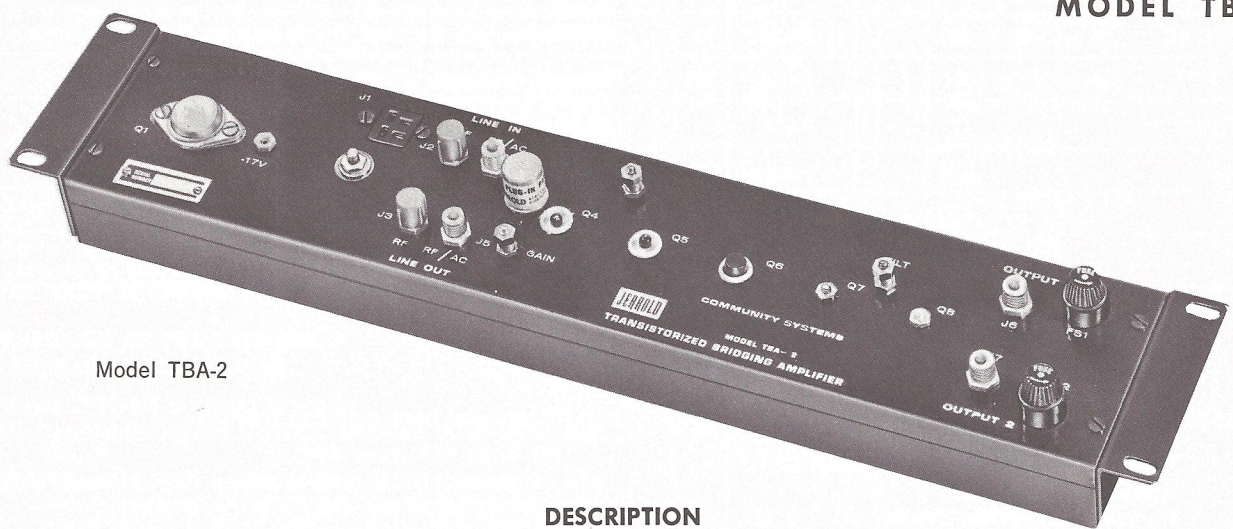


## SOLID-STATE INTERMEDIATE BRIDGING AMPLIFIER

MODEL TBA-2



Model TBA-2

### DESCRIPTION

Jerrold Model TBA-2 is a solid-state intermediate bridging amplifier for creating feeder lines at trunk line locations between two TML-1 amplifiers. The location may be anywhere within 8 to 14 db of cable (measured at ch. 13) from the preceding Model TML-1. The unit is designed for mounting in a weather housing which may be installed either on the cross-

arm of a utility pole or suspended from the messenger strand near the pole. Model TBA-2 has two outputs. Each has an output capability of 42 dbj per channel for 12 channels at -57 db cross-modulation. Each output can be fused to permit powering up to eight Model TLE-1 feeder line extenders via the coaxial cable.

### SPECIFICATIONS

FREQUENCY RANGE	54-216 mc
GAIN (Min. full)	26 db (each of 2 outputs)
RESPONSE FLATNESS	±½ db (thru 8 db of cable, measured at 216 mc)
GAIN CONTROL (fine)	5 db range
(coarse)	plug-in pad (0 to 15 db in 3 db steps)
TILT CONTROL	3 db range (for 6 db of cable)
TILT ALIGNMENT	Thru 8 db of cable
IMPEDANCE (input and output)	75 ohms
VSWR (input)	1.23:1 max. (19 db return loss)
(output)	1.38:1 max. (16 db return loss)
ISOLATION BETWEEN OUTPUTS	16 db min.

LINE INSERTION LOSS	¾ db max.
MAX. OUTPUT CAPABILITY	
-57 db Cross-Mod.*	
(per ch. for 9 ch.)	43 dbj** (using block tilt)
(per ch. for 12 ch.)	42 dbj*** (using block tilt)
POWER REQUIRED	19 to 30 v ac @ 0.4 amp. max.
AMBIENT TEMPERATURE RANGE	-30° F to 140° F

\*At -57 db cross-mod. level with amplifiers cascaded to the limit and output properly de-rated for cascading, there will be no cross-mod. distortion visible in either black and white or color pictures. At -51 db cross-mod. level, cross-mod. distortion will be barely perceptible on a white screen.

\*\*0 dbj = 1,000 microvolts across 75 ohms.

\*\*\*42 dbj output is attained by using a block tilt technique, i.e., lo-band channels are operated 3 db below the high channel level. For flat output, de-rate output capability 2 db.

## CHART OF CONTROLS AND CONNECTIONS

NAME	CIRCUIT DESIGNATION	TYPE	FUNCTION
GAIN	R3	Potentiometer	Fine gain control; range 5 db
J8	J8	4-pin Socket	Accommodates plug-in pads for coarse gain control
TILT	R13	Potentiometer	Tilt control; range 3 db, compensating for 6 db of cable
J1	J1	4-pin Socket	AC input from Model RPS-15 or RPS-30
LINE IN JR RF	J2	F-61A	Main line input terminal; rf only
J4 RF/AC	J4	F-61A	Main line input terminal; rf and ac power (rf in—ac in or out)
LINE OUT JR RF	J3	F-61A	Main line output terminal; rf only
J5 RF/AC	J5	F-61A	Main line output terminal, rf and ac power (rf out—ac in or out)
OUTPUT 1	J6	F-61A	Feeder line output terminal 1
OUTPUT 2	J7	F-61A	Feeder line output terminal 2
FS1	FS1	Fuse	Insertion of fuse passes ac to J6
FS2	FS2	Fuse	Insertion of fuse passes ac to J7
TP1	TP1	Tip Jack	Test point for —17 volts dc

### INSTALLATION

#### ACCESSORIES FURNISHED

- 1 Model PIP-0 (shipped in place on unit)
- 2 Fuses
- 1 4-terminal connector (cap for J1)
- 2 Brackets
- 4 Screws #6-32 x 1/4
- 4 Screws #10-32 x 3/8

#### INSTALLATION PROCEDURE

**CAUTION: DO NOT INSERT FUSES INTO TBA-2 UNTIL ALL TLE-1 UNITS ARE INSTALLED!**

Model TBA-2 may be installed anywhere in the trunk line within 8 db min. and 14 db max. (measured at ch. 13) of cable from the preceding TML-1.

Mount TBA-2 in weather housing.

- a. If housing mounted on cross-arm:  
Install TBA-2 in the housing.
- b. If housing suspended from messenger strand:  
Attach brackets to TBA-2 chassis so that ears project from the bottom of the chassis. Then engage the ears with the slots in the floor of the weather housing.

#### AC POWER CONNECTIONS

- a. If powered via trunk line from either direction:
  - (1) Place cap (shipped with unit) over J1.
  - (2) Remove cap from either LIN INPUT RF/AC or LINE OUTPUT RF/AC terminal (depending on direction from which power is supplied).
  - (3) Prepare JT-404 jumper cable with FHC-404 connectors. Interconnect selected RF/AC terminal on TBA-2 and proper bulk-head terminal within weather housing with prepared jumper.

- b. If powered from supply at location:

- (1) From RPS-30 or RPS-15:  
Connect J1 on RPS-30 (J3 on RPS-15) to J1 on TBA-2 with cable furnished with power supply.
- (2) From CPS-4 or 405-P:  
Place cap over J1. Prepare JT-404 jumper cable with FHC-404 connectors. Remove cap from LINE IN RF/AC terminal on TBA-2 and interconnect this terminal with the RF/AC terminal on either CPS-4 or 405-P with the prepared jumper.

#### CONNECTION OF RF TO TBA-2

- a. With LINE IN RF/AC terminal already connected:
  - (1) If ac power desired on trunk line OUT:  
Remove cap from LINE OUT RF/AC terminal. Prepare JT-404 jumper and connect terminal to proper bulk-head terminal in weather housing.
  - (2) If no ac power desired on trunk line OUT:  
Remove cap from LINE OUT RF terminal. Prepare RG-59/U jumper with F-59A connectors and connect terminal to proper bulk-head terminal in housing.
- b. With LINE OUT RF/AC terminal already connected:  
Same procedure as step a, except that connection is made to the LINE IN terminals and the proper bulk-head fitting.
- c. With no connections made to LINE IN or LINE OUT terminals:
  - (1) If ac power to be sent in **both** directions:  
Use **both** RF/AC terminals on TBA-2 with JT-404 jumpers to appropriate bulk-head terminals.
  - (2) If ac power is to be sent in **one** direction:  
Jumper the **one** RF/AC terminal required to pass ac with a JT-404 jumper to its appropriate bulk-head terminal. Use other RF terminal (no ac power) with RG-59/U jumper to its appropriate bulk-head terminal.

## SETTING OF SIGNAL LEVELS

1. Make sure that all rf and ac trunk lines have been connected and all power supplies (remote or local) energized.
2. Remove caps from OUTPUT terminals J7 and J8.
3. Connect terminating resistor TR-72F to J7.
4. Turn GAIN control full cw (maximum).
5. Turn TILT control full ccw (minimum).
6. Connect field strength meter Model 704-B to OUTPUT terminal J8 and measure signal output in dbj for channel 13.
  - a. If measured output is **less** than the desired output, check TP1 to see that amplifier is receiving proper —17 volts dc supply. If not, check ac input to see that voltage is at least 19 volts. Check rf input to see that signal is sufficient; i.e., desired output less 26 db is minimum signal required for proper operation.
  - b. If measured output is equal to or 2 to 3 db above desired output, adjust GAIN control ccw to obtain exact level desired. Record the level.
  - c. If measured output is **more** than 3 db above desired output, remove plug-in PIP-0 and replace with pad having the required attenuation. Then adjust GAIN control ccw to obtain exact level desired. Record the level.
7. Measure the signal output in dbj for channel 2. Adjust TILT control until measured output is approximately 3 db below the level recorded at channel 13 if block tilt is used, or to the same level as recorded for channel 13 if flat output is desired.

## CONNECTION OF TBA-2 OUTPUT TO BULK-HEAD TERMINAL(S)

- a. If one OUTPUT terminal is used:
  - (1) Terminate unused OUTPUT terminal in 75 ohms with TR-72F.
  - (2) Prepare RG-59/U jumper with F-59A connectors and connect desired OUTPUT terminal to bulk-head terminal of feeder. If **no** ac power is to be sent down feeder, installation is complete. Otherwise go to step c.
- b. If both OUTPUT terminals are used:
 

Connect both terminals to bulk-head terminals as in a.(2). If **no** ac power is to be sent down either feeder, installation is complete. Otherwise go to step c.
- c. If ac power for TLE-1 line extender is required in feeder line:
  - (1) Install and make all rf and ac connections to TLE-1 line extender(s).
  - (2) Place fuse(s) in socket(s) adjacent to OUTPUT terminal(s) where ac power is required.

## CONNECTION OF TBA-2 OUTPUT TO SPLITTERS (if used)

- a. **Without ac** power to feeder lines:
 

Connect OUTPUT(s) of TBA-2 to Model 1592 splitter(s) with RG-59/U jumper(s) equipped with F-59A connectors. Splitter should be **inside** weather housing.
- b. **With ac** power to feeder lines:
  - (1) Install and make all rf and ac connections to TLE-1 line extender(s).
  - (2) Connect OUTPUT(s) of TBA-2 to bulk-head fitting(s) with RG-59/U jumper(s) equipped with F-59A connectors. Then connect bulk-head fitting(s) to Model 1593 splitter(s) with similar jumpers. Splitter(s) should be **outside** weather housing.
  - (3) Place fuse(s) in socket(s) adjacent to OUTPUT terminal(s) which are required to pass ac.

## MAINTENANCE

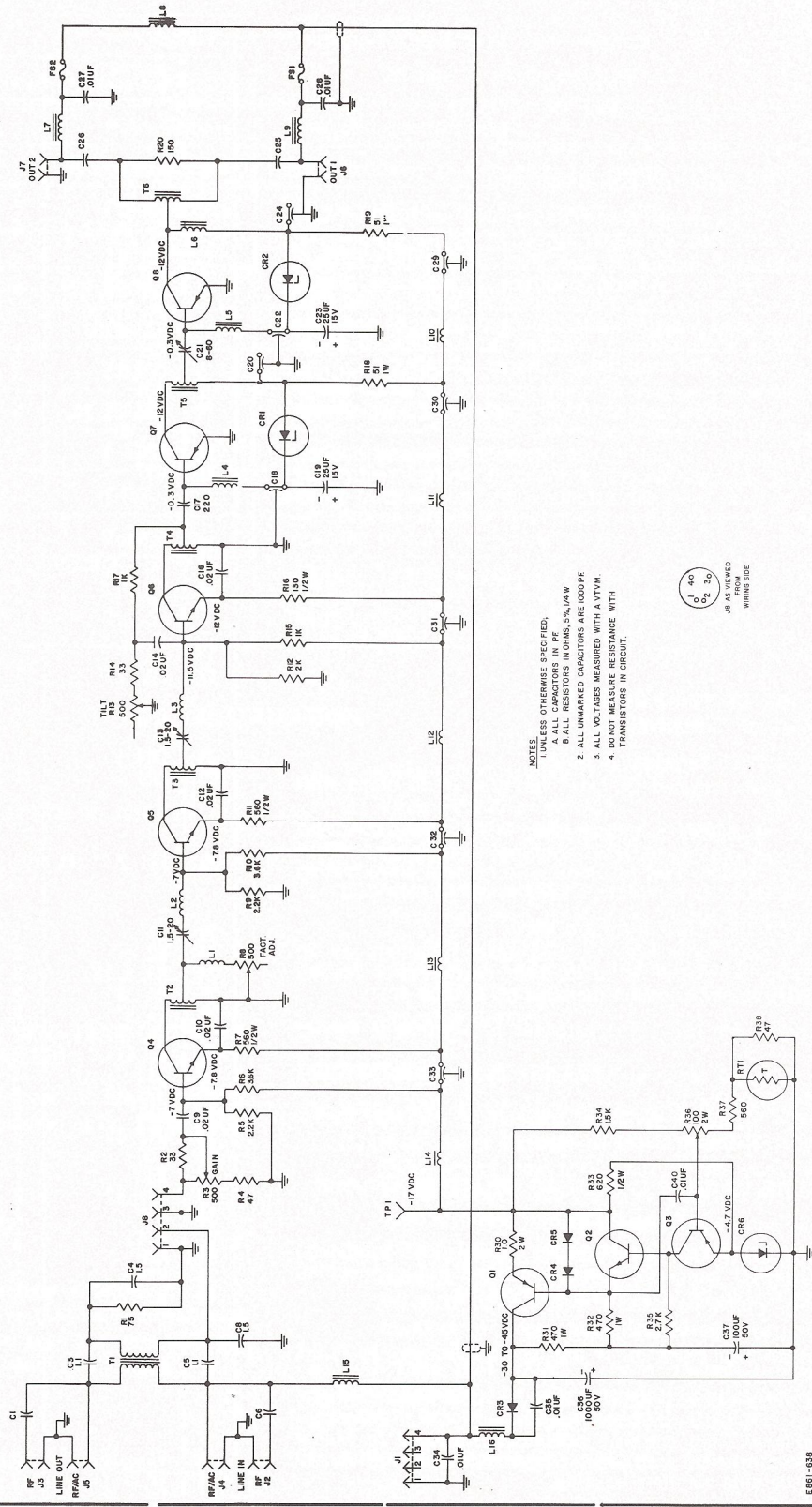
Model TBA-2 is designed for long life with trouble-free performance. Should it become necessary to replace a transistor, only exactly the same type may be substituted. Servicing is to be done only by skilled personnel, experienced in transistor circuitry. For their benefit, a schematic circuit diagram and a parts list are given.

## REPLACEMENT PARTS LIST—TBA-2

ASSEMBLY		REF. DWG. NO.: E861-638		
ITEM	SCHEMATIC DESIGNATION	QTY.	DESCRIPTION	JERROLD PART NO.
<b>CAPACITORS</b>				
1	C1, 6, 25, 26	4	1000 pf GMV cer. disc	123-115
2	C3, 5	2	1.1 pf, 5%, 500 v gimmick	122-061
3	C4, 8	2	1.5 pf, 5%, 500 v gimmick	122-062
4	C9, 10, 12, 14, 16	5	0.2 mf, + 80 —20%, 25 v dc	124-065
5	C11, 13	2	1.5 —20 pf mica trimmer	128-537
6	C18, 20, 22, 24, 29, 30, 31, 32, 33	9	1000 pf, 500 v GMV feed-thru	129-205
7	C17	1	220 pf, 10%	123-119
8	C19, 23	2	25 mf, 15 v elec.	127-065
9	C21	1	8-60 pf mica trimmer	128-538
10	C27, 28, 34, 35, 40	5	.01 mf GMV cer. disc	124-031
11	C36	1	1000 mf, 50 v. elec.	127-061
12	C37	1	100 mf, 50 v. elec.	127-050
<b>CONNECTORS</b>				
13	J1	1	Plug	B184-007
14	J2, 3, 4, 5, 6, 7	6	Chassis fittings F-61A	C821-155
15	J8	1	Socket CJ #2675	182-103
16	TP1	1	Tip Jack, red	185-112
<b>DIODES</b>				
17	CR1, 2	2	Zener 12 v ±5%, 400 mw Motorola #1N963B	137-725
18	CR3	1	Sil. rect. Solitron 200 piv, 140 v rms, 6 amp.	137-726
19	CR4, 5	2	Sil. rect. Solitron #CER-68A	137-718
20	CR6	1	Zener 4.7 v ±5%, 400 mw Motorola #1N750A	137-724
<b>FUSES</b>				
21	FS1, 2	2	1 amp. 3AG	101-238
<b>RESISTORS (values in ohms)</b>				
22	R1	1	75, 5%, ¼ w	112-954
23	R2, 14	2	33, 5%, ¼ w	112-995
24	R3, 8, 13	3	500, pot. 10%	B118-122
25	R4, 38	2	47, 5%, ¼ w	112-992
26	R5, 9	2	2.2 k, 5%, ¼ w	112-932
27	R6, 10	2	3.6 k, 5%, ¼ w	112-999
28	R7, 11	2	560, 5%, ½ w	112-329
29	R12	1	2 k, 5%, ½ w	112-390
30	R15, 17	2	1 k, 5%, ¼ w	112-977
31	R16	1	130, 5%, ½ w	112-251
32	R18, 19	2	51, 5%, 1 w	112-201
33	R20	1	150, 5%, ¼ w	112-974
34	R30	1	1, 5%, 2 w	110-105
35	R31, 32	2	470, 5%, 1 w	112-318
36	R33	1	620, 5%, ½ w	112-335
37	R34	1	1.5 k, 5%, ¼ w	112-966
38	R35	1	2.7 k, 5%, ¼ w	112-931
39	R36	1	100, pot. 10%, 2 w	118-025
40	R37	1	560, 5%, ¼ w	112-204
<b>THERMISTOR</b>				
41	RT1	1	28.2 ohms @ 25° C— Keystone Carbon #RL6MIT	110-025
<b>TRANSFORMERS</b>				
42	T1	1	Coil type	109-107
43	T2, 5	2	Assembly	B144-093
44	T3, 4, 6	3	Assembly	B144-084
<b>TRANSISTORS</b>				
45	Q1	1	Factory selected	130-104
46	Q2	1	Factory selected	130-122
47	Q3	1	Factory selected	130-123
48	Q4, 5	2	Factory selected	S130-112
49	Q6	1	Factory selected	A130-125
50	Q7	1	Factory selected	A130-124-1
51	Q8	1	Factory selected	A130-124-2

# SCHEMATIC

## SOLID STATE BRIDGING AMPLIFIER MODEL TBA-2



- NOTES:
1. UNLESS OTHERWISE SPECIFIED, ALL RESISTORS ARE 1/4 W.
  2. ALL UNMARKED CAPACITORS ARE 10000 PF.
  3. ALL VOLTAGES MEASURED WITH A V.T.M.
  4. DO NOT MEASURE RESISTANCE WITH TRANSISTORS IN CIRCUIT.



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ALL DATA SUBJECT TO CHANGE WITHOUT NOTICE.

**JERROLD ELECTRONICS • PHILADELPHIA, PA. 19104**  
CATV SYSTEMS DIVISION



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