

HITACHI

SERVICE MANUAL MANUEL DE SERVICE

PA**No. 0021****55EX7K/50EX6K
46EX3B/4K 50ES1B/K
46EX3BS/4KS****NTSC****AP32, AP31 Chassis****R/C: CLU-682GJ****R/C: CLU-681GJ****1 CLU-609**

AP32 chassis is for models 55EX7K, 50EX6K, 46EX3B/BS, 46EX4K/KS using remote control CLU-682GJ.

AP31 chassis is for models 50ES1B, 50ES1K using remote control CLU-681GJ.

Le chassis AP32 est conçu pour les modèles 55EX7K, 50EX6K, 46EX3B/BS, 46EX4K/KS et ceux-ci utilisent la télécommande CLU-682GJ. Le chassis AP31 est conçu pour les modèles 50ES1B, 50ES1K et ceux-ci utilisent la télécommande CLU-681GJ.

Models 46EX3BS, 46EX4KS are identical to models 46EX3B, 46EX4K respectively except for the added Ultra Shield. Refer to replacement parts list for Ultra Shield parts.

Les modèles 46EX3BS, 46EX4KS sont identiques aux modèles 46EX3B, 46EX4K respectivement à l'exception de "Ultra Shield." Se référer à la liste des pièces de remplacement pour "L'Ultra Shield."

TABLES DES MATIERES

NOTICE DE SECURITE DU FABRICANT	2
PRÉCAUTION DE SECURITE	3
PRÉCAUTIONS DE DÉPANNAGE	6
PRÉCAUTIONS TECHNIQUES	10
SPECIFICATIONS	11
PROTECTION DE CIRCUIT	11
RENSEIGNEMENTS GÉNÉRAUX	12
RÉGLAGE DES FONCTIONS D'IMAGE ET SON	13
CODES DE RÉPARATION DE	
L'AUTOVÉRIFICATION	15
RÉGLAGE DE CONVERGENCE	15
CONNEXION É DECONNEXION DU	
CONNECTEUR HT	17
SCHÉMA	33
DIAGRAMME DE CIRCUIT DE BASE	38
DIAGRAMME DE CÂBLAGE	71
FORME D'ONDE DE CHAQUE ETAGE	77
PLAQUETTE DE CÂBLAGE IMPRIMES	81
VUE SUPERPOSE	93
LISTE DES PIÉCES DE RECHANGÉ	98

CONTENTS

PRODUCT SAFETY NOTICE	18
SAFETY PRECAUTIONS	19
SERVICE PRECAUTIONS	22
TECHNICAL CAUTIONS	25
SPECIFICATIONS	26
CIRCUIT PROTECTION	26
GENERAL INFORMATION	27
ADJUSTING PICTURE AND SOUND	
FUNCTIONS	28
SELF CHECK REPAIR CODES	30
CONVERGENCE ADJUSTMENT	30
CAUTIONS WHEN CONNECTING/DISCONNECTING	
THE HV CONNECTOR	32
BLOCK DIAGRAM	33
BASIC CIRCUIT DIAGRAM	38
WIRING DIAGRAM	71
WAVEFORMS AT EACH SECTION	77
PRINTED CIRCUIT BOARDS	81
EXPLODED VIEW	93
REPLACEMENT PARTS LIST	98

ATTENTION: Avant de mettre ce chassis en service, il est important que le technicien lise les "Mesures de sécurité" et "Avis concernant l'appareil" contenus dans le MANUEL DE SERVICE.

CAUTION: Before servicing this chassis, it is important that the service technician read the "Safety Precaution" and "Product Safety Notices" in this Service Manual.

Caractéristiques techniques et composants sont sujets à modification pour amélioration.
SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

TELEVISION DE PROJECTION COULEUR PROJECTION COLOR TELEVISION

AUGUST / AOUT 1993**HHEA - MANUFACTURING DIVISION**

SAFETY NOTICE

USE ISOLATION TRANSFORMER WHEN SERVICING

Components having special safety characteristics are identified by shading on the schematics and by  on the parts list in this service data and its supplements and bulletins. Before servicing the chassis, it is important that the service technician read and follow the "Safety Precautions" and "Product Safety Notices" in this Service Manual.

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.

Improperly performed repairs can adversely affect the safety and reliability of the product and may void warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING

Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health and Safety Code, Section 25249.5).

When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with solder. Also, when soldering do not inhale any smoke or fumes produced.

NOTICE DE SÉCURITÉ

SE SERVIR D'UN TRANSFORMATEUR DE SÉPARATION POUR EFFECTUER LES DÉPANNAGES

Les composants qui possèdent des caractéristiques de sécurité spéciales sont identifiés par un ombrage sur les schémas de montage et par un symbole  dans la liste de pièces constitutives du présent manuel de données de dépannage, dans son supplément et les bulletins.

*Le tube-image doit être remplacé par un modèle identique au modèle d'origine ou par un tube-image dont la marque est recommandée par Hitachi de façon à avoir la certitude qu'une protection contre le rayonnement des rayons X est assurée.

Ce Manuel de service fut conçu afin d'être utilisé par des techniciens qualifiés et non pas des bricoleurs. Les techniciens qualifiés possèdent l'équipement et l'outillage appropriés et furent professionnellement formés à effectuer des réparations complexes sur les produits couverts par le présent manuel. Les réparations mal effectuées peuvent affecter la sécurité et l'intégrité du produit et ainsi annuler la garantie. Si vous n'êtes pas qualifié afin d'effectuer les réparations d'une façon professionnelle et sécuritaire veuillez vous référer à un technicien qualifié.

AVERTISSEMENT

Le plomb utilisé dans la soudure de ce produit est reconnu par l'agence de Santé et Bien-Être de la Californie comme produit toxique pouvant causer des malformations à la naissance ou autres dommages physiques connexes (Code de Santé et Sécurité de la Californie, (Section 25249.5).

Éviter tout contact avec la peau lors de l'entretien ou la manutention des circuits ou autres composantes pouvant contenir du plomb. Ne pas inhaler les vapeurs ou fumées de soudures.

PRÉCAUTION DE SÉCURITÉ

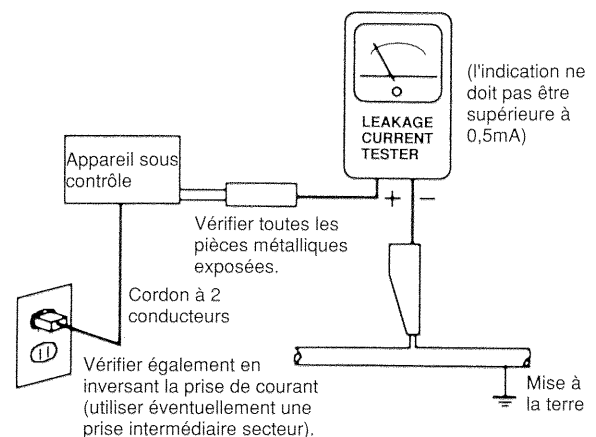
1. Avant que le dépanneur ne rende l'appareil à son client, il doit s'assurer qu'il ne présente aucun danger ni risque d'électrocution après lui avoir fait subir tous les essais nécessaires et être certain que tous les dispositifs de sécurité incorporés à l'appareil fonctionnent normalement, ces essais étant les suivants:

a. Vérifier que les dispositifs de protection incorporés ne sont ni défectueux ni/ou asservis pendant un dépannage. (1) Des blindages de protection sont installés dans le châssis pour mettre le dépanneur comme le client à l'abri de tout danger. Remplacer correctement tous les blindages de protection, notamment ceux qui ont été retirés pour que le dépannage soit plus facile à réaliser. (2) lors du remontage du châssis et/ou de tout autre organe dans le coffret de l'appareil, il convient de s'assurer que tous les dispositifs de protection sont parfaitement remis en place y compris, mais non seulement, les boutons non métalliques, les presspahns d'isolement, les plaques de blindage/couvercles de compartiment et de réglage, les réseaux d'isolement à résistances et capacitances. L'appareil ne doit pas être mis en fonction et le dépanneur en charge ne doit permettre à personne de l'utiliser quant qu'il n'est pas muni de tous ses dispositifs de protection et que leur fonctionnement a été parfaitement vérifié. **Les dépanneurs asservissant ces dispositifs de protection ou qui n'effectuent pas les vérifications de sécurité nécessaires risquent d'être entièrement responsables des dommages qui en résulteraient**

b. Vérifier qu'aucune ouverture du coffret ne permet à un adulte ou un enfant d'y introduire les doigts et se trouver en contact avec une tension dangereuse. Ces ouvertures sont notamment mais ne se limitent pas seulement (1) aux espaces entre le tube-image et le masque de coffret, (2) de trop grandes fentes d'aération de coffret et (3) le dos du coffret n'étant pas remonté complètement et/ou correctement.

c. **Contrôle d'antenne à froid** — Après avoir débranché la prise d'alimentation secteur de la prise murale délivrant du courant alternatif, installer une connexion de jonction électrique entre les deux lamelles de la prise. Placer l'interrupteur général de l'appareil comme pour mettre sous tension. Appliquer une des pointes de touche d'un ohmmètre sur les lamelles de la prise reliées et toucher avec l'autre pointe de touche chaque vis de borne de connexion d'entrée d'antenne de syntoniseur exposée et le cas échéant, le connecteur de câble coaxial. Si la résistance relevée est inférieure à 1,0 Mégohms ou **supérieure à 12 Mégohms, c'est la preuve qu'il y a une anomalie** qui exige des réparations avant que l'appareil soit rendu au client. Refaire les mêmes essais, mais cette fois-ci en ayant pris soin de placer l'interrupteur général de l'appareil en position d'arrêt.

d. **Contrôle de fuites de courant à chaud** — Après avoir remonté complètement l'appareil, brancher directement la prise d'alimentation secteur dans une prise murale délivrant du courant alternatif de 120 V. (Ne pas se servir du transformateur de séparation pour effectuer cet essai.) Se servir d'un contrôleur de courant de fuite ou un système de mesure conforme aux normes de l'organisme américain de normalisation (ANSI) C101.0 Courant de fuite des appareils électriques et aux normes pour appareillages électriques (UL) 1410, (59.7). Placer tout d'abord l'interrupteur général de l'appareil en position de marche et le ramener sur arrêt et mesurer à partir d'une terre sûre (canalisation d'eau, conduite, etc.) toute partie métallique exposée de l'appareil (antennes, support de manipulation, coffrets métalliques, revêtements métalliques, têtes de vis, axes de dispositifs de réglage, etc.) notamment les parties métalliques exposées offrant une voie de retour électrique au châssis. Le courant relevé ne doit pas dépasser 0,5 millampère. Inverser la position de la prise d'alimentation dans la prise murale du secteur et refaire ces vérifications.



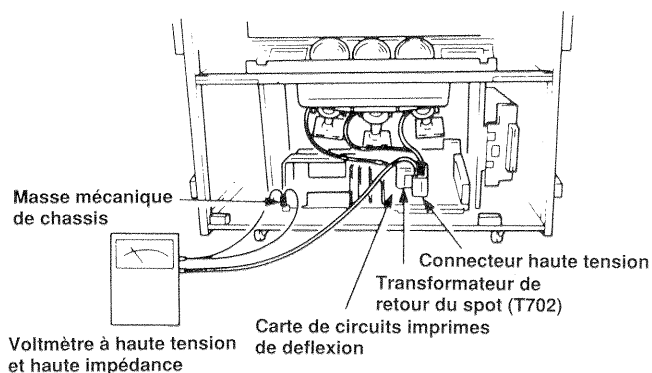
Vérification de fuites de courant secteur

TOUT RELEVÉ NE SE PLAÇANT PAS DANS LES LIMITES PRESCRITES CI-DESSUS MENTIONNÉES SIGNALE UN RISQUE DE DÉCHARGE ÉLECTRIQUE POTENTIELLEMENT DANGEREUSE QUI DOIT ÊTRE ÉLIMINÉ AVANT DE RENDRE L'APPAREIL AU CLIENT OU DE BRANCHER L'ANTENNE OU D'AUTRES ACCESSOIRES.

e. **Haute tension** — Ce récepteur de télévision est équipé d'un circuit de maintien haute tension dans le but d'indiquer clairement que la tension a augmenté et dépasse la valeur prédéterminée. Se conformer à toutes les notices qui sont indiquées dans le manuel de dépannage relatives à ce circuit de maintien haute tension lors des dépannages pour que ce circuit fonctionne toujours correctement.

- f. **Rappel de sécurité destiné au dépanneur** — Avec un réglage minimum des commandes de niveau du noir et d'image, la haute tension de service de ce récepteur de télévision est inférieure à 31.6. Quand des composants ayant une influence directe sur la haute tension sont remplacés, il convient de vérifier que la haute tension, avec un réglage minimum des commandes de niveau du noir et d'image, est inférieure à 31.6. Pour mesurer la haute tension, se servir d'un voltmètre à haute tension et haute impédance. Relier le pôle (–) à la masse mécanique du châssis et le pôle (+) à l'anode du tube cathodique (bouton T.H.T.). Procéder comme représenté sur le schéma de câblage ci-dessous).

Remarque: Ne pas oublier qu'il est impératif de placer l'interrupteur général en position d'arrêt avant d'effectuer le raccordement à l'anode du tube cathodique (bouton T.H.T.).



- g. **Rayonnement des rayons X** — Tube-image: Le tube cathodique constitue la principale source de rayonnement des rayons X dans ce récepteur de télévision. Le tube cathodique utilisé dans ce récepteur de télévision est spécialement construit pour interdire l'émission des rayons X.

Pour qu'une protection permanente contre le rayonnement des rayons X soit assurée, le tube cathodique de remplacement qui est utilisé doit être du même type que l'original et être un modèle approuvé par HITACHI.

Au cours du dépannage et des mesures effectués dans le récepteur de télévision quand la panne est d'origine haute tension, éviter d'être trop près du tube cathodique et des composants haute tension.

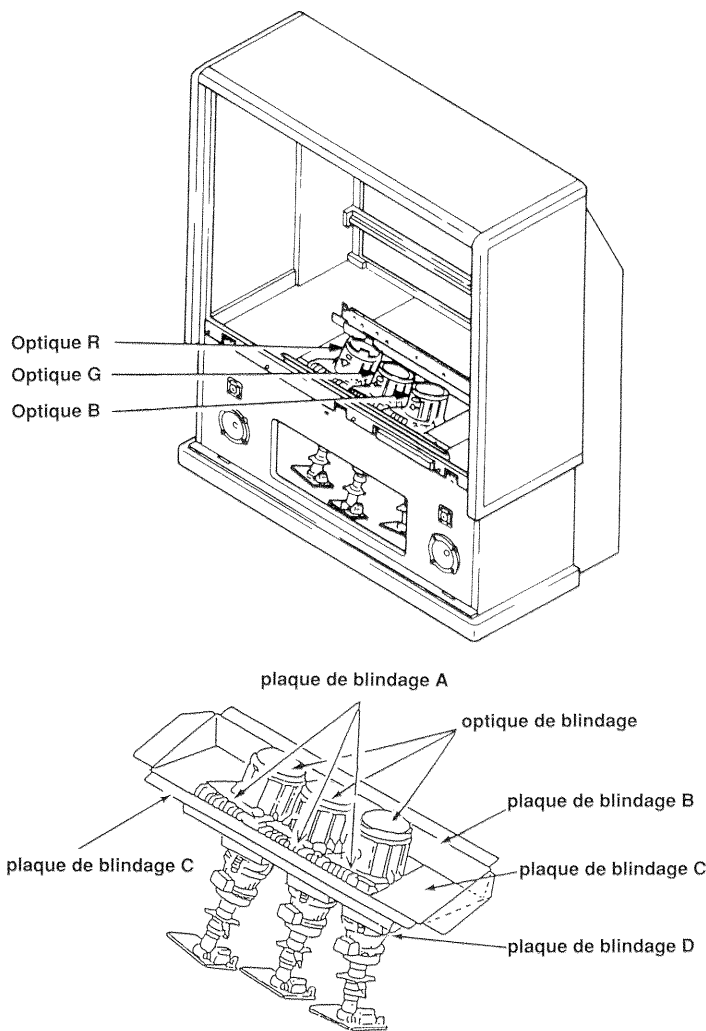
Le châssis ne doit pas fonctionner plus longtemps que nécessaire pour localiser la source d'émission excessive de tension.

- h. **Blindage de protection contre le rayonnement des rayons X**

- 1) Ce récepteur de télévision est équipé de plaques de blindage assurant une protection contre le rayonnement des rayons X. Ne jamais supprimer les plaques de blindage de protection contre le rayonnement des

rayons X, A, B, C ou D représentés sur la fig. 1 valable pour effecteur un dépannage et/ou prélever des mesures de vérification.

- 2) Pour éviter tout rayonnement des rayons X après avoir remplacé le tube cathodique et les optiques, vérifier que ces composants sont bien remontés et fixés correctement sur la platine et le coffret de l'appareil et ne risquent pas de se détacher facilement.



Détails des blindage contre le rayonnement des rayons X

Fig. 1

2. Lire et se conformer à toutes les précautions et remarques relatives à la sécurité du coffret de récepteur de télévision, le châssis ou du tube cathodique.
3. **Mise en garde sur les modifications apportées à la conception de base** — Il ne faut jamais modifier ni ajouter des éléments mécaniques ou électriques à la construction de base du récepteur de télévision. Toute modification ou adjonction d'articles tels que des systèmes de branchement de sortie son et/ou d'image supplémentaires risquent d'affecter les caractéristiques de sécurité de ce récepteur de télévision et de favoriser une situation présentant un danger

évident à l'utilisateur. Toute modification ou adjonction d'accessoires risquent d'entraîner l'invalidation de la garantie produite par le fabricant de l'appareil et peut vous rendre responsable, en tant que dépanneur, responsable des accidents corporels ou des dommages encourus qui en résultent.

4. Mise en garde sur la protection contre l'implosion du tube cathodique — Le tube cathodique du présent récepteur de télévision utilise un système de protection intégrale contre l'implosion. Pour qu'une protection permanente soit assurée contre l'implosion, le tube cathodique ne doit être remplacé que par un tube cathodique possédant un numéro de type identique. Il ne faut jamais déposer, reposer ou manipuler le tube cathodique sans avoir pris le soin préalable de porter des lunettes de protection à dispositifs de protection latéraux. Les personnes qui ne sont pas équipées ainsi doivent être suffisamment éloignées pendant les manipulations du tube cathodique. Eloigner le tube cathodique du corps. Ne pas manipuler le tube cathodique en le saisissant par son col.

5. Mise en garde à propos d'un châssis sous tension —

- a. Certains châssis de récepteurs de télévision sont directement reliés électriquement à un conducteur du cordon d'alimentation secteur et ne peuvent être dépannés en toute sécurité sans l'usage d'un transformateur de séparation que dans la mesure où la prise d'alimentation secteur est branchée de telle sorte que la masse de la source d'alimentation secteur est directement reliée au châssis. Pour avoir la certitude que la prise d'alimentation secteur est branchée correctement, se munir d'un voltmètre à courant alternatif pour mesurer entre le châssis et une terre connue. Si la tension relevée est supérieure à 1,0V, débrancher la prise d'alimentation secteur et la rebrancher dans la prise en inversant sa position puis mesurer encore une fois le potentiel entre le châssis et une terre connue.
- b. Certains châssis de récepteurs de télévision possèdent normalement une tension alternative de 85 V (efficace) entre le châssis et une terre sans qu'il soit tenu compte de la polarité de la prise d'alimentation secteur. Ces châssis ne peuvent être dépannés en toute sécurité qu'après avoir placé un transformateur de séparation sur la ligne d'alimentation entre le récepteur de télévision et la source d'alimentation secteur, autant pour la protection du dépanneur que pour l'équipement de dépannage.
- c. Certains châssis de récepteurs de télévision possèdent un système de mise à la terre secondaire en plus de la mise à la terre principale du châssis. Il faut savoir que ce système de mise à la terre secondaire n'est pas isolé à la terre sont parfaitement isolés électriquement par un matériau d'isolément qui ne doit en aucun cas être asservi ni modifié.

6. Respecter la disposition d'origine des fils électriques. Faire très attention au cheminement des fils électriques, notamment aux emplacements suivants:

- a. les angles aigus,
- b. près des pièces et éléments chauds par dégagement thermique — auquel cas il convient de vérifier que les fils électriques ou les composants ne touchent jamais ces pièces et éléments,
- c. l'alimentation secteur,
- d. une haute tension et
- e. les fils de raccordement d'antenne.

Toutes les vérifications nécessaires doivent être faites à tous les niveaux de châssis pour s'assurer que les fils électriques ne sont ni pincés, ni déplacés ou usés de façon quelconque. Aucune modification ne doit être apportée quant à l'espacement entre les divers organes et composants et entre les composants et les cartes de circuits imprimés. Vérifier que le cordon d'alimentation secteur n'est pas endommagé.

7. Les composants, pièces et/ou le câblage électrique dégageant une chaleur anormale ou présentant tout autre forme d'endommagement doivent être remplacés par des composants, pièces ou éléments de câblage électrique conformes aux caractéristiques d'origine. En outre, la raison pour laquelle la chaleur anormale est dégagée doit être cernée ainsi que tout dommage tandis que les mesures de correction nécessaires doivent être prises pour éliminer tout risque de danger potentiel.

8. **NOTICE DE SÉCURITÉ DE PRODUIT** — De nombreuses pièces mécaniques et composants électriques de télévision possèdent des caractéristiques spéciales relatives à la sécurité de l'appareil, certaines d'entre elles n'étant pas toujours évidentes après une inspection visuelle comme la protection qu'elles doivent assurer n'est pas forcément obtenue si des composants de rechange prévues pour des tensions supérieures, wattage supérieur sont utilisés. Les pièces de rechange possédant de telles caractéristiques de sécurité spéciales sont identifiées dans les données de dépannage Hitachi par un ombrage dans les schémas de montage et par un symbole () dans la liste des pièces de rechange. L'emploi de composants de remplacement différents n'ayant pas des caractéristiques de sécurité identiques à celles que possèdent les pièces de rechange recommandées dans les données de dépannage Hitachi indiquées dans la liste des pièces de rechange peuvent être à l'origine de décharges électriques, amorçage électrique et/ou tout autre accident du même type. La sécurité du produit fait l'objet d'une constante révision et de nouvelles instructions à ce sujet sont fournies au moment opportun. Il est indispensable de toujours s'informer en lisant la documentation de dépannage Hitachi la plus récente. Une demande d'obtention des plus récentes informations ou d'exemplaires supplémentaires à ce sujet peut être faite et les brochures reçues pour une somme modique en l'adressant à Hitachi.

PRÉCAUTIONS DE DÉPANNAGE

ATTENTION: Avant de procéder au dépannage d'appareils décrits dans les présentes données de dépannage et ses suppléments et additifs, lire et appliquer les PRÉCAUTIONS DE SÉCURITÉ mentionnées à la page 3 de cette documentation. N.B.: Si des circonstances imprévues se présentent et créent un conflit entre les précautions de sécurité mentionnées à la page 3 de cette documentation, il faut toujours appliquer les précautions de sécurité suivantes. N'oubliez pas la sécurité en premier.

Précautions générales de dépannage

1. Débrancher systématiquement la prise d'alimentation secteur de la prise secteur avant d'effectuer les opérations suivantes:

- a. Dépose ou repose d'organes, composants, cartes de circuits imprimés, module ou tout autre ensemble.
- b. Débranchement ou rebranchement de prise d'appareil électrique ou tout autre branchement électrique.
- c. Branchement d'un appareil d'essai en parallèle à un condensateur électrolytique dans l'appareil.

ATTENTION: un remplacement de composant inapproprié ou un remontage de condensateurs électrolytiques sans respect des polarités risque de se conclure par une explosion.

d. Décharge du contact T.H.T. du tube cathodique..

2. Ne vérifier la haute tension qu'en utilisant un contrôleur de haute tension approprié ou tout appareil de mesure de tension (voltmètre électronique, multimètre TEC, etc.) équipé de pointe de touche adaptée. Ne jamais vérifier une haute tension en provoquant un "arc électrique."

La boîte de distribution haute tension possède une résistance interne de 400 Mégohms (résistance de fuite) qui est connectée de la haute tension à la terre. Après avoir coupé le courant d'alimentation à l'appareil, la haute tension se décharge par l'intermédiaire de la résistance de fuite haute tension. Si les tubes sont chargés de haute tension après avoir coupé le courant d'alimentation, c'est l'indice que la résistance de fuite est défectueuse ou que la terre de la résistance de fuite est déconnectée.

3. Décharger l'anode T.H.T. des tubes cathodiques au niveau de l'une des sorties R, G ou B de la boîte de distribution haute tension uniquement (a) en raccordant tout d'abord l'extrémité d'un fil de pince isolante au système démagnétisation ou de blindage de masse d'aquadag là où les fils de masse de la prise du tube cathodique sont reliés puis (b) faire toucher l'autre extrémité du fil de pince isolante à la sortie R, G ou B de la boîte de distribution haute tension de tube cathodique en se servant d'une poignée isolante pour éviter tout contact avec la haute tension.

4. Ne jamais projeter de produits chimiques sur ou aux environs de cet appareil ou sur l'un quelconque de ses ensembles.

5. Sauf indication contraire mentionnée dans ces données de dépannage, nettoyer les contacts électriques en se servant de la préparation suivante et d'un ustensile d'entretien de tuyau, un coton-tige ou tout applicateur non abrasif; 10% (par volume) d'acétone et 90% (par volume) d'alcool isopropylique (concentré entre 90 et 99%).

ATTENTION: Ce mélange est particulièrement inflammable. Sauf indication contraire mentionnée dans ces données de dépannage, la lubrification des contacts n'est pas nécessaire.

6. Ne jamais asservir les dispositifs d'accouplement de prise ou fiche de tension d'alimentation que les appareils décrits dans les présentes données de dépannage pourraient posséder.

7. Ne jamais appliquer le courant d'alimentation secteur à cet appareil et/ou à tout ensemble électrique tant que toutes les plaques de refroidissement à semi-conducteurs ne sont pas correctement installées.

8. Relier systématiquement le fil de terre de l'appareil de mesure à une masse mécanique appropriée du châssis avant d'appliquer la pointe de touche positive de l'appareil. Débrancher toujours le fil de terre de l'appareil de mesure en premier.

9. Ne se servir que des accessoires de fixation et d'essai mentionnés dans les données de dépannage avec cet appareil.

ATTENTION: Ne jamais relier le ruban de terre de l'accessoire d'essai à toute plaque de refroidissement de cet appareil.

Dispositifs sensibles électrostatiquement

Certains dispositifs à semi-conducteurs (transistorisés) sont aisément destructibles par l'électricité statique. Ces dispositifs sont plus spécialement désignés sous le vocable "Dispositifs sensibles électrostatiquement." Un exemple caractéristique de dispositif sensible électrostatiquement sont les circuits intégrés et quelques transistors à effet de champ et "puces" à semi-conducteurs. Les techniques suivantes doivent être utilisées pour limiter l'incidence de l'endommagement des composants par l'électricité statique.

1. Juste avant de manipuler un composant à semi-conducteur ou un ensemble constitué de semi-conducteurs, décharger l'électricité statique de votre corps en touchant une terre connue. Par ailleurs, se munir d'un dispositif à ruban porté au poignet pour décharge de l'électricité statique en vente dans le commerce, dispositif qui doit être retiré pour éviter toute décharge de courant avant de mettre l'appareil sous tension pour le soumettre aux essais.

2. Après avoir retiré un ensemble électrique équipé d'un dispositif sensible électrostatiquement, placer l'ensemble sur une surface conductrice telle qu'une feuille d'aluminium pour éviter toute charge d'électricité statique ou d'exposition de l'ensemble à l'électricité statique.

3. Ne se servir que d'un fer à souder dont l'extrémité est reliée à la terre pour souder ou dessouder les dispositifs sensibles électrostatiquement.

4. Utiliser uniquement un dispositif de décapage de soudure de type antistatique. Certains dispositifs de décapage de soudure n'étant pas classés dans la catégorie des dispositifs antistatiques risquent de provoquer des décharges électriques capables d'endommager les dispositifs sensibles électrostatiquement.
5. Ne pas se servir de produits chimiques à base de liquide Fréon car ils peuvent engendrer des charges électriques suffisamment puissantes pour endommager les dispositifs sensibles électrostatiquement.
6. Ne jamais retirer un dispositif sensible électrostatiquement de remplacement de son emballage de protection tant que l'on n'est pas prêt à l'installer. (La plupart des dispositifs sensibles électrostatiquement de remplacement sont placés dans un emballage de protection et leurs fils électriques sont shuntés par l'intermédiaire de la mousse synthétique conductrice, du papier d'aluminium ou un matériau conducteur ayant des propriétés identiques.)
7. Juste avant de retirer le matériau de protection des fils de raccordement d'un dispositif sensible électrostatiquement de remplacement, mettre le matériau de protection en contact avec le châssis ou le circuit qui doit recevoir le dispositif sensible électrostatiquement.

ATTENTION: Aucun courant d'alimentation ne doit être appliqué au châssis ou au circuit concerné tandis que les précautions de sécurité qui s'imposent doivent être appliquées.

8. Éviter de vous déplacer pendant que le dispositif sensible électrostatiquement de remplacement est sorti de son emballage. (Toute opération potentiellement destructrice telle que le frottement des vêtements ou le décollement des pieds du sol revêtu d'un tapis peut engendrer la formation de l'électricité statique suffisamment puissante pour détruire le dispositif sensible électrostatiquement.

Conseils généraux relatifs à la soudure

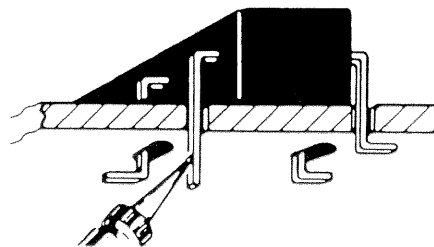
1. Se servir d'un fer à souder basse tension dont l'extrémité est reliée à la terre et le diamètre et la forme sont appropriés pour maintenir une température à la pointe se situant entre 500°F et 600°F.
2. Se servir d'une soudure à la résine appropriée composée de 60 parts d'étain et 40 parts de polmb.
3. Nettoyer soigneusement la pointe du fer à souder.
4. Nettoyer soigneusement les surfaces à souder. Se servir d'une petite sole à poils métalliques 0.5 inch or 1.25 cm à poignée métallique. Ne pas se servir de produits chimiques à vaporiser à base de liquide Fréon.
5. Appliquer les techniques de soudage sousmentionnées:
 - a. Laisser la pointe du fer à souder atteindre une température normale (située entre 500°F et 600°F).
 - b. Réchauffer les fils du composant jusqu'à ce que la soudure commence à fondre.
 - c. Dégager rapidement la soudure fondue avec un dispositif antistatique de dégagement de soudure ou un dispositif d'aspiration ou encore, avec une tresse de soudure.

ATTENTION: Agir rapidement pour éviter de surchauffer la feuille de métal de la carte de circuits imprimés.

6. Appliquer les techniques de soudage sousmentionnées:
 - a. Laisser la pointe du fer à souder atteindre une température normale (située entre 500°F et 600°F).
 - b. Plaquer tout d'abord la pointe du fer à souder et la tresse de soudure contre les fils du composant jusqu'à ce que la soudure fonde.
 - c. Déplacement rapidement la pointe du fer à souder jusqu'à la limite de jonction des fils du composant et la feuille métallique de carte de circuits imprimés et l'y maintenir jusqu'à ce que la soudure soit liquide autour du fil du composant et de la feuille.

ATTENTION: Agir rapidement pour éviter de surchauffer la feuille de métal de la carte de circuits imprimés ou les composants.

- d. Examiner minutieusement la surface de soudure et retirer toute bavure ou éclaboussure de soudure avec une petite brosse métallique.



Se servir du fer à souder pour replier les fils

Dépose et remplacement de circuit intégré

Certaines cartes de circuits imprimés de châssis en bloc Hitachi sont munies de trous ovalisés par lesquels les fils de jonction des circuits intégrés sont introduits puis repliés endessous et contre le support du circuit. Si les trous sont ovalisés, la technique suivante doit être appliquée pour déposer et remplacer un circuit intégré. Utiliser la technique standard mentionnées aux alinéas 5 et 6 qui précèdent pour les cartes de circuits imprimés munies de trous ronds ordinaires.

Dépose

1. Dessouder et redresser chaque fil de jonction du circuit intégré en une seule opération et en effectuant ce travail avec la pointe du fer à souder au fur et à mesure que la soudure fond.
2. Dégager la soudure fondue avec un dispositif d'élimination de soudure à aspiration de type antistatique (ou avec la tresse de soudure) avant de déposer le circuit intégré.

Remplacement

1. Introduire délicatement le circuit intégré dans la carte de circuits imprimés.
2. Replier délicatement chacun des fils de jonction du circuit intégré contre la surface du support et souder.
3. Nettoyer les surfaces soudées et retirer les bavures de soudure avec une petite brosse métallique. (Il est inutile d'effectuer une application acrylique sur ces surfaces.)

Dépose et remplacement de transistor discret à signaux faibles

1. Déposer le transistor défectueux en coupant ses fils de jonction le plus près possible du boîtier du composant.
2. Replier l'extrémité de chacun des trois fils de jonction en forme de "U" qui restent sur la carte de circuits imprimés.
3. Replier l'extrémité des fils de jonction en forme de "U" du transistor de remplacement.
4. Brancher les fils de jonction du transistor de remplacement aux fils correspondants qui sortent de la carte de circuits imprimés et serrer la partie en "U" avec une pince à long bec pour réaliser un parfait contact de métal à métal et souder chaque liaison.

Dépose et remplacement de dispositifs à transistor de sortie

1. Réchauffer et retirer toute trace de soudure se trouvant sur les fils de jonction du transistor.
2. Retirer la vis de fixation de la plaque de refroidissement (s'il en est.).
3. Dégager délicatement le transistor de la carte de circuits imprimés.
4. Introduire le transistor dans la carte de circuits imprimés.
5. Souder chaque fil de jonction du transistor et couper l'excédent de fil.
6. Remplacer la plaque de refroidissement.

Dépose et remplacement de diode

1. Retirer la diode défectueuse en coupant les fils de jonction le plus près possible du boîtier de la diode.
2. Replier les deux fils de jonction qui restent à la perpendiculaire de la carte de circuits imprimés.
3. Respecter la polarité de la diode, torsader chacun des fils de jonction de la diode neuve autour du fil correspondant de la carte de circuits imprimés.
4. Serrer solidement chaque raccordement et souder.
5. Vérifier (du côté cuivré de la carte de circuits imprimés) si les jonctions de soudure de deux fils de jonction d'origine sont normales. S'ils ne sont pas luisants, les réchauffer et au besoin, ajouter de la soudure.

Dépose et remplacement de fusible et de résistance ordinaires

1. Couper les fils de jonction de chaque fusible ou de résistance en haut du tube creux de la carte de circuits imprimés.
2. Retenir solidement les fils de jonction du composant de remplacement à 1/8 de pouce du haut du tube creux.
3. Souder les fils de jonction.

ATTENTION: Respecter l'écartement d'origine entre le composant remplacé et les composants voisins et la carte de circuits imprimés pour éviter toute formation excessive de température dans les composants.

Réparation de la surface métallique de carte de circuits imprimés

Toute température excessive appliquée à la feuille cuivrée d'une carte de circuits imprimés provoque un affaiblissement de l'adhérence de liaison de la feuille cuivrée sur la carte de circuits imprimés, ce qui provoque une séparation ou le décollement de la feuille cuivrée. Les recommandations et procédés suivants doivent être appliqués quand ceci est remarqué.

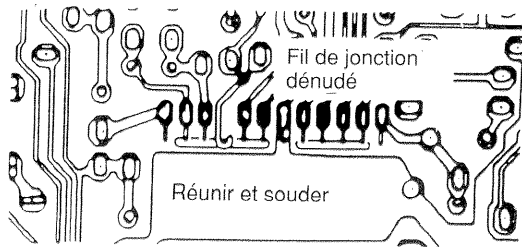
Zones critiques de surface cuivrée

Une grande densité de composants et surface cuivrée et/ou la présence de tension spéciales ou de caractéristiques d'intensités également spéciales ainsi que l'espacement et l'intégrité de la surface cuivrée de certaines zones d'une carte de circuits imprimés les rendent plus critiques que d'autres. La feuille cuivrée de ces zones est désignée sous l'appellation de "Surface cuivrée critique" tandis qu'elles sont identifiées et illustrées dans les données de dépannage dans le chapitre intitulé "Sécurité relative à la surface cuivrée (se reporter au tableau de la table des matières pour connaître le numéro de page). La surface cuivrée critique exigeant des techniques de soudage spéciales pour avoir la certitude que les normes de sécurité relatives à la maintenance et au dépannage sont respectées, il est préférable de s'informer auprès des spécialistes Hitachi.

Raccordement de circuit intégré

La restauration d'une surface soudée de circuit intégré endommagée est réalisée en appliquant la technique suivant qui consiste tout d'abord à installer un fil de jonction sur la surface cuivrée de la carte de circuits imprimés. (Cette technique ne doit être utilisée que pour le raccordement de circuit intégré.)

1. Décoller délicatement la partie endommagée de la surface cuivrée avec un couteau. (Découper la moins possible de surface cuivrée.)
2. Gratter délicatement les restes de soudure et de couche acrylique (s'il en est) du bord de ce qui reste de surface cuivrées.

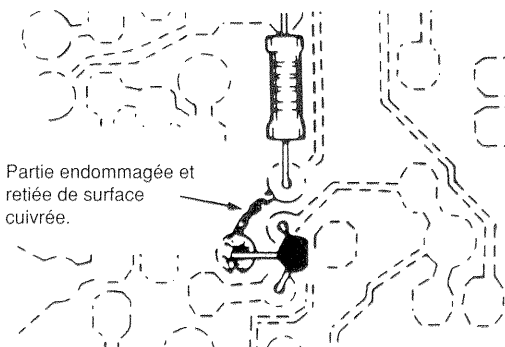


Installer le fil de jonction et souder

3. Former un petit "U" au bout du fil de jonction de faible calibre et le fixer délicatement autour de la broche du circuit intégré. Souder la jonction du circuit intégré.
4. Faire passer le fil de jonction en suivant la partie découpée de la surface cuivrée et le superposer à la partie de surface cuivrée qui est en bon état. Souder la surface superposée et couper l'excédent de fil de jonction.

A d'autres emplacements

Utiliser la technique suivante pour restaurer la surface cuivrée endommagée à l'état normal au niveau des branchements autres que les broches de circuit intégré. Cette technique oblige à installer un fil de jonction sur la carte de circuits imprimés côté composant.



Fil de jonction isolé

1. Retirer la surface cuivrée endommagée avec un couteau. Retirer au moins 1/4 de pouce de cuivre pour avoir la certitude que des conditions dangereuses ne subsistent pas au cas où le fil de jonction se couperait.
2. Tracer sur la surface cuivrée et des deux côtés de la rupture jusqu'à localiser le composant le plus proche qui est directement relié à la surface cuivrée affectée.
3. Brancher du fil de jonction isolé de calibre 20 du fil de raccordement du composant le plus proche d'un côté de la surface cuivrée abîmée au fil de jonction du composant le plus proche de l'autre côté. Retenir soldement et souder.

ATTENTION: Vérifier que le fil de jonction isolé est acheminé de telle sorte qu'il ne touche pas les composants ou des angles aigus.

Systèmes d'accord de synthèse de fréquence

1. Débrancher systématiquement le cordon d'alimentation de l'appareil avant de débrancher ou rebrancher un système d'accord de synthèse de fréquence mais aussi avant de déposer ou remettre en place des modules de système d'accord de synthèse de fréquence.
2. Le syntoniseur de système d'accord de synthèse de fréquence ne doit jamais être débranché du module de contrôle d'accord de système d'accord de synthèse de fréquence quand l'appareil est sous tension.
3. Quand des pannes irrégulières se produisent et semblent provenir de défauts de raccordement de câble au système d'accord de synthèse de fréquence, isoler immédiatement l'appareil de l'alimentation secteur dès que le connecteur défectueux est localisé et continuer à confirmer le branchement défectueux en effectuant un essai de continuité. Cette façon de limiter les risques de surtension des semi-conducteurs du système d'accord de synthèse de fréquence.

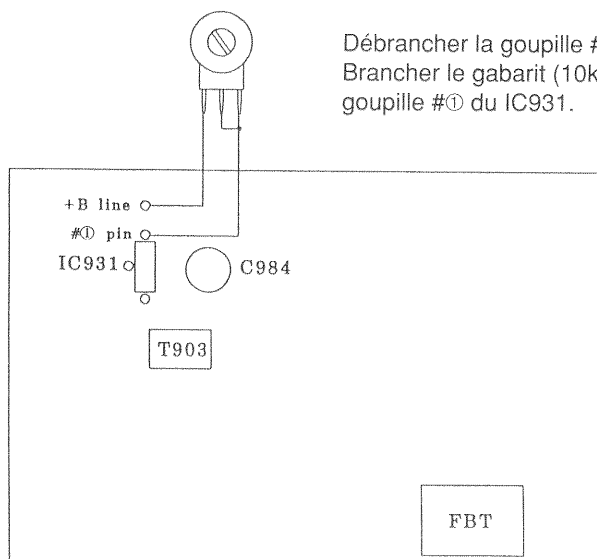
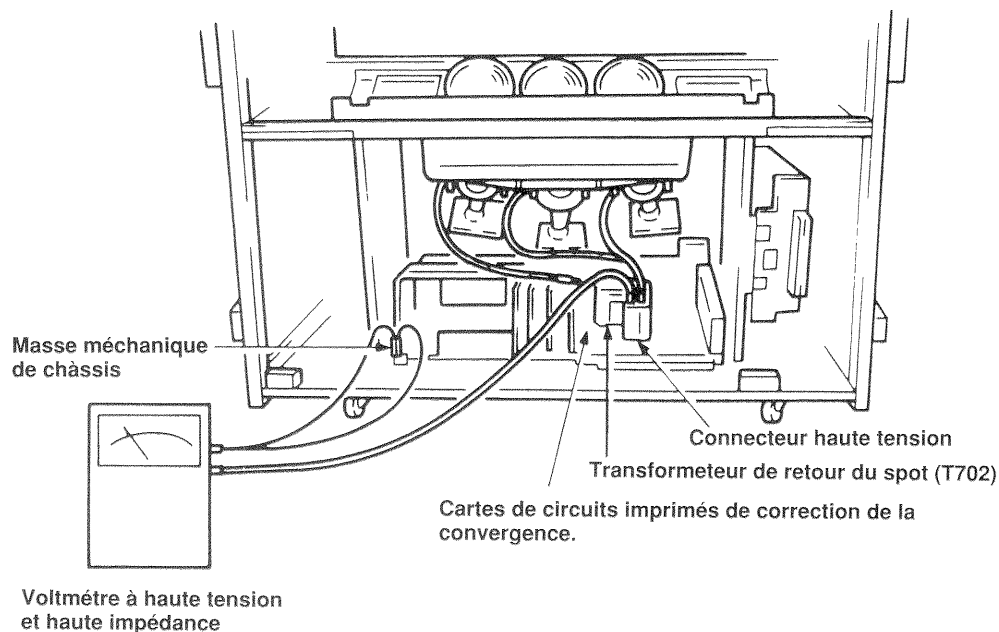
PRÉCAUTIONS TECHNIQUES

Vérification du fonctionnement du circuit limiteur de haute tension

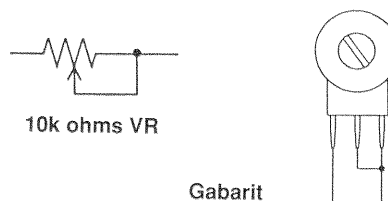
Connector le voltmètre haute tension entre le connecteur haute tension et la terre de châssis de la manière indiquée en Fig. 2.

2. Régler la tension d'entrée secteur à 130V.
3. Capter le patron régulier sur votre écran, et réduire documment la fréquence avec votre gabarit jusqu'à ce que l'image disparaisse et que votre téléviseur s'éteigne complètement.

4. Quant votre circuit opère correctement, votre haut-voltage devrait être en-dessous de 35.5KV a 0.6mA a ce moment votre circuit s'etindra.
5. Fermer immédiatement votre téléviseur après la verifcation du circuit.
6. Débrancher votre téléviseur pour environ 1 minute afin de rétablir le courant. Enlever votre gabarit et votre appareil de mesure.



Débrancher la goupille #① du IC931 de la linge +B.
Brancher le gabarit (10k ohms VR) entre la linge +B et la goupille #① du IC931.



SPECIFICATIONS TECHNIQUES

Modele: (AP32)	55EX7K	50EX6K	Tension d'anode: 30.0 kV
	46EX3B	46EX7K	(Intensité du faisceau nulle)
(AP31)	50ES1B	50ES1K	Intensité: 520 ft-l Nominal - 46EX3B/4K
			430 ft-l Nominal - 50EX6K
			350 ft-l Nominal - 55EX7K
			430 ft-l Nominal - 50ES1B/K
			(Blanc de crête)
Tube Cathodique:	7 pouces deflexion de 80°°		
	180CSB22(K)R/180CSB22(K)G/		
	180CSB22(K)B		
Entrée alimentation:	Secteur altern. 120V, 60Hz		Haut-parieurs: 2 pour graves - 6 pouces (16cm)
Consomation:	220W - Maximum (AP32)		round.
	205W - Maximum (AP31)		
	153W - Service (AP32)		
	144W - Service (AP31)		
Impédance d'entrée d'antenne:	75 ohms (300ohms)		
Canaux de réception:	Canal		
	VHF	2 à 13	
	UHF	14 à 69	
	CATV Mid	(A-2)-(A-1),4	
	EXT. Mid	A-I	
	CATV Super	J-W	
	CATV Hyper	W+1 - W+28	
	CATV Ultra	W+29 - W+84	
Fréquences Intermédiaires:	Porteuse de fréquence intermédiaire image: 45.75 MHz		
	Porteuse de fréquence intermédiaire son: 41.25 MHz		
	Porteuse secondaire de couleur: 42.17 MHz		
Entrée Video:	1 V c-c 75 ohms		
Sortie Video:	1 V c-c 75 ohms		
Entrée Audio:	0.4V (eff.), 40 k ohms		
Sortie Audio Stéréo:	0.4V (eff.), 1 k ohm		
Puissance Audio:	Avant - 8W eff./canal, impédence de 8 ohms		
	Arrière - 4W eff./canal, impédence de 8 ohms		

Dimensions:	55EX7K	50EX6K
Hauteur (en pouces)	56 3/8	54 5/8
Largeur (en pouces)	50 1/4	45 3/4
Profondeur (en pouces)	28	24 1/2
Poids (en livres)	288	244
	46EX3B/4K	50EX1B/K
Hauteur (en pouces)	48 3/8	51 7/8
Largeur (en pouces)	39 3/4	43 1/8
Profondeur (en pouces)	24 1/2	23 5/8
Poids (en livres)	206	212

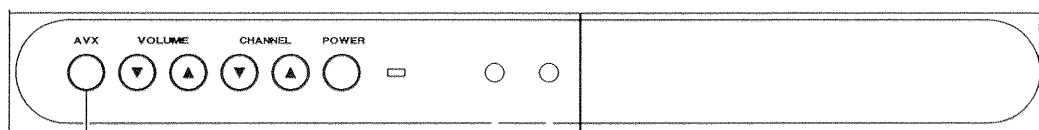
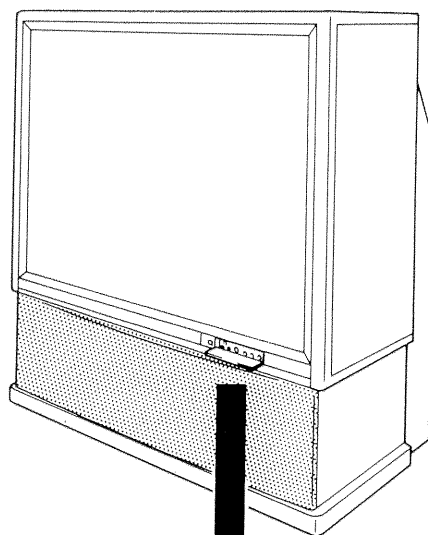
Ensembles des plaquettes

de circuits (P.C.B.):	CPT (B)
	CPT (G)
	CPT (R)
	Correction de Convergence
	Signaux
	Deflexion/d'alimentation
	Borne HP
	Commande
	Stéréo
	Bornes

PROTECTION DE CIRCUIT

Fusible	Circuit protégé	Emplacement physique
F601 1.6A/125V (CC)	Verticale	Plaquette de circuit de deflexion/d'alimentation
F901 5.0A/125V (CA)	Fusible principal	Plaquette de circuit de deflexion/d'alimentation
F903 5.0A/125V (CC)	Fusible principal	Plaquette de circuit de deflexion/d'alimentation
F932 4.0A/125V (CC)	Verticale	Plaquette de circuit de deflexion/d'alimentation
F933 3.0A/125V (CC)	Convergence	Plaquette de circuit de deflexion/d'alimentation
F934 3.0A/125V (CC)	+12V	Plaquette de circuit de deflexion/d'alimentation
F935 4.0A/125V (CC)	+11V	Plaquette de circuit de deflexion/d'alimentation
F936 3.0A/125V (CC)	Avant Sortie Audio	Plaquette de circuit de deflexion/d'alimentation
F937 1.6A/125V (CC)	130V (+B)	Plaquette de circuit de deflexion/d'alimentation

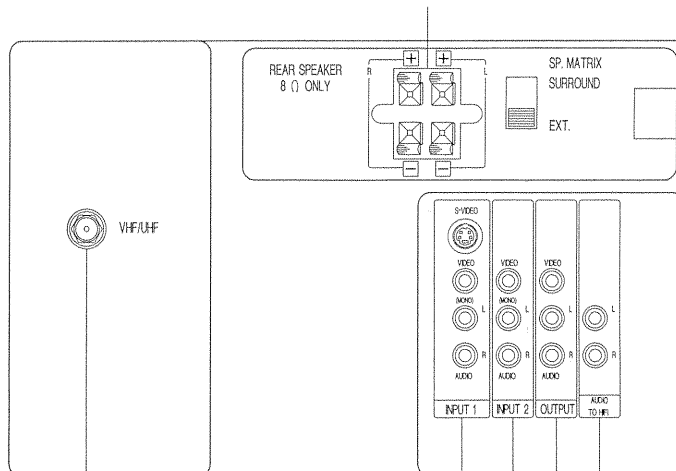
RENSEIGNEMENT GÉNÉRAUX



SELECTEUR TV/VIDEO

Panneau de Commande
Fig. 3

BORNES D'HAUT PARIEURS ARRIÈRES



BORNE D'ANTENNE

ENTRÉE 1, 2

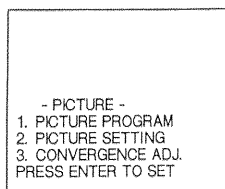
BORNES DE AUDIO HI-FI

BORNES DE SORTIES

Panneau de branchement arrière
Fig. 4

RÉGLAGE DE L'IMAGE ET FONCTIONS DU MODE SON

Appuyer sur MENU, 2 ENTER sur la télécommande afin d'obtenir l'affichage des fonctions PICTURE.



PICTURE PROGRAM est pour votre réglage préféré - contraste, couleur, etc.

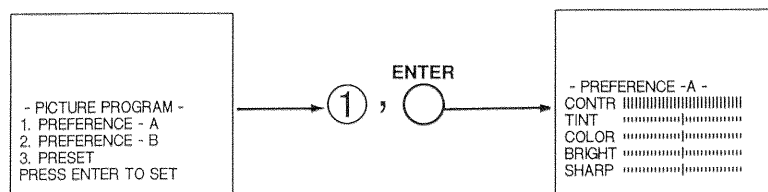
PICTURE SETTINGS est utiliser pour améliorer la qualité de l'image.

CONVERGENCE ADJ. est utiliser afin d'aligner les trois couleur (rouge, vert, bleu) de façon à obtenir une image claire..

• PROGRAMME IMAGE (PICTURE PROGRAM)

Il y'a deux réglages préférée "A et B" ou utiliser l'usine PRESET.

Appuyer sur MENU, 2, ENTER, 1, ENTER afin de sélectionner PICTURE PROGRAM.



Appuyer sur les touches de curseur afin de sélectionner et régler les fonctions.

CONTRASTE (CONTR) — Utiliser cette commande afin de régler le niveau du noir et du blanc de l'image. Cette ajustement affectera l'image seulement si PICTURE SETTING AI est à la position OFF.

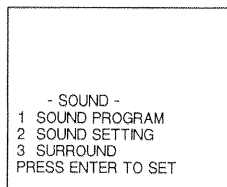
TEINTE (TINT) — Permet de régler le ton de la peau de façon que cette dernière paraisse naturelle.

COULEUR (COLOR) — Utiliser cette commande afin de régler le niveau de couleur de l'image.

BRILLIANCE (BRIGHT) — Cette commande permet de régler la brillance de l'image entière.

NETTÉTÉ (SHARP) — Cette commande permet de régler les menus détails de l'image. Cette ajustement affectera l'image seulement si PICTURE SETTING AI est à la position OFF.

Appuyer sur MENU, 3, ENTER sur la télécommande afin d'obtenir les fonctions du mode SOUND.

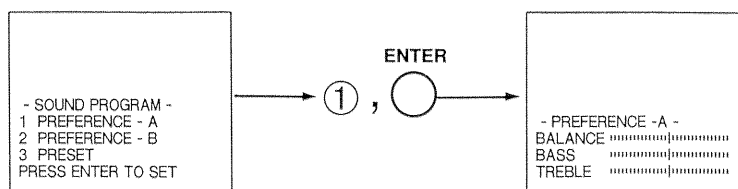


SOUND PROGRAM est pour vos réglages préférés - équilibrage, grave, aigus, etc.
SOUND SETTING est utiliser pour améliorer la qualité sonore.

• PROGRAMME SON (SOUND PROGRAM)

Vous avez deux choix de réglage préféré A et B, ou vous pouvez utiliser les réglages.

Appuyer sur MENU, 3, ENTER, 1, ENTER afin de sélectionner SOUND PROGRAM.



Appuyer sur le curseur afin de sélectionner et effectuer les ajustements.

ÉQUILIBRAGE — Cette commande contrôle l'équilibre des niveaux sonores gauche et droit des haut-parleurs internes du téléviseur, la sortie AUDIO TO HI-FI ainsi que les haut-parleurs ambophonique. La commande d'équilibrage du niveau sonore est aussi trouvée dans la fonction DOLBY TEST.

GRAVE (BASS)— Cette commande contrôle les sons graves sur tous les haut-parleurs.

ALGU (TREBLE) — Cette commande contrôle les sons aigus sur tous les haut-parleurs.

CODES DE RÉPARATION DE L'AUTO-VÉRIFICATION

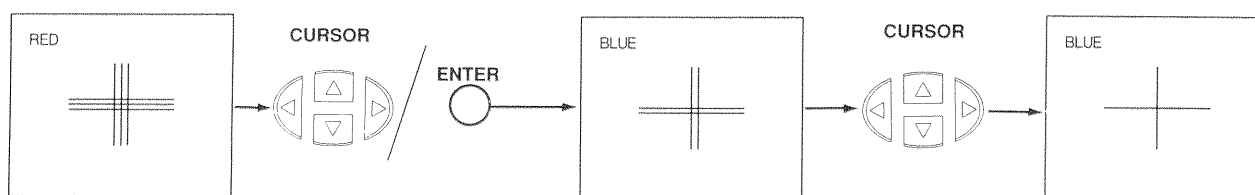
Appuyer simultanément sur la touche AVX et sur la touche POWER.

CODE	PHÉNOMÈNES DÉTECTÉS	TEMPS DE DÉTECTION	REMARQUES
40	Déflexion horizontale anormale	---	---
41	Le transformateur de retour de spot puisse sa charge sur la ligne de 12 volt	---	---
50	Le relais de puissance un position arrêt	---	Condition anormale causant l'arrêt du relais
10	Vérifier pour le PLL verroués	Noon verrouillé	Durant le temps de selection
11	Vérifier pour l'opération	Non terminé enn 2 sec.	Durant le temps de selection
60	Vérifier l'entree AC	Temps de restoration at uP	L'entree AC (50/60 Hz) non détectes durant le temps de restoration
31	Vérifier l'operation du IC0001	Temps de restoration at uP	Vérifier si l'operation est à l'interieur des limites specifiées

Remarque: Les codes 10 ou 11 peuvent apparaite si le téléviseur est mis en marche sans être brancher à une source d'antenne.

RÉGLAGE DE LA CONVERGENCE

Appuyer sur MENU, 2, ENTER, 3, ENTER sur la télécommande afin d'obtenir l'affichage des ajustements de la convergence.



Appuyer sur le curseur ▲, ▼ afin de déplacer l'affichage de couleur vers le haut ou vers le bas.
 Appuyer sur le curseur ◀, ▶ afin de déplacer l'affichage de couleur vers la droite ou vers la gauche.
 Appuyer sur ENTER pour changer de couleur.
 Appuyer sur MENU pour sortir.

Implantation des VR de réglage



PRECAUTIONS A PRENDRE EN CAS CONNEXION/DECONNEXION DU CONNECTEUR HT

Effectuer les points suivants lorsque le connecteur HT (connecteur d'anode) est retiré ou inséré pour le remplacement CPT, etc.

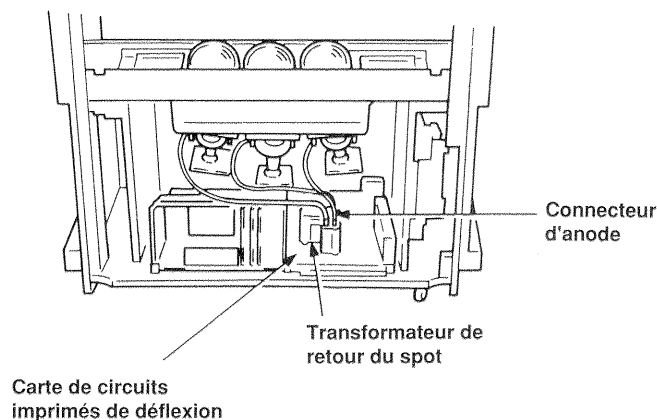


Fig. 5

Pendant le retrait

1. Insérer un petit tournevis à lame plate (tournevis de réglage : 5-7 mm de large et 0.2-0.3 mm d'épaisseur) dans la section (A) de la Fig. 6, puis l'enfoncer dans la direction de la flèche (B). Le verrou se libère avec un déclic. (L'état de la Fig. 8-(1) change à celui de la Fig. 8-(2).)

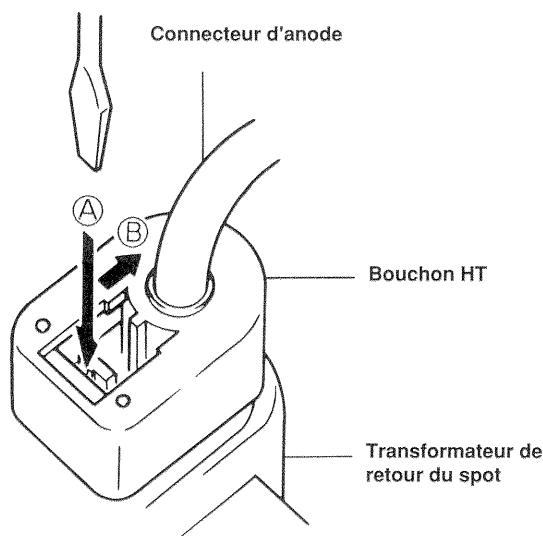


Fig. 6

2. Retirer le bouchon HT et déposer le connecteur d'anode (Fig. 7).

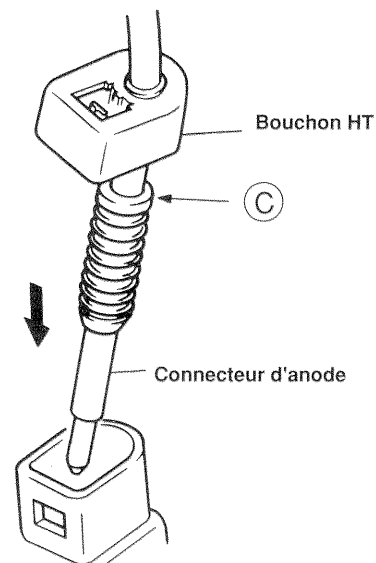
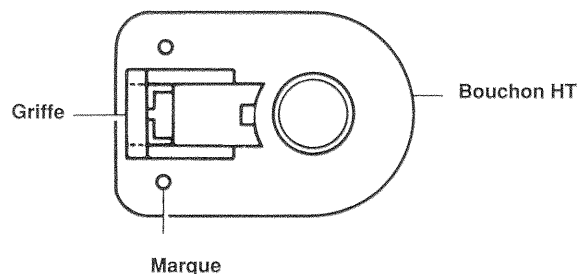


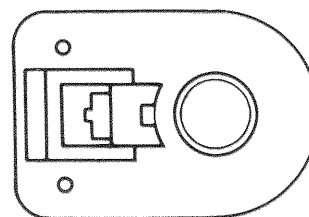
Fig. 7

Pendant l'insertion

1. Insérer profondément le connecteur d'anode dans le FBT (à la section (C) de la Fig. 7), puis enfoncer le bouchon HT dans le FBT jusqu'à ce qu'un déclic se fasse entendre.
2. Vérifier que le connecteur est bien inséré. (Vérifier que la griffe est au niveau de la marque située sur le bouchon HT comme dans la Fig. 8-(1).)



- (1) Verrouiller
(Lorsque le connecteur est inséré)



- (2) Libérer
(Lorsque le connecteur est retiré)

Fig. 8

SAFETY NOTICE

USE ISOLATION TRANSFORMER WHEN SERVICING

Components having special safety characteristics are identified by a ⚠ on the schematics and on the parts list in this Service Data and its supplements and bulletins. Before servicing this chassis, it is important that the service technician read and follow the "Safety Precautions" and "Product Safety Notices" in this Service Manual.

*For continued x-radiation protection, replace picture tube with original type or Hitachi approved equivalent type.

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.

Improperly performed repairs can adversely affect the safety and reliability of the product and may void warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING

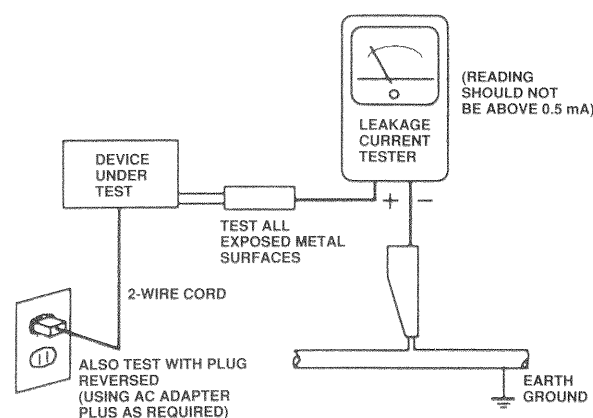
Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health and Safety Code, Section 25249.5).

When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with solder. Also, when soldering do not inhale any smoke or fumes produced.

This television receiver provides display of television closed captioning in accordance with section 15.119 of the FCC rules.

SAFETY PRECAUTIONS

1. Before returning an instrument to the customer, always make a safety check of the entire instrument, including but not limited to the following items:
 - a. Be sure that no built-in protective devices are defective and/or have been deleted during servicing. (1) Protective shields are provided on this chassis to protect both the technician and the customer. Correctly replace all missing protective shields, including any removed for servicing convenience. (2) When reinstalling the chassis and/or other assembly in the cabinet, be sure to put back in place all protective devices, including but not limited to, nonmetallic control knobs, insulating fishpapers, adjustment and compartment covers/shields, and isolation resistor/capacitor networks. **Do not operate this instrument or permit it to be operated without all protective devices correctly installed and functioning. Servicers who defeat safety features or fail to perform safety checks may be liable for any resulting damage.**
 - b. Be sure that there are no cabinet openings through which an adult or child might be able to insert their fingers and contact a hazardous voltage. Such openings include, but are not limited to (1) spacing between the picture tube and cabinet mask, (2) excessively wide cabinet ventilation slots, and (3) an improperly fitted and/or incorrectly secured cabinet back cover.
 - c. **Antenna Cold Check** — With the instrument AC plug removed from any AC source, connect an electrical jumper across the two AC plug prongs. Place the instrument AC switch in the on position. Connect one lead of an ohmmeter to the AC plug prongs tied together and touch the other ohmmeter lead in turn to each tuner antenna input exposed terminal screw and, if applicable, to the coaxial connector. If the measured resistance is less than 1.0 megohms or greater than 5.2 megohms, an abnormality exists that must be corrected before the instrument is returned to the customer. Repeat this test with the instrument AC switch in the off position.
 - d. **Leakage Current Hot Check** — With the instrument completely reassembled, plug the AC line cord directly into a 120V AC outlet. (Do not use an isolation transformer during this test.) Use a leakage current tester or a metering system that complies with American National Standards Institute (ANSI) C101.0 Leakage Current for Appliances and Underwriters Laboratories (UL) 1410, (50.7). With the instrument AC switch first in the on position and then in the off position, measure from a known earth ground (metal waterpipe, conduit, etc.) to all exposed metal parts of the instrument (antennas, handle bracket, metal cabinet, screw heads, metallic overlays, control shafts, etc.), especially any exposed metal parts that offer an electrical return path to the chassis. Any current measured must not exceed 0.5 milliamps. Reverse the instrument power cord plug in the outlet and repeat test.



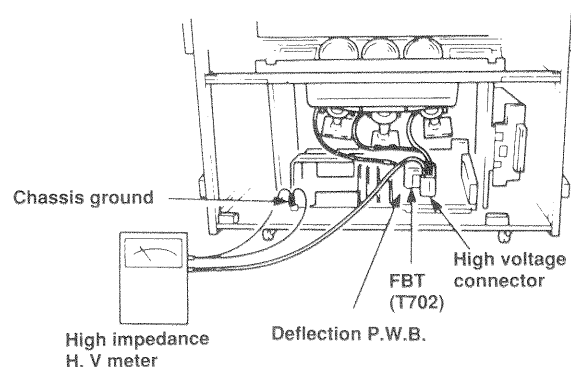
AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS SPECIFIED HEREIN INDICATE A POTENTIAL SHOCK HAZARD THAT MUST BE ELIMINATED BEFORE RETURNING THE INSTRUMENT TO THE CUSTOMER OR BEFORE CONNECTING THE ANTENNA OR ACCESSORIES.

- e. **High Voltage** — This receiver is provided with a hold down circuit for clearly indicating that voltage has increased in excess of a predetermined value. Comply with all notes described in this Service Manual regarding this hold down circuit when servicing, so that this hold down circuit may correctly be operated.
- f. **Serviceman Warning** — With minimum contrast and brightness, operating high voltage in this receiver is lower than **31.6kV**. In case any component having influence on high voltage is replaced, confirm that high voltage with minimum contrast and brightness is lower than **31.6kV**.

To measure H.V. use a high impedance H.V. meter. Connect (–) to chassis earth and (+) to the CRT anode button. (See the following connection diagram.)

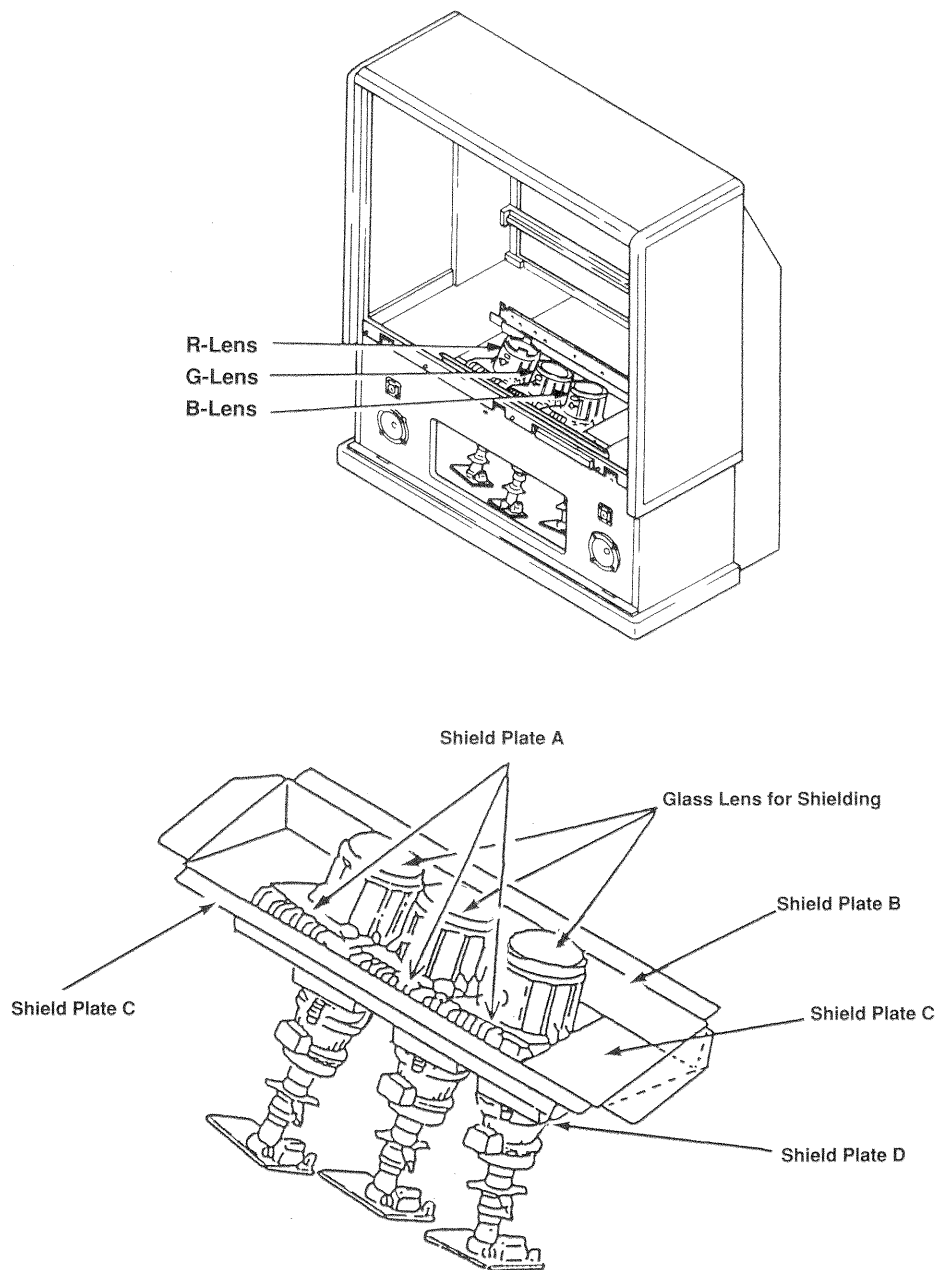
Note: Turn power switch off without fail before the connection to the anode button is made.



- g. **X-radiation — TUBE:** The primary source of X- radiation in this receiver is the picture tube. The tube utilized for the above mentioned function in this chassis is specially constructed to limit X-radiation emissions. For continued X-radiation protection, the replacement tube must be the same type as the original, HITACHI approved type.
- When troubleshooting and making test measurements in a receiver with a problem of excessive high voltage, avoid being unnecessarily close to the picture tube and the high voltage component.
- Do not operate the chassis longer than is necessary to locate the cause of excessive voltage.

h. **X-Radiation Shield —**

- 1) This receiver is provided X-ray shield plates for the protection of X-radiation. Do not remove X-ray shield plates A, B, C, or D shown in Fig. 1 unnecessarily, when troubleshooting and/or making test measurements.
- 2) To prevent X-radiation, after replacement of picture tube and lens, confirm these components to be fixed correctly to bracket and cabinet, and not to be taken off easily.



Detailing X-radiation shield.

Fig. 1

2. Read and comply with all caution and safety-related notes on or inside the receiver cabinet, on the receiver chassis, or on the picture tube.
3. **Design Alteration Warning** — Do not alter or add to the mechanical or electrical design of this TV receiver. Design alterations and additions, including but not limited to, circuit modifications and the addition of items such as auxiliary audio and/or video output connectors, might alter the safety characteristics of this receiver and create a hazard to the user. Any design alterations or additions may void the manufacturer's warranty and may make you, the servicer, responsible for personal injury or property damage resulting therefrom.
4. **Picture Tube Implosion Protection Warning** — The picture tube in this receiver employs integral implosion protection. For continued implosion protection, replace the picture tube only with one of the same type number. Do not remove, install, or otherwise handle the picture tube in any manner without first putting on shatterproof goggles equipped with side shields. People not so equipped must be kept safely away while picture tubes are handled. Keep the picture tube away from your body. Do not handle the picture tube by its neck.
5. **Hot Chassis Warning** — **a.** Some TV receiver chassis are electrically connected directly to one conductor of the AC power cord and may be safely serviced without an isolation transformer only if the AC power plug is inserted so that the chassis is connected to the ground side of the AC power source. To confirm that the AC power plug is inserted correctly, with an AC voltmeter measure between the chassis and a known earth ground. If a voltage reading in excess of 1.0V is obtained, remove and reinsert the AC power plug in the opposite polarity and again measure the voltage potential between the chassis and a known earth ground. **b.** Some TV receiver chassis normally have 85V AC (RMS) between chassis and earth ground regardless of the AC plug polarity. These chassis can be safely serviced only with an isolation transformer inserted in the power line between the receiver and the AC power source, for both personnel and test equipment protection. **c.** Some TV receiver chassis have a secondary ground system in addition to the main chassis ground. This secondary ground system is not isolated from the AC power line. The two ground systems are electrically separated by insulating material that must not be defeated or altered.
6. Observe original lead dress. Take extra care to assure correct lead dress in the following areas: **a.** near sharp edges, **b.** near thermally hot parts — be sure that leads and components do not touch thermally hot parts, **c.** the AC supply, **d.** high voltage and **e.** antenna wiring. Always inspect in all areas for pinched, out-of-plate, or frayed wiring. Do not change spacing between components, and between components and the printed circuit board. Check AC power cord for damage.
7. Components, parts, and/or wiring that appear to have overheated or are otherwise damaged should be replaced with components, parts, or wiring that meet original specifications. Additionally, determine the cause of overheating and/or damage and, if necessary, take corrective action to remove any potential safety hazard.
8. **PRODUCT SAFETY NOTICE** — Many TV electrical and mechanical parts have special safety-related characteristics some of which are often not evident from visual inspection, nor can the protection they give necessarily be obtained by replacing them with components rated for higher voltage, wattage, etc. Parts that have special safety characteristics are identified Hitachi service data by shading on schematics and by a (Δ) in the parts list. Use of a substitute replacement that does not have the same safety characteristics as the recommended replacement part in Hitachi service data parts list might create shock, fire, and/or other hazards. Product safety is under review continuously and new instructions are issued whenever appropriate. For the latest information, always consult the appropriate current Hitachi service literature. A subscription to, or additional copies of Service literature may be obtained at a normal charge from Hitachi.

SERVICING PRECAUTIONS

CAUTION: Before servicing instruments covered by this service data and its supplements and addenda, read and follow the SAFETY PRECAUTIONS on page 19 of this publication.

NOTE: If unforeseen circumstances create conflict between the following servicing precautions and any of the safety precautions on page 19 of this publication, always follow the safety precautions. Remember: Safety First.

General Servicing Precautions

1. Always unplug the instrument AC power cord from the AC power source before:
 - a. Removing or reinstalling any component, circuit board, module, or any other instrument assembly.
 - b. Disconnecting or reconnecting any instrument electrical plug or other electrical connection.
 - c. Connecting a test substitute in parallel with an electrolytic capacitor in the instrument.
Caution: A wrong part substitution or incorrect polarity installation of electrolytic capacitors may result in an explosion hazard.
 - d. Discharging the picture tube anode.
2. Test high voltage only by measuring it with an appropriate high voltage meter or other voltage measuring device (DVM, FETVOM, etc.) equipped with a suitable high voltage probe. Do not test high voltage by "drawing an arc." The H.V. Distribution Box has an internal 400M Ω resistor (bleeder resistor) connected from the high voltage to ground. After power is removed from the instrument the high voltage will discharge through the high voltage bleeder resistor. If the tubes have high voltage after power is removed, then the bleeder resistor is defective or the bleeder ground is disconnected.
3. Discharge the picture tube's anode at any of the R, G, or B outputs on the High Voltage distribution box only by (a) first connecting one end of an insulated clip lead to the degaussing or kine aquadag grounding system shield at the point where the picture tube socket ground lead is connected, and then (b) touch the other end of the insulated clip lead to the picture tube high voltage distribution box R, G, or B output, using an insulating handle to avoid personal contact with high voltage.
4. Do not spray chemical on or near this instrument or any of its assemblies.
5. Unless specified otherwise in these service data, clean electrical contacts by applying the following mixture to the contacts with a pipe cleaner, cotton-tipped stick or comparable nonabrasive applicator: 10% (by volume) Acetone and 90% (by volume) isopropyl alcohol (90%-99% strength). **Caution:** This is a flammable mixture. Unless specified otherwise in these service data, lubrication of contacts is not required.
6. Do not defeat any plug/socket B+ voltage interlocks with which instruments covered by this service data might be equipped.

7. Do not apply AC power to this instrument and/or any of its electrical assemblies unless all solid-state device heat sinks are correctly installed.
8. Always connect the test instrument ground lead to the appropriate instrument chassis ground before connecting the test instrument positive lead. Always remove the test instrument ground lead last.
9. Use with this instrument only the test fixtures specified in this service data.

CAUTION: Do not connect the test fixture ground strap to any heatsink in this instrument.

Electrostatically Sensitive (ES) Devices

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices. Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by static electricity.

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an anti-static type solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material.)
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.
CAUTION: Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.
8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ES device.)

General Soldering Guidelines

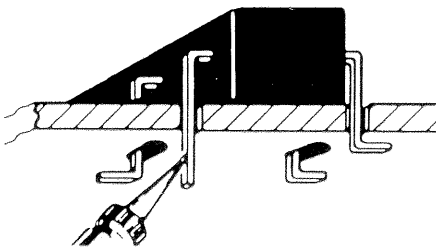
1. Use a grounded-tip, low-wattage soldering iron and appropriate tip size and shape that will maintain tip temperature within the range 500°F to 600°F.
2. Use an appropriate gauge of resin-core solder composed of 60 parts tin/40 parts lead.
3. Keep the soldering iron tip clean and well tinned.
4. Thoroughly clean the surfaces to be soldered. Use a small wire-bristle (0.5 inch or 1.25 cm) brush with a metal handle. Do not use freon-propelled spray-on cleaners.
5. Use the following unsoldering technique.
 - a. Allow the soldering iron tip to reach normal temperature (500°F to 600°F).
 - b. Heat the component lead until the solder melts. Quickly draw away the melted solder with an anti-static, suction-type solder removal device or with solder braid.

CAUTION: Work quickly to avoid overheating the circuit board printed foil.

6. Use the following soldering technique.
 - a. Allow the soldering iron tip to reach normal temperature (500°F to 600°F).
 - b. First, hold the soldering iron tip and solder strand against the component lead until the solder melts.
 - c. Quickly move the soldering iron tip to the junction of the component lead and the printed circuit foil, and hold it there only until the solder flows onto and around both the component lead and the foil.

CAUTION: Work quickly to avoid overheating the circuit board printed foil or components.

- d. Closely inspect the solder area and remove any excess or splashed solder with a small wire-bristle brush.



Use Soldering Iron to Pry Leads

IC Removal/Replacement

Some Hitachi unitized chassis circuit boards have slotted holes (oblong) through which the IC leads are inserted and then bent flat against the circuit foil. When holes are the slotted type, the following technique should be used to remove and replace the IC. When working with boards using the familiar round hole, use the standard technique as outlined in paragraphs 5 and 6 above.

Removal

1. Desolder and straighten each IC lead in one operation by gently prying up on the lead with the soldering iron tip as the solder melts.
2. Draw away the melted solder with an anti-static suction-type solder removal device (or with solder braid) before removing the IC.

Replacement

1. Carefully insert the replacement IC in the circuit board.
2. Carefully bend each IC lead against the circuit foil pad and solder it.
3. Clean the soldered areas with a small wire-bristle brush. (It is not necessary to reapply acrylic coating to the areas.)

“Small-signal” Discrete Transistor Removal/Replacement

1. Remove the defective transistor by clipping its leads as close as possible to the component body.
2. Bend into a “U” shape the end of each of three leads remaining on the circuit board.
3. Bend into a “U” shape the replacement transistor leads.
4. Connect the replacement transistor leads to the corresponding leads extending from the circuit board and crimp the “U” with long nose pliers to insure metal to metal contact, then solder each connection.

Power Output Transistor Devices Removal/Replacement

1. Heat and remove all solder from around the transistor leads.
2. Remove the heatsink mounting screw (if so equipped).
3. Carefully remove the transistor from the circuit board.
4. Insert new transistor in circuit board.
5. Solder each transistor lead, and clip off excess lead.
6. Replace heatsink.

Diode Removal/Replacement

1. Remove defective diode by clipping its leads as close as possible to diode body.
2. Bend the two remaining leads perpendicularly to the circuit board.
3. Observing diode polarity, wrap each lead out of the new diode around the corresponding lead on the circuit board.
4. Securely crimp each connection and solder it.
5. Inspect (on the circuit board copper side) the solder joints of the two “original” leads. If they are not shiny, reheat them and, if necessary, apply additional solder.

Fuses and Conventional Resistor Removal/Replacement

1. Clip each fuse or resistor lead at top of circuit board hollow stake.
2. Securely crimp leads of replacement component around stake 1/8 inch from top.
3. Solder the connections.

CAUTION: Maintain original spacing between the replaced component and adjacent components and the circuit board, to prevent excessive component temperatures.

Circuit Board Foil Repair

Excessive heat applied to the copper foil of any printed circuit board will weaken the adhesive that bonds the foil to the circuit board, causing the foil to separate from, or "lift-off," the board. The following guidelines and procedures should be followed whenever this condition is encountered.

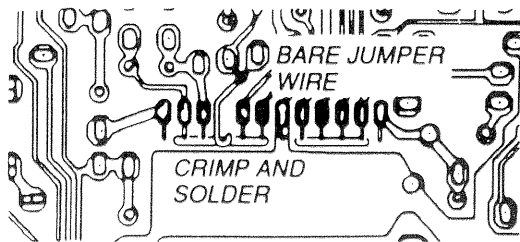
In Critical Copper Pattern Areas

High component/copper pattern density and/or special voltage/current characteristics make the spacing and integrity of copper pattern in some circuit board areas more critical than in others. The circuit foil in these areas is designated as Critical Copper Pattern and is identified and illustrated in this service data in the section titled Safety Related Copper Pattern (see table of contents for page number). Because Critical Copper Pattern requires special soldering techniques to ensure the maintenance of reliability and safety standards, contact your Hitachi personnel.

At IC Connections

To repair defective copper pattern at IC connections, use the following procedure to install a jumper wire on the copper pattern side of the circuit board. (Use this technique only on IC connections.)

1. Carefully remove the damaged copper pattern with a sharp knife. (Remove only as much copper as absolutely necessary.)
2. Carefully scratch away the solder resist and acrylic coating (if used) from the end of the remaining copper pattern.



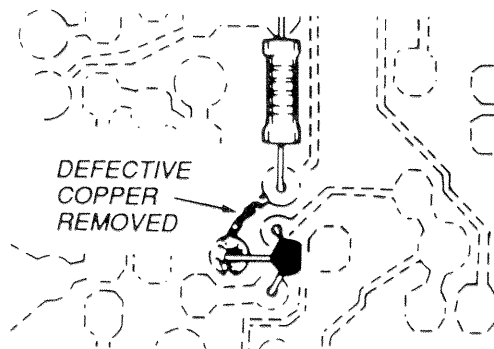
Install Jumper Wire and Solder

3. Bend a small "U" in one end of a small-gauge jumper wire and carefully crimp it around the IC pin. Solder the IC connection.

4. Route the jumper wire along the path of the cut-away copper pattern and let it overlap the previously scraped end of the good copper pattern. Solder the overlapped area, and clip off any excess jumper wire.

At Other connections

Use the following technique to repair defective copper pattern at connections other than IC Pins. This technique involves the installation of a jumper wire on the component side of the circuit board.



Insulated Jumper wire

1. Remove the defective copper pattern with a sharp knife. Remove at least 1/4 inch of copper, to ensure that a hazardous condition will not exist if the jumper wire opens.
2. Trace along the copper pattern from both sides of the pattern break and locate the nearest component that is directly connected to the affected copper pattern.
3. Connect insulated 20-gauge jumper wire from the lead of the nearest component on one side of the pattern break to the lead of the nearest component on the other side. Carefully crimp and solder the connections.

CAUTION: Be sure the insulated jumper wire is dressed so that it does not touch components or sharp edges.

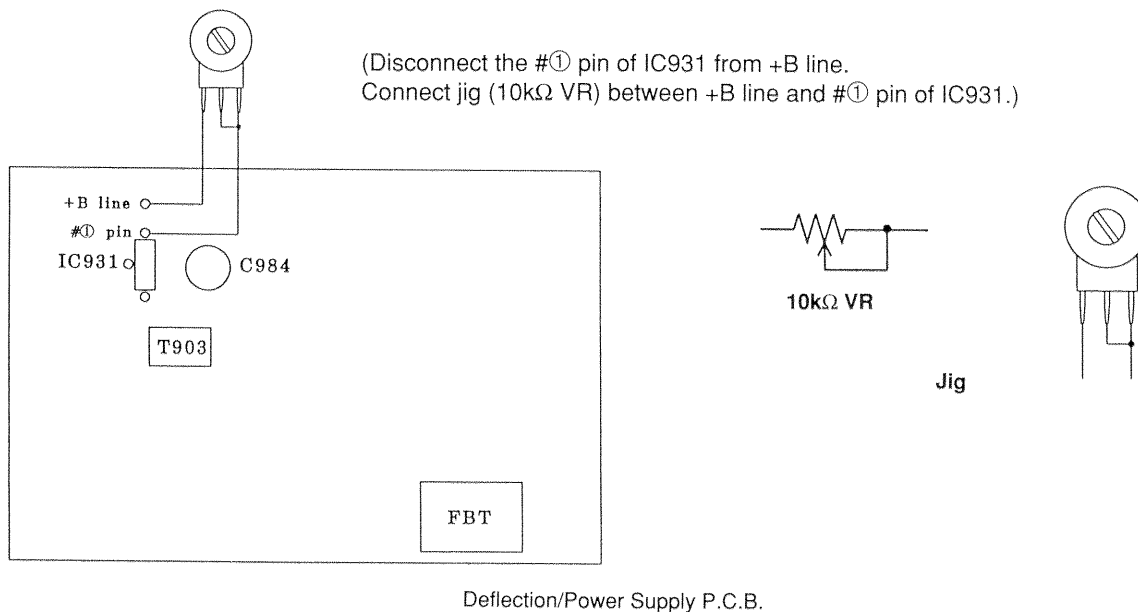
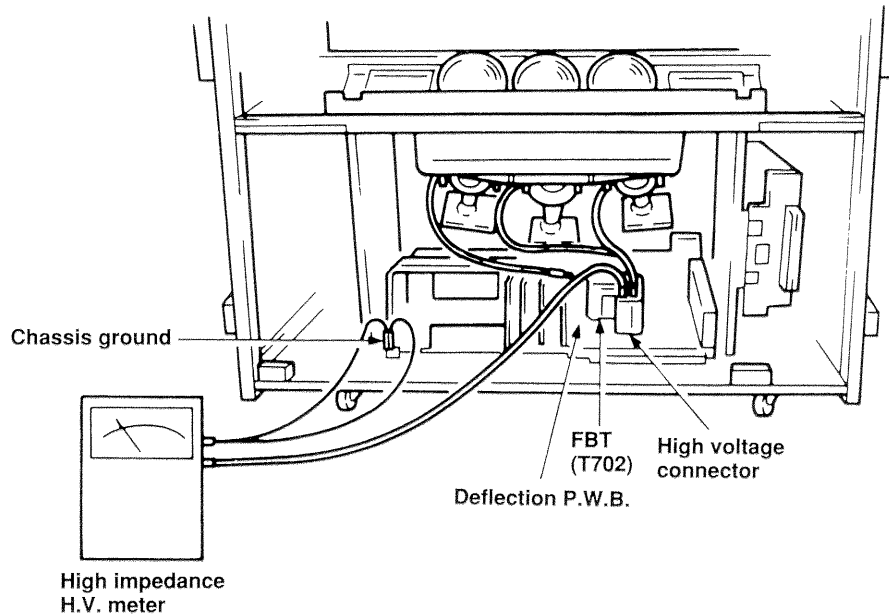
Frequency Synthesis (FS) Tuning Systems

1. Always unplug the instrument AC power cord before disconnecting or reconnecting FS tuning system cables and before removing or reinserting FS tuning system modules.
2. The FS tuner must never be disconnected from the FS tuning control module while power is applied to the instrument.
3. When troubleshooting intermittent problems that might be caused by defective cable connection(s) to the FS tuning system, remove the instrument AC power as soon as the defective connector is found and finish confirming the bad connection with a continuity test. This procedure will reduce the probability of electrical overstress of the FS system semi-conductor components.

TECHNICAL CAUTIONS

High Voltage limiter circuit operation check.

1. Turn off TV and connect jig as shown in Figure 2. Adjust jig fully counter-clockwise for minimum resistance.
2. Set the AC input to 120V AC and turn on TV.
3. Confirm test pattern on CRT is a usable picture, then slowly adjust jig until the picture disappears and TV shuts down.
4. When the limiter circuit is operating properly, High Voltage will be less than 35.5kV at 0.6mA when TV shuts down.
5. Turn off set immediately after checking circuit operation.
6. Unplug set for one minute to reset shutdown circuit. Remove jig and voltmeter.



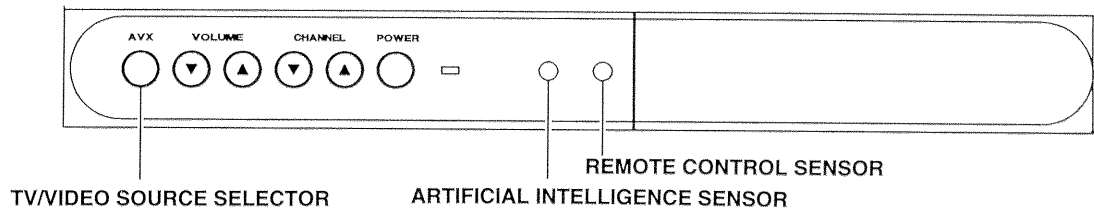
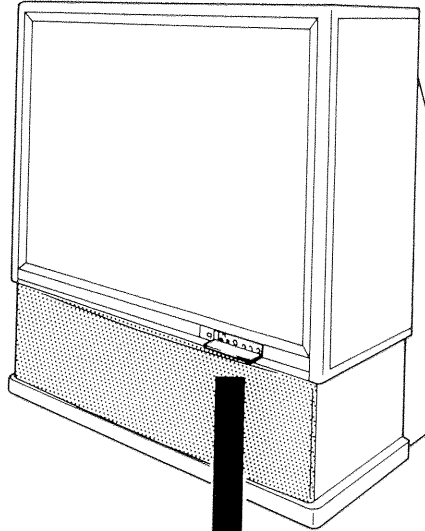
SPECIFICATIONS

Model (AP32 Chassis):	55EX7K 46EX3B	50EX6K 46EX4K	Anode Voltage:	30.0 kV (Zero Beam Current)
Model (AP31 Chassis):	50ES1B	50ES1K	Brightness:	520 ft-Nominal - 46EX3B/4K 430 ft-Nominal - 50EX6K 350 ft-Nominal - 55EX7K 430 ft-Nominal - 50ES1B/K (Peak White)
Cathode-Ray Tube:	80° deflection 7 inch 180CSB22(K)R/180CSB22(K)G/ 180CSB22(K)B		Speakers:	2 Woofers - 6 inch (16 cm) round
Power Input:	120 volts AC, 60Hz			
Power Consumption:	220 watts - Maximum (AP32) 205 watts - Maximum (AP31) 153 watts - Operating (AP32) 144 watts - Operating (AP31)		Dimension:	55EX7K 50EX6K
Antenna Impedance:	75 ohm Unbalanced VHF/UHF/CATV		Height (in.)	56 3/8 54 5/8
Receiving Channel:	CH VHF 2-13 UHF 14-69 EXT. Mid (A-2)-(A-1),4+ CATV Mid A-I CATV Super J-W CATV Hyper (W+1)-(W+28) CATV Ultra (W+29)-(W+53)		Width (in.)	50 1/4 45 3/4
			Depth (in.)	28 24 1/2
			Weight (lbs.)	288 244
				46EX3B/4K 50EX1B/K
			Height (in.)	48 3/8 51 7/8
			Width (in.)	39 3/4 43 1/8
			Depth (in.)	24 1/2 23 5/8
			Weight (lbs.)	206 212
Intermediate Frequency:	Picture I-F Carrier 45.75 MHz Sound I-F Carrier 41.25 MHz Color Sub Carrier 42.17 MHz		Circuit Board Assemblies:	CPT (B) P.C.B. CPT (G) P.C.B. CPT (R) P.C.B. Convergence Correction P.C.B. Signal P.C.B. Deflection/Power Supply P.C.B. SP Terminal P.C.B. Control P.C.B. MTS P.C.B. Terminal P.C.B. 2 Line Comb P.C.B.
Video Input:	1 Voltp-p 75 ohm			
Video Output:	1 Voltp-p 75 ohm			
Audio Input:	0.4 volt rms, 40 k ohm			
Stereo Audio Output:	0.4 volt rms, 1 k ohm			
Audio Output Power:	Front — 8 watts rms per channel, 8 ohm impedance. Rear — 4 watts rms per channel, 8 ohm impedance.			

CIRCUIT PROTECTION

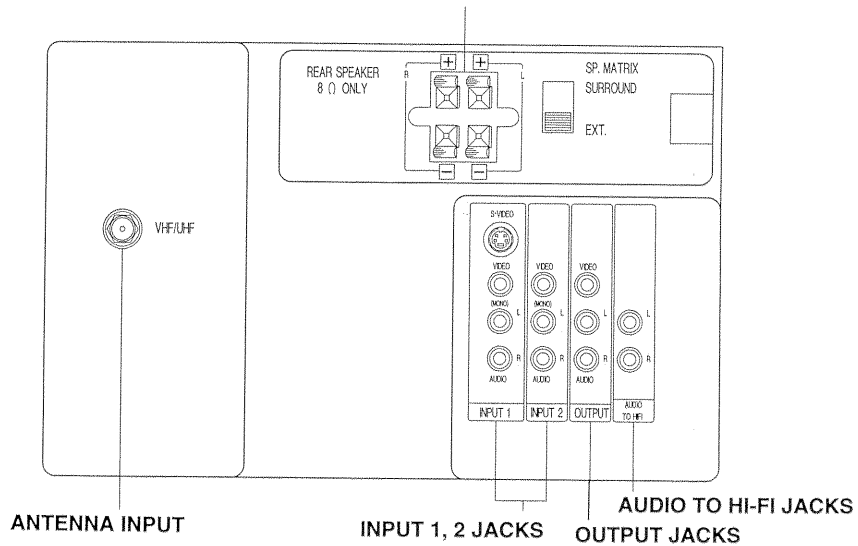
Fuse (or Device)	Circuit Protected	Physical Location
F601 1.6A/125V DC	Vertical	Power/Defl. Circuit Board
F901 5A/125V AC	Main Fuse	Power/Defl. Circuit Board
F903 5A/125V DC	Main Fuse	Power/Defl. Circuit Board
F932 4A/125V DC	Vertical	Power/Defl. Circuit Board
F933 3A/125V DC (MINIFUSE)	Convergence	Power/Defl. Circuit Board
F934 3A/125V DC (MINIFUSE)	12V Supply	Power/Defl. Circuit Board
F935 4A/125V DC	11V Supply	Power/Defl. Circuit Board
F936 3A/125V DC (MINIFUSE)	Front Audio Output	Power/Defl. Circuit Board
F937 1.6A/125V DC	130V (+B) Supply	Power/Defl. Circuit Board

GENERAL INFORMATION



Control Panel
Fig. 3

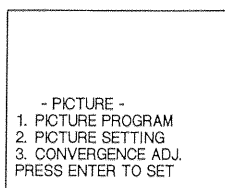
REAR SPEAKER TERMINAL



Rear Connections Panel
Fig. 4

ADJUSTING FOR PICTURE AND SOUND FUNCTIONS

Press MENU, 2 ENTER on the remote control to display the -PICTURE- functions.



PICTURE PROGRAM is for preferred settings — contrast, color, etc.

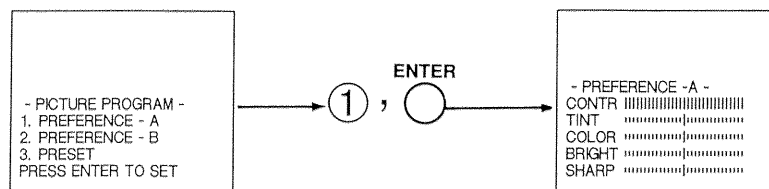
PICTURE SETTING is used to improve the picture quality.

CONVERGENCE ADJ. is used to align the TV color picture tubes (red, green, blue) to produce a clear picture.

• PICTURE PROGRAM

There are two sets of preferred settings, PREFERENCE-A, PREFERENCE-B or use the factory PRESET settings.

Press MENU, 2, ENTER, 1, ENTER to select the PICTURE PROGRAM.



Press the CURSOR buttons to select and make adjustments.

CONTRAST — Use this function to change the contrast between black and white levels in the picture. This adjustment will only affect the picture when the PICTURE SETTING AI is OFF. See page XX.

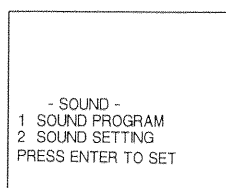
TINT — Use this function to adjust flesh tones so that they appear natural.

COLOR — Use this function to adjust the level of color in the picture.

BRIGHTNESS — Use this function to adjust overall picture brightness.

SHARPNESS — Use this function to adjust the amount of fine detail in the picture. This adjustment will only affect the picture when PICTURE SETTING AI is OFF.

Press MENU, 3 ENTER on the remote control to display the -SOUND- functions.

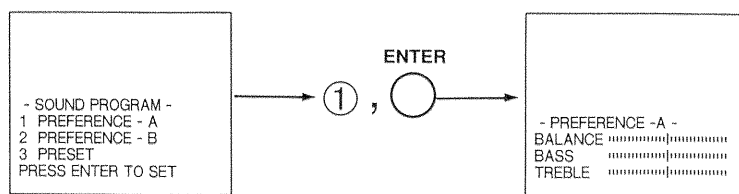


SOUND PROGRAM is for preferred settings — balance, bass and treble.
SOUND SETTING is used to improve the sound quality.

• SOUND PROGRAM

There are two sets of preferred settings, PREFERENCE-A, PREFERENCE-B or use the factory PRESET settings.

Press MENU, 3, ENTER, 1, ENTER to select the SOUND PROGRAM.



Press the CURSOR buttons to select and make adjustments.

BALANCE — This function will control the left, right balance of the TV internal speakers, the AUDIO TO HI-FI output and the surround speakers. The balance control is also found in the DOLBY TEST function.

BASS — This function controls the low frequency audio to all speakers.

TREBLE — This function controls the high frequency to all speakers.

SELF CHECK REPAIR CODES

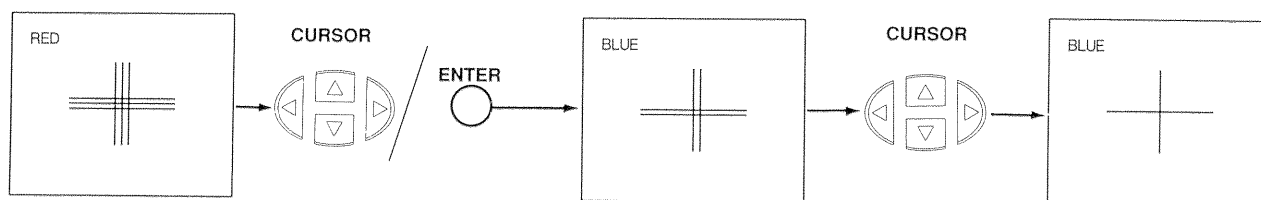
Press the AVX and POWER buttons on the control panel at the same time.

CODE	DETECTION CONTENTS	DETECTION TIME	REMARK
40	Abnormal horizontal deflection	- - -	- - -
41	Flyback Transformer loading on 12V line	- - -	- - -
50	Power Relay off	- - -	Abnormal condition causing relay to turn off
10	Check for PLL lock	Not locked in 2 sec.	During selection time
11	Check for AFC operation	Not finished in 2 sec.	During selection time
60	Check for AC input	At uP reset time	AC input (50/60Hz) not detected at reset time
31	Check IC0001 operation	At uP reset time	Check for out of range operation

Note: Code 10 or 11 may appear if TV is turned on without an antenna source connected.

CONVERGENCE ADJUSTMENT

Press MENU, 2, ENTER, 3, ENTER on the remote control to display the CONVERGENCE ADJUSTMENT.



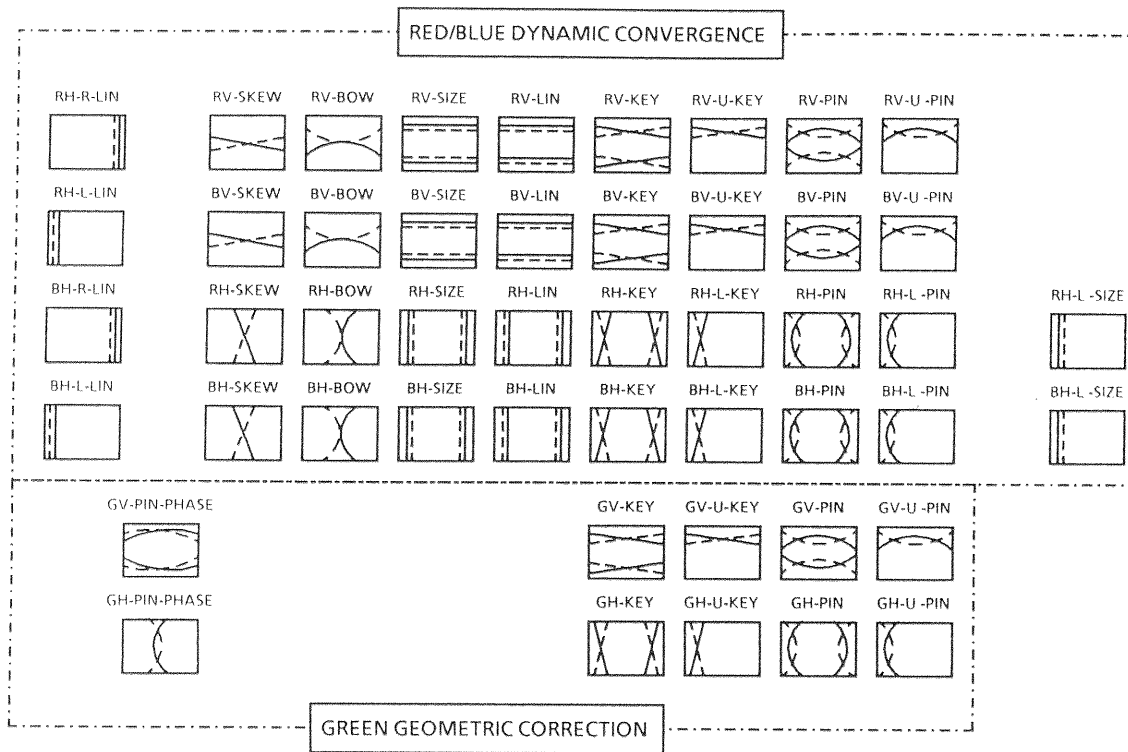
Press the CURSOR ▲, ▼ to move the color displayed up or down.

Press the CURSOR ◀, ▶ to move the color displayed left or right.

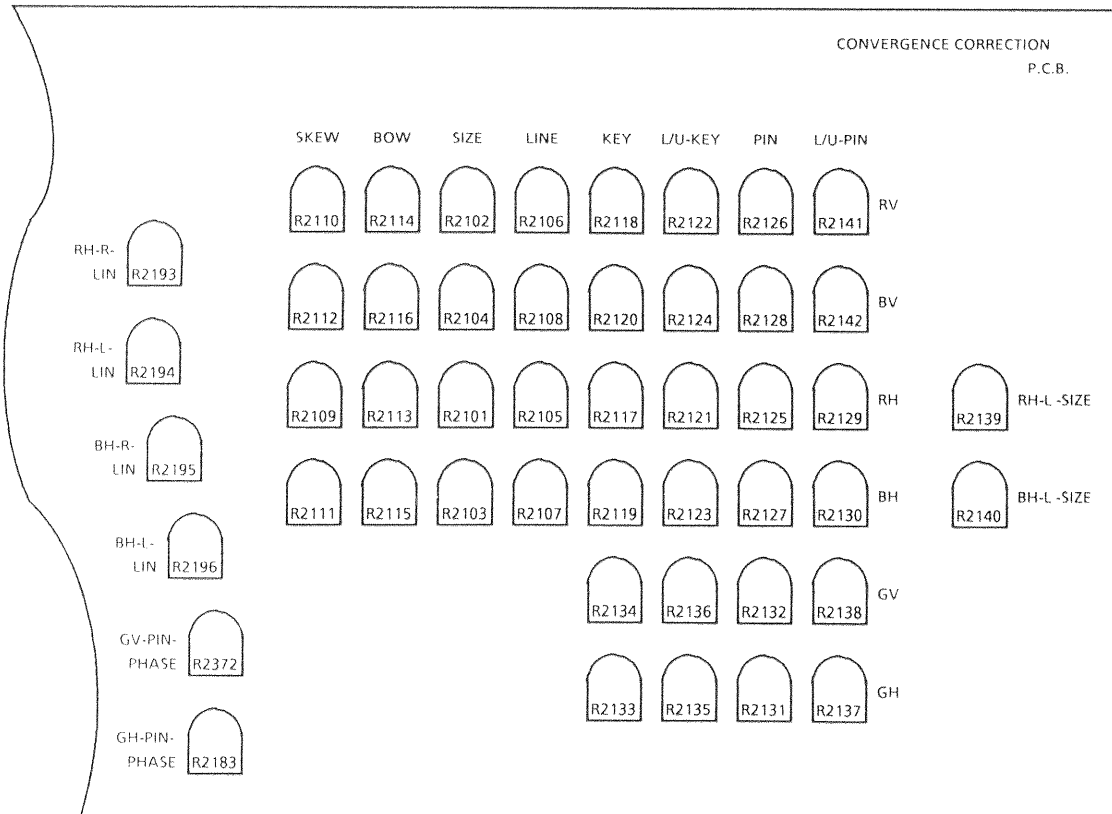
Press ENTER to change the color.

Press MENU to exit.

Dynamic Convergence



Layout of the Adjustment VR



CAUTIONS WHEN CONNECTING/DISCONNECTING THE HV CONNECTOR

Perform the following when the HV connector (anode connector) is removed or inserted for CPT replacement, etc.

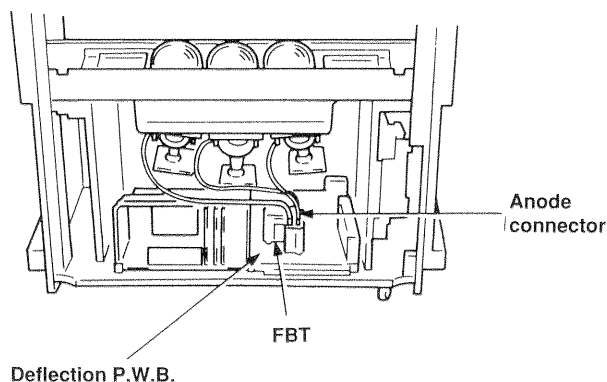


Fig. 5

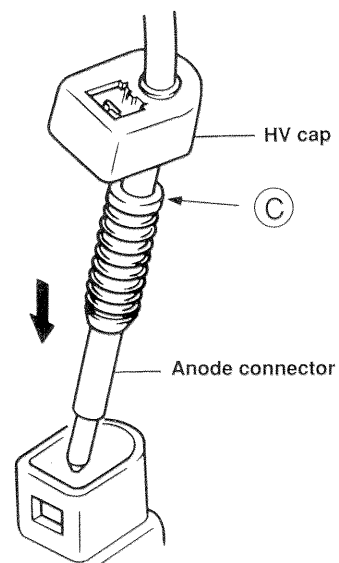


Fig. 7

During Removal

1. Insert a small flat-bladed screwdriver (adjustment screwdriver: 5-7 mm wide and 0.2-0.3 mm thick) into section (A) in Fig. 6 and then push it in the direction of arrow (B). The lock will release with a click. (The state in Fig. 8 (1) will change to that in Fig. 8 (2).)

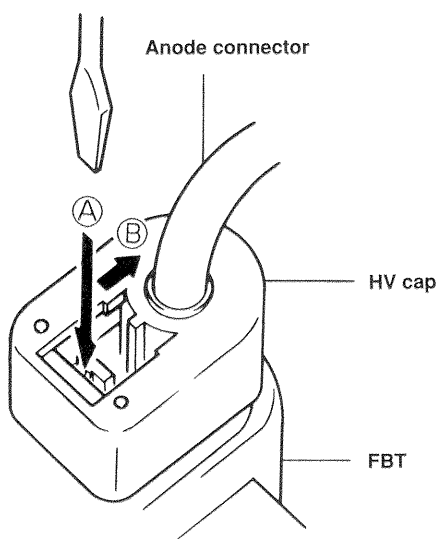
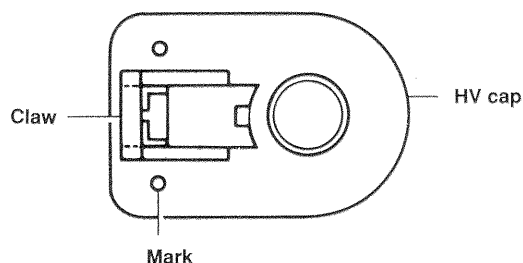


Fig. 6

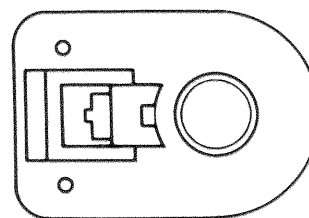
2. Remove the HV cap and remove the anode connector (Fig. 7).

During Insertion

1. Insert the anode connector deep into the FBT (to section (C) in Fig. 7) and then push the HV cap into the FBT until it clicks.
2. Make sure the connector is securely inserted. (Check that the claw is at the mark on the HV cap shown as in Fig. 8 (1).)

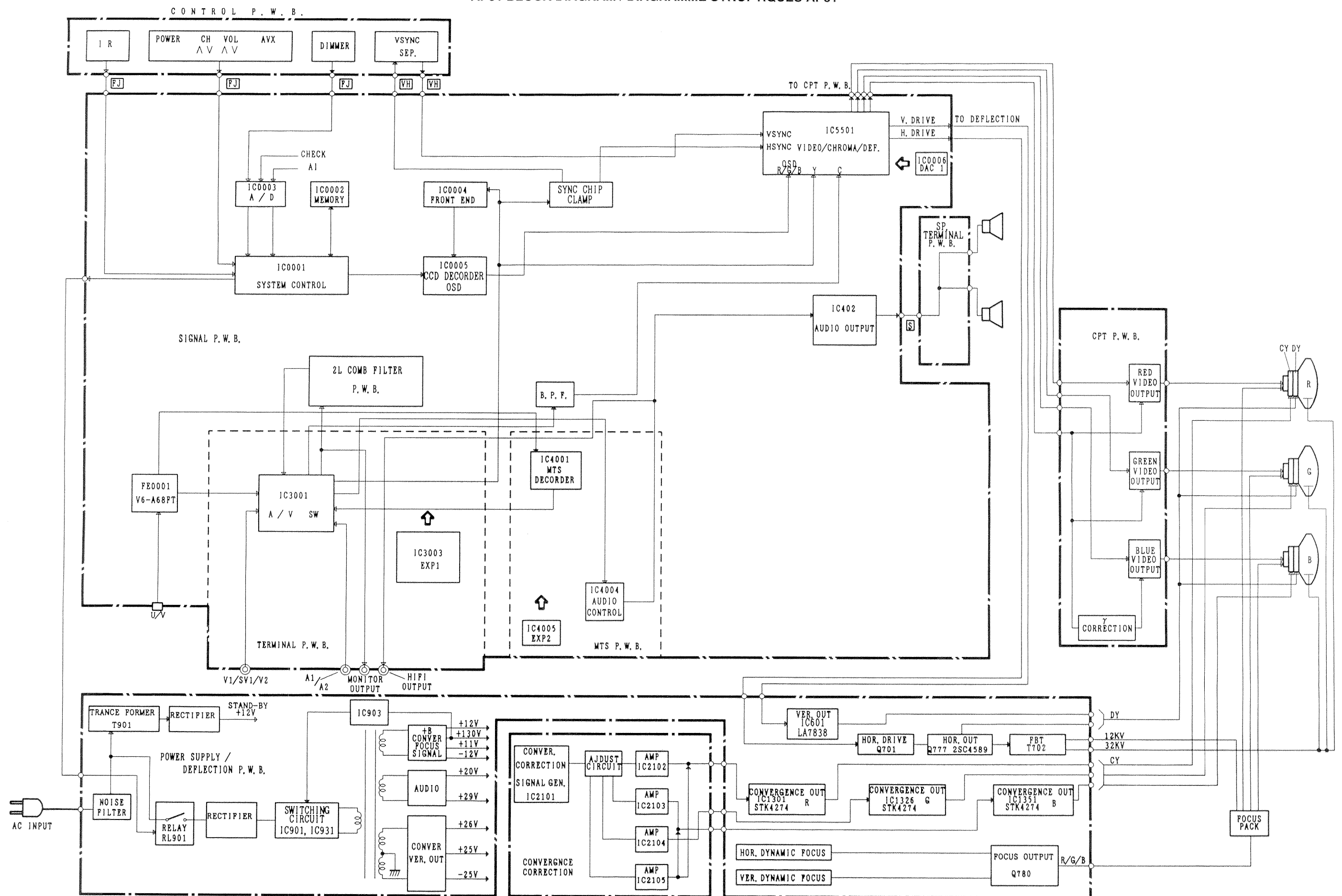


- (1) Lock on
(When connector is inserted)

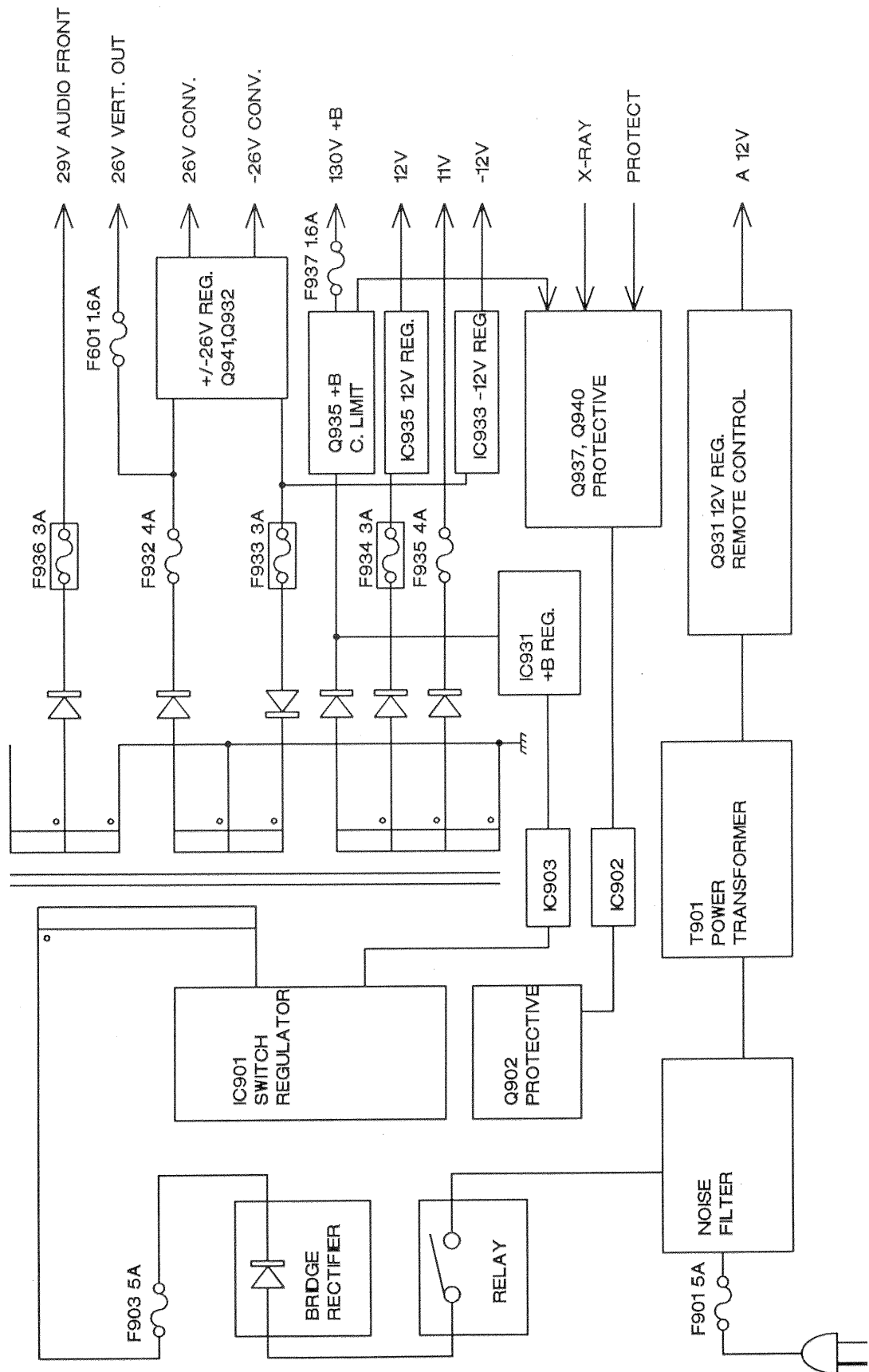


- (2) Release
(When connector is removed)

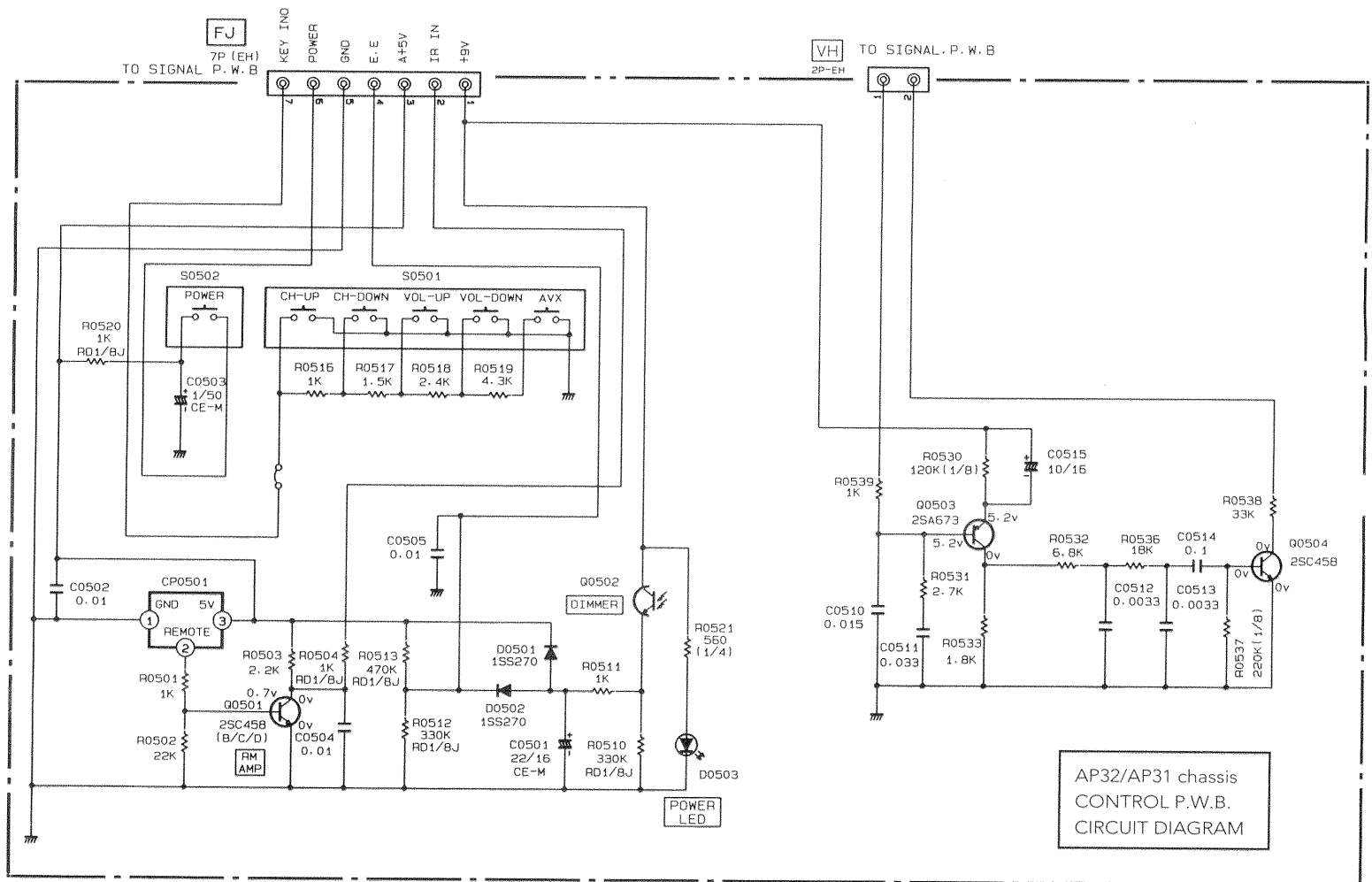
Fig. 8



PROTECTION CIRCUIT BLOCK DIAGRAM DIAGRAMME SYNOPTIQUES



BASIC CIRCUIT DIAGRAM DIAGRAMME DE CIRCUIT DE BASE



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NOTICE DE SÉCURITÉ DE FABRICATION: Les composants qui sont accompagnés du symbole  et indiqués par une zone de couleur, possèdent des caractéristiques spéciales qui ont traités à la sécurité. Avant de procéder au remplacement de l'un de ces composants, lire attentivement la notice de sécurité de fabrication contenue dans ce manuel de réparation. Ne pas altérer le niveau de sécurité de l'appareil en procédant à des réparations erronées.

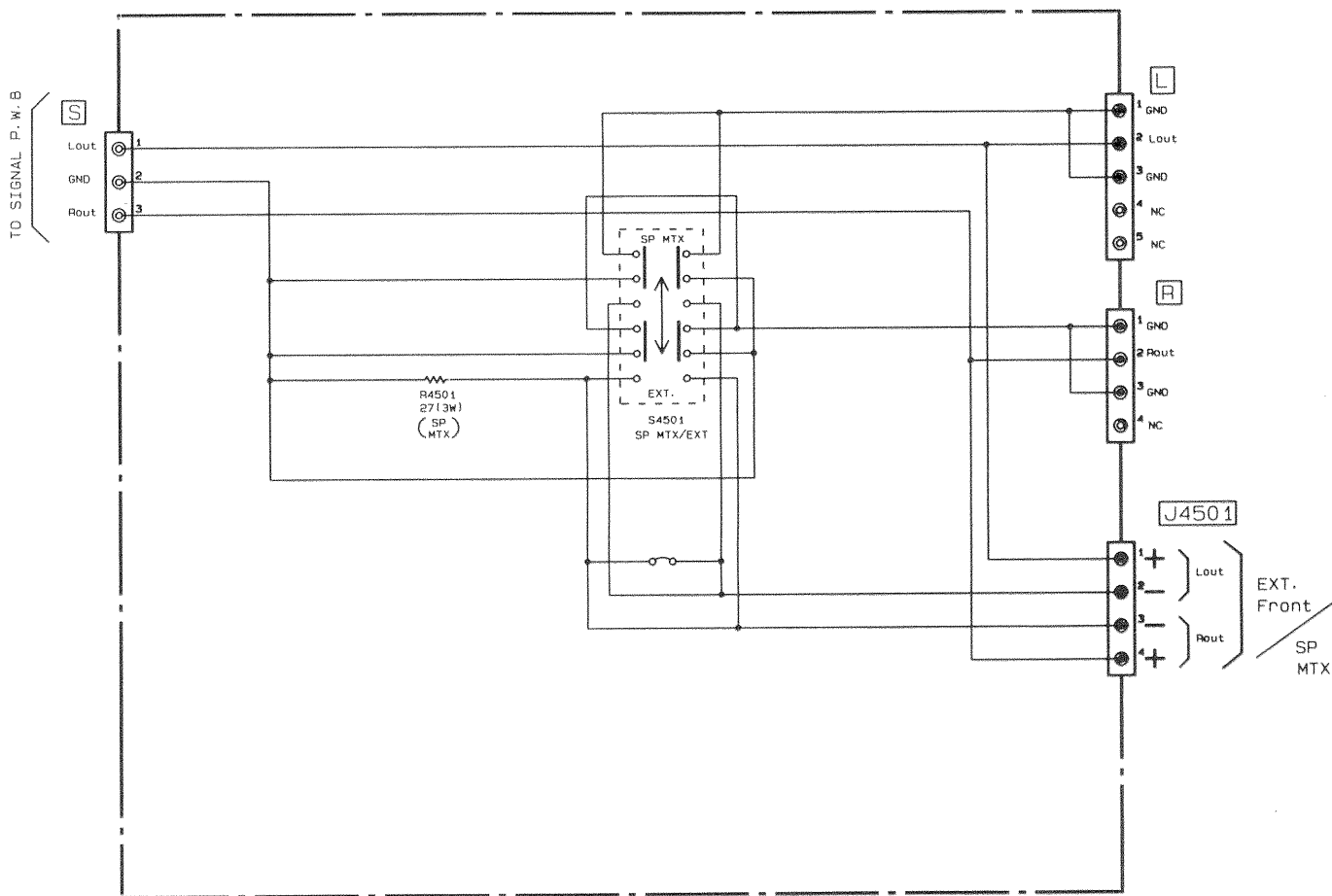
- All DC voltage to be measured with a tester (100k Ω /V). Voltage taken on a complex color bar signal including a standard color bar signal.
- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.
- Etant donné que ceci représente un diagramme schématique de base, la valeur des éléments est sujette à modification pour des raisons d'amélioration.

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AP32/AP31 chassis
2LINE COMB P.W.B.
CIRCUIT DIAGRAM

- All DC voltage to be measured with a tester (100k Ω/V). Voltage taken on a complex color bar signal including a standard color bar signal.
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BASIC CIRCUIT DIAGRAM DIAGRAMME DE CIRCUIT DE BASE



AP32/AP31 chassis
SP. TERMINAL P.W.B.
CIRCUIT DIAGRAM

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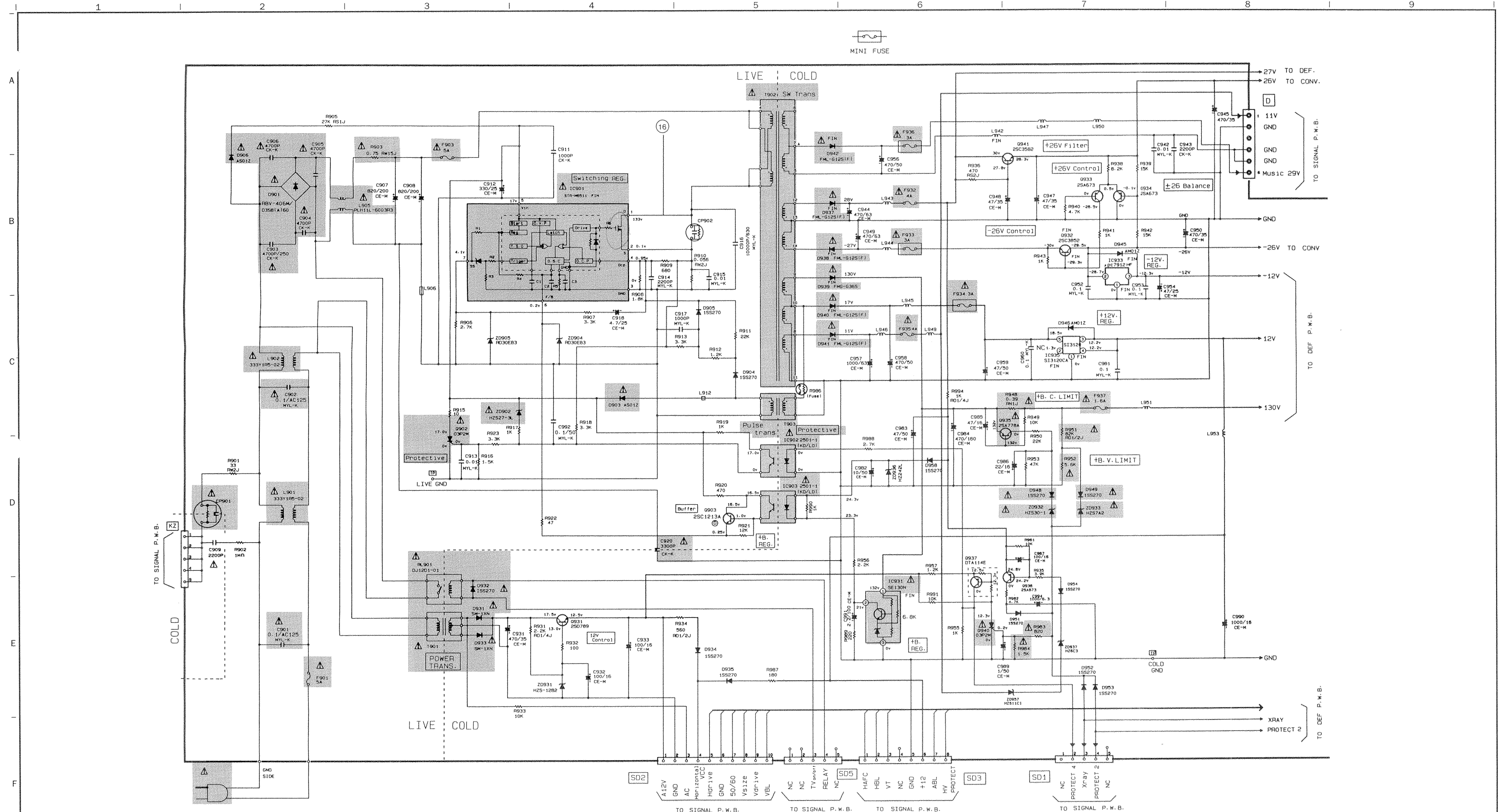
NOTICE DE SÉCURITÉ DE FABRICATION: Les composants qui sont accompagnés du symbole et indiqués par une zone de couleur, possèdent des caractéristiques spéciales qui ont trait à la sécurité. Avant de procéder au remplacement de l'un de ces composants, lire attentivement la notice de sécurité de fabrication contenue dans ce manuel de réparation. Ne pas altérer le niveau de sécurité de l'appareil en procédant à des réparations erronées.

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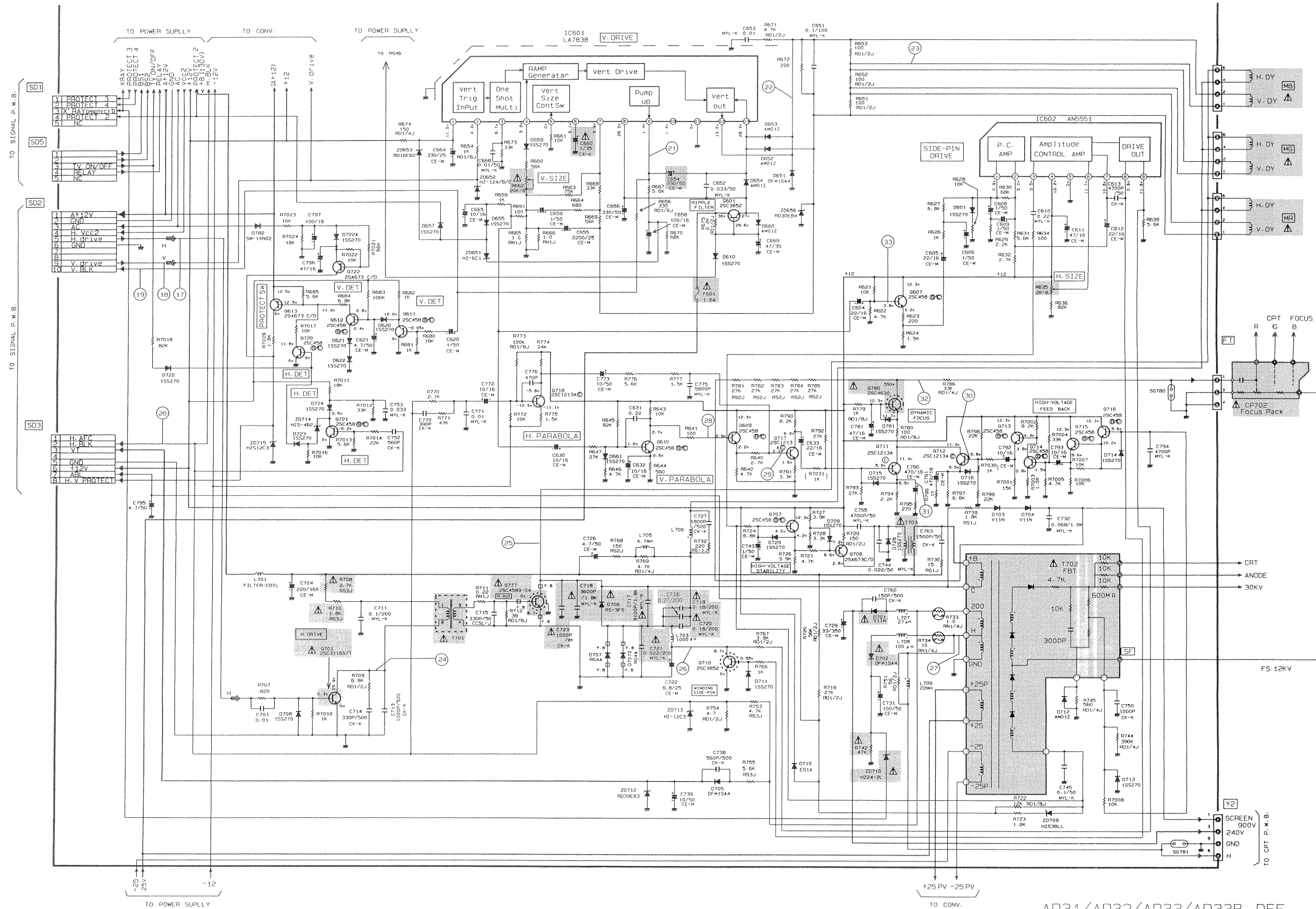
DIAGRAMME DE CIRCUIT DE BASE / BASIC CIRCUIT DIAGRAM



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AP31/AP32/AP33/AP33B DEF.

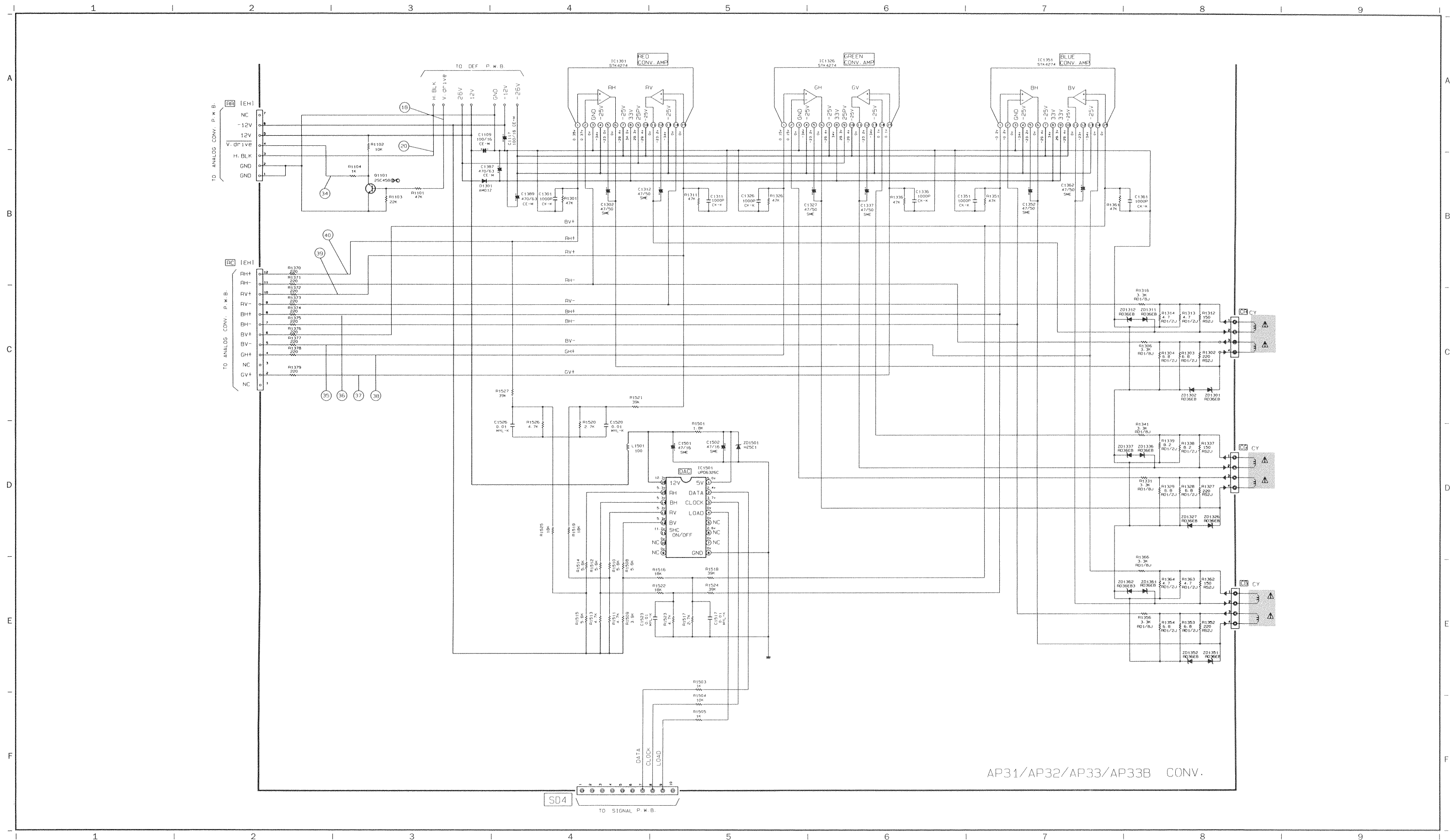


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DIAGRAMME DE CIRCUIT DE BASE / BASIC CIRCUIT DIAGRAM



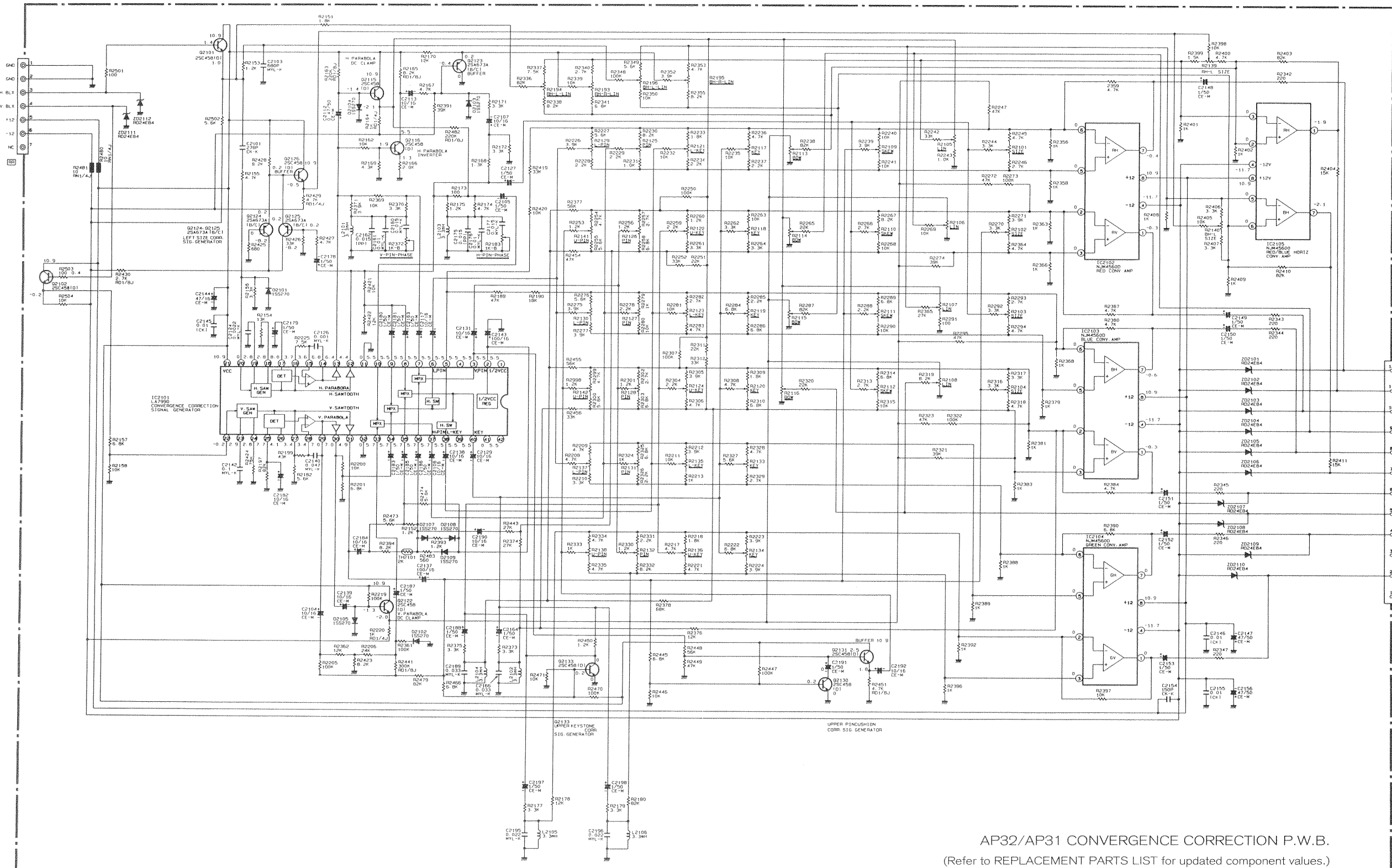
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DIAGRAMME DE CIRCUIT DE BASE / BASIC CIRCUIT DIAGRAM



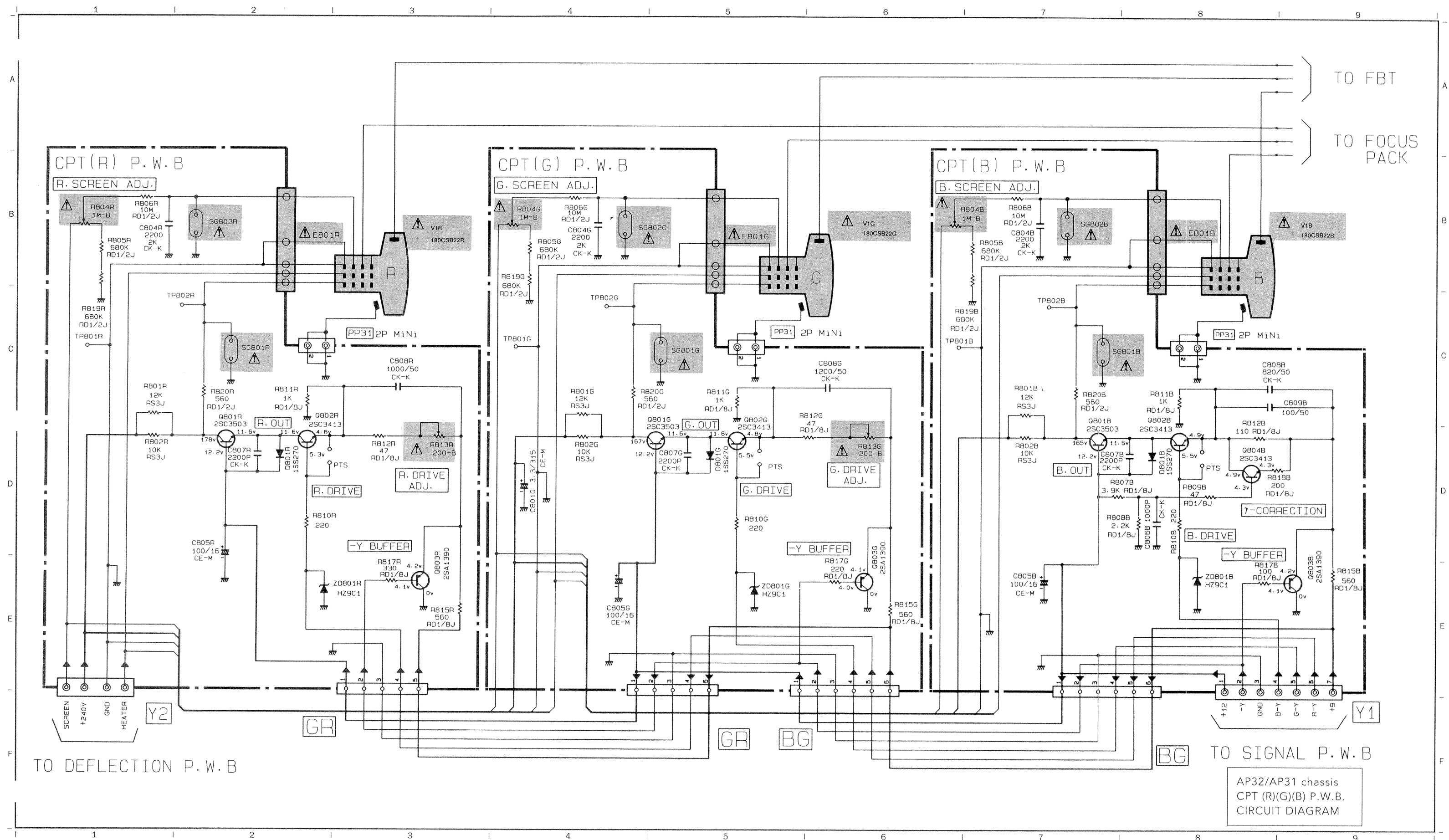
AP32/AP31 CONVERGENCE CORRECTION P.W.B.

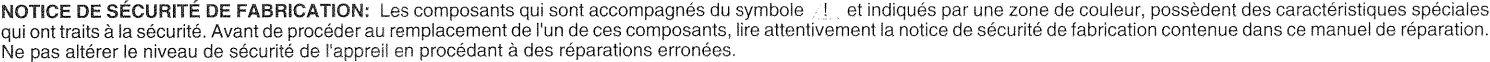
(Refer to REPLACEMENT PARTS LIST for updated component values.)

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DIAGRAMME DE CIRCUIT DE BASE / BASIC CIRCUIT DIAGRAM



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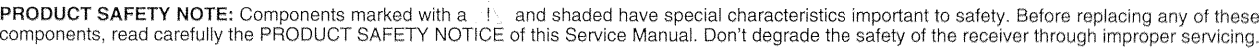
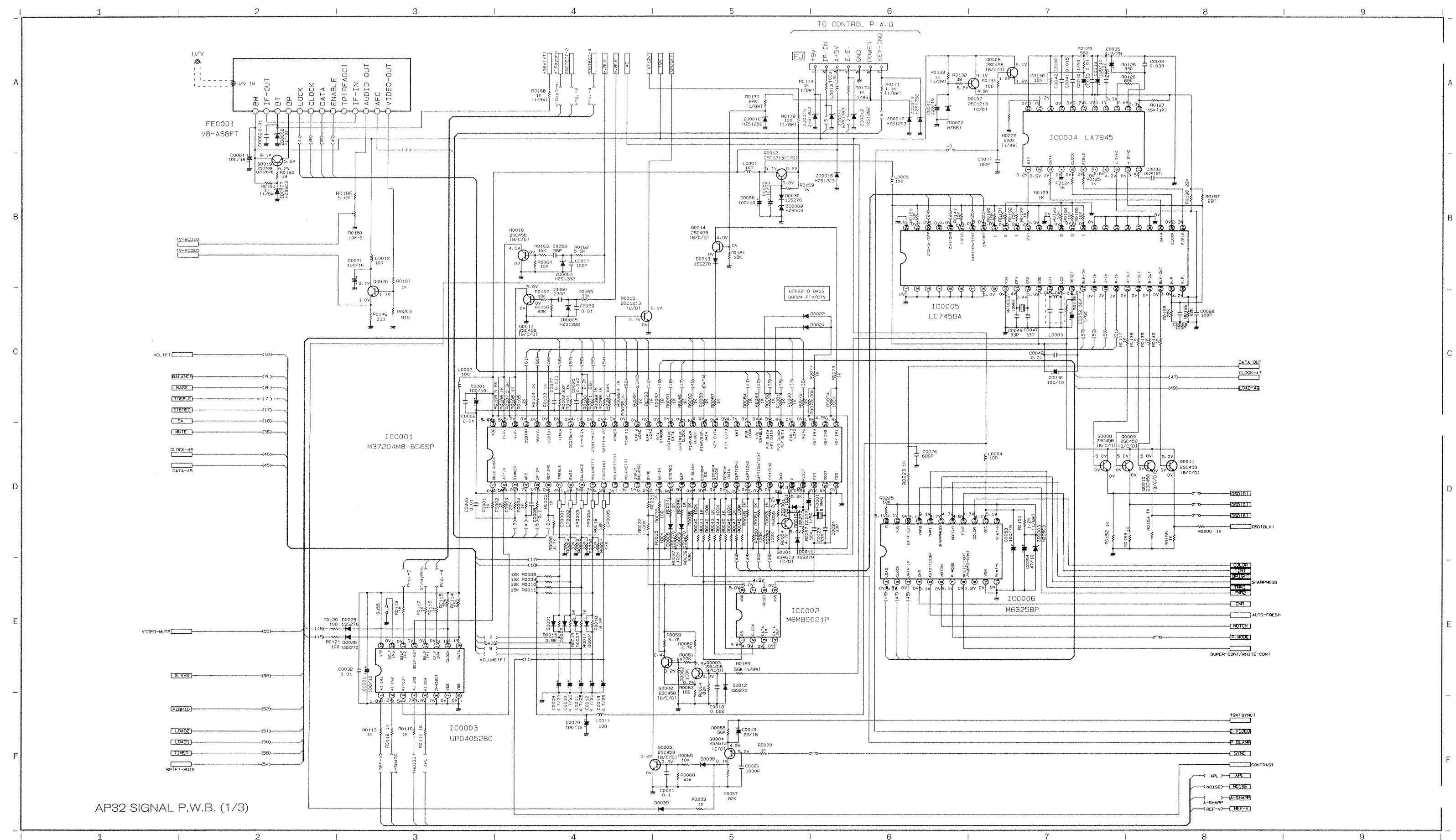
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DIAGRAMME DE CIRCUIT DE BASE / BASIC CIRCUIT DIAGRAM



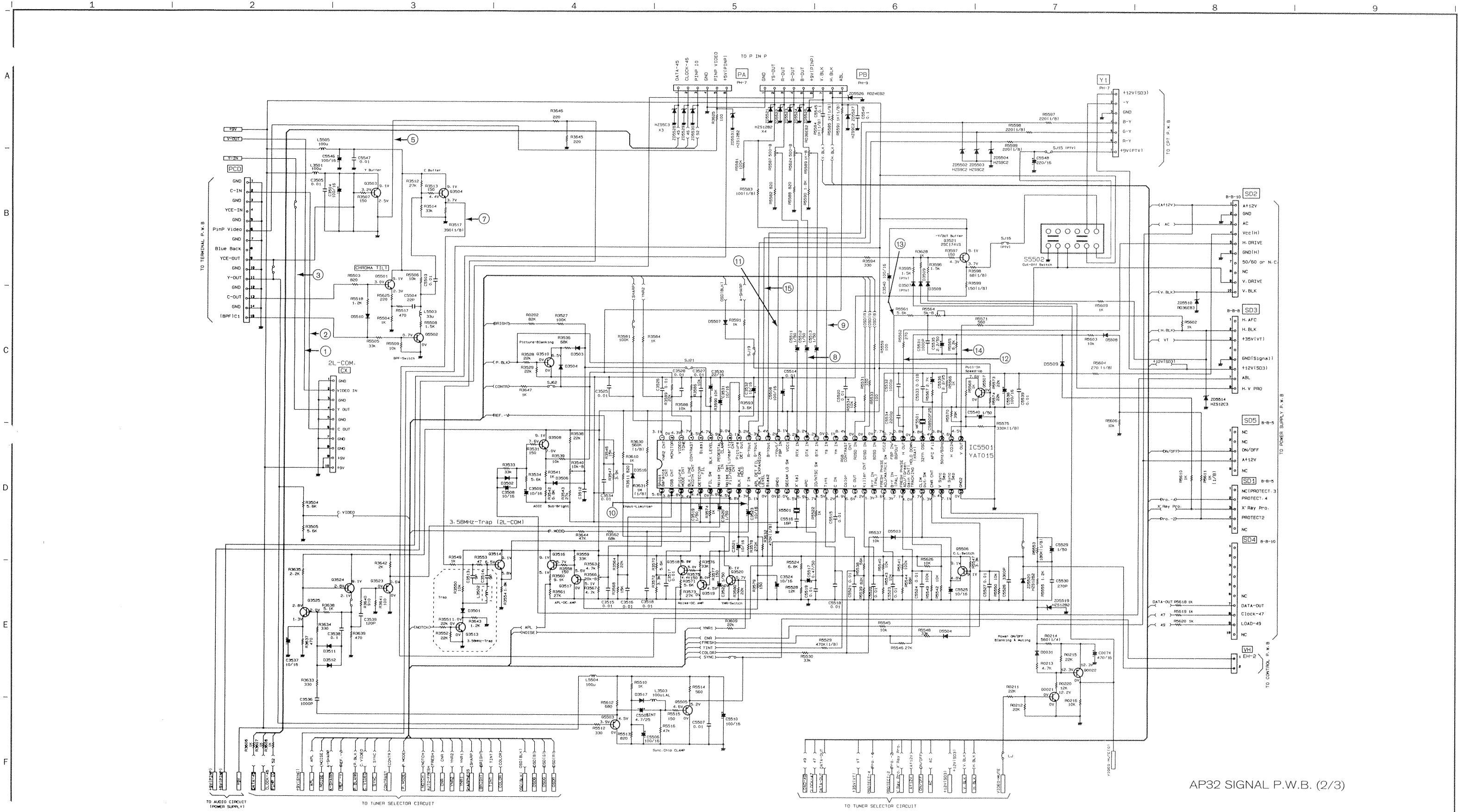
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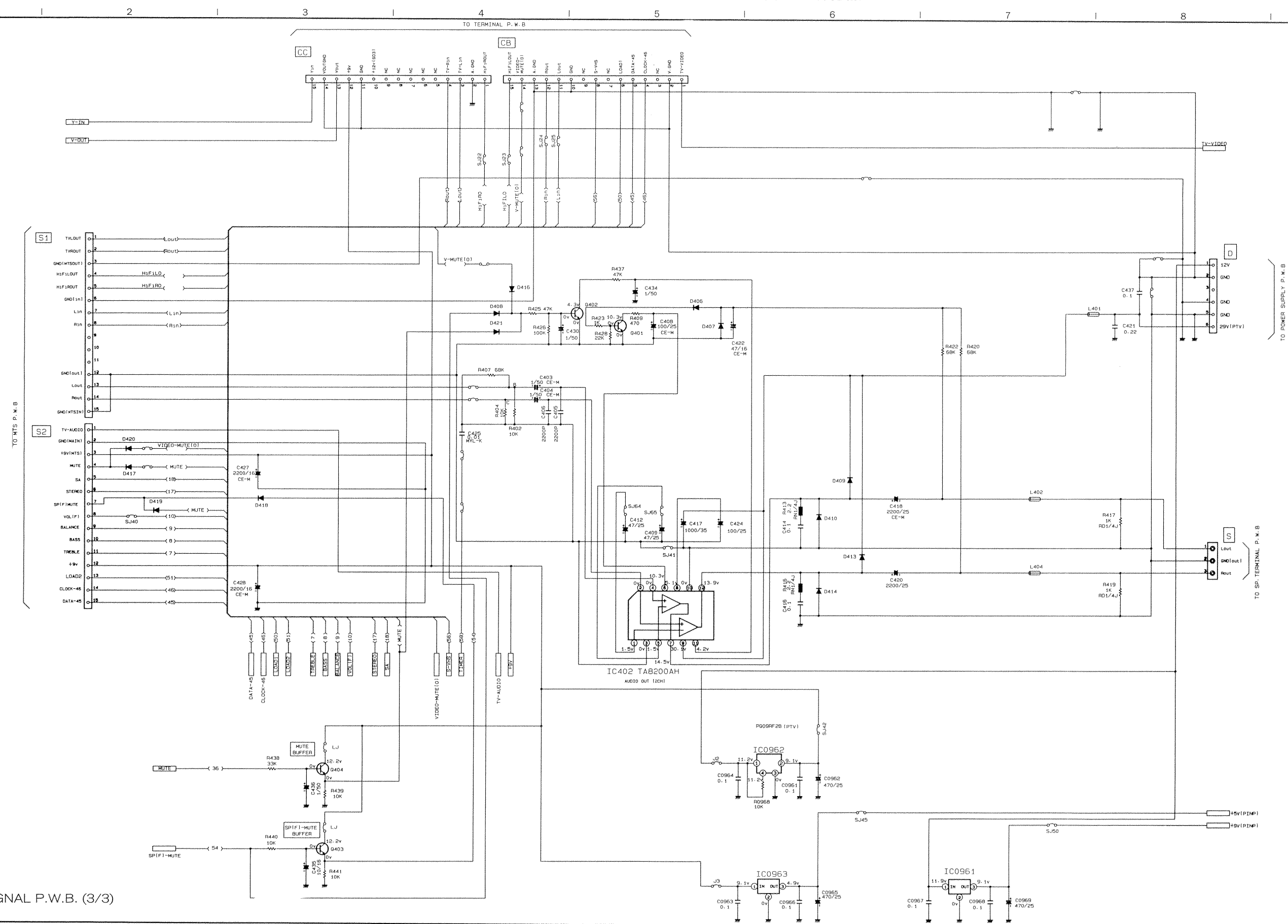
DIAGRAMME DE CIRCUIT DE BASE / BASIC CIRCUIT DIAGRAM



AP32 SIGNAL P.W.B. (2/3)

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DIAGRAMME DE CIRCUIT DE BASE / BASIC CIRCUIT DIAGRAM

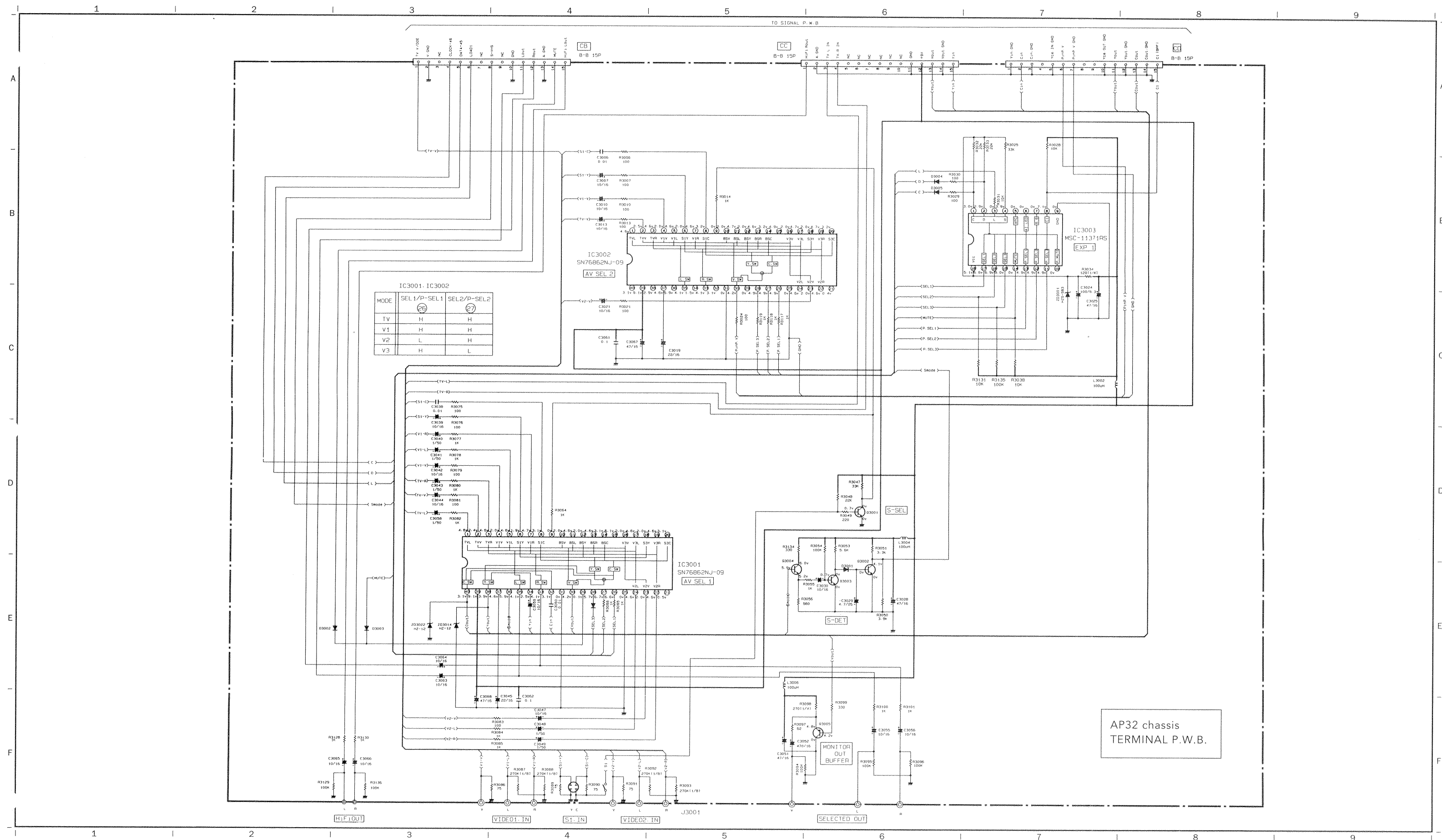


AP32 SIGNAL P.W.B. (3/3)

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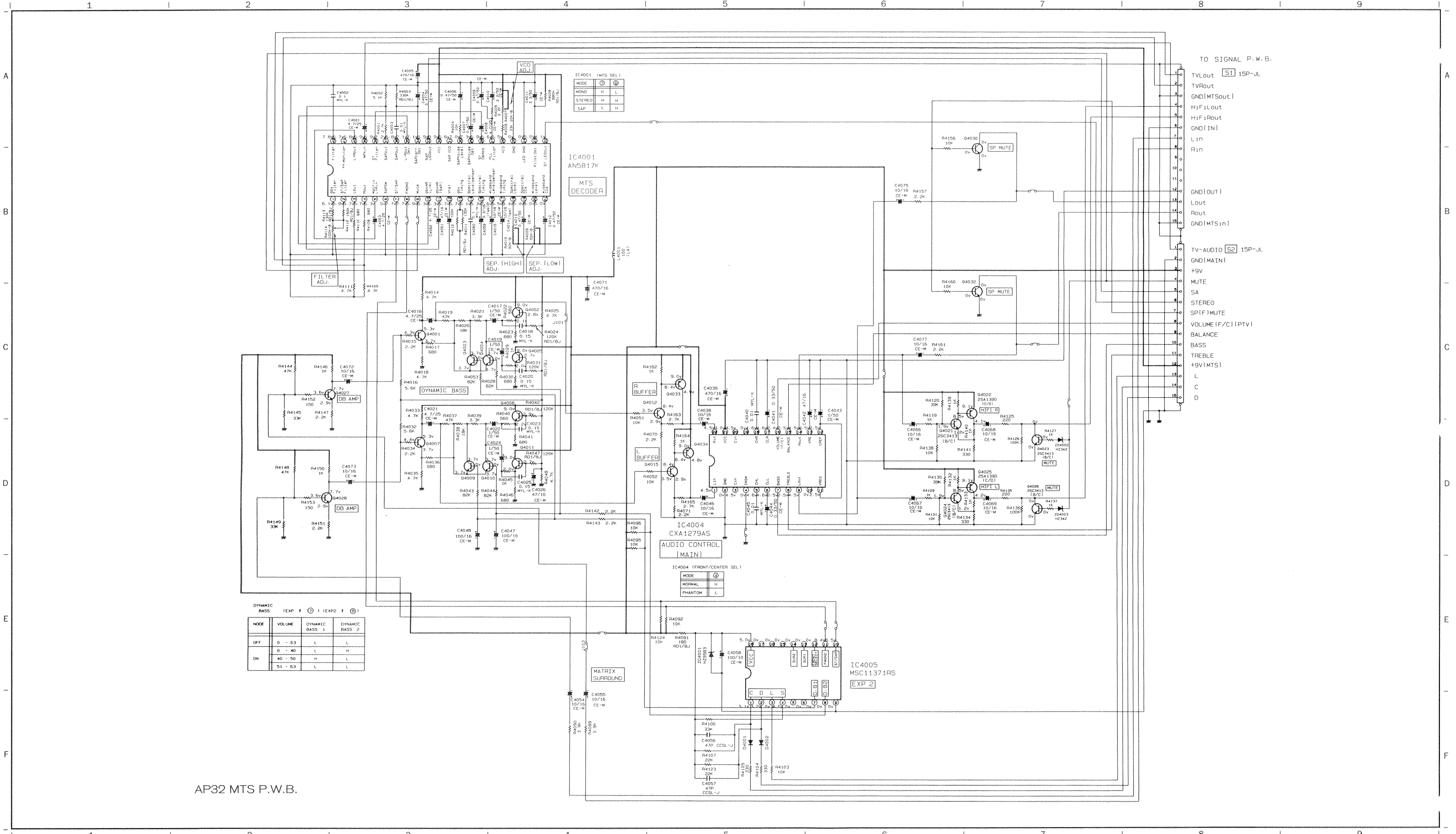
DIAGRAMME DE CIRCUIT DE BASE / BASIC CIRCUIT DIAGRAM



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DIAGRAMME DE CIRCUIT DE BASE / BASIC CIRCUIT DIAGRAM

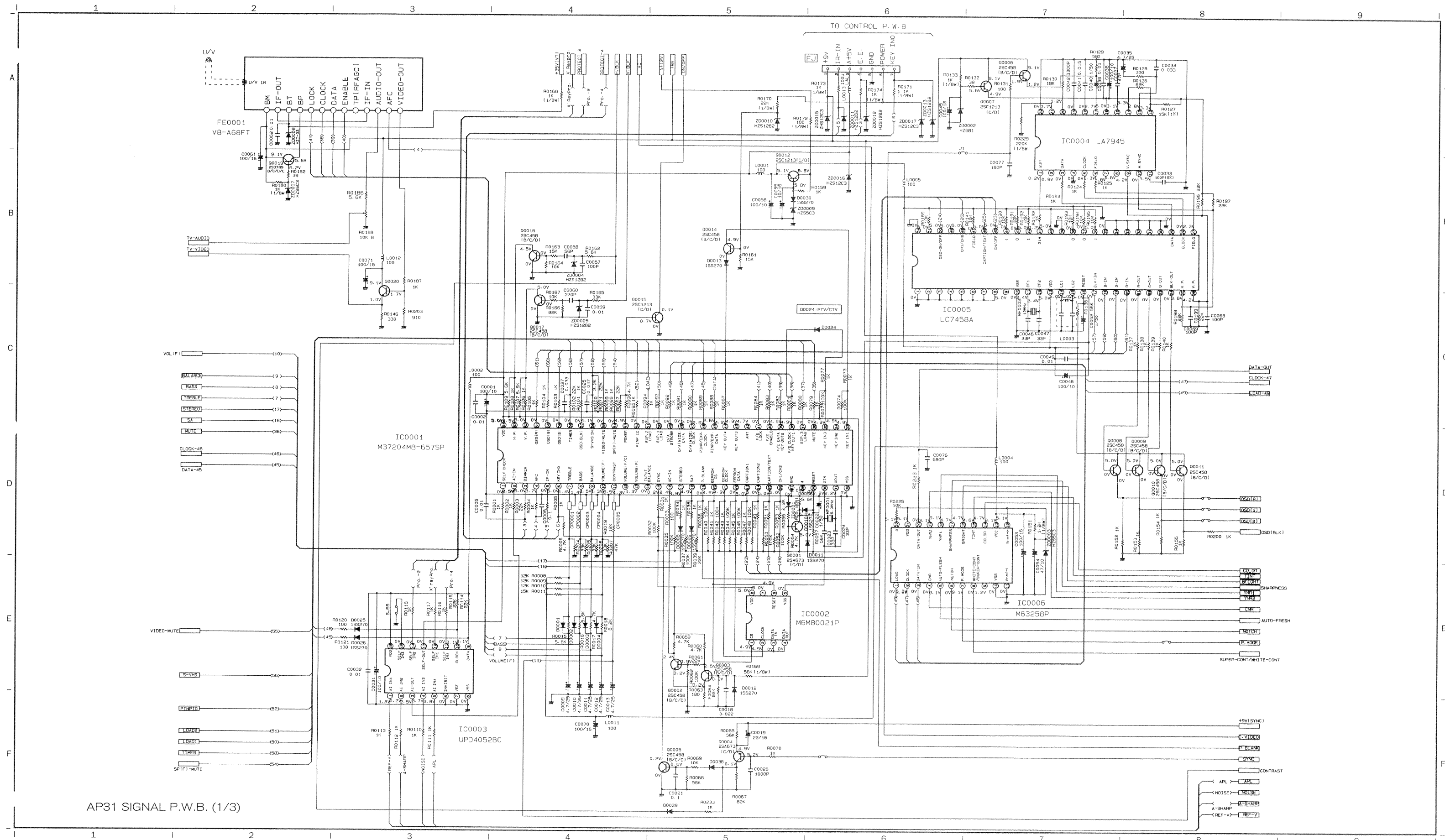


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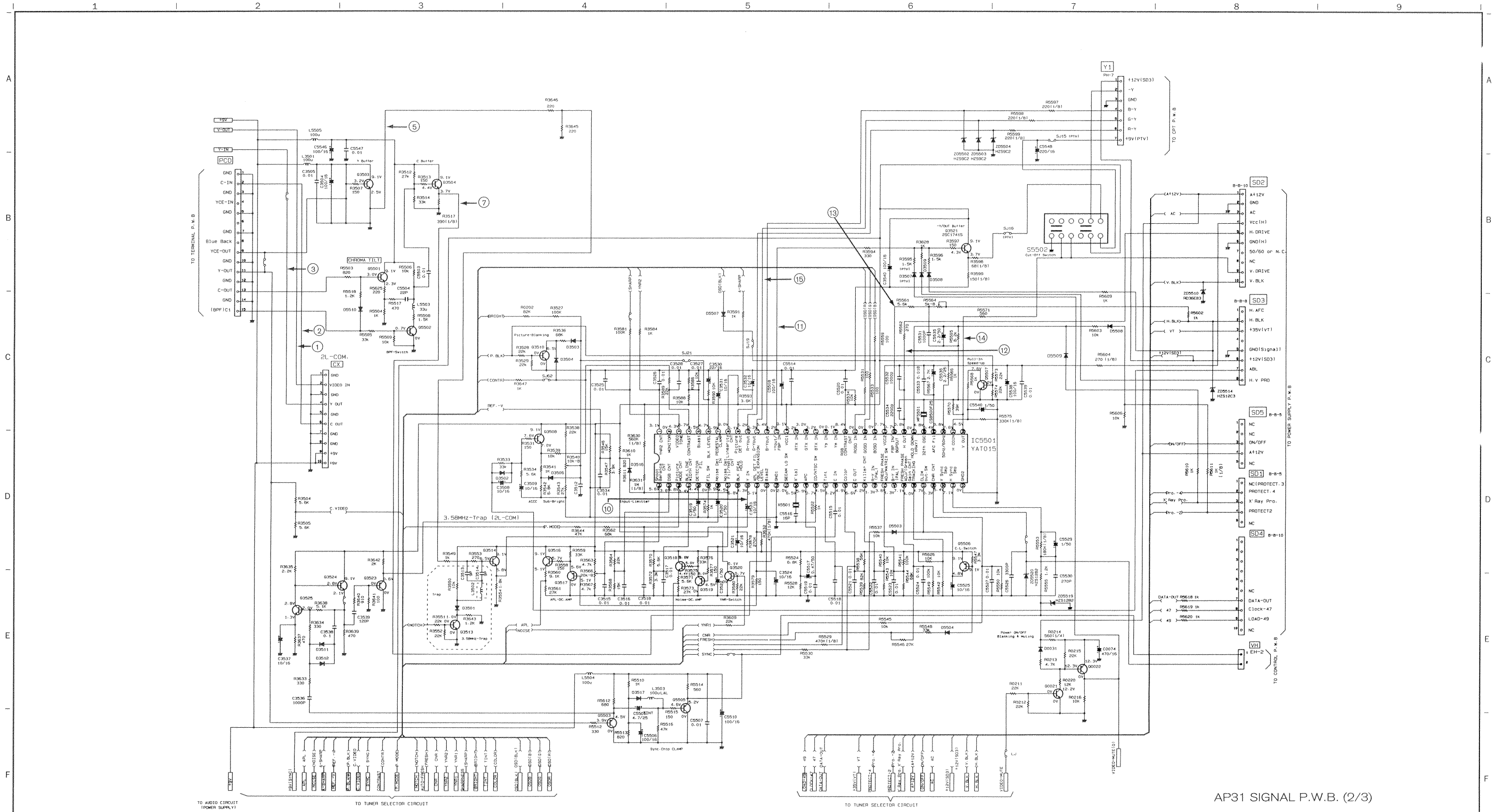
DIAGRAMME DE CIRCUIT DE BASE / BASIC CIRCUIT DIAGRAM



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DIAGRAMME DE CIRCUIT DE BASE / BASIC CIRCUIT DIAGRAM



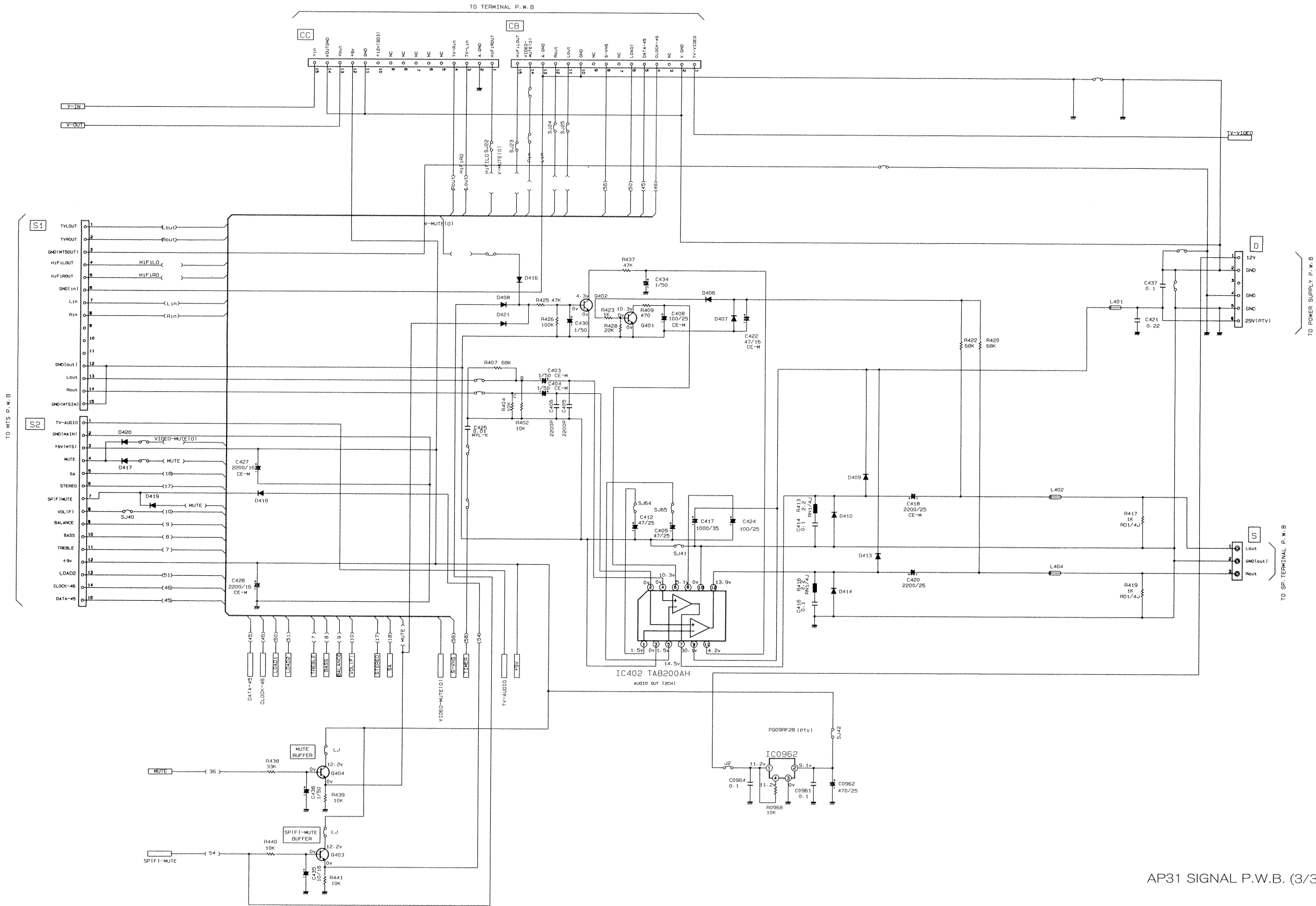
AP31 SIGNAL P.W.B. (2/3)

• Etant donné que ceci représente un diagramme schématique de base, la valeur des éléments est sujette à modification pour des raisons d'amélioration.

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DIAGRAMME DE CIRCUIT DE BASE / BASIC CIRCUIT DIAGRAM



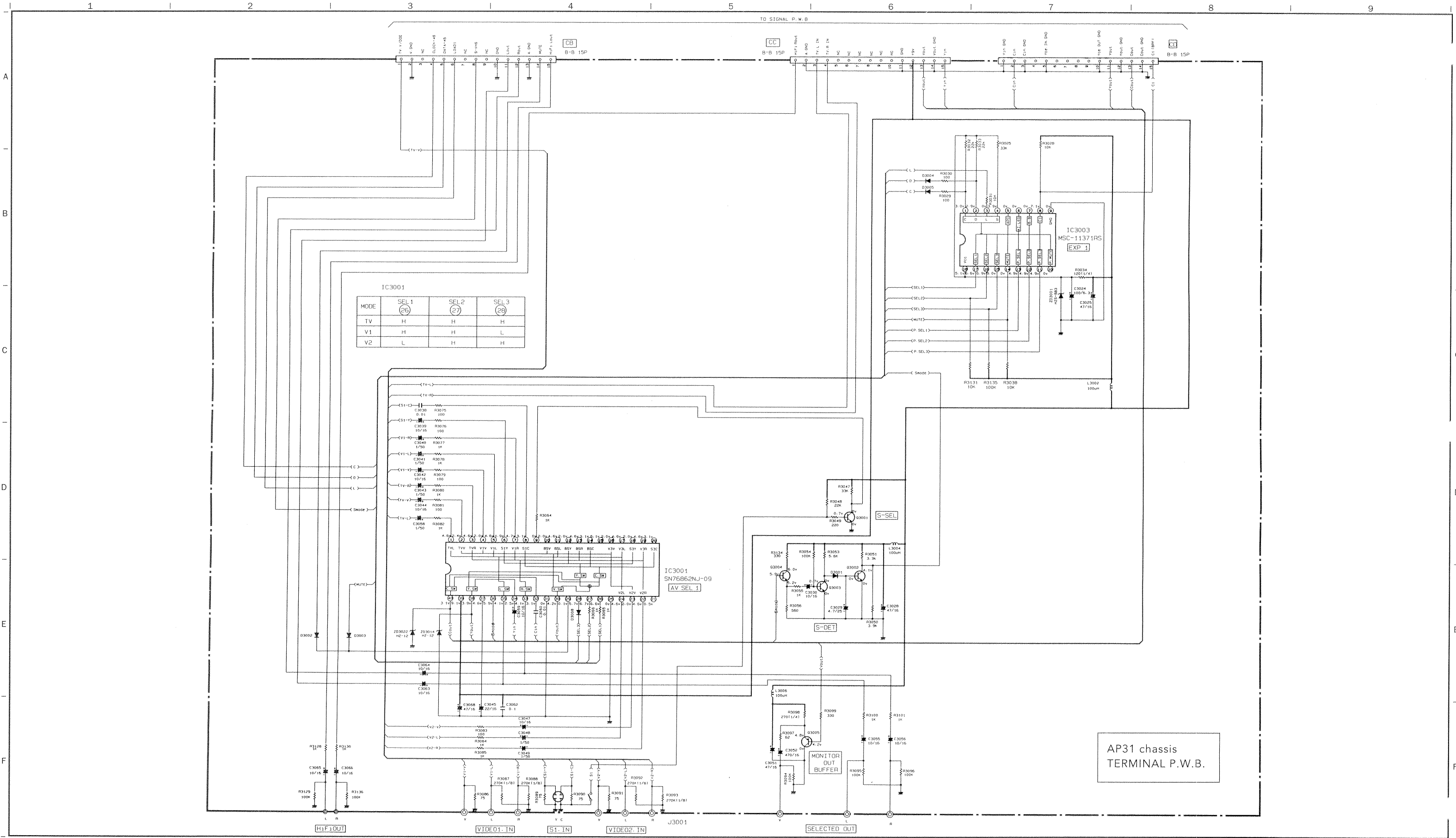
AP31 SIGNAL P.W.B. (3/3)

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DIAGRAMME DE CIRCUIT DE BASE / BASIC CIRCUIT DIAGRAM



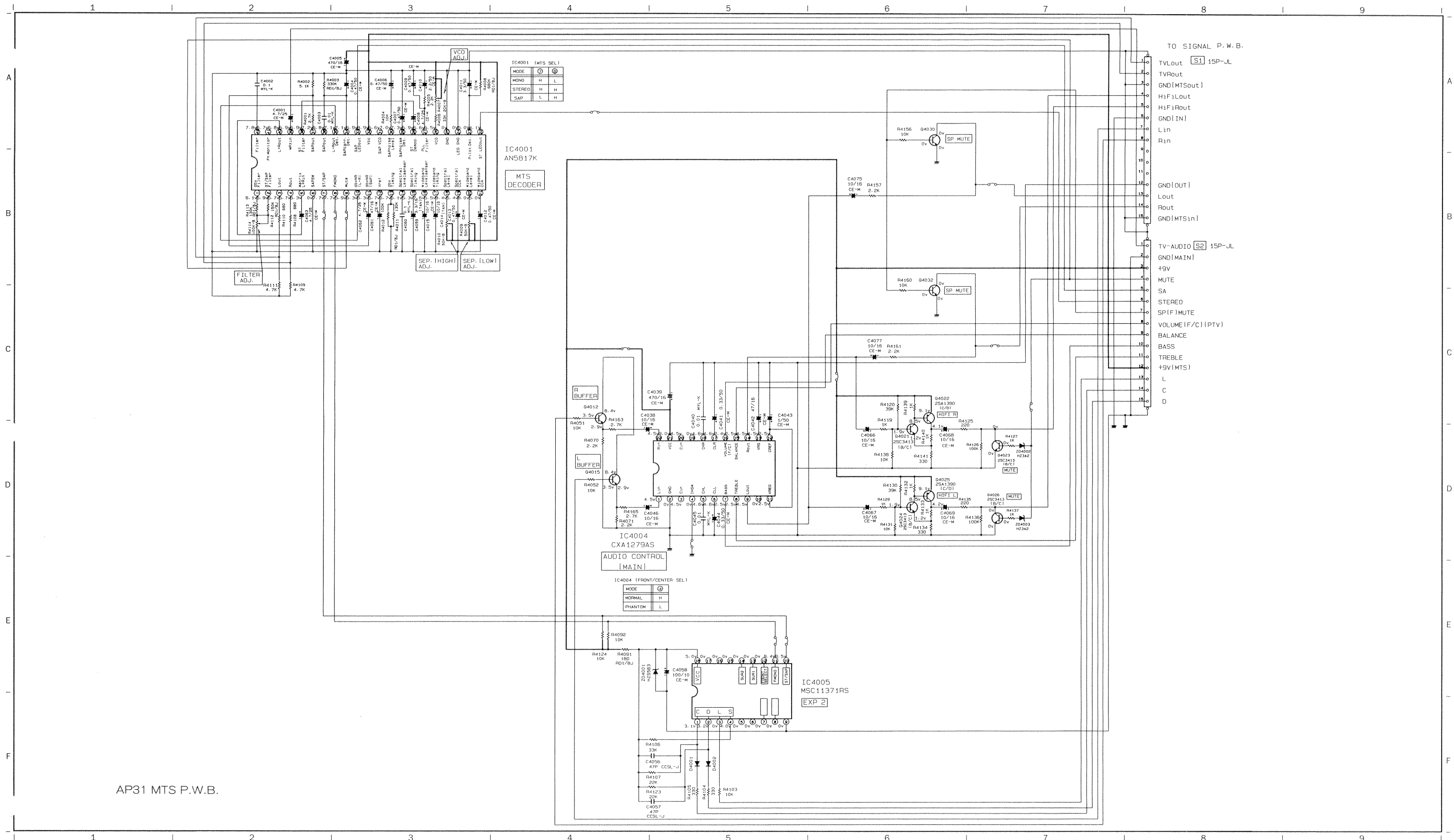
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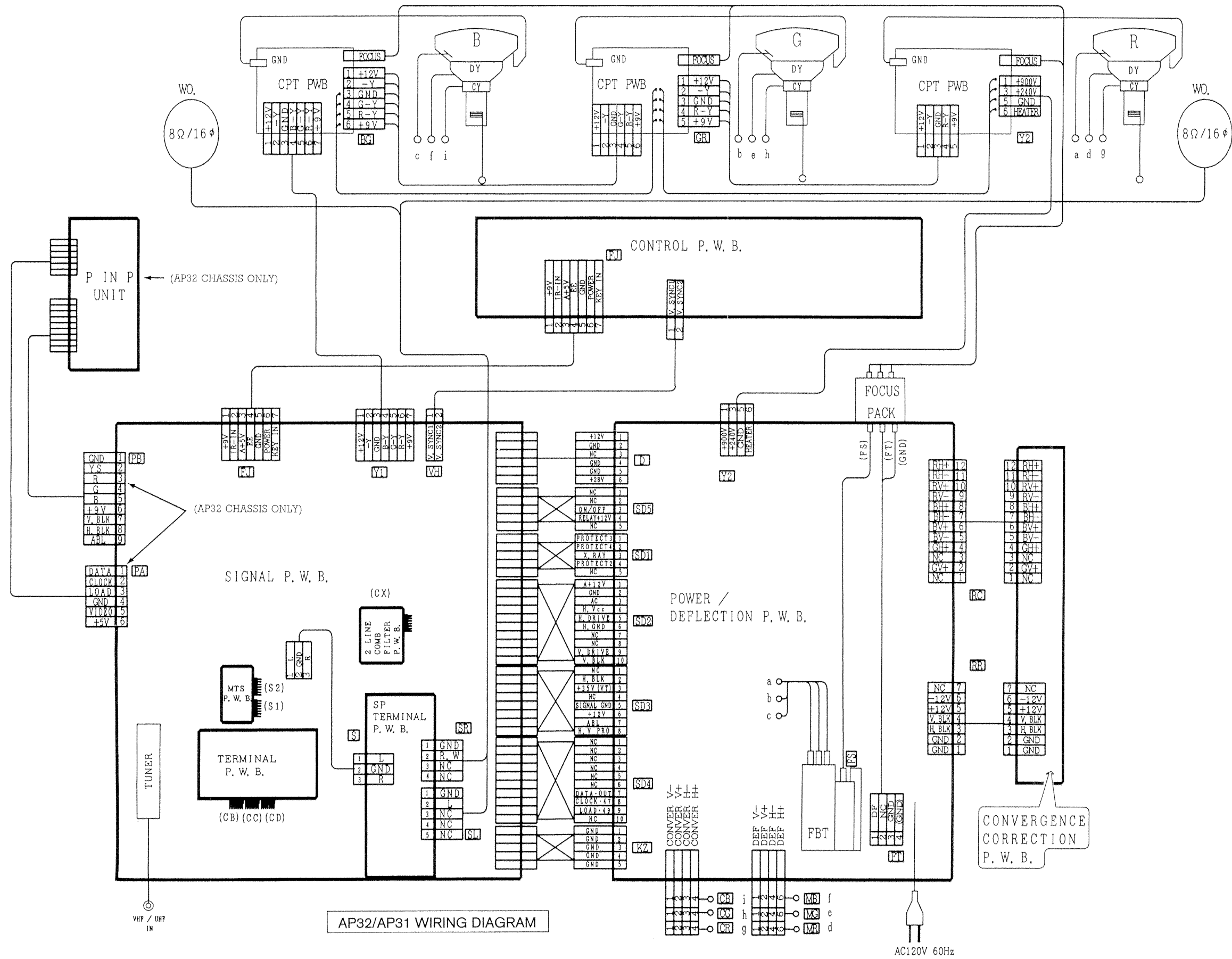
DIAGRAMME DE CIRCUIT DE BASE / BASIC CIRCUIT DIAGRAM



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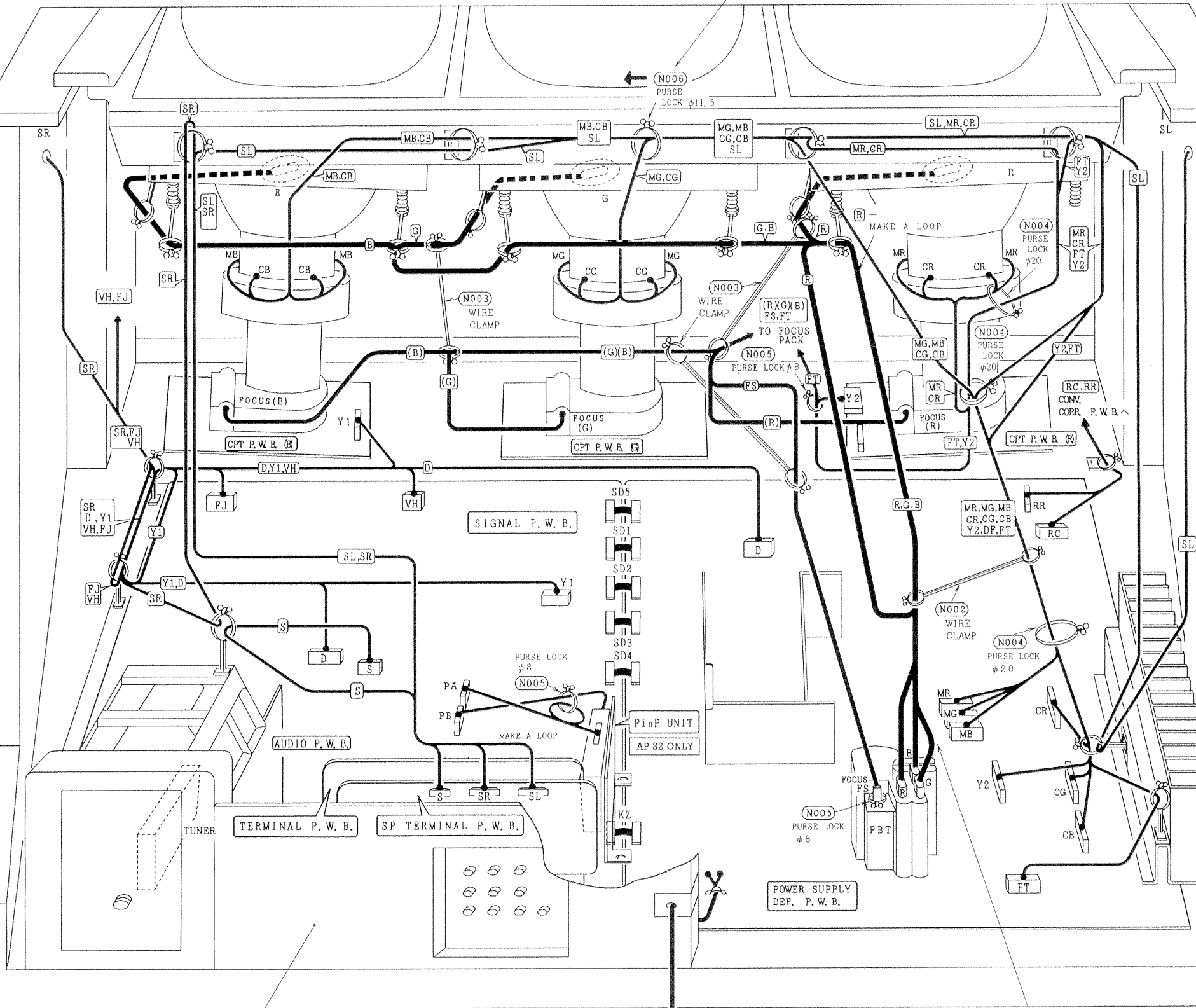
- All DC voltage to be measured with a tester (100k Ω /V). Voltage taken on a complex color bar signal including a standard color bar signal.
- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.

WIRING DIAGRAM / SCHÉMA DE CÂBLAGE



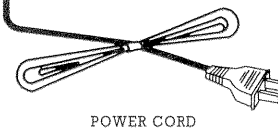
WIRING DIAGRAM / SCHÉMA DE CÂBLAGE

NOTE: SHOULD BE PULLED IN THE DIRECTION OF THE ARROW



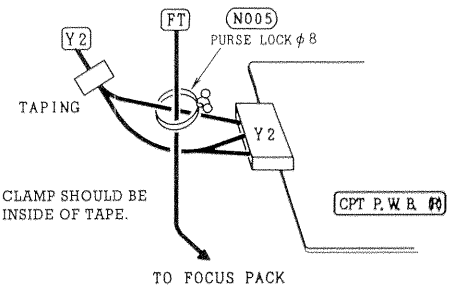
ANTENNA TERMINAL BOARD

73

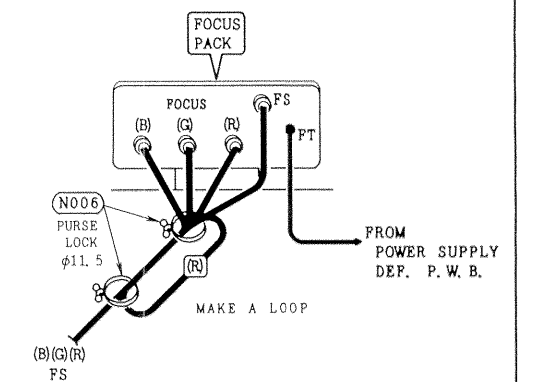


POWER CORD

NOTE: DON'T LET ANODE LEAD TOUCH OTHER WIRES.

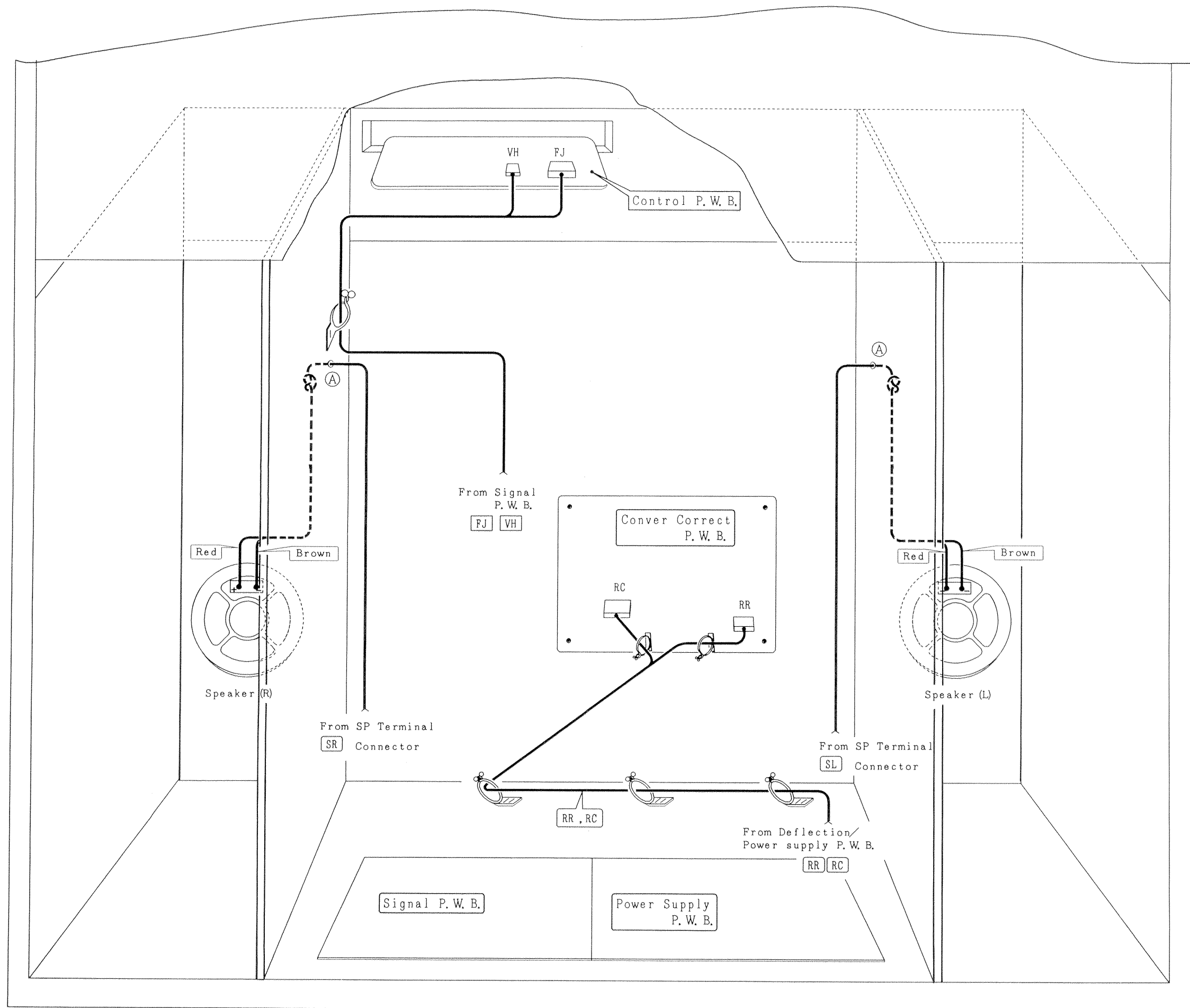


Y2 CONNECTOR



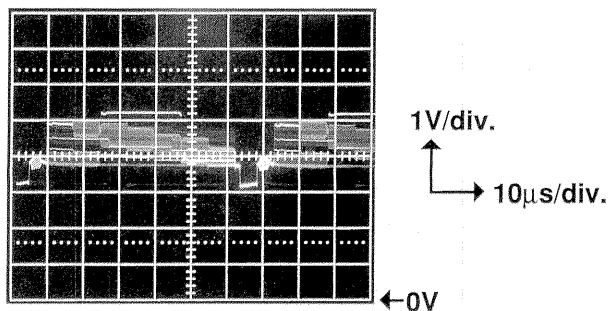
FOCUS PACK

WIRING DIAGRAM / SCHÉMA DE CÂBLAGE

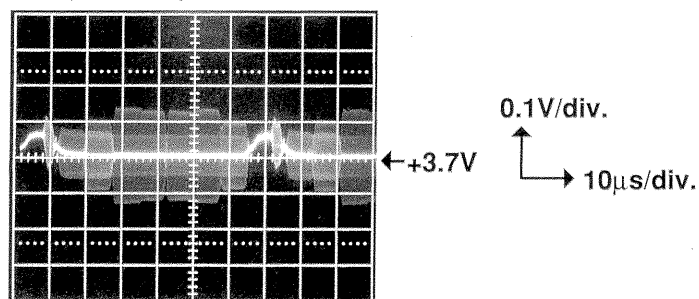


WAVEFORMS AT EACH SECTION/FORME D'ONDE DE CHAQUE ÉTAGE

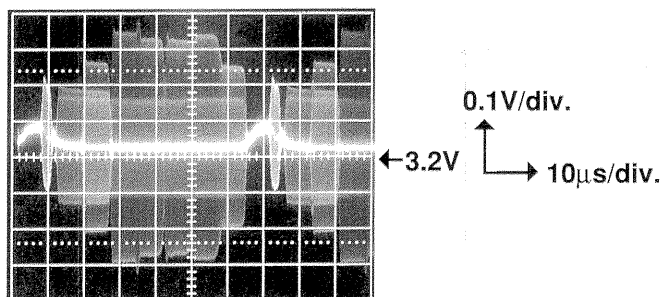
① CX-connector pin 2
(Video in)



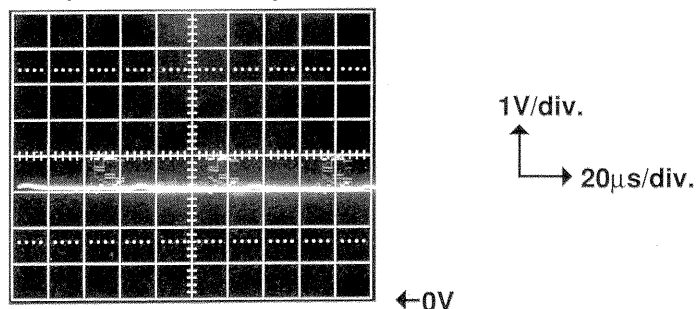
⑦ Q3504 emitter
(C-buffer)



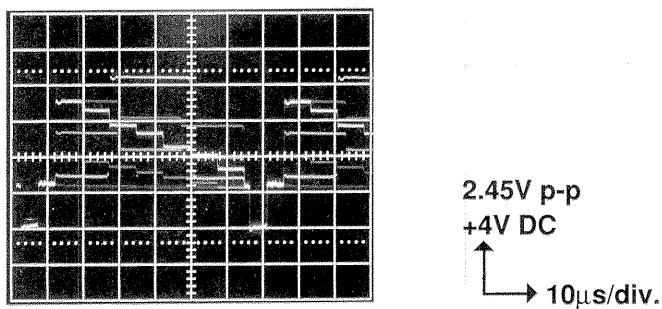
② CX-connector pin 6
(C-out)



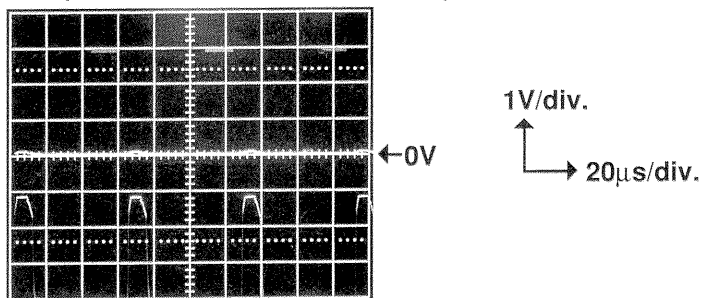
⑧ IC5501 pin 16 (AP32)
(GTX in, PinP on)



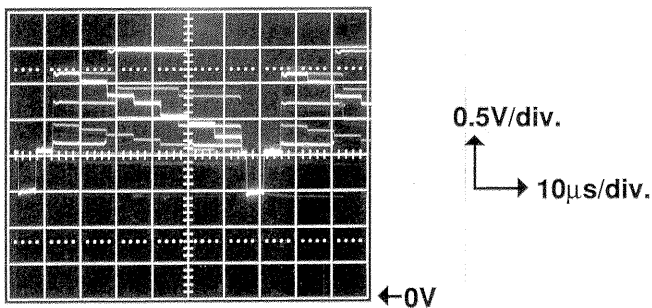
③ CX-connector pin 4
(Y-out)



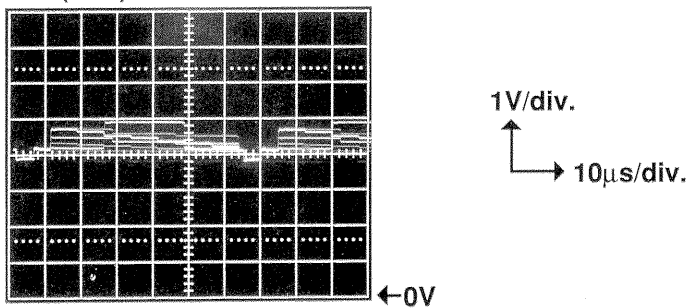
⑨ IC5501 pin 18 (AP32)
(Ys-PinP with H.Blk. reference)



⑤ Q3503 Emitter
(Y-buffer)

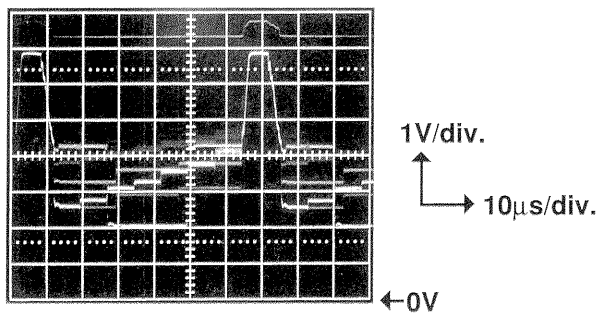


⑩ IC5501 pin 55
(Y-in)

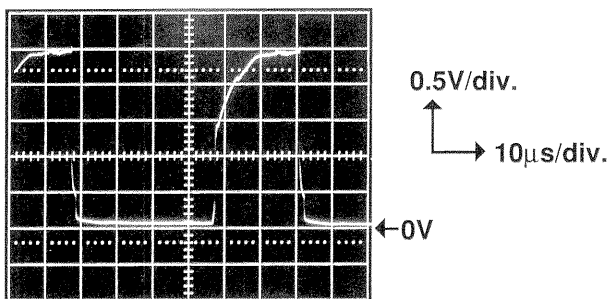


WAVEFORMS AT EACH SECTION/FORME D'ONDE DE CHAQUE ÉTAGE

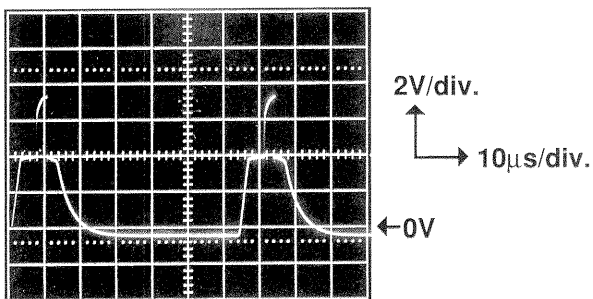
⑪ IC5501 pin 13
(-Y out)



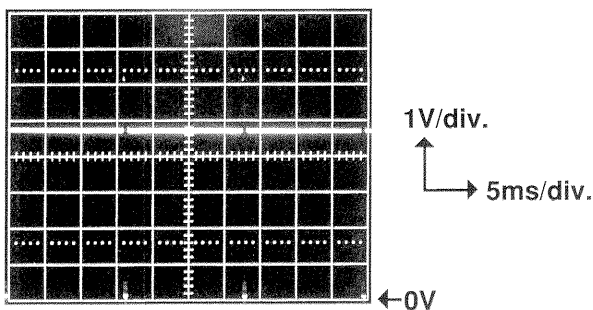
⑫ IC5501 pin 26
(H-out)



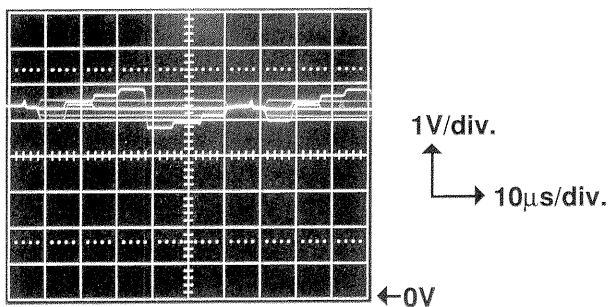
⑬ IC5501 pin 25
(FB Pin)



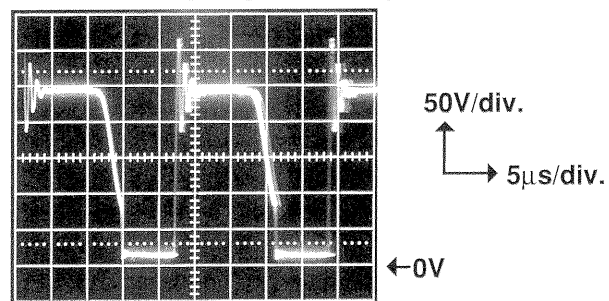
⑭ IC5501 pin 32
(V out)



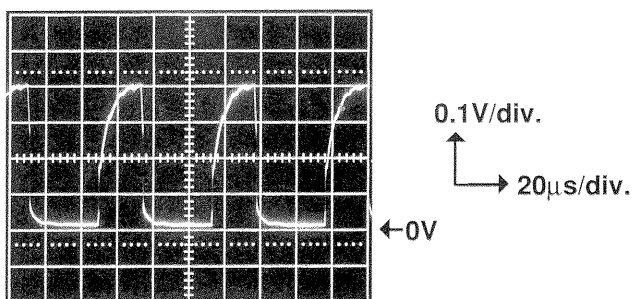
⑮ IC5501 pin 11
(G-Y out)



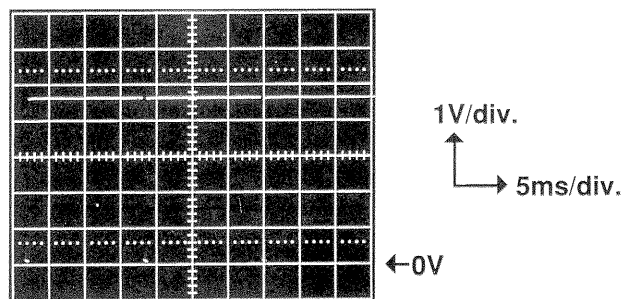
⑯ IC901 pin 1
(Switching Regulator Output)



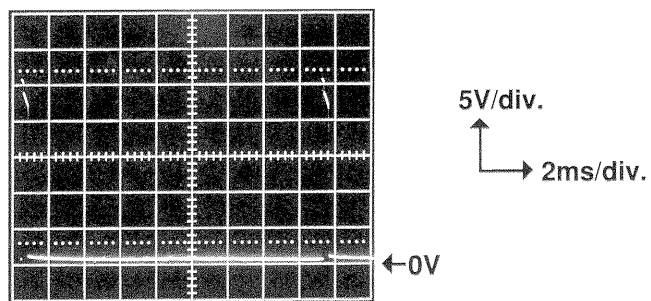
⑰ SD2 connector pin 5
(H. Drive)



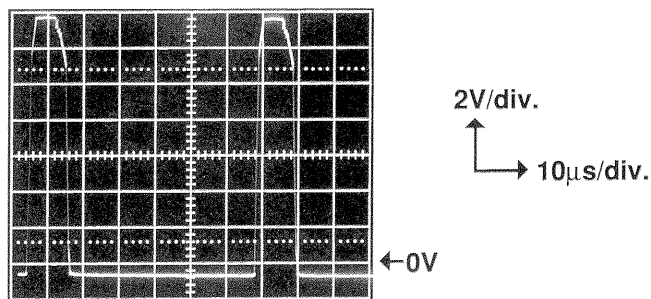
⑱ SD2 connector pin 9
(V. Drive)



⑲ SD2 connector pin 10
(V. Blanking)

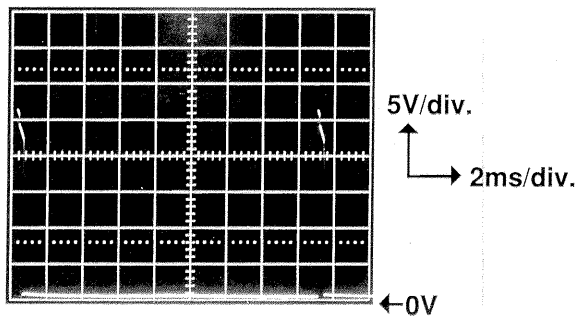


⑳ SD3 connector pin 2
(H. Blanking)

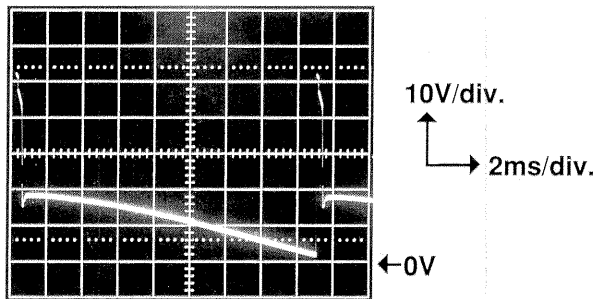


WAVEFORMS AT EACH SECTION/FORME D'ONDE DE CHAQUE ÉTAGE

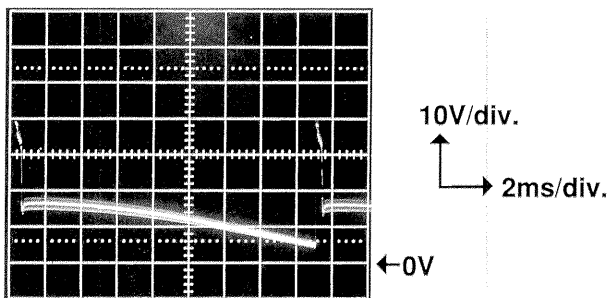
②1 IC601 pin 9
(V. pump-up)



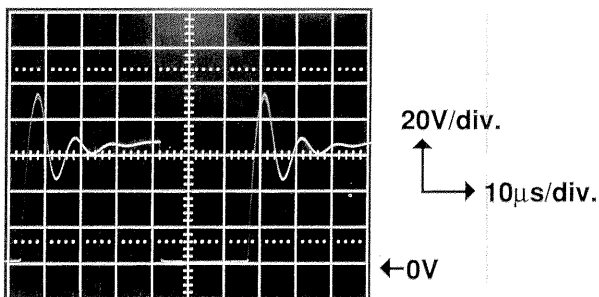
②2 IC601 pin 12
(V.-out)



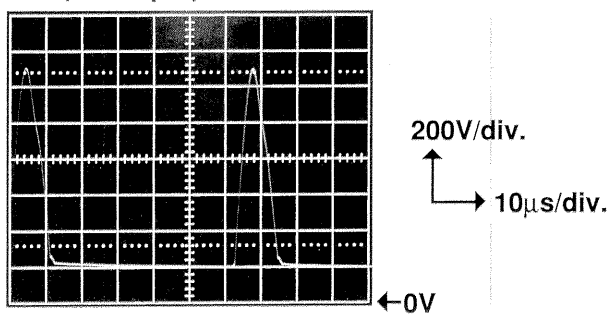
②3 MB-connector pin 1
(V.DY-Blue)



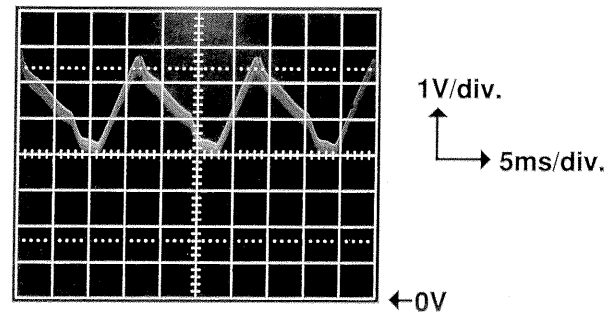
②4 Q701 Collector
(H. Drive)



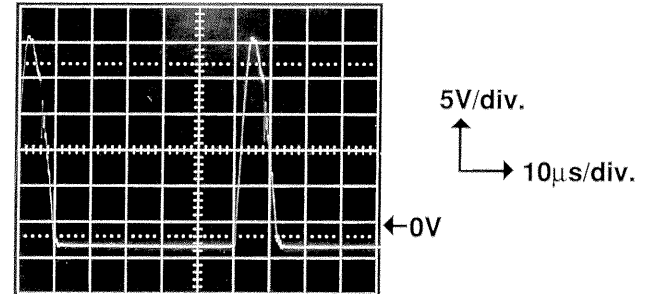
②5 Q777 Collector
(H. Output)



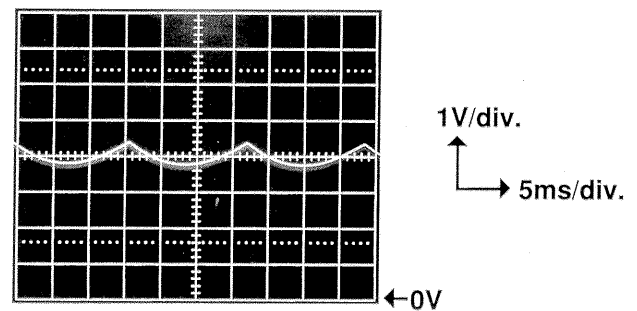
②6 Q710 Collector



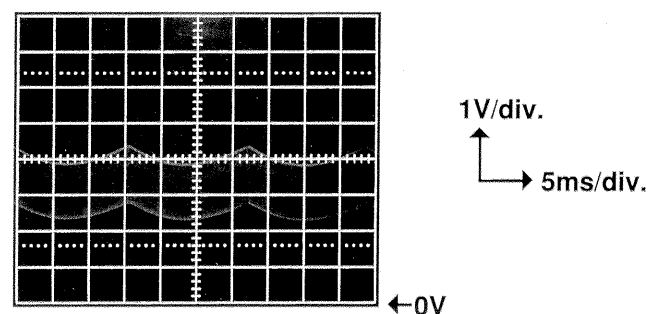
②7 FBT pin H
(CPT Heater)



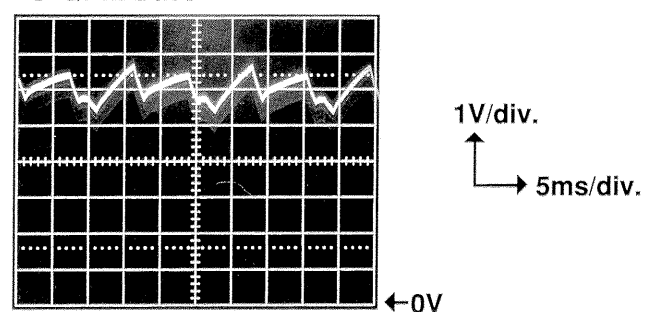
②8 Q609 Base



②9 Q717 Base

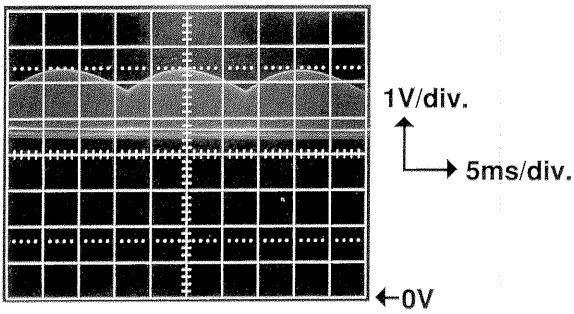


③0 Q712 Base

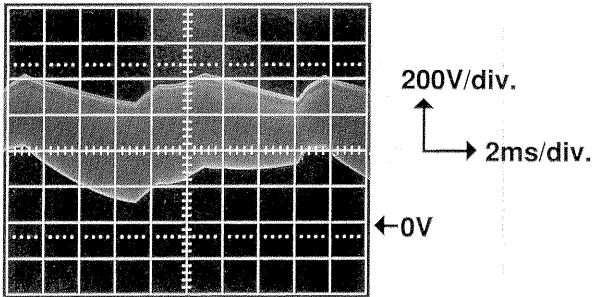


WAVEFORMS AT EACH SECTION/FORME D'ONDE DE CHAQUE ÉTAGE

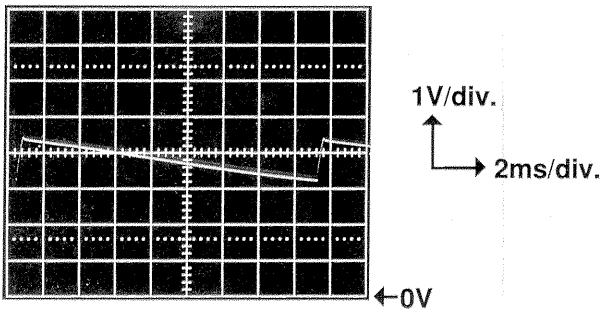
③① Q711 Emitter



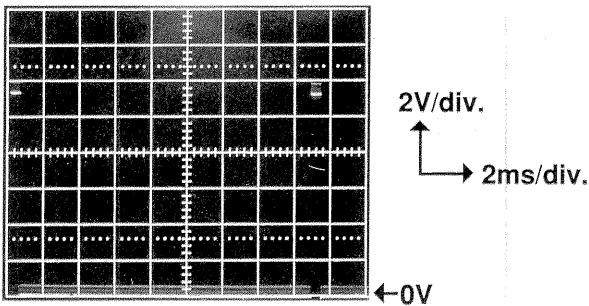
③② Q780 Collector (Dynamic Focus)



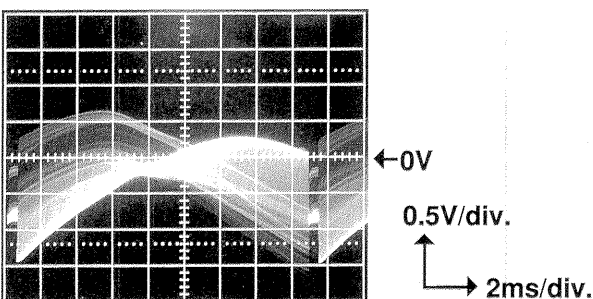
③③ Q607 Base



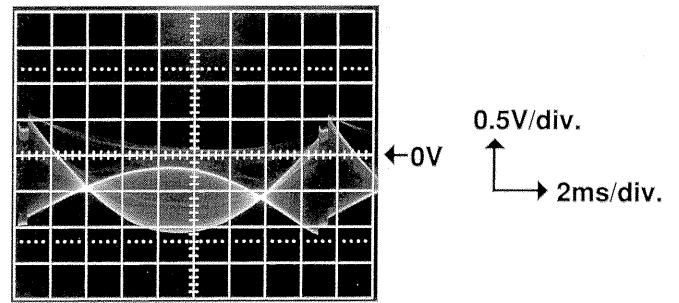
③④ RR connector pin 4 (V Drive)



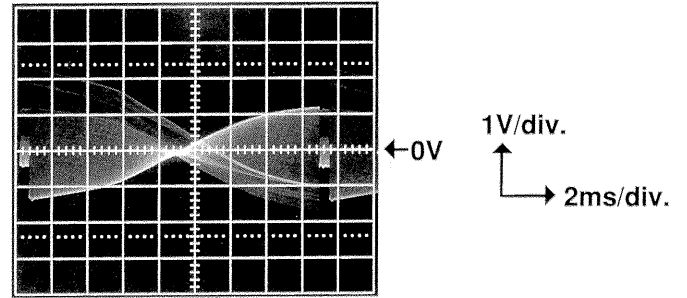
③⑤ IC1351 pin 14 (BV-)



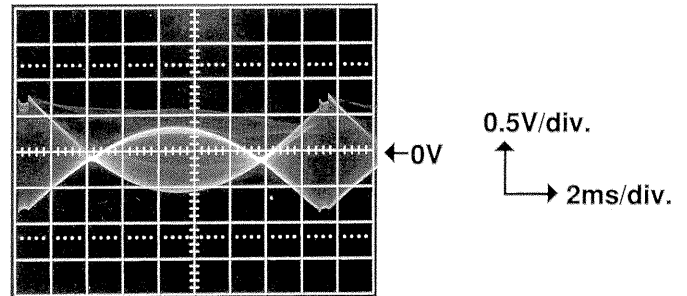
③⑥ IC1351 pin 1 (BH+)



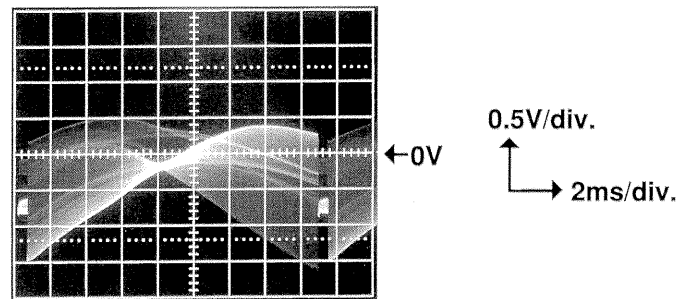
③⑦ IC1326 pin 15 (GV+)



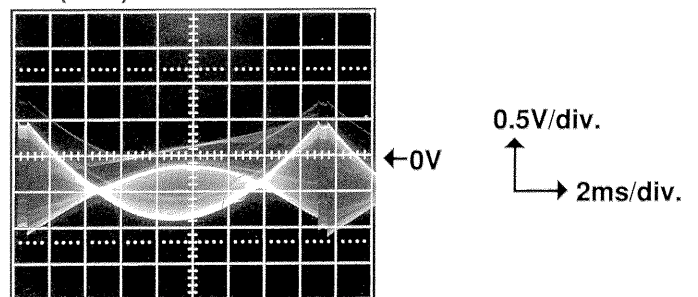
③⑧ IC1326 pin 1 (GH+)



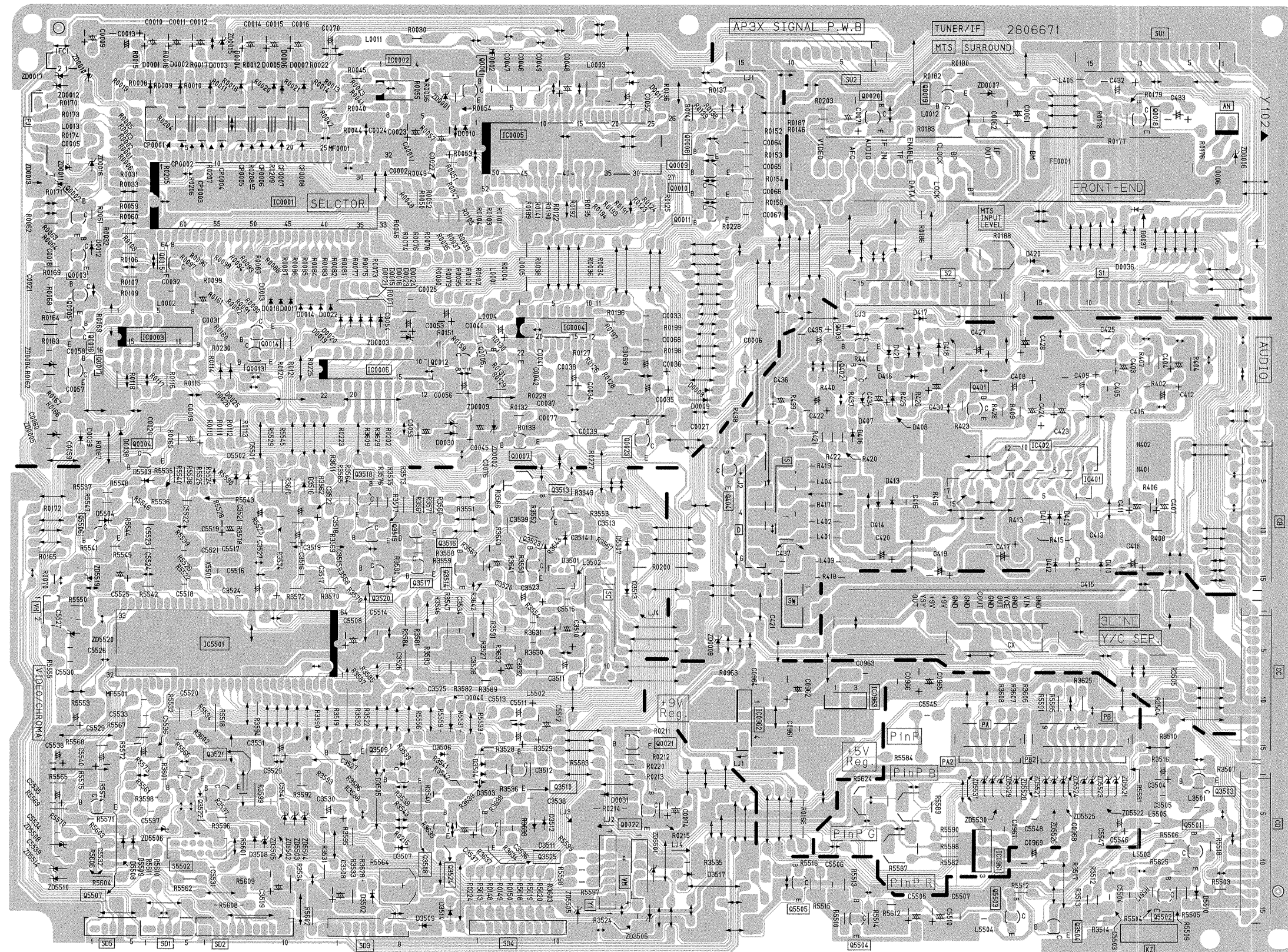
③⑨ IC1301 pin 15 (RV+)



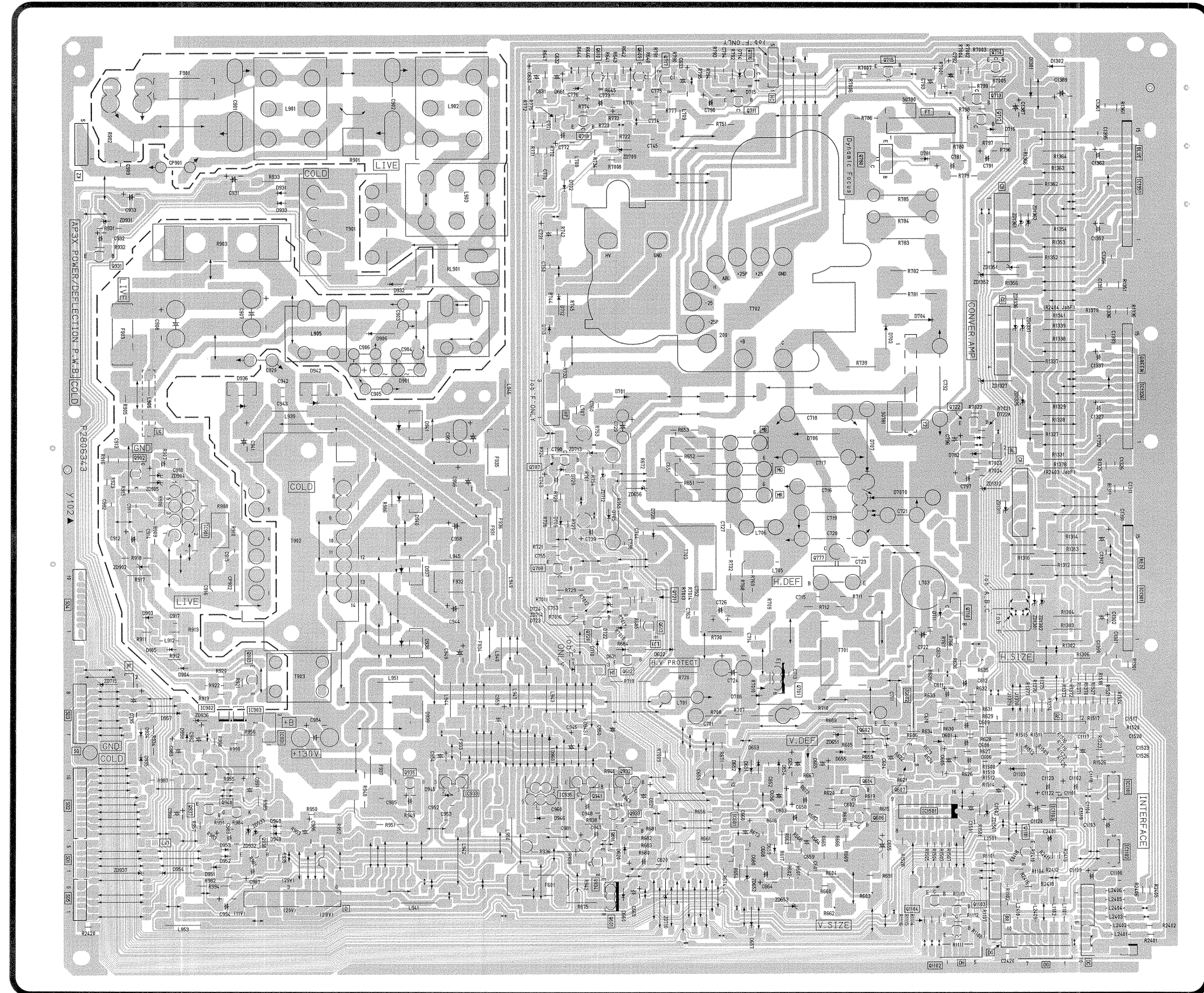
④① IC1301 pin 1 (RH+)



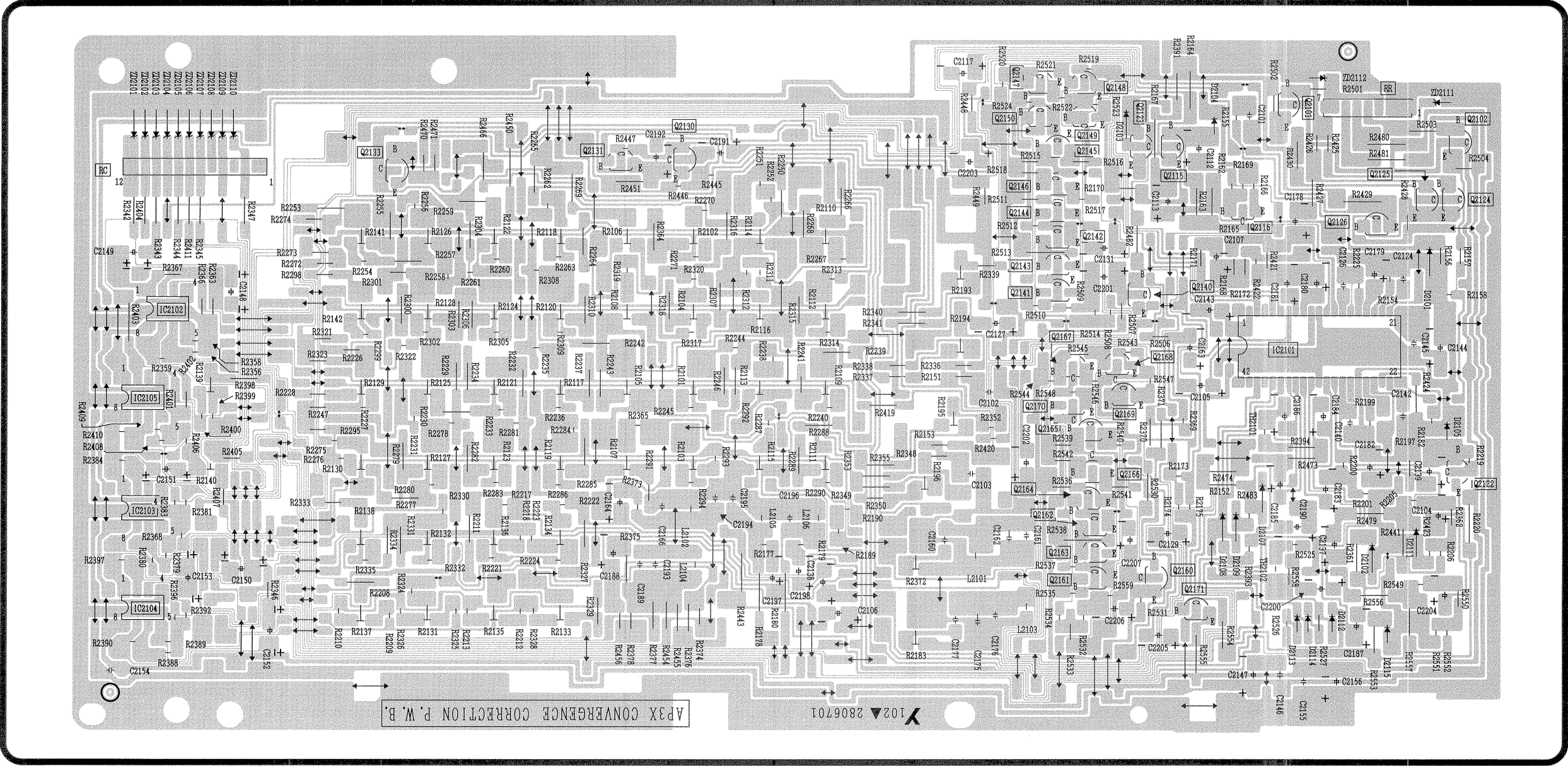
SIGNAL P.C.B.



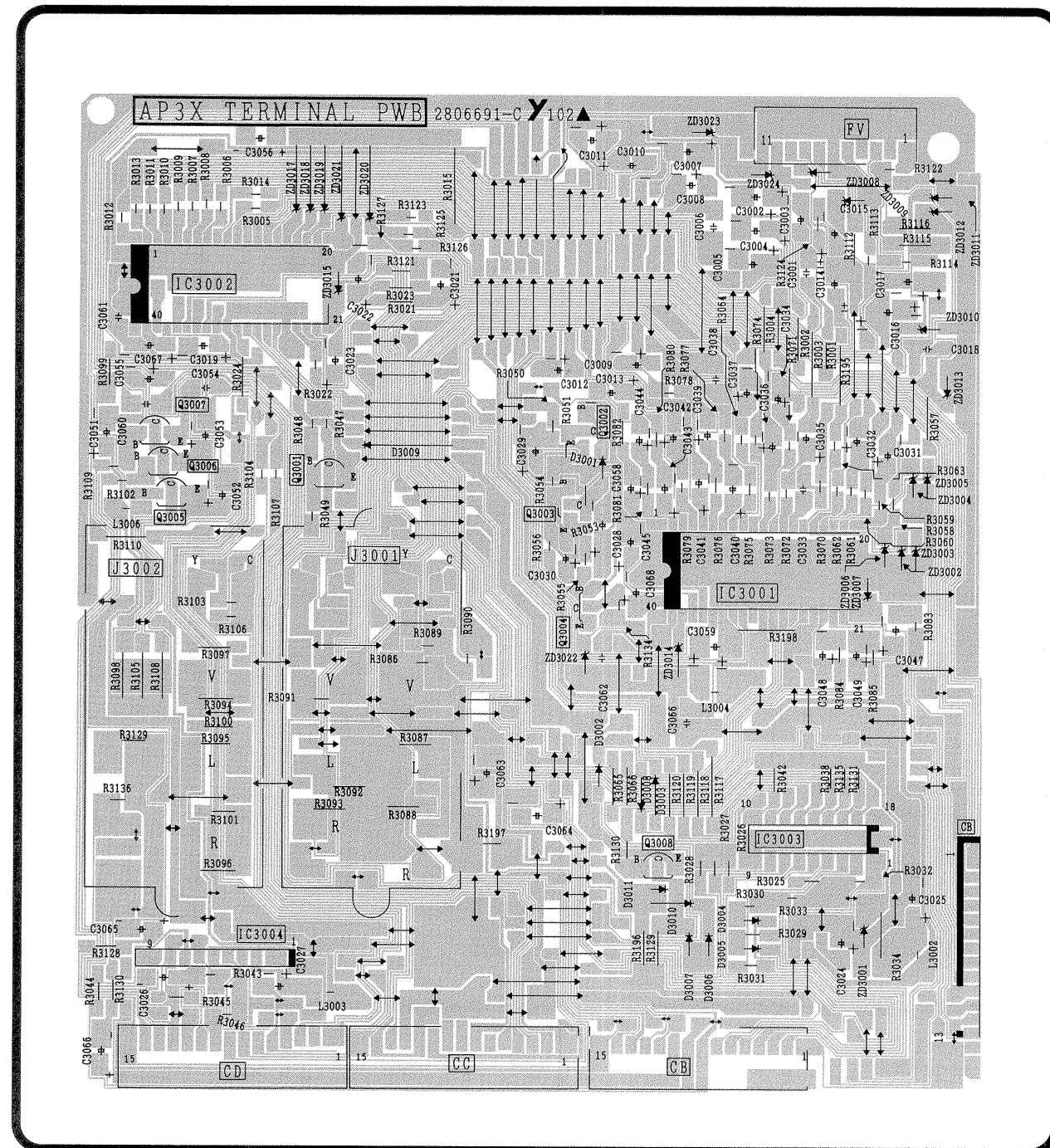
POWER/DEFLECTION P.C.B.



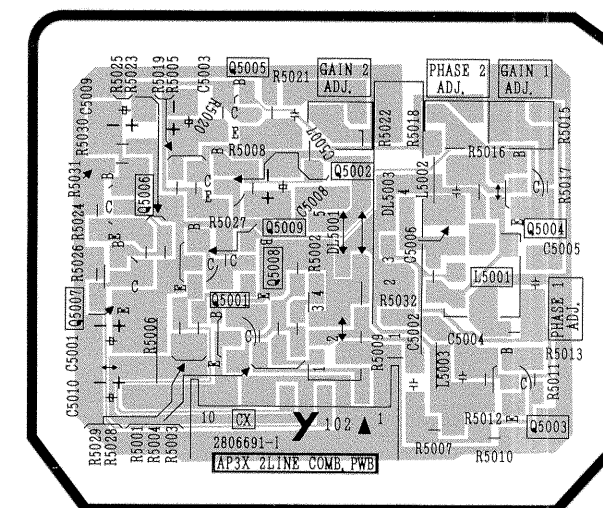
CONVERGENCE CORRECTION P.C.B.



TERMINAL P.C.B.

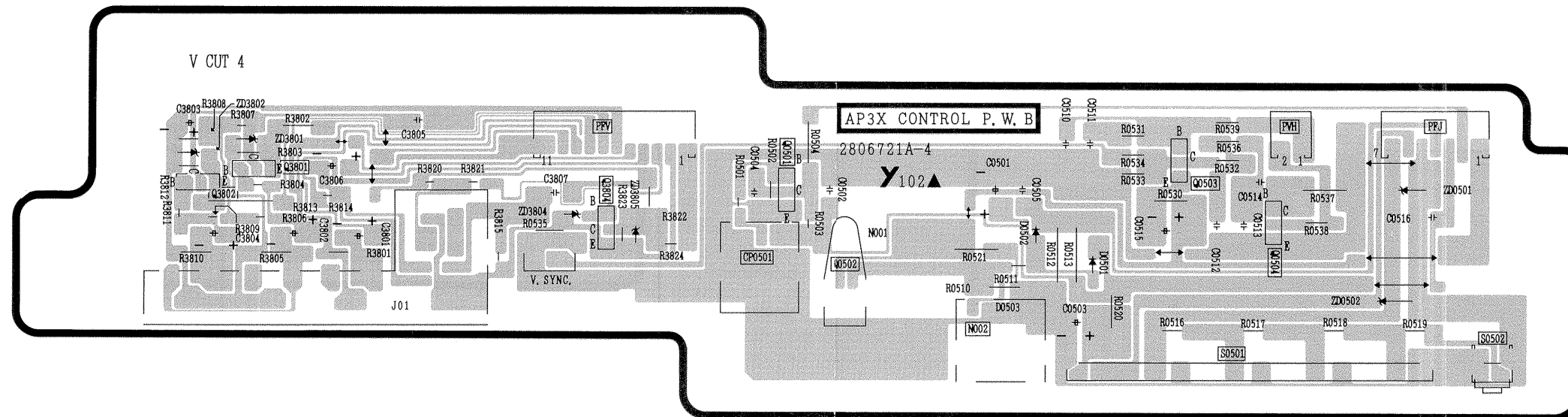


2 LINE COMB P.C.B.

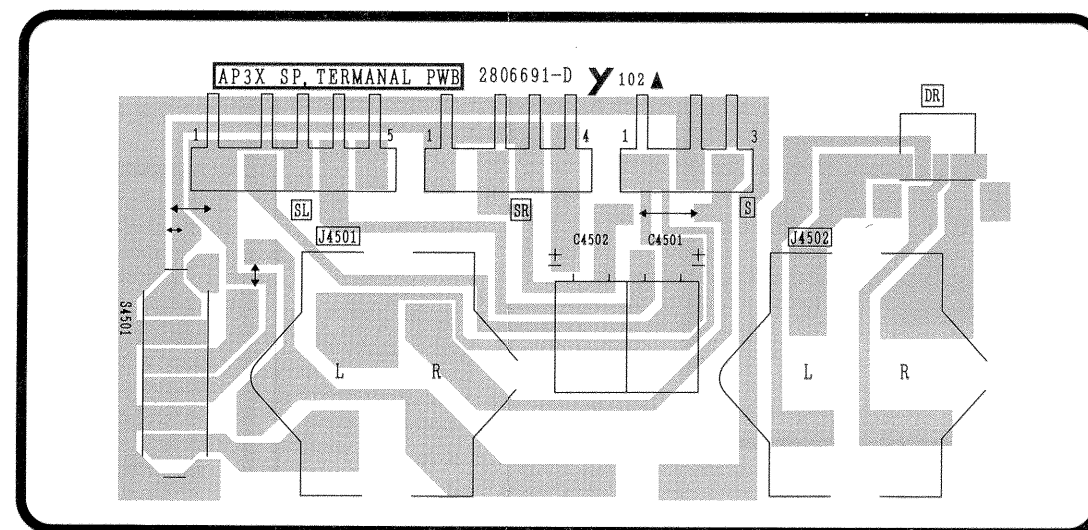


PRINTED CIRCUIT BOARD / PLAQUETTE DE CÂBLAGE IMPRIMES

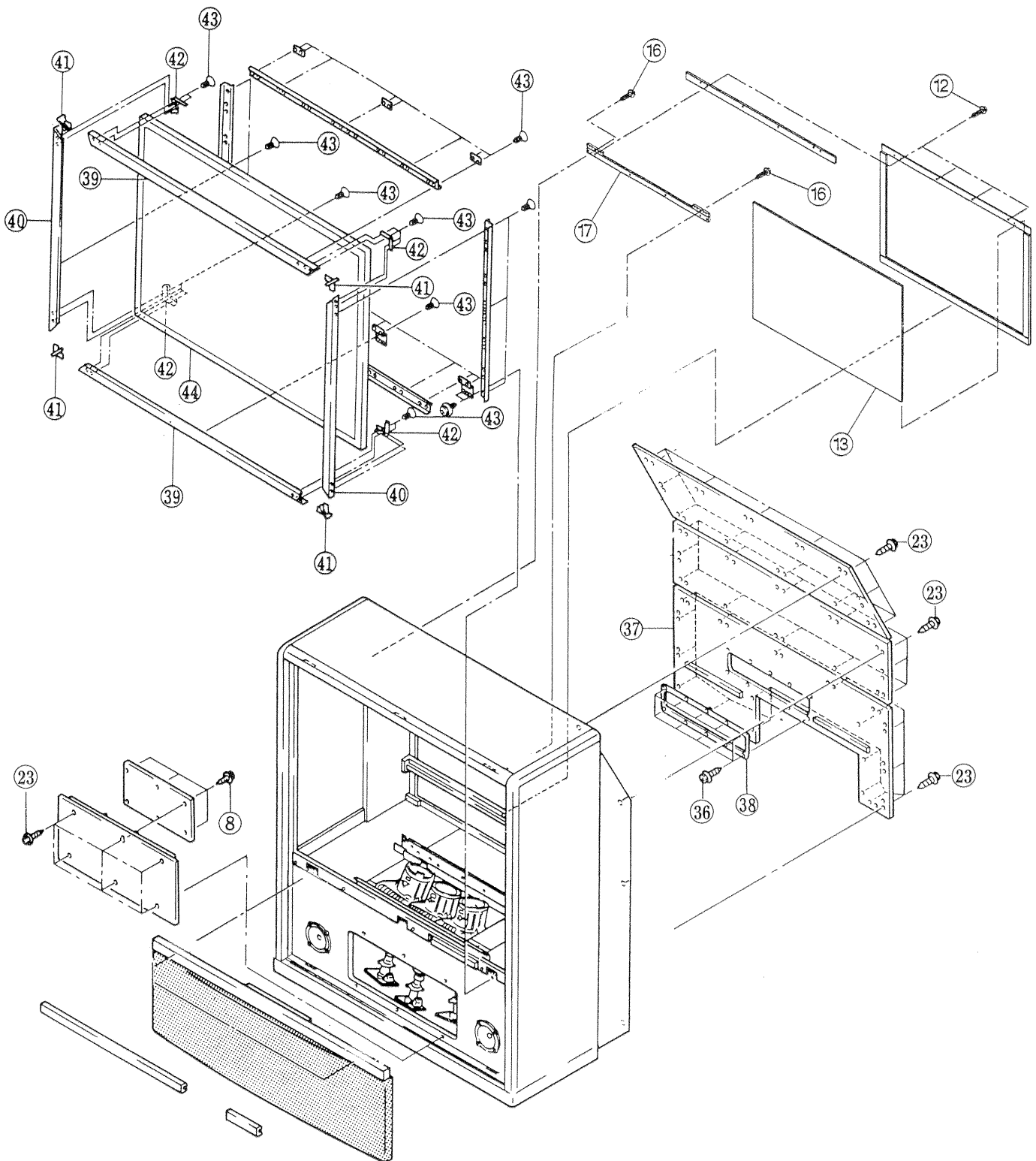
CONTROL P.C.B.



SPEAKER TERMINAL P.C.B.

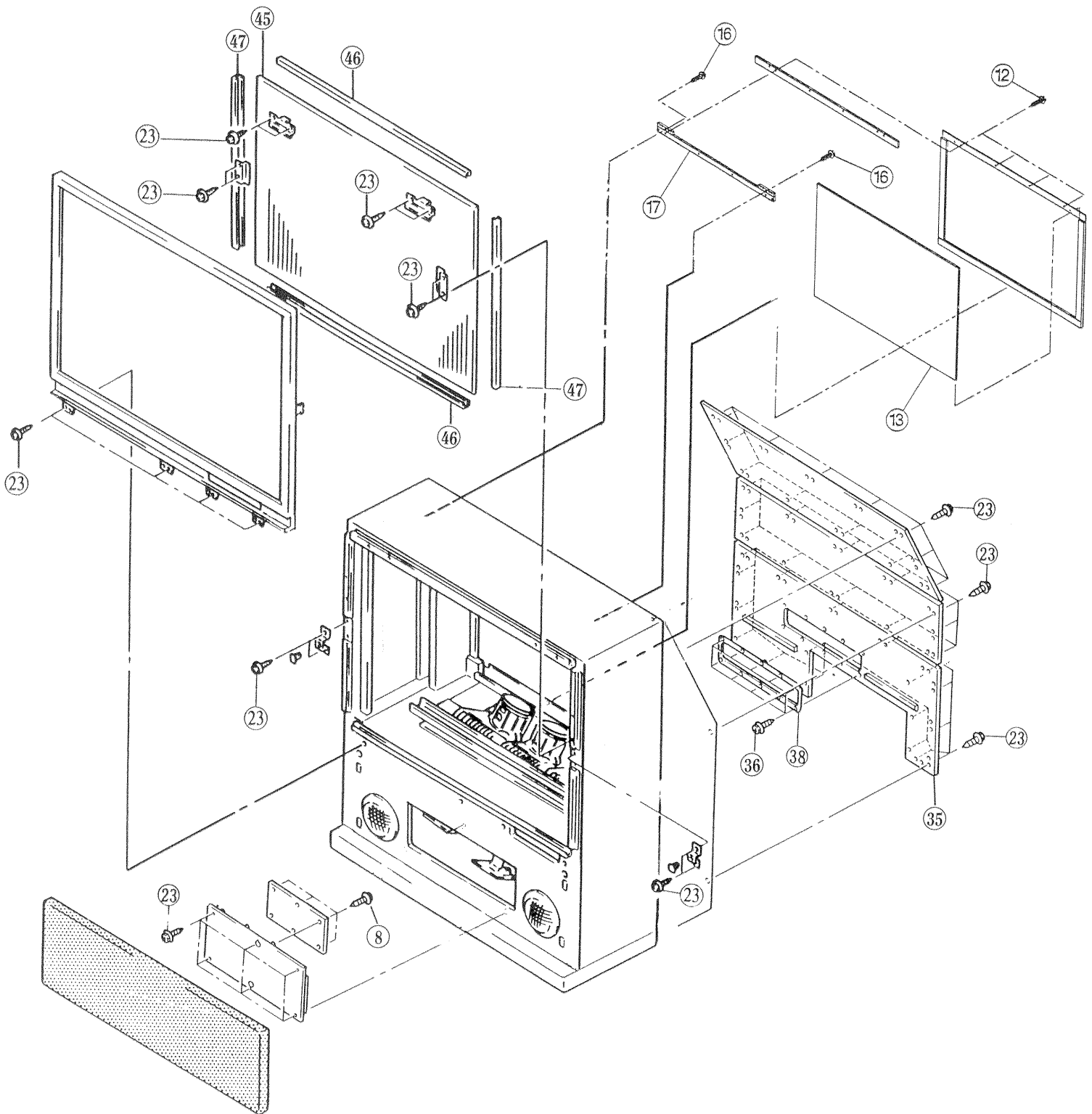


EXPLODED VIEW / VUE SUPERPOSE (1 / 3)
(55EX7K / 50EX6K)



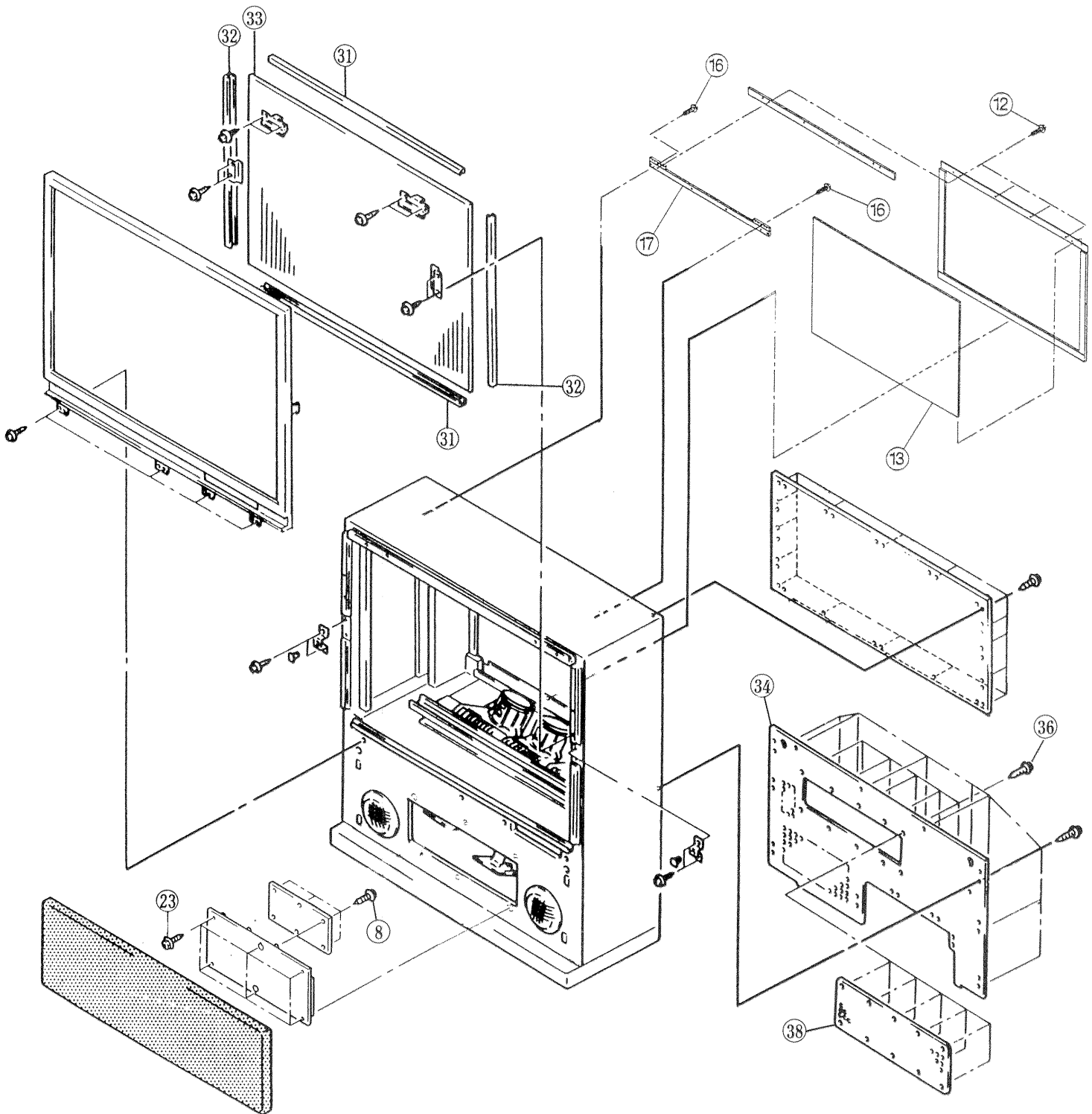
Note: Some parts may appear different than those shown in the exploded view. When ordering, refer to the REPLACEMENT PARTS LIST for correct part number. Since this Service Manual covers several models, use care to select the correct part for the model being serviced.

EXPLODED VIEW / VUE SUPERPOSE (1 / 3) (50ES1B / 50ES1K)



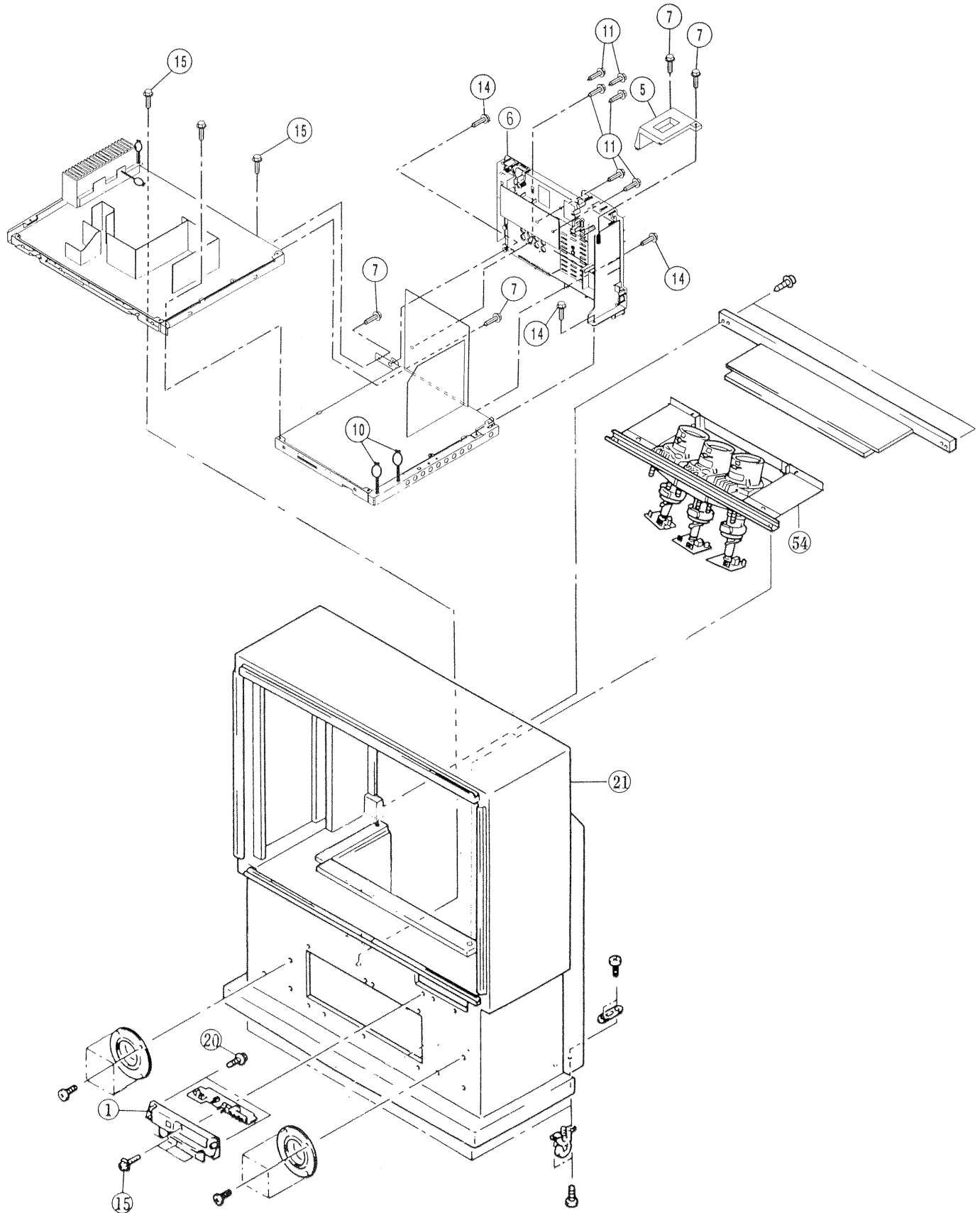
Note: Some parts may appear different than those shown in the exploded view. When ordering, refer to the REPLACEMENT PARTS LIST for correct part number. Since this Service Manual covers several models, use care to select the correct part for the model being serviced.

EXPLODED VIEW / VUE SUPERPOSE (1 / 3)
(46EX3B/3BS / 46EX4K/4KS)



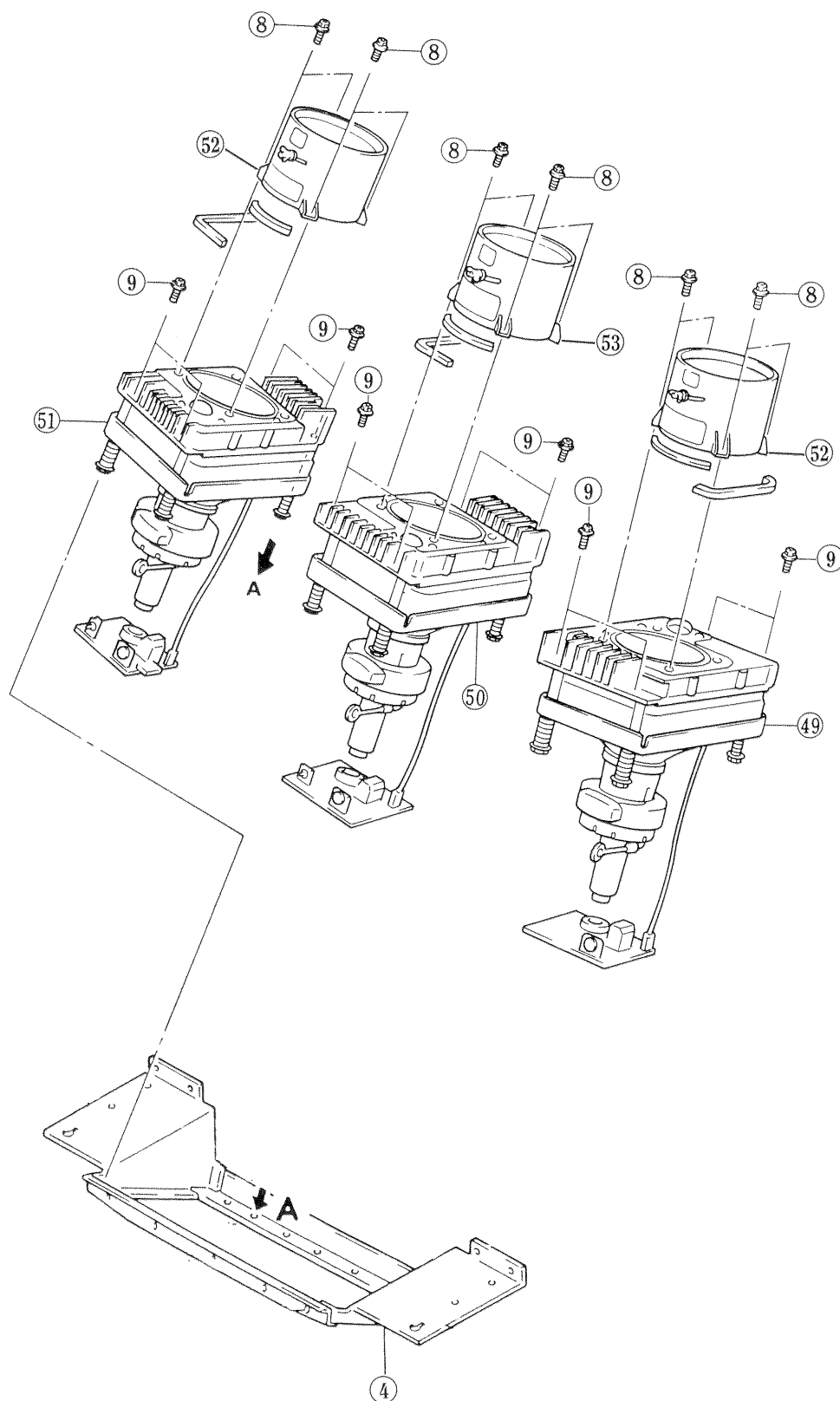
Note: Some parts may appear different than those shown in the exploded view. When ordering, refer to the REPLACEMENT PARTS LIST for correct part number. Since this Service Manual covers several models, use care to select the correct part for the model being serviced.

EXPLODED VIEW / VUE SUPERPOSE (2 / 3)



Note: Some parts may appear different than those shown in the exploded view. When ordering, refer to the REPLACEMENT PARTS LIST for correct part number. Since this Service Manual covers several models, use care to select the correct part for the model being serviced.

EXPLODED VIEW / VUE SUPERPOSE (3 / 3)



Note: Some parts may appear different than those shown in the exploded view. When ordering, refer to the REPLACEMENT PARTS LIST for correct part number. Since this Service Manual covers several models, use care to select the correct part for the model being serviced.

REPLACEMENT PARTS LIST / LISTE DE PIÉCES DE RECHANGE

PRODUCT SAFETY NOTE: Components marked with a  have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

ABBREVIATION	Capacitors..... CD: Ceramic Disc, PF: Polyester Film, EL: Electrolytic, PP: Polypropylene, PR: Paper, TA: Tantalum, TM: Trimmer Resistors..... CF: Carbon Film, CC: Carbon Composition, MF: Metal oxide Film, VR: Variable Resistor, WW: Wire Wound, FR: Fuse Resistor, MG: Metal Glazed Semiconductors.... TR: Transistor, DI: diode, ZD: Zener Diode, VA: Varistor, TH: Thermistor, IC: Integrated Circuit
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SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
		CAPACITORS			
C0001	0800048	CAPACITOR ELECTROLYTIC 100MF 10V	C0058	0890071	CAPACITOR CERAMIC DISCAL 56PF +-5% 50V
C0002	0244171	CD 0.01MF +80-20% 50V	C0059	0890087	CAPACITOR CERAMIC DISCAL 1000PF +-10% 50V
C0005	0244171	CD 0.01MF +80-20% 50V	C0060	0890079	CAPACITOR, CERAMIC DISCAL 270PF +-10% 50V
C0006	0880057	CAPACITOR POLYESTER FILM 0.1MF +-10% 50V	C0061	0800049	CAPACITOR, ELECTROLYTIC 100MF 16V
C0009	0800009	CAPACITOR ELECTROLYTIC 4.7MF 25V	C0062	0244171	CD 0.01MF +80-20% 50V
C0010	0800009	CAPACITOR ELECTROLYTIC 4.7MF 25V	C0064	0890074	CAPACITOR CERAMIC DISCAL 100PF +-5% 50V
C0011	0800009	CAPACITOR ELECTROLYTIC 4.7MF 25V	C0065	0890074	CAPACITOR CERAMIC DISCAL 100PF +-5% 50V
C0012	0800009	CAPACITOR ELECTROLYTIC 4.7MF 25V	C0066	0890074	CAPACITOR CERAMIC DISCAL 100PF +-5% 50V
C0013	0800009	CAPACITOR ELECTROLYTIC 4.7MF 25V	C0067	0890074	CAPACITOR CERAMIC DISCAL 100PF +-5% 50V
C0018	0880048	CAPACITOR PF 0.022MF +-10% 50V	C0068	0890074	CAPACITOR CERAMIC DISCAL 100PF +-5% 50V
C0019	0800023	CAPACITOR ELECTROLYTIC 22MF 16V	C0069	0890074	CAPACITOR CERAMIC DISCAL 100PF +-5% 50V
C0020	0890087	CAPACITOR CERAMIC DISCAL 1000PF +-10% 50V	C0070	0800049	CAPACITOR, ELECTROLYTIC 100MF 16V
C0021	0880057	CAPACITOR POLYESTER FILM 0.1MF +-10% 50V	C0071	0800049	CAPACITOR, ELECTROLYTIC 100MF 16V
C0022	0800003	CAPACITOR ELECTROLYTIC 1MF 50V	C0074	0800074	CAPACITOR ELECTROLYTIC 470MF 16V
C0023	0890067	CAPACITOR CERAMIC DISCAL 33PF +-5% 50V	C0076	0890033	CAPACITOR, CERAMIC DISCAL 680PF +-10% 50V
C0024	0890067	CAPACITOR CERAMIC DISCAL 33PF +-5% 50V	C0077	0890077	CAPACITOR CERAMIC DISCAL 180PF +-10% 50V
C0025	0880053	CAPACITOR PF 0.047MF +-10% 50V	C0501	0800023	CAPACITOR ELECTROLYTIC 22MF 16V
C0027	0880051	CAPACITOR PF 0.033MF +-10% 50V	C0502	0244171	CD 0.01MF +80-20% 50V
C0031	0800048	CAPACITOR ELECTROLYTIC 100MF 10V	C0503	0800003	CAPACITOR ELECTROLYTIC 1MF 50V
C0032	0244171	CD 0.01MF +80-20% 50V	C0504	0244171	CD 0.01MF +80-20% 50V
C0033	0890074	CAPACITOR CERAMIC DISCAL 100PF +-5% 50V	C0505	0244171	CD 0.01MF +80-20% 50V
C0034	0880051	CAPACITOR PF 0.033MF +-10% 50V	C0510	0880011	CAPACITOR PF 0.015MF +-10% 50V
C0035	0800009	CAPACITOR ELECTROLYTIC 4.7MF 25V	C0511	0880013	CAPACITOR PF 0.033MF +-10% 50V
C0037	0890069	CAPACITOR, CERAMIC DISCAL 47PF +-5% 50V	C0512	0880006	CAPACITOR POLYESTER FILM 3300PF +-10% 50V
C0038	0800048	CAPACITOR ELECTROLYTIC 100MF 10V	C0513	0880006	CAPACITOR POLYESTER FILM 3300PF +-10% 50V
C0039	0244171	CD 0.01MF +80-20% 50V	C0514	0880016	CAPACITOR POLYESTER FILM 0.1MF +-10% 50V
C0040	0800003	CAPACITOR ELECTROLYTIC 1MF 50V	C0515	0800015	CAPACITOR, ELECTROLYTIC 10MF 16V
C0041	0880046	CAPACITOR PF 0.015MF +-10% 50V	C0516	0880016	CAPACITOR POLYESTER FILM 0.1MF +-10% 50V
C0042	0244107	CD 3300PF +-10% 50V	C0961	0880057	CAPACITOR POLYESTER FILM 0.1MF +-10% 50V
C0045	0800049	CAPACITOR, ELECTROLYTIC 100MF 16V	C0962	0800075	CAPACITOR ELECTROLYTIC 470MF 25V
C0046	0890067	CAPACITOR CERAMIC DISCAL 33PF +-5% 50V	C0963	0880057	CAPACITOR PF 0.1MF +-10% 50V (AP32 ONLY)
C0047	0890067	CAPACITOR CERAMIC DISCAL 33PF +-5% 50V	C0964	0880057	CAPACITOR POLYESTER FILM 0.1MF +-10% 50V
C0048	0800048	CAPACITOR ELECTROLYTIC 100MF 10V	C0965	0800075	CAPACITOR EL 470MF 25V (AP32 ONLY)
C0049	0244171	CD 0.01MF +80-20% 50V	C0966	0880057	CAPACITOR PF 0.1MF +-10% 50V (AP32 ONLY)
C0052	0800003	CAPACITOR ELECTROLYTIC 1MF 50V	C0967	0880057	CAPACITOR PF 0.1MF +-10% 50V (AP32 ONLY)
C0053	0800049	CAPACITOR, ELECTROLYTIC 100MF 16V	C0968	0880057	CAPACITOR PF 0.1MF +-10% 50V (AP32 ONLY)
C0054	0800039	CAPACITOR ELECTROLYTIC 47MF 10V	C0969	0800075	CAPACITOR EL 470MF 25V (AP32 ONLY)
C0055	0800015	CAPACITOR, ELECTROLYTIC 10MF 16V	C1109	0800049	CAPACITOR, ELECTROLYTIC 100MF 16V
C0056	0800048	CAPACITOR ELECTROLYTIC 100MF 10V	C1117	0800049	CAPACITOR, ELECTROLYTIC 100MF 16V
C0057	0890074	CAPACITOR CERAMIC DISCAL 100PF +-5% 50V	C1301	0890087	CAPACITOR CERAMIC DISCAL 1000PF +-10% 50V
			C1302	0800044	CAPACITOR ELECTROLYTIC 47MF 50V
			C1311	0890087	CAPACITOR CERAMIC DISCAL 1000PF +-10% 50V
			C1312	0800044	CAPACITOR ELECTROLYTIC 47MF 50V

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SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
C1326	0890087	CAPACITOR CERAMIC DISCAL 1000PF +-10% 50V	C2166	0880013	CAPACITOR PF 0.033MF +-10% 50V
C1327	0800044	CAPACITOR ELECTROLYTIC 47MF 50V	C2175	0299029	PP 0.015MF +-2% 100V
C1336	0890087	CAPACITOR CERAMIC DISCAL 1000PF +-10% 50V	C2176	0880009	CAPACITOR POLYESTER FILM 0.01MF +-10% 50V
C1337	0800044	CAPACITOR ELECTROLYTIC 47MF 50V	C2177	0880011	CAPACITOR PF 0.015MF +-10% 50V
C1351	0890087	CAPACITOR CERAMIC DISCAL 1000PF +-10% 50V	C2178	0800003	CAPACITOR ELECTROLYTIC 1MF 50V
C1352	0800044	CAPACITOR ELECTROLYTIC 47MF 50V	C2179	0800003	CAPACITOR ELECTROLYTIC 1MF 50V
C1361	0890087	CAPACITOR CERAMIC DISCAL 1000PF +-10% 50V	C2180	0800003	CAPACITOR ELECTROLYTIC 1MF 50V
C1362	0800044	CAPACITOR ELECTROLYTIC 47MF 50V	C2181	0800003	CAPACITOR ELECTROLYTIC 1MF 50V
C1387	0258178	EL 470MF,63V	C2182	0800015	CAPACITOR,ELECTROLYTIC 10MF 16V
C1389	0258178	EL 470MF,63V	C2183	0800003	CAPACITOR ELECTROLYTIC 1MF 50V
C1501	0800041	CAPACITOR ELECTROLYTIC 47MF 16V	C2184	0800015	CAPACITOR,ELECTROLYTIC 10MF 16V
C1502	0800041	CAPACITOR ELECTROLYTIC 47MF 16V	C2185	0800003	CAPACITOR ELECTROLYTIC 1MF 50V
C1517	0880044	CAPACITOR POLYESTER FILM 0.01MF +-10% 50V	C2186	0800003	CAPACITOR ELECTROLYTIC 1MF 50V
C1520	0880044	CAPACITOR POLYESTER FILM 0.01MF +-10% 50V	C2187	0800003	CAPACITOR ELECTROLYTIC 1MF 50V
C1523	0880044	CAPACITOR POLYESTER FILM 0.01MF +-10% 50V	C2188	0800003	CAPACITOR ELECTROLYTIC 1MF 50V
C1526	0880044	CAPACITOR POLYESTER FILM 0.01MF +-10% 50V	C2189	0880012	CAPACITOR PF 0.022MF +-10% 50V
C2101	0244136	CD 270PF +-10% 50V	C2190	0800015	CAPACITOR,ELECTROLYTIC 10MF 16V
C2103	0880001	CAPACITOR POLYESTER FILM 680PF +-10% 50V	C2191	0800003	CAPACITOR ELECTROLYTIC 1MF 50V
C2104	0800015	CAPACITOR,ELECTROLYTIC 10MF 16V	C2192	0800015	CAPACITOR,ELECTROLYTIC 10MF 16V
C2105	0800003	CAPACITOR ELECTROLYTIC 1MF 50V	C2195	0880012	CAPACITOR PF 0.022MF +-10% 50V
C2106	0800015	CAPACITOR,ELECTROLYTIC 10MF 16V	C2196	0880012	CAPACITOR PF 0.022MF +-10% 50V
C2107	0800015	CAPACITOR,ELECTROLYTIC 10MF 16V	C2197	0800003	CAPACITOR ELECTROLYTIC 1MF 50V
C2112	0800001	CAPACITOR ELECTROLYTIC 0.47MF 50V	C2198	0800003	CAPACITOR ELECTROLYTIC 1MF 50V
C2113	0800015	CAPACITOR,ELECTROLYTIC 10MF 16V	C3006	0244171	CD 0.01MF +80-20% 50V (AP32 ONLY)
C2117	0800015	CAPACITOR,ELECTROLYTIC 10MF 16V	C3007	0800015	CAPACITOR,EL 10MF 16V (AP32 ONLY)
C2124	0880005	CAPACITOR POLYESTER FILM 2200PF +-10% 50V	C3010	0800015	CAPACITOR,EL 10MF 16V (AP32 ONLY)
C2126	0299001	PP 0.001MF +-2% 100V	C3013	0800015	CAPACITOR,EL 10MF 16V (AP32 ONLY)
C2127	0800003	CAPACITOR ELECTROLYTIC 1MF 50V	C3019	0800023	CAPACITOR EL 22MF 16V (AP32 ONLY)
C2129	0800015	CAPACITOR,ELECTROLYTIC 10MF 16V	C3021	0800015	CAPACITOR,EL 10MF 16V (AP32 ONLY)
C2131	0800015	CAPACITOR,ELECTROLYTIC 10MF 16V	C3024	0800047	CAPACITOR ELECTROLYTIC 100MF 6.3V
C2137	0800049	CAPACITOR,ELECTROLYTIC 100MF 16V	C3025	0800041	CAPACITOR ELECTROLYTIC 47MF 16V
C2138	0800015	CAPACITOR,ELECTROLYTIC 10MF 16V	C3028	0800041	CAPACITOR ELECTROLYTIC 47MF 16V
C2139	0800015	CAPACITOR,ELECTROLYTIC 10MF 16V	C3029	0800009	CAPACITOR ELECTROLYTIC 4.7MF 25V
C2140	0880014	CAPACITOR PF 0.047MF +-10% 50V	C3030	0800015	CAPACITOR,ELECTROLYTIC 10MF 16V
C2142	0880016	CAPACITOR POLYESTER FILM 0.1MF +-10% 50V	C3038	0244171	CD 0.01MF +80-20% 50V
C2143	0800049	CAPACITOR,ELECTROLYTIC 100MF 16V	C3039	0800015	CAPACITOR,ELECTROLYTIC 10MF 16V
C2144	0800041	CAPACITOR ELECTROLYTIC 47MF 16V	C3040	0800003	CAPACITOR ELECTROLYTIC 1MF 50V
C2145	0244141	CD 0.01MF +-10% 50V	C3041	0800003	CAPACITOR ELECTROLYTIC 1MF 50V
C2146	0244141	CD 0.01MF +-10% 50V	C3042	0800015	CAPACITOR,ELECTROLYTIC 10MF 16V
C2147	0800041	CAPACITOR ELECTROLYTIC 47MF 16V	C3043	0800003	CAPACITOR ELECTROLYTIC 1MF 50V
C2148	0252417	EL 1MF 50V	C3044	0800015	CAPACITOR,ELECTROLYTIC 10MF 16V
C2149	0252417	EL 1MF 50V	C3045	0800023	CAPACITOR ELECTROLYTIC 22MF 16V
C2150	0252417	EL 1MF 50V	C3047	0800015	CAPACITOR,ELECTROLYTIC 10MF 16V
C2151	0252417	EL 1MF 50V	C3048	0800003	CAPACITOR ELECTROLYTIC 1MF 50V
C2152	0252417	EL 1MF 50V	C3049	0800003	CAPACITOR ELECTROLYTIC 1MF 50V
C2153	0252417	EL 1MF 50V	C3051	0800041	CAPACITOR ELECTROLYTIC 47MF 16V
C2154	0244229	CD 150PF +-10% 50V	C3052	0800074	CAPACITOR ELECTROLYTIC 470MF 16V
C2155	0244141	CD 0.01MF +-10% 50V	C3055	0800015	CAPACITOR,ELECTROLYTIC 10MF 16V
C2156	0800044	CAPACITOR ELECTROLYTIC 47MF 50V	C3056	0800015	CAPACITOR,ELECTROLYTIC 10MF 16V
C2160	0880011	CAPACITOR PF 0.015MF +-10% 50V	C3058	0800003	CAPACITOR ELECTROLYTIC 1MF 50V
C2161	0880009	CAPACITOR POLYESTER FILM 0.01MF +-10% 50V	C3059	0284638	EL 10MF 16V
C2162	0299029	PP 0.015MF +-2% 100V	C3060	0244171	CD 0.01MF +80-20% 50V
C2163	0800003	CAPACITOR ELECTROLYTIC 1MF 50V	C3061	0880057	CAPACITOR PF 0.1MF +-10% 50V (AP32 ONLY)
C2164	0800003	CAPACITOR ELECTROLYTIC 1MF 50V	C3062	0880057	CAPACITOR POLYESTER FILM 0.1MF +-10% 50V

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C3063	0800015	CAPACITOR,EL 10MF 16V (AP32 ONLY)	C4020	0880059	CAPACITOR P F 0.15MF 50V (AP32 ONLY)
C3064	0800015	CAPACITOR,EL 10MF 16V (AP32 ONLY)	C4021	0800009	CAPACITOR EL 4.7MF 25V (AP32 ONLY)
C3065	0800015	CAPACITOR,ELECTROLYTIC 10MF 16V	C4022	0800003	CAPACITOR EL 1MF 50V (AP32 ONLY)
C3066	0800015	CAPACITOR,ELECTROLYTIC 10MF 16V	C4023	0880059	CAPACITOR PF 0.15MF 50V (AP32 ONLY)
C3067	0800041	CAPACITOR EL 47MF 16V (AP32 ONLY)	C4024	0800003	CAPACITOR EL 1MF 50V (AP32 ONLY)
C3068	0800041	CAPACITOR ELECTROLYTIC 47MF 16V	C4025	0880059	CAPACITOR PF 0.15MF 50V (AP32 ONLY)
C3504	0800049	CAPACITOR,ELECTROLYTIC 100MF 16V	C4026	0800041	CAPACITOR EL 47MF 16V (AP32 ONLY)
C3505	0244171	CD 0.01MF +80-20% 50V	C403	0800003	CAPACITOR ELECTROLYTIC 1MF 50V
C3508	0800015	CAPACITOR,ELECTROLYTIC 10MF 16V	C4038	0800015	CAPACITOR,ELECTROLYTIC 10MF 16V
C3509	0800015	CAPACITOR,ELECTROLYTIC 10MF 16V	C4039	0800074	CAPACITOR ELECTROLYTIC 470MF 16V
C3513	0890113	CAPACITOR CERAMIC DISCAL 9PF +-0.5% 50V	C404	0800003	CAPACITOR ELECTROLYTIC 1MF 50V
C3514	0890113	CAPACITOR CERAMIC DISCAL 9PF +-0.5% 50V	C4040	0880044	CAPACITOR POLYESTER FILM 0.01MF +-10% 50V
C3515	0244171	CD 0.01MF +80-20% 50V	C4041	0253943	EL 0.33MF 50V
C3516	0244171	CD 0.01MF +80-20% 50V	C4042	0800041	CAPACITOR ELECTROLYTIC 47MF 16V
C3517	0244171	CD 0.01MF +80-20% 50V	C4043	0800003	CAPACITOR ELECTROLYTIC 1MF 50V
C3518	0244171	CD 0.01MF +80-20% 50V	C4044	0253943	EL 0.33MF 50V
C3519	0800003	CAPACITOR ELECTROLYTIC 1MF 50V	C4045	0880044	CAPACITOR POLYESTER FILM 0.01MF +-10% 50V
C3520	0800003	CAPACITOR ELECTROLYTIC 1MF 50V	C4046	0800015	CAPACITOR,ELECTROLYTIC 10MF 16V
C3521	0800015	CAPACITOR,ELECTROLYTIC 10MF 16V	C4047	0800049	CAPACITOR,EL 100MF 16V (AP32 ONLY)
C3522	0800003	CAPACITOR ELECTROLYTIC 1MF 50V	C4048	0800049	CAPACITOR,EL 100MF 16V (AP32 ONLY)
C3523	0800015	CAPACITOR,ELECTROLYTIC 10MF 16V	C405	0244105	CD 2200PF +-10% 50V
C3524	0800015	CAPACITOR,ELECTROLYTIC 10MF 16V	C4054	0800015	CAPACITOR,EL 10MF 16V (AP32 ONLY)
C3525	0244171	CD 0.01MF +80-20% 50V	C4055	0800015	CAPACITOR,EL 10MF 16V (AP32 ONLY)
C3526	0244171	CD 0.01MF +80-20% 50V	C4056	0890069	CAPACITOR,CERAMIC DISCAL 47PF +-5% 50V
C3527	0244171	CD 0.01MF +80-20% 50V	C4057	0890069	CAPACITOR,CERAMIC DISCAL 47PF +-5% 50V
C3528	0244171	CD 0.01MF +80-20% 50V	C4058	0800048	CAPACITOR ELECTROLYTIC 100MF 10V
C3530	0800023	CAPACITOR ELECTROLYTIC 22MF 16V	C4059	0292712	TA 3.3MF 16V
C3531	0800015	CAPACITOR,ELECTROLYTIC 10MF 16V	C406	0244105	CD 2200PF +-10% 50V
C3532	0800015	CAPACITOR,ELECTROLYTIC 10MF 16V	C4060	0880057	CAPACITOR POLYESTER FILM 0.1MF +-10% 50V
C3534	0244171	CD 0.01MF +80-20% 50V	C4061	0800041	CAPACITOR ELECTROLYTIC 47MF 16V
C3536	0890087	CAPACITOR CERAMIC DISCAL 1000PF +-10% 50V	C4062	0800009	CAPACITOR ELECTROLYTIC 4.7MF 25V
C3537	0800015	CAPACITOR,ELECTROLYTIC 10MF 16V	C4063	0800009	CAPACITOR ELECTROLYTIC 4.7MF 25V
C3538	0880057	CAPACITOR POLYESTER FILM 0.1MF +-10% 50V	C4066	0800015	CAPACITOR,ELECTROLYTIC 10MF 16V
C3539	0890075	CAPACITOR CERAMIC DISCAL 120PF 50V +-5%	C4067	0800015	CAPACITOR,ELECTROLYTIC 10MF 16V
C3540	0800049	CAPACITOR,ELECTROLYTIC 100MF 16V	C4068	0800015	CAPACITOR,ELECTROLYTIC 10MF 16V
C4001	0800009	CAPACITOR ELECTROLYTIC 4.7MF 25V	C4069	0800015	CAPACITOR,ELECTROLYTIC 10MF 16V
C4002	0880057	CAPACITOR POLYESTER FILM 0.1MF +-10% 50V	C4071	0800074	CAPACITOR ELECTROLYTIC 470MF 16V
C4003	0880044	CAPACITOR POLYESTER FILM 0.01MF +-10% 50V	C4072	0800015	CAPACITOR,EL 10MF 16V (AP32 ONLY)
C4004	0800001	CAPACITOR ELECTROLYTIC 0.47MF 50V	C4073	0800015	CAPACITOR,EL 10MF 16V (AP32 ONLY)
C4005	0800074	CAPACITOR ELECTROLYTIC 470MF 16V	C4075	0800015	CAPACITOR,ELECTROLYTIC 10MF 16V
C4006	0800001	CAPACITOR ELECTROLYTIC 0.47MF 50V	C4077	0800015	CAPACITOR,ELECTROLYTIC 10MF 16V
C4007	0800001	CAPACITOR ELECTROLYTIC 0.47MF 50V	C408	0800051	CAPACITOR ELECTROLYTIC 100MF 25V
C4008	0800009	CAPACITOR ELECTROLYTIC 4.7MF 25V	C409	0800042	CAPACITOR ELECTROLYTIC 47MF 25V
C4009	0800001	CAPACITOR ELECTROLYTIC 0.47MF 50V	C412	0800042	CAPACITOR ELECTROLYTIC 47MF 25V
C4010	0800005	CAPACITOR,ELECTROLYTIC 2.2MF 50V	C414	0880057	CAPACITOR POLYESTER FILM 0.1MF +-10% 50V
C4011	0800007	CAPACITOR,ELECTROLYTIC 3.3MF 50V	C416	0880057	CAPACITOR POLYESTER FILM 0.1MF +-10% 50V
C4012	0800001	CAPACITOR ELECTROLYTIC 0.47MF 50V	C417	0800084	CAPACITOR ELECTROLYTIC 1000MF 35V
C4013	0800001	CAPACITOR ELECTROLYTIC 0.47MF 50V	C418	0258192	EL 2200MF 25V
C4014	0292714	TA 10MF +-10% 16V	C420	0258192	EL 2200MF 25V
C4015	0800015	CAPACITOR,ELECTROLYTIC 10MF 16V	C421	0880062	CAPACITOR POLYESTER FILM 0.22MF +-10% 50V
C4016	0800009	CAPACITOR EL 4.7MF 25V (AP32 ONLY)	C422	0800042	CAPACITOR ELECTROLYTIC 47MF 25V
C4017	0800003	CAPACITOR EL 1MF 50V (AP32 ONLY)	C424	0800051	CAPACITOR ELECTROLYTIC 100MF 25V
C4018	0880059	CAPACITOR PF 0.15MF 50V (AP32 ONLY)	C425	0244171	CD 0.01MF +80-20% 50V
C4019	0800003	CAPACITOR EL 1MF 50V (AP32 ONLY)	C427	0800087	CAPACITOR ELECTROLYTIC 2200MF 16V

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C428	0800087	CAPACITOR ELECTROLYTIC 2200MF 16V	C604	0800023	CAPACITOR ELECTROLYTIC 22MF 16V
C430	0800003	CAPACITOR ELECTROLYTIC 1MF 50V	C605	0284647	EL 22MF 16V
C434	0800003	CAPACITOR ELECTROLYTIC 1MF 50V	C606	0800003	CAPACITOR ELECTROLYTIC 1MF 50V
C435	0800015	CAPACITOR,ELECTROLYTIC 10MF 16V	C608	0284446	EL 1MF 50V
C436	0800003	CAPACITOR ELECTROLYTIC 1MF 50V	C609	0284446	EL 1MF 50V
C437	0880057	CAPACITOR POLYESTER FILM 0.1MF +-10% 50V	C610	0880062	CAPACITOR POLYESTER FILM 0.22MF +-10% 50V
C5001	0800049	CAPACITOR,ELECTROLYTIC 100MF 16V	C611	0800041	CAPACITOR ELECTROLYTIC 47MF 16V
C5002	0800015	CAPACITOR,ELECTROLYTIC 10MF 16V	C612	0284647	EL 22MF 16V
C5003	0800049	CAPACITOR,ELECTROLYTIC 100MF 16V	C613	0244109	CD 4700PF +-10% 50V
C5004	0890122	CAPACITOR CERAMIC DISCAL 39PF +-5% 50V	C620	0800003	CAPACITOR ELECTROLYTIC 1MF 50V
C5005	0880044	CAPACITOR POLYESTER FILM 0.01MF +-10% 50V	C621	0284449	EL 4.7MF 50V
C5006	0246462	CD 82PF +-10% 50V	C630	0800015	CAPACITOR,ELECTROLYTIC 10MF 16V
C5007	0244171	CD 0.01MF +-80-20% 50V	C631	0880062	CAPACITOR POLYESTER FILM 0.22MF +-10% 50V
C5008	0800049	CAPACITOR,ELECTROLYTIC 100MF 16V	C632	0800015	CAPACITOR,ELECTROLYTIC 10MF 16V
C5009	0800049	CAPACITOR,ELECTROLYTIC 100MF 16V	C633	0800015	CAPACITOR,ELECTROLYTIC 10MF 16V
C5010	0800041	CAPACITOR ELECTROLYTIC 47MF 16V	C651	0279859	PF 0.1MF +-10% 100V
C5503	0244171	CD 0.01MF +-80-20% 50V	C652	0880051	CAPACITOR PF 0.033MF +-10% 50V
C5504	0246448	CD 22PF +-5% 50V	C653	0880044	CAPACITOR POLYESTER FILM 0.01MF +-10% 50V
C5505	0800009	CAPACITOR ELECTROLYTIC 4.7MF 25V	C654	0800069	CAPACITOR,ELECTROLYTIC 330MF 50V
C5506	0800049	CAPACITOR,ELECTROLYTIC 100MF 16V	C655	0252969	EL 2200MF 25V
C5507	0244171	CD 0.01MF +-80-20% 50V	C656	0800069	CAPACITOR,ELECTROLYTIC 330MF 50V
C5508	0800049	CAPACITOR,ELECTROLYTIC 100MF 16V	C658	0800049	CAPACITOR,ELECTROLYTIC 100MF 16V
C5510	0800049	CAPACITOR,ELECTROLYTIC 100MF 16V	C659	0284446	EL 1MF 50V
C5511	0800003	CAPACITOR EL 1MF 50V (AP32 ONLY)	 C660	0298261	TA 1MF +-10% 35V
C5512	0800003	CAPACITOR EL 1MF 50V (AP32 ONLY)	C664	0800067	CAPACITOR,ELECTROLYTIC 330MF 25V
C5513	0800003	CAPACITOR EL 1MF 50V (AP32 ONLY)	C665	0800015	CAPACITOR,ELECTROLYTIC 10MF 16V
C5514	0244171	CD 0.01MF +-80-20% 50V	C668	0880044	CAPACITOR POLYESTER FILM 0.01MF +-10% 50V
C5515	0244171	CD 0.01MF +-80-20% 50V	C669	0800043	CAPACITOR ELECTROLYTIC 47MF 35V
C5516	0890116	CAPACITOR CERAMIC DISCAL 15PF +-5% 50V	C701	0880044	CAPACITOR POLYESTER FILM 0.01MF +-10% 50V
C5517	0800001	CAPACITOR ELECTROLYTIC 0.47MF 50V	C711	0299926	PP 0.1MF +-10% 200V
C5518	0244171	CD 0.01MF +-80-20% 50V	C713	0244501	CD 1000PF +-10% 500V
C5519	0244171	CD 0.01MF +-80-20% 50V	C714	0243507	CD 330PF +-10% 500V
C5520	0244171	CD 0.01MF +-80-20% 50V	C715	0890028	CAPACITOR CERAMIC DISCAL 330PF +-10% 50V
C5521	0244171	CD 0.01MF +-80-20% 50V	 C716	0299931	PP 0.27MF +-10% 200V
C5522	0244171	CD 0.01MF +-80-20% 50V	 C717	0262426	PP 9100PF +-5% 1.8KV
C5523	0244171	CD 0.01MF +-80-20% 50V	 C718	0262415	PP 3600PF +-5% 1.8KV
C5524	0244171	CD 0.01MF +-80-20% 50V	 C719	0299929	PP 0.18MF +-10% 200V
C5525	0800015	CAPACITOR,ELECTROLYTIC 10MF 16V	 C720	0299929	PP 0.18MF +-10% 200V
C5526	0244107	CD 3300PF +-10% 50V	 C721	0299918	PP 0.022MF +-10% 200V
C5527	0244171	CD 0.01MF +-80-20% 50V	C722	0259473	EL 6.8MF 25V
C5529	0800003	CAPACITOR ELECTROLYTIC 1MF 50V	 C723	0244211	CD 1000PF +-10% 2KV
C5530	0890079	CAPACITOR,CERAMIC DISCAL 270PF +-10% 50V	C724	0259153	EL 220MF 160V
C5531	0890087	CAPACITOR CERAMIC DISCAL 1000PF +-10% 50V	C726	0284634	EL 4.7MF 50V
C5533	0880047	CAPACITOR PF 0.018MF +-10% 50V	C727	0244504	CD 1800PF +-10% 500V
C5535	0800005	CAPACITOR,ELECTROLYTIC 2.2MF 50V	C729	0253983	EL 33MF
C5536	0800003	CAPACITOR ELECTROLYTIC 1MF 50V	C731	0800053	CAPACITOR ELECTROLYTIC 100MF 50V
C5538	0800049	CAPACITOR,ELECTROLYTIC 100MF 16V	C732	0299636	PP 0.068MF +-5% 1600V
C5539	0244171	CD 0.01MF +-80-20% 50V	C738	0243510	CD 560PF +-10% 500V
C5540	0800003	CAPACITOR ELECTROLYTIC 1MF 50V	C739	0800018	CAPACITOR ELECTROLYTIC 10MF 50V
C5545	0880057	CAPACITOR PF 0.1MF +-10% 50V (AP32 ONLY)	C743	0800003	CAPACITOR ELECTROLYTIC 1MF 50V
C5546	0800049	CAPACITOR,ELECTROLYTIC 100MF 16V	C744	0880048	CAPACITOR PF 0.022MF +-10% 50V
C5547	0244171	CD 0.01MF +-80-20% 50V	C745	0880057	CAPACITOR POLYESTER FILM 0.1MF +-10% 50V
C5548	0800058	CAPACITOR ELECTROLYTIC 220MF 16V	C750	0890087	CAPACITOR CERAMIC DISCAL 1000PF +-10% 50V
C5549	0880057	CAPACITOR PF 0.1MF +-10% 50V (AP32 ONLY)	C752	0890084	CAPACITOR CERAMIC DISCAL 560PF +-10% 50V

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SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
C753	0880051	CAPACITOR PF 0.033MF +-10% 50V	C933	0800049	CAPACITOR,ELECTROLYTIC 100MF 16V
C755	0244109	CD 4700PF +-10% 50V	C942	0880044	CAPACITOR POLYESTER FILM 0.01MF +-10% 50V
C760	0243503	CD 150PF +-10% 500V	C943	0244105	CD 2200PF +-10% 50V
C763	0890089	CAPACITOR CERAMIC DISCAL 1500PF +-10% 50V	C944	0258178	EL 470MF,63V
C770	0890082	CAPACITOR CERAMIC DISCAL 390PF +-10% 50V	C945	0284439	EL 470MF 35V
C771	0880044	CAPACITOR POLYESTER FILM 0.01MF +-10% 50V	C947	0800043	CAPACITOR ELECTROLYTIC 47MF 35V
C772	0800015	CAPACITOR,ELECTROLYTIC 10MF 16V	C948	0800043	CAPACITOR ELECTROLYTIC 47MF 35V
C773	0284642	EL 10MF 50V	C949	0258178	EL 470MF,63V
C775	0880041	CAPACITOR POLYESTER FILM 5600PF +-10% 50V	C950	0284439	EL 470MF 35V
C776	0890083	CAPACITOR CERAMIC DISCAL 470PF +-10% 50V	C952	0880057	CAPACITOR POLYESTER FILM 0.1MF +-10% 50V
C781	0800041	CAPACITOR ELECTROLYTIC 47MF 16V	C953	0880057	CAPACITOR POLYESTER FILM 0.1MF +-10% 50V
C790	0800074	CAPACITOR ELECTROLYTIC 470MF 16V	C954	0800042	CAPACITOR ELECTROLYTIC 47MF 25V
C791	0800074	CAPACITOR ELECTROLYTIC 470MF 16V	C956	0258175	EL 470MF 31.5V
C792	0252396	EL 10MF 16V	C957	0258179	EL 1000MF,6
C793	0800015	CAPACITOR,ELECTROLYTIC 10MF 16V	C958	0258175	EL 470MF 31.5V
C794	0244109	CD 4700PF +-10% 50V	C959	0800044	CAPACITOR ELECTROLYTIC 47MF 50V
C795	0284449	EL 4.7MF 50V	C960	0880057	CAPACITOR POLYESTER FILM 0.1MF +-10% 50V
C796	0800041	CAPACITOR ELECTROLYTIC 47MF 16V	C981	0880057	CAPACITOR POLYESTER FILM 0.1MF +-10% 50V
C797	0800049	CAPACITOR,ELECTROLYTIC 100MF 16V	C982	0800018	CAPACITOR ELECTROLYTIC 10MF 50V
C801G	0257543	EL 3.3MF 315V	C983	0800044	CAPACITOR ELECTROLYTIC 47MF 50V
C804B	0244889	CD 2200PF +-10% 2KV	C984	0258697	EL 470MF 160V
C804G	0244889	CD 2200PF +-10% 2KV	C985	0800041	CAPACITOR ELECTROLYTIC 47MF 16V
C804R	0244889	CD 2200PF +-10% 2KV	C986	0800023	CAPACITOR ELECTROLYTIC 22MF 16V
C805B	0800326	CAPACITOR ELECTROLYTIC 100MF 16V	C987	0800003	CAPACITOR ELECTROLYTIC 1MF 50V
C805G	0800326	CAPACITOR ELECTROLYTIC 100MF 16V	C989	0800003	CAPACITOR ELECTROLYTIC 1MF 50V
C805R	0800326	CAPACITOR ELECTROLYTIC 100MF 16V	C990	0800082	CAPACITOR ELECTROLYTIC 1000MF 16V
C806B	0244501	CD 1000PF +-10% 500V	C991	0258121	EL 2.2MF 100V
C807B	0244105	CD 2200PF +-10% 50V	C992	0880044	CAPACITOR POLYESTER FILM 0.01MF +-10% 50V
C807G	0244105	CD 2200PF +-10% 50V	C994	0800079	CAPACITOR ELECTROLYTIC 1000MF 6.3V
C807R	0244105	CD 2200PF +-10% 50V			
C808B	0244120	CD 820PF +-10% 50V			
C808G	0244102	CD 1200PF +-10% 50V			
C808R	0244139	CD 1000PF +-10% 50V	R0001	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
C809B	0244227	CD 100PF +-10% 50V	R0002	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
⚠ C901	0279718	PF 0.1MF +-10% 125V	R0003	0700058	RESISTOR,CARBON FILM 22K OHM +-5% 1/16W
⚠ C902	0279718	PF 0.1MF +-10% 125V	R0004	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
⚠ C903	0248593	CD 4700PF +80-20% 250V	R0005	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
⚠ C904	0248593	CD 4700PF +80-20% 250V	R0006	0700049	RESISTOR,CARBON FILM 4.7K OHM +-5% 1/16W
⚠ C905	0248593	CD 4700PF +80-20% 250V	R0008	0700055	RESISTOR,CARBON FILM 12K OHM +-5% 1/16W
⚠ C906	0248593	CD 4700PF +80-20% 250V	R0009	0700055	RESISTOR,CARBON FILM 12K OHM +-5% 1/16W
C907	0259167	EL 820MF 200V	R0010	0700055	RESISTOR,CARBON FILM 12K OHM +-5% 1/16W
C908	0259167	EL 820MF 200V	R0011	0700056	RESISTOR,CARBON FILM 15K OHM +-5% 1/16W
⚠ C909	0249486	CD 2200PF +-20%	R0015	0700051	RESISTOR,CARBON FILM 5.6K OHM +-5% 1/16W
C911	0890087	CAPACITOR CERAMIC DISCAL 1000PF +-10% 50V	R0016	0700051	RESISTOR,CARBON FILM 5.6K OHM +-5% 1/16W
C912	0800061	CAPACITOR ELECTROLYTIC 220MF 35V	R0017	0700049	RESISTOR,CARBON FILM 4.7K OHM +-5% 1/16W
C913	0880044	CAPACITOR POLYESTER FILM 0.01MF +-10% 50V	R0018	0700053	RESISTOR,CARBON FILM 8.2K OHM +-5% 1/16W
C914	0880035	CAPACITOR POLYESTER FILM 2200PF +-10% 50V	R0019	0700055	RESISTOR,CARBON FILM 12K OHM +-5% 1/16W
C915	0880044	CAPACITOR POLYESTER FILM 0.01MF +-10% 50V	R0031	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
C916	0299981	PP 0.01MF +-5% 630V	R0032	0700067	RESISTOR,CARBON FILM 100K OHM +-5% 1/16W
C917	0880031	CAPACITOR POLYESTER FILM 1000PF +-10% 50V	R0033	0700027	RESISTOR,CARBON FILM 100 OHM +-5% 1/16W
C918	0800009	CAPACITOR ELECTROLYTIC 4.7MF 25V	R0034	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
⚠ C920	0249487	CD 3300PF +-20%	R0035	0700067	RESISTOR,CARBON FILM 100K OHM +-5% 1/16W
C931	0800075	CAPACITOR ELECTROLYTIC 470MF 25V	R0036	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
C932	0800015	CAPACITOR,ELECTROLYTIC 10MF 16V	R0037	0700067	RESISTOR,CARBON FILM 100K OHM +-5% 1/16W

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SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
R0038	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R0097	0700058	RESISTOR,CARBON FILM 22K OHM +-5% 1/16W
R0039	0700058	RESISTOR,CARBON FILM 22K OHM +-5% 1/16W	R0098	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R0040	0700067	RESISTOR,CARBON FILM 100K OHM +-5% 1/16W	R0099	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R0041	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R0100	0700045	RESISTOR,CARBON FILM 2.2K OHM +-5% 1/16W
R0042	0700067	RESISTOR,CARBON FILM 100K OHM +-5% 1/16W	R0101	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R0043	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R0102	0700058	RESISTOR,CARBON FILM 22K OHM +-5% 1/16W
R0044	0700067	RESISTOR,CARBON FILM 100K OHM +-5% 1/16W	R0103	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R0045	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R0104	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R0046	0700067	RESISTOR,CARBON FILM 100K OHM +-5% 1/16W	R0105	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R0047	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R0106	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R0048	0700067	RESISTOR,CARBON FILM 100K OHM +-5% 1/16W	R0107	0700051	RESISTOR,CARBON FILM 5.6K OHM +-5% 1/16W
R0049	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R0108	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R0050	0700067	RESISTOR,CARBON FILM 100K OHM +-5% 1/16W	R0109	0700051	RESISTOR,CARBON FILM 5.6K OHM +-5% 1/16W
R0051	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R0110	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R0052	0700067	RESISTOR,CARBON FILM 100K OHM +-5% 1/16W	R0111	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R0053	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R0112	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R0054	0700049	RESISTOR,CARBON FILM 4.7K OHM +-5% 1/16W	R0113	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R0055	0700045	RESISTOR,CARBON FILM 2.2K OHM +-5% 1/16W	R0114	0700058	RESISTOR,CARBON FILM 22K OHM +-5% 1/16W
R0056	0700051	RESISTOR,CARBON FILM 5.6K OHM +-5% 1/16W	R0115	0700058	RESISTOR,CARBON FILM 22K OHM +-5% 1/16W
R0057	0700064	RESISTOR,CARBON FILM 56K OHM +-5% 1/16W	R0116	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R0059	0700049	RESISTOR,CARBON FILM 4.7K OHM +-5% 1/16W	R0117	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R0060	0700049	RESISTOR,CARBON FILM 4.7K OHM +-5% 1/16W	R0118	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R0061	0700058	RESISTOR,CARBON FILM 22K OHM +-5% 1/16W	R0120	0700027	RESISTOR,CARBON FILM 100 OHM +-5% 1/16W
R0062	0700067	RESISTOR,CARBON FILM 100K OHM +-5% 1/16W	R0121	0700027	RESISTOR,CARBON FILM 100 OHM +-5% 1/16W
R0063	0700031	RESISTOR,CARBON FILM 180 OHM +-5% 1/16W	R0122	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R0064	0700066	RESISTOR,CARBON FILM 82K OHM +-5% 1/16W	R0123	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R0065	0700064	RESISTOR,CARBON FILM 56K OHM +-5% 1/16W	R0124	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R0067	0700066	RESISTOR,CARBON FILM 82K OHM +-5% 1/16W	R0125	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R0068	0700063	RESISTOR,CARBON FILM 47K OHM +-5% 1/16W	R0126	0700065	RESISTOR,CARBON FILM 68K OHM +-5% 1/16W
R0069	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W	R0127	0119635	MF 15K OHM +-1% 1/8W
R0070	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R0128	0700034	RESISTOR,CARBON FILM 330 OHM +-5% 1/16W
R0071	0700058	RESISTOR,CARBON FILM 22K OHM +-5% 1/16W	R0129	0700037	RESISTOR,CARBON FILM 560 OHM +-5% 1/16W
R0073	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R0130	0700057	RESISTOR,CARBON FILM 18K OHM +-5% 1/16W
R0074	0700067	RESISTOR,CARBON FILM 100K OHM +-5% 1/16W	R0131	0700027	RESISTOR,CARBON FILM 100 OHM +-5% 1/16W
R0075	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R0132	0700022	RESISTOR,CARBON FILM 39 OHM +-5% 1/16W
R0076	0700067	RESISTOR,CARBON FILM 100K OHM +-5% 1/16W	R0133	0100065	CF 1K OHM +-5% 1/8W
R0077	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R0136	0700064	RESISTOR,CARBON FILM 56K OHM +-5% 1/16W
R0078	0700067	RESISTOR,CARBON FILM 100K OHM +-5% 1/16W	R0137	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R0079	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R0138	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R0081	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R0139	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R0082	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R0140	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R0083	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R0141	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W
R0084	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R0146	0100053	CF 330 OHM +-5% 1/8W
R0086	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R0151	0100067	CF 1.2K OHM +-5% 1/8W
R0087	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R0152	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R0088	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R0153	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R0089	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R0154	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R0090	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R0155	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R0091	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R0159	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R0092	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R0161	0700056	RESISTOR,CARBON FILM 15K OHM +-5% 1/16W
R0093	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R0162	0700051	RESISTOR,CARBON FILM 5.6K OHM +-5% 1/16W
R0094	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R0163	0700056	RESISTOR,CARBON FILM 15K OHM +-5% 1/16W
R0095	0700041	RESISTOR,CF 1K OHM +-5% 1/16W (AP32 ONLY)	R0164	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W
R0096	0700049	RESISTOR,CARBON FILM 4.7K OHM +-5% 1/16W	R0165	0700061	RESISTOR,CARBON FILM 33K OHM +-5% 1/16W

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R0166	0700066	RESISTOR,CARBON FILM 82K OHM +-5% 1/16W	R0518	0187074	CF 2.4K OHM +-5% 1/16W
R0167	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W	R0519	0187080	CF 4.3K OHM +-5% 1/16W
R0168	0100065	CF 1K OHM +-5% 1/8W	R0520	0100065	CF 1K OHM +-5% 1/8W
R0169	0700064	RESISTOR,CARBON FILM 56K OHM +-5% 1/16W	R0521	0114149	CF 560 OHM +-5% 1/4W
R0170	0100097	CF 22K OHM +-5% 1/8W	R0530	0100115	CF 120K OHM +-5% 1/8W
R0171	0100066	CF 1.1K OHM +-5% 1/8W	R0531	0700046	RESISTOR,CARBON FILM 2.7K OHM +-5% 1/16W
R0172	0100041	CF 100 OHM +-5% 1/8W	R0532	0700052	RESISTOR,CARBON FILM 6.8K OHM +-5% 1/16W
R0173	0100065	CF 1K OHM +-5% 1/8W	R0533	0700044	RESISTOR,CARBON FILM 1.8K OHM +-5% 1/16W
R0174	0100065	CF 1K OHM +-5% 1/8W	R0536	0700057	RESISTOR,CARBON FILM 18K OHM +-5% 1/16W
R0180	0100065	CF 1K OHM +-5% 1/8W	R0537	0100121	CF 220K OHM +-5% 1/8W
R0182	0700022	RESISTOR CARBON FILM 39 OHM +-5% 1/16W	R0538	0700061	RESISTOR,CARBON FILM 33K OHM +-5% 1/16W
R0186	0700051	RESISTOR,CARBON FILM 5.6K OHM +-5% 1/16W	R0539	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R0187	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R0968	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W
R0188	0150287	VR 10K OHM-B	R1101	0700063	RESISTOR CARBON FILM 47K OHM +-5% 1/16W
R0189	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W	R1102	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W
R0190	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W	R1103	0700058	RESISTOR,CARBON FILM 22K OHM +-5% 1/16W
R0191	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W	R1104	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R0192	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W	R1301	0700063	RESISTOR CARBON FILM 47K OHM +-5% 1/16W
R0193	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W	R1302	0110229	MF 220 OHM +-5% 2W
R0194	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W	R1303	0113696	CF 6.8 OHM +-5% 1/2W
R0195	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W	R1304	0113696	CF 6.8 OHM +-5% 1/2W
R0196	0700058	RESISTOR,CARBON FILM 22K OHM +-5% 1/16W	R1306	0100077	CF 3.3K OHM +-5% 1/8W
R0197	0700058	RESISTOR,CARBON FILM 22K OHM +-5% 1/16W	R1311	0700063	RESISTOR CARBON FILM 47K OHM +-5% 1/16W
R0198	0700058	RESISTOR,CARBON FILM 22K OHM +-5% 1/16W	R1312	0110225	MF 150 OHM +-5% 2W
R0199	0700058	RESISTOR,CARBON FILM 22K OHM +-5% 1/16W	R1313	0113692	CF 4.7 OHM +-5% 1/2W
R0200	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R1314	0113692	CF 4.7 OHM +-5% 1/2W
R0202	0700066	RESISTOR,CARBON FILM 82K OHM +-5% 1/16W	R1316	0100077	CF 3.3K OHM +-5% 1/8W
R0203	0187064	CF 910 OHM +-5% 1/16W	R1326	0700063	RESISTOR CARBON FILM 47K OHM +-5% 1/16W
R0204	0700061	RESISTOR,CARBON FILM 33K OHM +-5% 1/16W	R1327	0110229	MF 220 OHM +-5% 2W
R0205	0700061	RESISTOR,CARBON FILM 33K OHM +-5% 1/16W	R1328	0113696	CF 6.8 OHM +-5% 1/2W
R0206	0700061	RESISTOR,CARBON FILM 33K OHM +-5% 1/16W	R1329	0113696	CF 6.8 OHM +-5% 1/2W
R0207	0700063	RESISTOR CARBON FILM 47K OHM +-5% 1/16W	R1331	0100077	CF 3.3K OHM +-5% 1/8W
R0211	0700058	RESISTOR,CARBON FILM 22K OHM +-5% 1/16W	R1336	0700063	RESISTOR CARBON FILM 47K OHM +-5% 1/16W
R0212	0700058	RESISTOR,CARBON FILM 22K OHM +-5% 1/16W	R1337	0110225	MF 150 OHM +-5% 2W
R0213	0700049	RESISTOR,CARBON FILM 4.7K OHM +-5% 1/16W	R1338	0113698	CF 8.2 OHM +-5% 1/2W
R0214	0114149	CF 560 OHM +-5% 1/4W	R1339	0113698	CF 8.2 OHM +-5% 1/2W
R0215	0700058	RESISTOR,CARBON FILM 22K OHM +-5% 1/16W	R1341	0100077	CF 3.3K OHM +-5% 1/8W
R0216	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W	R1351	0700063	RESISTOR CARBON FILM 47K OHM +-5% 1/16W
R0220	0700055	RESISTOR,CARBON FILM 12K OHM +-5% 1/16W	R1352	0110229	MF 220 OHM +-5% 2W
R0223	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R1353	0113696	CF 6.8 OHM +-5% 1/2W
R0225	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W	R1354	0113696	CF 6.8 OHM +-5% 1/2W
R0229	0100121	CF 220K OHM +-5% 1/8W	R1356	0100077	CF 3.3K OHM +-5% 1/8W
R0232	0700058	RESISTOR,CARBON FILM 22K OHM +-5% 1/16W	R1361	0700063	RESISTOR CARBON FILM 47K OHM +-5% 1/16W
R0233	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R1362	0110225	MF 150 OHM +-5% 2W
R0501	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R1363	0113692	CF 4.7 OHM +-5% 1/2W
R0502	0700058	RESISTOR,CARBON FILM 22K OHM +-5% 1/16W	R1364	0113692	CF 4.7 OHM +-5% 1/2W
R0503	0700045	RESISTOR,CARBON FILM 2.2K OHM +-5% 1/16W	R1366	0100077	CF 3.3K OHM +-5% 1/8W
R0504	0100065	CF 1K OHM +-5% 1/8W	R1370	0700032	RESISTOR,CARBON FILM 220 OHM +-5% 1/16W
R0510	0100125	CF 330K OHM +-5% 1/8W	R1371	0700032	RESISTOR,CARBON FILM 220 OHM +-5% 1/16W
R0511	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R1372	0700032	RESISTOR,CARBON FILM 220 OHM +-5% 1/16W
R0512	0100125	CF 330K OHM +-5% 1/8W	R1373	0700032	RESISTOR,CARBON FILM 220 OHM +-5% 1/16W
R0513	0100129	CF 470K OHM +-5% 1/8W	R1374	0700032	RESISTOR,CARBON FILM 220 OHM +-5% 1/16W
R0516	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R1375	0700032	RESISTOR,CARBON FILM 220 OHM +-5% 1/16W
R0517	0700043	RESISTOR,CARBON FILM 1.5K OHM +-5% 1/16W	R1376	0700032	RESISTOR,CARBON FILM 220 OHM +-5% 1/16W

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SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
R1377	0700032	RESISTOR,CARBON FILM 220 OHM +-5% 1/16W	R2126	0150136	VR 5K OHM-B
R1378	0700032	RESISTOR,CARBON FILM 220 OHM +-5% 1/16W	R2127	0150136	VR 5K OHM-B
R1379	0700032	RESISTOR,CARBON FILM 220 OHM +-5% 1/16W	R2128	0150136	VR 5K OHM-B
R1501	0700044	RESISTOR,CARBON FILM 1.8K OHM +-5% 1/16W	R2129	0150136	VR 5K OHM-B
R1503	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R2130	0150136	VR 5K OHM-B
R1504	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W	R2131	0150136	VR 5K OHM-B
R1505	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R2132	0150136	VR 5K OHM-B
R1507	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R2133	0150136	VR 5K OHM-B
R1508	0700051	RESISTOR,CARBON FILM 5.6K OHM +-5% 1/16W	R2134	0150136	VR 5K OHM-B
R1509	0700048	RESISTOR,CARBON FILM 3.9K OHM +-5% 1/16W	R2135	0150136	VR 5K OHM-B
R1510	0700051	RESISTOR,CARBON FILM 5.6K OHM +-5% 1/16W	R2136	0150136	VR 5K OHM-B
R1511	0700049	RESISTOR,CARBON FILM 4.7K OHM +-5% 1/16W	R2137	0150136	VR 5K OHM-B
R1512	0700051	RESISTOR,CARBON FILM 5.6K OHM +-5% 1/16W	R2138	0150136	VR 5K OHM-B
R1513	0700049	RESISTOR,CARBON FILM 4.7K OHM +-5% 1/16W	R2139	0150136	VR 5K OHM-B
R1514	0700051	RESISTOR,CARBON FILM 5.6K OHM +-5% 1/16W	R2140	0150136	VR 5K OHM-B
R1515	0700051	RESISTOR,CARBON FILM 5.6K OHM +-5% 1/16W	R2141	0150136	VR 5K OHM-B
R1516	0700057	RESISTOR,CARBON FILM 18K OHM +-5% 1/16W	R2142	0150136	VR 5K OHM-B
R1517	0700046	RESISTOR,CARBON FILM 2.7K OHM +-5% 1/16W	R2151	0700044	RESISTOR,CARBON FILM 1.8K OHM +-5% 1/16W
R1518	0700062	RESISTOR,CARBON FILM 39K OHM +-5% 1/16W	R2152	0700046	RESISTOR,CARBON FILM 2.7K OHM +-5% 1/16W
R1519	0700057	RESISTOR,CARBON FILM 18K OHM +-5% 1/16W	R2153	0700048	RESISTOR,CARBON FILM 3.9K OHM +-5% 1/16W
R1520	0700046	RESISTOR,CARBON FILM 2.7K OHM +-5% 1/16W	R2154	0187092	CF 13K OHM+-5% 1/16W
R1521	0700062	RESISTOR,CARBON FILM 39K OHM +-5% 1/16W	R2155	0700049	RESISTOR,CARBON FILM 4.7K OHM +-5% 1/16W
R1522	0700057	RESISTOR,CARBON FILM 18K OHM +-5% 1/16W	R2156	0700047	RESISTOR,CARBON FILM 3.3K OHM +-5% 1/16W
R1523	0700049	RESISTOR,CARBON FILM 4.7K OHM +-5% 1/16W	R2157	0700052	RESISTOR,CARBON FILM 6.8K OHM +-5% 1/16W
R1524	0700062	RESISTOR,CARBON FILM 39K OHM +-5% 1/16W	R2158	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W
R1525	0700057	RESISTOR,CARBON FILM 18K OHM +-5% 1/16W	R2162	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W
R1526	0700049	RESISTOR,CARBON FILM 4.7K OHM +-5% 1/16W	R2163	0100121	CF 220K OHM +-5% 1/8W
R1527	0700062	RESISTOR,CARBON FILM 39K OHM +-5% 1/16W	R2164	0114161	CF 1K OHM +-5% 1/4W
R1528	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W	R2165	0100087	CF 8.2K OHM +-5% 1/8W
R2101	0150136	VR 5K OHM-B	R2166	0187072	CF 2K OHM +-5% 1/16W
R2102	0150136	VR 5K OHM-B	R2167	0700049	RESISTOR,CARBON FILM 4.7K OHM +-5% 1/16W
R2103	0150136	VR 5K OHM-B	R2168	0187068	CF 1.3K OHM +-5% 1/16W
R2104	0150136	VR 5K OHM-B	R2169	0187080	CF 4.3K OHM +-5% 1/16W
R2105	0150136	VR 5K OHM-B	R2170	0700055	RESISTOR,CARBON FILM 12K OHM +-5% 1/16W
R2106	0150136	VR 5K OHM-B	R2171	0700047	RESISTOR,CARBON FILM 3.3K OHM +-5% 1/16W
R2107	0150136	VR 5K OHM-B	R2172	0700047	RESISTOR,CARBON FILM 3.3K OHM +-5% 1/16W
R2108	0150136	VR 5K OHM-B	R2173	0700065	RESISTOR CARBON FILM 68K OHM +-5% 1/16W
R2109	0150136	VR 5K OHM-B	R2174	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W
R2110	0150136	VR 5K OHM-B	R2175	0700047	RESISTOR,CARBON FILM 3.3K OHM +-5% 1/16W
R2111	0150136	VR 5K OHM-B	R2177	0700047	RESISTOR,CARBON FILM 3.3K OHM +-5% 1/16W
R2112	0150136	VR 5K OHM-B	R2178	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W
R2113	0150136	VR 5K OHM-B	R2179	0700047	RESISTOR,CARBON FILM 3.3K OHM +-5% 1/16W
R2114	0150136	VR 5K OHM-B	R2180	0700055	RESISTOR,CARBON FILM 12K OHM +-5% 1/16W
R2115	0150136	VR 5K OHM-B	R2182	0700051	RESISTOR,CARBON FILM 5.6K OHM +-5% 1/16W
R2116	0150136	VR 5K OHM-B	R2183	0150134	VR 1K OHM-B
R2117	0150136	VR 5K OHM-B	R2189	0700053	RESISTOR,CARBON FILM 8.2K OHM +-5% 1/16W
R2118	0150136	VR 5K OHM-B	R2190	0700057	RESISTOR,CARBON FILM 18K OHM +-5% 1/16W
R2119	0150136	VR 5K OHM-B	R2193	0150136	VR 5K OHM-B
R2120	0150136	VR 5K OHM-B	R2194	0150136	VR 5K OHM-B
R2121	0150136	VR 5K OHM-B	R2195	0150136	VR 5K OHM-B
R2122	0150136	VR 5K OHM-B	R2196	0150136	VR 5K OHM-B
R2123	0150136	VR 5K OHM-B	R2197	0700066	RESISTOR,CARBON FILM 82K OHM +-5% 1/16W
R2124	0150136	VR 5K OHM-B	R2199	0187104	CF 43K OHM +-5% 1/16W
R2125	0150136	VR 5K OHM-B	R2200	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W

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SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
R2201	0700052	RESISTOR,CARBON FILM 6.8K OHM +-5% 1/16W	R2264	0700047	RESISTOR,CARBON FILM 3.3K OHM +-5% 1/16W
R2205	0700067	RESISTOR,CARBON FILM 100K OHM +-5% 1/16W	R2265	0700058	RESISTOR,CARBON FILM 22K OHM +-5% 1/16W
R2206	0187098	CF 24K OHM +-5% 1/16W	R2266	0700046	RESISTOR,CARBON FILM 2.7K OHM +-5% 1/16W
R2208	0700049	RESISTOR,CARBON FILM 4.7K OHM +-5% 1/16W	R2267	0700053	RESISTOR,CARBON FILM 8.2K OHM +-5% 1/16W
R2209	0700049	RESISTOR,CARBON FILM 4.7K OHM +-5% 1/16W	R2268	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W
R2210	0700047	RESISTOR,CARBON FILM 3.3K OHM +-5% 1/16W	R2269	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W
R2211	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W	R2270	0700047	RESISTOR,CARBON FILM 3.3K OHM +-5% 1/16W
R2212	0700048	RESISTOR,CARBON FILM 3.9K OHM +-5% 1/16W	R2271	0700048	RESISTOR,CARBON FILM 3.9K OHM +-5% 1/16W
R2213	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R2272	0700063	RESISTOR CARBON FILM 47K OHM +-5% 1/16W
R2217	0700049	RESISTOR,CARBON FILM 4.7K OHM +-5% 1/16W	R2273	0700067	RESISTOR,CARBON FILM 100K OHM +-5% 1/16W
R2218	0700044	RESISTOR,CARBON FILM 1.8K OHM +-5% 1/16W	R2274	0700062	RESISTOR,CARBON FILM 39K OHM +-5% 1/16W
R2219	0700067	RESISTOR,CARBON FILM 100K OHM +-5% 1/16W	R2275	0700048	RESISTOR,CARBON FILM 3.9K OHM +-5% 1/16W
R2220	0114161	CF 1K OHM +-5% 1/4W	R2276	0700051	RESISTOR,CARBON FILM 5.6K OHM +-5% 1/16W
R2221	0700046	RESISTOR,CARBON FILM 2.7K OHM +-5% 1/16W	R2277	0700048	RESISTOR,CARBON FILM 3.9K OHM +-5% 1/16W
R2222	0700052	RESISTOR,CARBON FILM 6.8K OHM +-5% 1/16W	R2278	0700042	RESISTOR,CARBON FILM 1.2K OHM +-5% 1/16W
R2223	0700048	RESISTOR,CARBON FILM 3.9K OHM +-5% 1/16W	R2279	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R2224	0700048	RESISTOR,CARBON FILM 3.9K OHM +-5% 1/16W	R2280	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W
R2225	0187086	CF 7.5K OHM +-5% 1/16W	R2281	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W
R2226	0700048	RESISTOR,CARBON FILM 3.9K OHM +-5% 1/16W	R2282	0700046	RESISTOR,CARBON FILM 2.7K OHM +-5% 1/16W
R2227	0700051	RESISTOR,CARBON FILM 5.6K OHM +-5% 1/16W	R2283	0700048	RESISTOR,CARBON FILM 3.9K OHM +-5% 1/16W
R2228	0700045	RESISTOR,CARBON FILM 2.2K OHM +-5% 1/16W	R2284	0700052	RESISTOR,CARBON FILM 6.8K OHM +-5% 1/16W
R2229	0700043	RESISTOR,CARBON FILM 1.5K OHM +-5% 1/16W	R2285	0700045	RESISTOR,CARBON FILM 2.2K OHM +-5% 1/16W
R2230	0700056	RESISTOR,CARBON FILM 15K OHM +-5% 1/16W	R2286	0700052	RESISTOR,CARBON FILM 6.8K OHM +-5% 1/16W
R2231	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R2287	0700066	RESISTOR,CARBON FILM 82K OHM +-5% 1/16W
R2232	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W	R2288	0700045	RESISTOR,CARBON FILM 2.2K OHM +-5% 1/16W
R2233	0700044	RESISTOR,CARBON FILM 1.8K OHM +-5% 1/16W	R2289	0700052	RESISTOR,CARBON FILM 6.8K OHM +-5% 1/16W
R2234	0700045	RESISTOR,CARBON FILM 2.2K OHM +-5% 1/16W	R2290	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W
R2235	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W	R2291	0700027	RESISTOR,CARBON FILM 100 OHM +-5% 1/16W
R2236	0700049	RESISTOR,CARBON FILM 4.7K OHM +-5% 1/16W	R2292	0700047	RESISTOR,CARBON FILM 3.3K OHM +-5% 1/16W
R2237	0700045	RESISTOR,CARBON FILM 2.2K OHM +-5% 1/16W	R2293	0700046	RESISTOR,CARBON FILM 2.7K OHM +-5% 1/16W
R2238	0700066	RESISTOR,CARBON FILM 82K OHM +-5% 1/16W	R2294	0700049	RESISTOR,CARBON FILM 4.7K OHM +-5% 1/16W
R2239	0700048	RESISTOR,CARBON FILM 3.9K OHM +-5% 1/16W	R2295	0700063	RESISTOR CARBON FILM 47K OHM +-5% 1/16W
R2240	0700052	RESISTOR,CARBON FILM 6.8K OHM +-5% 1/16W	R2298	0700042	RESISTOR,CARBON FILM 1.2K OHM +-5% 1/16W
R2241	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W	R2299	0700049	RESISTOR,CARBON FILM 4.7K OHM +-5% 1/16W
R2242	0700061	RESISTOR,CARBON FILM 33K OHM +-5% 1/16W	R2300	0700051	RESISTOR,CARBON FILM 5.6K OHM +-5% 1/16W
R2243	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R2301	0700042	RESISTOR,CARBON FILM 1.2K OHM +-5% 1/16W
R2244	0700047	RESISTOR,CARBON FILM 3.3K OHM +-5% 1/16W	R2302	0700046	RESISTOR,CARBON FILM 2.7K OHM +-5% 1/16W
R2245	0700051	RESISTOR,CARBON FILM 5.6K OHM +-5% 1/16W	R2303	0700052	RESISTOR,CARBON FILM 6.8K OHM +-5% 1/16W
R2246	0700046	RESISTOR,CARBON FILM 2.7K OHM +-5% 1/16W	R2304	0700045	RESISTOR,CARBON FILM 2.2K OHM +-5% 1/16W
R2247	0700063	RESISTOR CARBON FILM 47K OHM +-5% 1/16W	R2305	0700048	RESISTOR,CARBON FILM 3.9K OHM +-5% 1/16W
R2250	0700067	RESISTOR,CARBON FILM 100K OHM +-5% 1/16W	R2306	0700049	RESISTOR,CARBON FILM 4.7K OHM +-5% 1/16W
R2251	0700058	RESISTOR,CARBON FILM 22K OHM +-5% 1/16W	R2307	0700067	RESISTOR,CARBON FILM 100K OHM +-5% 1/16W
R2252	0700061	RESISTOR,CARBON FILM 33K OHM +-5% 1/16W	R2308	0700049	RESISTOR,CARBON FILM 4.7K OHM +-5% 1/16W
R2253	0700042	RESISTOR,CARBON FILM 1.2K OHM +-5% 1/16W	R2309	0700044	RESISTOR,CARBON FILM 1.8K OHM +-5% 1/16W
R2254	0700049	RESISTOR,CARBON FILM 4.7K OHM +-5% 1/16W	R2310	0700052	RESISTOR,CARBON FILM 6.8K OHM +-5% 1/16W
R2255	0700051	RESISTOR,CARBON FILM 5.6K OHM +-5% 1/16W	R2311	0700058	RESISTOR,CARBON FILM 22K OHM +-5% 1/16W
R2256	0700042	RESISTOR,CARBON FILM 1.2K OHM +-5% 1/16W	R2312	0700061	RESISTOR,CARBON FILM 33K OHM +-5% 1/16W
R2257	0700046	RESISTOR,CARBON FILM 2.7K OHM +-5% 1/16W	R2313	0700046	RESISTOR,CARBON FILM 2.7K OHM +-5% 1/16W
R2258	0700052	RESISTOR,CARBON FILM 6.8K OHM +-5% 1/16W	R2314	0700052	RESISTOR,CARBON FILM 6.8K OHM +-5% 1/16W
R2259	0700045	RESISTOR,CARBON FILM 2.2K OHM +-5% 1/16W	R2315	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W
R2260	0700042	RESISTOR,CARBON FILM 1.2K OHM +-5% 1/16W	R2316	0700047	RESISTOR,CARBON FILM 3.3K OHM +-5% 1/16W
R2261	0700047	RESISTOR,CARBON FILM 3.3K OHM +-5% 1/16W	R2317	0700047	RESISTOR,CARBON FILM 3.3K OHM +-5% 1/16W
R2262	0700047	RESISTOR,CARBON FILM 3.3K OHM +-5% 1/16W	R2318	0700049	RESISTOR,CARBON FILM 4.7K OHM +-5% 1/16W
R2263	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W	R2319	0700053	RESISTOR,CARBON FILM 8.2K OHM +-5% 1/16W

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SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
R2320	0700058	RESISTOR,CARBON FILM 22K OHM +-5% 1/16W	R2378	0700065	RESISTOR CARBON FILM 68K OHM +-5% 1/16W
R2321	0700062	RESISTOR,CARBON FILM 39K OHM +-5% 1/16W	R2379	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R2322	0700067	RESISTOR,CARBON FILM 100K OHM +-5% 1/16W	R2380	0700049	RESISTOR,CARBON FILM 4.7K OHM +-5% 1/16W
R2323	0700063	RESISTOR CARBON FILM 47K OHM +-5% 1/16W	R2381	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R2324	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R2383	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R2325	0700052	RESISTOR,CARBON FILM 6.8K OHM +-5% 1/16W	R2384	0700049	RESISTOR,CARBON FILM 4.7K OHM +-5% 1/16W
R2326	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R2388	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R2327	0700051	RESISTOR,CARBON FILM 5.6K OHM +-5% 1/16W	R2389	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R2328	0700049	RESISTOR,CARBON FILM 4.7K OHM +-5% 1/16W	R2390	0700052	RESISTOR,CARBON FILM 6.8K OHM +-5% 1/16W
R2329	0700046	RESISTOR,CARBON FILM 2.7K OHM +-5% 1/16W	R2391	0700062	RESISTOR,CARBON FILM 39K OHM +-5% 1/16W
R2330	0700042	RESISTOR,CARBON FILM 1.2K OHM +-5% 1/16W	R2392	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R2331	0700045	RESISTOR,CARBON FILM 2.2K OHM +-5% 1/16W	R2393	0700044	RESISTOR,CARBON FILM 1.8K OHM +-5% 1/16W
R2332	0700053	RESISTOR,CARBON FILM 8.2K OHM +-5% 1/16W	R2394	0700053	RESISTOR,CARBON FILM 8.2K OHM +-5% 1/16W
R2333	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R2396	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R2334	0700049	RESISTOR,CARBON FILM 4.7K OHM +-5% 1/16W	R2397	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W
R2335	0700049	RESISTOR,CARBON FILM 4.7K OHM +-5% 1/16W	R2398	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W
R2336	0700066	RESISTOR,CARBON FILM 82K OHM +-5% 1/16W	R2399	0700043	RESISTOR,CARBON FILM 1.5K OHM +-5% 1/16W
R2337	0187086	CF 7.5K OHM +-5% 1/16W	R2400	0700049	RESISTOR,CARBON FILM 4.7K OHM +-5% 1/16W
R2338	0700053	RESISTOR,CARBON FILM 8.2K OHM +-5% 1/16W	R2401	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R2339	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W	R2402	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R2340	0700042	RESISTOR,CARBON FILM 1.2K OHM +-5% 1/16W	R2403	0700066	RESISTOR,CARBON FILM 82K OHM +-5% 1/16W
R2341	0700052	RESISTOR,CARBON FILM 6.8K OHM +-5% 1/16W	R2404	0700056	RESISTOR,CARBON FILM 15K OHM +-5% 1/16W
R2342	0700032	RESISTOR,CARBON FILM 220 OHM +-5% 1/16W	R2405	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W
R2343	0700032	RESISTOR,CARBON FILM 220 OHM +-5% 1/16W	R2406	0700047	RESISTOR,CARBON FILM 3.3K OHM +-5% 1/16W
R2344	0700032	RESISTOR,CARBON FILM 220 OHM +-5% 1/16W	R2407	0700047	RESISTOR,CARBON FILM 3.3K OHM +-5% 1/16W
R2345	0700032	RESISTOR,CARBON FILM 220 OHM +-5% 1/16W	R2408	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R2346	0700032	RESISTOR,CARBON FILM 220 OHM +-5% 1/16W	R2409	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R2347	0700032	RESISTOR,CARBON FILM 220 OHM +-5% 1/16W	R2410	0700066	RESISTOR,CARBON FILM 82K OHM +-5% 1/16W
R2348	0700067	RESISTOR,CARBON FILM 100K OHM +-5% 1/16W	R2411	0700056	RESISTOR,CARBON FILM 15K OHM +-5% 1/16W
R2349	0700051	RESISTOR,CARBON FILM 5.6K OHM +-5% 1/16W	R2419	0700062	RESISTOR,CARBON FILM 39K OHM +-5% 1/16W
R2350	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W	R2420	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W
R2352	0700048	RESISTOR,CARBON FILM 3.9K OHM +-5% 1/16W	R2421	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W
R2353	0700049	RESISTOR,CARBON FILM 4.7K OHM +-5% 1/16W	R2422	0700055	RESISTOR,CARBON FILM 12K OHM +-5% 1/16W
R2355	0700053	RESISTOR,CARBON FILM 8.2K OHM +-5% 1/16W	R2423	0700053	RESISTOR,CARBON FILM 8.2K OHM +-5% 1/16W
R2356	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R2424	0187110	CF 75K OHM +-5% 1/16W
R2358	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R2425	0700038	RESISTOR,CARBON FILM 680 OHM +-5% 1/16W
R2359	0700049	RESISTOR,CARBON FILM 4.7K OHM +-5% 1/16W	R2426	0700061	RESISTOR,CARBON FILM 33K OHM +-5% 1/16W
R2361	0100115	CF 120K OHM +-5% 1/8W	R2427	0700049	RESISTOR,CARBON FILM 4.7K OHM +-5% 1/16W
R2362	0700055	RESISTOR,CARBON FILM 12K OHM +-5% 1/16W	R2428	0700053	RESISTOR,CARBON FILM 8.2K OHM +-5% 1/16W
R2363	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R2429	0114177	CF 4.7K OHM +-5% 1/4W
R2364	0700049	RESISTOR,CARBON FILM 4.7K OHM +-5% 1/16W	R2430	0100075	CF 2.7K OHM +-5% 1/8W
R2365	0700055	RESISTOR,CARBON FILM 12K OHM +-5% 1/16W	R2441	0100124	CF 300K OHM +-5% 1/8W
R2366	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R2443	0700059	RESISTOR CARBON FILM 27K OHM +-5% 1/16W
R2367	0700049	RESISTOR,CARBON FILM 4.7K OHM +-5% 1/16W	R2445	0700052	RESISTOR,CARBON FILM 6.8K OHM +-5% 1/16W
R2368	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R2446	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W
R2369	0700058	RESISTOR,CARBON FILM 22K OHM +-5% 1/16W	R2447	0700067	RESISTOR,CARBON FILM 100K OHM +-5% 1/16W
R2370	0700047	RESISTOR,CARBON FILM 3.3K OHM +-5% 1/16W	R2448	0700064	RESISTOR,CARBON FILM 56K OHM +-5% 1/16W
R2371	0700048	RESISTOR,CARBON FILM 3.9K OHM +-5% 1/16W	R2449	0700063	RESISTOR CARBON FILM 47K OHM +-5% 1/16W
R2372	0150134	VR 1K OHM-B	R2450	0700042	RESISTOR,CARBON FILM 1.2K OHM +-5% 1/16W
R2373	0700047	RESISTOR,CARBON FILM 3.3K OHM +-5% 1/16W	R2451	0100081	CF 4.7K OHM +-5% 1/8W
R2374	0700055	RESISTOR,CARBON FILM 12K OHM +-5% 1/16W	R2454	0700049	RESISTOR,CARBON FILM 4.7K OHM +-5% 1/16W
R2375	0700047	RESISTOR,CARBON FILM 3.3K OHM +-5% 1/16W	R2455	0700059	RESISTOR CARBON FILM 27K OHM +-5% 1/16W
R2376	0700056	RESISTOR,CARBON FILM 15K OHM +-5% 1/16W	R2456	0700066	RESISTOR,CARBON FILM 82K OHM +-5% 1/16W
R2377	0700055	RESISTOR,CARBON FILM 12K OHM +-5% 1/16W	R2466	0700052	RESISTOR,CARBON FILM 6.8K OHM +-5% 1/16W

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SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
R2470	0700067	RESISTOR,CARBON FILM 100K OHM +-5% 1/16W	R3088	0100123	CF 270K OHM +-5% 1/8W
R2471	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W	R3089	0187038	CF 75 OHM +-5% 1/16W
R2473	0700051	RESISTOR,CARBON FILM 5.6K OHM +-5% 1/16W	R3090	0187038	CF 75 OHM +-5% 1/16W
R2474	0700051	RESISTOR,CARBON FILM 5.6K OHM +-5% 1/16W	R3091	0187038	CF 75 OHM +-5% 1/16W
R2479	0700066	RESISTOR,CARBON FILM 82K OHM +-5% 1/16W	R3092	0100123	CF 270K OHM +-5% 1/8W
R2480	0119514	FR 10 OHM +-5% 1/4W	R3093	0100123	CF 270K OHM +-5% 1/8W
R2481	0119514	FR 10 OHM +-5% 1/4W	R3094	0700067	RESISTOR,CARBON FILM 100K OHM +-5% 1/16W
R2482	0100121	CF 220K OHM +-5% 1/8W	R3095	0700067	RESISTOR,CARBON FILM 100K OHM +-5% 1/16W
R2483	0700044	RESISTOR,CARBON FILM 1.8K OHM +-5% 1/16W	R3096	0700067	RESISTOR,CARBON FILM 100K OHM +-5% 1/16W
R2501	0700027	RESISTOR,CARBON FILM 100 OHM +-5% 1/16W	R3097	0187036	CF 620HM +-5% 1/16W
R2502	0700051	RESISTOR,CARBON FILM 5.6K OHM +-5% 1/16W	R3098	0114141	CF 270 OHM +-5% 1/4W
R2503	0700027	RESISTOR,CARBON FILM 100 OHM +-5% 1/16W	R3099	0700034	RESISTOR,CARBON FILM 330 OHM +-5% 1/16W
R2504	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W	R3100	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R3006	0700027	RESISTOR,CF 100 OHM +-5% 1/16W (AP32 ONLY)	R3101	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R3007	0700027	RESISTOR,CF 100 OHM +-5% 1/16W (AP32 ONLY)	R3117	0700041	RESISTOR,CF 1K OHM +-5% 1/16W (AP32 ONLY)
R3010	0700027	RESISTOR,CF 100 OHM +-5% 1/16W (AP32 ONLY)	R3118	0700041	RESISTOR,CF 1K OHM +-5% 1/16W (AP32 ONLY)
R3013	0700027	RESISTOR,CF 100 OHM +-5% 1/16W (AP32 ONLY)	R3119	0700041	RESISTOR,CF 1K OHM +-5% 1/16W (AP32 ONLY)
R3014	0700041	RESISTOR,CF 1K OHM +-5% 1/16W (AP32 ONLY)	R3128	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R3021	0700027	RESISTOR,CF 100 OHM +-5% 1/16W (AP32 ONLY)	R3129	0700067	RESISTOR,CARBON FILM 100K OHM +-5% 1/16W
R3024	0700027	RESISTOR,CF 100 OHM +-5% 1/16W (AP32 ONLY)	R3130	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R3025	0700061	RESISTOR,CF 33K OHM +-5% 1/16W	R3131	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W
R3028	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W	R3134	0700034	RESISTOR,CARBON FILM 330 OHM +-5% 1/16W
R3029	0700027	RESISTOR,CARBON FILM 100 OHM +-5% 1/16W	R3135	0700067	RESISTOR,CARBON FILM 100K OHM +-5% 1/16W
R3030	0700027	RESISTOR,CARBON FILM 100 OHM +-5% 1/16W	R3136	0700067	RESISTOR,CARBON FILM 100K OHM +-5% 1/16W
R3031	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W	R3504	0700051	RESISTOR,CARBON FILM 5.6K OHM +-5% 1/16W
R3032	0700058	RESISTOR,CARBON FILM 22K OHM +-5% 1/16W	R3505	0700051	RESISTOR,CARBON FILM 5.6K OHM +-5% 1/16W
R3033	0700058	RESISTOR,CARBON FILM 22K OHM +-5% 1/16W	R3507	0700029	RESISTOR,CARBON FILM 150 OHM +-5% 1/16W
R3034	0114133	CF 120 OHM +-5% 1/4W	R3512	0700059	RESISTOR CARBON FILM 27K OHM +-5% 1/16W
R3038	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W	R3513	0700029	RESISTOR,CARBON FILM 150 OHM +-5% 1/16W
R3047	0700061	RESISTOR,CARBON FILM 33K OHM +-5% 1/16W	R3514	0700061	RESISTOR,CARBON FILM 33K OHM +-5% 1/16W
R3048	0700058	RESISTOR,CARBON FILM 22K OHM +-5% 1/16W	R3517	0100055	CF 390 OHM +-5% 1/8W
R3049	0700032	RESISTOR,CARBON FILM 220 OHM +-5% 1/16W	R3527	0700067	RESISTOR,CARBON FILM 100K OHM +-5% 1/16W
R3050	0700048	RESISTOR,CARBON FILM 3.9K OHM +-5% 1/16W	R3528	0700058	RESISTOR,CARBON FILM 22K OHM +-5% 1/16W
R3051	0700047	RESISTOR,CARBON FILM 3.3K OHM +-5% 1/16W	R3529	0700058	RESISTOR,CARBON FILM 22K OHM +-5% 1/16W
R3053	0700051	RESISTOR,CARBON FILM 5.6K OHM +-5% 1/16W	R3531	0700029	RESISTOR,CARBON FILM 150 OHM +-5% 1/16W
R3054	0700067	RESISTOR,CARBON FILM 100K OHM +-5% 1/16W	R3533	0700061	RESISTOR,CARBON FILM 33K OHM +-5% 1/16W
R3055	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R3534	0700051	RESISTOR,CARBON FILM 5.6K OHM +-5% 1/16W
R3056	0700037	RESISTOR,CARBON FILM 560 OHM +-5% 1/16W	R3536	0700065	RESISTOR CARBON FILM 68K OHM +-5% 1/16W
R3064	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R3538	0700058	RESISTOR,CARBON FILM 22K OHM +-5% 1/16W
R3065	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R3539	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W
R3066	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R3540	0150114	VR 10K OHM-B
R3075	0700027	RESISTOR,CARBON FILM 100 OHM +-5% 1/16W	R3541	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R3076	0700027	RESISTOR,CARBON FILM 100 OHM +-5% 1/16W	R3542	0700052	RESISTOR,CARBON FILM 6.8K OHM +-5% 1/16W
R3077	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R3543	0700059	RESISTOR CARBON FILM 27K OHM +-5% 1/16W
R3078	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R3546	0700056	RESISTOR,CARBON FILM 15K OHM +-5% 1/16W
R3079	0700027	RESISTOR,CARBON FILM 100 OHM +-5% 1/16W	R3547	0700048	RESISTOR,CARBON FILM 3.9K OHM +-5% 1/16W
R3080	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R3549	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R3081	0700027	RESISTOR,CARBON FILM 100 OHM +-5% 1/16W	R3550	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W
R3082	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R3551	0700058	RESISTOR,CARBON FILM 22K OHM +-5% 1/16W
R3083	0700027	RESISTOR,CARBON FILM 100 OHM +-5% 1/16W	R3552	0700058	RESISTOR,CARBON FILM 22K OHM +-5% 1/16W
R3084	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R3553	0700023	RESISTOR,CARBON FILM 47 OHM +-5% 1/16W
R3085	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R3554	0700044	RESISTOR,CARBON FILM 1.8K OHM +-5% 1/16W
R3086	0187038	CF 75 OHM +-5% 1/16W	R3558	0700029	RESISTOR,CARBON FILM 150 OHM +-5% 1/16W
R3087	0100123	CF 270K OHM +-5% 1/8W	R3559	0700061	RESISTOR,CARBON FILM 33K OHM +-5% 1/16W

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SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
R3560	0187088	CF 9.1K OHM +-5% 1/16W	R3644	0700063	RESISTOR CARBON FILM 47K OHM +-5% 1/16W
R3561	0700059	RESISTOR CARBON FILM 27K OHM +-5% 1/16W	R3645	0700032	RESISTOR,CARBON FILM 220 OHM +-5% 1/16W
R3562	0700067	RESISTOR,CARBON FILM 100K OHM +-5% 1/16W	R3646	0700032	RESISTOR,CARBON FILM 220 OHM +-5% 1/16W
R3563	0700049	RESISTOR,CARBON FILM 4.7K OHM +-5% 1/16W	R3647	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R3564	0700058	RESISTOR,CARBON FILM 22K OHM +-5% 1/16W	R4001	0700046	RESISTOR,CARBON FILM 2.7K OHM +-5% 1/16W
R3566	0150115	VR 20K OHM-B	R4002	0187082	CF 5.1K OHM +-5% 1/16W
R3567	0700049	RESISTOR,CARBON FILM 4.7K OHM +-5% 1/16W	R4003	0100125	CF 330K OHM +-5% 1/8W
R3568	0700056	RESISTOR,CARBON FILM 15K OHM +-5% 1/16W	R4004	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W
R3570	0700051	RESISTOR,CARBON FILM 5.6K OHM +-5% 1/16W	R4005	0700045	RESISTOR,CARBON FILM 2.2K OHM +-5% 1/16W
R3571	0700051	RESISTOR,CARBON FILM 5.6K OHM +-5% 1/16W	R4006	0700061	RESISTOR,CARBON FILM 33K OHM +-5% 1/16W
R3572	0700047	RESISTOR,CARBON FILM 3.3K OHM +-5% 1/16W	R4007	0150157	VR 200K OHM-B RV-6
R3573	0700059	RESISTOR CARBON FILM 27K OHM +-5% 1/16W	R4008	0100133	CF 680K OHM +-5% 1/8W
R3574	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R4009	0150290	VR 50K OHM (B)
R3575	0700029	RESISTOR,CARBON FILM 150 OHM +-5% 1/16W	R4010	0150290	VR 50K OHM (B)
R3576	0700061	RESISTOR,CARBON FILM 33K OHM +-5% 1/16W	R4011	0100116	CF 130K OHM +-5% 1/8W
R3577	0700029	RESISTOR,CARBON FILM 150 OHM +-5% 1/16W	R4012	0700067	RESISTOR,CARBON FILM 100K OHM +-5% 1/16W
R3578	0100123	CF 270K OHM +-5% 1/8W	R4014	0700049	RESISTOR,CF 4.7K OHM +-5% 1/16W (AP32 ONLY)
R3579	0700029	RESISTOR,CARBON FILM 150 OHM +-5% 1/16W	R4015	0700045	RESISTOR,CF 2.2K OHM +-5% 1/16W (AP32 ONLY)
R3580	0700058	RESISTOR,CARBON FILM 22K OHM +-5% 1/16W	R4016	0700051	RESISTOR,CF 5.6K OHM +-5% 1/16W (AP32 ONLY)
R3581	0700067	RESISTOR,CARBON FILM 100K OHM +-5% 1/16W	R4017	0700038	RESISTOR,CF 680 OHM +-5% 1/16W (AP32 ONLY)
R3584	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R4018	0700049	RESISTOR,CF 4.7K OHM +-5% 1/16W (AP32 ONLY)
R3586	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W	R4019	0700063	RESISTOR CF 47K OHM +-5% 1/16W (AP32 ONLY)
R3588	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W	R402	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W
R3589	0700058	RESISTOR,CARBON FILM 22K OHM +-5% 1/16W	R4020	0700057	RESISTOR,CF 18K OHM +-5% 1/16W (AP32 ONLY)
R3590	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W	R4021	0700047	RESISTOR,CF 3.3K OHM +-5% 1/16W (AP32 ONLY)
R3591	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R4022	0700037	RESISTOR,CF 560 OHM +-5% 1/16W (AP32 ONLY)
R3593	0187078	CF 3.6K OHM +-5% 1/16W	R4023	0700038	RESISTOR,CF 680 OHM +-5% 1/16W (AP32 ONLY)
R3594	0700034	RESISTOR,CARBON FILM 330 OHM +-5% 1/16W	R4024	0100115	CF 120K OHM +-5% 1/8W (AP32 ONLY)
R3595	0700027	RESISTOR,CARBON FILM 100 OHM +-5% 1/16W	R4025	0700049	RESISTOR,CF 4.7K OHM +-5% 1/16W (AP32 ONLY)
R3596	0700043	RESISTOR,CARBON FILM 1.5K OHM +-5% 1/16W	R4028	0700066	RESISTOR,CF 82K OHM +-5% 1/16W (AP32 ONLY)
R3597	0700029	RESISTOR,CARBON FILM 150 OHM +-5% 1/16W	R4029	0700041	RESISTOR,CF 1K OHM +-5% 1/16W (AP32 ONLY)
R3598	0100037	CF 68 OHM +-5% 1/8W	R4030	0700038	RESISTOR,CF 680 OHM +-5% 1/16W(AP32 ONLY)
R3599	0100045	CF 150 OHM +-5% 1/8W	R4031	0100115	CF 120K OHM +-5% 1/8W (AP32 ONLY)
R3606	0100065	CF 1K OHM +-5% 1/8W (AP32 ONLY)	R4032	0700051	RESISTOR,CF 5.6K OHM +-5% 1/16W (AP32 ONLY)
R3607	0100065	CF 1K OHM +-5% 1/8W (AP32 ONLY)	R4033	0700049	RESISTOR,CF 4.7K OHM +-5% 1/16W (AP32 ONLY)
R3608	0100065	CF 1K OHM +-5% 1/8W (AP32 ONLY)	R4034	0700045	RESISTOR,CF 2.2K OHM +-5% 1/16W (AP32 ONLY)
R3609	0700058	RESISTOR,CARBON FILM 22K OHM +-5% 1/16W	R4035	0700049	RESISTOR,CF 4.7K OHM +-5% 1/16W (AP32 ONLY)
R3610	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R4036	0700038	RESISTOR,CF 680 OHM +-5% 1/16W (AP32 ONLY)
R3611	0700039	RESISTOR,CARBON FILM 820 OHM +-5% 1/16W	R4037	0700063	RESISTOR CF 47K OHM +-5% 1/16W (AP32 ONLY)
R3625	0700027	RESISTOR,CF 100 OHM +-5% 1/16W (AP32 ONLY)	R4038	0700057	RESISTOR,CF 18K OHM +-5% 1/16W (AP32 ONLY)
R3628	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R4039	0700047	RESISTOR,CF 3.3K OHM +-5% 1/16W (AP32 ONLY)
R3630	0100131	CF 560K OHM +-5% 1/8W	R404	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W
R3631	0179536	MG 1M OHM +-5% 1/8W	R4040	0700037	RESISTOR,CF 560 OHM +-5% 1/16W (AP32 ONLY)
R3632	0100129	CF 470K OHM +-5% 1/8W	R4041	0700038	RESISTOR,CF 680 OHM +-5% 1/16W (AP32 ONLY)
R3633	0700034	RESISTOR,CARBON FILM 330 OHM +-5% 1/16W	R4042	0100115	CF 120K OHM +-5% 1/8W (AP32 ONLY)
R3634	0700034	RESISTOR,CARBON FILM 330 OHM +-5% 1/16W	R4043	0700066	RESISTOR,CF 82K OHM +-5% 1/16W (AP32 ONLY)
R3635	0700045	RESISTOR,CARBON FILM 2.2K OHM +-5% 1/16W	R4044	0700066	RESISTOR,CF 82K OHM +-5% 1/16W (AP32 ONLY)
R3637	0700036	RESISTOR,CARBON FILM 470 OHM +-5% 1/16W	R4045	0700041	RESISTOR,CF 1K OHM +-5% 1/16W (AP32 ONLY)
R3638	0187082	CF 5.1K OHM +-5% 1/16W	R4046	0700038	RESISTOR,CF 680 OHM +-5% 1/16W (AP32 ONLY)
R3639	0700036	RESISTOR,CARBON FILM 470 OHM +-5% 1/16W	R4047	0100115	CF 120K OHM +-5% 1/8W (AP32 ONLY)
R3640	0187064	CF 910 OHM +-5% 1/16W	R4048	0700049	RESISTOR,CF 4.7K OHM +-5% 1/16W (AP32 ONLY)
R3641	0700027	RESISTOR,CARBON FILM 100 OHM +-5% 1/16W	R4051	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W
R3642	0187072	CF 2K OHM +-5% 1/16W	R4052	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W
R3643	0700042	RESISTOR,CARBON FILM 1.2K OHM +-5% 1/16W	R4053	0700066	RESISTOR,CF 82K OHM +-5% 1/16W (AP32 ONLY)

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SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
R407	0700065	RESISTOR CARBON FILM 68K OHM +-5% 1/16W	R4153	0700029	RESISTOR,CF 150 OHM +-5% 1/16W (AP32 ONLY)
R4070	0700045	RESISTOR,CARBON FILM 2.2K OHM +-5% 1/16W	R4156	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W
R4071	0700045	RESISTOR,CARBON FILM 2.2K OHM +-5% 1/16W	R4157	0700045	RESISTOR,CARBON FILM 2.2K OHM +-5% 1/16W
R4089	0700048	RESISTOR,CF 3.9K OHM +-5% 1/16W (AP32 ONLY)	R416	01195051	FR 2.2 OHM +-5% 1/4W
R409	0700036	RESISTOR,CARBON FILM 470 OHM +-5% 1/16W	R4160	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W
R4090	0700048	RESISTOR,CF 3.9K OHM +-5% 1/16W (AP32 ONLY)	R4161	0700045	RESISTOR,CARBON FILM 2.2K OHM +-5% 1/16W
R4091	0100047	CF 180 OHM +-5% 1/8W	R4162	0700041	RESISTOR,CF 1K OHM +-5% 1/16W (AP32 ONLY)
R4092	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W	R4163	0700046	RESISTOR,CARBON FILM 2.7K OHM +-5% 1/16W
R4095	0700054	RESISTOR,CF 10K OHM +-5% 1/16W (AP32 ONLY)	R4164	0700041	RESISTOR,CF 1K OHM +-5% 1/16W (AP32 ONLY)
R4096	0700054	RESISTOR,CF 10K OHM +-5% 1/16W (AP32 ONLY)	R4165	0700046	RESISTOR,CARBON FILM 2.7K OHM +-5% 1/16W
R4103	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W	R417	0114161	CF 1K OHM +-5% 1/4W
R4104	0700027	RESISTOR,CARBON FILM 100 OHM +-5% 1/16W	R419	0114161	CF 1K OHM +-5% 1/4W
R4105	0700027	RESISTOR,CARBON FILM 100 OHM +-5% 1/16W	R420	0700065	RESISTOR CARBON FILM 68K OHM +-5% 1/16W
R4106	0700061	RESISTOR,CARBON FILM 33K OHM +-5% 1/16W	R422	0700065	RESISTOR CARBON FILM 68K OHM +-5% 1/16W
R4107	0700058	RESISTOR,CARBON FILM 22K OHM +-5% 1/16W	R423	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R4108	0700038	RESISTOR,CARBON FILM 680 OHM +-5% 1/16W	R425	0700063	RESISTOR CARBON FILM 47K OHM +-5% 1/16W
R4109	0700049	RESISTOR,CARBON FILM 4.7K OHM +-5% 1/16W	R426	0700067	RESISTOR,CARBON FILM 100K OHM +-5% 1/16W
R4110	0700038	RESISTOR,CARBON FILM 680 OHM +-5% 1/16W	R428	0700058	RESISTOR,CARBON FILM 22K OHM +-5% 1/16W
R4111	0700049	RESISTOR,CARBON FILM 4.7K OHM +-5% 1/16W	R437	0700063	RESISTOR CARBON FILM 47K OHM +-5% 1/16W
R4112	0100117	CF 150K OHM +-5% 1/8W	R438	0700061	RESISTOR,CARBON FILM 33K OHM +-5% 1/16W
R4113	0100116	CF 130K OHM +-5% 1/8W	R439	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W
R4114	0150160	VR 10K OHM-B +-30%	R440	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W
R4119	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R441	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W
R4120	0700062	RESISTOR,CARBON FILM 39K OHM +-5% 1/16W	R4501	0147152	VW 27 OHM +-5% 3W
R4123	0700058	RESISTOR,CARBON FILM 22K OHM +-5% 1/16W	R5001	0700032	RESISTOR,CARBON FILM 220 OHM +-5% 1/16W
R4124	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W	R5002	0700039	RESISTOR,CARBON FILM 820 OHM +-5% 1/16W
R4125	0700032	RESISTOR,CARBON FILM 220 OHM +-5% 1/16W	R5003	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R4126	0700067	RESISTOR,CARBON FILM 100K OHM +-5% 1/16W	R5004	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R4127	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R5005	0700038	RESISTOR,CARBON FILM 680 OHM +-5% 1/16W
R4129	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R5006	0114131	CF 100 OHM +-5% 1/4W
R413	01195051	FR 2.2 OHM +-5% 1/4W	R5007	0700059	RESISTOR CARBON FILM 27K OHM +-5% 1/16W
R4130	0700062	RESISTOR,CARBON FILM 39K OHM +-5% 1/16W	R5008	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R4131	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W	R5009	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R4132	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R5010	0700063	RESISTOR CARBON FILM 47K OHM +-5% 1/16W
R4133	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R5011	0700027	RESISTOR,CARBON FILM 100 OHM +-5% 1/16W
R4134	0700034	RESISTOR,CARBON FILM 330 OHM +-5% 1/16W	R5012	0700037	RESISTOR,CARBON FILM 560 OHM +-5% 1/16W
R4135	0700032	RESISTOR,CARBON FILM 220 OHM +-5% 1/16W	R5013	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R4136	0700067	RESISTOR,CARBON FILM 100K OHM +-5% 1/16W	R5015	0150111	VR 1K OHM-B
R4137	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R5016	0700037	RESISTOR,CARBON FILM 560 OHM +-5% 1/16W
R4138	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W	R5017	0700039	RESISTOR,CARBON FILM 820 OHM +-5% 1/16W
R4139	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R5018	0150110	VR 500 OHM-B
R4140	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R5019	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R4141	0700034	RESISTOR,CARBON FILM 330 OHM +-5% 1/16W	R5020	0700034	RESISTOR,CARBON FILM 330 OHM +-5% 1/16W
R4142	0700045	RESISTOR,CF 2.2K OHM +-5% 1/16W (AP32 ONLY)	R5021	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R4143	0700045	RESISTOR,CF 2.2K OHM +-5% 1/16W (AP32 ONLY)	R5022	0150112	VR 2K OHM-B
R4144	0700063	RESISTOR CF 47K OHM +-5% 1/16W (AP32 ONLY)	R5023	0700035	RESISTOR,CARBON FILM 390 OHM +-5% 1/16W
R4145	0700061	RESISTOR,CF 33K OHM +-5% 1/16W (AP32 ONLY)	R5024	0700031	RESISTOR,CARBON FILM 180 OHM +-5% 1/16W
R4146	0700041	RESISTOR,CF 1K OHM +-5% 1/16W (AP32 ONLY)	R5025	0700033	RESISTOR,CARBON FILM 270 OHM +-5% 1/16W
R4147	0700045	RESISTOR,CF 2.2K OHM +-5% 1/16W (AP32 ONLY)	R5026	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W
R4148	0700063	RESISTOR CF 47K OHM +-5% 1/16W (AP32 ONLY)	R5027	0700044	RESISTOR,CARBON FILM 1.8K OHM +-5% 1/16W
R4149	0700061	RESISTOR,CF 33K OHM +-5% 1/16W (AP32 ONLY)	R5028	0700042	RESISTOR,CARBON FILM 1.2K OHM +-5% 1/16W
R4150	0700041	RESISTOR,CF 1K OHM +-5% 1/16W (AP32 ONLY)	R5029	0700045	RESISTOR,CARBON FILM 2.2K OHM +-5% 1/16W
R4151	0700045	RESISTOR,CF 2.2K OHM +-5% 1/16W (AP32 ONLY)	R5030	0700052	RESISTOR,CARBON FILM 6.8K OHM +-5% 1/16W
R4152	0700029	RESISTOR,CF 150 OHM +-5% 1/16W (AP32 ONLY)	R5031	0700049	RESISTOR,CARBON FILM 4.7K OHM +-5% 1/16W

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SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
R5032	0700045	RESISTOR,CARBON FILM 2.2K OHM +-5% 1/16W	R5582	0700039	RESISTOR,CF 820 OHM +-5% 1/16W (AP32 ONLY)
R5033	0700032	RESISTOR,CARBON FILM 220 OHM +-5% 1/16W	R5583	0700027	RESISTOR,CF 100 OHM +-5% 1/16W (AP32 ONLY)
R5034	0700037	RESISTOR,CARBON FILM 560 OHM +-5% 1/16W	R5584	0700041	RESISTOR,CF 1K OHM +-5% 1/16W (AP32 ONLY)
R5503	0700039	RESISTOR,CARBON FILM 820 OHM +-5% 1/16W	R5585	0700041	RESISTOR,CF 1K OHM +-5% 1/16W (AP32 ONLY)
R5504	0700037	RESISTOR,CARBON FILM 560 OHM +-5% 1/16W	R5587	0150133	VR 500OHM-B (AP32 ONLY)
R5505	0700061	RESISTOR,CARBON FILM 33K OHM +-5% 1/16W	R5588	0700039	RESISTOR,CF 820 OHM +-5% 1/16W (AP32 ONLY)
R5506	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W	R5589	0150134	VR 1K OHM-B (AP32 ONLY)
R5508	0700032	RESISTOR,CARBON FILM 220 OHM +-5% 1/16W	R5590	0700044	RESISTOR,CF 1.8K OHM +-5% 1/16W (AP32 ONLY)
R5509	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W	R5591	0700041	RESISTOR,CF 1K OHM +-5% 1/16W (AP32 ONLY)
R5510	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R5597	0100049	CF 220 OHM +-5% 1/8W
R5512	0700034	RESISTOR,CARBON FILM 330 OHM +-5% 1/16W	R5598	0100049	CF 220 OHM +-5% 1/8W
R5513	0700039	RESISTOR,CARBON FILM 820 OHM +-5% 1/16W	R5599	0100049	CF 220 OHM +-5% 1/8W
R5514	0700037	RESISTOR,CARBON FILM 560 OHM +-5% 1/16W	R5602	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R5515	0700029	RESISTOR,CARBON FILM 150 OHM +-5% 1/16W	R5603	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W
R5516	0700063	RESISTOR CARBON FILM 47K OHM +-5% 1/16W	R5604	0100051	CF 270 OHM +-5% 1/8W
R5518	0700042	RESISTOR,CARBON FILM 1.2K OHM +-5% 1/16W	R5606	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W
R5522	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R5609	0100065	CF 1K OHM +-5% 1/8W
R5524	0700052	RESISTOR,CARBON FILM 6.8K OHM +-5% 1/16W	R5610	0100065	CF 1K OHM +-5% 1/8W
R5528	0700055	RESISTOR,CARBON FILM 12K OHM +-5% 1/16W	R5611	0100065	CF 1K OHM +-5% 1/8W
R5529	0100129	CF 470K OHM +-5% 1/8W	R5612	0700038	RESISTOR,CARBON FILM 680 OHM +-5% 1/16W
R5530	0700061	RESISTOR,CARBON FILM 33K OHM +-5% 1/16W	R5618	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R5531	0700027	RESISTOR,CARBON FILM 100 OHM +-5% 1/16W	R5619	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R5533	0700027	RESISTOR,CARBON FILM 100 OHM +-5% 1/16W	R5620	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R5534	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W	R5624	0150133	VR 500OHM-B (AP32 ONLY)
R5537	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W	R5625	0700032	RESISTOR,CARBON FILM 220 OHM +-5% 1/16W
R5538	0700065	RESISTOR CARBON FILM 68K OHM +-5% 1/16W	R5626	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W
R5539	0700066	RESISTOR,CARBON FILM 82K OHM +-5% 1/16W	R621	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W
R5540	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W	R622	0700049	RESISTOR,CARBON FILM 4.7K OHM +-5% 1/16W
R5541	0700067	RESISTOR,CARBON FILM 100K OHM +-5% 1/16W	R623	0700032	RESISTOR,CARBON FILM 220 OHM +-5% 1/16W
R5542	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W	R624	0700043	RESISTOR,CARBON FILM 1.5K OHM +-5% 1/16W
R5543	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W	R626	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R5544	0700065	RESISTOR CARBON FILM 68K OHM +-5% 1/16W	R627	0700052	RESISTOR,CARBON FILM 6.8K OHM +-5% 1/16W
R5545	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W	R628	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W
R5546	0700059	RESISTOR CARBON FILM 27K OHM +-5% 1/16W	R629	0700045	RESISTOR,CARBON FILM 2.2K OHM +-5% 1/16W
R5547	0700047	RESISTOR,CARBON FILM 3.3K OHM +-5% 1/16W	R630	0700065	RESISTOR CARBON FILM 68K OHM +-5% 1/16W
R5548	0700061	RESISTOR,CARBON FILM 33K OHM +-5% 1/16W	R631	0700051	RESISTOR,CARBON FILM 5.6K OHM +-5% 1/16W
R5549	0700067	RESISTOR,CARBON FILM 100K OHM +-5% 1/16W	R632	0700046	RESISTOR,CARBON FILM 2.7K OHM +-5% 1/16W
R5550	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W	R634	0700027	RESISTOR,CARBON FILM 100 OHM +-5% 1/16W
R5553	0100119	CF 180K OHM +-5% 1/8W	R635	0150112	VR 2K OHM-B
R5555	0700042	RESISTOR,CARBON FILM 1.2K OHM +-5% 1/16W	R636	0700066	RESISTOR,CARBON FILM 82K OHM +-5% 1/16W
R5559	0700027	RESISTOR,CARBON FILM 100 OHM +-5% 1/16W	R639	0700051	RESISTOR,CARBON FILM 5.6K OHM +-5% 1/16W
R5561	0700051	RESISTOR,CARBON FILM 5.6K OHM +-5% 1/16W	R640	0700046	RESISTOR,CARBON FILM 2.7K OHM +-5% 1/16W
R5562	0700033	RESISTOR,CARBON FILM 270 OHM +-5% 1/16W	R641	0700027	RESISTOR,CARBON FILM 100 OHM +-5% 1/16W
R5564	0150113	VR 5K OHM-B RS-6	R642	0700049	RESISTOR,CARBON FILM 4.7K OHM +-5% 1/16W
R5565	0700053	RESISTOR,CARBON FILM 8.2K OHM +-5% 1/16W	R643	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W
R5566	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R644	0700037	RESISTOR,CARBON FILM 560 OHM +-5% 1/16W
R5567	0700046	RESISTOR,CARBON FILM 2.7K OHM +-5% 1/16W	R645	0700066	RESISTOR,CARBON FILM 82K OHM +-5% 1/16W
R5568	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R646	0700049	RESISTOR,CARBON FILM 4.7K OHM +-5% 1/16W
R5570	0700062	RESISTOR,CARBON FILM 39K OHM +-5% 1/16W	R647	0700057	RESISTOR,CARBON FILM 18K OHM +-5% 1/16W
R5571	0700037	RESISTOR,CARBON FILM 560 OHM +-5% 1/16W	R651	0113725	CF 100 OHM +-5% 1/2W
R5573	0700058	RESISTOR,CARBON FILM 22K OHM +-5% 1/16W	R652	0113725	CF 100 OHM +-5% 1/2W
R5574	0700058	RESISTOR,CARBON FILM 22K OHM +-5% 1/16W	R653	0113725	CF 100 OHM +-5% 1/2W
R5575	0100125	CF 330K OHM +-5% 1/8W	R654	0100065	CF 1K OHM +-5% 1/8W
R5581	0700067	C F 100K OHM +-5% 1/16W (AP32 ONLY)	R656	0100053	CF 330 OHM +-5% 1/8W

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SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
R659	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R722	0100091	CF 12K OHM +-5% 1/8W
R660	0700064	RESISTOR,CARBON FILM 56K OHM +-5% 1/16W	R723	0700044	RESISTOR,CARBON FILM 1.8K OHM +-5% 1/16W
R661	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W	R724	0700052	RESISTOR,CARBON FILM 6.8K OHM +-5% 1/16W
 R662	0150115	VR 20K OHM-B	R726	0700048	RESISTOR,CARBON FILM 3.9K OHM +-5% 1/16W
R663	0187110	CF 75K OHM +-5% 1/16W	R727	0700048	RESISTOR,CARBON FILM 3.9K OHM +-5% 1/16W
R664	0700038	RESISTOR,CARBON FILM 680 OHM +-5% 1/16W	R728	0700052	CF 6.8K OHM +-5% 1/16W (AP32 ONLY)
R665	0119722	MF 1 OHM +-5% 1W	R729	0113729	CF 150 OHM +-5% 1/2W
R666	0119722	MF 1 OHM +-5% 1W	R730	0110101	MF 15 OHM +-5% 1W
R667	0700051	RESISTOR,CARBON FILM 5.6K OHM +-5% 1/16W	R732	0110129	MF 220 OHM +-5% 1W
R668	0700061	RESISTOR,CARBON FILM 33K OHM +-5% 1/16W	R733	01195121	FR 1 OHM +-5% 1/4W
R669	0700064	RESISTOR,CARBON FILM 56K OHM +-5% 1/16W	R734	0119514	FR 10 OHM +-5% 1/4W
R670	0700065	RESISTOR CARBON FILM 68K OHM +-5% 1/16W	R739	0110251	MF 1.8K OHM +-5% 2W
R671	0113766	CF 4.7K OHM +-5% 1/2W	 R742	0700063	RESISTOR CARBON FILM 47K OHM +-5% 1/16W
R672	0110129	MF 220 OHM +-5% 1W	R744	0100127	CF 390K OHM +-5% 1/8W
R673	0700061	RESISTOR,CARBON FILM 33K OHM +-5% 1/16W	R745	0114149	CF 560 OHM +-5% 1/4W
R674	0114135	CF 150 OHM +-5% 1/4W	R751	0113719	CF 56 OHM +-5% 1/2W
R675	0113758	CF 2.2K OHM +-5% 1/2W	R753	0110361	MF 4.7K OHM +-5% 3W
R680	0700057	RESISTOR,CARBON FILM 18K OHM +-5% 1/16W	R754	0113766	CF 4.7K OHM +-5% 1/2W
R681	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R755	0110363	MF 5.6K OHM +-5% 3W
R682	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R766	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R683	0700067	RESISTOR,CARBON FILM 100K OHM +-5% 1/16W	R767	0100079	CF 3.9K OHM +-5% 1/8W
R684	0700052	RESISTOR,CARBON FILM 6.8K OHM +-5% 1/16W	R768	0110225	MF 150 OHM +-5% 2W
R685	0700051	RESISTOR,CARBON FILM 5.6K OHM +-5% 1/16W	R769	0114177	CF 4.7K OHM +-5% 1/4W
R691	0700027	RESISTOR,CARBON FILM 100 OHM +-5% 1/16W	R770	0700046	RESISTOR,CARBON FILM 2.7K OHM +-5% 1/16W
R7001	0700056	RESISTOR,CARBON FILM 15K OHM +-5% 1/16W	R771	0700063	RESISTOR CARBON FILM 47K OHM +-5% 1/16W
R7002	0700053	RESISTOR,CARBON FILM 8.2K OHM +-5% 1/16W	R772	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W
R7003	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R773	0100113	CF 100K OHM +-5% 1/8W
R7004	0700061	RESISTOR,CARBON FILM 33K OHM +-5% 1/16W	R774	0187098	CF 24K OHM +-5% 1/16W
R7005	0700049	RESISTOR,CARBON FILM 4.7K OHM +-5% 1/16W	R775	0700043	RESISTOR,CARBON FILM 1.5K OHM +-5% 1/16W
R7006	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W	R776	0700051	RESISTOR,CARBON FILM 5.6K OHM +-5% 1/16W
R7007	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W	R777	0700043	RESISTOR,CARBON FILM 1.5K OHM +-5% 1/16W
R7008	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W	R779	0100065	CF 1K OHM +-5% 1/8W
R7009	0700044	RESISTOR,CARBON FILM 1.8K OHM +-5% 1/16W	R780	0100041	CF 100 OHM +-5% 1/8W
R7010	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	R781	0110279	MF 27K OHM +-5% 2W
R7011	0700057	RESISTOR,CARBON FILM 18K OHM +-5% 1/16W	R782	0110279	MF 27K OHM +-5% 2W
R7012	0700061	RESISTOR,CARBON FILM 33K OHM +-5% 1/16W	R783	0110279	MF 27K OHM +-5% 2W
R7013	0700051	RESISTOR,CARBON FILM 5.6K OHM +-5% 1/16W	R784	0110279	MF 27K OHM +-5% 2W
R7014	0700058	RESISTOR,CARBON FILM 22K OHM +-5% 1/16W	R785	0110279	MF 27K OHM +-5% 2W
R7016	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W	R786	0114213	CF 33K OHM +-5% 1/4W
R7017	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W	R790	0700053	RESISTOR,CARBON FILM 8.2K OHM +-5% 1/16W
R7018	0700066	RESISTOR,CARBON FILM 82K OHM +-5% 1/16W	R791	0700047	RESISTOR,CARBON FILM 3.3K OHM +-5% 1/16W
R7021	0700064	RESISTOR,CARBON FILM 56K OHM +-5% 1/16W	R792	0700059	RESISTOR CARBON FILM 27K OHM +-5% 1/16W
R7022	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W	R793	0700059	RESISTOR CARBON FILM 27K OHM +-5% 1/16W
R7023	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W	R794	0700045	RESISTOR,CARBON FILM 2.2K OHM +-5% 1/16W
R7024	0700057	RESISTOR,CARBON FILM 18K OHM +-5% 1/16W	R795	0700033	RESISTOR,CARBON FILM 270 OHM +-5% 1/16W
R707	0700039	RESISTOR,CARBON FILM 820 OHM +-5% 1/16W	R796	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
 R708	0110355	MF 2.7K OHM +-5% 3W	R797	0700052	RESISTOR,CARBON FILM 6.8K OHM +-5% 1/16W
R709	0113770	CF 6.8K OHM +-5% 1/2W	R798	0700058	RESISTOR,CARBON FILM 22K OHM +-5% 1/16W
 R710	0110351	MF 1.8K OHM +-5% 3W	R799	0700058	RESISTOR,CARBON FILM 22K OHM +-5% 1/16W
R711	0119688	MF 0.22 OHM +-5% 1W	R801B	0110371	MF 12K OHM +-5% 3W
R712	0100031	CF 39 OHM +-5% 1/8W	R801G	0110371	MF 12K OHM +-5% 3W
R719	0113787	CF 33K OHM +-5% 1/2W (AP32 ONLY)	R801R	0110371	MF 12K OHM +-5% 3W
R720	0113793	CF 56K OHM +-5% 1/2W	R802B	0110369	MF 10K OHM +-5% 3W
R721	0700049	RESISTOR,CARBON FILM 4.7K OHM +-5% 1/16W	R802G	0110369	MF 10K OHM +-5% 3W

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SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
R802R	0110369	MF 10K OHM +-5% 3W	R920	0700036	RESISTOR,CARBON FILM 470 OHM +-5% 1/16W
⚠ R804B	0151635	VR 1M OHM-B	R921	0700055	RESISTOR,CARBON FILM 12K OHM +-5% 1/16W
⚠ R804G	0151635	VR 1M OHM-B	R922	0700023	RESISTOR,CARBON FILM 47 OHM +-5% 1/16W
⚠ R804R	0151635	VR 1M OHM-B	R923	0700047	RESISTOR,CARBON FILM 3.3K OHM +-5% 1/16W
R805B	0179535	MG 680K OHM +-5% 1/2W	R931	0114169	CF 2.2K OHM +-5% 1/4W
R805G	0179535	MG 680K OHM +-5% 1/2W	R932	0700027	RESISTOR,CARBON FILM 100 OHM +-5% 1/16W
R805R	0179535	MG 680K OHM +-5% 1/2W	R933	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W
R806B	0179529	MG 10M OHM +-5% 1/2W	R934	0113719	CF 56 OHM +-5% 1/2W
R806G	0179529	MG 10M OHM +-5% 1/2W	R935	0700048	RESISTOR,CARBON FILM 3.9K OHM +-5% 1/16W
R806R	0179529	MG 10M OHM +-5% 1/2W	R936	0110237	MF 470 OHM +-5% 2W
R807B	0100079	CF 3.9K OHM +-5% 1/8W	R938	0113760	CF 2.7K OHM +-5% 1/2W
R808B	0100073	CF 2.2K OHM +-5% 1/8W	R939	0700056	RESISTOR,CARBON FILM 15K OHM +-5% 1/16W
R809B	0100033	CF 47 OHM +-5% 1/8W	R940	0700052	RESISTOR,CARBON FILM 6.8K OHM +-5% 1/16W
R810B	0100049	CF 220 OHM +-5% 1/8W	R941	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R810G	0100049	CF 220 OHM +-5% 1/8W	R942	0700056	RESISTOR,CARBON FILM 15K OHM +-5% 1/16W
R810R	0100049	CF 220 OHM +-5% 1/8W	R943	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R811B	0100065	CF 1K OHM +-5% 1/8W	R948	0119693	MF 0.39 OHM +-5% 1W
R811G	0100065	CF 1K OHM +-5% 1/8W	R949	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W
R811R	0100065	CF 1K OHM +-5% 1/8W	R950	0700058	RESISTOR,CARBON FILM 22K OHM +-5% 1/16W
R812B	0100044	CF 130 OHM +-5% 1/8W	⚠ R951	0113797	CF 82K OHM +-5% 1/2W
R812G	0100033	CF 47 OHM +-5% 1/8W	⚠ R952	0700051	RESISTOR,CARBON FILM 5.6K OHM +-5% 1/16W
R812R	0100033	CF 47 OHM +-5% 1/8W	R953	0700063	RESISTOR CARBON FILM 47K OHM +-5% 1/16W
⚠ R813G	01513341	VR 200 OHM-B	R955	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
⚠ R813R	01513341	VR 200 OHM-B	R956	0700045	RESISTOR,CARBON FILM 2.2K OHM +-5% 1/16W
R815B	0100059	CF 560 OHM +-5% 1/8W	R957	0700042	RESISTOR,CARBON FILM 1.2K OHM +-5% 1/16W
R815G	0100059	CF 560 OHM +-5% 1/8W	R981	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W
R815R	0100059	CF 560 OHM +-5% 1/8W	R982	0700049	RESISTOR,CARBON FILM 4.7K OHM +-5% 1/16W
R817B	0100041	CF 100 OHM +-5% 1/8W	⚠ R983	0700039	RESISTOR,CARBON FILM 820 OHM +-5% 1/16W
R817G	0100049	CF 220 OHM +-5% 1/8W	⚠ R984	0700043	RESISTOR,CARBON FILM 1.5K OHM +-5% 1/16W
R817R	0100053	CF 330 OHM +-5% 1/8W	R986	0119514	FR 10 OHM +-5% 1/4W
R818B	0100048	CF 200 OHM +-5% 1/8W	R987	0114137	CF 180 OHM +-5% 1/4W
R819B	0179535	MG 680K OHM +-5% 1/2W	R988	0700046	RESISTOR,CARBON FILM 2.7K OHM +-5% 1/16W
R819G	0179535	MG 680K OHM +-5% 1/2W	R989	0700032	RESISTOR,CARBON FILM 220 OHM +-5% 1/16W
R819R	0179535	MG 680K OHM +-5% 1/2W	R990	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W
R820B	0113744	CF 560 OHM +-5% 1/2W	R991	0700054	RESISTOR,CARBON FILM 10K OHM +-5% 1/16W
R820G	0113744	CF 560 OHM +-5% 1/2W	R994	0114161	CF 1K OHM +-5% 1/4W
R820R	0113744	CF 560 OHM +-5% 1/2W			
R901	0144151	WW 33 OHM +-5% 2W			ICs
R902	0139015	CC 1M OHM +-20% 1/2W			
⚠ R903	0147804	WW 0.75 OHM 15W	IC0001	2001762	IC M37204M8-657SP
R905	0110169	MF 10K OHM +-5% 1W	IC0002	2007831	IC M6M80041P
R906	0700046	RESISTOR,CARBON FILM 2.7K OHM +-5% 1/16W	IC0003	2366301	IC UPD4052BC
R907	0700047	RESISTOR,CARBON FILM 3.3K OHM +-5% 1/16W	IC0004	2004951	IC LA7945
R908	0700044	RESISTOR,CARBON FILM 1.8K OHM +-5% 1/16W	IC0005	2001752	IC LC7458A-02
R909	0700038	RESISTOR,CARBON FILM 680 OHM +-5% 1/16W	IC0006	2008721	IC M62358P
R910	0148009	WW 0.056 OHM 2W	IC0961	2003423	IC UPC7893AHF (LINEAR) (AP32 ONLY)
R911	0700058	RESISTOR,CARBON FILM 22K OHM +-5% 1/16W	IC0962	2004665	IC PQ09RF21
R912	0700042	RESISTOR,CARBON FILM 1.2K OHM +-5% 1/16W	IC0963	2003421	IC UPC7805AHF (AP32 ONLY)
R913	0700047	RESISTOR,CARBON FILM 3.3K OHM +-5% 1/16W	IC1301	2003191	IC STK4274 (LINEAR)
R915	0700014	RESISTOR,CARBON FILM 10 OHM +-5% 1/16W	IC1326	2003191	IC STK4274 (LINEAR)
R916	0700043	RESISTOR,CARBON FILM 1.5K OHM +-5% 1/16W	IC1351	2003191	IC STK4274 (LINEAR)
R917	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	IC1501	2380391	IC UPD6326C
R918	0700047	RESISTOR,CARBON FILM 3.3K OHM +-5% 1/16W	IC2101	2383191	IC LA7990
R919	0700041	RESISTOR,CARBON FILM 1K OHM +-5% 1/16W	IC2102	2914051	IC NJM4560D

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SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
IC2103	2914051	IC NJM4560D	Q2124	2320681	TR 2SA673A B/C SI 80MHZ 400MW
IC2104	2914051	IC NJM4560D	Q2125	2320681	TR 2SA673A B/C SI 80MHZ 400MW
IC2105	2914051	IC NJM4560D	Q2126	2320595	TR 2SC458(D) SI 230MHZ 200MW
IC3001	2004792	IC SN76862NJ-09	Q2130	2320595	TR 2SC458(D) SI 230MHZ 200MW
IC3002	2004792	IC SN76862NJ-09 (AP32 ONLY)	Q2131	2320595	TR 2SC458(D) SI 230MHZ 200MW
IC3003	2917391	IC MSC11371RS	Q2133	2320595	TR 2SC458(D) SI 230MHZ 200MW
IC4001	2004592	IC AN5817K	Q3001	2320591	TR 2SC458B/C SI 230MHZ 200MW
IC4004	2004362	IC CXA1279AS	Q3002	2320591	TR 2SC458B/C SI 230MHZ 200MW
IC4005	2917391	IC MSC11371RS	Q3003	2320591	TR 2SC458B/C SI 230MHZ 200MW
IC402	2004751	IC TA8200AH	Q3004	2320591	TR 2SC458B/C SI 230MHZ 200MW
IC5501	2020321	IC YAT015	Q3005	2320637	TR 2SA673C/D SI 80MHZ 400MW
IC601	2003541	IC LA7838 (LINEAR)	Q3503	2320591	TR 2SC458B/C SI 230MHZ 200MW
IC602	2380651	IC AN5551	Q3504	2320591	TR 2SC458B/C SI 230MHZ 200MW
 IC901	2373343	MODULE STR-M6511	Q3508	2320591	TR 2SC458B/C SI 230MHZ 200MW
 IC902	2000465	IC PS2501-1 (KD/LD) (PHOTO COUPLER)	Q3510	2320591	TR 2SC458B/C SI 230MHZ 200MW
 IC903	2000465	IC PS2501-1 (KD/LD) (PHOTO COUPLER)	Q3513	2320591	TR 2SC458B/C SI 230MHZ 200MW
 IC931	2381344	IC SE130N	Q3514	2320591	TR 2SC458B/C SI 230MHZ 200MW
IC933	2003413	IC UPC7912HF	Q3516	2320591	TR 2SC458B/C SI 230MHZ 200MW
IC935	2000632	IC SI-3120CA	Q3517	2320637	TR 2SA673C/D SI 80MHZ 400MW
TRANSISTORS			Q3518	2320591	TR 2SC458B/C SI 230MHZ 200MW
Q0001	2320637	TR 2SA673C/D SI 80MHZ 400MW	Q3519	2320637	TR 2SA673C/D SI 80MHZ 400MW
Q0002	2320591	TR 2SC458B/C SI 230MHZ 200MW	Q3520	2320591	TR 2SC458B/C SI 230MHZ 200MW
Q0003	2320591	TR 2SC458B/C SI 230MHZ 200MW	Q3521	2326021	TR 2SC1741S
Q0004	2320637	TR 2SA673C/D SI 80MHZ 400MW	Q3523	2320637	TR 2SA673C/D SI 80MHZ 400MW
Q0005	2320591	TR 2SC458B/C SI 230MHZ 200MW	Q3524	2320591	TR 2SC458B/C SI 230MHZ 200MW
Q0006	2320591	TR 2SC458B/C SI 230MHZ 200MW	Q3525	2320591	TR 2SC458B/C SI 230MHZ 200MW
Q0007	2320643	TR 2SC1213C SI 80MHZ 400MW	Q4001	2320591	TR 2SC458B/C SI 230MHZ 200MW (AP32 ONLY)
Q0008	2320591	TR 2SC458B/C SI 230MHZ 200MW	Q4002	2320591	TR 2SC458B/C SI 230MHZ 200MW (AP32 ONLY)
Q0009	2320591	TR 2SC458B/C SI 230MHZ 200MW	Q4003	2320591	TR 2SC458B/C SI 230MHZ 200MW (AP32 ONLY)
Q0010	2320591	TR 2SC458B/C SI 230MHZ 200MW	Q4004	2320591	TR 2SC458B/C SI 230MHZ 200MW (AP32 ONLY)
Q0011	2320591	TR 2SC458B/C SI 230MHZ 200MW	Q4005	2320591	TR 2SC458B/C SI 230MHZ 200MW (AP32 ONLY)
Q0012	2320643	TR 2SC1213C SI 80MHZ 400MW	Q4007	2320591	TR 2SC458B/C SI 230MHZ 200MW (AP32 ONLY)
Q0014	2320591	TR 2SC458B/C SI 230MHZ 200MW	Q4008	2320591	TR 2SC458B/C SI 230MHZ 200MW (AP32 ONLY)
Q0015	2320643	TR 2SC1213C SI 80MHZ 400MW	Q4009	2320591	TR 2SC458B/C SI 230MHZ 200MW (AP32 ONLY)
Q0016	2320591	TR 2SC458B/C SI 230MHZ 200MW	Q401	2320591	TR 2SC458B/C SI 230MHZ 200MW
Q0017	2320591	TR 2SC458B/C SI 230MHZ 200MW	Q4010	2320591	TR 2SC458B/C SI 230MHZ 200MW (AP32 ONLY)
Q0019	2323521	TR 2SD789 B/C/D/E	Q4011	2320591	TR 2SC458B/C SI 230MHZ 200MW (AP32 ONLY)
Q0020	2320591	TR 2SC458B/C SI 230MHZ 200MW	Q4012	2320591	TR 2SC458B/C SI 230MHZ 200MW
Q0021	2320591	TR 2SC458B/C SI 230MHZ 200MW	Q4015	2320591	TR 2SC458B/C SI 230MHZ 200MW
Q0022	2320637	TR 2SA673C/D SI 80MHZ 400MW	Q402	2320591	TR 2SC458B/C SI 230MHZ 200MW
Q0024	2320591	TR 2SC458B/C SI 230MHZ 200MW	Q4021	2320591	TR 2SC458B/C SI 230MHZ 200MW
Q0501	2320598	TR 2SC458B/C/D SI 230MHZ 200MW	Q4022	2320637	TR 2SA673C/D SI 80MHZ 400MW
Q0502	2312992	PHOTO TRANSISTOR PRT-38PT3F(M)	Q4023	2320591	TR 2SC458B/C SI 230MHZ 200MW
Q0503	2320637	TR 2SA673C/D SI 80MHZ 400MW	Q4024	2320591	TR 2SC458B/C SI 230MHZ 200MW
Q0504	2320598	TR 2SC458B/C/D SI 230MHZ 200MW	Q4025	2320637	TR 2SA673C/D SI 80MHZ 400MW
Q1101	2320591	TR 2SC458B/C SI 230MHZ 200MW	Q4026	2320591	TR 2SC458B/C SI 230MHZ 200MW
Q2101	2320595	TR 2SC458(D) SI 230MHZ 200MW	Q4027	2320591	TR 2SC458B/C SI 230MHZ 200MW (AP32 ONLY)
Q2102	2320595	TR 2SC458(D) SI 230MHZ 200MW	Q4028	2320591	TR 2SC458B/C SI 230MHZ 200MW (AP32 ONLY)
Q2115	2320595	TR 2SC458(D) SI 230MHZ 200MW	Q403	2320591	TR 2SC458B/C SI 230MHZ 200MW
Q2116	2320595	TR 2SC458(D) SI 230MHZ 200MW	Q4030	2320591	TR 2SC458B/C SI 230MHZ 200MW
Q2122	2320595	TR 2SC458(D) SI 230MHZ 200MW	Q4032	2320591	TR 2SC458B/C SI 230MHZ 200MW
Q2123	2320681	TR 2SA673A B/C SI 80MHZ 400MW	Q4033	2320637	TR 2SA673C/D SI 80MHZ 400MW (AP32 ONLY)
			Q4034	2320637	TR 2SA673C/D SI 80MHZ 400MW (AP32 ONLY)
			Q404	2320591	TR 2SC458B/C SI 230MHZ 200MW

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SYMBOL NO.	PART NO.	PART DESCRIPTION		SYMBOL NO.	PART NO.	PART DESCRIPTION	
Q5001	2320596	TR 2SC458C/D	SI 230MHZ 200MW	Q934	2320637	TR 2SA673C/D	SI 80MHZ 400MW
Q5002	2320596	TR 2SC458C/D	SI 230MHZ 200MW	 Q935	2321112	TR 2SA778A	
Q5003	2320596	TR 2SC458C/D	SI 230MHZ 200MW	Q937	2326862	TR DTA114ES	
Q5004	2320596	TR 2SC458C/D	SI 230MHZ 200MW	Q938	2320637	TR 2SA673C/D	SI 80MHZ 400MW
Q5005	2320596	TR 2SC458C/D	SI 230MHZ 200MW	 Q940	2323782	TR 03P2M	
Q5006	2320596	TR 2SC458C/D	SI 230MHZ 200MW	Q941	2312171	TR 2SC3852	
Q5007	2320637	TR 2SA673C/D	SI 80MHZ 400MW				
Q5008	2320596	TR 2SC458C/D	SI 230MHZ 200MW				DIODES
Q5009	2320596	TR 2SC458C/D	SI 230MHZ 200MW				
Q5501	2320591	TR 2SC458B/C	SI 230MHZ 200MW	D0001	23383211	DI 1SS270	
Q5502	2320591	TR 2SC458B/C	SI 230MHZ 200MW	D0002	23383211	DI 1SS270	
Q5503	2320637	TR 2SA673C/D	SI 80MHZ 400MW	D0003	23383211	DI 1SS270	
Q5505	2320637	TR 2SA673C/D	SI 80MHZ 400MW	D0004	23383211	DI 1SS270	
Q5506	2320637	TR 2SA673C/D	SI 80MHZ 400MW	D0008	23383211	DI 1SS270	
Q5507	2320591	TR 2SC458B/C	SI 230MHZ 200MW	D0009	23383211	DI 1SS270	
Q601	2312171	TR 2SC3852		D0010	23383211	DI 1SS270	
Q607	2320591	TR 2SC458B/C	SI 230MHZ 200MW	D0011	23383211	DI 1SS270	
Q609	2320591	TR 2SC458B/C	SI 230MHZ 200MW	D0012	23383211	DI 1SS270	
Q610	2320591	TR 2SC458B/C	SI 230MHZ 200MW	D0013	23383211	DI 1SS270	
Q611	2320591	TR 2SC458B/C	SI 230MHZ 200MW	D0022	23383211	DI 1SS270 (AP32 ONLY)	
Q612	2320591	TR 2SC458B/C	SI 230MHZ 200MW	D0024	23383211	DI 1SS270	
Q613	2320637	TR 2SA673C/D	SI 80MHZ 400MW	D0025	23383211	DI 1SS270	
 Q701	2326216	TR 2SC3116 S/T		D0026	23383211	DI 1SS270	
Q707	2320591	TR 2SC458B/C	SI 230MHZ 200MW	D0030	23383211	DI 1SS270	
Q708	2320637	TR 2SA673C/D	SI 80MHZ 400MW	D0031	23383211	DI 1SS270	
Q710	2312171	TR 2SC3852		D0038	23383211	DI 1SS270	
Q711	2320663	TR 2SC1213AC	SI 80MHZ 400MW	D0039	23383211	DI 1SS270	
Q712	2320663	TR 2SC1213AC	SI 80MHZ 400MW	D0501	23383211	DI 1SS270	
Q713	2320591	TR 2SC458B/C	SI 230MHZ 200MW	D0502	23383211	DI 1SS270	
Q714	2320591	TR 2SC458B/C	SI 230MHZ 200MW	D0503	2339691	LED SLH-56VC77F	
Q715	2320591	TR 2SC458B/C	SI 230MHZ 200MW	D1301	23394911	DI AM01Z	
Q716	2320591	TR 2SC458B/C	SI 230MHZ 200MW	D2101	23383211	DI 1SS270	
Q717	2320663	TR 2SC1213AC	SI 80MHZ 400MW	D2102	23383211	DI 1SS270	
Q718	2320663	TR 2SC1213AC	SI 80MHZ 400MW	D2103	23383211	DI 1SS270	
Q720	2320591	TR 2SC458B/C	SI 230MHZ 200MW	D2104	23383211	DI 1SS270	
Q721	2320591	TR 2SC458B/C	SI 230MHZ 200MW	D2105	23383211	DI 1SS270	
Q722	2320637	TR 2SA673C/D	SI 80MHZ 400MW	D2107	23383211	DI 1SS270	
 Q777	2315273	TRANSISTOR 2SC4589-04		D2108	23383211	DI 1SS270	
 Q780	2314991	TRANSISTOR 2SC4630		D2109	23383211	DI 1SS270	
Q801B	2312651	TR 2SC3503 C/D/E/F		D3001	23383211	DI 1SS270	
Q801G	2312651	TR 2SC3503 C/D/E/F		D3002	23383211	DI 1SS270	
Q801R	2312651	TR 2SC3503 C/D/E/F		D3003	23383211	DI 1SS270	
Q802B	2320591	TR 2SC458B/C	SI 230MHZ 200MW	D3004	23383211	DI 1SS270	
Q802G	2320591	TR 2SC458B/C	SI 230MHZ 200MW	D3005	23383211	DI 1SS270	
Q802R	2320591	TR 2SC458B/C	SI 230MHZ 200MW	D3008	23383211	DI 1SS270	
Q803B	2320637	TR 2SA673C/D	SI 80MHZ 400MW	D3501	23383211	DI 1SS270	
Q803G	2320637	TR 2SA673C/D	SI 80MHZ 400MW	D3502	23383211	DI 1SS270	
Q803R	2320637	TR 2SA673C/D	SI 80MHZ 400MW	D3503	23383211	DI 1SS270	
Q804B	2320591	TR 2SC458B/C	SI 230MHZ 200MW	D3504	23383211	DI 1SS270	
 Q902	2323782	TR 03P2M		D3506	23383211	DI 1SS270	
Q903	2320665	TR 2SC1213A(D)		D3507	23383211	DI 1SS270	
Q931	2323521	TR 2SD789 B/C/D/E		D3508	23383211	DI 1SS270	
Q932	2312171	TR 2SC3852		D3509	23383211	DI 1SS270	
Q933	2320637	TR 2SA673C/D	SI 80MHZ 400MW	D3511	23383211	DI 1SS270	

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SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
D3512	23383211	DI 1SS270	D722A	23383211	DI 1SS270
D3516	23383211	DI 1SS270	D723	23383211	DI 1SS270
D3517	23383211	DI 1SS270	D724	23383211	DI 1SS270
D4001	23383211	DI 1SS270	D728	23383211	DI 1SS270
D4002	23383211	DI 1SS270	D729	23383211	DI 1SS270
D406	23383211	DI 1SS270	D781	23383211	DI 1SS270
D407	23383211	DI 1SS270	D782	2349661	DIODE SM-1XN02
D408	23383211	DI 1SS270	D801B	23383211	DI 1SS270
D409	23383211	DI 1SS270	D801G	23383211	DI 1SS270
D410	23383211	DI 1SS270	D801R	23383211	DI 1SS270
D413	23383211	DI 1SS270	 D901	2342061	DI D3SB(A)60
D414	23383211	DI 1SS270	 D903	23394811	DI AS01Z
D416	23383211	DI 1SS270	D904	23383211	DI 1SS270
D417	23383211	DI 1SS270	D905	23383211	DI 1SS270
D418	23383211	DI 1SS270	 D906	23394811	DI AS01Z
D420	23383211	DI 1SS270	 D931	2349661	DIODE SM-1XN02
D421	23383211	DI 1SS270	 D932	23383211	DI 1SS270
D5503	23383211	DI 1SS270	 D933	2349661	DIODE SM-1XN02
D5504	23383211	DI 1SS270	D934	23383211	DI 1SS270
D5507	23383211	DI 1SS270	D935	23383211	DI 1SS270
D5508	23383211	DI 1SS270	 D937	2338944	DI FML-G12S(F)
D5509	23383211	DI 1SS270	 D938	2338944	DI FML-G12S(F)
D5510	23383211	DI 1SS270	 D939	2338932	DI FMG-G36S
D601	23383211	DI 1SS270	 D940	2338944	DI FML-G12S(F)
D620	23383211	DI 1SS270	 D941	2338944	DI FML-G12S(F)
D621	23383211	DI 1SS270	 D942	2338944	DI FML-G12S(F)
D622	23383211	DI 1SS270	D945	23394911	DI AM01Z
D651	2338902	DI DFM1SA4	D946	23394911	DI AM01Z
D652	23394911	DI AM01Z	 D948	23383211	DI 1SS270
D653	23394911	DI AM01Z	 D949	23383211	DI 1SS270
D654	23394911	DI AM01Z	D951	23383211	DI 1SS270
D655	23383211	DI 1SS270	D952	23383211	DI 1SS270
D657	23383211	DI 1SS270	D953	23383211	DI 1SS270
D659	23383211	DI 1SS270	D954	23383211	DI 1SS270
D660	23394911	DI AM01Z	D957	23383211	DI 1SS270
D661	23383211	DI 1SS270	D958	23383211	DI 1SS270
! D701	2330564	DI V11N SI	ZD0001	2334122	ZD RD5.1EB1 SI
! D702	2338902	DI DFM1SA4	ZD0002	2339844	ZD HZS6B1
D703	2330564	DI V11N SI	ZD0003	2339839	ZD HZS5C3
D704	2330564	DI V11N SI	ZD0004	2339885	ZD HZS12B2
! D705	2338902	DI DFM1SA4	ZD0005	2339885	ZD HZS12B2
D706	2348511	DIODE RS3FS	ZD0007	2339849	DIODE-ZENER HZS6C3
D707	2339531	DI RG4A	ZD0008	2335991	ZD HZT-33
D7070	2339531	DI RG4A	ZD0009	2339839	ZD HZS5C3
D708	23383211	DI 1SS270	ZD0010	2339885	ZD HZS12B2
D709	23383211	DI 1SS270	ZD0011	2339885	ZD HZS12B2
D710	2334581	DI ES1A SI	ZD0012	2339885	ZD HZS12B2
D711	23383211	DI 1SS270	ZD0013	2339885	ZD HZS12B2
D712	23394911	DI AM01Z	ZD0015	2339885	ZD HZS12B2
D713	23383211	DI 1SS270	ZD0016	2339885	ZD HZS12B2
D714	23383211	DI 1SS270	ZD0017	2339885	ZD HZS12B2
D715	23383211	DI 1SS270	ZD0501	2339885	ZD HZS12B2
D716	23383211	DI 1SS270	ZD0502	2339885	ZD HZS12B2
D722	23383211	DI 1SS270	ZD1301	2334324	ZD RD36EB3

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SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
ZD1302	2334324	ZD RD36EB3	ZD712	2334334	ZD RD39EB3
ZD1311	2334324	ZD RD36EB3	ZD713	2339889	ZD HZS12C3
ZD1312	2334324	ZD RD36EB3	ZD714	2339825	ZD HZS4B2
ZD1326	2334324	ZD RD36EB3	ZD715	2339889	ZD HZS12C3
ZD1327	2334324	ZD RD36EB3	ZD801B	2331827	ZD HZ-9 (C1)
ZD1336	2334324	ZD RD36EB3	ZD801G	2331827	ZD HZ-9 (C1)
ZD1337	2334324	ZD RD36EB3	ZD801R	2331827	ZD HZ-9 (C1)
ZD1351	2334324	ZD RD36EB3	⚠ ZD902	2339223	ZD HZS27-3L
ZD1352	2334324	ZD RD36EB3	ZD904	2334304	ZD RD30EB3
ZD1361	2334324	ZD RD36EB3	ZD905	2334304	ZD RD30EB3
ZD1362	2334324	ZD RD36EB3	ZD931	2339885	ZD HZS12B2
ZD1501	2331797	ZD HZ5C1	⚠ ZD932	2339231	ZD HZS30-1L
ZD2101	2334285	DIODE-ZENER RD24EB4	⚠ ZD933	2339042	ZD HZS7A2L
ZD2102	2334285	DIODE-ZENER RD24EB4	ZD936	2335461	ZD HZ24 (2L)
ZD2103	2334285	DIODE-ZENER RD24EB4	ZD937	2331809	ZD HZ-6 (C3)
ZD2104	2334285	DIODE-ZENER RD24EB4			
ZD2105	2334285	DIODE-ZENER RD24EB4			
ZD2106	2334285	DIODE-ZENER RD24EB4			
ZD2107	2334285	DIODE-ZENER RD24EB4	⚠ T701	2260291	HORIZONTAL DRIVE TRANSFORMER
ZD2108	2334285	DIODE-ZENER RD24EB4	⚠ T702	2436493	FLYBACK TRANSFORMER
ZD2109	2334285	DIODE-ZENER RD24EB4	⚠ T703	2272762	SPC TRANSFORMER
ZD2110	2334285	DIODE-ZENER RD24EB4	⚠ T901	2213993	POWER TRANSFORMER
ZD2111	2334285	DIODE-ZENER RD24EB4	⚠ T902	2215594	SWITCHING TRANSFORMER
ZD2112	2334285	DIODE-ZENER RD24EB4	⚠ T903	2215861	POWER TRANSFORMER
ZD3001	2339836	DIODE-ZENER HZS5B3			
ZD3014	2331154	ZD HZ12 (A1-3/B1-3/C1-3)			
ZD3022	2331154	ZD HZ12 (A1-3/B1-3/C1-3)			
ZD4001	2339836	DIODE-ZENER HZS5B3	⚠ F601	2722353	FUSE 1.6A
ZD4002	2339812	DIODE-ZENER HZS3A2	⚠ F901	2722358	FUSE 5A
ZD4003	2339812	DIODE-ZENER HZS3A2	⚠ F903	2722358	FUSE 5A
ZD5502	2339868	ZD HZS9C2	⚠ F932	2722357	FUSE 4A
ZD5503	2339868	ZD HZS9C2	⚠ F933	2722387	FUSE 3A
ZD5504	2339868	ZD HZS9C2	⚠ F934	2722387	FUSE 3A
ZD5510	2334324	ZD RD36EB3	⚠ F935	2722357	FUSE 4A
ZD5514	2331849	ZD HZ-12(C3)	⚠ F936	2722387	FUSE 3A
ZD5519	2339885	ZD HZS12B2	⚠ F937	2722353	FUSE 1.6A
ZD5520	2339885	ZD HZS12B2			
ZD5521	2339885	ZD HZS12B2 (AP32 ONLY)			
ZD5522	2339885	ZD HZS12B2 (AP32 ONLY)			
ZD5523	2339885	ZD HZS12B2 (AP32 ONLY)			
ZD5524	2339885	ZD HZS12B2 (AP32 ONLY)			
ZD5525	2334323	DIODE-ZENER RD36EB2 (AP32 ONLY)	CP0001	2791754	DSS306-55B101M
ZD5526	2334285	DIODE-ZENER RD24EB4 (AP32 ONLY)	CP0002	2791754	DSS306-55B101M
ZD5527	2339868	ZD HZS9C2 (AP32 ONLY)	CP0003	2791754	DSS306-55B101M
ZD5528	2331799	ZD HZ5(C)3 SI (AP32 ONLY)	CP0004	2791754	DSS306-55B101M
ZD5529	2331799	ZD HZ5(C)3 SI (AP32 ONLY)	CP0005	2791754	DSS306-55B101M
ZD5530	2331799	ZD HZ5(C)3 SI (AP32 ONLY)	CP0501	2381126	REMOTE CONTROL RECEIVER SPS-409-1F
ZD5531	2339885	ZD HZS12B2 (AP32 ONLY)	⚠ CP702	0150668	FOCUS PACK MHF174-09
ZD651	2331807	ZD HZ-6 (C1)	⚠ CP901	2793312	CAPRISTOR
ZD652	2331154	ZD HZ12 (A1-3/B1-3/C1-3)	⚠ CP901A	2784342	CONDENSER COVER
ZD653	2334243	ZD RD16E(B2)	CP902	2793312	CAPRISTOR
ZD656	2334305	ZD RD30E (B4)	MF0001	2163972	CERAMIC FILTER 6MHZ
ZD709	2339612	ZD HZS3BLL	MF0002	2168831	CRYSTAL
⚠ ZD710	2335461	ZD HZ24 (2L)	MF5501	2786685	CRYSTAL
			M302	2375511	CHIP BOARD HC3053S (P IN P UNIT) (AP32 ONLY)

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SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
		COILS	L953	2161152	FILTER COIL
L0001	2122956	LA AXIAL COIL 100 MICRO H +-10%			SWITCHES
L0002	2122956	LA AXIAL COIL 100 MICRO H +-10%	S0501	2632851	TACTO SWITCH
L0003	2146091	COIL-OSC	S0502	2632901	KEY SWITCH
L0004	2122956	LA AXIAL COIL 100 MICRO H +-10%	S4501	2622561	SLIDE SWITCH
L0005	2122956	LA AXIAL COIL 100 MICRO H +-10%	S5502	2621051	SLIDE SWITCH
L0011	2122956	LA AXIAL COIL 100 MICRO H +-10%			MISCELLANEOUS
L0012	2122956	LA AXIAL COIL 100 MICRO H +-10%			
L0013	2122956	LA AXIAL COIL 100 MICRO H +-10%			
L1501	2120482	FILTER COIL 100 MICRO H +-10%	1	3204532	CONTROL PANEL ASS'Y (HHEA MD) (HSCC MD) (W/O INDOOR PLATE)
L2101	2120484	FILTER COIL		3821731	CNTRL DR (W/O DR PLATE) (HHEA MD) (HSCC)
L2102	2120484	FILTER COIL		3273431	CONTROL BUTTON (HHEA MD) (HSCC MD)
L2103	2120484	FILTER COIL		4159427	3X10 TAPPING SCREW WITH WASHER
L2104	2120484	FILTER COIL		4518772	3X12 TNE
L2105	2120484	FILTER COIL		3204182	R/C LENS (HHEA MD) (HSCC MD)
L2106	2120484	FILTER COIL		3725352	BOARD HOLDER
L3002	2120489	FILTER COIL 100 MICRO H +-10%	4	4492092	LENS CRT METAL
L3004	2120489	FILTER COIL 100 MICRO H +-10%	5	3873612	PWB HOLDER
L3006	2220584	CHOKE COIL TSL0707330K	6	3204812	TERMINAL HOLDER ASS'Y (HHEA MD)
L3501	2120482	FILTER COIL 100 MICRO H +-10%	7	4519512	TAPPING SCREW 4X16 MM
L3502	2166121	TRAP COIL 3.58MHZ	8	4524911	HEXAGON FLANGEHEAD 4X12
L3503	2122956	LA AXIAL COIL 100 MICRO H +-10%	9	4524911	HEXAGON FLANGEHEAD 4X12 (EXCEPT 55EX7K)
L4001	2122253	LA AXIAL COIL 100 MICRO H	9	4524915	4X20 TAPPING SCREW (55EX7K ONLY)
L401	2123461	FERRITE BEADS CORE		H460201	BRACKET SPACER(55EX7K ONLY)(SPACER WASHER USED FOR INITIAL PRODUCTION)
L402	2123461	FERRITE BEADS CORE			
L404	2123461	FERRITE BEADS CORE	10	3744173	CLAMPER
L5001	2141148	1H DL COIL		4519512	TAPPING SCREW 4X16 MM
L5002	2122939	LA AXIAL COIL 5.6 MICRO H	11	4519503	3X12 TAPPING SCREW
L5503	2122949	LA AXIAL COIL 33 MICRO H +-10%	12	4137977	4X25 SELF TAPPING SCREW
L5504	2120482	FILTER COIL 100 MICRO H +-10%	13	4339596	MIRROR
L5505	2120482	FILTER COIL 100 MICRO H +-10%	14	4520232	4X16 DT SCREW
L701	2121181	FILTER COIL	15	4520771	4x18 TAPPING SCREW W/ WASHER
L703	2124181	CHOKE COIL	16	4524915	4X14 HEX HEAD TAPPING SCREW
L705	2120486	FILTER COIL 4700 MICRO H +-5%	17	4331943	MIRROR HOLDER
L706	2124511	LINEARITY COIL		3700921	LAMP LENS (HHEA MD) (HSCC MD)
L707	2122095	FILTER COIL 27 MICRO H		3742021	LEAD HOLDER(CABINET)
L708	2120482	FILTER COIL 100 MICRO H +-10%		8781642	4X12 TAPPING SCREW
L709	2122094	FIXED COIL	20	4137975	4X16 ZA R SCREW
 L901	2123507	LINE FILTER	21	3142631	CABINET ASS'Y (HHEA MD)(55EX7K)
 L902	2123507	LINE FILTER	21	3142651	CABINET ASS'Y (HHEA MD)(50EX6K)
 L905	2124365	COIL	21	3142661	CABINET ASS'Y (HHEA MD)(46EX3B/BS)
L906	2122653	FERRITE BEADS CORE	21	3142681	CABINET ASS'Y (HHEA MD)(46EX4K/KS)
L912	2123469	FERRITE BEADS CORE READ 2.3	21	3142732	CABINET ASS'Y (HHEA MD)(50ES1B)
L942	2161152	FILTER COIL	21	3142731	CABINET ASS'Y (HHEA MD)(50ES1K)
L943	2161152	FILTER COIL		3737193	SCREW SEAT 4XL10
L944	2161152	FILTER COIL	23	4520771	4X18 TAPPING SCREW W/ WASHER
L945	2161152	FILTER COIL	31	H310591	SCREEN FR. H (46EX3B/3BS/4K/4KS)(HHEA MD)
L946	2161152	FILTER COIL	32	H310592	SCREEN FR. V (46EX3B/3BS/4K/4KS)(HHEA MD)
L947	2161152	FILTER COIL	33	3189765	SCREEN ASS'Y(46EX3B/3BS/4K/4KS)(HHEA MD)
L949	2161152	FILTER COIL		H310684	ULTRASHIELD(46EX3BS/4KS)(HHEA MD)
L950	2161152	FILTER COIL		H310595	SHIELD H-RETAINER(46EX3BS/4KS)(HHEA MD)
L951	2161152	FILTER COIL			

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SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
	H310596	SHIELD V-RETAINER(46EX3BS/4KS)(HHEA MD)	NF932	2721351	FUSE HOLDER
34	H520283	REAR BOARD L(46EX3BS/4KS)(HHEA MD)	NF935	2721351	FUSE HOLDER
35	H520322	REARBOARD L(50ES1B/K)(HHEA MD)	NF937	2721351	FUSE HOLDER
36	4517997	4X12 SELF TAPPING SCREW	NIC901	4520883	M3X12 SCREW WITH WASHER
	3727972	HOLDER-AC LINE CORD	NIC933	4520883	M3X12 SCREW WITH WASHER
	3744172	CLUMT 20	NIC935	4520883	M3X12 SCREW WITH WASHER
37	H520292	REARBOARD L(55EX7K)(HHEA MD)	NI131B	4520885	M3X16 SCREW
37	H520302	REARBOARD L(50EX6K)(HHEA MD)	NI131C	4518772	3X12 TNE
38	4304282	COVER NET	NI601B	4520883	M3X12 SCREW WITH WASHER
39	3103037	SCREEN FRAME 50H (50EX6K)(HHEA MD)	NQ710B	4520883	M3X12 SCREW WITH WASHER
39	3103134	SCREEN FRAME 55H (55EX7K)(HHEA MD)	NQ777B	4520883	M3X12 SCREW WITH WASHER
40	3103038	SCREEN FRAME 50V(50EX6K) (HHEA MD)	NQ777C	2771892	FERRITE BEADS CORE 004
40	3103135	SCREEN FRAME 55V (55EX7K)(HHEA MD)	NQ777D	2771893	FERRITE BEADS CORE
41	3830493	FRAME CORNER (55EX7K,50EX6K) (HHEA MD)	NQ780B	4520883	M3X12 SCREW WITH WASHER
42	4349013	FR. CRNR. METAL (55EX7K,50EX6K)(HHEA MD)	NQ932	4520883	M3X12 SCREW WITH WASHER
	4298641	BOARD FOR PANEL	NQ941	4520883	M3X12 SCREW WITH WASHER
43	4527631	4X18 TAPPING SCREW	NT902	4518772	3X12 TNE
44	3189844	SCREEN ASS'Y (50EX6K)(HHEA MD)	N0932A	4520883	M3X12 SCREW WITH WASHER
44	3189843	SCREEN ASS'Y (55EX7K)(HHEA MD)	N0962A	4520883	M3X12 SCREW WITH WASHER
45	3189764	SCREEN ASS'Y (50ES1B/K)(HHEA MD)	N0963A	4520883	M3X12 SCREW WITH WASHER
46	H310591	SCREEN FRAME H (50ES1B/K)(HHEA MD)	N1030	4159427	3X10 TAPPING SCREW WITH WASHER
47	H310592	SCREEN FRAME V (50ES1B/K)(HHEA MD)	N1031D	4518772	3X12 TNE
 49	4876423	LENS CRT BLK ASS'Y B (HHEA MD) (HSCC MD)	N1032D	8815124	WASHER,LOCK 3MM
 50	4876422	LENS CRT BLK ASS'Y G (HHEA MD) (HSCC MD)	N1033	4518772	3X12 TNE
 51	4876421	LENS CRT BLK ASS'Y R (HHEA MD) (HSCC MD)	N1055	4159425	3X16 TAPPING SCREW
 52	3393742	DELTA 77 A/B ASS'Y RB (HHEA MD) (HSCC MD)	N1060	3746482	WIRE CLAMP
 53	3393741	DELTA 77 A/B ASS'Y G (AP32 CHASSIS) (HHEA MD)(HSCC)	N1075	4159427	3X10 TAPPING SCREW WITH WASHER
 53	3393742	DELTA 77 A/B ASS'Y RB (AP31 CHASSIS) (HHEA MD)(HSCC)	N155	4524911	HEXAGON FLANGEHEAD 4X12
			N157B	4524913	HEXAGON FLANGEHEAD 4X12 R
			N157G	4524913	HEXAGON FLANGEHEAD 4X12 R
DL5001	2151041	DELAY LINE AND B.P.F	N157R	4524913	HEXAGON FLANGEHEAD 4X12 R
DL5003	2794401	DELAY LINE	N302	4520883	M3X12 SCREW WITH WASHER
EFUS	2687791	F-US ADAPTOR	N402A	4520883	M3X12 SCREW WITH WASHER
ERR	2902266	7P SUB MINI PLUG PIN	N408B	3332021	EARTH SPRING
			N408G	3332021	EARTH SPRING
 E101	2444875	DEFLECTION YOKE (HHEA MD) (HSCC MD)	N408R	3332021	EARTH SPRING
E301	2573787	REM CONT CLU-682GJ (HHEA MD) (HSCC)(AP32)	N409B	4159411	3X8 KNURL TAPPING SCREW
E301	2573786	REM CONT CLU-681GJ (HHEA MD) (HSCC)(AP31)	N409G	4159411	3X8 KNURL TAPPING SCREW
E302	2573622	REMOTE CONTROL TRANSMITTER CLU-609 (HH	N409R	4159411	3X8 KNURL TAPPING SCREW
 E801B	2698673	CPT SOCKET	N801	3763751	SK BINDER
 E801G	2698673	CPT SOCKET	N803	4520881	M3X8 SCREW WITH WASHER
 E801R	2698673	CPT SOCKET	 N9	2745414	POWER SUPPLY CORD
E802	2661756	1P PLUG PIN WITH BASE	N9BFN	4520883	M3X12 SCREW WITH WASHER
FE0001	2429691	FRONTEND V8-A68FT	N9N	4520881	M3X8 SCREW WITH WASHER
JUSP	2994843	MINI PIN PLUG WITH COAXIAL CABLE	N9NN	4770601	3 FLANGE NUT
J3001	2672891	6P PIN JACK WITH S TERMINAL	N9NR	4520883	M3X12 SCREW WITH WASHER
J3002	2672894	5P PIN JACK	N901	3772201	AC CORD HOLDER
J4501	2672901	4P PUSH TERMINAL	N907	3739671	CORD HOLDER
ND707	2771894	FERRITE BEADS CORE 006	PCB	2661753	PIN PLUG WITH BASE
ND901	4520883	M3X12 SCREW WITH WASHER	PCG	2661753	PIN PLUG WITH BASE
ND939	4520883	M3X12 SCREW WITH WASHER	PCR	2661753	PIN PLUG WITH BASE
NF601	2721351	FUSE HOLDER	PD	2663135	PLUG PIN WITH BASE (6P)
NF901	2721351	FUSE HOLDER	PFJ	2902266	7P SUB MINI PLUG PIN
NF903	2721351	FUSE HOLDER	PKZ	2674631	5P CONNECTOR

PRODUCT SAFETY NOTE: Components marked with a  have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
PLG	2661756	1P PLUG PIN WITH BASE			
PMB	2665272	4P PLUG PIN WITH BASE			
PMG	2665272	4P PLUG PIN WITH BASE			
PMR	2665272	4P PLUG PIN WITH BASE			
PP31	2661751	PLUG PIN WITH BASE			
PRR	2902266	7P SUB MINI PLUG PIN			
PS	2661752	PLUG PIN			
PS	2661942	CONNECTOR			
PSD1	2674631	5P CONNECTOR			
PSD2	2674635	10P CONNECTOR			
PSD3	2674634	8P CONNECTOR			
PSD4	2674635	10P CONNECTOR			
PSD5	2674631	5P CONNECTOR			
PSG	2661756	1P PLUG PIN WITH BASE			
PSL	2661944	CONNECTOR			
PTS	2663821	2P PLUG PIN			
 RL901	2640572	POWER RELAY			
SG780	2340039	SPARK GAP			
SG781	2340039	SPARK GAP			
 SG801B	2340039	SPARK GAP			
 SG801G	2340039	SPARK GAP			
 SG801R	2340039	SPARK GAP			
 SG802B	2340039	SPARK GAP			
 SG802G	2340039	SPARK GAP			
 SG802R	2340039	SPARK GAP			
SP401	2412921	SPEAKER 160MM			
SP402	2412921	SPEAKER 160MM			
TH2101	2340552	THERMISTOR			
W811B	2692461	FOCUS LEAD WIRE (HHEA MD) (HSCC MD)			
W811G	2692461	FOCUS LEAD WIRE (HHEA MD) (HSCC MD)			
W811R	2692461	FOCUS LEAD WIRE (HHEA MD) (HSCC MD)			
X5501	2791505	CRYSTAL			

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