# MSX turboR ST and GT memory expansions

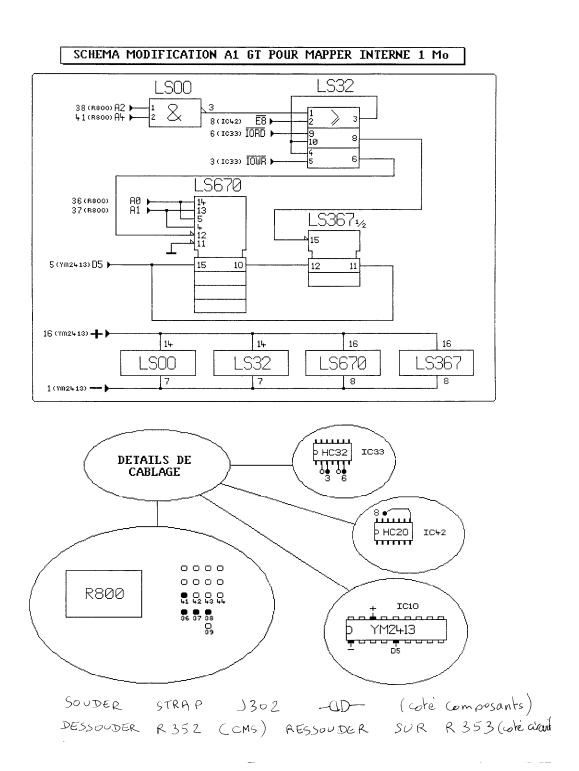
# Circuit diagrams by Jipe, 2007

turboR GT memory expansion

turboR ST memory expansion

### Circuit diagram for memory expansion MSX turboR GT

The modification requires a new memory ,mapper, shown in the next figure, and new memory IC's, see next page.



#### turboR GT with 1 Mb memory expansion

Solder strap at J302, connect the two solder islands (component side) Desolder R352 (SMD part) Solder at position R353 (backside)

#### turboR ST 1 MB memory expansion



You see a 1Mb extension in a ST with IC directly on the board.

The memory Ics is not on the circuit diagram.

If you use M514400A-70SJ on the ST you have no problem

Remove it on old PC memory, easy just pull with a screwdriver

Soldered directly at the location of the removed original memory IC's.

No Simm no Board and no problem with the keyboard film

With the Simm components destroy the keyboard film

See the SMD resistor near the ram with the special position for bank 0 of memory

On the GT better use a SIMM 80ns because with 70ns the the GT boots abnormal.

### Translation of the directions on the next circuit diagram:

Desolder the memory IC's from the ST (IC38-IC32)

Cut the ground connection at the board trace near pin 18 of the R800 IC (see detail), be careful!

Connect pin 18 of the R800 (MA19) to the upper pin of R39 (pin 22 of the S1990)

Connect pin 33 of the R800 to pin 5 of the memory connectioon IC38 IC32

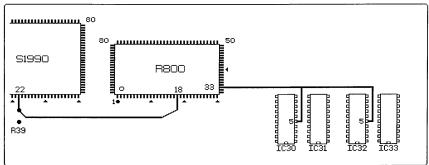
Solder a resirct of 1K in the location of R41

Solder a strap at location R229

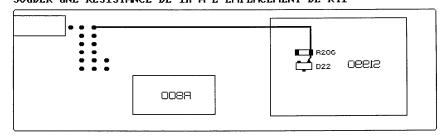
Desodler R286 (SMD part)

Connect R286 on the side of D22 to a14 (see picture)

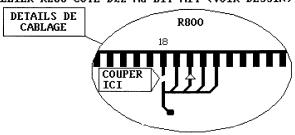
#### SCHEMA DE MODIFICATION A1 ST POUR MAPPER INTERNE 1 Mo



DESSOUDER LES MEMOIRES DU ST (IC30-IC32).
COUPER LA PISTE RELIANT BROCHE 18 DU R800 A LA MASSE (VOIR DETAIL) ATTENTION TRES DELICAT !!
RELIER BROCHE 18 DU R800 (MA19) A LA BROCHE SUPERIEURE DE R39 (BROCHE 22 DU S1990).
RELIER BROCHE 33 DU R800 A LA BROCHE 5 DES SUPPORTS MEMOIRES IC30 IC32.
SOUDER UNE RESISTANCE DE 1K A L'EMPLACEMENT DE R41



SOUDER UN STRAP A L'EMPLACEMENT R229. DESSOUDER R286 (CMS). RELIER R286 COTE D22 AU BIT A14 (VOIR DESSIN).



SI BESOIN DEPLACER LA CAPA SOUS CARAM Emplacement libre à Sa gauche

#### SCHEMA MODIFICATION A1 ST POUR MAPPER INTERNE 1 Mo LS30 $\oplus$ LS32 44 (R800) A7 ► 43 (R800) A6 ► 42 (R800) A5 ► 41 (R800) A4 ► 39 (R800) A3 ► 38 (R800) A2 ► & 72 (9769) | ORQØ ▶ 9 10 73(9769) RDØ ▶ 8 6 74 (9769) WRØ ▶ S670 36 (R800) 37 (R800) A0 ► A1 ► 14 13 5 4 12 11 S367<sub>½</sub> 15 $\Box$ 5 (Ym2413) D5 🕨 10 12 11 16 (YM2413) 🕂 🕨 14 14 16 16 LS30 LS32 LS367 LS670 8 8 1 (YM2413) ---YYZL13 DETAILS DE CABLAGE T9769 R800 DORGO 72 A4 A5 A6 A} ROD ( LC77