

On the Care and Feeding of Trimline Telephones

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—Provisional—

Introduced in 1965 by Western Electric and subsequently manufactured in several variants and by a number of makers, in America and overseas, the dial-in-handset Trimline might well be described as the last “standard” telephone design. This note is directed toward the user who wishes to take advantage of one of the distinctive Trimline features, its illuminated dial. Please be aware that there are many Trimline-like telephones, some of them marketed under the Trimline name, to which this note does not apply.

1 The Trimline Family

Neglecting the variations in mounting arrangements and handset cords, we can distinguish three major groupings of Trimlines.

rotary	Dial	Touch-Tone
desk	Base	wall
incandescent	Dial Light	LED

It is important to observe that *all* “proper” Trimlines, including licensed clones such as the ITT “Trendline”, have illuminated dials.¹ This is *not* generically true of dial-in-handset telephones. Dial lighting on the broadly similar Automatic Electric Styleline, for instance, was confined to rotary-dial desk-base units. The information and advice provided in this note is intended only for the telephones specifically mentioned, and may be inapplicable or even (although it seems unlikely) dangerous where other types are concerned. If you have information which you feel should be added to this document, you are welcome to contact the author.

2 Identifying Your Trimline

In order to assure correct operation of your dial light, it is first necessary to ascertain the type of lamp used. For Touch-Tone handsets, this is very simple: units with round buttons have incandescent

¹This is not quite universally valid as stated, but exceptions are rare. The author happens to possess a “demonstrator” unit made in transparent plastic, which presumably should have an LED, but for some reason was assembled without it.

lamps, while those with square buttons have LEDs.² For rotary-dial handsets, “LED” may be printed on the dial card, underneath the resting position of the fingerstop. This marking will be visible when the dial is rotated (as long as you are not covering it up with your finger). If there is no such marking, you presumably have an incandescent-lamp handset. The definitive test is to look behind the number-card cover for the lamp, as described below.

3 Lighting the Lamp

3.1 Incandescent

Trimline telephones with incandescent dial lights use a stubby bulb requiring a sizable fraction of a watt of power.³ This is provided from the household supply through a step-down transformer, also used with “Princess” telephones, which puts out nominally 6 V AC limited to 250 mA.⁴ The current from the dial-light transformer is ordinarily fed into Pair 2 (black/yellow) of the station wiring. If you have a multiple-line system, special arrangements may be required. While one transformer is required per Princess (due to the larger lamp and the night-light feature), there should be no problem supporting multiple Trimlines from a single transformer, especially where it is not likely that more than two will be off-hook at any time. It is of the utmost importance to assure, when you are connecting the transformer, that current is fed *only* to the telephone(s) you wish to illuminate, and not to equipment which might be damaged, or to anywhere a hazard might be created.

If your incandescent-lamp Trimline does not light when taken off-hook with the lamp current applied to the appropriate terminals, the most likely problem is a dead (or missing) lamp. After disconnecting the telephone or handset, you will need to prise up the number-card cover on the handset. Underneath is a small metal shield which serves to diffuse the heat from the lamp. Lift this away, and the lamp (mounted in what is known as a telephone-slide base) can be coaxed out. Test it directly, using a multimeter with a continuity setting, or substitute a known good bulb. It is also possible that the current is not reaching the handset. Such a fault is most likely to be in the handset cord. This too can be dismantled and checked for continuity. If both the lamp and the handset cord test OK, your telephone may have a serious circuit fault (in the base or the handset), and your best course of action may be to discontinue using it.

Do note that even small filament lamps get hot. The typical telephone call of 1965 was fairly brief, and the interval between calls long enough to allow substantial cooling, so the likelihood of damage to circuit components or the plastic housing was small. Talking for hours, you will definitely feel the handset get warm. If you do this often, it may be wiser to remove the lamp, or possibly to install an interrupter switch to disconnect from the transformer.

3.2 LED

About ten years after the Trimline first appeared, a new form of lamp was introduced: the light-emitting diode. This shines a curious yellow-green (Western Electric), but draws a small enough

²Square-button Touch-Tone dials should work regardless of line polarity, but round-button dials may not. When using an ATA or PBX, it may be simpler to re-program the polarity than to swap the wiring.

³The replacement lamp recommended by late Bell System Practices is designated type 53A. Original equipment may be 51B, 53B, 53S, or other designations from other suppliers.

⁴Western Electric transformer models 2012A and 2012C were used in the Bell System – caution must be taken, as certain other transformers supplied with Princesses can reportedly deliver excessive current and damage Trimlines. The ITT transformer designation was 31(0)690.

current that it can be powered from “talk battery” without excessively loading the line. No special connection or equipment is required, and the circuit is not polarity-sensitive.

Therefore, an LED handset should always illuminate when the telephone is connected to an active (common-battery) central-office line, PBX, or voice-over-IP analog terminal adapter (to name the most common options), and off-hook. In the simplest terms, if you can hear dial tone, you should see light. If no light appears, your handset may well have a serious circuit fault, and you might be best served to discontinue using it. It is normal for the light to dim or go out when the (rotary) dial is winding back to normal, or a Touch-Tone button is depressed.

4 Other Telephone Types

This note is directed toward the Trimline and certain derivative models of apparatus, and is not intended to provide complete coverage of the topic of illuminated dial-in-handset telephones. The author is, however, willing to include related items of particular importance when they are brought to his attention, especially those which have safety implications.

Styleline

As mentioned previously, not all Automatic Electric Styleline telephones are provided with a dial light. If your Styleline does not illuminate, it probably never did. To determine this may require disassembling the handset in order to inspect the dial from behind.

The dial lamp employed is an electroluminescent device (one might term it a light-emitting capacitor) which gives a diffuse blue-green glow, and may be familiar from the use of the same technology in night-lights. This type of lamp draws negligible current, but requires a moderate potential, and is ordinarily connected to the 115 V household supply, through a current-limiting plug which places a large resistance in both “hot” and “neutral” legs. In this way, if (for instance) damage to the wiring should allow the lamp supply to cross over onto the signal wires, the user or maintenance personnel can be protected from a dangerous shock. The lamp supply may be introduced either by a separate power cord, or on Pair 2 as for the incandescent Trimline. Since the base may not have the necessary wiring to feed the lamp supply through, it may appear desirable to experiment by applying voltage directly to the relevant terminals on the handset, but suitable care must be taken to avoid injury and other hazards associated with mains power.

A Trimline Models

The original Trimline spawned an endless succession of derivatives, imitators, et cetera, which fall outside the present scope. It would be a hopeless job to try to list all of them — the “210 Trimline” marketed under the AT&T name for a number of years, the Korean-made Northwestern Bell “Room-mate”, the BT “Minstrel”, et cetera. The sensible course is rather to indicate which models we do mean to consider. Additions and clarifications are of course welcome.

Western Electric

According to Bell System designations, the handset was the telephone proper, with the base classed as a kind of accessory. Handsets were designated 220 (rotary dial) or 2220 (12-button Touch-Tone),

bases as AC (wall) or AD (desk). Suffixes denoted variants, eg, 220AL with LED illumination and pre-modular “fat” handset-cord jack – note that the AC2 wall base is substantially deeper than the AC1, and holds the handset more securely, but all ITT and Stromberg–Carlson production appears to use the early design. Sets refurbished for direct sale may have received a new numbering code.

“Trendline” – ITT

Aside from the term “Tel–Touch”, ITT largely followed Western Electric nomenclature. Additionally, designations were defined for complete telephones.

	AC	AD
220	200	254
2220	2200	2254

Production of incandescent-lamp instruments was extensive. Square-button touchpads (with smaller buttons and shorter travel than on Western Electric pads) were used on some late-production Tel–Touch Trendlines, as well as push-button pulse-dial sets, and “Trendline II” sets of markedly different construction. Some have (orange) LED illumination and some do not. Confusion seems difficult to avoid. Whether LED rotary handsets were made is unclear.

Successor company Cortelco appears to have marketed a variety of instrument types under the “Trendline” name.

“Slenderet” – Stromberg–Carlson

Further information regarding this apparatus is invited.

Most or all production appears to have been incandescent-lighted, with round-button Touch–Tone handsets manufactured well into the 1980s. Designations appear to follow ITT practices.

Square-button models may have been sold only under the successor “Comdial” brand.

“Gondola” – Citesa (Spanish subsidiary of ITT)

Further information regarding this apparatus is invited.

Rotary-dial only; touchpad models marketed under the same name are likely to be quite different internally. It appears that early production used an incandescent lamp with step-down, but specifics are not available. Reportedly, when telephone company staff complained that subscribers were asking them to work on mains wiring, a solution was found in LED illumination, setting the course for Western Electric to follow. The LED is *red*, and may possibly be polarity-sensitive.

“Manhattan” – Siemens

Further information regarding this apparatus is invited.

According to a German Post Office brochure, desk sets (designated DFeAp or KFeAp 370) and wall sets (390) were introduced in 1981, all with rotary dials. It appears likely that LED illumination was employed. The author believes that the instrument on display at the Museum of Communications, Nuremberg, is a round-button Touch–Tone model in a color not offered in Germany.