

## **Converting a Western Electric 2504-BM Telephone** **Set to a 2500-D or DM Single Line Telephone Set**

The W.E. 2504-BM type sets are intended solely for specially engineered lines, and not for general telephone use. The set is equipped with a card-operated line switch, which provides six transfer contacts and is arranged for two-wire service. The set is convertible to four-wire service at installation. The 2504-BM also supports speakerphone connection.

The set is equipped with 35C3A T/T dial, a T1A Ringer, either a 425G, 425K or 4228 type Network. The mounting cord is a D24E type, and the exclusion switch assembly is operated by the left hook switch plunger.

A ringer “Off – High” adjustment lever is located on the left hand side, behind the handset cord opening. The 2504-BM is arranged for a KS-8109L1 Buzzer which is not furnished with the set. This information also applies to the W.E. 2504-B telephone set. (Information provided by Paul-F Telephone Collection)

Remove all of the additional equipment which is unique to a 2504-BM when it left the factory. ( See Note – 1 on Page – 12 ).

The 35C3A touch tone DTMF dial pad, the ringer, the Network and the polarity guard, will remain with the set.

The set should have either a 4228 or a 425K Network from the factory.

The dial should be a 35C3A Type Touch Tone, polarity sensitive dial pad. There are 11 leads associated with this dial for additional functions performed by a typical 2504-BM desk set. However only 8 of those leads will be used for the set’s conversion to a 2500-D or DM telephone set.

Color coding of the 35C3A dial conductors is the same as the T/T dial used on a typical 2500-D or DM set.

The polarity Guard will most likely be a 840364202 type module.

Using a standard W.E. schematic for a 2500-D or DM telephone set to complete the following :

**T/T Dial Pad Connections :**

<b><u>DIAL</u></b>	<b><u>NETWORK TERMINAL</u></b>
(G)	“ F “
(BK)	“RR”
(W-BL)	“S”
(W)	“GN”
(R-G)	“R”
(R)	“T”
(BL)	“B”
(O-BK)	“C”

Insulate the spade connectors on the remaining 3 dial conductors and store inside the set.

**\*\*\* IMPORTANT \*\*\***

The color coding on the conductors leaving the hook switch assembly “DO NOT” conform to those found on the standard hook switch normally found inside the 2500D or DM telephone set.

While some of the switch hook functions in a 2504-BM are the same as that found inside a 2500-D or DM, the color coding is different.

<b><u>HOOK SWITCH CONDUCTOR</u></b>	<b><u>NETWORK TERMINAL</u></b>
White (W)	“L-1”
Yellow (Y)	“GN”
Violet (V)	“C”
Orange (O)	“L-2”
Blue (BL)	“L-2”

**HOOK SWITCH CONDUCTOR**

RED (R)

SLATE (S)

**POLARITY GUARD**

“T”

“S”

**POLARITY GUARD**

Green Conductor

White Conductor

**NETWORK**

“F”

“C”

**\*\*NB\*\*** - The terminals “T” and “S” on the polarity guard are difficult to see, and it would appear that only terminal “T” is actually marked. Terminal “S” is determined by the process of elimination.

**Handset Connections** : Follow the same color coded connections as those associated with the 2500-D or DM.

<b><u>Conductor Color</u></b>	<b><u>Network Terminal</u></b>
Green (Receiver)	“S”
White (Receiver)	“R”
Black (Transmitter)	“B”
Red (Transmitter)	“T”

**Line Cord** : Follow the standard connections for a single line set :

Green (tip) to “L-1” on the Network

Red (ring) to “L-2” on the Network

**Bridged Ringing** :

**Ringer** : 2504-BM telephone sets are normally equipped with a “T1A” type ringer which only has 2 conductors, red and black. If keeping this ringer onboard, black to “L-1”, Red to “K” on the network, and install jumper between “A” and “L-2” on the network.

**C4 Type Ringer : Installs in the normal fashion.**

<b>Red Wire :</b>	<b>to</b>	<b>“L-2” on Network</b>
<b>Black Wire:</b>	<b>to</b>	<b>“L-1” on Network</b>
<b>Slate / Red Wire</b>	<b>to</b>	<b>“A” on Network</b>
<b>Slate Wire</b>	<b>to</b>	<b>“K” on Network</b>

**Use a rubber chassis grommet in the hook switch support tower to accommodate the bottom chassis pin on the C4 ringer.**

**The base unit of the 2504-BM has the correct 2 machine screw mounting positions for a typical C4 ringer.**

This is the set upon which  
the conversion was performed.



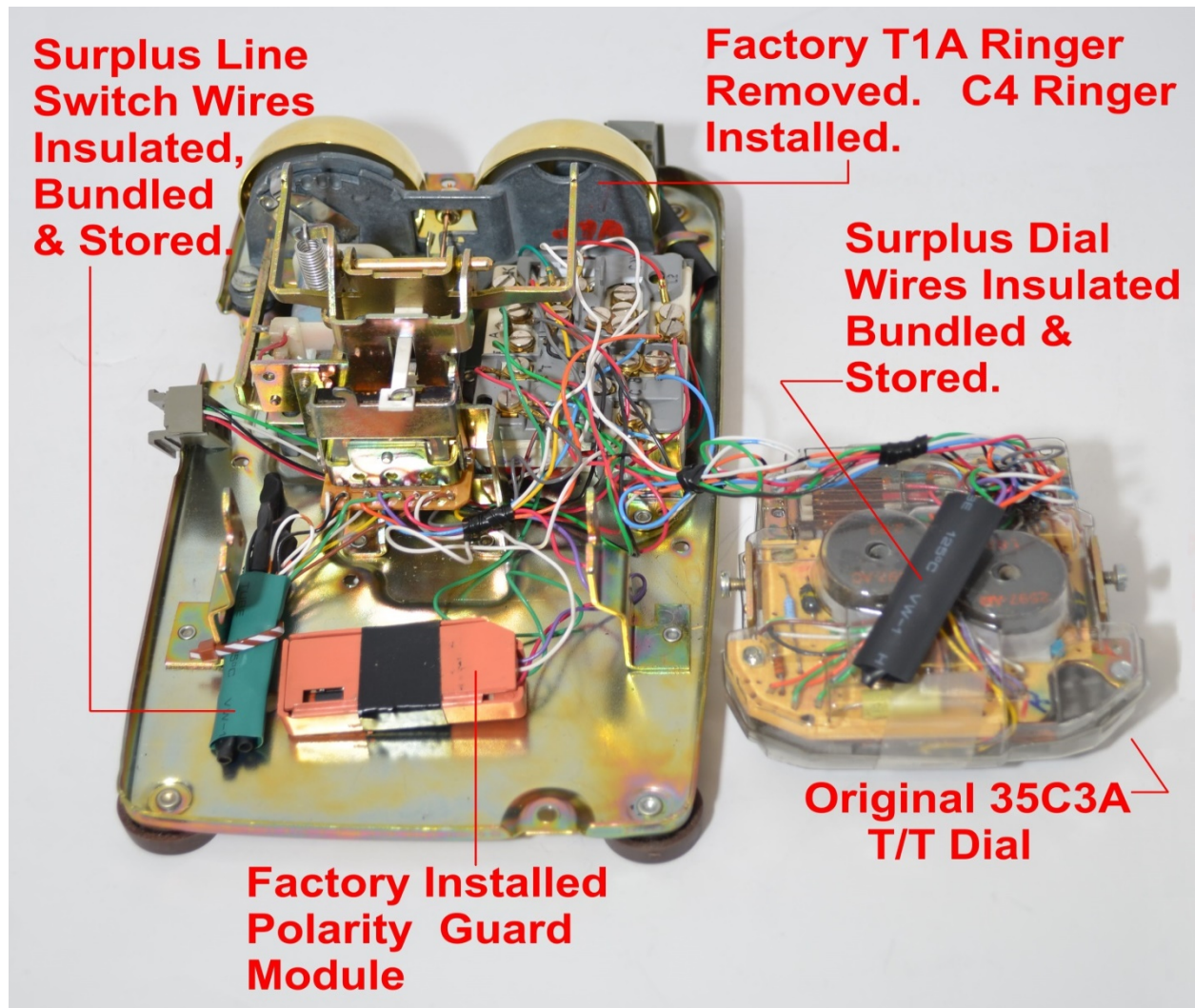
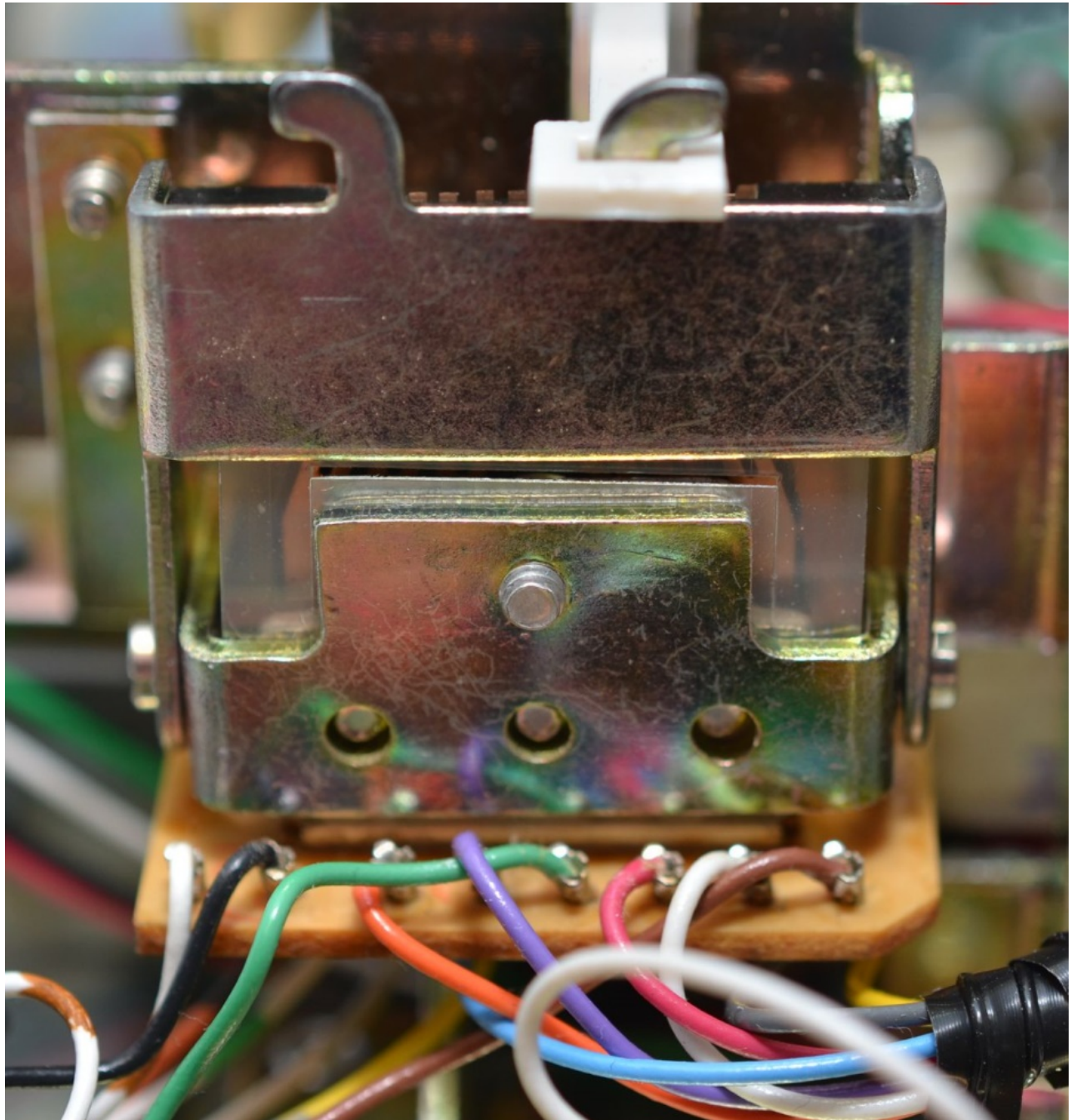
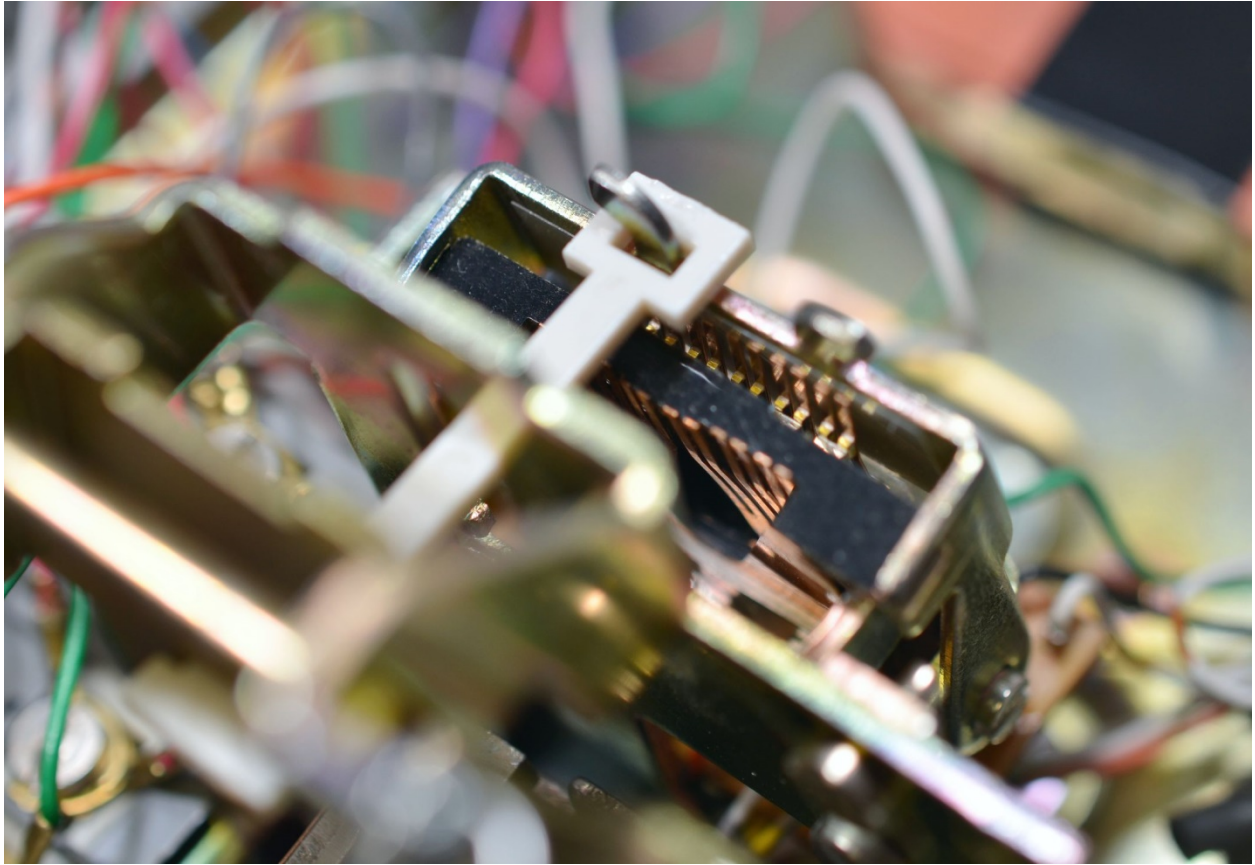


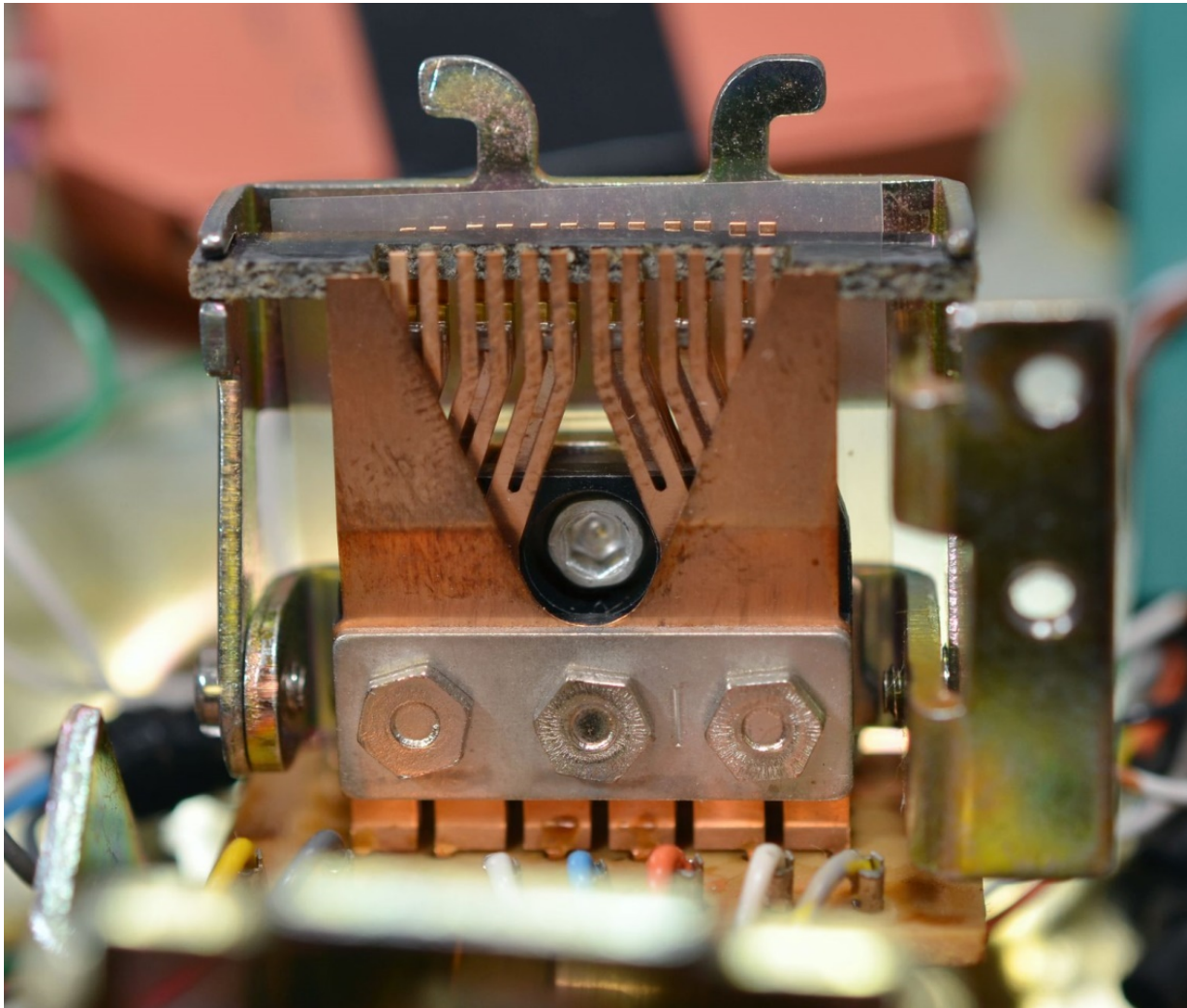
Fig. 1 - The 5204-BM as it appears after conversion to a 2500-D or DM telephone set.



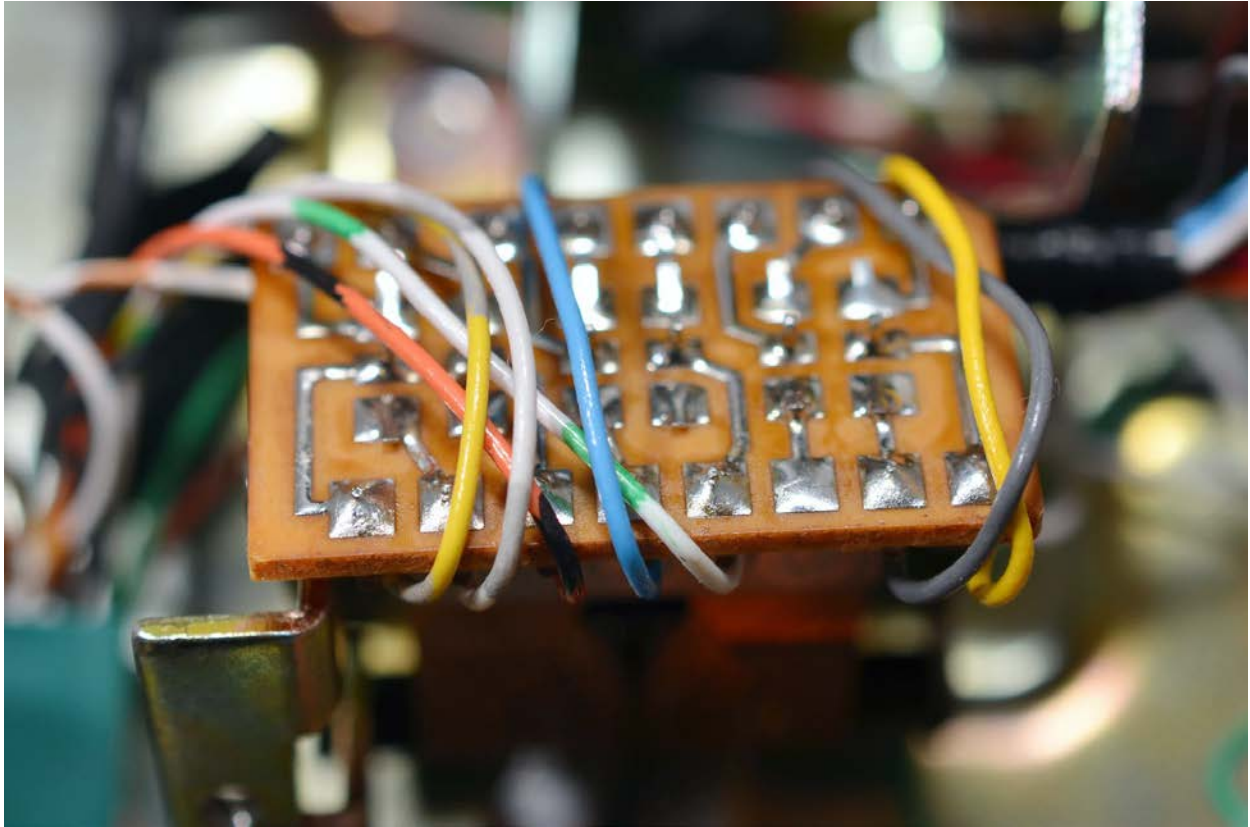
**Fig. 2 - The rear view of the factory “Line Switch” in the 2504-BM telephone set.  
Note the multiple conductors, which represent only half of the total number present.**



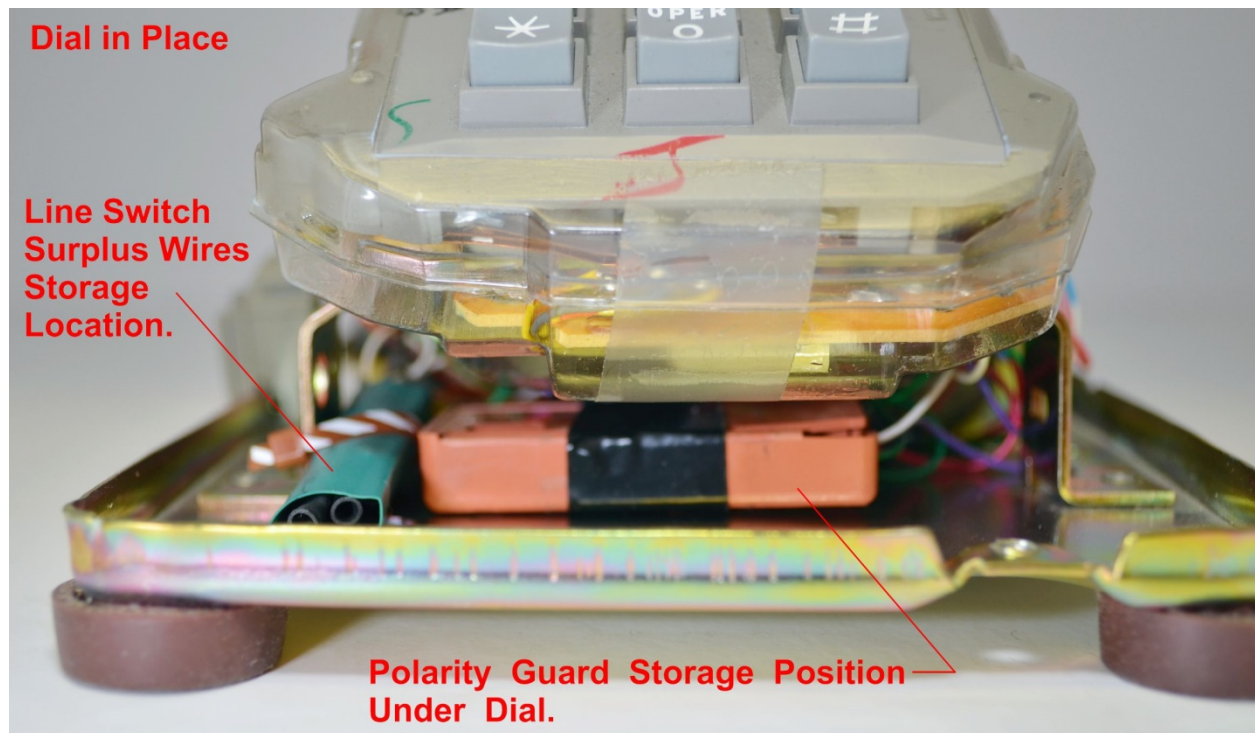
**Fig. 3 – View of the “Line Switch” from above showing top of switch springs and the plastic actuator connected to the handset, plunger operated bell crank.**



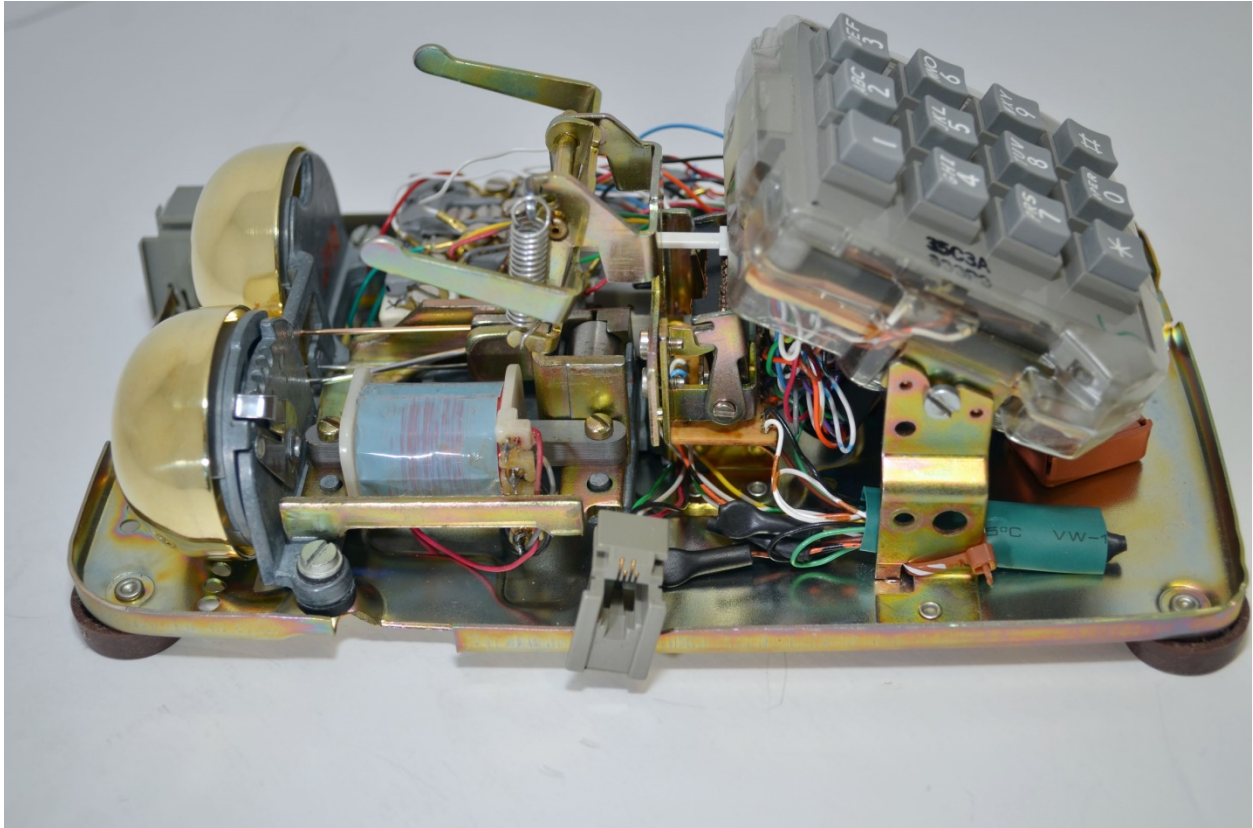
**Fig. 4 - View of the front of the “Line Switch” which is normally obscured by the handset hook assembly tower.**



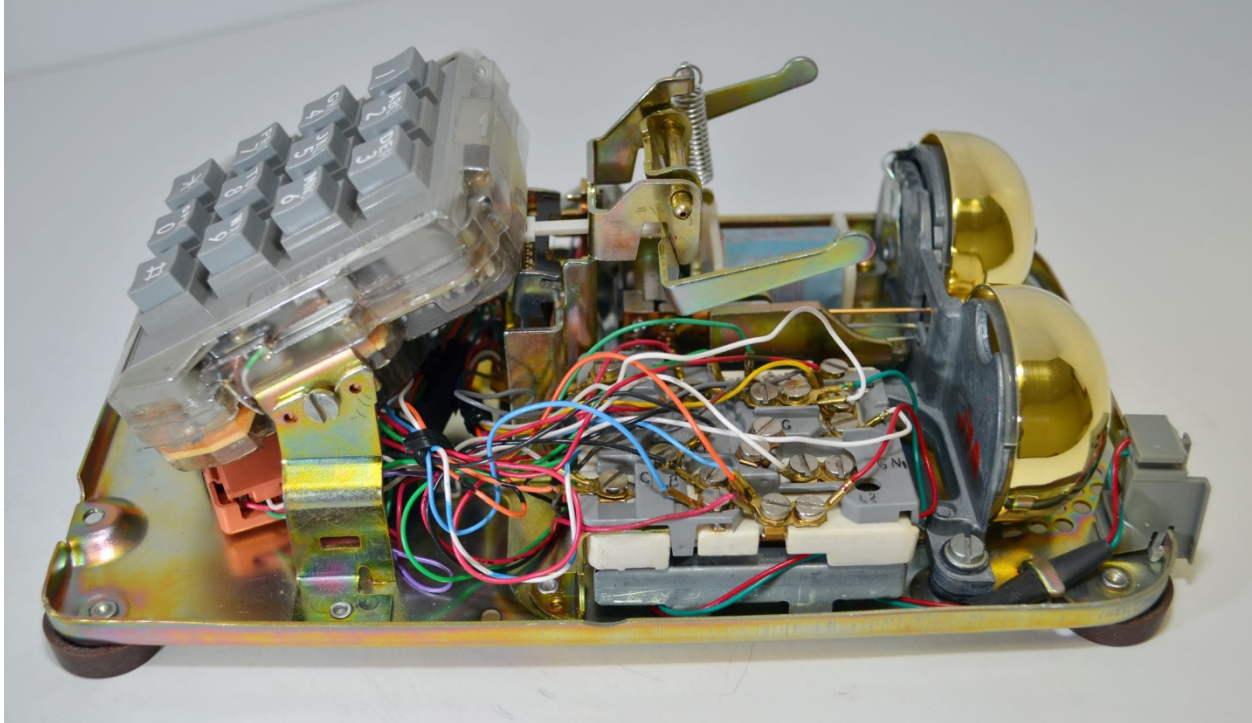
**Fig. 5 - View of the underside of the “Line Switch” circuit board, not normally seen. It’s positioned facing downward, approximately 1” inch above the inside surface of the base, and behind the T/T dial.**



**Fig. 6 – View from the front of the set showing surplus “Line Switch” conductors and the polarity guard module storage location.**



**Fig. 7 - Picture of the left side of the set with the set's case removed.**



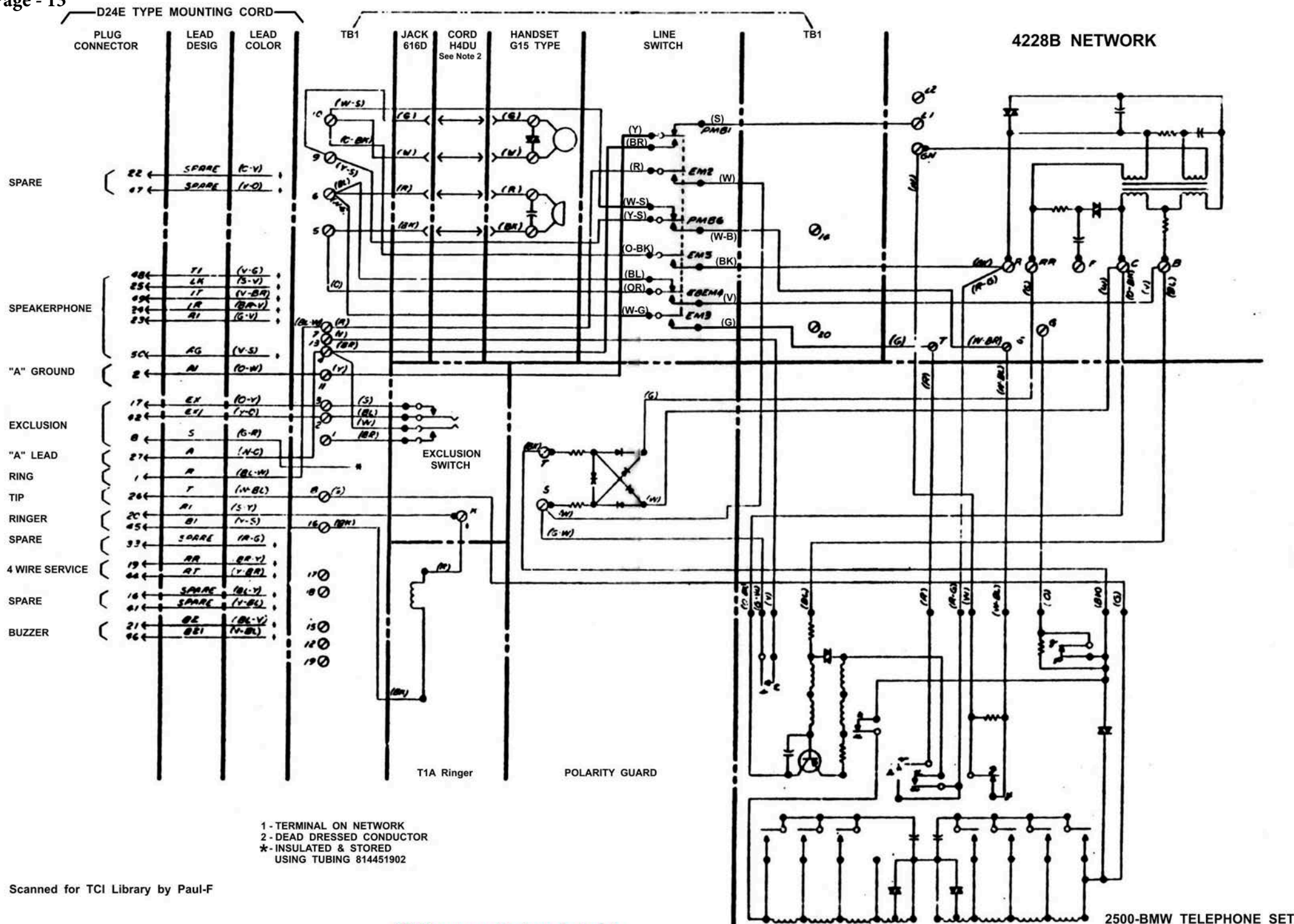
**Fig. 8 - View of the right side of the telephone with the set's case removed.**

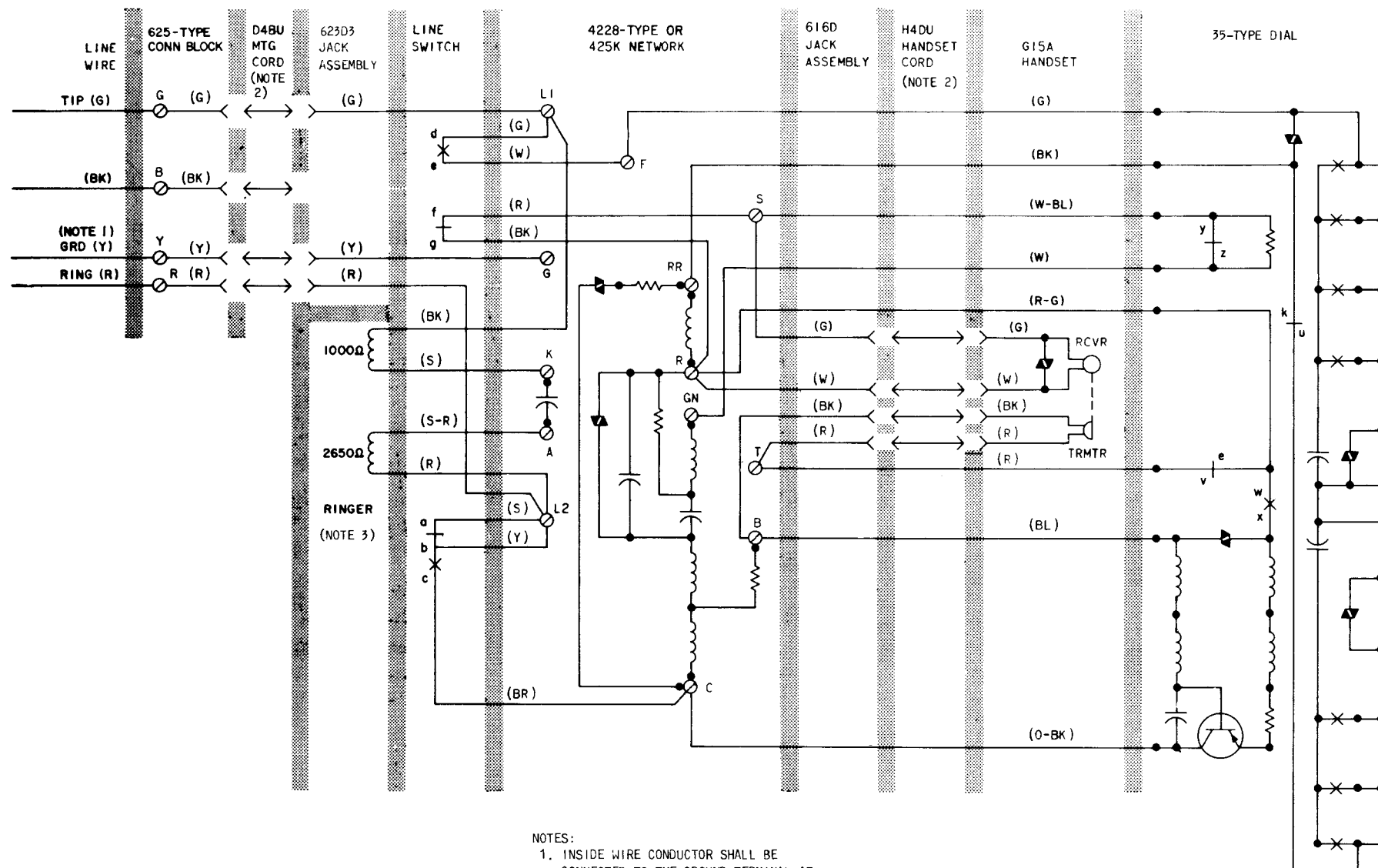
**Rev. 01**

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**Note – 1 : Removing all of the “not required” factory components unique to the 2504-BM during the course of converting the set is totally optional. Packaging and labelling the parts that are removed, is one method of ensuring the parts don't get lost. Leaving them in place inside the set, guarantees their safe keeping for the future if it's ever decided to return the set to it's original configuration.**





## 2500DM Telephone Set, Connections