DO THIS FIRST

Before you power up your TC9 you should do a few things.

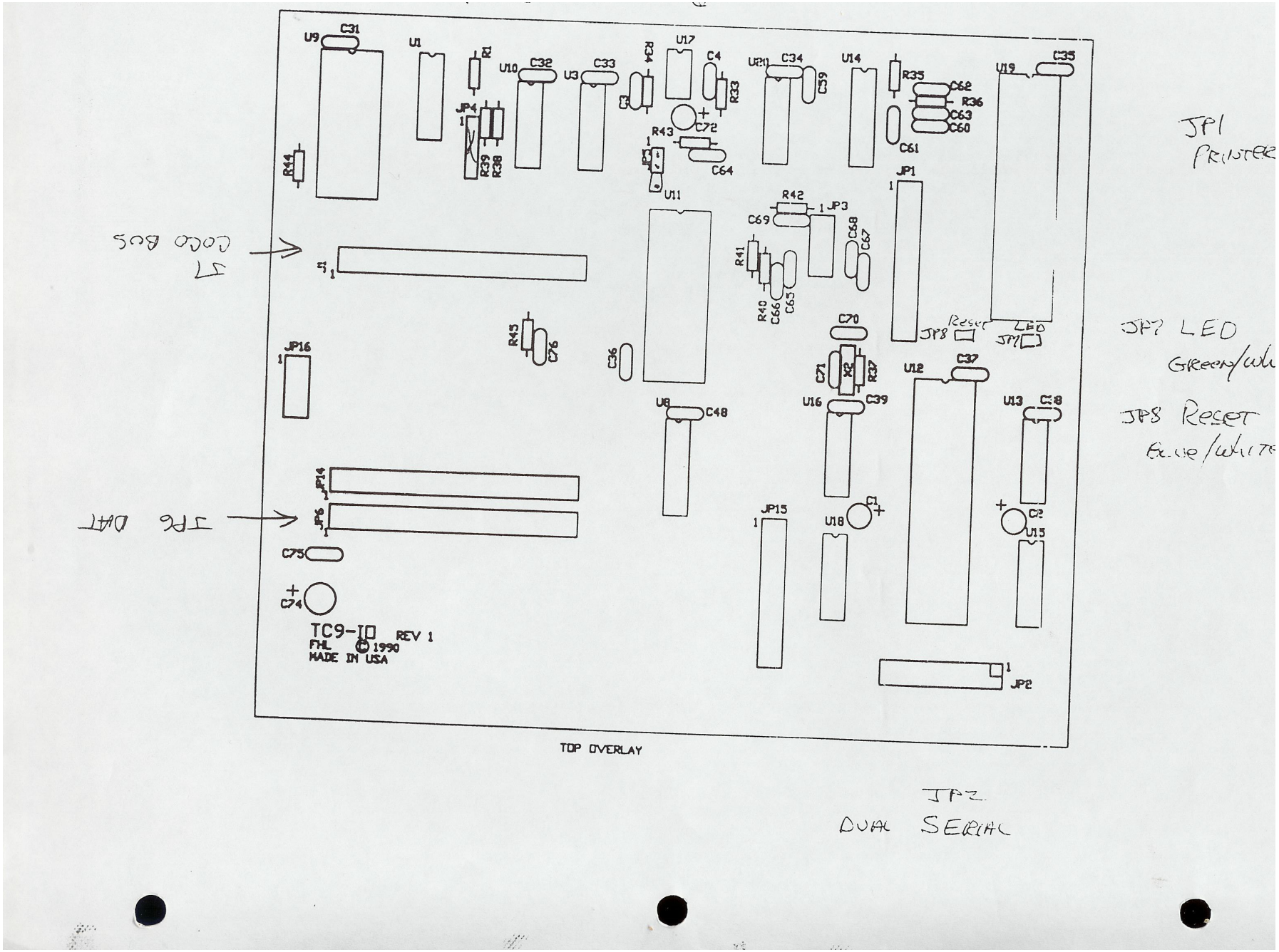
- ❒ Remove the top by removing the 6 screws on the back. Lift and pivot the top forward to release it from the front bezel.
- ❒ Check for loose connector wiring and loose screws. Sometimes this happens during shipping.

Before you can use your TC9 you have to install a floppy drive and a controller. The controllers top faces the TC9 board or towards the rear of the case.

- ❒ Install a controller, floppy drive, power and ribbon cables.
- ❒ Connect the AT keyboard to the front connector.
- ❒ Connect your monitor to the appropriate rear connector.
- ❒ Insert the included disk.
- ❒ Power up

You should see a series of letters in the upper left hand corner of the screen followed by the words 'TC9 BOOT'.

From here on out things are straight OS9.



JP1
PRINTER

JP7 LED
Green/wh

JP8 RESET
Blue/white

JP2
DUAL SERIAL

TC9 General Information

Jumper descriptions

TC9-CPU

JP10	1-2 is Composit Video, 3-4 is amplified sound. (See JP5 on TC9-IO board)
CN1	CoCo3 style CM8 RGB connector.
P8	Power connector. IBM PC power supply style.
JP9	Reset connector (see also JP8 on TC9-IO)
JP8	512K-1Meg jumper. Must shunt for 512K, connect to DAT for 1 Meg.
JP11	K-Bus addressing.
JP7	IO board interconnect socket.
JP12	IO board interconnect socket.
JP13	IO board interconnect socket.

TC9-IO

JP14	Bottom is interconnect to CPU, top is for future expansion.
JP15	Bottom is interconnect to CPU, top is for future expansion.
JP16	Bottom is interconnect to CPU, top is for future expansion.
JP6	DAT board connector. (For 1 Meg operation) (6809 Header)
J1 40	CoCo Bus connector. (Requires reverse pin PCD connector)
JP5	Center to 3 is amplified sound. Center to 1 is raw D to A.
JP3	A to D (Joystick) connector
JP1	Parallel connector. (Connect to DB25 Female for PC style parallel connector)
JP2 20	2X10 Dual Serial connector. (Split 20 conductor ribbon in half. First 9 wires go to DB9 Male, 11 thru 19 go to second DB9 for AT compatible serial ports.)
JP8 2	Reset connector (same as JP9 on CPU card)
JP7 2	Power for LED. (Found on most PC cases)
JP4 5	AT keyboard connector. (Beware, 5 Pin DIN connectors are not in sequence.)

Notes:

Mounting Spacers
For many applications interboard spacers are not needed. However because the CoCo Bus cable can cause the IO board to wobble it is advisable to use spacers between the two boards. The spacers should be 11/16 long. 5/8 spacers can be used if washers are added.

AutoBoot
TC9 Boot EPROM v1.1 will autoboot from a Tandy compatible floppy controller, a FHL Eliminator, or a Burke&Burke XT-ROM v3.0. For future expansion it will look for the ASCII letters 'OS' as the first two bytes at $C000 and if there will transfer to that code. This is so that 3rd party developers can make custom EROMS for their disk controllers.

TC9-CPU
JP11, the K-Bus addressing header is only used when the TC9 is plugged into a K-Bus backplane. Each TC9 takes up 1 Megabyte of the K-Bus 16 Megabyte address space.

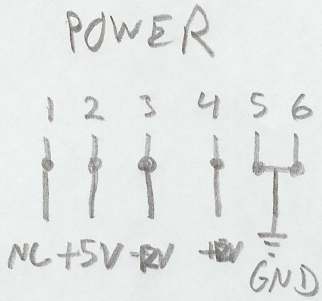
Power Connector P8
All (most?) PC power supplies have both a P8 and P9 connector. The P8 connector usually has 2 black wires and 1 red wire plus other colors while the P9 connector has 2 black wires and 3 red wires and a white wire. Make sure you use the right one!

TC9-IO
J1 is the CoCo bus connector. If a cable is used to connect to cartridges then special reverse pin PCD connectors must be used. JP14 and J1 are 'almost' the same. It is possible to connect the CoCo Bus cable to JP14 and even to its counterpart on the CPU card (JP7) This is useful for debugging. J1 is preferred .

DAT Board
When you connect the DAT board make sure that it goes in JP6 and NOT JP14. The DAT board is stable enough so spacers need no be used. There is no provision for spacers anyway.

JP3/JOYSTICK

+5	1 2	R SW1
L SW1	3 4	R SW2
L SW2	5 6	R HORZ
L HORZ	7 8	R VERT
L VERT	9 10	GROUND



TC9 Back Panel connector information

JP3 is duplicated on the back panel as the JOYSTICK connector and the pinouts are the same.

Other back panel connectors:

RGB is the same as the CoCo3 CM-8 monitor.

Comp. and Sound are also the same as the CoCo3.

/T1 and /T2 are AT compatible DB9 male serial ports.

/P is a XT/AT compatible parallel printer port (DB25 Female)

Preliminary info for TC9IO AT Keyboard and shell+

8/18/91

Shift TAB	**goes to the beginning of the line.**
Shift ENTER	**goes to the end of the line.**
Ins	**inserts a character at the cursor**
DEL	**deletes a character at the cursor.**
BackSpace	**moves the cursor left 1 character. (Also Left Arrow)**
Right Arrow	**moves the cursor right 1 character.**
Home	**displays the line with no cursor movement.**
Shift Caps	**is the keyboard mouse. (Disabled in the present version**
Caps lock	**works as expected.**
Scroll Lock	**sends a $17 which is CTRL W or pause on most systems.**

AT Key Table (At the end of TC9IO starting at offset $a2c)

The IBM AT keyboard is odd. The codes sent from the keyboard have no relation to their ASCII values. When a key is pressed the 'scan' code is sent out. For example when you press the key 'A' the key board sends $1C. When you let the key up the keyboard sends out the 'break' code $F0 plus the scan code. Thus when you let up on the 'A' key the keyboard sends out $F0 $1C. In the current version of the keyboard some keys are hard coded. The CTRL (Control) key in combination with another key sends out the expected value. Changing the keys A-Z would affect the Control key send out. The Alt key ors 128 to the value of the key and sends a $FF plus the key. Thus Alt a becomes $FFE1.

The table is comprised of 2 bytes for each key. The first is unshifted and the second is shifted. Referring to the scan code chart you see that the letter 'A' is scan code 1C. Look at this chart at $1C you see the codes $6141. $61 is unshifted 'a' and $41 is shifted 'A'. If you wanted to change the way a key worked all that is necessary is to change the table. For example if you wanted to change the ALT SysRq which changes the screen (Clear key on a CoCo) to say F10 for forward screen and F9 for reverse screen this is what you would do.

Put 8282 at 09 and 8383 at 01. This is offset $A2E=83 $A2F=83 and $A3E=82 $A3F=82. If you wanted to disable Alt SysRq key then at 84 you would change the 8283 to 0000.

Preliminary info for TC9IO AT Keyboard and shell+

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Scan Code Table

							codes
0000	B9B9 F9	0000	B5B5 F5	B3B3 F3	B1B1 F1	B2B2 F2	0000 -00-07 F12
0000	B0B0 F10	B8B8 F8	B6B6 F6	B4B4 F4	0918 TAB	607E ` ~	0000 -08-0F
0000	0000 ALT	0000 LTSHIFT	0000 CTRL	0000 q Q	7151 1 !	3121	0000 -10-17
0000	0000	7A5A z Z	7353 s S	6141 a A	7757 w W	3240 2 @	0000 -18-1F
0000	6343 c C	7858 x X	6444 d D	6545 e E	3424 4	3323 3 #	0000 -20-27
0000	2020 Space	7656 v V	6646 f F	7454 t T	7252 r R	3525 5 %	0000 -28-2F
0000	6E4E n N	6242 b B	6848 h H	6747 g G	7959 y Y	365E 6 ^	0000 -30-37
0000	0000	6D4D m M	6A4A j J	7555 u U	3726 7 &	382A 8 *	0000 -38-3F
0000	2C3C	6B4B <	6949 k K	6F4F i I	3029 o O	3928 0)	0000 -40-47 9 (
0000	2E3E . >	2F3F / ?	6C4C l L	3B3A ; :	7050 p P	2D5F - _	0000 -48-4F
0000	0000	2722 ' "	0000	5B7B [{	3D2B = +	0000	0000 -50-57
8184 CapLk	0000 RtSft	0D19 Ent	5D7D] }	0000	5C7C \ |	0000	0000 -58-5F
0000	0000	0000	0000	0000	0000	087F Backsp	0000 -60-67
0000	1231 End 1	0000	0834 <- 4	1337 Home 7	0000	0000	0000 -68-6F
1130 Ins 0	102E Del .	0A32 DnAr 8	3535 5	0936 RtAr 6	0C38 UpAr 8	1B1B ESC	0000 -70-77
0000	2B2B + +	1A33 PgDn 3	2D2D - -	2A2A * *	1C39 PgUp 9	1717 ScrLk	0000 -78-7F
0000	0000	0000	B7B7 F7	8283 AltSysRq	0000	0000	0000 -80-87

Preliminary info for TC9IO AT Keyboard and shell+

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0000	0000	0000	0000	0000	0000	0000	0000 -88-8F
0000	0000	0000	0000	0000	0000	0000	0000 -90-97
0000	0000	0000	0000	0000	0000	0000	0000 -98-9F
0000	0000	0000	0000	0000	0000	0000	0000 -A0-A7
0000	0000	0000	0000	0000	0000	0000	0000 -A8-AF
0000	0000	0000	0000	0000	0000	0000	0000 -B0-B7
0000	0000	0000	0000	0000	0000	0000	0000 -B8-BF
0000	0000	0000	0000	0000	0000	0000	0000 -C0-C7
0000	0000	0000	0000	0000	0000	0000	0000 -C8-CF
0000	0000	0000	0000	0000	0000	0000	0000 -D0-D7
0000	0000	0000	0000	0000	0000	0000	0000 -D8-DF
0000	0000	0000	0000	0000	0000	0000	0000 -E0-E7
0000	0000	0000	0000	0000	0000	0000	0000 -E8-EF
0000	0000	0000	0000	0000	0000	0000	0000 -F0-F7
0000	0000	0000	0000	0000	0000	0000	0000 -F8-FF

AT Scan Table Note: (0E ` ~ <-SLOPE) The unshifted character is the reverse '. It does not display on a TC9 (CoCo) screen.

00	40	80 C0
01 F9	41 , <	81 C1
02	42 K	82 C2
03 F5	43 I	83 F7 C3
04 F3	44 O	84 SYSRQ C4
05 F1	45 0)	85 C5
06 F2	46 9 (	86 C6
07 F12	47	87 C7
08	48	88 C8
09 F10	49 . >	89 C9
0A F8	4A / ?	8A CA
0B F6	4B L	8B CB
0C F4	4C ; :	8C CC
0D TAB	4D P	8D CD
0E ` ~ <-SLOPE`	4E - _	8E CE
0F	4F	8F CF
10	50	90 D0
11 ALT	51	91 D1
12 LTSHIFT	52 ' "	92 D2
13	53	93 D3
14 CTRL	54 [{	94 D4
15 Q	55 = +	95 D5
16 1 !	56	96 D6
17	57	97 D7
18	58 CAPSLOCK	98 D8
19	59 RTSHIFT	99 D9
1A Z	5A ENTER	9A DA
1B S	5B] }	9B DB
1C A	5C	9C DC
1D W	5D \ |	9D DD
1E 2 @	5E	9E DE
1F	5F	9F DF
20	60	

Preliminary info for TC9IO AT Keyboard and shell+

8/18/91

21 C	61	B1	E1
22 X	62	B2	E2
23 D	63	B3	E3
24 E	64	B4	E4
25 4 $	65	B5	E5
26 3 #	66 BACKSPACE	B6	E6
27	67	B7	E7
28	68	B8	E8
29 SPACE	69 END (1)	B9	E9
2A V	6A	BA	EA
2B F	6B LTARROW (4)	BB	EB
2C T	6C HOME (7)	BC	EC
2D R	6D	BD	ED
2E 5 %	6E	BE	EE
2F	6F	BF	EF
30	70 INS (0)	B0	F0
31 N	71 DEL (.)	B1	F1
32 B	72 DNARROW (2)	B2	F2
33 H	73 (5)	B3	F3
34 G	74 RTARROW (6)	B4	F4
35 Y	75 UPARROW (8)	B5	F5
36 6 ^	76 ESC	B6	F6
37	77 NUMLOCK	B7	F7
38	78 F11	B8	F8
39	79 +	B9	F9
3A M	7A PGDN (3)	BA	FA
3B J	7B -	BB	FB
3C U	7C *	BC	FC
3D 7 &	7D PGUP (9)	BD	FD
3E 8 *	7E SCROLLLOCK	BE	FE
3F	7F	BF	FF

TC-9 Technical Information

Parallel Port address: &HFF1A
Serial Port /t1 address: &HFF30
Serial Port /t2 address: &HFF34