 2.5V—2A<br>(No. 3 6.3V—.6A) | 2G        | 2 $\frac{1}{8}$ | 2 $\frac{1}{8}$ | 2 $\frac{7}{8}$ | 3 $\frac{3}{8}$ | 3 $\frac{1}{8}$ | 4               |

For Dumont 24-XH; RCA 902, 913; National 2002 Tubes.

\*\*With half wave rectification.

### No. 352 — Replacement Transformer Encyclopedia. Free

Thordarson Replacement Transformer Encyclopedia No. 352 indicates proper transformer and choke replacement for receivers listed in Rider's Manuals. This handy, useful time-saver, originated by Thordarson, is now used by good service engineers the world over. In addition, it contains electrical and physical characteristics of all transformers and chokes listed in the Guide. Also included is a convenient table for choosing the correct output transformer for each application.





2H



3A



3A



3A



3C

## POWER (R) TRANSFORMERS

To furnish plate and filament voltage requirements of amplifiers, receivers and exciter stages of transmitters.

### UNIVERSAL REPLACEMENT POWER TRANSFORMERS — "13R" SERIES

The choice of servicemen in all parts of the world because of the universal adaptability to receiver replacement, both electrically and mechanically. Adjustable mounting brackets permit flush, vertical or horizontal mounting. Replacement recommendations are given in Thordarson Replacement Transformer Encyclopedia No. 352.

| Type No.  | List Price | Pri. V.A. | Secondary       |           | Filament Windings |                  |                |            | Mtg. Fig. | Mtg. Centers |       | Dimensions |       |       | Wt. Lbs. |
|-----------|------------|-----------|-----------------|-----------|-------------------|------------------|----------------|------------|-----------|--------------|-------|------------|-------|-------|----------|
|           |            |           | A.C. Load Volts | D.C. M.A. | Rect. Fil.        | Fil. No. 1       | Fil. No. 2     | Fil. No. 3 |           | Width        | Depth | W.         | D.    | H.    |          |
| ★ T-13R19 | \$3.60     | 45        | 240-0-240       | 40        | 5V-2A             | 6.3V-2A Ct.      |                |            | 3A        | 2 1/2        | 2 1/8 | 3          | 2 1/2 | 2 1/2 | 2 1/2    |
| ★ T-13R11 | 3.90       | 60        | 290-0-290       | 50        | 5V-3A             | 6.3V-2A Ct.      |                |            | 3A        | 2 1/2        | 2 1/8 | 3          | 2 1/2 | 2 3/4 | 3 1/4    |
| ★ T-13R20 | 4.50       | 60        | 305-0-305       | 70        | 5V-2A             | 6.3V-3.5A Ct.    |                |            | 3A        | 2 1/2        | 2 1/8 | 3          | 2 1/2 | 3 5/8 | 3 1/4    |
| ★ T-13R12 | 4.50       | 65        | 350-0-350       | 70        | 5V-3A             | 6.3V-2.5A Ct.    |                |            | 3A        | 2 1/2        | 2 1/8 | 3          | 2 1/2 | 3 5/8 | 3 1/4    |
| ★ T-13R13 | 5.40       | 90        | 350-0-350       | 90        | 5V-3A             | 6.3V-3.5A Ct.    |                |            | 3A        | 3 1/8        | 2 1/2 | 3 3/4      | 3 1/8 | 3 1/2 | 5 1/4    |
| ★ T-13R14 | 6.00       | 115       | 350-0-350       | 120       | 5V-4A             | 6.3V-4.7A Ct.    |                |            | 3A        | 3 1/8        | 2 1/2 | 3 3/4      | 3 1/8 | 3 3/8 | 5 1/4    |
| ★ T-13R15 | 6.90       | 140       | 375-0-375       | 150       | 5V-4A             | 6.3V-5A Ct.      |                |            | 3A        | 3 3/4        | 3     | 4 1/2      | 3 3/4 | 3 7/8 | 6 1/2    |
| ★ T-13R16 | 7.80       | 180       | 400-0-400       | 200       | 5V-4A             | 6.3V-5.14A Ct.   |                |            | 3A        | 3 3/4        | 3     | 4 1/2      | 3 3/4 | 3 7/8 | 7 3/4    |
| T-13R17   | 5.10       | 85        | 300-0-300       | 60        | 5V-3A             | 6.3V-2.5A Ct.    | 2.5V-7.5A Ct.  |            | 3A        | 2 5/8        | 2 1/4 | 3 3/8      | 2 5/8 | 3 1/8 | 4 1/2    |
| T-13R18   | 6.00       | 115       | 350-0-350       | 90        | 5V-3A             | 6.3/2.5-3.5A Ct. | 2.5V-9A Ct.    |            | 3A        | 3 3/4        | 3     | 4 1/2      | 3 3/4 | 3 5/8 | 5 3/4    |
| T-13R08   | 6.00       | 105       | 350-0-350       | 90        | 5V-3A             | 6.3V-3.3A Ct.    | 2.5V-6A Ct.    |            | 3A        | 3 1/8        | 2 1/2 | 3 3/4      | 3 1/8 | 3 3/8 | 5 1/4    |
| T-13R09   | 7.50       | 160       | 375-0-375       | 180       | 5V-3A             | 6.3V-3.3A Ct.    | 2.5V-6A Ct.    |            | 3A        | 3 3/4        | 3     | 4 1/2      | 3 3/4 | 3 3/8 | 7 1/2    |
| T-13R00   | 5.40       | 70        | 275-0-275       | 70        | 5V-3A             | 5V-.5A Ct.       | 2.5V-10.5A Ct. |            | 3A        | 2 5/8        | 2 1/4 | 3 3/8      | 2 5/8 | 3 1/4 | 4        |
| ★ T-13R01 | 4.20       | 60        | 325-0-325       | 40        | 5V-3A             | 2.5V-4A Ct.      |                |            | 3A        | 2 1/2        | 2 1/8 | 3          | 2 1/2 | 2 3/4 | 3 1/4    |
| ★ T-13R02 | 4.50       | 60        | 350-0-350       | 50        | 5V-3A             | 2.5V-7.25A Ct.   |                |            | 3A        | 2 1/2        | 2 1/8 | 3          | 2 1/2 | 2 5/8 | 3 1/4    |
| ★ T-13R03 | 5.10       | 75        | 350-0-350       | 70        | 5V-3A             | 2.5V-9A Ct.      |                |            | 3A        | 2 5/8        | 2 1/4 | 3 3/8      | 2 5/8 | 3 1/4 | 4        |
| T-13R04   | 6.00       | 115       | 350-0-350       | 100       | 5V-3A             | 2.5V-12.5A Ct.   |                |            | 3A        | 3 1/8        | 2 1/2 | 3 3/4      | 3 1/8 | 3 7/8 | 5 1/4    |
| ★ T-13R05 | 6.00       | 110       | 350-0-350       | 70        | 5V-3A             | 2.5V-9A Ct.      | 2.5V-3.5A Ct.  |            | 3A        | 3 1/8        | 2 1/2 | 3 3/4      | 3 1/8 | 3 3/8 | 5 1/4    |
| ★ T-13R06 | 6.90       | 130       | 350-0-350       | 120       | 5V-3A             | 2.5V-12.5A Ct.   | 2.5V-3.5A Ct.  |            | 3A        | 3 3/4        | 3     | 4 1/2      | 3 3/4 | 3 1/8 | 6 1/2    |
| ★ T-13R07 | 7.20       | 140       | 400-0-400       | 110       | 5V-3A             | 2.5V-15A Ct.     | 2.5V-3.5A Ct.  |            | 3A        | 3 3/4        | 3     | 4 1/2      | 3 3/4 | 3 7/8 | 6 3/4    |

### AMPLIFIER, TRANSMITTER AND REPLACEMENT — Half Shell or Flush Mounting

Lugs are brought out through solder terminals facilitating circuit changes for the experimenter.

|           |        |    |           |     |       |               |             |  |    |       |       |       |       |       |       |
|-----------|--------|----|-----------|-----|-------|---------------|-------------|--|----|-------|-------|-------|-------|-------|-------|
| T-60R49   | \$3.60 | 30 | 280-0-280 | 30  | 5V-2A | 2.5V-3.5A Ct. |             |  | 2H |       | 2 3/8 | 2 1/8 | 2 1/2 | 2     | 2     |
| T-50R03-  | 3.90   | 75 | 350-0-350 | 80  | 5V-2A | 2.5V-12A Ct.  |             |  | 2H | 3 1/8 | 2 1/2 | 3 5/8 | 3 5/8 | 3 1/8 | 5 1/2 |
| T-63R63-  | 3.90   | 75 | 350-0-350 | 80  | 5V-2A | 2.5V-9A Ct.   | 2.5V-3A Ct. |  | 2H | 3 1/8 | 2 1/2 | 3 5/8 | 3 5/8 | 3 1/8 | 5 1/2 |
| ★ T-70R20 | 3.90   | 45 | 300-0-300 | 50  | 5V-2A | 6.3V-2A Ct.   |             |  | 2H |       | 2 1/2 | 3 7/8 | 2 5/8 | 2     | 3     |
| T-70R21   | 5.40   | 70 | 350-0-350 | 70  | 5V-2A | 2.5V-4A Ct.   | 6.3V-3A Ct. |  | 2H |       | 2 7/8 | 4     | 3 3/8 | 2 5/8 | 4 1/4 |
| ★ T-75R47 | 5.70   | 85 | 340-0-340 | 125 | 5V-2A | 6.3V-2A Ct.   |             |  | 2H |       | 2 7/8 | 4     | 3 3/8 | 2 5/8 | 6     |

### VIBRATOR POWER TRANSFORMERS

For operation with a vibrator from a six volt battery source.

| Type No.  | List Price | Secondary            |      | Mtg. Fig. | Mtg. Centers |       | Dimensions |       |       | Wt. Lbs. |
|-----------|------------|----------------------|------|-----------|--------------|-------|------------|-------|-------|----------|
|           |            | D.C. Volts to Filter | M.A. |           | Width        | Depth | W.         | D.    | H.    |          |
| ★ T-14R33 | \$3.60     | 225                  | 40   | 3C        | 2 1/8        | 1 5/8 | 2 1/2      | 2 5/8 | 3 1/8 | 2        |
| ★ T-14R34 | 4.20       | 250                  | 50   | 3C        | 2 1/8        | 2 1/8 | 2 1/2      | 2 3/4 | 3 1/4 | 2 1/4    |
| ★ T-14R35 | 4.50       | 260                  | 60   | 3C        | 2            | 2 1/8 | 2 1/2      | 2 7/8 | 3 1/8 | 2 1/2    |
| T-14R36   | 5.70       | 285                  | 75   | 3C        | 2            | 2 1/8 | 2 1/2      | 3 1/8 | 3 1/8 | 3        |
| T-14R37   | 6.00       | 350                  | 75   | 3C        | 2            | 2 1/8 | 2 1/2      | 3 3/8 | 3 1/8 | 3 1/2    |
| T-14R38   | 6.90       | 320                  | 100  | 2G        | 2 5/8        | 2 5/8 | 3 5/8      | 3 1/8 | 4 5/8 | 5        |
| ★ T-14R39 | 3.30       | 150                  | 40   | 2B        | 2 3/8        |       | 2 7/8      | 2 1/8 | 2 3/8 | 1 1/4    |

### UNIVERSAL 115 VOLT A. C. OR 6 VOLT D. C. VIBRATOR POWER TRANSFORMER

|           |        |                                           |    |  |   |       |       |   |       |       |
|-----------|--------|-------------------------------------------|----|--|---|-------|-------|---|-------|-------|
| ★ T-14R40 | \$9.00 | 350 D. C. @ 1.35 Ma. Fil. 6.3 @ 4.75 Amp. | 2G |  | 3 | 3 1/4 | 3 3/4 | 4 | 4 7/8 | 8 1/2 |
|-----------|--------|-------------------------------------------|----|--|---|-------|-------|---|-------|-------|

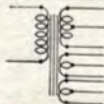


# Power (R) Transformers

THORDARSON



## POWER (R) TRANSFORMERS — Amplifier, Transmitter and Replacement

| Type No.                                                                                                     | List Price | Pri. V.A. | Secondary              |           | Bias Tap | Filament Windings      |               |                    |                    | Mtg. Centers |                 |                 | Dimensions      |                 |                 | Wt. Lbs.         |
|--------------------------------------------------------------------------------------------------------------|------------|-----------|------------------------|-----------|----------|------------------------|---------------|--------------------|--------------------|--------------|-----------------|-----------------|-----------------|-----------------|-----------------|------------------|
|                                                                                                              |            |           | A.C. Load Volts        | D.C. M.A. |          | Rect. Fil.             | Fil. No. 1    | Fil. No. 2         | Fil. No. 3         | Mtg. Fig.    | Width           | Depth           | W.              | D.              | H.              |                  |
|                             |            |           |                        |           |          |                        |               |                    |                    |              |                 |                 |                 |                 |                 |                  |
| <b>FULLY SHIELDED — UPRIGHT MOUNTING</b><br>Leads are brought out through an opening in the base.            |            |           |                        |           |          |                        |               |                    |                    |              |                 |                 |                 |                 |                 |                  |
| T-56R01                                                                                                      | \$6.99     | 60        | 325-0-325              | 70        |          | 5V—2A                  | 2.5V—3A Ct.   | 1.5V—1A<br>1.5V—4A | 5V—.5A Ct.         | 2G           | 2 $\frac{1}{8}$ | 2 $\frac{3}{8}$ | 3 $\frac{5}{8}$ | 3 $\frac{5}{8}$ | 4 $\frac{5}{8}$ | 5 $\frac{3}{4}$  |
| T-56R02                                                                                                      | 5.10       | 70        | 350-0-350              | 70        |          | 5V—2A                  | 2.5V—9A Ct.   | 2.5V—1.5A Ct.      |                    | 2G           | 2 $\frac{1}{8}$ | 2 $\frac{3}{8}$ | 3 $\frac{5}{8}$ | 3 $\frac{5}{8}$ | 4 $\frac{5}{8}$ | 6                |
| T-56R03                                                                                                      | 8.10       | 85        | 350-0-350              | 105       |          | 5V—3A                  | 2.5V—3A Ct.   | 2.5V—1.75A Ct.     | 1.5V—5A<br>1.5V—1A | 2G           | 3               | 2 $\frac{3}{8}$ | 3 $\frac{3}{4}$ | 3 $\frac{3}{8}$ | 4 $\frac{7}{8}$ | 7 $\frac{1}{4}$  |
| T-56R05                                                                                                      | 8.10       | 115       | 350-0-350              | 110       |          | 5V—3A                  | 2.5V—9A Ct.   | 2.5V—3A Ct.        | 2.5V—3A Ct.        | 2G           | 3               | 2 $\frac{3}{8}$ | 3 $\frac{3}{4}$ | 3 $\frac{3}{8}$ | 4 $\frac{7}{8}$ | 7 $\frac{3}{4}$  |
| T-37R70-C                                                                                                    | 9.00       | 95        | 350-0-350              | 80        |          | 5V—2A Ct.              | 3V—10A Ct.    | 5V—2.5A Ct.        |                    | 2G           | 2 $\frac{1}{8}$ | 3 $\frac{1}{8}$ | 3 $\frac{5}{8}$ | 3 $\frac{3}{8}$ | 4 $\frac{5}{8}$ | 6 $\frac{3}{4}$  |
| For Sparton Models 235, 589, 593, 600 Series, 737, 931 and other receivers using Kellogg and other 3V tubes. |            |           |                        |           |          |                        |               |                    |                    |              |                 |                 |                 |                 |                 |                  |
| T-70R78                                                                                                      | 5.10       | 60        | 340-0-340              | 55        |          | 5V—2A                  | 6.3V—1.5A Ct. |                    |                    | 2G           | 2 $\frac{1}{8}$ | 2 $\frac{1}{8}$ | 3 $\frac{5}{8}$ | 2 $\frac{3}{4}$ | 4 $\frac{3}{8}$ | 4                |
| T-17R34                                                                                                      | 6.30       | 90        | 300-0-300              | 125       |          | 5V—2A                  | 6.3V—4.8A Ct. |                    |                    | 2G           | 2 $\frac{1}{8}$ | 2 $\frac{3}{8}$ | 3 $\frac{5}{8}$ | 3 $\frac{5}{8}$ | 4 $\frac{5}{8}$ | 5 $\frac{3}{4}$  |
| T-17R35                                                                                                      | 4.20       | 60        | 290-0-290              | 50        |          | 5V—3A                  | 6.3V—2A Ct.   |                    |                    | 4G           | 2               | 1 $\frac{5}{8}$ | 2 $\frac{5}{8}$ | 3               | 3 $\frac{1}{8}$ | 3 $\frac{1}{2}$  |
| T-17R36                                                                                                      | 4.80       | 65        | 350-0-350              | 70        |          | 5V—3A                  | 6.3V—2.5A Ct. |                    |                    | 4G           | 2               | 2 $\frac{1}{2}$ | 2 $\frac{5}{8}$ | 3 $\frac{3}{8}$ | 3 $\frac{1}{8}$ | 3 $\frac{1}{2}$  |
| T-17R37                                                                                                      | 5.70       | 90        | 350-0-350              | 90        |          | 5V—3A                  | 6.3V—3.5A Ct. |                    |                    | 2G           | 2 $\frac{1}{8}$ | 2 $\frac{3}{8}$ | 3 $\frac{5}{8}$ | 3 $\frac{1}{2}$ | 4 $\frac{5}{8}$ | 5 $\frac{1}{2}$  |
| T-17R38                                                                                                      | 6.30       | 115       | 350-0-350              | 120       |          | 5V—4A                  | 6.3V—4.7A Ct. |                    |                    | 2G           | 2 $\frac{1}{8}$ | 2 $\frac{3}{8}$ | 3 $\frac{5}{8}$ | 3 $\frac{5}{8}$ | 4 $\frac{5}{8}$ | 5 $\frac{1}{2}$  |
| T-70R61                                                                                                      | 5.70       | 60        | 385-0-385              | 70        |          | 5V—2A                  | 6.3V—2.5A Ct. |                    |                    | 2G           | 2 $\frac{1}{8}$ | 2 $\frac{3}{8}$ | 3 $\frac{5}{8}$ | 3 $\frac{1}{8}$ | 4 $\frac{5}{8}$ | 4 $\frac{3}{4}$  |
| T-70R62                                                                                                      | 7.50       | 110       | 350-0-350              | 145       |          | 5V—3A                  | 6.3V—4.5A Ct. |                    |                    | 2G           | 3               | 3 $\frac{1}{8}$ | 3 $\frac{3}{4}$ | 3 $\frac{3}{8}$ | 4 $\frac{5}{8}$ | 8 $\frac{1}{2}$  |
| T-92R21                                                                                                      | 9.00       | 150       | 389-0-389              | 200       |          | 5V—3A                  | 6.3V—5A Ct.   |                    |                    | 2G           | 3               | 3 $\frac{1}{2}$ | 3 $\frac{3}{4}$ | 4 $\frac{1}{4}$ | 4 $\frac{7}{8}$ | 9                |
| T-17R30                                                                                                      | 10.20      | 200       | 370-0-370              | 280       |          | 5V—3A                  | 6.3V—7A Ct.   |                    |                    | 2G           | 3               | 3 $\frac{5}{8}$ | 3 $\frac{3}{4}$ | 4 $\frac{3}{8}$ | 4 $\frac{7}{8}$ | 9 $\frac{1}{2}$  |
| T-17R31                                                                                                      | 15.00      | 300       | 430-0-430              | 325       |          | 5V—6A                  | 6.3V—8A Ct.   |                    |                    | 2G           | 3               | 3 $\frac{1}{2}$ | 3 $\frac{3}{4}$ | 4 $\frac{1}{4}$ | 4 $\frac{7}{8}$ | 13 $\frac{1}{2}$ |
| T-74R28                                                                                                      | 8.10       | 105       | 440-0-440              | 125       | 38V      | 5V—3A<br>2.5V—3A       | 6.3V—3.3A Ct. |                    |                    | 2G           | 3               | 2 $\frac{3}{8}$ | 3 $\frac{3}{4}$ | 3 $\frac{3}{8}$ | 4 $\frac{7}{8}$ | 8                |
| T-87R85                                                                                                      | 9.00       | 145       | 330-0-330              | 160       | 77V      | 5V—3A<br>5V—2A         | 6.3V—2A Ct.   | 2.5V—5A Ct.        |                    | 2G           | 3               | 3 $\frac{1}{8}$ | 3 $\frac{3}{4}$ | 3 $\frac{3}{8}$ | 4 $\frac{7}{8}$ | 8 $\frac{1}{2}$  |
| T-68R26                                                                                                      | 8.70       | 160       | 550-0-550              | 150       |          | 5V—3A                  | 7.5V—2.5A Ct. | 2.5V—5A Ct.        |                    | 2G           | 3               | 3 $\frac{1}{2}$ | 3 $\frac{3}{4}$ | 4 $\frac{1}{4}$ | 4 $\frac{5}{8}$ | 10 $\frac{1}{8}$ |
| T-69R35                                                                                                      | 8.10       | 135       | 390-0-390              | 200       |          | 5V—3A                  | 6.3V—3A Ct.   |                    |                    | 2G           | 3               | 3 $\frac{1}{2}$ | 3 $\frac{3}{4}$ | 4 $\frac{1}{4}$ | 4 $\frac{5}{8}$ | 9 $\frac{1}{2}$  |
| T-75R50                                                                                                      | 9.30       | 160       | 435-0-435              | 250       | 80V      | 5V—3A<br>2.5V—3A       | 6.3V—1.5A Ct. | 2.5V—10A Ct.       |                    | 2G           | 3               | 3 $\frac{1}{2}$ | 3 $\frac{3}{4}$ | 4 $\frac{1}{4}$ | 4 $\frac{5}{8}$ | 10 $\frac{1}{2}$ |
| T-83R82                                                                                                      | 12.00      | 200       | 740-0-740              | 140       | 150V     | 5V—3A<br>2.5V—3A       | 7.5V—2.5A Ct. |                    |                    | 2G           | 3               | 4               | 3 $\frac{3}{4}$ | 4 $\frac{3}{4}$ | 4 $\frac{5}{8}$ | 11 $\frac{1}{2}$ |
| T-83R85                                                                                                      | 15.00      | 290       | 740-0-740<br>325-0-325 | 200       | 150V     | 5V—3A<br>2.5V—3A       | 7.5V—5A Ct.   |                    |                    | 2G           | 3               | 4 $\frac{1}{2}$ | 3 $\frac{3}{4}$ | 5 $\frac{1}{4}$ | 4 $\frac{7}{8}$ | 13 $\frac{1}{2}$ |
| T-89R28                                                                                                      | 13.80      | 250       | 550-0-550              | 275<br>75 |          | 5V—3A Ct.<br>5V—2A Ct. | 6.3V—6A Ct.   |                    |                    | 2G           | 3               | 4 $\frac{1}{2}$ | 3 $\frac{3}{4}$ | 5 $\frac{1}{4}$ | 4 $\frac{7}{8}$ | 15               |
| T-19R30                                                                                                      | 9.60       | 170       | 560-0-560              | 150       |          | 5V—3A                  | 6.3V—3A Ct.   | 7.5V—2.5A Ct.      |                    | 2G           | 3               | 3 $\frac{1}{4}$ | 3 $\frac{3}{4}$ | 4               | 4 $\frac{7}{8}$ | 8 $\frac{3}{4}$  |

### C. H. T. POWER TRANSFORMERS

For amplifiers, transmitters, or deluxe receivers. Designed to operate continuously at full rated load. Cases compound filled for complete coil protection.

|         |         |     |           |     |     |                |               |                              |  |    |                  |                  |                                                  |                  |
|---------|---------|-----|-----------|-----|-----|----------------|---------------|------------------------------|--|----|------------------|------------------|--------------------------------------------------|------------------|
| T-15R00 | \$15.00 | 140 | 500-0-500 | 150 |     | 5V-3A          | 7.5V/6.3-5A   |                              |  | 3U | 4 $\frac{9}{16}$ | 3 $\frac{3}{4}$  | 5 $\frac{3}{8}$ 4 $\frac{9}{16}$ 5 $\frac{3}{4}$ | 15               |
| T-15R01 | 21.00   | 310 | 500-0-500 | 400 |     | 5V-6A          | 6.3V-6A       |                              |  | 3U | 5 $\frac{5}{8}$  | 4 $\frac{9}{16}$ | 6 $\frac{3}{8}$ 5 $\frac{3}{8}$ 6 $\frac{3}{4}$  | 24 $\frac{1}{2}$ |
| T-15R02 | 15.90   | 220 | 750-0-750 | 200 |     | 2.5V-10A       | 7.5V/6.3-3A   |                              |  | 3U | 4 $\frac{9}{16}$ | 4 $\frac{1}{8}$  | 5 $\frac{3}{8}$ 4 $\frac{9}{16}$ 6 $\frac{3}{8}$ | 17               |
| T-15R03 | 16.50   | 205 | 400-0-400 | 200 |     | 5V-3A          | 6.3V-3A       | 2.5V-4A                      |  | 3U | 4 $\frac{9}{16}$ | 4 $\frac{1}{8}$  | 5 $\frac{3}{8}$ 4 $\frac{9}{16}$ 6 $\frac{3}{8}$ | 19               |
| T-15R04 | 9.00    | 30  | 255-0-255 | 25  |     |                | 6.3V-2.1A Ct. |                              |  | 3U | 2 $\frac{3}{8}$  | 2 $\frac{1}{2}$  | 3 3 3 $\frac{5}{8}$                              | 3                |
| T-15R05 | 15.90   | 150 | 340-0-340 | 135 | 77V | 5V-3A<br>5V-2A | 6.3V-4A Ct.   | *6.3V-2A Ct.<br>*2.5V-5A Ct. |  | 3U | 3 $\frac{5}{8}$  | 3 $\frac{7}{8}$  | 4 $\frac{5}{8}$ 4 $\frac{1}{8}$ 5 $\frac{7}{8}$  | 10               |
| T-15R06 | 14.70   | 155 | 360-0-360 | 175 |     | 5V-3A          | 6.3V-5A Ct.   |                              |  | 3U | 3 $\frac{5}{8}$  | 3 $\frac{7}{8}$  | 4 $\frac{5}{8}$ 4 $\frac{1}{8}$ 5 $\frac{7}{8}$  | 11               |
| T-15R07 | 15.90   | 238 | 380-0-380 | 280 |     | 5V-3A          | 6.3V-7A Ct.   |                              |  | 3U | 3 $\frac{5}{8}$  | 4 $\frac{1}{4}$  | 4 $\frac{5}{8}$ 4 $\frac{7}{8}$ 5 $\frac{3}{8}$  | 12               |
| T-15R08 | 19.20   | 253 | 450-0-450 | 325 |     | 5V-6A          | 6.3V-8A Ct.   |                              |  | 3U | 4 $\frac{9}{16}$ | 4 $\frac{1}{8}$  | 5 $\frac{3}{8}$ 4 $\frac{9}{16}$ 6 $\frac{3}{8}$ | 22               |

### SPEAKER FIELD SUPPLY TRANSFORMERS

|           |        |     |                        |  |       |  |  |  |  |    |                 |                 |                                                 |                 |
|-----------|--------|-----|------------------------|--|-------|--|--|--|--|----|-----------------|-----------------|-------------------------------------------------|-----------------|
| ★ T-67R97 | \$5.10 | 55  | 115 V.D.C. @ 50 to 250 |  | 5V-3A |  |  |  |  | 4G | 3 $\frac{1}{4}$ | 1 $\frac{1}{8}$ | 3 $\frac{5}{8}$ 3 $\frac{3}{8}$ 3 $\frac{5}{8}$ | 4 $\frac{3}{4}$ |
| T-92R53   | 6.90   | 120 | 300 V.D.C. @ 200       |  | 5V-3A |  |  |  |  | 4G | 3 $\frac{1}{4}$ | 2 $\frac{3}{8}$ | 3 $\frac{5}{8}$ 3 $\frac{3}{8}$ 3 $\frac{5}{8}$ | 6 $\frac{1}{4}$ |

\*Not simultaneous—for 2A3's or 6A3's Fil.

TRANSFORMER SPECIALISTS SINCE 1895

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This accurate and convenient table has been compiled to facilitate choosing the correct output transformer. Two types are offered for most tubes: the

universal type, which is designed to accommodate a wide range of tube and voice coil impedances, and the specific duty type.

| TUBE                                | PLATE VOLTS | BIAS VOLTS | PLATE M. A. | PLATE LOAD OHMS | WATTS OUTPUT | UNIVERSAL TYPE TRANSFORMER | SPECIFIC DUTY TRANSFORMER                         |
|-------------------------------------|-------------|------------|-------------|-----------------|--------------|----------------------------|---------------------------------------------------|
| 1A5G.....                           | 90          | -4.5       | 4.0         | 25,000          | .115         |                            | T-14S83                                           |
| 1C5G.....                           | 90          | -7.5       | 7.5         | 8,000           | .240         | T-13S38†                   | T-14S84                                           |
| 1D8GT.....                          | 90          | -9.0       | 5.0         | 12,000          | .200         | T-13S38†                   |                                                   |
| 1E7G (1 section).....               | 135         | -4.5       | 7.5         | 16,000          | .290         | T-13S38†                   | T-13S43                                           |
| (2 sections, P-P) ....              | 135         | -7.5       | *3.5        | 24,000          | .575         |                            | T-14S83                                           |
| 1F4, 1F5G.....                      | 135         | -4.5       | 8.0         | 16,000          | .310         | T-13S38†                   | T-13S43                                           |
| 1G5G.....                           | 90          | -6.0       | 8.5         | 8,500           | .250         | T-13S38†                   | T-14S84                                           |
| 1G6G.....                           | 90          | 0          | *1.0        | 12,000          | .675         | T-13S38†                   |                                                   |
| 1J5G.....                           | 135         | -16.5      | 7.0         | 13,500          | .450         | T-13S38†                   |                                                   |
| 1J6G.....                           | 135         | 0          | *5.0        | 10,000          | 2.1          | T-13S38†                   | T-81S01                                           |
| 1N6G.....                           | 90          | -4.5       | 3.1         | 25,000          | .100         |                            | T-14S83                                           |
| 1Q5G, 1Q5GT.....                    | 90          | -4.5       | 9.5         | 8,000           | .270         | T-13S38†                   | T-14S84                                           |
| 1S4.....                            | 45          | -4.5       | 3.8         | 8,000           | .065         | T-13S38†                   | T-14S84                                           |
| 1T5GT.....                          | 90          | -6.0       | 6.5         | 14,000          | .170         | T-13S38†                   | T-13S43                                           |
| 2A3 (Single Cl. A).....             | 250         | -45.0      | 60.0        | 2,500           | 3.5          | T-13S42                    | T-17S10                                           |
| (P-P AB fixed bias) ..              | 300         | -62.0      | *40.0       | 3,000           | 15.0         | T-13S41                    | T-58S72                                           |
| (P-P AB self bias) ...              | 300         | -62.0      | *40.0       | 5,000           | 10.0         | T-13S41                    | (C.H.T., T-15S91)<br>T-67S54<br>(C.H.T., T-15S90) |
| 2A5 (Single Cl. A).....             | 250         | -16.5      | 34.0        | 7,000           | 3.1          | T-13S42                    | T-13S37                                           |
| (Single Cl. A).....                 | 285         | -20.0      | 38.0        | 7,000           | 4.5          | T-13S42                    | T-13S37                                           |
| (P-P Cl. A).....                    | 250         | -16.5      | *34.0       | 14,000          | 6.2          | T-57S01§                   | T-67S51                                           |
| (P-P Cl. AB <sub>1</sub> ).....     | 315         | -24.0      | *31.0       | 10,000          | 11.0         | T-13S41                    | T-75S75                                           |
| (P-P Cl. AB <sub>2</sub> ).....     | 375         | -21.0      | *27.0       | 10,000          | 19.0         | T-13S41                    | T-75S75                                           |
| 3Q5GT (Fil. par.).....              | 90          | -4.5       | 9.5         | 8,000           | .270         | T-13S38†                   | T-14S84                                           |
| (Fil. series).....                  | 90          | -4.5       | 7.5         | 8,000           | .230         | T-13S38†                   | T-14S84                                           |
| 4A6G.....                           | 90          | -1.5       | *1.1        | 8,000           | 1.0          | T-13S38†                   | T-14S81                                           |
| 6A3.....                            | 250         | -45.0      | 60.0        | 2,500           | 3.2          | T-13S42                    | T-17S10                                           |
| 6A4.....                            | 180         | -12.0      | 22.0        | 8,000           | 1.4          | T-13S38†                   | T-13S37                                           |
| 6A5G.....                           | 250         | -45.0      | 60.0        | 2,500           | 3.2          | T-13S42                    | T-17S10                                           |
| 6A6.....                            | 300         | 0          | *17.5       | 8,000           | 10.0         | T-13S41                    | T-67S48                                           |
| 6AC5G.....                          | 250         | self       | 32.0        | 7,000           | 3.7          | T-13S42                    | T-13S37                                           |
| (P-P Cl. B).....                    | 250         | 0          | *2.5        | 10,000          | 8.0          | T-13S41                    | T-75S75                                           |
| 6AL6G.....                          | 250         | -14.0      | 72.0        | 2,500           | 6.5          | T-13S42                    | T-17S10                                           |
| 6B4G (Single Cl. A).....            | 250         | -45.0      | 60.0        | 2,500           | 3.2          | T-13S42                    | T-17S10                                           |
| (P-P AB fixed bias) ..              | 325         | -68.0      | *40.0       | 3,000           | 15.0         | T-13S41                    | T-58S72                                           |
| (P-P AB self bias) ...              | 325         | -68.0      | *40.0       | 5,000           | 10.0         | T-13S41                    | (C.H.T., T-15S91)<br>T-67S54<br>(C.H.T., T-15S90) |
| 6B5.....                            | 300         | 0          | 42.0        | 7,000           | 4.0          | T-13S42                    | T-13S37                                           |
| 6E6.....                            | 250         | -27.5      | *18.0       | 14,000          | 1.6          | T-57S01§                   | T-13S40                                           |
| 6F6.....                            | 250         | -16.5      | 34.0        | 7,000           | 3.1          | T-13S42                    | T-13S37                                           |
| 6G6G.....                           | 180         | -9.0       | 15.0        | 10,000          | 1.1          | T-13S38†                   |                                                   |
| 6G6G.....                           | 135         | -6.0       | 11.5        | 12,000          | .6           | T-13S38†                   |                                                   |
| 6K6G.....                           | 315         | -21.0      | 25.5        | 9,000           | 4.5          | T-57S01§                   |                                                   |
| 6K6G.....                           | 250         | -18.0      | 32.0        | 7,600           | 3.4          | T-13S42                    | T-13S37                                           |
| 6L6 (Single Cl. A).....             | 250         | -14.0      | 72.0        | 2,500           | 6.5          | T-13S42                    | T-17S10                                           |
| (Single Cl. A).....                 | 320         | -20.0      | 76.0        | 2,500           | 8.0          |                            | T-17S10                                           |
| (P-P Cl. A <sub>1</sub> ).....      | 270         | -16.5      | *67.5       | 5,000           | 18.5         |                            | T-67S54                                           |
| (P-P Cl. AB <sub>1</sub> ).....     | 319         | -23.0      | *50.0       | 4,300           | 25.0         |                            | (C.H.T., T-15S90)<br>T-17S12                      |
| (P-P Cl. AB <sub>1</sub> ).....     | 400         | -25.0      | *51.0       | 6,600           | 34.0         |                            | (C.H.T., T-15S91)<br>T-17S13                      |
| (P-P Cl. AB <sub>2</sub> ).....     | 430         | -20.0      | *47.0       | 5,500           | 40.0         |                            | (C.H.T., T-15S92)<br>T-17S14                      |
| (P-P-Par. Cl. AB <sub>1</sub> ).... | 410         | -28.0      | *50.0       | 3,300           | 60.0         |                            | (C.H.T., T-15S92)<br>T-17S15                      |
| (P-P-Par. Cl. AB <sub>2</sub> ).... | 430         | -24.5      | *52.0       | 1,900           | 120.0        |                            | (C.H.T., T-15S93)<br>T-17S16<br>(C.H.T., T-15S94) |

\* Zero signal per plate. † T-14S85 may be used when a transformer with lugs is preferred to one with leads.

§ T-57S02 may be used when a transformer with leads is preferred to one with lugs.

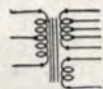


# Choosing Output Transformers

THORDARSON

| TUBE                                | PLATE VOLTS | BIAS VOLTS | PLATE M. A. | PLATE LOAD OHMS | WATTS OUTPUT | UNIVERSAL TYPE TRANS-FORMER | SPECIFIC DUTY TRANS-FORMER |
|-------------------------------------|-------------|------------|-------------|-----------------|--------------|-----------------------------|----------------------------|
| 6N6G.....                           | 300         | 0          | 42.0        | 7,000           | 4.0          | T-13S42                     | T-13S37                    |
| 6N7.....                            | 300         | 0          | *17.5       | 8,000           | 10.0         | T-13S41                     | T-67S48                    |
| 6V6 (Single Cl. A).....             | 250         | -12.5      | 44.5        | 5,000           | 4.5          | T-13S42                     |                            |
| (Single Cl. A <sub>1</sub> ).....   | 315         | -13.0      | 34.0        | 8,500           | 5.5          | T-57S01§                    |                            |
| (P-P Cl. AB <sub>1</sub> ).....     | 250         | -15.0      | *35.0       | 10,000          | 10.0         | T-13S41                     | T-75S75                    |
| (P-P Cl. AB <sub>1</sub> ).....     | 306         | -20.0      | *50.0       | 8,000           | 15.0         | T-13S41                     | T-17S11                    |
| (C.H.T., T-15S90)                   |             |            |             |                 |              |                             |                            |
| 6Y6G.....                           | 135         | -13.5      | 58.0        | 2,000           | 3.6          | T-13S42                     | T-17S10                    |
| 6Y6G.....                           | 200         | -14.0      | 61.0        | 2,600           | 6.0          | T-13S42                     | T-17S10                    |
| 6Y7G.....                           | 180         | 0          | *3.8        | 7,000           | 5.5          | T-13S42                     | T-67S48                    |
| 6Y7G.....                           | 250         | 0          | *5.3        | 14,000          | 8.0          | T-57S01§                    | T-13S40                    |
| 6Z7G.....                           | 135         | 0          | *3.0        | 9,000           | 2.5          | T-13S38†                    | T-81S01                    |
| 6Z7G.....                           | 180         | 0          | *4.2        | 12,000          | 4.2          | T-13S38†                    | T-13S40                    |
| 7A5.....                            | 110         | -7.5       | 35.0        | 2,500           | 1.4          | T-13S42                     | T-17S10                    |
| 7B5.....                            | 100         | -7.0       | 9.0         | 12,000          | .35          | T-13S38†                    |                            |
| 7B5.....                            | 250         | -18.0      | 32.0        | 7,600           | 3.4          | T-13S42                     | T-13S37                    |
| 7C5.....                            | 250         | -12.5      | 45.0        | 5,000           | 4.5          | T-13S42                     | T-89S74                    |
| (P-P Cl. AB <sub>1</sub> ).....     | 250         | -15.0      | *35.0       | 10,000          | 10.0         | T-13S41                     | T-75S75                    |
| 10.....                             | 425         | -50.0      | 18.0        | 10,000          | 1.6          | T-57S01§                    |                            |
| 12A5.....                           | 100         | -15.0      | 17.0        | 4,500           | .8           | T-13S42                     | T-13S39                    |
| 12A5.....                           | 180         | -25.0      | 45.0        | 3,300           | 3.4          | T-13S42                     | T-13S39                    |
| 12A7.....                           | 135         | -13.5      | 9.0         | 13,500          | .55          | T-13S38†                    | T-13S43                    |
| 18.....                             | 250         | -16.5      | 34.0        | 7,000           | 3.0          | T-13S42                     | T-13S37                    |
| 19.....                             | 135         | 0          | *5.0        | 10,000          | 2.1          | T-13S38†                    | T-81S01                    |
| 25A6.....                           | 95          | -15.0      | 20.0        | 4,500           | .9           | T-13S42                     | T-13S39                    |
| 25A7G.....                          | 100         | -15.0      | 20.5        | 4,500           | .770         | T-13S42                     | T-13S39                    |
| 25AC5GT.....                        | 180         | 0          | 27.0        | 8,000           | 2.0          | T-13S38†                    | T-13S37                    |
| (P-P Cl. B).....                    | 180         | 0          | *2.0        | 4,800           | 6.0          | T-13S41                     | T-67S54                    |
| 25B6G.....                          | 105         | -16.0      | 48.0        | 1,700           | 2.4          | T-13S42                     | T-14S82                    |
| 25L6.....                           | 110         | -7.5       | 49.0        | 1,500           | 2.1          | T-13S42                     | T-14S82                    |
| 31.....                             | 135         | -22.5      | 8.0         | 7,000           | .185         | T-13S42                     | T-13S37                    |
| 32L7GT.....                         | 110         | -7.5       | 40.0        | 2,500           | 1.5          | T-13S42                     | T-17S10                    |
| 33.....                             | 135         | -13.5      | 14.5        | 7,000           | .7           | T-13S42                     | T-13S37                    |
| 35A5-LT.....                        | 110         | -7.5       | 40.0        | 2,500           | 1.5          | T-13S42                     | T-17S10                    |
| 35L6GT.....                         | 110         | -7.5       | 40.0        | 2,500           | 1.5          | T-13S42                     | T-17S10                    |
| 38.....                             | 135         | -13.5      | 9.0         | 13,500          | .55          | T-13S38†                    |                            |
| 38.....                             | 250         | -25.0      | 22.0        | 10,000          | 2.5          | T-13S38†                    |                            |
| 41.....                             | 250         | -18.0      | 32.0        | 7,600           | 3.4          | T-13S42                     | T-13S37                    |
| 42.....                             | 250         | -16.5      | 34.0        | 7,000           | 3.1          | T-13S42                     | T-13S37                    |
| 43.....                             | 95          | -15.0      | 20.0        | 4,500           | .9           | T-13S42                     | T-13S39                    |
| 45 (Single Cl. A).....              | 250         | -50.0      | 34.0        | 3,900           | 1.6          | T-13S42                     | T-89S74                    |
| (P-P Cl. AB <sub>1</sub> ).....     | 275         | -56.0      | *36.0       | 5,060           | 12.0         | T-13S41                     | T-67S54                    |
| 46 (Single Cl. A Triode).....       | 250         | -33.0      | 22.0        | 6,400           | 1.25         | T-13S42                     | T-13S37                    |
| (P-P Cl. B).....                    | 400         | 0          | *6.0        | 5,800           | 20.0         | T-13S41                     | T-67S52                    |
| 47.....                             | 250         | -16.5      | 31.0        | 7,000           | 2.7          | T-13S42                     | T-13S37                    |
| (P-P Cl. A).....                    | 250         | -16.5      | *31.0       | 14,000          | 5.4          | T-57S01§                    | T-67S51                    |
| 48.....                             | 96          | -19.0      | 52.0        | 1,500           | 2.0          | T-13S42                     | T-14S82                    |
| (P-P Cl. A <sub>1</sub> Pent.)..... | 125         | -20.0      | *50.0       | 3,000           | 5.0          | T-13S41                     | T-58S72                    |
| 49 (P-P Cl. B).....                 | 135         | 0          | *1.3        | 8,000           | 2.3          | T-13S38†                    | T-14S81                    |
| 50 (P-P Cl. A).....                 | 450         | -84.0      | *55.0       | 8,000           | 9.2          | T-13S41                     | T-65S94                    |
| 50C6G.....                          | 135         | -13.5      | 58.0        | 2,000           | 3.6          | T-13S42                     | T-17S10                    |
| 50L6GT.....                         | 110         | -7.5       | 49.0        | 1,500           | 2.1          | T-13S42                     | T-14S82                    |
| 52.....                             | 110         | 0          | 43.0        | 2,000           | 1.5          | T-13S42                     | T-17S10                    |
| (P-P Cl. B).....                    | 180         | 0          | *1.5        | 10,000          | 5.0          | T-57S01§                    | T-81S01                    |
| 53.....                             | 300         | 0          | *17.5       | 8,000           | 10.0         | T-13S41                     | T-67S48                    |
| 59 (Single Cl. A Triode).....       | 250         | -28.0      | 26.0        | 5,000           | 1.25         | T-13S42                     | T-13S39                    |
| (Single Cl. A Pent.).....           | 250         | -18.0      | 35.0        | 6,000           | 3.0          | T-13S42                     | T-13S37                    |
| (P-P Cl. B).....                    | 400         | 0          | *13.0       | 6,000           | 20.0         | T-13S41                     | T-67S52                    |
| 70L7-GT.....                        | 110         | -7.5       | 40.0        | 2,000           | 1.8          | T-13S42                     | T-17S10                    |
| 71-A.....                           | 180         | -40.5      | 20.0        | 4,800           | .79          | T-13S42                     | T-13S39                    |
| (P-P Cl. A).....                    | 180         | -40.5      | *20.0       | 8,000           | 1.6          | T-13S38†                    | T-33S99                    |
| 79.....                             | 180         | 0          | *3.8        | 7,000           | 5.5          | T-13S42                     | T-67S48                    |
| 89.....                             | 250         | -25.0      | 32.0        | 6,750           | 3.4          | T-13S42                     | T-13S37                    |
| 182B/482B.....                      | 250         | -35.0      | 20.0        | 4,500           | 1.35         | T-13S42                     | T-13S39                    |
| 183/483.....                        | 250         | -65.0      | 20.0        | 4,500           | 1.8          | T-13S42                     | T-13S39                    |
| 950.....                            | 135         | -16.5      | 7.0         | 13,500          | .450         | T-13S38†                    |                            |

See footnote page 22.



## OUTPUT (S) TRANSFORMERS

For coupling audio power amplifier tubes to a loud speaker voice coil or line. Correctly matching the output tubes to a speaker load is important. Efficiency, frequency response and distortion are affected by this matching. Small, unshielded types are listed for use with receivers where the transformer is usually mounted on the loud speaker frame. Larger shielded types have multiple secondary impedances as required in sound amplifiers. C.H.T. output transformers have a greater selection of output impedances, meeting practically all speaker requirements. These units are compound filled and are provided with jacks and plugs to facilitate speaker matching. Tertiary winding included on some types for inverse feed-back connections. Refer to pages 22-23 for complete listing of tubes with recommended output transformers.

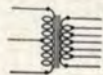
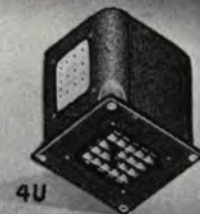
| Type No.                                                       | List Price | Tube Type                                                            | Class                                    | Ohms Impedance |                            | Pri.M.A. Max. Mtg. |       |      | Mtg. Centers |       | Dimensions |       |       | Wt. Lbs. |
|----------------------------------------------------------------|------------|----------------------------------------------------------------------|------------------------------------------|----------------|----------------------------|--------------------|-------|------|--------------|-------|------------|-------|-------|----------|
|                                                                |            |                                                                      |                                          | Pri.           | Sec.                       | Per Side           | Watts | Fig. | Width        | Depth | W.         | D.    | H.    |          |
| REPLACEMENT OUTPUT TRANSFORMERS                                |            |                                                                      |                                          |                |                            |                    |       |      |              |       |            |       |       |          |
| T-14S81                                                        | \$1.50     | 1-42, 2A5, 6F6 or P-P45, 71                                          | A                                        | 7,000 Ct.      | 3 to 6                     | 40                 | 5     | 3B   | 2            | 2 3/8 | 1 5/8      | 1 3/8 | 1 1/2 |          |
| T-14S82                                                        | 1.50       | 1-25L6                                                               | A                                        | 1,500          | 3 to 6                     | 55                 | 5     | 3B   | 2            | 2 3/8 | 1 5/8      | 1 3/8 | 1 1/2 |          |
| ★ T-14S83                                                      | 1.50       | 1A5-G, 1E7-G                                                         | A                                        | 25,000 Ct.     | 3 to 6                     | 8                  | 5     | 3B   | 2            | 2 3/8 | 1 5/8      | 1 3/8 | 1 1/2 |          |
| ★ T-14S84                                                      | 1.50       | 1-1C5G, 1Q5G                                                         | A                                        | 8,000          | 3 to 6                     | 10                 | 5     | 3B   | 2            | 2 3/8 | 1 5/8      | 1 3/8 | 1 1/2 |          |
| ★ T-13S37                                                      | 1.50       | 1-6F6, 42, 2A5, 47                                                   | A                                        | 7,000          | 1/2/4                      | 36                 | 5     | 3E   | 2            | 2 3/8 | 2          | 1 3/8 | 1 1/2 |          |
| T-13S39                                                        | 1.50       | 1-45, 12A5, 43, 71A                                                  | A                                        | 4,000          | 1/2/4                      | 36                 | 5     | 3E   | 2            | 2 3/8 | 2          | 1 3/8 | 1 1/2 |          |
| T-13S43                                                        | 1.60       | 1-1F4, 1D4, 1F5G                                                     | A                                        | 16,000         | 1/2/4                      | 10                 | 5     | 3E   | 2            | 2 3/8 | 1 5/8      | 1 3/8 | 1 1/2 |          |
| T-33S99                                                        | 1.80       | 2-45, 71, 43, 25A6 P-P                                               | A                                        | 8,000 Ct.      | 6 to 12                    | 36                 | 10    | 2B   | 2 3/8        | 2 7/8 | 2 1/8      | 2 3/8 | 1 1/4 |          |
| T-13S40                                                        | 1.80       | 2-6F6, 42 P-P, 2-2A5, 47 P-P                                         | A                                        | 14,000 Ct.     | 1/2/4                      | 40                 | 10    | 3E   | 2 3/8        | 2 7/8 | 2          | 1 5/8 | 3/4   |          |
| ★ T-81S01                                                      | 1.80       | 1-19, 1J6G, 1G6G P-P<br>2-30, 49 P-P                                 | B<br>B                                   | 10,000 Ct.     | 2/4/8                      | 15                 | 8     | 2B   | 2 1/8        | 2 5/8 | 1 5/8      | 2     | 3/4   |          |
| HEAVY DUTY OUTPUT TRANSFORMERS TO LINE OR SPEAKER (High Level) |            |                                                                      |                                          |                |                            |                    |       |      |              |       |            |       |       |          |
| T-72S58                                                        | \$2.00     | Pentode Plate to phones or oscillator.                               | A                                        | 10,000         | 2,000<br>50                | 30                 | 5     | 2B   | 2 1/8        | 2 5/8 | 1 5/8      | 2     | 3/4   |          |
| ★ T-17S10                                                      | 3.60       | 1-6L6                                                                | A                                        | 2,500          | 2/4/8/500                  | 80                 | 8     | 2F   | 2 5/8        | 3 3/8 | 2 1/2      | 3     | 2 1/4 |          |
| ★ T-17S11                                                      | 5.40       | 2-6V6 P-P                                                            | AB1                                      | 8,000*         | 4/8/15/250/500             | 52                 | 15    | 2F   | 3 1 1/2      | 3 5/8 | 3 1/8      | 3 1/2 | 3 1/2 |          |
| ★ T-17S12                                                      | 5.40       | 2-6L6 P-P                                                            | AB1<br>(with 300 V. on plate and screen) | 4,300*         | 4/8/15/250/500             | 95                 | 25    | 2F   | 3 1 1/2      | 3 5/8 | 3 1/8      | 3 1/2 | 3 1/2 |          |
| ★ T-17S13                                                      | 7.20       | 2-6L6 P-P                                                            | AB1                                      | 6,600*         | 4/8/15/250/500             | 80                 | 34    | 2G   | 2 1/8        | 2 5/8 | 3 5/8      | 3 3/8 | 4 5/8 | 5 1/2    |
| T-17S14                                                        | 7.20       | 2-6L6 P-P                                                            | AB2                                      | 5,500*         | 4/8/15/250/500             | 90                 | 40    | 2G   | 2 1/8        | 2 5/8 | 3 5/8      | 3 3/8 | 4 5/8 | 5 1/4    |
| T-17S15                                                        | 7.80       | 4-6L6 P-P Par.                                                       | AB1                                      | 3,300*         | 4/8/15/250/500             | 155                | 60    | 2G   | 2 1/8        | 2 5/8 | 3 5/8      | 3 3/8 | 4 5/8 | 5 3/4    |
| T-17S16                                                        | 18.00      | 4-6L6 P-P Par.                                                       | AB2                                      | 1,900*         | 84/100/125/<br>166/250/500 | 230                | 120   | 2G   | 3            | 4 1/4 | 3 3/4      | 5     | 4 7/8 | 14 1/4   |
| T-68S06                                                        | 3.00       | 1-6F6, 42, 2A5, 1-47                                                 | A                                        | 7,000          | 10 or 2,000                | 36                 | 5     | 2F   | 2 3/8        | 2 7/8 | 1 7/8      | 2 3/8 | 1     |          |
| ★ T-67S51                                                      | 4.20       | 2-6F6, 42, 2A5, 47 P-P                                               | A                                        | 14,000         | 4/8/15/500                 | 40                 | 20    | 2F   | 2 5/8        | 3 3/8 | 2 1/2      | 3     | 2 1/4 |          |
| T-67S48                                                        | 4.20       | 2-45, 71, 43, 25A6 P-P<br>1-6N7, 6A6, 53 P-P                         | A<br>B                                   | 8,000          | 4/8/15/500                 | 36                 | 25    | 2F   | 2 5/8        | 3 3/8 | 2 1/2      | 3     | 2 1/4 |          |
| T-67S52                                                        | 4.80       | 2-46, 59 P-P<br>2-6F6, 42, 2A5 P-P<br>2-6N7, 6A6, 53 P-P Par.        | B<br>AB2<br>B                            | 5,800          | 4/8/15/500                 | 60                 | 30    | 2F   | 3 1 1/2      | 3 5/8 | 3 1/8      | 3 1/2 | 3 1/2 |          |
| T-58S72                                                        | 4.50       | 2-2A3, 6B4G P-P<br>2-48, 25L6 P-P                                    | AB<br>A                                  | 3,000          | 4/8/15/500                 | 60                 | 30    | 2F   | 3 1 1/2      | 3 5/8 | 3 1/8      | 3 1/2 | 3 1/4 |          |
| ★ T-67S54                                                      | 4.80       | 2-6L6 P-P<br>2-2A3, 6B4G, 45 P-P                                     | A<br>AB                                  | 5,000          | 4/8/15/500                 | 60                 | 30    | 2F   | 3 1 1/2      | 3 5/8 | 3 1/8      | 3 1/2 | 3 1/2 |          |
| T-67S92                                                        | 4.80       | 4-2A3, 6B4G, 45 P-P Par.<br>4-48, 25L6, P-P Par.                     | AB<br>A                                  | 1,500          | 4/8/15/500                 | 80                 | 40    | 2F   | 3 1 1/2      | 3 5/8 | 3 1/8      | 3 1/2 | 3 1/2 |          |
| T-65S94                                                        | 4.80       | 2-50 P-P<br>2-6F6, 42, 2A5 P-P                                       | A<br>AB2                                 | 8,000          | 4/8/15/500                 | 55                 | 40    | 2F   | 3 1 1/2      | 3 5/8 | 3 1/8      | 3 1/2 | 3 1/2 |          |
| ★ T-75S75                                                      | 4.80       | 2-6F6, 42 or 2A5<br>1-6N7, 6A6, 53 P-P<br>2-6N6G, 6B5, 2B6, 6AC5 P-P | AB2<br>B<br>A                            | 10,000         | 4/8/15/500                 | 45                 | 40    | 2F   | 3 1 1/2      | 3 5/8 | 3 1/8      | 3 1/2 | 3 1/2 |          |
| T-84S58                                                        | 7.20       | 2-6L6 P-P                                                            | AB2                                      | 3,800          | 4/8/15/500                 | 115                | 60    | 2G   | 2 1/8        | 2 5/8 | 3 5/8      | 3 3/8 | 4 5/8 | 6        |
| T-89S75                                                        | 4.80       | 2-6L6 P-P                                                            | AB1                                      | 6,600          | 4/8/15/500                 | 80                 | 40    | 2F   | 3 1 1/2      | 3 5/8 | 3 1/8      | 3 1/2 | 3 1/2 |          |
| T-89S74                                                        | 4.50       | 1-6L6                                                                | A                                        | 4,000          | 4/8/15/500                 | 70                 | 15    | 2F   | 2 5/8        | 3 3/8 | 2 1/2      | 3     | 2 1/4 |          |
| T-89S68                                                        | 7.80       | 4-6L6 P-P Par.                                                       | AB1                                      | 3,300          | 50/125/200/<br>250/333/500 | 150                | 75    | 2G   | 2 1/8        | 2 5/8 | 3 5/8      | 3 3/8 | 4 5/8 | 5 3/4    |
| T-83S87-                                                       | 10.80      | 4-50 P-P Par.                                                        | AB2                                      | 3,000          | 4/8/15/500                 | 160                | 90    | 2G   | 3            | 2 5/8 | 3 3/4      | 3 1/8 | 4 7/8 | 7 3/4    |
| *10% feed-back winding.                                        |            |                                                                      |                                          |                |                            |                    |       |      |              |       |            |       |       |          |

\*10% feed-back winding.



# Output (s) Transformers

THORDARSON



## UNIVERSAL REPLACEMENT TUBE TO VOICE COIL

Preferred by many because of wide plate impedance and voice coil coverage. Proper matching of load impedances to speaker voice coils is accomplished by using taps as specified in the instruction sheets.

| Type No.  | List Price | Tube Type                     | Class | Ohms Impedance                             |                       | Pri. M.A. Per Side | Max. Watts | Mtg. Centers                   |                                 |                               | Dimensions                     |                               |                               | Wt. Lbs.                      |  |  |
|-----------|------------|-------------------------------|-------|--------------------------------------------|-----------------------|--------------------|------------|--------------------------------|---------------------------------|-------------------------------|--------------------------------|-------------------------------|-------------------------------|-------------------------------|--|--|
|           |            |                               |       | Pri.                                       | Sec.                  |                    |            | Mtg. Fig.                      | Width                           | Depth                         | W.                             | D.                            | H.                            |                               |  |  |
| ★ T-13S38 | \$1.80     | Universal Single or P-P Tubes | A     | 4,000/7,000                                | Ajustable             | 36                 | 8          | 3E                             | 2 <sup>3</sup> / <sub>8</sub>   | 1 <sup>1</sup> / <sub>2</sub> | 2 <sup>5</sup> / <sub>16</sub> | 2                             | 1 <sup>5</sup> / <sub>8</sub> | 3/ <sub>4</sub>               |  |  |
| T-14S85†  | 1.80       |                               |       | 8,000/10,000                               | .1 to 29              |                    |            | 3B                             | 2 <sup>3</sup> / <sub>8</sub>   |                               | 2 <sup>5</sup> / <sub>16</sub> | 1 <sup>5</sup> / <sub>8</sub> | 1 <sup>5</sup> / <sub>8</sub> | 3/ <sub>4</sub>               |  |  |
| ★ T-57S01 | 2.40       |                               |       | 14,000 Ct.                                 |                       |                    |            | 2E                             | 2 <sup>3</sup> / <sub>8</sub>   |                               | 2 <sup>7</sup> / <sub>8</sub>  | 2 <sup>1</sup> / <sub>2</sub> | 2 <sup>3</sup> / <sub>8</sub> | 1 <sup>1</sup> / <sub>4</sub> |  |  |
| T-57S02†  | 2.40       |                               |       |                                            | 2B                    |                    |            | 2 <sup>3</sup> / <sub>8</sub>  | 2 <sup>7</sup> / <sub>8</sub>   |                               | 2 <sup>1</sup> / <sub>2</sub>  | 2 <sup>3</sup> / <sub>8</sub> | 1 <sup>1</sup> / <sub>4</sub> |                               |  |  |
| T-17S57   | 2.70       |                               |       |                                            | 2C                    |                    |            | 1 <sup>9</sup> / <sub>16</sub> |                                 |                               | 2                              | 1 <sup>7</sup> / <sub>8</sub> | 2 <sup>3</sup> / <sub>8</sub> | 1 <sup>1</sup> / <sub>4</sub> |  |  |
| ★ T-13S42 | 1.80       | Universal Single Tube         | A     | 1,500/2,000<br>4,000/5,000<br>7,000        | Ajustable<br>.1 to 29 | 55                 | 10         | 3E                             | 2 <sup>3</sup> / <sub>8</sub>   |                               | 2 <sup>5</sup> / <sub>16</sub> | 2                             | 1 <sup>5</sup> / <sub>8</sub> | 3/ <sub>4</sub>               |  |  |
| ★ T-13S41 | 3.30       | Universal P-P Tubes           | A     | 3,000/5,000<br>6,600/7,000<br>8,000/10,000 | Ajustable<br>.1 to 29 | 60                 | 20         | 2E                             | 2 <sup>15</sup> / <sub>16</sub> |                               | 3 <sup>3</sup> / <sub>8</sub>  | 2 <sup>1</sup> / <sub>2</sub> | 3                             | 2 <sup>1</sup> / <sub>4</sub> |  |  |

†Color coded leads for voice coil connections. Unused leads may be clipped off at coil.

## UNIVERSAL TUBE TO LINE

|           |        |                   |   |                                   |     |    |    |    |        |  |       |       |   |       |
|-----------|--------|-------------------|---|-----------------------------------|-----|----|----|----|--------|--|-------|-------|---|-------|
| ★ T-61S25 | \$3.90 | Univ. Single Tube | A | 2,500/4,000<br>5,000/6,000/7,000  | 500 | 60 | 10 | 2E | 2 5/16 |  | 3 3/8 | 2 1/2 | 3 | 2 1/4 |
| ★ T-61S26 | 4.20   | Univ. P-P Tubes   | A | 8,000/10,000<br>12,000/14,000 Ct. | 500 | 55 | 10 | 2E | 2 5/16 |  | 3 3/8 | 2 1/2 | 3 | 2 1/4 |

## C. H. T. MULTIPLE TAP OUTPUT TRANSFORMERS

Switchboard plug-in terminal board for quick and accurate selection of secondary impedances. Tertiary winding provides feedback voltage 10% of full primary. Split Primaries.

|         |         |                                                       |                  |                         |                                    |     |     |    |        |       |       |       |       |        |
|---------|---------|-------------------------------------------------------|------------------|-------------------------|------------------------------------|-----|-----|----|--------|-------|-------|-------|-------|--------|
| T-15S90 | \$12.00 | 2-6V6 P-P<br>2-6L6 P-P<br>2-2A3 P-P (self bias)       | AB1<br>AB1<br>AB | 8,000<br>5,000<br>5,000 | 2/3/4/6/-<br>8/16/125/-<br>250/500 | 70  | 15  | 4U | 3 5/8  | 3 5/8 | 4 5/8 | 4 3/8 | 4 3/4 | 7 1/4  |
| T-15S91 | 15.00   | 2-6L6 P-P (300 V. P. & Sc.)<br>2-2A3 P-P (fixed bias) | AB<br>AB         | 4,300<br>3,000          | Same<br>as above                   | 95  | 25  | 4U | 3 5/8  | 3 5/8 | 4 5/8 | 4 3/8 | 4 3/4 | 8      |
| T-15S92 | 18.00   | 2-6L6 P-P<br>2-6L6 P-P                                | AB1<br>AB2       | 6,600<br>5,500          | Same<br>as above                   | 90  | 40  | 4U | 3 5/8  | 4 1/4 | 4 5/8 | 4 7/8 | 5 3/8 | 8 3/4  |
| T-15S93 | 21.00   | 2-6L6 P-P<br>4-6L6 P-P Par.                           | AB1<br>AB2       | 3,300<br>3,800          | Same<br>as above                   | 155 | 60  | 4U | 3 5/8  | 4 1/4 | 4 5/8 | 4 7/8 | 5 3/8 | 15 1/2 |
| T-15S94 | 24.00   | 4-6L6 P-P Par.                                        | AB2              | 1,900                   | 500/250/166<br>/125/100/84         | 230 | 120 | 4U | 4 9/16 | 4 3/4 | 5 3/8 | 5 1/2 | 6 3/8 | 18     |

## UNIVERSAL LINE TO VOICE COIL

|           |        |                                           |  |                            |                                             |    |    |        |       |       |       |        |        |       |
|-----------|--------|-------------------------------------------|--|----------------------------|---------------------------------------------|----|----|--------|-------|-------|-------|--------|--------|-------|
| ★ T-53S81 | \$5.70 | Line to Voice Coil                        |  | 500/250                    | 4-8-15                                      | 35 |    | 2D     | 2 1/8 | 1 3/4 | 2 7/8 | 2 9/16 | 3 1/16 | 3 1/2 |
| ★ T-60S48 | 3.60   | Line to Voice Coil                        |  | 500/1,000                  | Pri. as 500 ohm-                            | 10 | 2E | 2 5/16 |       |       | 3 3/8 | 2 1/2  | 3      | 2     |
| T-17S18   | 4.50   | 1-6 may be con. in par. to 500 ohm line   |  | 1,500/2,000<br>2,500/3,000 | .06 to 8.; Pri. as 1000 ohm .12 to 16, etc. |    |    |        |       |       |       |        |        |       |
| ★ T-14S80 | 2.40   | Line to Voice Coil                        |  | 500                        | 2/4/6/8                                     | 12 | 2E | 2 3/8  |       |       | 2 7/8 | 2 1/2  | 2 3/8  | 1 1/2 |
| T-17S17   | 7.80   | Line to Voice Coil                        |  | 500                        | 4/8/16/25/50                                | 75 | 3C | 3 1/4  |       |       | 3 3/4 | 3 3/8  | 4      | 6 1/2 |
| T-76S74   | 4.50   | Line to multiple spkrs. (autotransformer) |  | 500                        | 250/166/125/<br>100/84                      | 30 | 4C | 2 1/16 |       |       | 3     | 2 1/2  | 2 5/8  | 2 1/2 |

## C. H. T. MULTIPLE LINE TO VOICE COIL

With Switchboard plug-in terminal board.

|         |         |                    |  |          |                    |    |    |       |       |  |       |       |       |       |
|---------|---------|--------------------|--|----------|--------------------|----|----|-------|-------|--|-------|-------|-------|-------|
| T-15S96 | \$15.00 | Line to Voice Coil |  | 1000/500 | 50/24/16/8/6/4/3/2 | 25 | 4U | 3 5/8 | 4 1/4 |  | 4 5/8 | 4 7/8 | 5 3/8 | 7 1/4 |
| T-15S97 | 19.20   | Line to Voice Coil |  | 1000/500 | 50/24/16/8/6/4/3/2 | 60 | 4U | 3 5/8 | 4 1/4 |  | 4 5/8 | 4 7/8 | 5 3/8 | 9     |

## C. H. T. CRYSTAL RECORDER TRANSFORMERS

The wave of interest in recording radio programs, speech and other audio happenings has created the desire to build recording equipment. These two transformers are offered to meet the requirements for coupling to a crystal recording head. Secondary designed for constant velocity recording (series connection), and constant amplitude recording (parallel connection).

|         |         |                                                  |  |      |                             |    |    |       |       |  |   |       |   |   |
|---------|---------|--------------------------------------------------|--|------|-----------------------------|----|----|-------|-------|--|---|-------|---|---|
| T-15S98 | \$12.00 | Line to crystal cutting head                     |  | 500  | Series 16,000<br>Par. 4,000 | 10 | 3U | 2 3/8 | 2 1/8 |  | 3 | 2 3/4 | 4 | 5 |
| T-15S99 | 12.00   | Push-pull 2A3, 6B4G etc. to crystal cutting head |  | 1600 | Series 16,000<br>Par. 4,000 | 10 | 3U | 2 3/8 | 2 1/8 |  | 3 | 2 3/4 | 4 | 5 |



3P



3T



C7, C10

## TRU-FIDELITY HIGH LEVEL OUTPUT TO LINE OR VOICE COIL TRANSFORMERS

| Type No.  | List Price | Ohms Impedance                                    |                                                  | Max. D.C. per side M.A. | Max. D.C. unbalance M.A. | Max. Sig. Level db | Mtg. Fig. | Mtg. Centers |       | Dimensions |       |       | Wt. Lbs. |
|-----------|------------|---------------------------------------------------|--------------------------------------------------|-------------------------|--------------------------|--------------------|-----------|--------------|-------|------------|-------|-------|----------|
|           |            | Primary                                           | Secondary                                        |                         |                          |                    |           | Width        | Depth | W.         | D.    | H.    |          |
| T-90S07-  | \$21.60    | 1250/5000*<br>750/3000*                           | 50/200*<br>125/500*                              | 60                      | 5                        | +32                | 3T        | 2 3/8        | 1 7/8 | 3 1/8      | 2 3/8 | 4 1/8 | 4 3/4    |
| T-3S21    | 21.60      | 1250/5000*<br>750/3000*                           | 1.25/5*<br>3.75/15*                              | 60                      | 5                        | +32                | C7        | 1 7/8        | 2 3/8 | 3 1/4      | 3 5/8 | 4 5/8 | 4 3/4    |
| ★ T-3S22† | 22.80      | 1250/5000*<br>750/3000*                           | 50/200*/125/500*<br>1.25/5*/3.75/15*             | 60                      | 5                        | +34                | C10       | 1 7/8        | 2 3/8 | 3 7/8      | 4     | 5 1/8 | 4 3/4    |
| T-3S16†   | 45.00      | 6600* P-P 6L6§<br>6000*                           | 62.5/250*/125/500*<br>1.25/5*/7.5/10<br>3.75/15* | 84                      | 7                        | +37.5              | 3P        | 2 3/8        | 6 1/8 | 4 1/8      | 6 5/8 | 5 1/4 | 4 3/4    |
| T-3S17†   | 54.00      | 3800* P-P Par. 6L6§<br>3300* or P-P 6L6           | 62.5/250*/125/500*<br>1.25/5*/7.5/10<br>3.75/15* | 152                     | 7                        | +40                | 3P        | 2 3/8        | 7 5/8 | 4 1/8      | 8 1/8 | 5 1/4 | 4 3/4    |
| T-3S23†   | 45.00      | 2500*/1500* P-P Par.<br>2A3, 6B4, 6L6's<br>etc. § | 62.5/250*/125/500*<br>1.25/5*/7.5/10<br>3.75/15* | 140                     | 7                        | +37                | 3P        | 2 3/8        | 5 7/8 | 4 1/8      | 6 3/8 | 5 1/4 | 4 3/4    |
| T-90S12-  | 20.40      | 50/200*/125/500*                                  | 1.25/5*/3.75/7.5/<br>10/15*                      | 100                     | .5                       | +30                | 3T        | 2 3/8        | 1 7/8 | 3 1/8      | 2 3/8 | 4 1/8 | 4 3/4    |

\*Indicates inductive and capacitive balance to center tap for use on balanced transmission lines.

† ± 1db 30 to 15,000 c.p.s. § Tertiary winding is 10% of full primary.

## AUTOMATIC VOLTAGE REGULATORS



Will deliver a constant voltage (within  $\pm 1\%$ ) despite line fluctuations from 95 to 130 volts and/or secondary loads from no load to full load rating. Operation is fully automatic and instantaneous. Once installed no further adjustment is necessary. Supplies optional output voltages of 110, 115 or 120 volts — 60 cycles. Cases are compound filled for coil protection and to minimize operating noise.

The ideal voltage regulator for oscillators, speech amplifiers, monitoring equipment, signal generators, metering equipment, recording equipment — wherever constant voltages are required.

Special units can be furnished incorporating various types of transformer windings.

For details on the complete line of Thordarson Automatic Voltage Regulators write for Catalog SD-422.

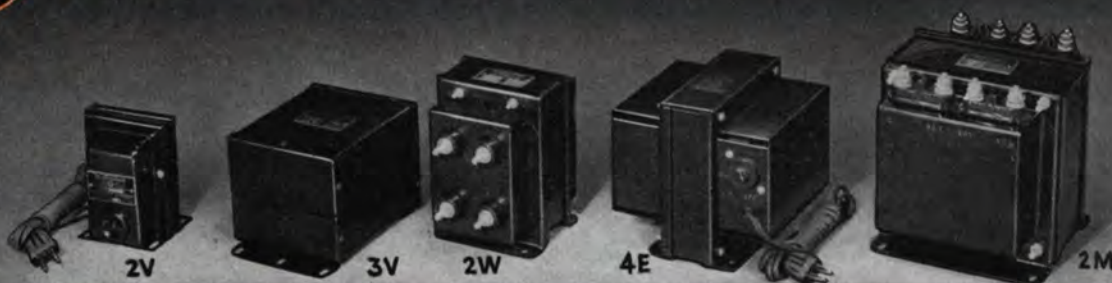
Chart shows actual line voltage fluctuations over 14 hour period and corresponding regulated output delivered by a Thordarson Automatic Voltage Regulator.

| Type No. | List Price | Capacity V.A. | Mtg. Fig. | Mtg. Centers |       | Dimensions |       |        | Wt. Lbs. |
|----------|------------|---------------|-----------|--------------|-------|------------|-------|--------|----------|
|          |            |               |           | Width        | Depth | W.         | D.    | H.     |          |
| ★ T-9V30 | \$ 51.00   | 100           | S2N       | 11 5/8       | 2 5/8 | 12 7/8     | 5 1/4 | 6 3/4  | 48       |
| ★ T-9V31 | 78.00      | 250           | S2N       | 11 5/8       | 3 1/8 | 12 7/8     | 6 1/8 | 8 1/2  | 68       |
| ★ T-9V32 | 120.00     | 500           | S2N       | 16           | 4     | 17         | 6 1/8 | 7 5/8  | 76       |
| ★ T-9V33 | 210.00     | 1000          | S2N       | 19           | 4     | 20         | 7 1/8 | 10 1/4 | 150      |

## FENCE CONTROLLER TRANSFORMER

For 6 volt D.C. operation, with suitable relays. Open horizontal mounting.

| Type No. | List Price | Primary   | Sec.                                               |                              | Mtg. Centers |       | Dimensions |       |    | Wt. Lbs. |
|----------|------------|-----------|----------------------------------------------------|------------------------------|--------------|-------|------------|-------|----|----------|
|          |            |           |                                                    |                              | Width        | Depth | W.         | D.    | H. |          |
| T-18V10- | \$3.60     | 6 V. D.C. | 8,000 V. (37 M.A. Peak)<br>9,000 V. (25 M.A. Peak) | Open circuit<br>Open circuit | 2 5/8        | 1 1/8 | 3 3/8      | 1 7/8 | 3  | 1        |



## VOLTAGE CHANGER (V) TRANSFORMERS

### AUTOTRANSFORMERS

Autotransformers consist of a single winding on an iron core. Voltage variation is accomplished by means of taps.

#### Step Down — Convenience Outlet Type

Input side equipped with cord and plug. Output side has standard receptacle.

| Type No.  | List Price | Input Volts | Output Volts | Output Load |       | Mtg. Fig. | Mtg. Centers    |                 | Dimensions      |                 |                 | Wt. Lbs.         |
|-----------|------------|-------------|--------------|-------------|-------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|------------------|
|           |            |             |              | V.A.        | Amps. |           | Width           | Depth           | W.              | D.              | H.              |                  |
| ★ T-26V04 | \$ 5.70    | 220-250     | 110-125      | 80          | 0.725 | 2V        | 2 $\frac{1}{8}$ | 2 $\frac{1}{8}$ | 3 $\frac{3}{8}$ | 2 $\frac{1}{8}$ | 4 $\frac{5}{8}$ | 4 $\frac{1}{2}$  |
| ★ T-18V06 | 7.50       | 220-250     | 110-125      | 150         | 1.35  | 2V        | 2 $\frac{1}{8}$ | 2 $\frac{1}{8}$ | 3 $\frac{3}{8}$ | 3 $\frac{1}{8}$ | 4 $\frac{5}{8}$ | 6 $\frac{1}{4}$  |
| ★ T-50V11 | 9.00       | 220-250     | 110-125      | 250         | 2.25  | 2V        | 3               | 3 $\frac{1}{2}$ | 3 $\frac{3}{8}$ | 4 $\frac{1}{4}$ | 4 $\frac{5}{8}$ | 10 $\frac{1}{4}$ |
| T-18V07   | 16.20      | 220-250     | 110-125      | 500         | 4.5   | 2V        | 3               | 4 $\frac{1}{8}$ | 3 $\frac{3}{4}$ | 4 $\frac{7}{8}$ | 4 $\frac{5}{8}$ | 13               |

#### Line Voltage Adjusting — Convenience Outlet Type

For boosting or lowering line voltage. Input taps may be selected by means of a convenient plug arrangement as illustrated (Fig. 4E).

|         |         |            |     |     |     |    |                 |                 |                 |                 |                 |                 |
|---------|---------|------------|-----|-----|-----|----|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| T-18V20 | \$ 7.20 | 95/105/125 | 115 | 100 | 0.9 | 2V | 2 $\frac{1}{8}$ | 2 $\frac{1}{8}$ | 3 $\frac{3}{8}$ | 2 $\frac{1}{8}$ | 4 $\frac{5}{8}$ | 4 $\frac{1}{2}$ |
| T-18V21 | 8.40    | 95/105/125 | 115 | 150 | 1.3 | 2V | 2 $\frac{1}{8}$ | 2 $\frac{1}{8}$ | 3 $\frac{3}{8}$ | 3 $\frac{1}{8}$ | 4 $\frac{5}{8}$ | 5               |
| T-18V22 | 10.80   | 95/105/125 | 115 | 250 | 2.2 | 2V | 3               | 2 $\frac{5}{8}$ | 3 $\frac{3}{8}$ | 3 $\frac{3}{8}$ | 4 $\frac{5}{8}$ | 6 $\frac{1}{2}$ |
| T-18V23 | 15.00   | 95/105/125 | 115 | 500 | 4.5 | 2V | 3               | 3 $\frac{1}{8}$ | 3 $\frac{3}{8}$ | 3 $\frac{7}{8}$ | 4 $\frac{5}{8}$ | 9               |

#### Primary Regulating Types

For increasing or decreasing line voltage. Taps for 60, 80, 90, 100, 110, 120, and 125 volts. 50-60 cycles. Complete with instructions.

|         |         |                          |          |      |      |    |                 |                 |                 |                 |                 |                  |
|---------|---------|--------------------------|----------|------|------|----|-----------------|-----------------|-----------------|-----------------|-----------------|------------------|
| T-82V11 | \$18.00 | 60/80/90/100/110/120/125 | Variable | 500  | 4.5  | 2W | 3 $\frac{1}{4}$ | 3 $\frac{1}{8}$ | 4 $\frac{1}{4}$ | 4 $\frac{5}{8}$ | 6 $\frac{1}{8}$ | 16 $\frac{3}{4}$ |
| T-82V12 | 24.00   | 60/80/90/100/110/120/125 | Variable | 1000 | 9.0  | 2W | 3 $\frac{7}{8}$ | 3               | 5               | 4 $\frac{3}{4}$ | 6 $\frac{5}{8}$ | 22 $\frac{1}{2}$ |
| T-82V13 | 36.00   | 60/80/90/100/110/120/125 | Variable | 2000 | 18.0 | 2M | 5 $\frac{3}{4}$ | 5 $\frac{3}{4}$ | 6 $\frac{5}{8}$ | 7 $\frac{1}{2}$ | 6 $\frac{3}{4}$ | 39 $\frac{1}{2}$ |

#### Line Voltage — Solder Lug Taps

Provide means of increasing or decreasing line voltages from 0 to 135 volts in 5 volt steps, when operated from 100 to 135 volt line.

|         |         |       |          |     |      |    |                 |                 |                 |                 |                 |                  |
|---------|---------|-------|----------|-----|------|----|-----------------|-----------------|-----------------|-----------------|-----------------|------------------|
| T-18V03 | \$ 8.70 | 0-135 | Variable | 150 | 1.35 | 3C | 2 $\frac{1}{4}$ | 1 $\frac{7}{8}$ | 2 $\frac{3}{8}$ | 2 $\frac{1}{2}$ | 3 $\frac{3}{4}$ | 3 $\frac{1}{2}$  |
| T-18V04 | 10.80   | 0-135 | Variable | 250 | 2.25 | 3C | 3 $\frac{1}{4}$ | 2 $\frac{3}{8}$ | 3 $\frac{3}{4}$ | 2 $\frac{5}{8}$ | 4               | 5 $\frac{1}{4}$  |
| T-18V05 | 16.20   | 0-135 | Variable | 500 | 4.5  | 3C | 3 $\frac{1}{4}$ | 2 $\frac{7}{8}$ | 4 $\frac{1}{4}$ | 3 $\frac{3}{4}$ | 6 $\frac{1}{8}$ | 14 $\frac{1}{4}$ |

#### LINE REGULATING AUTOTRANSFORMER

Provides for an increase or decrease of 7.5 volts. May be used on any A.C. line of 50-60 cycle frequency from 90V to 125V as a step-up or step-down transformer. Especially suitable for boosting line voltage for fluorescent lighting units. Fully enclosed (similar to 2H) and mounted on a 4" outlet box cover, allowing for complete enclosure of all wiring in a conduit or BX system.

|         |         |        |               |      |    |    |                 |  |                 |                 |                 |   |
|---------|---------|--------|---------------|------|----|----|-----------------|--|-----------------|-----------------|-----------------|---|
| T-18V26 | \$ 6.90 | 90-125 | 7.5 Variation | 1150 | 10 | 4L | 3 $\frac{5}{8}$ |  | 4 $\frac{1}{8}$ | 3 $\frac{1}{2}$ | 4 $\frac{1}{8}$ | 5 |
|---------|---------|--------|---------------|------|----|----|-----------------|--|-----------------|-----------------|-----------------|---|

#### ISOLATION TRANSFORMERS

Electrostatic shield between primary and secondary. Feature unique plug-in primary voltage adjustment — no changing of connections.

|           |         |             |     |     |  |    |                 |                 |                 |                 |                 |    |
|-----------|---------|-------------|-----|-----|--|----|-----------------|-----------------|-----------------|-----------------|-----------------|----|
| ★ T-18V00 | \$12.60 | 105/115/125 | 115 | 100 |  | 2V | 3               | 2 $\frac{7}{8}$ | 3 $\frac{7}{8}$ | 3 $\frac{5}{8}$ | 4 $\frac{5}{8}$ | 8  |
| ★ T-18V01 | 23.40   | 105/115/125 | 115 | 250 |  | 4E | 4 $\frac{3}{8}$ | 2 $\frac{1}{8}$ | 5 $\frac{7}{8}$ | 5 $\frac{7}{8}$ | 6 $\frac{1}{8}$ | 20 |

#### SIGNALING TRANSFORMERS — Listed by Underwriters' Laboratories

Cases are compound filled and have separate primary and secondary wiring compartments. Knock-outs permit attachment of rigid or flexible conduit without exposing the wiring. Four secondary leads provide these output voltages — 4, 8, 12, 16, 20 and 24 volts.

| Type No.  | List Price | Intermittent Duty | Constant Duty | Mtg. Fig. | Mtg. Centers    |                 | Dimensions      |                 |                 | Wt. Lbs.         |
|-----------|------------|-------------------|---------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|------------------|
|           |            |                   |               |           | Width           | Depth           | W.              | D.              | H.              |                  |
| ★ T-47V01 | \$ 9.00    | 50 V. A.          | 35 V. A.      | 3V        | 3 $\frac{3}{4}$ | 6 $\frac{1}{4}$ | 4 $\frac{1}{2}$ | 7               | 4 $\frac{1}{4}$ | 6 $\frac{1}{4}$  |
| ★ T-47V02 | 13.20      | 100 V. A.         | 85 V. A.      | 3V        | 3 $\frac{3}{4}$ | 6 $\frac{1}{4}$ | 4 $\frac{1}{2}$ | 7 $\frac{3}{4}$ | 4 $\frac{1}{4}$ | 8                |
| T-47V03   | 26.10      | 250 V. A.         | 190 V. A.     | 3V        | 3 $\frac{3}{4}$ | 8 $\frac{1}{4}$ | 4 $\frac{1}{2}$ | 9               | 4 $\frac{1}{4}$ | 14 $\frac{1}{4}$ |
| T-47V04   | 42.00      | 500 V. A.         | 475 V. A.     | 3V        | 3 $\frac{3}{4}$ | 9 $\frac{3}{8}$ | 5 $\frac{1}{4}$ | 10              | 5 $\frac{3}{4}$ | 22 $\frac{1}{2}$ |

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