ELECTRONIC
Telephone Amplifier System

DUOFONE

Radio Shack®

Cat. No.
43-278

CUSTOM MANUFACTURED FOR RADIO SHACK, A DIVISION OF TANDY CORPORATION

The **REALISTIC®** DUōFONE Electronic Telephone Amplifier System offers you many custom-designed features. Its purpose is to provide "hands-free" telephone conversations at home or office.

Typical applications are —

- Long distance calls where your whole family can listen and talk together.

- Conference calls in your office.

- Lets you talk on the phone while taking care of the baby, fixing a meal, etc.

- Taking dictation on the phone, using the typewriter, check files, make notes, checking inventory ...

... All while on the phone — leaving your hands free to handle those important details.

This Telephone Amplifying Device has been approved and registered for direct connection to the phone lines. The registration number and ringer equivalence number are noted on the **DUōFONE** label.

It's simple to use and will soon become an invaluable addition to your office or household. Spend a few minutes learning about your **DUōFONE** from this booklet and you'll be sure to enjoy many years of convenience and dependability.

IMPORTANT NOTE: Before you make connection, you must notify your local Telephone Company of the registration number and ringer equivalence number of your **DUōFONE.** You'll find these numbers on the label on the bottom of the unit.

The **DUōFONE** comes with a new mini-modular plug installed on the end of its cable and a mini-modular jack on the rear cabinet.

Disconnect the mini-mod plug of your phone from the wall outlet and connect in to the mini-mod jack on the rear of the **DUōFONE.** Connect the **DUōFONE's** mini-mod plug to the wall outlet.

With this connection arrangement you can use either the **DUōFONE** or the phone in the normal manner.

If your telephone uses the older type 4-prong receptacles, Radio Shack sells the modular-to-4-prong adapter that is necessary to make the conversion. If your telephone unit is wired directly to the wall, you will need to update the unit for modular plug and jack connections. The telephone company will update your wiring.

Note: Your local phone company is authorized to charge you for the installation of any such jacks. They may ask for the U.S.O.C. number for the plug connection; this number is RJ-11C (ask for RJ-11W if you want the wall-type jack).

The **DUōFONE** must not be connected to:
- Coin-operated phones
- Party-line phones

Now your **DUōFONE** is ready to use.
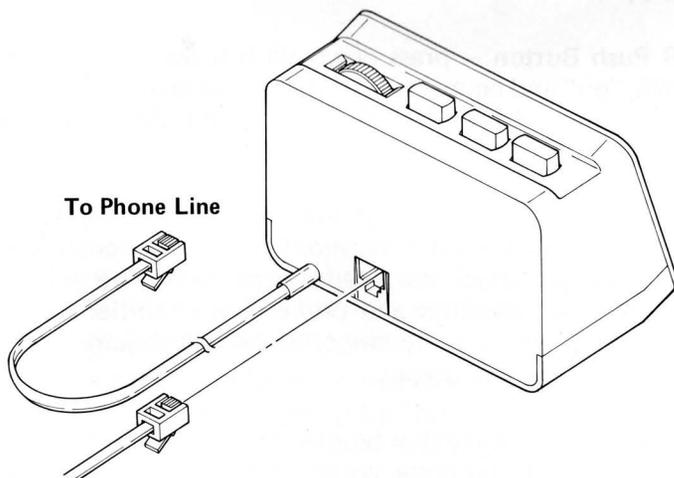
To Phone Line

From Telephone

CONTROLS

AMPLIFIER Push Button ─────────

SENSITIVITY Push Button ───────

VOLUME Control

PRIVACY Push Button ─────

Microphone
(behind grille)

Speaker ─────
(behind grille)

DUOFONE ELECTRONIC TELEPHONE AMPLIFIER SYSTEM
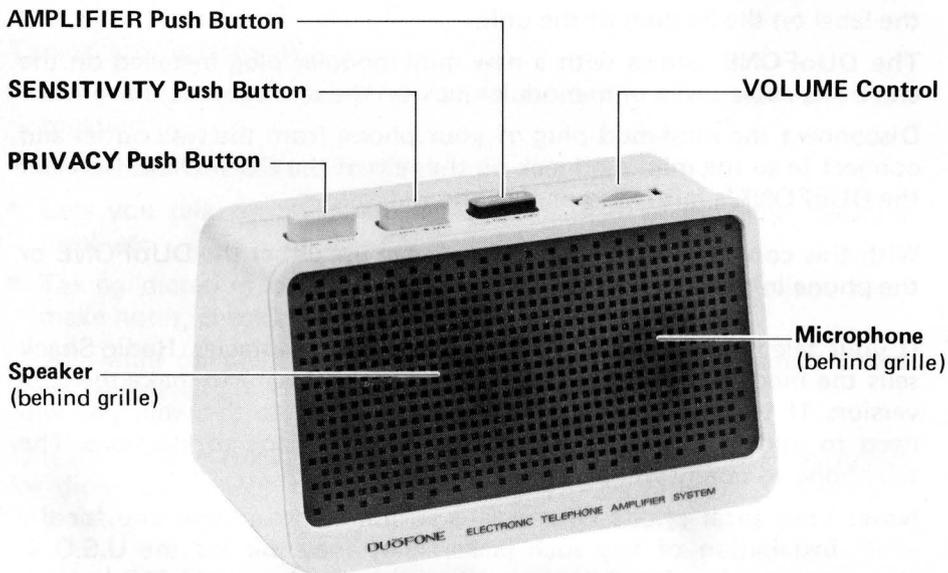
GETTING TO KNOW YOUR DUōFONE

There are just four controls — **PRIVACY, AMPLIFIER, VOLUME** and **SENSITIVITY.**

AMPLIFIER Push Button — press down till it locks in place; this turns the **DUōFONE** "on" and connects it to the phone line. This is similar to picking up the phone to talk. To "disconnect" the **DUōFONE** and turn it "off" press this button once again.

VOLUME Control — rotate toward the right (clockwise) to increase sound output from the speaker. You should use only enough volume to hear comfortably; too much may cause distortion. The volume level will depend on room acoustics and phone line conditions. Hard bare walls and tile floors and a fairly empty room will require less volume than one with carpeting and drapes.

NOTE: The **VOLUME** control has no effect on the signal going into the phone line. The level of that signal is controlled electronically.

SENSITIVITY Push Button — controls the pick-up sensitivity of the built-in mic. To reduce sensitivity, press down so it locks; to return to normal sensitivity, press again.

The **MINimum** position (down) is the most useful when operating in an area where there is a high background noise (which has the effect of locking your **DUōFONE** "on" and so you could not hear the other party's voice). See further explanation and uses later on.

PRIVACY Push Button — press down till it locks in place; this turns the built-in mic "OFF" and the person on the other end of the line cannot hear you, but you can still hear him. To return to normal operation, press again.

The Microphone and Speaker are mounted next to each other behind the front panel. When you talk, direct your voice toward the **DUōFONE**, so the microphone will pick up your voice.

You hear the incoming portion of the phone call from the Speaker.

SELECTING A LOCATION

In selecting a location for your **DUōFONE**, you need to know that room acoustics (with respect to the unit) has a great effect on proper operation.

You may have to experiment a little with the placement of the unit till you achieve a location that provides good mic pickup and yet gives good sound projection from the speaker.

Also, any vibration or noise in or near the surface on which you have placed the unit may be picked up by the mic and cause unusual sound effects and amplifier action. **Avoid locations with high background noise levels.**

OPERATION

RECEIVING A PHONE CALL

When the phone rings, no need to pick up the phone, just press the **AMPLIFIER** push button and release.

Adjust **VOLUME** as desired.

If there is a high background noise level (loud fan, appliance, loud music or other conversations), the **DUōFONE** may not switch to receive — you won't hear the other party's responses — if this happens, press **SENSITIVITY** down or temporarily press **PRIVACY** down (this removes the built-in Mic from the circuit, but the **DUōFONE** stays in the Receive mode). For most surroundings and applications, you will be able to leave the **SENSITIVITY** push button up (for maximum Mic sensitivity).

NOTE: Just to make sure you understand this point — your **DUōFONE** is **one way at a time.** Both ends of a phone conversation can not talk **at the same time.** You each have to take turns — just like with a CB Transceiver.

TO PLACE A CALL

Leave AMPLIFIER push button in the OFF position (up) and dial the phone number as usual. With the phone still off the hook or cradle, press **AMPLIFIER** down (ON) and then hang up the phone. Now, you're ready for hands-free conversation.

TO END A CALL

When you finish your conversation, press and release the **AMPLIFIER** push button. This breaks the circuit just as when you hand up the phone — and turns the **DUōFONE** off.

NOTES ON OPERATION

Always speak in a clear voice and a little slower than with normal telephone use. People at a distance from the **DUōFONE** should speak a little louder.

When and how to use the SENSITIVITY switch:

If you operate the **DUōFONE** in areas with high background noise levels, it may not function as you would expect. The problem is that the high volume of the background noise will not allow the other party to activate the **DUōFONE**. Remember this basic fact — the party that speaks first has priority. The electronics circuitry "locks-in" to amplify **that** party's voice; for the 2nd party to take over, the 2nd party must wait for a break in the 1st party's speech. Let's be specific. You are the 1st party; you want to talk to the 2nd party — but if there is a high noise level around you, even when you stop talking, the noise is picked

up by the Mic and keeps the **DUōFONE** active for "transmit" from your end. The 2nd party can not be heard (he or she may be talking, but you won't hear anything).

To solve this problem, we've added the **SENSITIVITY** switch. When you press it down (MIN), the Mic sensitivity is reduced, so the circuitry can "un-lock" and allow the 2nd party to talk. When you use the MIN position, the background noise will not affect the circuit as much as before, so when you stop talking, the circuitry can receive the 2nd party's voice.

When you use MIN position, a higher sound level is needed to "lock-in" your voice; so you should speak louder and move closer to the **DUōFONE** when using MIN. Also, you should move the **DUōFONE** so it won't be subjected to high background noise (or close a door, etc., to cut out the noise).

If you get into a situation where the background noise is just too loud and the **DUōFONE** gets locked into the transmit mode, the best thing you can do is just pick up the phone and then disconnect the **DUōFONE** by pressing the **AMPLIFIER** push-button. Then use the phone as normal. (Conditions just are not suitable for a telephone amplifier system.)

In a conference situation, remember that the other party can only listen to one voice at a time — so let each speak in turn (one at a time). Also, keep in mind that with **SENSITIVITY** in MIN position, sound pick-up will not be as sensitive — so either keep noise down to a minimum (including side conversations) or each one should speak up a little more.

How to use PRIVACY switch:

When talking on an ordinary phone, you would cover the mouthpiece with your hand when you don't want your caller to hear you. With the **DUōFONE**, you can do the same thing just by pressing the **PRIVACY** switch. This disconnects the built-in Microphone circuit; the **DUōFONE** stays in the Receive mode, but no sound is transmitted over the phone lines. To be return to normal function, press **PRIVACY** once more to release it.

Another practical use of this switch is when background noise around you gets so loud that it interferes with the **DUōFONE**'s operation, press the **PRIVACY** switch. This will prevent background noises from causing the **DUōFONE** to go into transmit mode. (This would be similar to a situation where you cover your phone's mouthpiece to avoid all the noise interfering with your caller.) Of course this is only a temporary solution, but it can be helpful to remember it.

MORE ON INSTALLATION

Since your **DUōFONE** has been approved and registered for direct connection to the phone lines, you can make the connections yourself — but you must notify the phone company of the registration number and ringer equivalence number, noted on the label of your **DUōFONE**, prior to use.

NOTE: Your **DUōFONE** must not be connected to party lines or coin operated telephone lines.

The simplest installation is with the connector supplied. It can be plugged directly into the new style mini-modular connectors the phone company now uses. If you need other style plugs or jacks for easy connection, your Radio Shack store has a complete selection of such jacks and plugs.

FCC wants you to know .....

It is almost unlikely, but . . . if your **DUōFONE** should cause problems on the phone line, the phone company has the right to temporarily discontinue your service.
If this ever happens, the phone company will notify you and give you the opportunity to correct such problem.

Also, you need to know that the phone company does have the right to make changes to their lines and/or equipment. If these changes might affect your **DUōFONE** (or require changes in the **DUōFONE** or its connection), the phone company will notify you in writing so you have a chance to take whatever action is necessary to insure uninterrupted phone service.

CARE AND MAINTENANCE

Install your **DUōFONE** near the telephone. Be sure it won't be knocked off the table, desk, etc. Position the wire free of normal telephone activities. The wires should **never** be routed in a way to interfere with foot-paths. A foot entangled in the cord could pull out the connection or knock the **DUōFONE** to the floor (and maybe damage circuitry).

PROBLEMS?

If the **DUōFONE** does not work at all (or weakly), check wire connections to the phone lines.

Telephone calls are automatically switched and routed through a complex group of equipment. You will occasionally encounter a "weak" or "noisy" line. In some cases you may have to ask the other party to speak-up or do so yourself. The connection may be so poor that you will actually have to re-dial the call. REMEMBER, your telephone amp can only amplify the signal it receives from the phone line.

Key or business telephone systems are not an intended use for the **DUōFONE** TELEPHONE AMPLIFIER SYSTEM. However, the **DUōFONE** can be conected to provide proper operation on many such systems. Generally, the TELEPHONE AMP will not provide adequate switching capability to cause the telephone company "hold" circuit to stay disengaged when the telephone handset is "on-hook" during use of your **DUōFONE**. We recommend that qualified personnel make these installations.

We recommend that you avoid placing your **DUōFONE** under an over-hang or any other area with a concave effect. This will help eliminate "hollow" sounds generated by such a location.

If you do have difficulty with the **DUōFONE**, or the phones don't work properly after you have connected it, disconnect the **DUōFONE** immediately. Then check to see if the phones work normally; if they do, chances are you've made an error in connection; re-check plugs, jacks and wires.

STILL HAVE PROBLEMS — and you've checked all the above ...

1. "When all else fails, read the Instructions." so goes a semi-humorous bit of advice!
2. Do not use a higher **VOLUME** setting than is needed for normal listening. Excessive volume levels may cause distortion.
3. Avoid areas of high background noise (or at least control them).
4. It is normal to have to adjust **VOLUME** for different calls; phone line conditions can vary with calls.
5. With any Telephone Amplifying system it is normal to have to talk a little slower and more clearly than usual — just get used to it.
6. When used in a high noise area, use the MIN **SENSITIVITY** position and speak from a position closer to the **DUōFONE** (within about 3' [1 m]).

If none of our suggestions help, just bring your **DUōFONE** to your local Radio Shack store; we have the personnel, equipment and parts to properly service your unit.

A Note Of Explanation:
Can't quite figure out what's going on? How and why the **DUōFONE** works as it does? Maybe this will help.

The **DUōFONE** utilizes a signal-sensing circuit which detects the first signal applied to the circuitry — either the Mic signal (outgoing) or phone line signal (incoming) — and turns on the proper internal amplifier for that signal. That internal amplifier circuit remains on till the signal ceases. Then the signal-sensing circuit returns to normal and waits for the next signal. In other words, the party that speaks first has priority and the second party can not be heard until the first party stops talking. Then the second party can talk.

A good comparison would be a CB Transceiver — except here we've got an automatic "send-receive" or Talk switch. But the control is at the **DUōFONE** end of the conversation. So, if there is a constant noise in the room where the **DUōFONE** is, it will maintain priority and will not allow the signal-sensing circuit to return to normal. This is why we have the **SENSITIVITY** switch — to help overcome this problem.

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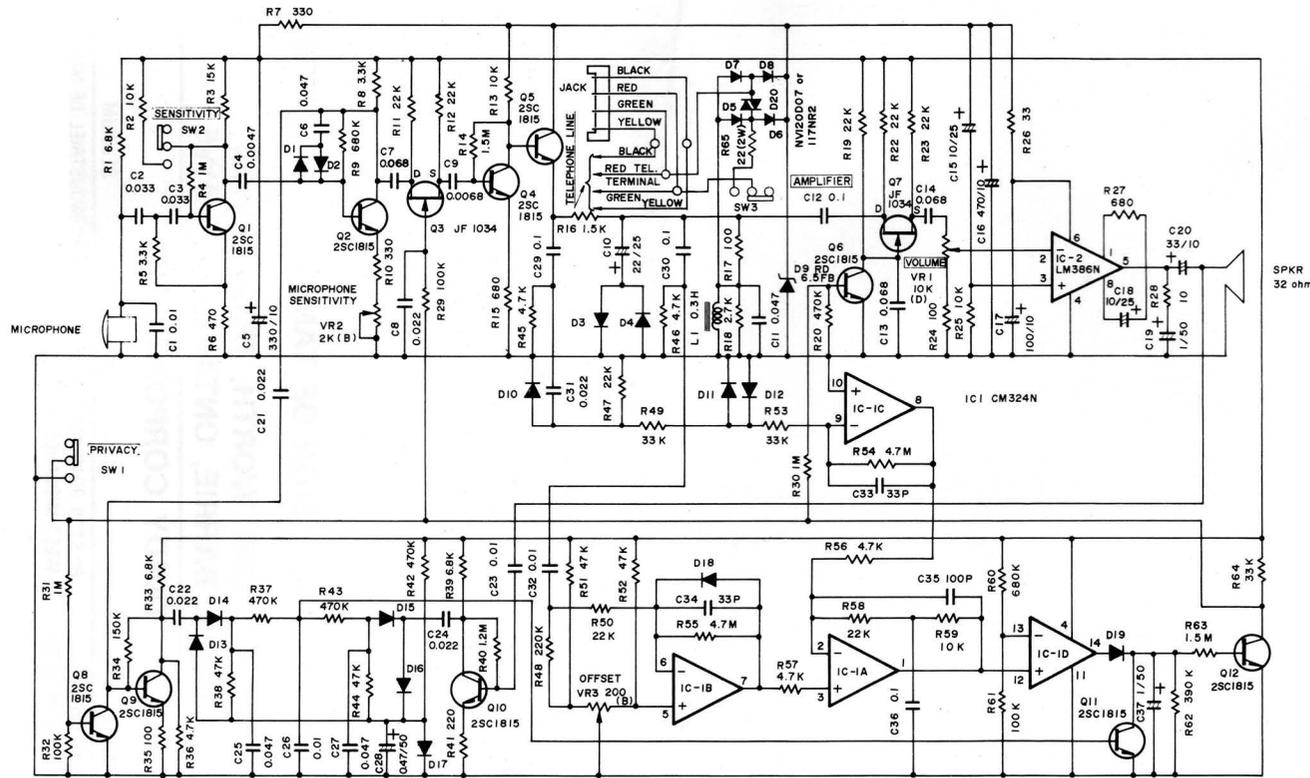
NOTE (1) ALL RESISTANCE VALUES ARE INDICATED IN "OHM" (K=10³ OHM).
(2) ALL CAPACITANCE VALUES ARE INDICATED IN "μF" (P=10⁻⁶ μF).
(3) WG713 or KDS4148 ARE USED AS: D1~D4, D10~D12, D17~D19.
(4) IOE-1 or IN4002 ARE USE AS: D5~D6.
(5) IN60 USE AS: D13~D16.

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RADIO SHACK, A DIVISION OF TANDY CORPORATION

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TANDY CORPORATION

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