

THORDARSON ELECTRIC MFG. DIVISION
MAGUIRE INDUSTRIES, INCORPORATEDINSTALLATION AND OPERATING INSTRUCTIONS FOR
THORDARSON T-32W10 TRU-FIDELITY TUNER - PHONO AMPLIFIER

This Tru-Fidelity amplifier has been expressly designed for home music installations and other applications where quality reproduction is required. Care should be taken in selecting any associate apparatus which may affect its operations and limit the excellent results that are possible. If the following instructions are carefully followed no difficulty will be experienced in the installation and operation of the amplifier. Before proceeding with the installation make sure that the power or lighting circuit supplies the proper voltage and frequency as indicated on the data plate. Thordarson amplifiers are designed for operation on 110-120V 50/60 cycle current, unless the data plate is stamped otherwise. Amplifiers for operation from other voltages and frequencies are available on special order.

CONTROL PANEL

The control panel contains one VOLUME control and two equalizer controls marked TREBLE and BASS. The frequency response of the amplifier is linear when the TREBLE equalizer control is set at 0 or the center of the dial, and the BASS control set at the #1 position on the dial. The treble frequencies are accentuated or boosted when the TREBLE control is turned toward the left or MAX position. Likewise, attenuation occurs when this control is turned toward the right or MIN position. The bass frequencies are accentuated or boosted when the BASS control is turned toward the right or MAX position. These controls are effective for correcting reproduction due to the difference in pickups, records, speakers, or accoustical conditions. An AC line switch is located on the BASS control shaft. Do not turn the switch ON unless the tubes are in the amplifier and the speaker and other accessories have been properly connected. (See OPERATION)

INPUT CONNECTIONS

Operation with AM-FM Tuner or Crystal Phono Pickup: The amplifier has one high impedance input channel marked PHONO-TUNER. Connect the output of the AM-FM tuner or crystal phono pickup to the amplifier input jack marked PHONO-TUNER by means of a low capacity, single conductor, shielded lead, using the input plug provided. To drive the amplifier to full rated output, the tuner or phono pickup should be capable of delivering approximately 1 volt of signal. If the installation includes both an AM or FM tuner and a phono pickup, a simple switching system can be employed to select the desired signal to be applied to the amplifier input.

Operation with a Magnetic Reluctance Phono Pickup: An additional octal socket marked PLUG-IN PRE-AMP is provided on the amplifier chassis to accommodate a Thordarson T-32W00 Plug-in Pre-Amp and Equalizer Stage if operation is desired with a magnetic reluctance type pickup cartridge. This small self-contained plug-in pre-amp is an accessory unit designed for use with the

T-32W10 amplifier to provide the additional voltage amplification and bass equalization necessary when employing magnetic phono pickup cartridges. The chassis socket which receives the plug-in pre-amp has been pre-wired at the factory.

Installation of T-32W00 Pre-Amp

First, insert the T-32W00 pre-amp securely into the chassis socket marked PLUG-IN PRE-AMP. Fasten the pre-amp grounding strap to the amplifier chassis by means of the 6/32 self-threading screw located adjacent to the octal socket. Then connect the magnetic phono pickup to the pre-amp input by means of a low capacity, single conductor, shielded lead, using the input plug provided. The input connector of the pre-amp is located on the top of the case directly in front of the 12AT7 tube. The output circuit of the pre-amp has been brought out to a connector marked PRE-AMPLIFIER OUTPUT located on the rear apron of the T-32W10 chassis. If the system is to be used only for phono reproduction employing a magnetic pickup cartridge, then join together the two chassis connectors marked PHONO - TUNER and PRE-AMPLIFIER OUTPUT by means of a short insulated wire using the phono plugs provided for this purpose. See Figure 1. When the music installation includes an AM or FM tuner in addition to a magnetic phono pickup, a simple switching arrangement should be provided to select the signal source to be applied to the amplifier input. Figure 2 shows the circuit connections of such an arrangement.

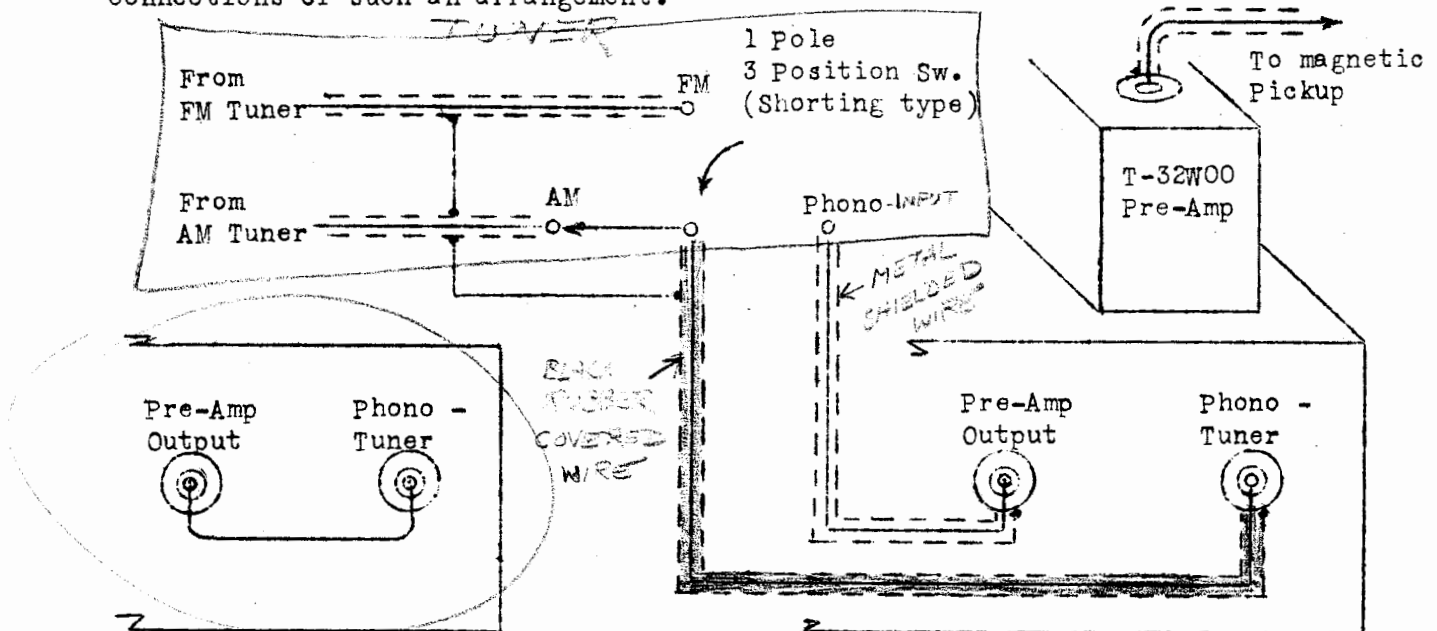
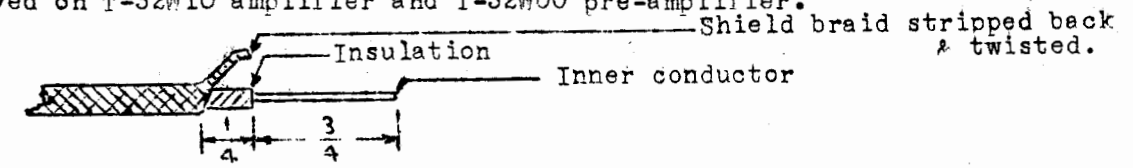


Fig. 1

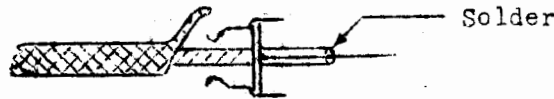
Fig. 2

Operation with a Microphone: Provision has been made in the design of the pre-amplifier circuit to permit the amplifier to be operated with a microphone when it is desired to use the unit as a small public address or recording amplifier. To employ the microphone, join socket lugs #4 and #5 of the octal socket marked PLUG-IN PRE-AMP together. This removes the bass equalization, which was provided for magnetic pickups, making the pre-amp frequency response essentially flat. Connect the microphone to the pre-amp input jack by means of a length of insulated single conductor shielded lead, using the input plug provided. The pre-amplifier gain is adequate for a high output crystal or high impedance dynamic microphone.

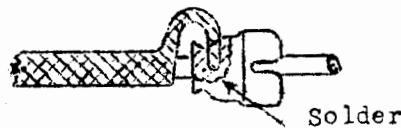
Wiring Procedure for Input Plugs: The diagrams shown under Figure 3 illustrate the simplest procedure for connecting the shielded input leads to the input plugs employed on T-32W10 amplifier and T-32W00 pre-amplifier.



(a) Skin single conductor shielded lead as shown.



(b) Solder inner conductor to tip of plug.



(c) Solder shield braid end to collar of plug.

Fig. 3 Wiring Procedure for Input Plug.

OUTPUT CONNECTIONS

Matching Output Impedances: The speaker voice coil connections are made to the terminal board marked SPEAKER located on the rear apron of the amplifier. Correct speaker impedance matching is important for good quality reproduction. The following table, Figure 4, indicates the contacts of the speaker terminal board to be used to match the various speaker impedances.

| SPEAKER | SPEAKER IMPEDANCE | CONNECT TO |
|---------|-------------------|------------|
| | 3.4/4 ohms | 1 and 2 |
| | 6/8 ohms | 1 and 3 |
| | 15/16 ohms | 1 and 4 |

Fig. 4

The speaker impedance taps provided on this amplifier match the majority of the high fidelity speakers on the market today. There are, however, several dual speaker units whose impedance rating is 500 ohms. To properly match such a speaker to this amplifier, employ a Thordarson T-22S80 line to voice coil transformer connected as shown in Figure 5.

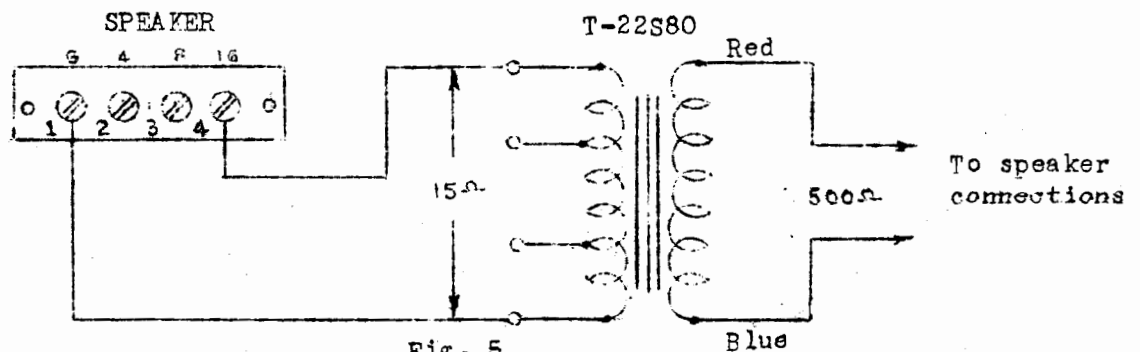


Fig. 5

S P E A K E R S

A high grade speaker of at least 10 watts rating is recommended if one is desirous of making use of the excellent characteristics of this Tru-Fidelity amplifier. Best results will be obtained with the dual types incorporating separated speakers for the high and low registers. A filter network is usually supplied to divide the output of the amplifier to the speakers. This filter must fit the characteristics of the speakers and, therefore, it must be designed to match the frequency response and impedance of the units. Speaker systems of this type are capable of converting electrical energy into sound energy with good efficiency at all frequencies from 30 to 10,000 C. P. S. or higher. The names of the companies manufacturing dual speakers will be supplied on request.

Several single speaker units are available with effective enclosures that reproduce efficiently all frequencies from 60 to 8000 C. P. S. Although these units are less expensive than the dual types, very excellent results can be obtained.

Either electro-dynamic or permanent magnet dynamic speakers are suitable. If electro-dynamic speakers are used they should contain their own field supply of a separate field supply should be provided since the amplifier does not supply field power.

O P E R A T I O N

After the tubes have been installed and the speaker and input circuits connected, the amplifier is ready for operation. However, check all connections again to make sure they are correct. Insert the line cord and turn the switch ON. Allow about one minute for the tubes to heat up before advancing the volume control. The controls should be turned up slowly at first so as to acquire the feel of the amplifier.

If an objectionable hum is noted in the speaker, reverse the line cord polarity. To do this remove the plug and give it a half-turn and reinsert it in the wall receptacle. Occasionally hum may be caused by faulty tubes. If hum still persists due to power line disturbance, the amplifier should be grounded. Connect a wire to the #1 lug on the speaker terminal board and fasten the other end to a water pipe or hot water or steam radiator.

A pair of mounting brackets are supplied to securely fasten the chassis in permanent installations. To mount the brackets, remove the felt mounting feet from the chassis bottom. Then, using the self-threading screws which held the mounting feet, fasten the mounting brackets to the corresponding holes in the bottom cover of the amplifier. If the amplifier chassis is mounted in a cabinet ~~or other confined space~~, allow sufficient room around the unit for free flow of air to provide adequate ventilation of the amplifier components.

T U B E S

Tubes play a very important part in the successful operation of modern high gain amplifiers. When supplied with the amplifier they are especially tested for elimination of hum and microphonics. Inferior or defective tubes should be avoided. If you can not obtain suitable tubes locally, we suggest that you order Thordarson selected tubes through your jobber. The tubes required for the T-32W10 amplifier are one 6SL7-CT, two 6V6-GT, and one 5Y3-GT. The T-32W00 pre-amplifier requires one type 12AT7 miniature tube. Do not in any instance remove the tubes from the amplifier until the switch has been turned off and the tubes have had time to cool.

Performance Characteristics
T-32W10 10Watt Tuner - Phono Amplifier

| | |
|--------------------|--|
| Power Output | 10 watts or +32.2 db. Harmonic distortion 2%. Intermodulation distortion 8%. |
| Frequency Response | ±1 db. 20-20,000 cps. |
| Input Channels | <p><u>One high Z medium level input for Tuner or Crystal Pickup.</u> <u>One medium level high impedance (1 meg.) input channel is provided. Gain - 69 db. Sensitivity - 1.1 volts rms. is required from the tuner or phono pickup to drive the amplifier to full output.</u></p> <p><u>One optional high Z low level input for magnetic pickup cartridge or high Z microphone.</u> An additional octal socket is provided on the chassis to accommodate a T-32W00 Plug-in Pre-amp and Equalizer stage when operation is desired with a magnetic reluctance type pickup cartridge. The chassis socket which receives the Plug-in Pre-amp has been wired at the factory. No additional wiring operations are required to employ a magnetic pickup with the 10 watt amplifier - just plug-in T-32W00 Pre-amp. The Pre-amp can also be utilized to supply the necessary additional amplification required when a microphone signal source is employed. See T-32W00 specifications for details.</p> <p>The output of the Pre-amp has been brought to a connector on the rear of T-32W10 amplifier so that the various signal sources such as tuner, crystal pickup, magnetic pickup, or microphone can readily be selected and applied to the medium level input.</p> |
| Tone Controls | <p>A dual treble control provides a boost of +10 db. at 10,000 cps., or an attenuation of -20 db. at 10,000 cps.</p> <p>A Bass control provides a maximum boost of +8 db. at 100 cps. The AC line switch is mounted on this control.</p> |
| Output Impedances | 4-8-16 ohms are available at terminal board on chassis rear apron. |
| Hum Level | -70 db. below rated output. |
| Tubes | 1 6SL7-GT, 2 6V6-GT, 1 5Y3-GT. |
| Power Requirements | 70 watts, 117 volts, 50/60 cycles. |
| Dimensions | 10 1/4" x 7 3/8" x 2 3/4". A pair of mounting brackets are supplied to facilitate the mounting of the chassis in permanent installations. |
| Net Weight | 10.75 lbs. |

SPECIFICATIONS FOR T-32W10

10 WATT TUNER-PHONO AMPLIFIER

Schematic Designation of Parts

| Design. of this Unit | Part No. | Description |
|--|----------------------|---|
| <u>Transformers and Chokes</u> | | |
| T-1 | TS-24R02-U | Power transformer |
| T-2 | T-51690A | Output transformer |
| CH-1 | T-20C53 | Filter choke |
| <u>Resistors</u> | | |
| All resistors are $\frac{1}{2}$ W 10% tolerance unless otherwise specified. | | |
| R-1 | RC $\frac{1}{2}$ 104 | 100K ohm resistor |
| P-2 | RCP-1-105 | 1 megohm volume control |
| R-3 | RCP-1-504 | .5 megohm volume control |
| R-4 | RC $\frac{1}{2}$ 222 | 2200 ohm resistor |
| R-5 | RC $\frac{1}{2}$ 224 | 220K ohm resistor |
| R-6 | RC $\frac{1}{2}$ 222 | 2200 ohm resistor |
| R-7 | RC $\frac{1}{2}$ 224 | 220K ohm resistor |
| R-8 | RC $\frac{1}{2}$ 474 | 470K ohm resistor |
| R-9 | RC $\frac{1}{2}$ 183 | 18K ohm resistor |
| R-10 | RC $\frac{1}{2}$ 474 | 470K ohm resistor |
| R-11 | RW-10-251 | 250 ohm 10 watt resistor |
| R-12 | RCP-1-105S | 1 megohm volume control with SPST switch |
| R-13 | RC $\frac{1}{2}$ 473 | 47K ohm resistor |
| R-14 | RC $\frac{1}{2}$ 473 | 47K ohm resistor |
| R-15 | RW-10-203 | 20K ohm 10 watt resistor |
| <u>Condensers</u> | | |
| C-1 | CP-401-202 | .002 mfd. 400V paper condenser |
| C-2 | CP-401-303 | .03 mfd. 400V paper condenser |
| C-3 | CP-401-502 | .005 mfd. 400V paper condenser |
| C-4 | CP-401-104 | .1 mfd. 400V paper condenser |
| C-5 | CP-401-104 | .1 mfd. 400V paper condenser |
| C-6 | CE-50-506 | 50 mfd. 50V electrolytic condenser |
| C-7 | CE-451-106 | 10 mfd. 450V electrolytic condenser |
| C-8) | CE-2007 | 20-20 mfd. 450V electrolytic condenser |
| C-9) | | |
| C-10 | CP-401-503 | .05 mfd. 400V paper condenser |
| <u>Tubes</u> | | |
| 1 | | 6SL7-GT tube |
| 2 | | 6Y6-GT tubes |
| 1 | | 5Y3-GT tube |

By _____

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Amplifier Engineering Department

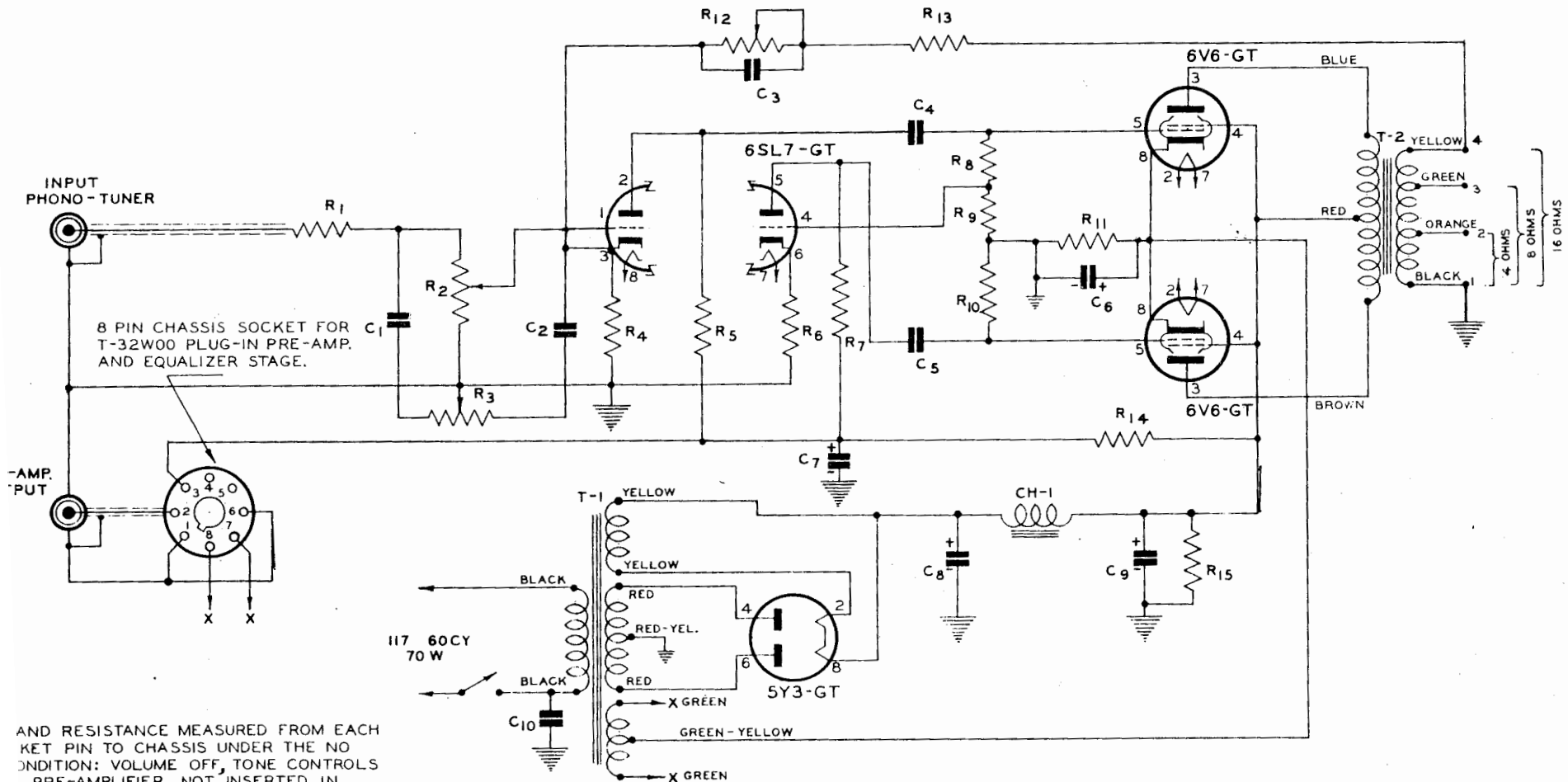
HORDARSON

ELECTRIC MANUFACTURING DIVISION

Maguire Industries

INCORPORATED

500 WEST HURON STREET • CHICAGO 10, ILLINOIS, U.S.A.



AND RESISTANCE MEASURED FROM EACH SOCKET PIN TO CHASSIS UNDER THE NO LOAD CONDITION: VOLUME OFF, TONE CONTROLS OFF, PRE-AMPLIFIER NOT INSERTED IN SOCKET.

TUBE SOCKET PIN NUMBERS

| TYPE | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | |
|--------|-------|------|---------|-------|-------|------|-------|------|-------|-------|-------|------|---------|------|---------|-------|
| | VOLTS | OHMS | VOLTS | OHMS | VOLTS | OHMS | VOLTS | OHMS | VOLTS | OHMS | VOLTS | OHMS | VOLTS | OHMS | VOLTS | OHMS |
| INPUT | 0 | 0 | 120 | 287 K | 1.4 | 2200 | 0 | 18 K | 120 | 287 K | 1.4 | 2200 | 3.15AC* | 250 | 3.15AC* | 250 |
| OUTPUT | 0 | 0 | 3.15AC* | 250 | 300 | 20K | 305 | 20K | 0 | 470K | — | — | 3.15AC* | 250 | 17 | 250 |
| HEATER | — | — | +335 | 20.4K | — | — | 350 | 210 | — | — | 350 | 210 | — | — | +335 | 20.4K |

VOLTAGE READINGS WERE TAKEN WITH AN RCA VOLT-OHM-MYST #195. TO DUPLICATE THESE READINGS A METER HAVING AN EQUIVALENT HIGH RESISTANCE MUST BE USED.
*HEATERS ARE ABOVE GROUND BY +17V.D.C.

T-32W10
10 WATT PHONO-TUNER
AMPLIFIER

THORDARSON ELECTRIC MANUFACTURING DIVISION
MAGUIRE INDUSTRIES INCORPORATED

500 West Huron Street

Chicago 10, Illinois

OPERATING DATA SHEET

IS- T-32W00

Thordarson T-32W00 Plug-in Pre-Amplifier and
Equalizer Stage for Magnetic Pick-up Cartridges.

Application of T-32W00 Pre-Amplifier

This small, self contained plug-in pre-amplifier is an accessory unit designed for use with Thordarson T-32W10 10 watt Phono-Tuner and amplifier or any other audio amplifier or radio set where magnetic pickup operation is desired. This unit, employing a miniature 12AT7 twin triode tube, provides the additional voltage amplification and bass equalization necessary when employing a magnetic reluctance phono pickup cartridge.

The T-32W10 amplifier chassis socket which receives the plug-in pre-amp has been pre-wired at the factory. No additional wiring operations are required to employ a magnetic pickup with this amplifier. To add the pre-amp to other equipment it is necessary to mount an octal socket on the chassis and wire to it the supply voltage leads and signal connections.

The Bass equalization provided by this pre-amp is adequate for all popular magnetic reluctance phono pickup. A maximum bass boost of +15 db occurs at 100 cycles; the frequency response from 1000 cycles out to 20,000 cycles is flat within + d db.

The maximum signal that can be applied to the pre-amp input at 1000 cycles is approximately 100 millivolts. To employ a magnetic pickup having a greater rated output will require the use of a voltage divided network to attenuate the signal. This can be readily accomplished by connecting a $\frac{1}{2}$ watt resistor of the proper value in series with the input lead. For example, if the output of the pickup is rated at .5 volts, connect a 4 megohm resistor in series with the input lead. Since the input resistance of the pre-amp is 1 megohm, this will apply one fifth the voltage, or 100 millivolts to the pre-amplifier.

The plug-in pre-amplifier also finds application as a microphone pre-amp stage for use with T-32W10 phono amplifier or other medium gain amplifiers to provide the necessary gain when high impedance crystal or dynamic microphone operation is desired. For this service the pre-amp base pins #4 and #5 are joined together, this removes the bass equalization making the response essentially flat from 50 to 20,000 cycles. The voltage gain under this condition of operation is 38 db at 1000 cycles.

(Continued on Page 2)

INSTALLATION OF T-32W00 PRE-AMPLIFIER IN
T-32W10 PHONO-TUNER AMPLIFIER

To employ the pre-amplifier with the Thordarson T-32W10 Tuner-Phono amplifier, refer to the instruction sheet which accompanies this unit. See the section titled INSTALLATION OF T-32W00 PRE-AMP on page 2.

INSTALLATION OF T-32W00 PRE-AMPLIFIER IN
OTHER AUDIO AMPLIFIERS OR RADIOS

This pre-amplifier can also be utilized with other audio amplifiers or radio sets when converting to magnetic phono pickup operation, or as a microphone pre-amplifier stage.

Physical Mounting: To add the pre-amp to other audio equipment it will be necessary to mount an octal socket on the equipment chassis to receive the pre-amp plug-in base. Take precaution to place the socket well away from possible sources of hum pickup such as power transformers, filter chokes, phono motors, etc. The free end of the pre-amp ground strap should be securely fastened to the equipment chassis with a 6/32 machine screw, being sure that good electrical contact is made.

Connections: The supply voltages for this unit must be obtained from the associated equipment. The voltage requirements are as follows: Heater voltage -- 6.3V @ .3 ampere. B+ voltage -- 250V DC maximum @ 1.5 MA, obtained from a well filtered source. It should be noted that the 6.3 volt heater circuit in the pre-amp is not grounded. This will permit the unit to obtain its heater voltage from a source which has either the heater center tap or one side of the heater winding grounded. An R-C decoupling filter has been included in the pre-amp case to provide stage isolation. Under no circumstances apply more than 250V B+ to the unit or the voltage rating of this decoupling condenser will be exceeded.

The heater, B+, B-, and signal output connections are brought out to the pre-amp octal base plug. The supply voltages should be wired to the proper socket pins as shown in the attached schematic diagram. The input connector of the pre-amp is located on the top of the case directly in front of the 12AY7 tube. Connect the magnetic pickup cartridge to the pre-amp input by means of a low capacity, single conductor shielded lead, using the input plug provided. The signal output of the pre-amp appears at octal base pins #1 and #2. Use a single conductor shielded lead to connect the pre-amp output to the existing PHONO INPUT or other input circuit of the associated equipment connect the shield braid to base pin #1 and the inner conductor to pin #2.

The average signal output of the pre-amp at 1000 cycles when using a GE type RPX040 magnetic cartridge is approximately 1 volt. The output circuit of the pre-amp is designed to work into a 1 megohm load. If the phono volume control or input circuit is of a lower resistance value, the amount of bass equalization obtained will be slightly reduced.

SPECIFICATIONS FOR T-32W00
PLUG-IN PRE-AMPLIFIER AND EQUALIZER STAGE

Schematic Designation of Parts

| <u>Design. on this Unit</u> | <u>Part Number</u> | <u>Description</u> |
|---------------------------------|------------------------|--|
| <u>Resistors</u> | | |
| R-1 | RC $\frac{1}{2}$ 105 | 1 megohm $\frac{1}{2}$ W resistor |
| R-2 | RC $\frac{1}{2}$ 222 | 2200 ohm $\frac{1}{2}$ W resistor |
| R-3 | RC $\frac{1}{2}$ 224 | 220K ohm $\frac{1}{2}$ W resistor |
| R-4 | RC $\frac{1}{2}$ 475 | 4.7 megohm $\frac{1}{2}$ W resistor |
| R-5 | RC $\frac{1}{2}$ 224 | 220K ohm $\frac{1}{2}$ W resistor |
| R-6 | RC $\frac{1}{2}$ 224 | 220K ohm $\frac{1}{2}$ W resistor |
| R-7 | RC $\frac{1}{2}$ 224 | 220K ohm $\frac{1}{2}$ W resistor |
| R-8 | RC $\frac{1}{2}$ 104 | 100K ohm $\frac{1}{2}$ W resistor |
| <u>Condensers</u> | | |
| C-1 | CM401-102 | .001 mfd. mica condenser |
| C-2 | CP401-502-M | .005 mfd. paper condenser miniature type. |
| C-3 | CP401-103-M | .01 mfd. paper condenser miniature type. |
| C-4 | CE151-106 | 10 mfd. 150V electrolytic condenser |
| <u>Tubes</u> | | |
| | | 12AV7 miniature tube |

