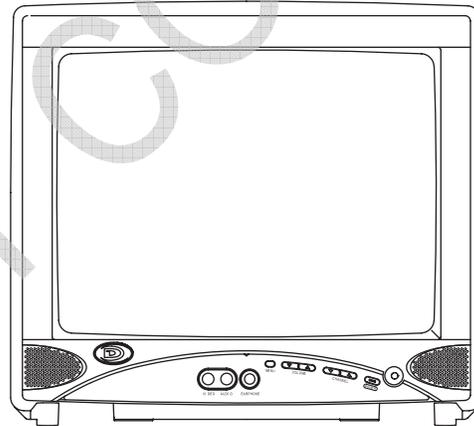




SERVICE MANUAL

This service manual shows only the differences between the model DWT1304 and the original model ST413E. All other information is described in the service manual of the model ST413E.

13" COLOR TELEVISION DWT1304



Different parts from original model (ST413E)

| Ref. No. | Description | Part No. |
|----------|---|--------------------|
| A1 | FRONT CABINET L2204UE | 0EM000886 |
| A2 | CONTROL PLATE L2204UE | 0EM302049 |
| A4▲ | RATING LABEL L2204UE | ----- |
| A-5 | BRAND BADGE L2204UE | 0EM408903 |
| B3 | Not Used | |
| S1 | CARTON L2204UE | 0EM408906 |
| S6 | SERIAL NO. LABEL L2204UE | ----- |
| S7 | LABEL, EAS(H3761UD) MAKER NO.ZLLFNSLE1 | 0VM410203 |
| X1▲ | OWNER'S MANUAL(E)/(S) L2204UE:ENGLISH/SPANISH | 0EMN02372 |
| X2 | REMOTE CONTROL NE142UD or REMOTE CONTROL NE154UD | NE142UD NE154UD |
| X4 | Not Used | |
| X-4 | SHEET RETURN STOP L2204UE | 0EM408998 |

DO NOT COPY

Symphonic

SYLVANIA
DURABRAND

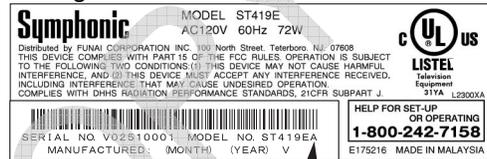
SERVICE MANUAL

Subject: Change of IF Signal Process IC

This service manual supplement is for the ST413E/6413TE/DWT1304/ST419E/6419TE changed IC model, which are different from the previous ST413E/6413TE/DWT1304/ST419E/6419TE model. For the ST413E/6413TE/DWT1304/ST419E/6419TE changed IC model, an "A" has been added to the end of the model number on rating label in the rear. Refer to the rating label illustration at right.

Example: ST419E

Rating label

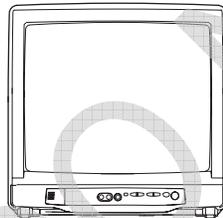


Suffix "A"

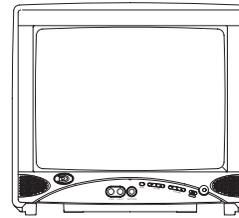
This service manual shows only the differences between the model ST413E/6413TE/DWT1304/ST419E/6419TE changed IC model and the previous ST413E/6413TE/DWT1304/ST419E/6419TE model. All other information is described in the service manual of the previous ST413E/6413TE/DWT1304/ST419E/6419TE model.

13" COLOR TELEVISION

ST413E/6413TE

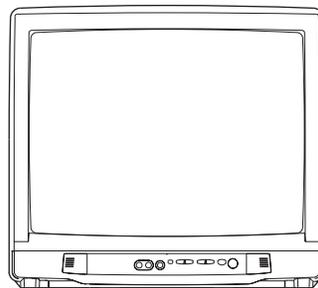


DWT1304



19" COLOR TELEVISION

ST419E/6419TE



IMPORTANT SAFETY NOTICE

Proper service and repair is important to the safe, reliable operation of all Funai Equipment. The service procedures recommended by Funai and described in this service manual are effective methods of performing service operations. Some of these service special tools should be used when and as recommended.

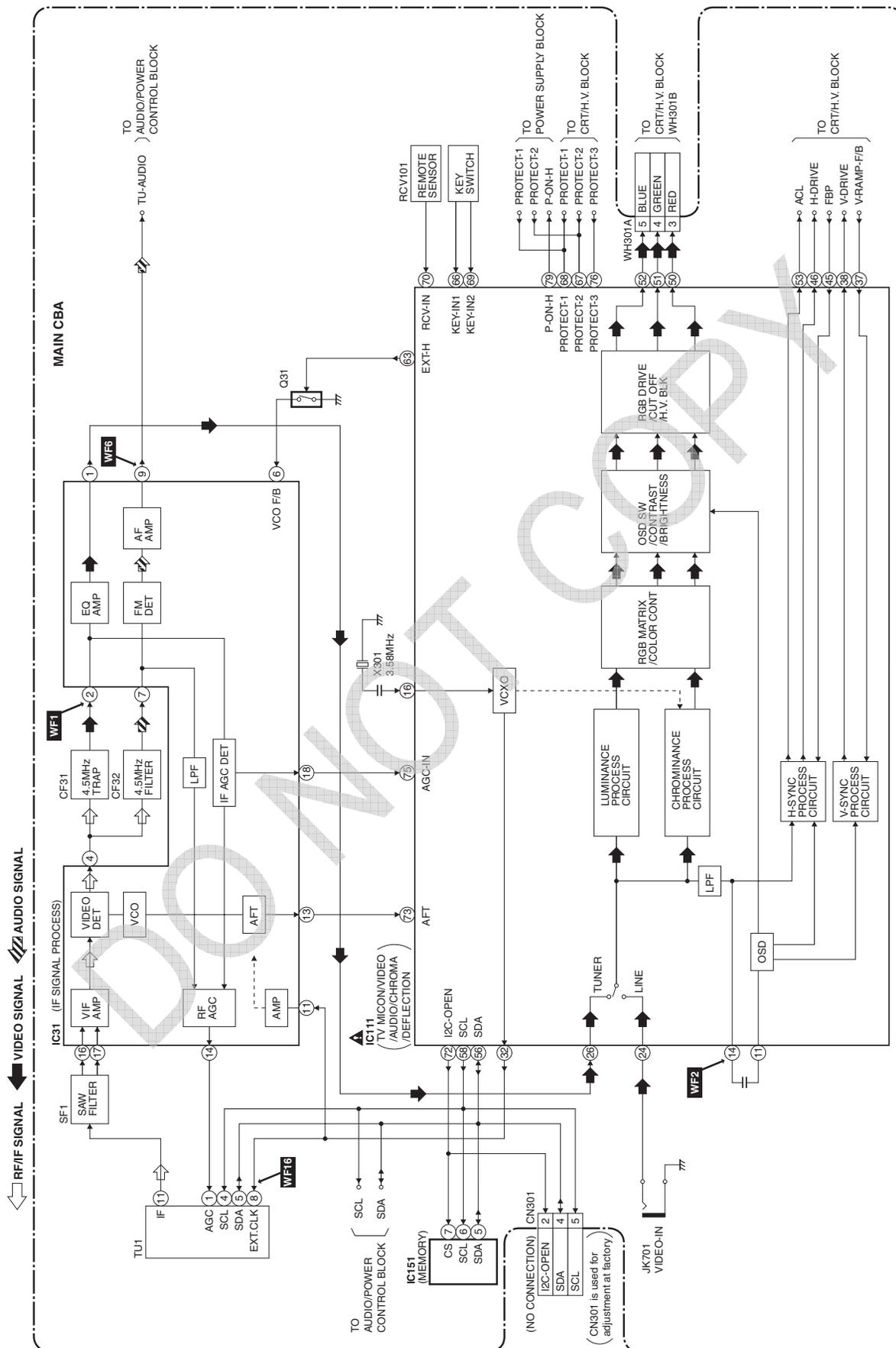
It is important to note that this service manual contains various CAUTIONS and NOTICES which should be carefully read in order to minimize the risk of personal injury to service personnel. The possibility exists that improper service methods may damage the equipment. It also is important to understand that these CAUTIONS and NOTICES ARE NOT EXHAUSTIVE. Funai could not possibly know, evaluate and advise the service trade of all conceivable ways in which service might be done or of the possible hazardous consequences of each way. Consequently, Funai has not undertaken any such broad evaluation. Accordingly, a servicer who uses a service procedure or tool which is not recommended by Funai must first use all precautions thoroughly so that neither his safety nor the safe operation of the equipment will be jeopardized by the service method selected.

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BLOCK DIAGRAMS

IF/Video/System Control Block Diagram



SCHEMATIC DIAGRAMS / CBA'S AND TEST POINTS

Standard Notes

Many electrical and mechanical parts in this chassis have special characteristics. These characteristics often pass unnoticed and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts that have these special safety characteristics are identified in this manual and its supplements; electrical components having such features are identified by the mark "▲" in the schematic diagram and the parts list. Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts that do not have the same safety characteristics as specified in the parts list may create shock, fire, or other hazards.

Note:

1. Do not use the part number shown on these drawings for ordering. The correct part number is shown in the parts list, and may be slightly different or amended since these drawings were prepared.
2. All resistance values are indicated in ohms ($K=10^3$, $M=10^6$).
3. Resistor wattages are 1/4W or 1/6W unless otherwise specified.
4. All capacitance values are indicated in μF ($P=10^{-6}\mu F$).
5. All voltages are DC voltages unless otherwise specified.

Note of Capacitors:

ML --- Mylar Cap. PP --- Metallized Film Cap. SC --- Semiconductor Cap. L --- Low Leakage type

Temperature Characteristics of Capacitors are noted with the following:

B --- $\pm 10\%$ CH --- $0\pm 60\text{ppm}/^\circ\text{C}$ CSL --- $+350\sim -1000\text{ppm}/^\circ\text{C}$

Tolerance of Capacitors are noted with the following:

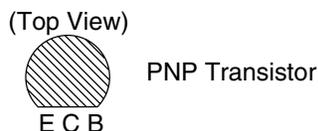
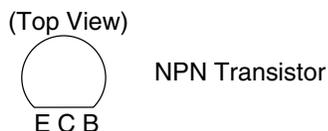
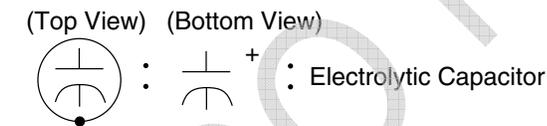
Z --- $+80\sim -20\%$

Note of Resistors:

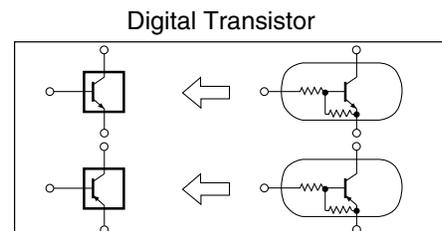
CEM --- Cement Res. MTL --- Metal Res. F --- Fuse Res.

Capacitors and transistors are represented by the following symbols.

CBA Symbols



Schematic Diagram Symbols



LIST OF CAUTION, NOTES, AND SYMBOLS USED IN THE SCHEMATIC DIAGRAMS ON THE FOLLOWING PAGES:

1. CAUTION: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE_A,_V FUSE.

ATTENTION: UTILISER UN FUSIBLE DE RECHANGE DE MÊME TYPE DE_A,_V.

2. CAUTION:

Fixed Voltage (or Auto voltage selectable) power supply circuit is used in this unit.

If Main Fuse (F601) is blown, first check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply. Otherwise it may cause some components in the power supply circuit to fail.

3. Note:

(1) Do not use the part number shown on the drawings for ordering. The correct part number is shown in the parts list, and may be slightly different or amended since the drawings were prepared.

(2) To maintain original function and reliability of repaired units, use only original replacement parts which are listed with their part numbers in the parts list section of the service manual.

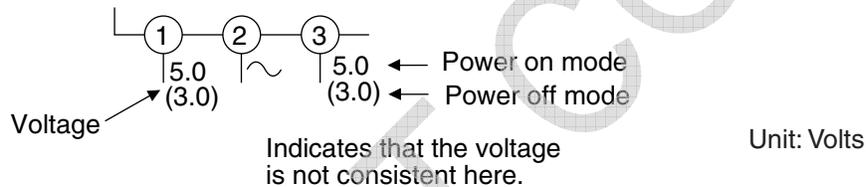
4. Wire Connectors

(1) Prefix symbol "CN" means "connector" (can disconnect and reconnect).

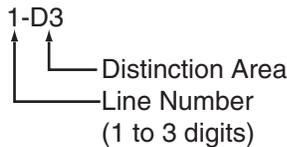
(2) Prefix symbol "CL" means "wire-solder holes of the PCB" (wire is soldered directly).

5. Voltage indications on the schematics are as shown below:

Plug the TV power cord into a standard AC outlet.:



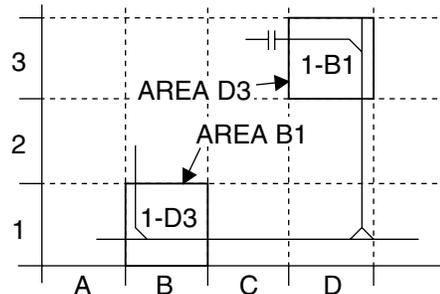
6. How to read converged lines



Examples:

1. "1-D3" means that line number "1" goes to the line number "1" of the area "D3".

2. "1-B1" means that line number "1" goes to the line number "1" of the area "B1".



7. Test Point Information

⊙ : Indicates a test point with a jumper wire across a hole in the PCB.

□→ : Used to indicate a test point with a component lead on foil side.

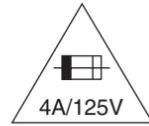
⊘ : Used to indicate a test point with no test pin.

● : Used to indicate a test point with a test pin.

Main 2/3 Schematic Diagram

CAUTION !

Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit.
If Main Fuse (F601) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply.
Otherwise it may cause some components in the power supply circuit to fail.



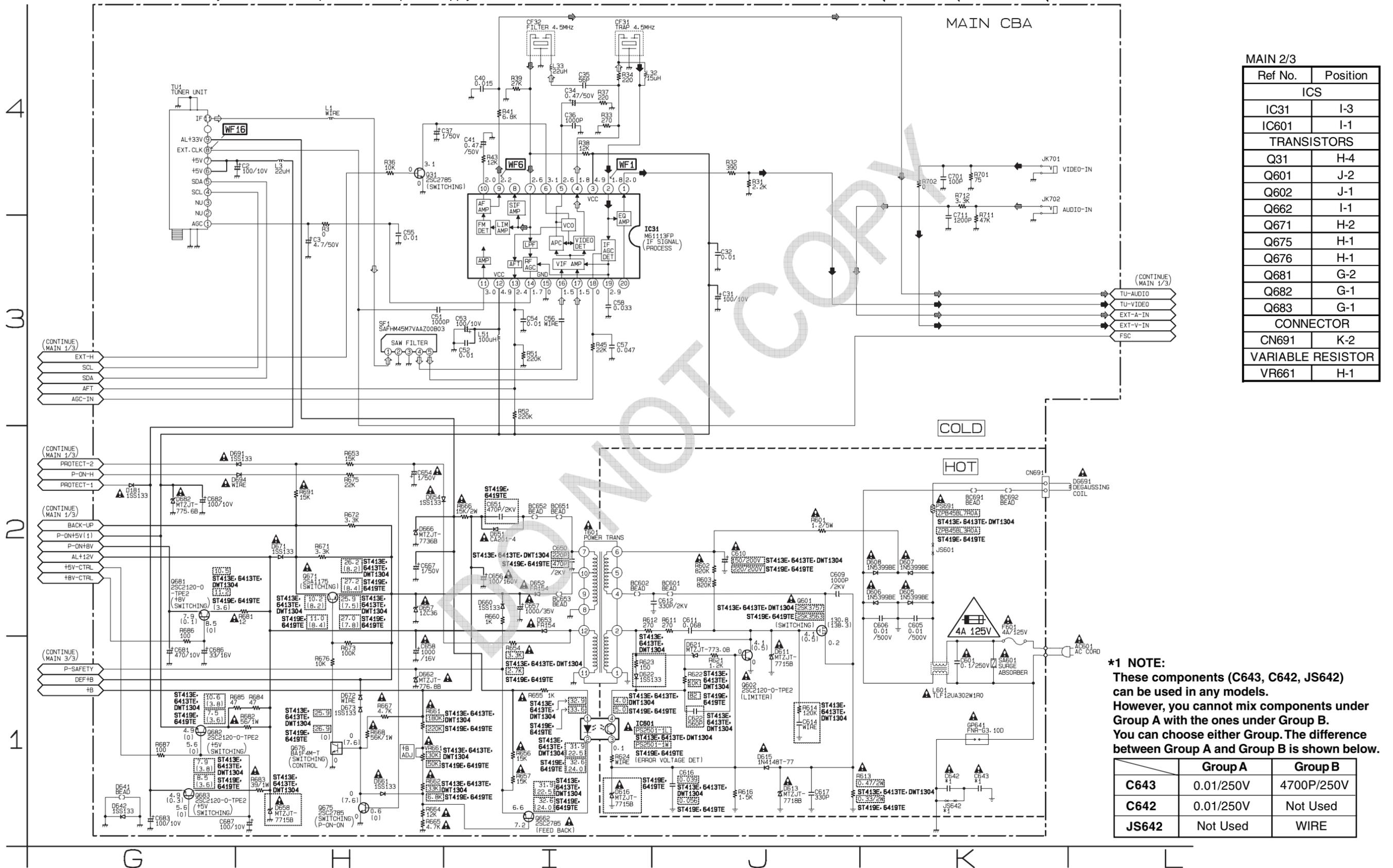
CAUTION ! : For continued protection against risk of fire, replace only with same type 4 A, 125V fuse.

ATTENTION : Utiliser un fusible de rechange de même type de 4A, 125V.

NOTE:

The voltage for parts in hot circuit is measured using hot GND as a common terminal.

IF SIGNAL VIDEO SIGNAL AUDIO SIGNAL



| Ref No. | Position |
|-------------------|----------|
| IC3 | |
| IC31 | I-3 |
| IC601 | I-1 |
| TRANSISTORS | |
| Q31 | H-4 |
| Q601 | J-2 |
| Q602 | J-1 |
| Q662 | I-1 |
| Q671 | H-2 |
| Q675 | H-1 |
| Q676 | H-1 |
| Q681 | G-2 |
| Q682 | G-1 |
| Q683 | G-1 |
| CONNECTOR | |
| CN691 | K-2 |
| VARIABLE RESISTOR | |
| VR661 | H-1 |

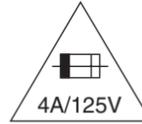
***1 NOTE:**
These components (C643, C642, JS642) can be used in any models.
However, you cannot mix components under Group A with the ones under Group B.
You can choose either Group. The difference between Group A and Group B is shown below.

| | Group A | Group B |
|-------|-----------|------------|
| C643 | 0.01/250V | 4700P/250V |
| C642 | 0.01/250V | Not Used |
| JS642 | Not Used | WIRE |

Main CBA Top View

CAUTION !

Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit. If Main Fuse (F601) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply. Otherwise it may cause some components in the power supply circuit to fail.



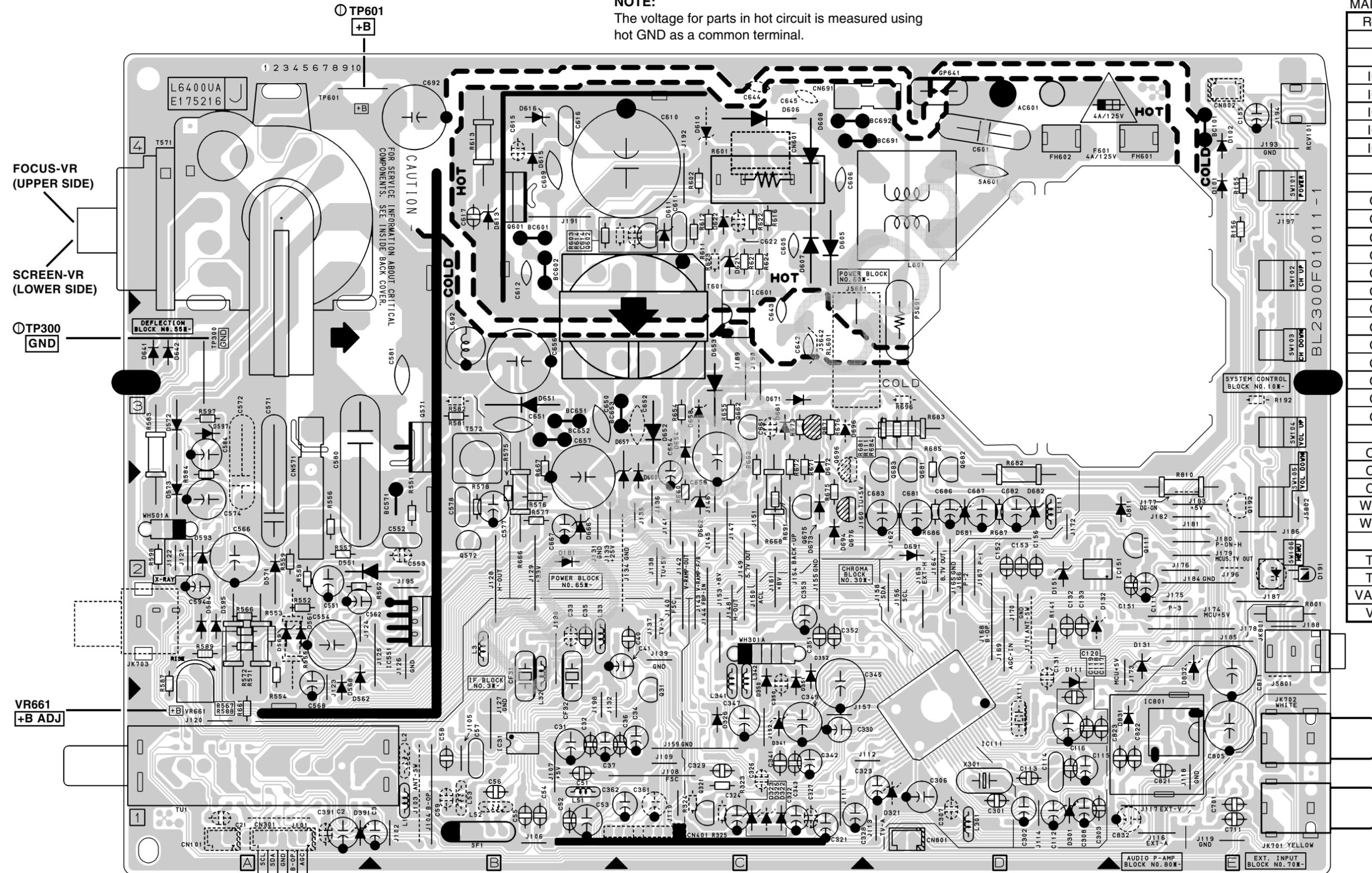
CAUTION ! : For continued protection against risk of fire, replace only with same type 4 A, 125V fuse.

ATTENTION : Utiliser un fusible de rechange de même type de 4A, 125V.

Because a hot chassis ground is present in the power supply circuit, an isolation transformer must be used. Also, in order to have the ability to increase the input slowly, when troubleshooting this type power supply circuit, a variable isolation transformer is required.

NOTE:

The voltage for parts in hot circuit is measured using hot GND as a common terminal.

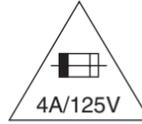


| MAIN CBA | |
|-------------------|----------|
| Ref No. | Position |
| ICs | |
| IC31 | B-1 |
| IC111 | D-1 |
| IC151 | E-2 |
| IC551 | B-2 |
| IC601 | C-4 |
| IC801 | E-1 |
| TRANSISTORS | |
| Q31 | C-1 |
| Q111 | E-2 |
| Q321 | C-1 |
| Q571 | B-3 |
| Q572 | B-2 |
| Q601 | B-4 |
| Q602 | B-4 |
| Q662 | C-3 |
| Q671 | C-3 |
| Q675 | C-2 |
| Q676 | C-2 |
| Q681 | D-3 |
| Q682 | D-3 |
| Q683 | D-3 |
| CONNECTORS | |
| CN571 | A-3 |
| CN691 | C-4 |
| CN801 | D-1 |
| WH301A | C-2 |
| WH501A | A-2 |
| TEST POINTS | |
| TP300 | A-3 |
| TP601 | A-4 |
| VARIABLE RESISTOR | |
| VR661 | A-1 |

Main CBA Bottom View

CAUTION !

Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit. If Main Fuse (F601) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply. Otherwise it may cause some components in the power supply circuit to fail.



CAUTION ! : For continued protection against risk of fire, replace only with same type 4 A, 125V fuse.
ATTENTION : Utiliser un fusible de rechange de même type de 4A, 125V.

NOTE:

The voltage for parts in hot circuit is measured using hot GND as a common terminal.

Because a hot chassis ground is present in the power supply circuit, an isolation transformer must be used. Also, in order to have the ability to increase the input slowly, when troubleshooting this type power supply circuit, a variable isolation transformer is required.



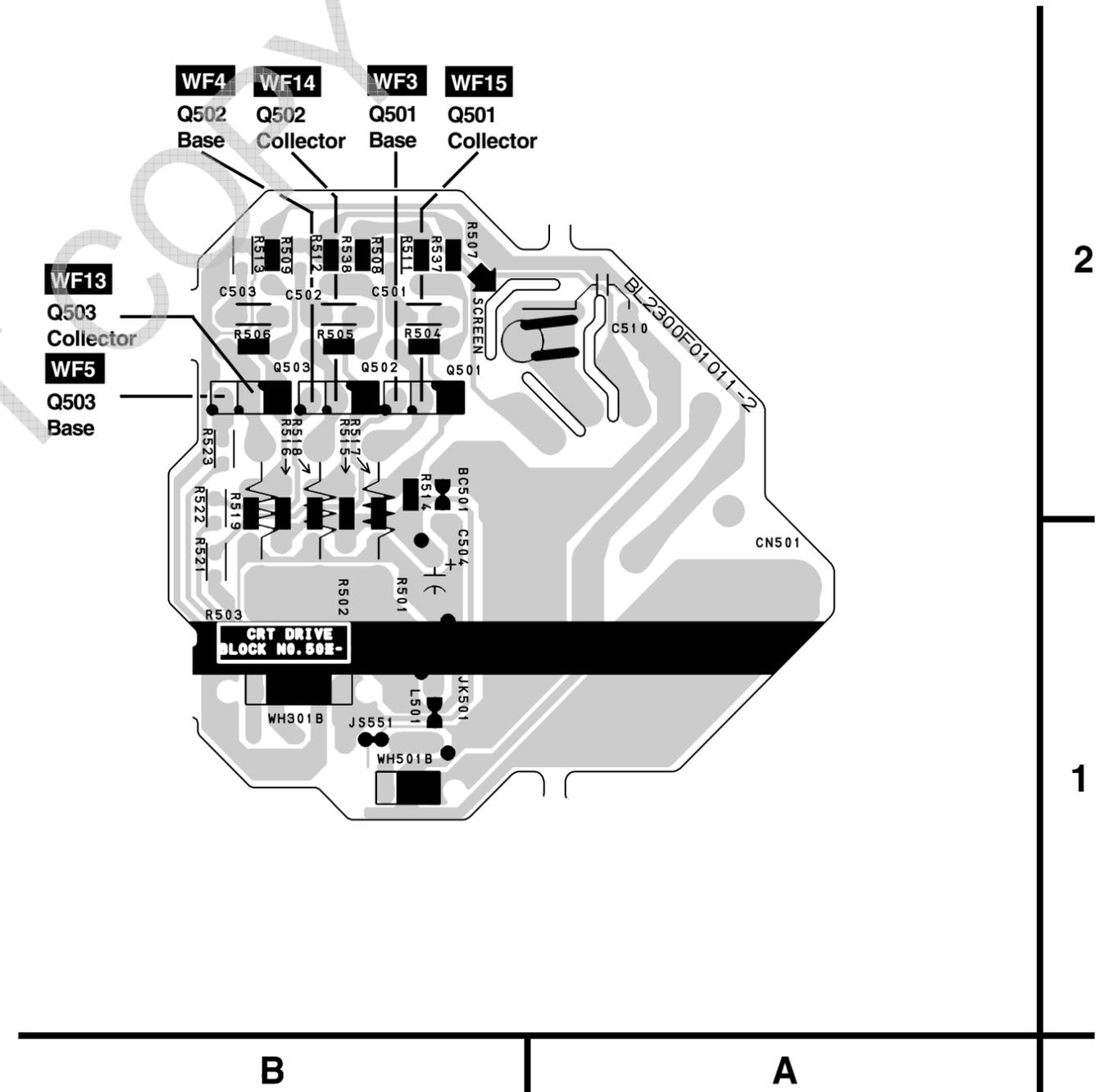
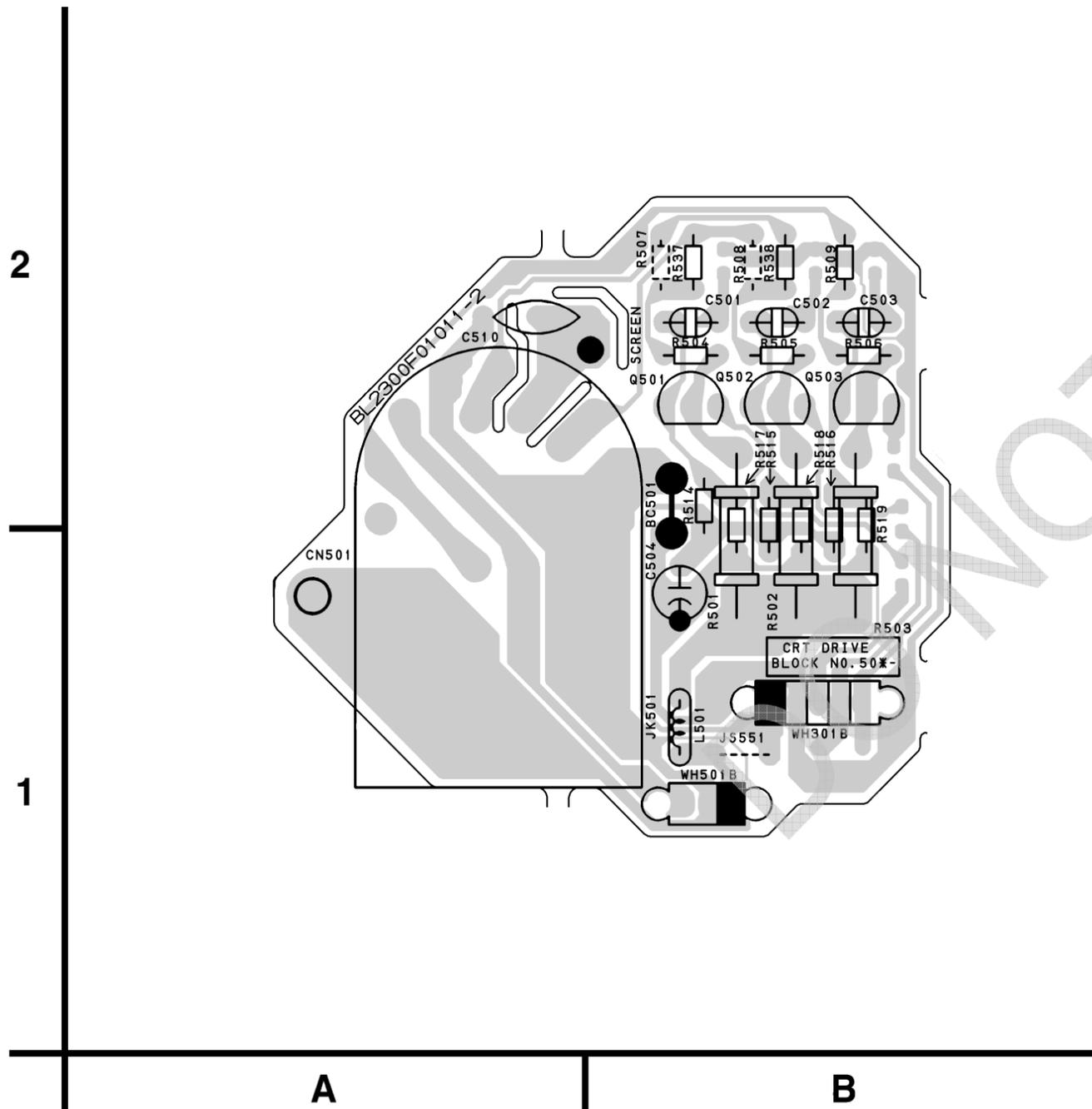
- WF8** Q571 Base
- WF7** Q572 Collector
- WF9** PIN 1 OF CN571
- WF12** PIN 4 OF CN571
- WF10** PIN 3 OF WH501A
- WF11** PIN 7 OF IC551
- WF1** PIN 2 OF IC31
- WF16** PIN 8 OF TU1
- WF6** PIN 9 OF IC31
- WF2** PIN 14 OF IC111

CRT CBA Top View

CRT CBA Bottom View

CRT CBA

| Ref No. | Position |
|-------------|----------|
| TRANSISTORS | |
| Q501 | B-2 |
| Q502 | B-2 |
| Q503 | B-2 |
| CONNECTORS | |
| CN501 | A-1 |
| WH301B | B-1 |
| WH501B | B-1 |



ST413E changed IC model

Different parts from the previous version model (ST413E)

| Ref. No. | Description | Part No. |
|------------------|-------------------------------|--------------|
| MECHANICAL PARTS | | |
| A4▲ | RATING LABEL L2200XA | ----- |
| S6 | SERIAL NO. LABEL L2200XA | ----- |
| ELECTRICAL PARTS | | |
| | MMA CBA | 0ESA05976 |
| | MAIN CBA | ----- |
| C38 | Not Used | |
| C609 | CERAMIC CAP. B K 1000pF/2KV | CCD3DKD0B102 |
| IC31 | IC:VIF/SIF M61113FP TFOG | QSZBA0SHT035 |
| R38▲ | CHIP RES.(1608) 1/10W J 12k Ω | RRXAJB5Z0123 |
| R132 | Not Used | |

6413TE changed IC model

Different parts from the previous version model (6413TE)

| Ref. No. | Description | Part No. |
|------------------|-------------------------------|--------------|
| MECHANICAL PARTS | | |
| A4▲ | RATING LABEL L2201XB | ----- |
| S6 | SERIAL NO. LABEL L2201XB | ----- |
| ELECTRICAL PARTS | | |
| | MMA CBA | 0ESA05976 |
| | MAIN CBA | ----- |
| C38 | Not Used | |
| C609 | CERAMIC CAP. B K 1000pF/2KV | CCD3DKD0B102 |
| IC31 | IC:VIF/SIF M61113FP TFOG | QSZBA0SHT035 |
| R38▲ | CHIP RES.(1608) 1/10W J 12k Ω | RRXAJB5Z0123 |
| R132 | Not Used | |

DWT1304 changed IC model

Different parts from the previous version model (DWT1304)

| Ref. No. | Description | Part No. |
|------------------|-------------------------------|--------------|
| MECHANICAL PARTS | | |
| A4▲ | RATING LABEL L2204XE | ----- |
| S6 | SERIAL NO. LABEL L2204XE | ----- |
| ELECTRICAL PARTS | | |
| | MMA CBA | 0ESA05976 |
| | MAIN CBA | ----- |
| C38 | Not Used | |
| C609 | CERAMIC CAP. B K 1000pF/2KV | CCD3DKD0B102 |
| IC31 | IC:VIF/SIF M61113FP TFOG | QSZBA0SHT035 |
| R38▲ | CHIP RES.(1608) 1/10W J 12k Ω | RRXAJB5Z0123 |
| R132 | Not Used | |

ST419E changed IC model

Different parts from the previous version model (ST419E)

| Ref. No. | Description | Part No. |
|------------------|--------------------------------------|--------------|
| MECHANICAL PARTS | | |
| A4▲ | RATING LABEL L2300XA | ----- |
| S6 | SERIAL NO. LABEL L2300XA | ----- |
| ELECTRICAL PARTS | | |
| | MMA CBA | 0ESA05979 |
| | MAIN CBA | ----- |
| C38 | Not Used | |
| C609 | CERAMIC CAP. B K 1000pF/2KV | CCD3DKD0B102 |
| IC31 | IC:VIF/SIF M61113FP TFOG | QSZBA0SHT035 |
| R38▲ | CHIP RES.(1608) 1/10W J 12k Ω | RRXAJB5Z0123 |
| R132 | Not Used | |

6419TE changed IC model

Different parts from the previous version model (6419TE)

| Ref. No. | Description | Part No. |
|------------------|--------------------------------------|--------------|
| MECHANICAL PARTS | | |
| A4▲ | RATING LABEL L2301XB | ----- |
| S6 | SERIAL NO. LABEL L2301XB | ----- |
| ELECTRICAL PARTS | | |
| | MMA CBA | 0ESA05979 |
| | MAIN CBA | ----- |
| C38 | Not Used | |
| C609 | CERAMIC CAP. B K 1000pF/2KV | CCD3DKD0B102 |
| IC31 | IC:VIF/SIF M61113FP TFOG | QSZBA0SHT035 |
| R38▲ | CHIP RES.(1608) 1/10W J 12k Ω | RRXAJB5Z0123 |
| R132 | Not Used | |

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