# INSTRUCTION MANUAL MODE D'EMPLOI GEBRUIKSAANWIJZING



HAM INTERNATIONAL JUMBO

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JUMB

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## Specifications

General

ENGLISH

Channels Modulation Modes Frequency Range Tune Frequency Control Frequency Tolerance Frequency Stability Operating Temperature Range Microphone AC Input Voltage AC Power Consumption DC Current Drain

Antenna Connectors [A and B] Semiconductors Meter #1 Meter #2

## Transmitter

Power Output SSB Generation AM Modulation AM Modulation Capability Harmonic and Spurious Emission AM/FM Frequency Response SSB Frequency Response Output Impedances [A and B] Output Indicators Tune

#### Receiver

FM Sensitivity AM Sensitivity SSB Sensitivity AM/FM Selectivity SSB Selectivity Image Rejection IF Rejection AGC Squelch Audio Frequency Response Distortion Adjacent Channel Rejection **Cross Modulation** Intermediate Frequency Clarifier Range Tune Range Noise blanker Audio Output Power Built-in Speaker External Speaker (optional)

120 channels in 3 bands FM, AM, LSB, USB 26.965 to 28.305 MHz ±5 kHz Phase-locked synthesizer ±0.005% ±0.003% -30°C to +50°C Plug-in [4-pin], 600 Ohm dynamic type 220V, 50/60 Hz 75W 1.5A [at maximum audio modulation] 0.5A [at standby with no signal] Standard SO-239 type 6 ICs, 2 FETs, 52 Transistors (Excluding the *Roger Beep* unit) Indicates relative RF power output/antenna SWR, Indicates received signal strength

4W or 0.5W-AM/FM, 12W (PEP)-Single sideband Dual-balanced modulation Class B amplitude, collectors modulation 100% Better than 60 dB 400 to 5,000 Hz 400 to 3,000 Hz 50 Ohms unbalanced RF Meter shows relative RF output power ±4.5 kHz minimum

0.5 µV for 20 dB S/N 0.7 µV for 10 dB S/N 0.2 µV for 10 dB S/N 5 dB at 4 kHz, 50 dB at 10 kHz 5 dB at 2 kHz. More than 50 dB More than 80 dB at 455 kHz Change in audio output: less than 12 dB from 10  $\mu$ V to 0.4V Adjustable — threshold less than 0.7  $\mu$ V 400 to 2,500 Hz Less than 10% at 3 watts output 8 Ohms  $>75 \, dB \, at \, 0.3 \, \mu V$ >50 dB 10.695 MHz [AM-1st, SSB], 455 kHz [AM-2nd] ±800 Hz ±4.5 kHz minimum IF single gate type More than 3 watts into 8 Ohms 8 Ohms, dynamic Disables internal speaker when connected

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ENGLISH

The HAM International JUMBO is an advanced FM/AM/SSB 2-way transceiver primarely designed for base station operation. It employs the very latest technology to provide 120 channels operation for 3 modes of transmitting and receiving by means of the phase-locked loop (PLL) circuitry. The use of the PLL circuitry assures a precise on-frequency operation on every channel that is unmatched by conventional frequency synthesis system units. The JUMBO also feateres the following:

- "Roger Beep" built-in.
- Electromagnetic TX-RX switching enables selective call facility.
- Two relay switched antenna inputs.
- Tune facility allows between-channel operation specially in SSB with more convencience than VFO.
- RF power (4W/0.5W) switch provided.
- Optional: Table pre-amplified compressor microphone model TW232S from Ham International.
- 120 channels in 3 bands.
- Modulation control lamp.
- Output for frequency counter.
- Giant LED's assures bright channel display.
- Detachable handgrips for professional 19" rack mounting.

## Description Générale

ERANCAIS

L'émetteur-récepteur JUMBO de HAM International utilise les techniques les plus avancées dans le domaine des radio-communications. On y trouve les innovations techniques les plus récentes tel que la modulation de fréquence à déviation étroite, les 120 canaux continus produit par circuit intégré à fonction logique (PLL) ainsi que la commutation électronique émissionréception. Le JUMBO offre aussi les nouveautés suivantes:

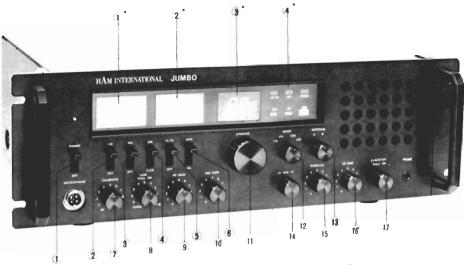
- Roger Beep incorporé.
- Connecteur prévu pour l'utilation d'un appel sélectif Ham International.
- 2 entrées d'antennes commutable par relay.
- Le bouton "TUNE" permet aussi d'opérer sur tous les canaux intermédiaires spécialement en SSB avec plus de confort qu'un VFO.
- Switch sortie RF (4W/0.5W) prévu.
- En option: Le micro de table préamplifié à compresseur, le modèle TW232S de HAM International.
- 120 canaux divisés en 3 bandes.
- Lampe de controle de la modulation.
- Sortie pour compteur de fréquence.
- Diodes electro-luminescentes géantes pour affichage digital très lisible.
- Poignées détachables pour montage en rack professionnel 19".

## Algemene Beschrijving

DUTCH

De HAM International JUMBO is een technisch vergevorderde FM/AM/SSB zenderontvanger ontworpen met het oog op een gebruik hoofzakelijk als basisstation. De laatste technologische snufjes werden gebruikt om 120 kanalen voort te brengen door middel van digitale frekwentie syntese met Phase lock loop (PLL circuits). Deze PLL schakeling verzekert een nauwkeurige frekwentie van ieder kanaal, in alle modes. Dit systeem is wat betreft kwaliteit niet te evenaren door de konventionele kristal synthesizers. De JUMBO heeft bovendien een aantal uitzonderlijke extras.

- 120 kanalen in 3 banden
- Ingebouwde Roger Beep
- Aansluiting voor selektieve systemen
- 2 omschakelbare antenne aansluitingen (vb beam + GP)
- Tuning welke toelaat tussen de kanalen te werden vooral in SSB gemakkelijker dan met een VFO
- RF vermogen (4W/0.5W) schakelaar voorzien.
- Controle lamp voor de modulatie
- Aansluiting voor frekwentie teller
- Zeer heldere kanaalaanduiding met reuze led display
- Met Professionele afneembare bandvaten voor montage in een HIFI RACK (19 inch)
- Bijbehoren tegen meerprijs te bekomen van *Ham International* – TW232S: Top kwaliteit tafel mikrofoon met ingebouwde kompressorvoorversterke.



#### \* See page 7.

## Installation

#### Connection

The transceiver is supplied with AC power cord. Proceed as follows to complete all necessary connections to the transceiver:

- Your transceiver has two standard antenna connectors of type SO-239 located on rear panel, for easy connection to standard PL-259 coax plugs. Use only enough cable to suit your needs. This will insure a proper impedance match and maximum power transfer from the transmitter to the antenna. If the coax antenna cable must be made longer, use coax cable with high efficiency and quality such as type RG-8/u.
- 2. AC Power Operation: Use 220 volts AC power for base station operation. Plug AC power cord into a working 220 volts household outlet.

## Noise Interference

There are several kinds of noise interferring you may encounter in base station operation. Some of these noise sources are; fluorescent buzz, nearby commercial broadcast, electrical appliance, lawnmower, and electrical storms, etc. Commercial products are available to reduce interference from these sources. Consult your dealer or CB/amateur radio supply shops.

#### Antennas

Ham International has designed a high power antenna for best performance in local and DX use with large bandwidth for equal quality on 120 channels: The Superstar.

#### Remote Speaker

The external speaker jack (EXT. SP) on the rear panel is used for remote receiver monitoring. The external speaker should have 8 ohms impedance and be able to handle at least 3 watts. When the external speaker is plugged in, the internal speaker is disconnected.

## Installation

#### **Connections**

Procédez aux connections dans l'ordre suivant:

- Votre Jumbo est équippé sur le panneau arrière de deux connecteurs d'antenne du type SO-239 qui conviennent pour les fiches standard PL259. Utilisez du cable coaxial de 50 ohms pour vos rallonges d'antennes.
- Utilisation sur le secteur AC 220V Connecter le cable d'alimentation AC dans la prise prévue à cet effet sur le panneau arrière et l'autre extrémité dans une prise de courant 220V.

#### ANTENNAS

HAM INTERNATIONAL a prévu pour votre Jumbo une antenne de base de haut rendement avec une large bande passante pour un résultat optimal en local ou en DX sur les 120 canaux: le modèle SUPERSTAR.

## Plaatsing

#### Aansluitingen

- Deze zenderontvanger heeft twee antenne aansluit mogelijkheden op het achterpaneel. Gebruik uitsluitend kabel van 50 ohm en de klassieke PL259 Plugs (amphenols).
- Gebruik op 220V netspanning Sluit het overeenkomstige snoer op de AC aansluitplug en op het stopkontakt 220V.

#### Antennes

Ham International heeft voor uw *JUMBO* een bijpassende antenne met hoog rendement en een grote bandbreedte voor een maksimum resultaat zowel voor lokaal als voor DX: *De Superstar.* 

## **Control Function**

- 1 *Power Switch* Place in POWER (lever up) position to apply power to the unit.
- 2 Noise Blanker Switch This switch activates the noise blanker circuit when placed in NB (lever up) position. The noise blanker is very effective for repetitive impulse noise such as ignition interference.

3 ANL Switch

When this switch is placed in the ANL (lever up) position, the automatic noise limiter in the audio is activated. The ANL may be used when noises generated from such sources as atmospheric discharge, electronic machinery etc., are present.

- 4 RF Power (4W/0.5W) Switch Permits you to adjust the RF output when AM/FM transmitting – 4W or 0.5W.
- 5 High Filter Switch This switch is used to remove high frequency noise from received signal.
- 6 SWR-Calibrate Switch

This switch serves for SWR check of your antenna:

CALIB (lever down): Used to calibrate the SWR meter before measuring your antenna's SWR ratio.

SWR (lever up): Used to directly read the SWR of antenna connected to the unit. See SWR check.

7 Calibrate Control

This control is used for calibrating the SWR meter for accurate SWR measuring in conjunction with the SWR-CALIB Switch 6).

8 Tune

In pulled position, allows to vary the operating frequency with plus minus 4.5 kHz and functions as a VFO. In pushed position, the frequency is the center frequency of the channel displayed.

9 RF Gain Control

This control is used primarily to optimize reception sensitivity in strong signal areas. Under normal operating conditions the control should be turned fully clockwise. When strong overload or distorted signals are received rotate this control counterclockwise to reduce gain.

*Note:* The *Squelch Control* 15) may require readjustment with reduced *RF Gain Control*.

## Face Avant

- 1 POWER Placer ce switch en position power pour alimenter l'appareil.
- 2 NB
  - Met le filtre "noise blanker" incorporé en fonctionnement pour atténuer seulement les parasites tel que ceux produit par les moteurs à explosion.
- 3 ANL

Met le filtre "ANL" incorporé en fonctionnement pour atténuer les bruits de fond pendant la réception.

4 Switch Sortie RF (4W/0.5W) Controle le niveau sortie RF en emission MA/MF – 4W ou 0.5W.

5 HI-FIL Cet interrupteur permet de diminuer les sous aigus indésirables signaux reçus.

- 6 SWR/Calibrate
  - En position *CALIB*: Pour calibrer le Tos-mètre avant la mesure du TOS.
  - En position *SWR*: Lecture du TOS sur le TOS-mètre.
- 7 Calibrate

Permet de calibrer le TOS-mètre lorsque l'inverseur SWR-CALIB est en position CALIB.

- 8 Tune
  - En position tirée, ce bouton, permet de varier la fréquence d'opération de ±4,5 kHz par rapport à la fréquence du canal indiqué.
  - En position poussée le tune ne fonctionne pas.
- 9 RF Gain

Pour atténuer les signaux trop puissance en réception; sa position normale est la position maximale à droîte.

10 MIC Gain

Un circuit pré-amplifieur pour le micro est incorporé dans votre JUMBO et permet une adaptation optimale à vos conditions de transmission.

- 11 Channel
   Le bouton permet de déterminer
   le canal d'opération en combinai son avec le selecteur de bande.
- 12 *Mode* Le bouton détermine le mode de modulation soit:

*FM:* Fréquence modulée à déviation étroite.

AM: Modulation d'amplitude,

# Voorzijde

- Power
   Plaats deze schakelaar in de positie POWER om het toestel aan te schakelen.
- 2 NB

Plaats de schakelaar omhoog om de Noise Blanker in the schakelen. Deze is alleen effectief om korte repeterende stoorpulsen zoals ontstekingsstoring van wagens te verminderen.

3 ANL

De schakelaar omhoog stelt de automatische ruis en storingsonderdrukker in werking in het audio degeelte, nuttig om atmosferische en allerhande storingen te onderdrukken. Gewoonlijk wordt hij continu ingeschakeld.

4 RF Vermogen Schakelaar (4W/ 0.5W)

Regelt de AM/FM zendvermogen bij de zenden -4W of 0.5W.

5 HIFIL

Met deze schakelaar kan men scherpe tonen tijdens de ontvangst wegsnijden.

6 SWR-Calibrate

In de positie *Calib*: om voor het meten van de staande golfverhouding de meter in te stellen. In de positie *SWR*: aflezing van de staande golf verhouding (SWR).

7 Calibrate

Hiermee regelt men de naald van de SWR meter op set terwijl de *SWR /Calib* schakelaar in de stand Calib staat.

8 Tune

Als men de knop uittrekt kan men zowel zend als ontvangst frekwentie  $\pm 4,5$  kHz bijregelen als de knop ingedrukt is krijgt men automatisch de juiste kanaalfrekwentie.

9 RF Gain

Om te sterke signalen bij ontvangst af te zwakken deze regeling staat normaal op maksimum (wijzerzin) = minimum verzwakking.

 10 Mic Gain

 In de JUMBO is een mikrofoon voorversterker ingebouwd, deze regelaar laat toe elke mikrofoon of stem optimaal aan te passen.

 11 Channel

In samenspel met de bandschakelaar kan men hiermee elk gewenst kanaal kiezen.

- 10 Microphone Gain Control A preamplifier circuit is built into this unit to increase microphone gain. Experiment with this control for the setting that will best suit your individual use.
- 11 Channel Selector This control selects any one of the 120 citizens band channels desired. The selected channel is digitally displayed in the window directly above the control.
- 12 Mode Selector

This control selects the mode of operation in either FM, standard AM, upper sideband, or lower sideband. Transmission in a mode can only be communicated to stations operating in the same mode.

13 Antenna A-B Selector

For switching between two types of antennas or dummy load that may be connected to the unit. You may connect a ground plane antenna (non-directional) to *Antenna A* receptacle, and a beam type antenna (highly directional) to the *Antenna B* receptacle on rear panel for long-range communications.

14 Band Selector (HI-MID-LOW) This is used in conjunction with the Channel Selector and selects one of 3 bands which are composed of 40 channels. Setting this to Low position enables you to operate over channels 1 through 40; MID position channels 41 to 80; and Hi position channels 81 to 120.

## 15 Squelch Control

This control is used to cut off or eliminate receiver background noise in the absence of an incoming signal. For maximum receiver sensitivity it is desired that the control be adjusted only to the point where the receiver background noise or ambient background noise is eliminated. Turn fully counterclockwise then slowly clockwise until the receiver noise just disappears. Any signal to be received must now be slightly stronger than the average received noise. Further clockwise rotation will increase the threshold level which a signal must overcome in order to be heard. Only strong signals will be heard at a maximum clockwise setting.

16 AF Gain (Volume) Control Permits you to adjust the listening level when receiving. *LSB, USB:* Modulation d'amplitude à bande latérale unique (B.L.U.) LSB bande inférieure.

- USB bande supérieure. 13 Antenne A et B
- Branche l'antenne connectée à l'entrée A ou B.
- 14 Band Selector
  Suivant le canal choisit, placer ce selecteur en position:
  L pour les canaux de 1 à 40.
  M pour les canaux de 41 à 80.
  H pour les canaux de 81 à 120.

15 Squelch Le squelch permet d'éliminer le bruit de fond indésirable en réception en l'absence de signal significatif. Plus le bouton est tourné à droite, plus fort le signal doît être pour ouvrir le récepteur.
16 Volume

- Controle le niveau sonore en réception.
- 17 Clarifier
  - Fonctionne comme "delta-tune" en AM ou FM et permet de clarifier la réception en B.L.U. (USB et LSB) en position tirée. En position poussée le clarifier ne fonctionne pas et la f. de réception est la même que celle d'émission.

12 Mode

Hiermee kann een der modulatie soorten gekozen worden.

*FM:* Frekwentie modulatie met heel smalle zwaai.

AM: Amplitude modulatie.

*LSB-USB:* Enkelzijband modulatie (SSB).

LSB = Lage zijband.

- USB = Hoge zijband.
- 13 Antenne A en B Mogelijkheid tot 2 antennes gelijktijdig aan te sluiten en met de schakelaar in een oogwenk om te schakelen vb. van Horizontaal naar vertikaal.

14 Band selector Stand L geeft de kanalen 1 tot 40. Stand M geeft de kanalen 41 tot 80.

> Stand H geeft de kanalem 81 tot 120. (Opgepast sommigen van deze laatste vallen in de 10m amateurband).

15 Squelch

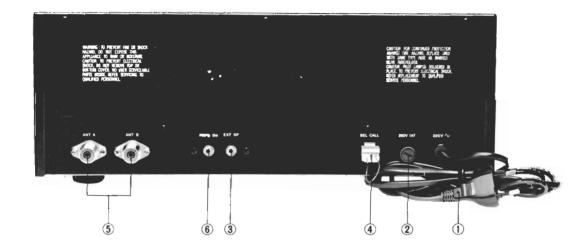
Hiermee kan men het vervelende achtergrond geruis bij afwezigheid van uitzendingen, of het lawaai van zwakke ongewenste stations wegwerken.

- 16 Volume Regelt de geluidssterkte bij de ontvangst.
- 17 Clarifier (Fijnregeling)
   Deze regeling laat toe de ontvanger af te stemmen op uitzendingen welke niet op de juiste frequentie zijn. In SSB wordt deze gebruikt om de juiste toonhoogte van de klank te verkrijgen voor een natuurgetrouwere weergave. De clarifier is slechts inge-

schakelt als de knop uitgetrokken is. In *Duw* positie is de ontvangst frekwentie gelijk aan de zendfrekwen tie en werkt de clarifier niet

## 17 Clarifier

The clarifier works only in pulled position. In pushed position the clarifier does not operate and the frequency of the receiver is same as the transmitter.



## Rear Panel

- 1 220V AC Power Cable.
- 2 Fuse 1A, 250V.
- 3 External Speaker Jack For 8 Ohm external Speaker connection. When the plug is inserted to this jack, the internal speaker is silenced.
- 4 Selective Call Jack Used to connect the optional selective call unit (available from Ham International).
- 5 Antenna Connectors A/B Used to connect antennas to the unit and mate with 50 Ohm coaxial plug, type PL-259.
- 6 Frequency Counter Output.

## Face Arrière

- 1 Cable d'alimentation 220V AC.
- 2 Fusible
- 1A, 250V.
- 3 Connecteur ext. sp. Pour connecter un haut-parleur extérieur de 8 ohms. En introduisant la fiche, le HP intérieur est mis hors circuit.
- 4 Connecteur Sel Call Prévu pour connecter un système d'appel selectif HAM International.
- 5 *Connecteur d'antenne A et B* Prévu pour connecter le cable coaxial 50 ohms par l'intermédiaire d'une fiche PL259.
- 6 Sortie pour fréquence-mètre.

## Achter Ziide

- 1 Aansluitsnoer voor AC 220V.
- 2 Fuse Zekering 1A, 250V.
- 3 Ext. Sp. Aansluitbus voor extra luidspreker, de inwendige luidspreker wordt bij het insteken van een plug uitgeschakeld.
- 4 Selektief Call Aansluiting, vraag raad aan uw Ham international verdeler.
- 5 Antenne aansluitbussen A en B
- 6 Uitgang naar frekwentie meter

#### Indicators

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See page 3.

1 Signal Strength Meter

The left hand meter provides a relative indication of the signal strength of a received signal in S units during reception. Note that SSB signals will respond this meter only during voice modulation. This being due to the fact that SSB transmissions do not contain a continuous RF carrier as is found on AM or FM.

2 RF Power/SWR Meter

Used for two purposes – to indicate relative transmitter power (4W or 0.5W AM/FM – selectable, 12W PEP SSB) when transmitting; to indicate the antenna SWR [standing wave ratio].

3 Channel Display

This is an LED [light emitting diode] digital readout which indicates the channel selected by the *Channel Selector 11*).

4 Function Indicators

The LED indicators located in this area permit you to know instantly the mode with which the unit has been engaged.

*Hi-CH:* Lights up when unit is operating in *Hi* 40 channels.

On Air: Lights up during transmit mode indicating you are on-the-air.

*Modulation:* Lights up during transmitting with intensity varied according to the strength of your voice modulation.

FM, AM, SSB: Indicates a mode selected by the Mode Selector 12).

## Push-to-Talk Microphone

The receiver and transmitter are controlled by the *Push-to-Talk* switch on the microphone. Press the switch and the transmitter is activated; release the switch to receive. When transmitting, hold the microphone two inches from the mouth and speak clearly in a normal voice. The radio comes complete with the low impedance dynamic microphone supplied.

Optional: TW232S table microphone.

#### Operating Procedure

#### To Receive

Important: Make sure antenna, power source, and microphone are connected before you operate.

- 1 Turn the unit on by setting the *Power Switch 1*) to *On* position. Now the meters, *Channel Display* and *Function Indicator* will be illuminated.
- 2 Temporarily, set the *Mode Selector 12* in *AM* position.
- 3 Set the Squelch Control 15) in fully counterclockwise position and adjust the AF Gain control 16) for a comfortable listening level.
- 4 Listen to the background noise from the speaker. Turn the Squelch Control 15) slowly clockwise until the noise just disappears (no signal should be present). Leave the Squelch Control at this setting. The Squelch Control is now properly adjusted. The receiver will remain quiet until a signal is actually received. Do not advance the Squelch Control too far clockwise or some of the weaker signals will not be heard.
- 5 Set Tune and Clarifier in the pushed and center position respectively.
- 6 Select a desired mode of operation, FM, AM, SSB, or, USB. Adjust *Clarifier 17*) for advanced operation.
- To Receive
- 1 Select the desired channel and mode of transmission.
- 2 If the channel is clear, depress the *Push-to-Talk* switch on the microphone. Speak in a normal tone of voice.

#### SWR Check

Though most antennas are factory-tuned, adjusting the length of antenna using the SWR meter may peak the antenna efficiency and protect the final RF power transistors from an overload due to mismatch. Proceed as follows:

- 1 Set the unit in the receive mode as instructed under the Operating Procedure to Receive section.
- 2 Set the Mode switch 12) to AM position; the SWR-Cal 6) switch to the Cal position.
- 3 Pressing the Push-to-Talk switch on the microphone and turn the Calibrate Control 7) clockwise (past click) so that the SWR meter pointer exactly coincides with the Set mark on the scale. Release the Push-to-Talk switch.
- 4 Set the SWR-Cal switch to the SWR position and depress the Push-to-Talk switch again. The SWR of your antenna is read directly on the scale. An SWR below 2 or less is desired as this indicates that over 95% of the transmitted power is broadcast into the air.

*Note:* If you find difficulty to obtain SWR readings smaller than 3 (ratio 1 is ideal though very hand to gain), consult the dealer to determine how to mach your antenna to your *JUMBO*.

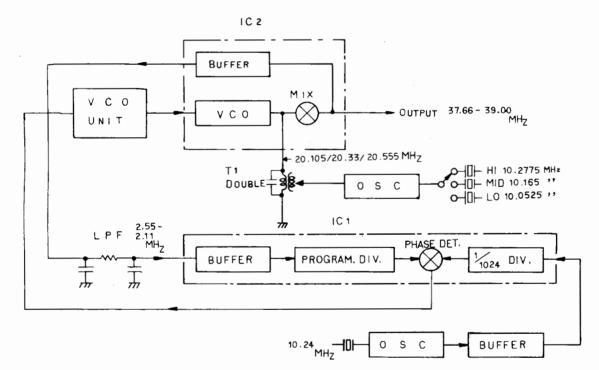
## Maintenance and Adjustment

The transceiver is specifically designed for the environment encountered in the base station use. The use of fully solid state circuitry and its rugged style result in high reliability. Should a failure occur, however, replace parts only with identical parts. Do not substitute. Refer to the Schematic Diagram and Replacement Parts List in this manual. If the performance described in the *Operation* section is not obtained, review the *Installation* section to insure that proper procedures were followed. If a problem still exists, refer to your *HAM International* dealer.

#### Circuit Description

The transceiver is a 120 channel CB radio which uses a phase locked loop [PLL] system of frequency synthesization to produce the crystal controlled channel and IF signals used in operation of the transmitter and receiver sections of the unit. The basic PLL system is comprised of a free-running voltage controlled oscillator (part of IC2), a phase detector, a reference crystal oscillator ( $\Omega$ 3) and a programmable divider (IC1), as seen in diagram below.

#### PLL Theory (PTOS006 Circuit Board)



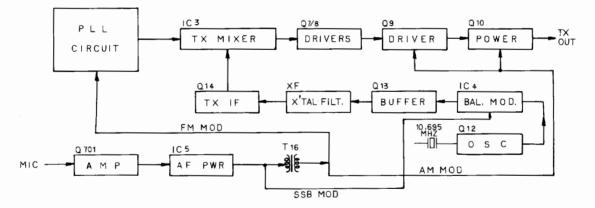
The voltage controlled oscillator [VCO] operates in the frequency range of 17.5550 to 18.4450 MHz in the AM/FM/USB mode and 17.5535 to 18.4435 MHz in the LSB mode, and is used to produce two output signals: #1; 37.660 to 39.000 MHz in the AM/FM/USB mode and 37.657 to 38.997 MHz in the LSB mode, #2; at 2.55 to 2.11 MHz. Reference frequency oscillator Q4 oscillates at 10.0525, 10.165, or 10.2775 MHz in accordance with the Band Selector switch (1.5 kHz lower when LSB mode). Its output is fed through the band-pass filter [BPF]/doubler resulting in an output signal, 20.105, 20.33, or 20.555 MHz in accordance with the band selected (3 kHz lower when LSB mode). This signal beats with the VCO free-running signal producing a 37.66 to 39.0 MHz in the AM,FM/ USB mode and 37.657 to 38.997 MHz in the LSB mode, which is fed to the receiver first mixer [Q22] and also to IC3 (on main circuit board PTBM059), the transmitter mixer. The second VCO output signal, at 2.55 to 2.11 MHz is fed to the programmable divider in IC1. Simultaneously the 10.24 MHz output of Q3 [through the buffer Q2] is applied to the programmable divider in IC1 and is divided down in 10 kHz steps. As a channel is chosen by the Channel Selector switch [SW-1 on PTS-W076], and N code signal is applied to the terminals [pin No. 9 to 15 of IC1] on the programmable divider in IC1, to preset the divider. The two signals, the crystal oscillated signal [10.24 MHz] from Q3, and the signal from the VCO via the lowpass filter [LPF] and buffer [in the IC1], are compared in the phase detector of IC1 and the phase detector produces a DC output voltage derived

from the phase difference in the signals fed to it. This DC output is applied through an LPF to the VCO, forming the phase loop. This DC voltage applied to the VCO causes it to shift frequency until its output signal locks up with the count-down frequency provided from reference oscillator Q3 [when two signals are in phase] at which point no DC output is produced in the phase detector, and th VCO remains *locked* on frequency. When a new channel is selected a new *N* code is applied to the programmable devider. The VCO is no longer locked because of the resulting phase difference in the phase detector, and it again shifts frequency to a locked condition, in turn producing 37 MHz output signals corresponding to the new channel programmed by the new N code. In summary it will be seen that a stable VCO frequency range will be produced, each specific frequency being determined by the N code selected by the Channel Selector switch.

#### Main Board Assembly (PTBM059)

The crystal oscillator Q12 is operating at 10.695 MHz in the AM/FM/USB mode, and 10.692 MHz in the LSB mode, controlled by the crystal, X3. This signal is #1; in the AM and FM modes of transmission, fed to the IC3 to be mixed with the first TX local oscillator frequency and result in 27 MHz transmitter frequencies, and #2; in the SSB modes of transmission, modulated through the balanced modulator IC4 with the audio output signal from the microphone amplifier, IC5. The resultant output of the balanced modulator is a double sideband, suppressed carrier signal. The crystal filter, XF, pass band is restricted to 3.5 kHz so that it allows only one sideband to pass through its output terminals, either USB or LSB mode, depending upon the Mode Selector switch selection. The exact frequency of which was determined by the Channel Selector switch selection and the PLL circuitry, as previously outlined, the resultant frequency, therefore, that is fed to the RF amplifier in IC3, is the channel frequency on the channel selected [channel 1 through 120 over 26.965 to 28.305 MHz]. The 27 MHz RF amplifier output is coupled to RF predriver transistors, Q7, 8, through T4, 5. The predrivers serve to isolate the oscillator and mixer stages from the output amplifiers, and at the same time provide a certain amount of power gain. Q8 output is applied to the base input of Q9, the RF driver stage and in turn to the Q10, the RF power output stage of the transmitter. These stages amplify the 27 MHz RF signal resulting in an output at L13 of 4W (or 0.5W) in AM or FM mode, and 12 watts PEP [peak envelope power] in the SSB mode.

TX Diagram



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#### Modulation Circuit

*AM:* The microphone feeds voice audio through Q701 on PTSW072 to the power audio IC IC5, and finally to collectors of Q9 and final RF power amplifier Q10 through T16, thereby amplitude modulating the carrier in AM transmission.

*FM:* In the FM mode, IC5 output is led to the anode of the FM modulating variable capacitor D5 (also involved for 'Tune' control) in circuit board assembly PTOS006, varying its bias to change parallel capacitance to X2, X3, or X4, finally giving deviation to PLL output frequency.

*SSB:* The IC5 output is directly fed to the balanced modulator IC4, resulting in suppressed carrier double side band, which is in turn supplied to the crystal filter to carrier removal.

ALC: An audio ALC [automatic level control] voltage derived from the audio signal at Q35 is fed to IC5 to control the output of audio amplifier to prevent overmodulation. In the AM or FM transmission, the output of Q35 is led to Q37 and is used to control the output of T16, whereas in the SSB transmit mode, the output of Q35 is fed to Q38 and is connected to the primary side of T16. This being due to the fact that the output of IC5 [modulation signal] is fed [to modulate the RF signal] from the secondary side of T16 in the AM or FM mode, and from the primary side of T16 in the SSB mode of transmission.

The transceiver is also equipped with the RF ALC circuit utilizing the RF output induced at the input of L12 [in the SSB mode only]. The minus voltage detected through D8 is applied to the DC

plus bias circuit [pin number 7 of IC3, TX mixer] thus reducing the gain of the TX mixer as high level RF signal is observed at L12. This circuit is disabled in the AM or FM mode of transmission. In summary, the ALC circuit [both audio and RF] accomplishes very important function, not only preventing overmodulation, but in the view of harmonic and spuirous suppression [especially in the SSB transmit mode].

#### Antenna Transmission Line

The lowpass filter between the antenna and collector of Q10 serves to pass the 27 MHz signals, attenuating higher frequency signals. It also acts to match the antenna impedance to the output impedance of the transmitter output stage, this nominally being 50 Ohm.

#### Receiver

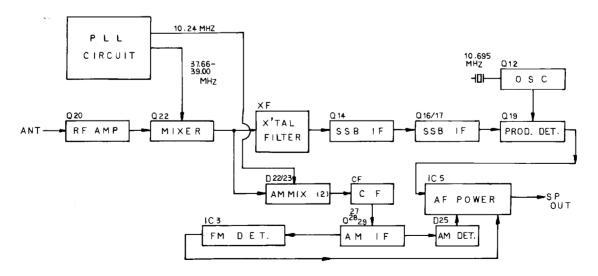
The RF signal, at a frequency between 26.965 to 28.305 MHz, feeds from the antenna through L13, 12, 11, and T7 to the 27 MHz RF amplifier Q20. Then the amplified output signal from Q20 is coupled through T9 to first mixer Q22 where it is beat with an injection signal from the VCO, IC2, through the VCO buffer Q2.

The frequency of the injection signal from IC2 depends on the channel being selected, as a signal of the 37 MHz range is programmed by the Channel Selector. The output of Q22 is therefore, 10.695 MHz in the AM/FM/USB modes, and 10.692 MHz in the LSB mode, the first intermediate frequency and is the result of the RF input and mixing of IC2 VCO signals.

In case of the AM or FM receive mode, this 10.695 MHz first IF signal is then fed to the second mixer, balanced D22 and D23. Also fed to the second mixer is the second local oscillator signal, 10.24 MHz, from Q3. Mixing of these two signals result in a signal at a frequency of 455 kHz in T14. This is the second intermediate frequency for AM or FM mode of reception. In AM mode, the 455 kHz signal passes through the ceramic bandpass filter CF, and fed to IF amplifiers Q27, 28, and 29, which include IF transformer T15. The output of Q29 is applied to D25, the AM diode detector, while in FM receiving mode, the 455 kHz signal amplified only through Q27 is led to FM demodulating IC, IC3 on the PTOS006 through T4. Resultant demodulated audio is acheived from the IC pin #12 and input to AF gain control VR, VR1. In the SSB mode of reception, the signal obtained as a result of the mixing of the RF input and IC2 VCO signals, 10.695 MHz in the USB, and 10.692 MHz in the LSB mode, is not converted down to lower intermediate frequency, but is passed through the crystal filter, XF, and fed to the SSB IF amplifiers, Q14, 16, and 17, which includes T11, and 12. The signal at the secondary side of T12 is fed to Q19, the product SSB detector and beat with the BFO [beat frequency oscillator] signal from the Q12 and finally rectified to audio frequency signal. The audio signal output from detectors (for AM [D25], FM [IC2], and SSB [Q19]), is passed through the AF Gain Control, VR1, to the input of the audio amplifier, IC5. The audio output is transformercoupled to the internal speaker, or to an external speaker through External Speaker jack, J3.

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RX Diagram



#### Squelch

Q32, 33, and 34 are the squelch amplifier transistors. At low [or no] signal levels Q34 collector conducts to ground and its output connected to pin number 6 of IC5 results in no signal output from the audio amplifier. As the incoming RF signal increases it results in opening up the AF amplifier and output is activated. The point at which Q34 cuts off is determined by setting of the Squelch Control, VR2.

#### Noise Blanker

The noises contained in the RF signal at the output of RF amplifier, Q20, is fed through C112 to the base of Q23. The amplified signal output of Q20 is rectified by diodes D20 and 21. The resulting DC voltage turns on Q24 [FET] which in turn turns on Q25 and 26. This causes the IF signal [10.695 or 10.692 MHz] at T10 to be conducted to ground through C121 and Q26 during the presence of the noise impulses, blanking out the noise from the audio output.

#### 'Tune' Circuit (PTOS006)

The 'Tune' control facility allows between-channel operation shifting both the transmit and receive frequencies 4.5 kHz above or below the assigned channel frequency continuously.

The active elements of the circuit are variable-capacitance diodes D4, D5 and VR4. Both diodes capacitances vary in accordance with the bias level determined by VR4 adjustment, thus increasing or decreasing the parallel capacitance to R14 at Q4 emitter through C25 (by D4) and the external capacitance to X1, X2 or X3 (by D5) simultaneously. The bias of both diodes is fixed when VR4 is pulled to *Off*.

#### Clarifier Circuit

The Clarifier is operative only in receive mode and changes the receive frequency regardless of the transmitting frequency. VR6 acts to vary the plus bias voltage of D206 (on circuit board Y3) in the same way as in Tune circuit description. Thus, Q4 oscillating frequency is pulled above (VR6 clockwise rotated) or down (VR6 counterclockwise rotated) its normal channel frequency. D206 is fixed biased when the unit is transmitting.

#### High Filter

The high-frequency-cut filter acts to improve readability in congested areas etc., eliminating high frequency noise component in audio output. In PTSW072 circuit board, Q702 serves to compensate CR filter loss.

#### Power Supply

The supplied 220V AC is stepped down through T201 and rectified by bridge rectifiers D1 to 4 on PTPW007. When the voltage output at pin #3 on the circuit board decreases, the collector current of Q2 also decreases causing reduced collector voltage. This will increase Q1 bias and Q201 bias. The voltage across the collector to emitter of Q201 decreases thus restoring the initial voltage incline.

#### Adjustment

#### Test Equipment

The following equipment are required for servicing:

- 1. A 50 Ohm resistive antenna load, 20W.
- 2. A frequency counter operable in the required range.
- 3. A HF signal generator operable over 50 kHz to 60 MHz.
- 4. An oscilloscope.
- 5. An FM deviation meter.
- 6. A digital Voltmeter.
- 7. An 8 Ohm 5W resistive speaker load.
- 8. Two audio signal generators, 10 Hz to 20 kHz.
- 9. An RF Voltmeter.
- 10. A circuit tester, input impedance 20 kOhm/V.
- 11. A 220V 50 Hz AC power source.
- 12. Dummy microphone plug (wired as shown beside applicable set-up).

To activate the transmitter without using the microphone PTT bar, use the dummy plug. This plug is also used to introduce a modulating audio signal to the microphone input circuit as described in the following procedures.

#### Precautions

Before performing any adjustment, check visually all jacks, plugs and solder joints for normal connection. Shown in the schematic diagram are nominal tested voltage values for the transistors and ICs. For tune-up and servicing, be sure to use identical parts as listed in the *Replacement Part List*.

#### Power Supply Alignment

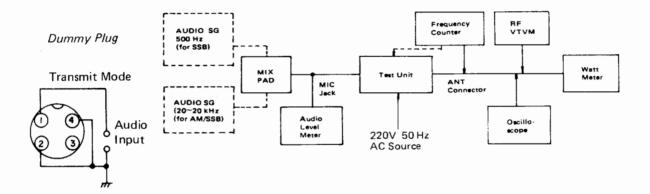
Important: This alignment should be performed first of all items.

1) Connect circuit tester across the terminal #3 (plus) and G (minus) on PTPW007.

- 2) Turn unit on at 220V 50 Hz input.
- 3) Reading should be 13.8 Volt. If necessary adjust, RV1.

#### Transmitter Alignment

Connect testing equipment to the unit as shown:



#### PLL Aligment (PTOS006)

- 1) Connect frequency counter to TP1 (or IC1 pin #3) through 1,000 pF capacitor.
- 2) Adjust CT1 for 10.240 MHz. Tolerance within  $\pm 50$  Hz is acceptable.

#### Off-Set Frequency Alignment (PTOS006, unless otherwise noted)

- 1) Connect frequency counter to TP4, with maximum level range.
- 2) Set the Mode selector to USB.
- 3) Set the Band selector to Lo.
- 4) Adjust CT2 for 20.105 MHz ±40 Hz.
- 5) Set the Band selector to Mid.
- 6) Adjust CT3 for 20.330 MHz ±40 Hz.
- 7) Set the Band selector to *Hi*.
- 8) Adjust CT4 for 20.555 MHz ±40 Hz.
- 9) Set the Band selector to Mid, the Channel selector to 60.
- 10) Connect scope to TP4.
- 11) Adjust T1 for maximum scope amplitude.
- 12) Connect frequency to TP5 (PTBM058).
- 13) Adjust CT5 (PTBM059) for 10.695 MHz ±50 Hz.

#### LSB Off-Set Alignment

- 1) Set the Mode selector to LSB, the Band selector to Lo.
- 2) Connect frequency counter to TP4 (PTOS006).
- 3) Adjust CT5 (PTOS006) for 20.1035 MHz ±40 Hz.
- 4) Connect frequency counter to TP5 (PTBM059).
- 5) Adjust CT4 for 10.692 MHz  $\pm$ 50 Hz.

#### VCO Alignment

- 1) Set the Band selector to Lo and the Channel selector to 1.
- 2) Connect digital Voltmeter between TP2 and ground.
- 3) Adjust VCO block core to obtain  $3.6V \pm 0.1V$ .
- 4) Set the Channel selector to 41, and the Band selector to Mid.
- 5) Adjust VR1 for 3.7V ± 0.1V.
- 6) Set the Channel selector to 1, and the Band selector to Hi (81 channel0.
- 7) Adjust VR2 for 3.8V ± 0.1V.

#### RF Power Amplifier Alignment (PTBM058, unless otherwise noted)

- 1) Set the Band selector to Lo and the Channel selector to 1.
- 2) Set the Mode switch to USB.
- 3) Feed 2,400 Hz 10 mV audio to unit.
- 4) Adjust T3 (PTOS006) and T5 (PTBM058) for maximum scope display.
- 5) Set the Band selector to Hi and the Channel selector to 40 (120 channel).
- 6) Adjust T2 (PTOS006) and T4 (PTBM058) for maximum scope display.

#### RF Driver Alignment (PTBM058)

- 1) Set the Channel selector to 60 with the Band selector set to Mid.
- 2) Feed 2,400 Hz 10 mV audio to unit.
- 3) Adjust T6, L11, L12 and L13 for maximum output on RF Wattmeter.
- 4) Remove testing audio.
- 5) Adjust RV4 and RV5 for minimum carrier leakage on scope.

#### Two-Tone Alignment (Refer to next page diagram)

- 1) Feed 500 Hz and 2,400 Hz audio tones to the mic circuit simultaneously. Use two audio signal generator sets.
- 2) Adjust both testing audio levels by means of attenuators on the generators, so that the scope presents wave figure like shown as 'A' of diagram next page.
- 3) Adjust RV11 to obtain 12W PEP power output.

#### AM/FM RF Power Alignment

- 1) Set Mode switch to AM, TX mode, channel 60.
- 2) Set RF Power switch to 0.5W.
- 3) Adjust RV9 to 0.5W on Wattmeter.
- 4) Set RF Power switch to 4W.
- 5) Adjust RV8 to 4W on Wattmeter.

#### AM Modulation Alignment

- 1) Apply 2,400 Hz 7 mV audio to the unit microphone input.
- 2) Adjust RV12 for modulation depth of 80%.
- 3) Increase audio level to 70 mV.
- 4) Check modulation depth increases to 90%.

#### FM Modulation Alignment

- 1) Set the Mode switch to FM position.
- 2) Apply 2,400 Hz 10 mV audio to modulation circuit. Use dummy mic plug.
- 3) Connect deviation meter to antenna output on the unit.
- 4) Adjust RV3 (PTOS006) to obtain 1.5 kHz deviation.

#### RF Power Meter Alignment

- 1) Set the unit to AM mode.
- 2) Comparing the external RF power meter and the one built-in the unit, adjust RV3 (PTBM059) for equal indication on the unit power meter.

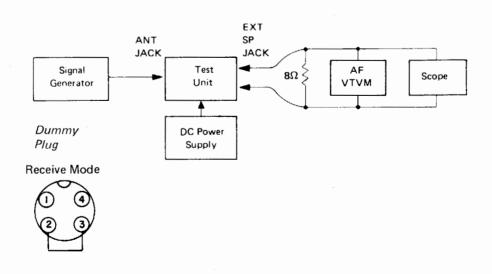
#### Transmitting Frequency Check

Verify that the frequency counter indicates channel frequencies tabulated in the *Frequency Table* with tolerance within  $\pm 800$  Hz.

# Receiver

## Alignment

Connect testing equipment as shown:



#### AGC Alignment

- 1) Connect digital Voltmeter to circuit board PTBM059 terminal 15 (Q20, Q22 AGC input) and chassis ground.
- 2) Set the transceiver to channel 60.
- 3) Rotate the RF Gain control fully clockwise.
- 4) Adjust RV8 for 2V reading.

#### AM Receiver Sensitivity

- 1) Set the signal generator to 27.655 MHz with 1 kHz 30% modulation.
- 2) Set the transceiver tuned to channel 60.
- 3) Set the Mode selector to AM position.
- Adjust T7, T8, T9, T10, T13, T14 and T15 fot maximum audio output across speaker dymmy resistor.

Note: Keep generator output as low as possible to avoid AGC action through this alignment.

5) After completing above procedure, rotate T7 to decrease the audio output by 2 dB.

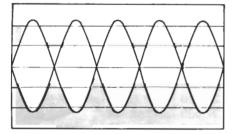
## Squelch Alignment

- 1) Set the Mode selector to AM position.
- 2) Set the signal generator to provide RF input signal of 300  $\mu$ V 1 kHz 30% modulated and rotate the Squelch control to the fully clockwise position.
- 3) Adjust RV9 so that the audio appears on scope.

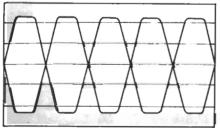
#### S-Meter Alignment

- 1) Set the Mode switch to AM position.
- 2) Select channel 60 (Mid band).
- 3) Set the signal generator to provide 100  $\mu$ V (40 dB) output.
- 4) Adjust RV7 so that the S-meter pointer indicates '9'.
  - A. Properly adjusted transmitter.
- B. Unequal tones Adjust generator outputs to balance.

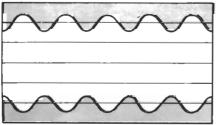
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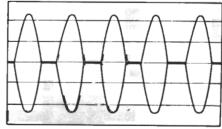
C. Excessive modulation – Adjust RV11 counterclockwise.



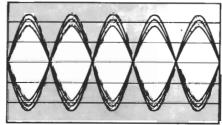
E. Undermodulation – Adjust RV11 clockwise.



- D. Final transistor incorrectly biased – Adjust VR1.



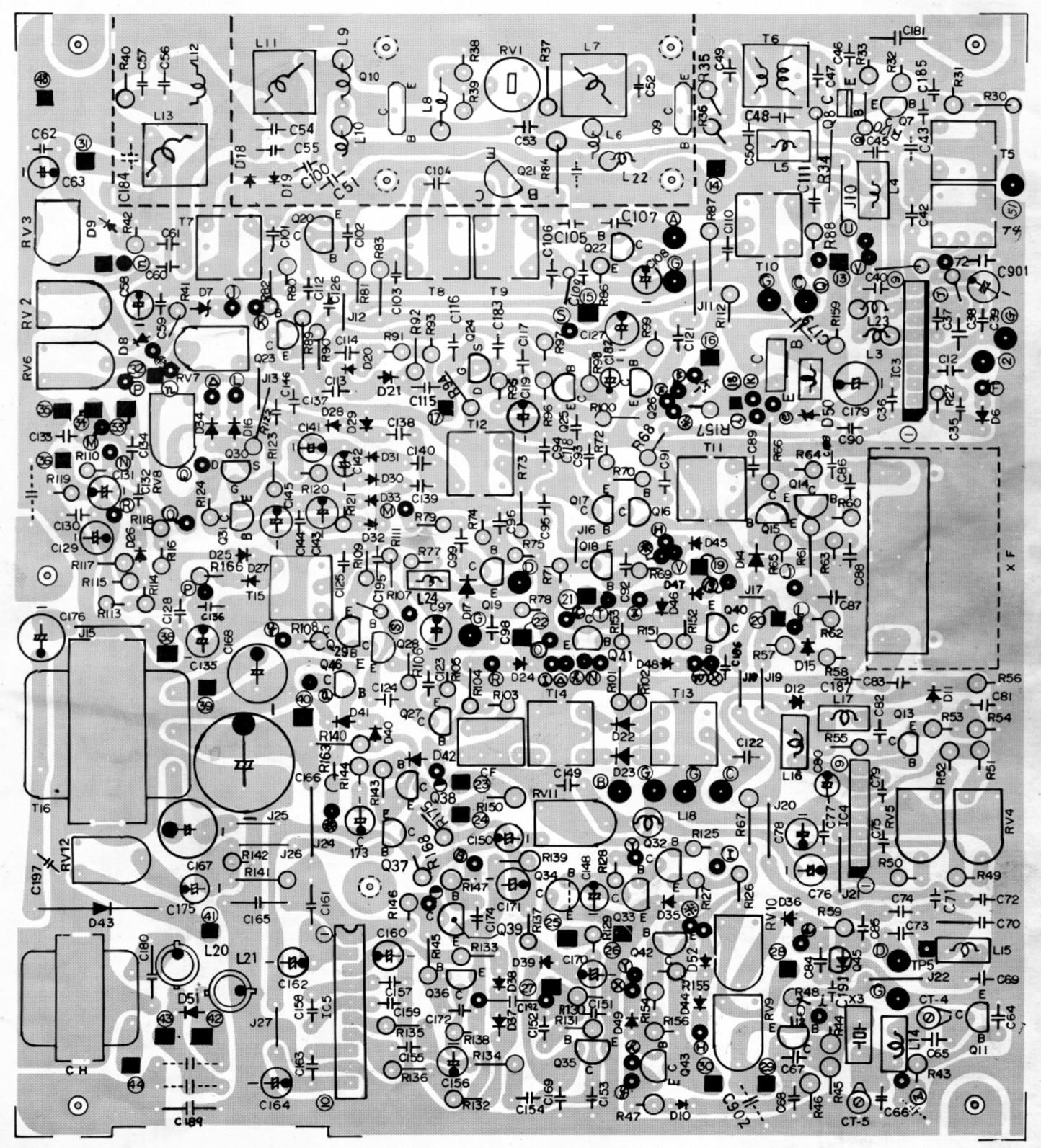
F. Similar to A but showing hum – Check for proper testing condition.



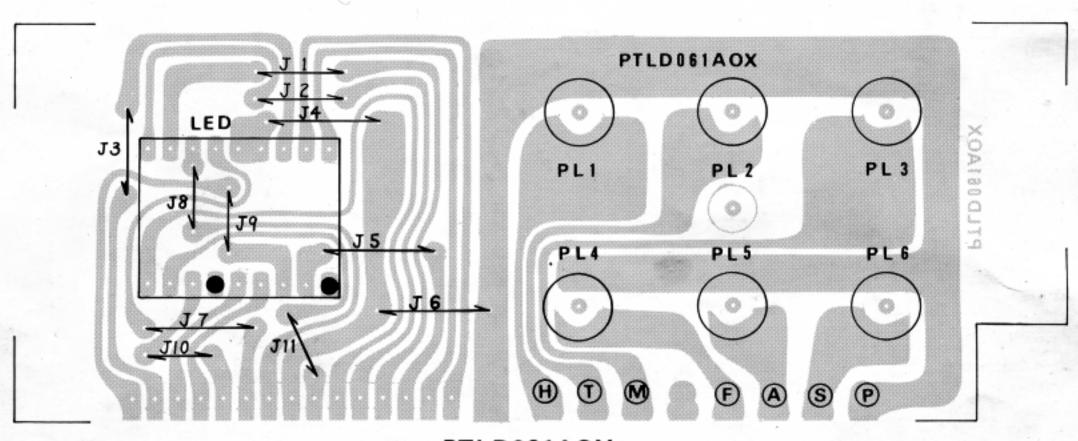
# Frequency Table

LOW CHANNEL	CHANNEL FREQUENCY IN MHZ	MID CHANNEL	CHANNEL FREQUENCY IN MHZ	HIGH CHANNEL	CHANNEL FREQUENCY IN MHZ
1	26.965	41	27.415	1	27.865
2	26.975	42	27.425	2	27.875
3	26.985	43	27.435	3	27.885
4	27.005	44	27.455	4	27.905
5	27.015	45	27.465	5	27.915
6	27.025	46	27.475	6	27.925
7	27.035	47	27.485	7	27.935
8	27.055	48	27.505	8	27.955
9	27.065	49	27.515	9	27.965
10	27.075	50	27.525	10	27.975
11	27.085	51	27.535	11	27.985
12	27.105	52	27.555	12	28.005
13	27.115	53	27.565	13	28.015
14	27.125	54	27.575	14	28.025
15	27.135	55	27.585	15	28.035
16	27.155	56	27.605	16	28.055
17	27.165	57	27.615	17	28.065
18	27,175	58	27.625	18	28.075
19	27.185	59	27.635	19	28.085
20	27.205	60	27.655	20	28.105
21	27.215	61	27.665	21	28.115
22	27,225	62	27.675	22	28.125
23	27.255	63	27.705	23	28.155
24	27.235	64	27.685	24	28.135
25	27.245	65	27.695	25	28.145
26	27.265	66	27.715	26	28.165
27	27.275	67	27.725	27	28.175
28	27.285	68	27.735	28	28.185
29	27.295	69	27.745	29	28.195
30	27.305	70	27.755	30	28.205
31	27.315	71	27.765	31	28.215
32	27.325	72	27.775	32	28.225
33	27.335	73	27.785	33	28.235
34	27.345	74	27.795	34	28.245
35	27.355	75	27.805	35	28.255
36	27.365	76	27.815	36	28.265
37	27.375	77	27.825	37	28.275
38	27.385	78	27.835	38	28.285
39	27.395	79	27.845	39	28.295
40	27.405	80	27.855	40	28.305

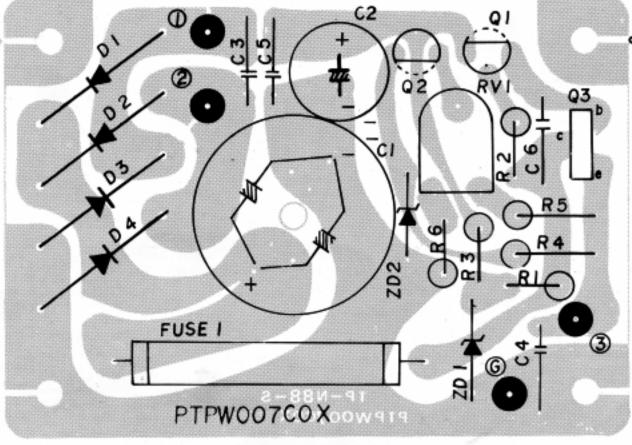


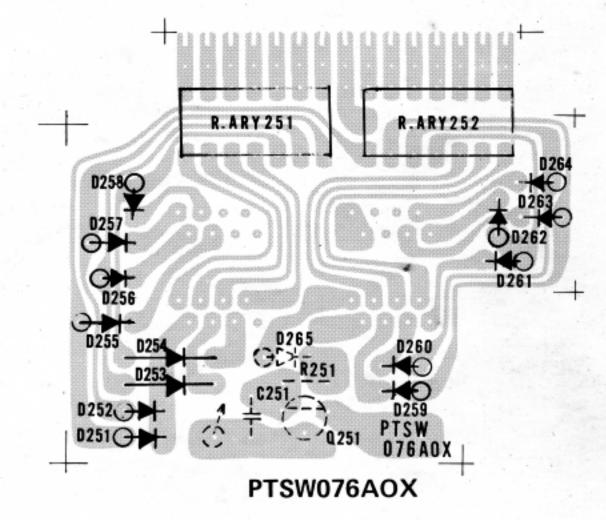


PTBM059COX

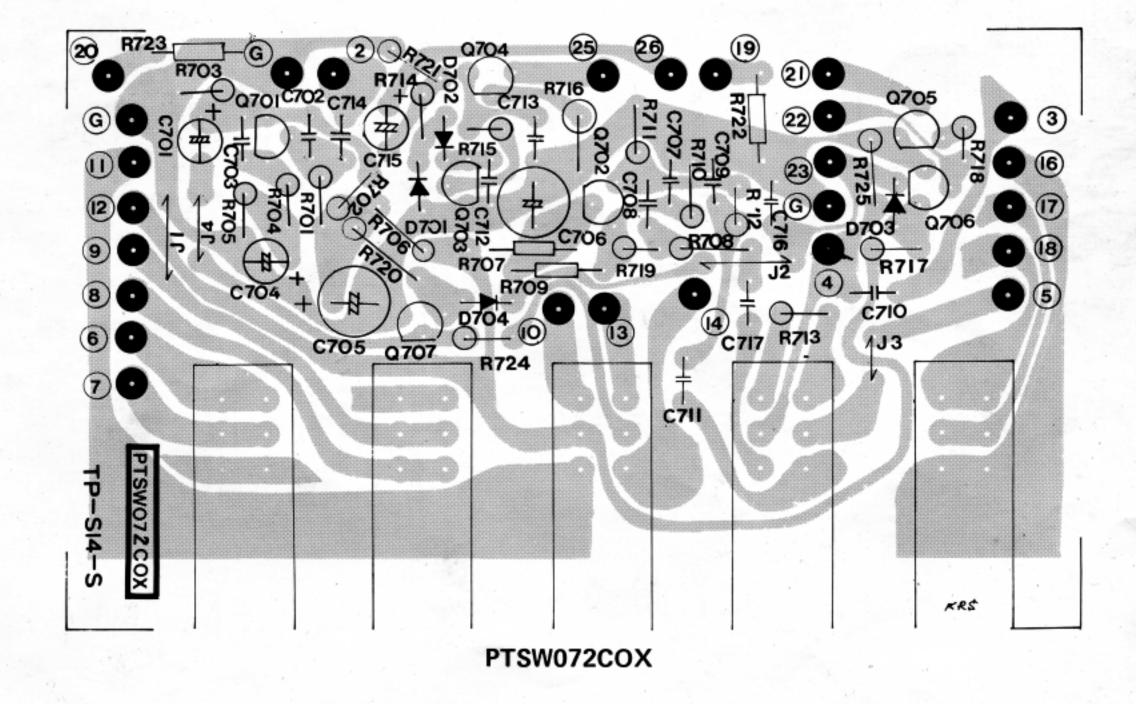


PTPW007COX

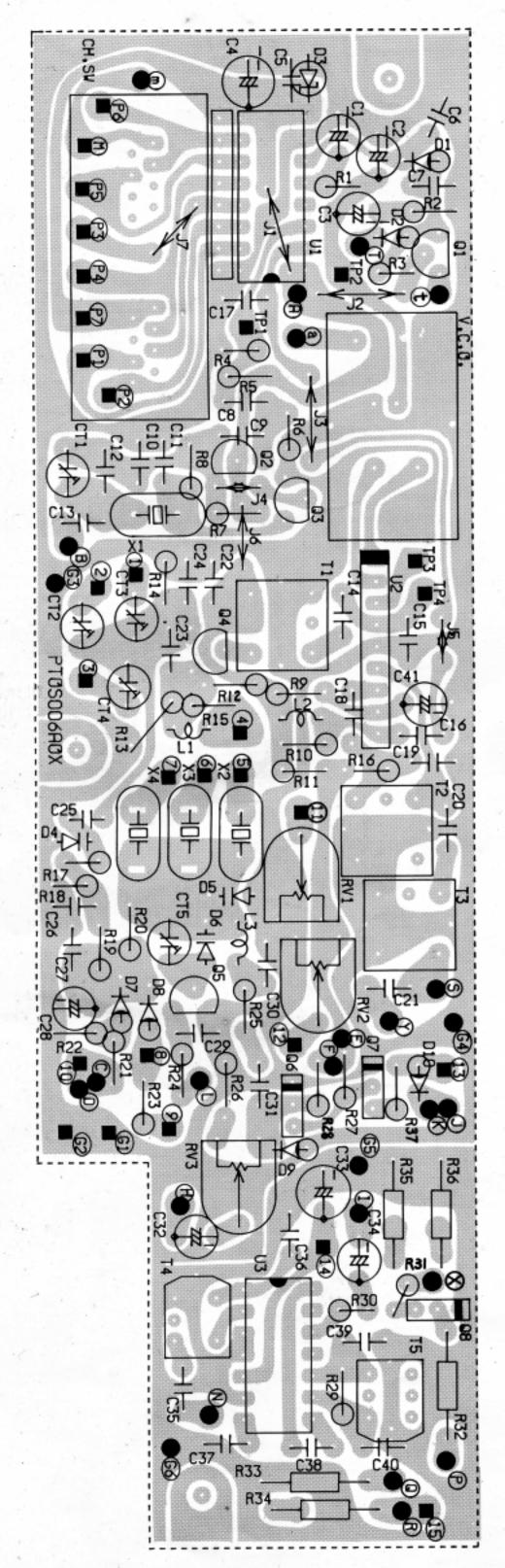


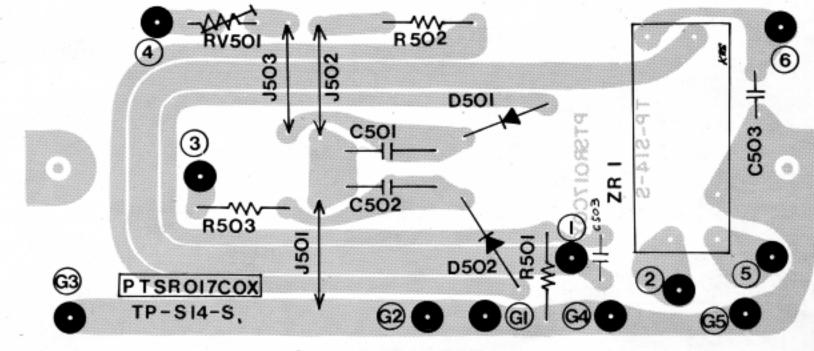


PTLD061AOX

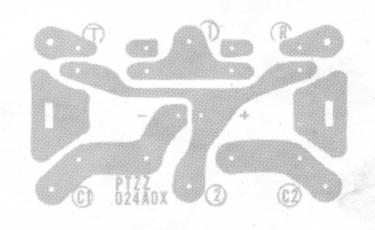


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
PTSR017COX



PTZZ024AOX

+ ROTARY SW PTSW026COX PTSW026COX PTSW026COX PTSW026COX

PTOS006AOX



Schematic Diagram

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المصيف المريكة المولا يحجب والمليق مراركة الأسرار المراجعة والمناجع والمناجع والمراجع والمعرف والمريك فتقتر الم

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PART NAME FLEC. ELEMENTS	PART CODE SBA35AESHL1										
PART CODE	STOCK NUMBER	PART NAME	s	PECIFIC	ATIONS		SYMBO	DLIC OR E	XPLODED	VIEW NO.	Q'TY USED
ACAC041EEA		AC CHRD ASSY.					AC1				1
ACCND38GFA		CONN CORD ASSY.					J7				1
4PTH4059CA		P.W.BOARD ASSY.									1
APTL0361A4		P.W. HOARD ASSY.									1
APTPW007F4		P.W.BOARD ASSY.									1
APT 58017PA		P.W.BOARD ASSY.									1
APTSW02604		P.W.BOARD ASSY.									1
APTSHO728A		P.W.BOARD ASSY.					ļ				1
APTSW076AA		P.W.BOARD ASSY.									1
APTZZEGRP1		P.W.BOARD ASSY.			· · · ·					-	1
APT220248A		.W.BOARD ASSY.									1
APTOSCOACA		P.W.BOARD ASSY.									1
CC08390KPM		CERAMIC CAP.	39.04	500	-10, +10	8 PH	C201	0.202	C204		3
CEAE4P7ALX		FLYT. CAPACITOR	4.7MFD	25V			C 212				. 1
CKIBLIJPEN		CERAMIC CAP.	0.01 MED	50V	-0, +100	<b>≭</b> F	C.205		-	· ·	1
CK084737FM		CERAMIC CAP.	0.047%50	5°V	-20, +23	ξF	C203				1
GJUMBO~A03		MIGE KIT									1
00011310X0		VARI-COP. DIODE	177310 12V	NO-PANK	26 MI N		D206		•		1
005Y1150XN		SILICON DIODE	MA150 VF=1.	2V,VR=3	SV ND-LANK	24M[N	<u> 1654</u>	n202	D203	D234	5
							0205				
OLAP31375R		1.5.0.	GD4-20980 85	<u>ר</u>	1.74		PL3				1
3700704845		TRANSISTOR	250704 D,6-	PANK			271				1
69251J104X		CARSON FILM R.	0.25W 10	OK OHM	5%		P207				1

PART NAME ELEC. FLEMENTS	PART CODE					
PART CODE	STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMB	OLIC OR EXPLODED VIEW NO.	Q'TY USED
2025T.J163X		CARBON FILM R.	0.25W 15K 3HM 5%	206		1
20255J133X		CARBUN FILM P.	0.25% 13K OHM 5%	200		1
251 J223x		CARRON FILM R.	0.25W 22K DHM 5%	P205	8210	2
2.7.26T.J473X		CARBON FILM R.	0.25W 47K 0HM 5%	204		1
2025TJ562X		CAPADN FILM R.	0.25w 5.5K OHM 5%	R202		_ ı
2025TJ563X		CAPBIN FILM R.	0.25W 55K 0HM 5%	R203		1
PD251J693X		CARAON FILM R.	0.25W 68K 04M 5%	P208		1
°G144.15538		M-DXIDE FILM R.	1W 56 OHM 5#	R201		ļ ,
RV44502405		VR.		VR 3		1
OV-14513413		٧२.		VR1	VR2	2
°V№503913		V٩.		V 9.5		1
evertoseos		VR.		V R 7		1
9V12503402		V.P.		VR4	VR6	2
SAAVJ0005		٧٩.	A OHM A-CURVE	V 2.8		1
SI 020201.CA		LEVES SWITCH		51		1
S20402102H		ROTARY SWITCH		\$2		1
SR2403107H		ROTARY SWITCH		54		_1
SR2604207H		ROTARY SW		\$3		ι
TPJ745001Y		PWR. TRANSFORMER		1201		1
VM270NB005		BUSHING		AC 81		1
YHE1520010		FUSE HOLDER				1
YJC025015Z		ANT JAK		J1	JZ	2
YJ 50350192		PHONE JACK		15		

20

PART NAME FLEC. ELEMENTS	PART CODE SBA35AESHL1					
PART CODE	STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBO	DLIC OR EXPLODED VIEW NO.	Q'TY USED
YJ1035023Z		3P JACK		J3	J4	2
YJZ045004Z		MIC JACK		J5		1
YLL03BXXZS		LUG TERMINAL		¥1	¥2	2
YLLOSCXXZX		LUG TERMINAL		¥ 3		1
YPE025001Z		PLUG		P1		1
<u>YSZ02001U</u>		LED SOKET				1
ZEB0102014		FUSE				1
7MU1050N01		METER 18BLOL		MI		1
ZMJ1050N08	· · · · · · · · · · · · · · · · · · ·	METER 18038L		M2		1
2241631020		LAMP		PL 1	PL2	2
7.0409209.12		SPEAKER		SP		1
RWVA300601		VR	30-ohm, 10W	VR9		
R025TJ472X		RESISTOR, CARBON	4.7k 1/4W	R211		
RD25TJ123X		RESISTOR, CARBON	12k 1/4W	R212		
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					-	+
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PART NAME MECH. FLEARNIS	PART CODE SB1354CSHL ?								
PART CODE	STOCK NUMBER		SPECI	SYMBOLIC OR EXPLODED VIEW NO.					
AMJUMBO *02		ESCUTCHEON ASSY			1				
3600360404		HIND HEAD SCREW	(+)81T, 42.5 X 4	S-NI	<u>8</u> 18- <u>1</u>	818-2			
45783595664		BIND HEAD SCREW	(+)HIT, 43 X 6	S-NI	B17-1	B17-2	B33		ļ;
463430.049 <u>14</u>		BIND HEAD SCREW	(+)8[T, 43 X 8	S-NI	839				;
1528511198		BIND HEAD SCREW	(+)AIT, 45 X 10	S-BLACK	B19-1	B19-2	B19-3	819-4	8
					B40-1	340-2	840-3	840-4	+
ASSC 10 DEMZ		CEMS SCREW	(+)BIT. 43 X 6	S-ZNCR	816-1	815-2	816-3	816-4	
			· · ·		B16-5	816-6	816-7	816-8	
					816-9				
45PL3005N0		BIND NATH SCREW	(+1817, M3 X 6	S-BLACK	827-1	327-2	627-3	823-1	5
					828-2				
RSPR3006NT		PAN HEAD SCREW	(+)BIT. M3 X 6	PLASTIC	837-1	830-2	830-3	830-4	5
					B30-5				<u> </u>
4545363534		FLAT HEAD SCREW	(+) BIT, M3 X 5	5 -NI	826-1	B25-2	B26-3		3
8505501248		FLAT HEAD SCREW	(+)B1T, 45 X 12	S-BLACK	B41-1	341-2	B41-3	841-4	4
STPS400RTZ		BIND TAP SCREW	(+)BIT, M4 X B	S-ZNCR (TAP TITE)	B20-1	320-2	820-3	820-4	<u> </u>
					B21-1	821-2	821-3	821-4	
3.TPL 300998		NATE TAP SCREW	(+)817, M3 X 8	S-BLACK	825-1	325-2	825-3	<u> B 2 5 - 4</u>	4
4TPP31458Z		PAN TAP SCREW	L+181T, M3 X 45	S-ZNCR	B29-1	829-2			2
STPWSCORAB		BRAS. TAP SCREW	(+)BIT, 43 X 8	S-BLACK	815-1	815-2			2
STON 30 986 J		BRAS. TAP SCREW			813-1	813-2	B13-3	913-4	5
					B14				
BTPW30089Z		BRAS. TAP SCREW	(+)BIT, 43 X 8	S-ZNCR	81-1	31-2	81-3	81-4	47

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PART NAME MECH. ELEMENTS	PART CODE SBA35AESHL2							1.000
PART CODE	STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBO	LIC OR EX	PLODED	VIEW NO.	Q'TY USEI
				B10	811-1	811-2	811-3	
				B11-4	811-5	B11-6	811-7	
				B11-8	32~1	82~2	82-3	
				82-4	B2-5	B2-6	B2-7	
				82-8	83-1	83-2	834	
				835-1	835-2	B35-3	335-4	
	. A And Mark			B36	B37-L	B37-2	84-1	
				84-2	85-1	85-2	85-3	
				85-4	85-5	85-6	86-1	
				B6-2	36-3	B6-4	87	
				83	89-1	89-2		
HTP6301467		HRAS. TAP SCREW	(+)BIT, M3 X 14 5-ZNCR	B12-1	B12-2	812-3	812-4	
ATPX320887		I.T ST SCREW	(+)BIT+ 43 X 8 S-ZNCR	822-1	822-2	B22-3	822-4	1
				82?-5	823-1	823-2	823-3	!
				H23-4	324-1	824-2	839-1	
				839-2				
1.64310.0557		FLAT L. WASHER	FLAT LARGE, 3 M/M S-ZNOR	B31-1	331-2	831-3	931-4	
54457C3858		FLAT L. WASHER	FLAT LARGE, 5 M/M S-BLACK	832-1	B32-2	832-3	832-4	
				842-1	842-2	842-3	842-4	
V347452103		FRONT PANEL		5				
"3/9 <b>257991</b>		CHASSIS		2				L
MBAY2SEDAR		REAR PANEL		6				
VC341550001		BRACKET		11				

PART NAME	PART CODE SHA35AFSHL2								
PART CODE	STOCK NUMBER	PART NAME SPECIFICATIONS		SYMBOLIC OR EXPLODED VIEW NO.					
1047152127		RRACKET		36-1	36-2			2	
HE MARSENNA		ESCUTCHERN		8				1	
912157014		BRICKET		19-1	19-2	19-3	19-4	4	
112252011		L ANGLE		39				1	
41622850001		TERMINAL		13				1	
11 7447 5001		SRACKET		42-1	42-2	÷		2	
W2767A119		KN03 V2		13-1	13-10	13-2	13-3	10	
				13-4	13-5	13-6	13-7		
				13-8	13-9				
		TUNER KNOB		12				1	
*\$12257001		BRACKET		40-1	40-2			2	
2538552741		SOTTH PLATE		17				1	
MT213BD015		SUPPORT		15				1	
1027474701		HANDLE		41-1	41-?			2	
4135152002		BRACKET L		B				1	
4035157003		BRACKET R		4				. 1	
¥JA5440002		HEAT SINK		17				1	
MU462SZ108		BRACKET		7				1	
¥IJ3975≌110		COVER		9				1	
4¥61552002		CLAMPER		33-1	33-2	33-3		3	
V853246001		LAMP HOUSE		21-1	21-2			2	
VE1640N003		RUSHING		39				1	
VE1762N023		WASHER		31-1	31-2			2	

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PART NAME MECH. ELEMENTS	PART CODE SBA35AESHL2							
PART CODE	STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBO	DLIC OR H	XPLODED	VIEW NO.	Q'TY USED
VK1644X002		INDICATOR		43				1
VK164PX001		LAMP GUIDE		2.2				
VM1658 X003		HOLDER		20-1	20-2			2
VM28553101		EDD T		15-1	16-2	16-3	16-4	
VN21058006		KNOB		14-1	14-2	14-3	14-4	
				14-5	14-6			1
V52238H002		SILICON SHEET		37				,
V522588001		SHEET		29-1	29-2	29-3	29-4	
V\$423Y H102		SHEFT		30-1	30-2	30-3	30-4	
				30-5	30-6			
V5605E3001		SARPTEN		32-1	32-?			- 2
V\$6474X001		FILTER		23				,
V\$665EN001		HARRIER		34				
VVL3116F27		FUSE LAAFT		25				<sup>1</sup>
VVE63THE03		LAHFL		28				ļ!
VVLE310104		UL. LABEL		27				
VVSVIKINGI		SEP. NO. PLATE		2.5				.⊥

PART NAME	PART CODE				
PART CODE	STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.	Q'TY USE
1720421744		PAN TAP SCHEW	(+)BIT, M4 X 13 S-NI		
TPWINDPH7		BRAS. TAP SCREW	(+)BIT, M3 X 8		
1414005FSW		IT. LOCK WASHER	ENSIDE TOOTHED, 4 M/M S-ZN	· ·	
733157002		HUI JEN			
101476,1142		MICROPHONE			<u> </u> .
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PART NAME	PART CODE								
PART CODE	Y JANJUMBO*01 STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO.					
ME97EAA133		ESCUTCHEON		1-4				1	
VK13258004		BUSH	1 811 1117 Mile 14	1-0-1	1-0-2	1-D-3	1-0-4	6	
				1-0-5	1-0-6				
VK2855M002		FRAME		1-9				1	
S765Y8002		SHEET		1-E				1	
VS8686C003		PLATE		1-0				ļ1	
								<u> </u>	
					:			-	
					_				
								<b>_</b>	
								_	
			arr 2007/08						
			aux						
			1.548 yr - y						
								-	
								+	

PART NAME	PART CODE									
PART CODE	STOCK NUMBER	PART NAME		SPECIFIC	ATIONS	SYMB	OLIC OR E	XPLODEI	VIEW NO.	Q'TY USED
BNHCL26NBN		NJT	M2.6, BS-NI	, THEN	-TYPE					2
BSPB3006NN		HIND HEAD SCREW	(+)BIT, M3	X 6	S-VI					7
ASPP 3006NT		PAN HEAD SCREW	(+)BIT, M3 X	6 PL	ASTIC					3
8WU265835W		IT. LOCK WASHER	INSIDE TOOTH	150 <b>, 2.</b>	64/4 S-ZN					2
8wU30655SW		IT. LOCK WASHER	INSIDE TOOTH	1ED, 3	M/M S-ZN					5
CCCB020CPM		CERANIC CAP.	PK 2PF	50V	-0.25, +0.25PF	C61			_	1
0008030CPM		CERAMIC CAP.	PJ 3PF	50V	-0.25, +0.25PF	c104				1
CCCR050CPM		CERAMIC CAP.	PH 5PF	50V	-0.25, +0.25PF	C42	C60			2
CCCB0500PM		CERAMIC CAP.	PH 5PF	50V	-0.5, +0.5PF	<u> 112</u>	C140			2
CCCBDSONPM		CERAMIC CAP.	PH 6 PF	50V	-0.5, +0.5PF	C 95			_	1
сссвоворрм		CERAMIC CAP.	PH 8PF	50V	-0.5, +0.5PF	C71				1
CCCB1000CM		CERAMIC CAP.	CH 10PF	50V	-0.5, +0.5°F	C 6 6				1
CCC8101KPM		CERANIC CAP.	100PF	50V	-10, +13% PH	<u>C138</u>	<u>c72</u>			2
CCCBIGIKOM		CERAMIC CAP.	100 PF	_ 50V	-10, +10% SL	C194				I
CCCB151KPM		CERAMIC CAP.	L50PF	50V	-10, +1)% PH	C36	C54			2
CCCB151KOM		CERAMIC CAP.	150PF	50V	-10, +10% SL	5155				1
сселаюкым		CERAMIC CAP.	1 9.27	50V	-10, +1)% 08	<u>C1 4 7</u>	C182			,
CCCB220KPM		CERAMIC CAP.	27PF	<u>5</u> 0V	-10, +10% PH	<u>c139</u>	568	<u>C74</u>		3
CCCB221KPM		CERAMIC CAP.	220PF	53V	-13, +13% PH	:113	C186	C 5 3	693	5
· · · · · · · · · · · · · · · · · · ·						<u>c.70</u>				$\vdash$
GCC8221K0M		CERAMIC CAP.	220 PF	50V	-10, +10% SL	:133	\$153	C 1 6 3	_	3
CCCB270KPN		CERAMIC CAP.	2 7 PF	50V	-13, +13% PH	<u>c122</u>				1
CCCB271KOM		CERAMIC CAP.	270PF	50V	-10, +10% SL	C184				1

PART NAME P.W.BOARD ASSY	PART CODE APTBM059CA									
PART CODE	STOCK NUMBER	PART NAME		SPECIFIC	ATIONS	SYMB	OLIC OR E	XPLODE	D VIEW NO.	Q'TY USED
0008330KPM		CEPAMIC CAP.	33 PF	50V	-10, +10% PH	C 1 0 0	512	C73	C 96	4 4
CCCB390KCM		CERAMIC CAP.	39PE	50V	-10, +13% CH	<u>C65</u>				1
CCCB390KPM		CERAMIC CAP.	39PF	50 V	-10, +10% PH	C 107	C185			2
0008391K0M		CERAMIC CAP.	390 PF	50 V	-10+ +1)% SL	C49				1
CCCB470KPM		CERAMIC CAP.	47PF	50V	-10, +13% PH	C 4 3	C 4 7	C56		3
CCC8471K 14		CERAMIC CAP.	470 PF	50V	-13, +13% SL	C 5 7				1
CCC8551K0M		CERAMIC CAP.	560PF	50V	-10, +10% SL	C 5 5				1
CCCR680KOM		CERAMIC CAP.	68PF	50V	-10, +13% SL	C157	C159			2
0008820KPM		CERANIC CAP.	82 PF	50V	-13, +13% PH	C37	C52			Z
CCOR560KPM		CERAMIC CAP.	56PF	50V	-10, +13% PH	C 3 8				1
CEAR32 MLX		FLYT. CAPACITOR	33 ME 0	6.3V		C169	C 97			2
CEAB470ALX		ELYT. CAPACITOR	47MED	6.3V		C171				1
CEACA704LX		ELYT. CAPACITOR	4 7 ME D	104		C149				1
CEADICOALX		CLYT. CAPACITOR	10MFD	1.6 V		C119	C145	C80		3
TEADIDIALX		ELYT. CAPACITOR	100MF0	16V		c168				1
0540222ALX		FLYT. CAPACITOR	2200MED	167		C166				1
CEAD320ALX		ELYT. CAPACETOR	33 MF D	16V		C178				l
CENDERLALX		FLYT. CAPACITOR	330MED	16V		C167				1
1 5A1147 DAL X		ELYT. CAPACITOR	47 MED	<u>15</u> V		C1 <u>62</u>	C176	C179		3
064629241X		ELYT. CAPACITOR	2.2MFD	25V		0175				1
CEAE3-PALX		FLYT. PAPACITOR	3.3MFD	25V		C 1 2 9	2142			2
C=4F407ALX		CLYT, CAPACITOR	4.7MED	251		<u>c131</u>	C150			2
06406474UX		FLYT. CAPACITOR	0.47 MED	50V		2170	2182			2

DART NAME		SPECIFIC	ATIONS			SYMB	OLIC OR H	EXPLODE	VIEW NO.	Q'TY USED
FLYT. CAPACITOR	1 MED	5.0V				C108	0135	C164	2173	
						C 6 3				
 CERAMIC CAP.	2200 PF	50V	-12,	+103	э_	C197				
 CERANIC CAR.	0.947860	574	-23,	+8)%	۶	C165	C180	<u>C181</u>	C137	
 CERAMIC CAP.	0.047 MED	5nV	-20,	+23%	F	C 1 98	0902			1
 VYLAD CARACTER	1000PF	50V	-10,	+13%		C115	C121	C183	r 67	
	··					C98				
 MYLAN CAPACITOR	0.01 MED	5 <u>)</u> V	-10,	+13%		C101	C103	C105	C105	. 4
 						<u>C109</u>	<b>C110</b>	<u>c111</u>	<u>C113</u>	
 						C124	\$126	C136	C137	
						C144	C146	C149	C154	
 						C169	C172	C174	C195	
						<u>C191</u>	C35	C 3 9	C 40	-
 						C45	C46	C48	C50	-
 						C 5 9	062	C64	C 75	
 						<u> </u>	C79	C 8 1	C 92	+
 						<u>C 93</u>	C 84	C85	<u>C 86</u>	
				_			C84	C90	C 9 1	+
 									<u>C99</u>	+
						, 	0155	C195		+
 MYLAR CAPACITOR	0.022MED	50V								
 MYLAS EAPACITOR	0.033MFD	50V	-10,	+10%		C116	2123	C125	\$135	
SY . A2 IMMOSOCA PART, STOCK NUMBER	PART. STOCK NUMBER         PART. NAME           ELYT. CAPACITOR         ELYT. CAPACITOR           CERAMIC CAP.         CERAMIC CAP.           CERAMIC CAP.         CERAMIC CAP.           VIAD CAPACITOR         VIAD CAPACITOR           MYLAP CAPACITOR         Interview           MYLAP CAPACITOR         Interview           MYLAP CAPACITOR         Interview	PART. STOCK NUMBER         PART. NAME           FLYT. CAPACITUR         1 MED           CERAMIC CAP.         2200 PF           CERAMIC CAP.         0.047 MD           CERAMIC CAP.         0.047 MD           VIAD CAPACITUR         1000 PF           NYLAD CAPACITUR         0.0147 MED           NYLAD CAPACITUR         0.0122 MED	РАКТ. STOCK NUMBER         РАКТ. NAME         SPECIFIC           -         -         1 МЕО         5.3.4           -         -         -         -           -         -         -         -         -           -         -         -         -         -         -           - <td>PART. STOCK NUMBER         PART. NAME         SPECIFICATIONS           LLYT. CAPACITOR         1MED 50V         -10.           CERAMIC CAP.         2200PF         50V         -10.           CERAMIC CAP.         0.047MED 50V         -20.           CERAMIC CAP.         0.047MED 50V         -20.           CERAMIC CAP.         0.047MED 50V         -20.           VERATIC CAP.         0.047MED 50V         -10.           VERATIC CAP.         0.047MED 50V         -10.           VERATIC CAP.         0.0147MED 50V         -10.           VERATIC CAP.         0.0147MED 50V         -10.           VERATIC CAP.         0.0122MED 50V         -10.           VERATIC CAP.         0.0122MED 50V         -10.</td> <td>PART. STOCK NUMBER         PART. NAME         SPECIFICATIONS           LUYT. CAPACITOR         1MED 50V         -10, +103           CERAMIC CAP.         2200PF         50V         -10, +103           CERAMIC CAP.         0.047MED 50V         -20, +203         +05           CERAMIC CAP.         0.047MED 50V         -20, +203         +05           CERAMIC CAP.         0.047MED 50V         -20, +203         +035           VELAC CAPACITOR         1000PF 50V         -10, +103         -10, +103           VELAC CAPACITOR         1000PF 50V         -10, +103         -10, +103           VELAC CAPACITOR         0.014FED 50V         -10, +103           VELAC CAPACITOR         2200PF 50V         -10, +104</td> <td>РАКТ. STOCK NUMBER         РАКТ. NAME         SPECIFICATIONS           ALYT. CAPACITIN         1MED         50V           CERAMIC CAP.         2200PF         50V         -10, +103           CERAMIC CAP.         0.047MID         50V         -20, +805         F           CERAMIC CAP.         0.047MID         50V         -20, +805         F           CERAMIC CAP.         0.047MID         50V         -20, +203         F           VYIAD CAPACITOR         1000PF         50V         -10, +103           VYIAD CAPACITOR         0.0147VFD         50V         -10, +103           VYIAD CAPACITOR         2000F         50V         -10, +103           VYIAD CAPACITOR         2200PF         50V         -10, +103</td> <td>РАКТ. STOCK NUMBER         РАКТ. NAME         SPECIFICATIONS         SYMB-           -<!--</td--><td>PART. STOCK NUMBER         PART. NAME         SPECIFICATIONS         SYMBOLIC OR 1           +LY*, CAPACITOR         1MED         53V         C108         C135           C         CSAMIC CAP.         2200PF         50V         -10, +103         C197           C         CSAMIC CAP.         2200PF         50V         -10, +103         C197           C         CSAMIC CAP.         0.047MD         50V         -20, +803         F         C165           C         CSAMIC CAP.         0.047MD         50V         -20, +803         F         C198         5902           C         CSAMIC CAP.         0.047MD         50V         -20, +233         F         C198         5902           MVIAC CAPACITOR         0.047VFD         50V         -10, +133         C115         C121           MVIAC CAPACITOR         0.0147D         52V         -10, +133         C191         C103           MVIAC CAPACITOR         0.0147D         52V         -10, +133         C194         C144         C145           C         CAPACITOR         0.0147D         52V         -10, +133         C164         C145           C         CAPACITOR         CAPACITOR         CAPACITOR         CAPACITOR</td><td>PART. STOCK NUMBER         PART. NAME         SPECIFICATIONS         SYMBOLIC OR EXPLODED          </td><td>PART. STOCK NUMBER         PART. NAME         SPECIFICATIONS         SYMBULIC OR EVIDED VIEW NO.           -</td></td>	PART. STOCK NUMBER         PART. NAME         SPECIFICATIONS           LLYT. CAPACITOR         1MED 50V         -10.           CERAMIC CAP.         2200PF         50V         -10.           CERAMIC CAP.         0.047MED 50V         -20.           CERAMIC CAP.         0.047MED 50V         -20.           CERAMIC CAP.         0.047MED 50V         -20.           VERATIC CAP.         0.047MED 50V         -10.           VERATIC CAP.         0.047MED 50V         -10.           VERATIC CAP.         0.0147MED 50V         -10.           VERATIC CAP.         0.0147MED 50V         -10.           VERATIC CAP.         0.0122MED 50V         -10.           VERATIC CAP.         0.0122MED 50V         -10.	PART. STOCK NUMBER         PART. NAME         SPECIFICATIONS           LUYT. CAPACITOR         1MED 50V         -10, +103           CERAMIC CAP.         2200PF         50V         -10, +103           CERAMIC CAP.         0.047MED 50V         -20, +203         +05           CERAMIC CAP.         0.047MED 50V         -20, +203         +05           CERAMIC CAP.         0.047MED 50V         -20, +203         +035           VELAC CAPACITOR         1000PF 50V         -10, +103         -10, +103           VELAC CAPACITOR         1000PF 50V         -10, +103         -10, +103           VELAC CAPACITOR         0.014FED 50V         -10, +103           VELAC CAPACITOR         2200PF 50V         -10, +104	РАКТ. STOCK NUMBER         РАКТ. NAME         SPECIFICATIONS           ALYT. CAPACITIN         1MED         50V           CERAMIC CAP.         2200PF         50V         -10, +103           CERAMIC CAP.         0.047MID         50V         -20, +805         F           CERAMIC CAP.         0.047MID         50V         -20, +805         F           CERAMIC CAP.         0.047MID         50V         -20, +203         F           VYIAD CAPACITOR         1000PF         50V         -10, +103           VYIAD CAPACITOR         0.0147VFD         50V         -10, +103           VYIAD CAPACITOR         2000F         50V         -10, +103           VYIAD CAPACITOR         2200PF         50V         -10, +103	РАКТ. STOCK NUMBER         РАКТ. NAME         SPECIFICATIONS         SYMB-           - </td <td>PART. STOCK NUMBER         PART. NAME         SPECIFICATIONS         SYMBOLIC OR 1           +LY*, CAPACITOR         1MED         53V         C108         C135           C         CSAMIC CAP.         2200PF         50V         -10, +103         C197           C         CSAMIC CAP.         2200PF         50V         -10, +103         C197           C         CSAMIC CAP.         0.047MD         50V         -20, +803         F         C165           C         CSAMIC CAP.         0.047MD         50V         -20, +803         F         C198         5902           C         CSAMIC CAP.         0.047MD         50V         -20, +233         F         C198         5902           MVIAC CAPACITOR         0.047VFD         50V         -10, +133         C115         C121           MVIAC CAPACITOR         0.0147D         52V         -10, +133         C191         C103           MVIAC CAPACITOR         0.0147D         52V         -10, +133         C194         C144         C145           C         CAPACITOR         0.0147D         52V         -10, +133         C164         C145           C         CAPACITOR         CAPACITOR         CAPACITOR         CAPACITOR</td> <td>PART. STOCK NUMBER         PART. NAME         SPECIFICATIONS         SYMBOLIC OR EXPLODED          </td> <td>PART. STOCK NUMBER         PART. NAME         SPECIFICATIONS         SYMBULIC OR EVIDED VIEW NO.           -</td>	PART. STOCK NUMBER         PART. NAME         SPECIFICATIONS         SYMBOLIC OR 1           +LY*, CAPACITOR         1MED         53V         C108         C135           C         CSAMIC CAP.         2200PF         50V         -10, +103         C197           C         CSAMIC CAP.         2200PF         50V         -10, +103         C197           C         CSAMIC CAP.         0.047MD         50V         -20, +803         F         C165           C         CSAMIC CAP.         0.047MD         50V         -20, +803         F         C198         5902           C         CSAMIC CAP.         0.047MD         50V         -20, +233         F         C198         5902           MVIAC CAPACITOR         0.047VFD         50V         -10, +133         C115         C121           MVIAC CAPACITOR         0.0147D         52V         -10, +133         C191         C103           MVIAC CAPACITOR         0.0147D         52V         -10, +133         C194         C144         C145           C         CAPACITOR         0.0147D         52V         -10, +133         C164         C145           C         CAPACITOR         CAPACITOR         CAPACITOR         CAPACITOR	PART. STOCK NUMBER         PART. NAME         SPECIFICATIONS         SYMBOLIC OR EXPLODED	PART. STOCK NUMBER         PART. NAME         SPECIFICATIONS         SYMBULIC OR EVIDED VIEW NO.           -

PART NAME	PART CODE						
PART CODE	STOCK NUMBER	PART NAME	SPECIFICATIONS	SYM	BOLIC OR EX	PLODED VIEW NO.	Q'TY USED
TRIGENOOST		RE COLL			T 8		2
210080315		RF_0011		19			↓ 1
T21008003T		P.F.T.		T5			1
1310020345		PETOIL		T5			1
1910020035		8E COTI					1
T310020045		RECOL		L13			1
TR10070055		8E COD		L11			1
LATULAUSIS		IFT		T14			1
1-101-40225		IFT		115			1
TREAMANE 35		TET		רוז דוס			1
TA104A0145		IET		T13			ļ
1010440155		LFT		711	T12		2
TP LOAP 003 F		KE COTH					1
VKILLSCOOL		SPACER .					1
V\$2212H012		SILION SHEET	·····				
VS311XX201		3409162					1
× 3.481.52001		COAXIAL CABLE		3			1
1002100	1 = 1	COANTAL CABLE		4			
JCTTREEXX		HI-YAAB AIRE		33			1 1
CONSTRUCT		II-NSVO MISE		12	22		í
N JOZEBERX		HT-RIAD WERE		2.1	30		
мозрагска		HI-MARA MIDE	. <u></u>	15	36	+	2
A 16213 FEXX		41-8200 ALDE		P5	3?		1

PART NAME	- - 20 ΤΩΝΩ596Δ						
PART CODE	STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMB	OLIC OR EX	PLODED VIEW NO.	Q'TY USED
WITH STERKK		HI-WINE		в			1
-11-4131 FXX		41-WRAP WIRE		14			1
21541SPEXX		41-49A9 x12F		25			
AUNSI HEXX		HI-ASVD MIGE		23			1
#105135FXX		HT-W2AP_WIRE		13	31		,
S 19F14EFXX		H1-2310 9185		10			1
- 406 L 23 C XX		HI-WKAP WIRE		1.7	28		2
-1041945 <b>x</b> x x		HI-VIAD NIRE		9			,
~ ISANIHEXX		HI-SAD WIDE	·	47		L	1
< IC/DREXX		HI-WAR WIPE		41		· · · · · ·	1
wiszier xx		HI-WAAP WIRP		13	7		2
A LOG DAFEXX		HI-APAR GIRE		24			1
WJG915FEXX		HI-WAR WIRE		11			1
<0391615XX		HE-WRAP WIRE		15			1
-YUCD\$A444		STRAVOED WIRE		35	37		2
ZAZ1A3021X		XTAL OSCILLATOP		× 3			1
							L

PART CODE	STOCK NUMBER	PART NAME	SPECIFICATIONS	SYME	SYMBOLIC OR EXPLODED VIEW NO.			
				D40	041	042	044	
				D.45	246	D47	048	
				D49	052	D53	26	
				0.8				
00551885XT		SILICON PLODE	151185 VRM=100 VFM=1.2 25MIN	051				_
DOZMZ 305CF		ZENER DIODE		07				
DAZMZ 3 LOXE		ZENER DIODE	4Z310 NJ-RANG	0.50			-	<u> </u>
0-0MAN# 12AN		t.c.	ANG12 7-PEN BALANCED-MOD.	104				
00703001AN		1.0.	AN103 D-PANK C3001-0	103				$\perp$
DOMOZOCAT		I.C.	TA7205AP5.8W AUDIO-POWER-AMP	105				
TANGERYRN		TRANSISTOR	254683 2-PANK	940	042			
TANTIGYAN		TRANSISTUR	254719 0-34NK	237	Q3 <u>8</u>			
1740723814		TRANSISTOR	254733 0-PANK	Q2.5	Q3 2			4
171 0460X83		TRANSISTOR	25C460 4,8-RANK	23				+
01C071084F		TRANSISTOR	2 SC 71 0 C-2 ANK	013	014	015	216	1
				017	020	Q2 2	027	+
				028	045			
יונטענסאטב		TRANSISTOR	250710 D-BANK	611	Q1 2	018	Q71	
				929	37			<u> </u>
TTOTORASE		TRANSISTOR	2 SC 76 3 _ C , D-9 ANK	023	026			
STEDBERTO		TRANSISTOR	250900 U-PANK	035				
TT 1045454		TRANSISTOR	2509454 Q-RANK	019	231	033	Q34	
				036	039			

PART NAME	PART CODE • • • • • • • • • • • • • • • • • • •								_
PART CODE	STOCK NUMBER	PART NAME	SPECIFIC	ATIONS	SYMB	OLIC OR I	EXPLODE	VIEW NO.	QTY USED
STOT SO STOR		TRANSISTOR	25C13R3 R-PANK		Q41	Q43			
HTT 1969KAF		TRANSISTIR	2501969 X.D-RANK		010				
1112156845		TRANSISTOR	2502165 NO-RANK		Q.9				
1111335×CC		TRANSISTOP	250325 0, C-RANK		D44				
UTK 1034YAF		TRANSTSTOR	2 SK34 C.D-RANK		Q24				:
11K-1034885		TRANSISTOR	25K34 F-RANK				:		ı
2025VJ110X		CAPRON FILM R.	0.25% 10 DHM	5 %	P 34	₹38			;
9.725V.1101.X		CAPERN FILM S.	0.251 100 000	58	R 2.9	819	R6 9	R73	
2725VJ172X		CARSIN FTLM R.	0.25W 1X ЛНМ	5 4	R 1 20	R123	P127	2137	12
					R140	R146	P166	R47	
					R 54	277	R80	293	:
•••>5¥J1^3X		CAPEDN FILM 4.	0.25W 10K DHM	58	R108	R119	R124	3125	10
					R132	R139	R31	R45	
					R 9 2	R98			
67257J104X		CARRON FILM R.	0.25W 100K 0HM	58	R50	R75	R89	896	4
9125VJ105X		CARBON FILM R.	0.25W 1M 34M	58	R 1 21	297			2
9925V3121X		CARBON FILM R.	0.25W 120 DHM	58	R53				
2025VJ123X		CAPBON FILM R.	0-25W 12K 0HM	58	857	279			2
2025VJ151X		CARSON FILM R.	0.25% 150 0HM	53	R109	R138	R60	R 72	
P025VJ152X		CARBON FILM R.	0.25% 1.5K OHM	58	27	R71			2
9025VJ153X		CARBON FILM P.	0.25W 15K 0HM	58	270	274			2
RD25VJ155X		CAPBON FILM R.	0.25W 1.5M OHM	5%	R93				<b>1</b>
0.725VJ183X		CARBON FILM R.	0.25W 19K 0HM	58	R 44	267			2

PART NAME	PART CODE							OTY
PART CODE	STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBO	DLIC OR E	XPLODE	VIEW NO.	Q'TY USED
2025VJ2?1X		CARBON FILM R.	0.25H 220 DHM 5%	R 32	R64	R83	287	4
2025V J222X		CARBON FILM R.	0.25 W 2.2K OHM 5%	R 1 06	R126	R142	R143	4
R025VJ223X		CARBON FILM R.	0.25W 22K 0HM 5%	R 1 1 3	R129	R133		3
₽025VJ271X		CARBON FILM R.	0.25W 270 DHM 5%	R175	R36			2
3725VJ272X		CAPBON FILM R.	0.25W 2.7K 2HM 5%	2151	8152	R153	R154	6
				R155	R156			 +
025V.1273X		CAPBON FILM R.	0.25W 27K 7HM 5%	R129				1
3025VJ274X		CARBON FILM R.	0.25W 270K 0HM 5%	R115				1
2.752.5V J.33.7X		CARBON FILM R.	0.25W 33 0HM 5%	P.35			÷	1
2775V.1331X		CARBON FILM R.	0.25W 330 7HM 5%	2100	348	R 5 1		3
2025VJ322X		CARSON FILM R.	0.25h 3.3K OHM 58	R145	R147	R172	R 43	11
				R 52	R58	R59	R69	
				R 78	<b>R84</b>	P 8 8		
V125V J333X		CARHON FILM R.	0.25W 33K 0HM 5%	R110	R116	R41		3
2725VJ391X		CARSON FILM P.	0.25W 390 0HM 5%	2159				1
2125VU 393X		CAPBON FILM R.	0.25W 39K 0HM 5%	R107				1
2025VJ470X		CARDON FILM R.	0.25W 47 DHM 5%	<u></u>	R112	P136		3
2025VJ471X	-	CARRIN FILM R.	0.25W 470 DHM 5%	P103	R 5 5	P86		3
v025VJ472X	<u> </u>	CARBON FILM R.	0.25W 4.7K 7H4 58	2141	240	R62	865	6
				2.81	385			
>725VJ473X		CARBON FILM R.	0.25N 47K 0HM 5%	F114	R119	R49	882	4
025VJ474X		CARBON FILM R.	0.25₩ 470K 0HM 5¥			:		1
20259 J541X		CARBON FILM R.	0.25K 550 DHM 56	8105	R134	R 46	255	5

PART NAME	PART CODE							
PART CODE	STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMB	DLIC OR H	XPLODED	VIEW NO.	Q'TY USE
				R63				
125815578		CAPBON FILM R.	0.25× 5.5K 14M 5%	R102	3104	R130	2131	
			· · · · · · ·	R169	R55	R44	R95	
125VJ563X		CARRON FILM R.	0.25W 55K 0HM 5%	R101				
125V J620X		CARDON FILM R.	0.258 68 084 5%	R 3 3				4
0.25VJ 6.91X		CARBON FILM P.	0.25W 680 0HM 5%	R 1 22	R42			
125VJ602X		CARBON FILM 3.	0.25W 6.9K 0HM 58	R144				1
025VJ693X		CARBON FILM R.	0.25W 68K 0HM 58	R117				_
1257J821X		CARBON EILM P.	0.25W 820 0HM 53	FL35	R61			
7259 J322X		CARBIN FILM R.	0.25W 8.2K 3HM 5%	R 3 ()				-
194ANJ 3918		M-OXIDE FILM R.	1/2 × 390 0HM 5%	R157				-
GHANJ561B		M-OXIOS FILM R.	1/2k 550 0HM 5%	R37				
PON410201		SEMT-FIXED VR.	1K OHM B-CURVE	R V4				
PGN810301		SEMI-FIXED VR.	10K OHM B-CURVE	R¥5	RV7			
934420211		SEMT-FIXED VR.	2K OHM B-CURVE	RV12				
254320301		SEMI-FIXED VR.	20K DHM B-CURVE	R <b>V</b> 3	₹٧6	889		
PSNR20401		SEMI-FIXED VR.	200K OHM B-CURVE	R V 1 0		÷		
23N850101		SEMI-FIXED VR.	500 OHM B-CURVE	RV11				_
PGN850201		SEMI-FIXED VR.	SK OHM B-CURVE	RV2	RV8			
PUNBIOINI		SEMT-FIXED VP.	100 OHM B-CURVE	R V 1				
X2ANJ1808		M-OXIDE FILM R.	2W 18 DHM 5%	R150				
96291004W		AF OPT		115				

PART NAME	PART CODE APT 8*059CA					-					
PART CODE	STOCK NUMBER	PART NAME	5	PECIFIC	ATIONS		SYMB	DLIC OR E	XPLODED	VIEW NO.	Q'TY USED
C 248473KCH	м	YLAP CAPACITOR	0.047MED	50V	-10,	+138	C102	C192	C51		. 3
CQ48683KCH	м	YLAR CAPACITOR	0.168 MED	50.V	-10,	+1)%	C 1 6 1	+			1
сомвараксн		YLAR CAPACITOR	8200PF	50V	-10,	+13%	C134				1
2553100MDN	T	ANTALUM CAP.	10 MED	161	-20,	+23%	C 1 2 7				1
CSSEDIOMOC	T	TANTALUM CAP.	1 MED	25 V	-23,	+23%	C141	C143			2
CSSE 389MDC	T	ANTALUM CAP.	3.9MFD	251	- 20 •	+238	C 1 5 6				1 1
CSSER22MDC		ANTALIM CAP.	0.22 MED	35 V	-23,	+23%	C58	C76	C 78	C 87	5
							C 9 0 1				_
5726200101		RIMMER CAP.					CT5				1
CT 77250401	T	RIMMER CAP.					CT4				1
F89455413M	м	ECH.FILTER					C F				1
FF10275016		• XTAL FILTER					MXF				l
111310244	c	011					L12				<u> </u>
1.320/10034	c	HOKE COLL					L20	1.21			2
LOADARORA	2	E COIL					L6	_			1
1141435386		<u>nu – – – – – – – – – – – – – – – – – – –</u>					13				1
1040135244	·	.F.C.					10	L.B			2
1.0140743		E COLL					1.22	L23	1.9		3
LEOP KONIN	p	EAKING COIL					L16	-			1
1110788915		<u>ECIL</u>					119				1
1 = 29 2K0 1N ·		E COTL					_15	L 4	L5		3
1.5 ¥F 78 00 14							L14				1
1.6., 9.) KINN [ N	D.	E COTL					17	L19	124		3

PART NAME	PART CODE . 17189 1590 A							
PART CODE	STOCK NUMBER	PART NAME	SPECIFICATIONS	SYME	OLIC OR	EXPLODE	D VIEW NO.	Q'TY USED
LJ11000049		SHOKE COIL		<u>64</u>				1
<u>986545X011</u>		SHESLO	+ ·					
32110001		HEAT SINK						1
SE56540211		HEAT SINK						
H0531 A0101		HEAT SHINK						1
+\$32740104		HEAT SINK						,
9w20185002		TERMINAL		-				6
4420185204		TERMENAL						42
44401 (2001		SHOR * JUMPER						7
494211 x022		SHORT JUMPER						7
Y+4710X003		SHORT JUMPER						6
MW 4010X004		SHOPT JUMPER						2
1X65300001		HEAT SHINK						<u> </u>
PTGMOSOCOX		PRINTED W.BOARD		-				1
0051V60XXT		SEPMANIUM DIUDE	NN-RANK	20	321	D22	n23	11
			-	025	027	028	029	
				031	033	D9		Ļ
10G1532XXT		GERMANTUM DIQDE	1532 VR=50VNO-RANK 25MIN	D16	D2 4	034		3
2056P250X6		STITCON DIDDE	GP25G 400V NO-RANK	043				1
075#4 <u>15</u> 7X4		SILICON DIODE	MA150 VE=1.2V, VR=35V ND-3ANK 24MIN	<b>p1</b> 3	011	012	514	29
				015	017	D18	019	
				026	030	032	035	<u> </u>
				D36	D3 7	038	039	

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PART NAME	PART CODE								
PART CODE	STOCK NUMBER	PART NAME	SPI	CIFICATIONS	SYMBO	LIC OR H	EXPLODE	VIEW NO.	Q'TY USED
MA01CX001		SHORT JUMPER							3
MW4010 X002		SHORT JUMPER							4
1-401CX003		SHORT JUMPER							4
PTL036143X		PRINTED W.BOARD							1
01-1 N5268N		LEO			LEDI				1
ZP3168101Z		LAMP			PL1	PI 2	PL 3	PL4	6
					PLS	PL6			-
222020222		PC JAINT.							1
								_	
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PART NAME	PART CODE								QTY
PART CODE	STOCK NUMBER	PART NAME	SPECIFICA	TIONS	SYMBO	DLIC OR E	XPLODED	VIEW NO.	USEI
		FLYT. CAPACITOR	100 MED 25V		5.5.2				-
0571522201		FLYT. CAPACITOR			C501				
CK 101/130-04		CEPSAIC CAP.	0.014ED 50V	-), +10)% E	C 504				_
KUD333064		CCPANIC CAP.	0.022ME0 50V	-), +1))% E	C 5 3 3	(505			
K (04737FM		CEPAMIC CAP.	0.047MED 50V	-20, +20% F	C 5 7 5			:	
4420135005		TERMINAL			_			-	+
vtop63703X		PRINTED W.BOARD							-
33 30 2 57 X 5		SILISON DIODE	GP25G 400V NO-PANK		0501	7502	0503	0514	-
27/07167XJ		ZENER NUMBE	RZ162 Vº=14V 29MIN	·····	Z 0501				
17711116F 4A		7 ENE 2 01005	05.6F 5.6-6.3V	4-24NK	Z 7 502				
TC DIGOXHA		TRANSTSTOR	250900 F-RANK		0502				Ļ
3710945111		TRANSISTOR	2509454 P-RANK		Q501				
1125-1111		CARBON FILM P.	1/2W 100 DHM	5 \$	R503				
×<11.15.1		CARRON FILM 2.	172W 1.2K OHM	58	R505				
112F J221X		CAPBON FILM P.	1/28 220 044	58	2501				-
2012FJ470X		CAPSON FILM R.	1/2W 47 0HM	5 K	8502				-
×312⊢1921X		CARBON FILM R.	1/2W 820 0HM	58	8504	R506			
2235451121		SEMI-FIXED VR.	500 8HM B-CURV	ε	RV 501				
76402030		FUSE			F501				-
27700004		FUSE CAP							

PART NAME PART CODE P. 4. SOLAD ASSY. APTSR01784			
PART CODE STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO. USE
SC080100PM	CERAMIC CAP.	PK 1PF 50V -0.25, +0.25PF	= C504
CK08103PEM	CERAMIC CAP.	0.01MFD 50V -0, +103% E	C 5 9 3
CKUB1031XY	CEPAMIC CAP.	0.01MFD 50V -30, +30%	C501 C502
MW401CX002	SHORT JUMPER		J501 J502
PTSENTROX	PRINTED W.BOARD		
1061 V4 04XT	SERMANTUM DECIDE	NO-RANK	D501 D502
> 1 25 T J 1 " I X	CARBON FILM R.	0.25W 100 0HM 54	8501 8502
012573103X	CAPRON FILM R.	0.25k 10K 0HM 5⊀	R503 R504
נפרקקאפט	SENT-FIXED VR.	20K DHM B-CURVE	RV501
2241341720	PELAY		231
		· · - · · · · · · · · · · · · · ·	
	+		

PART CODE	STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLO	DED VIEW NO. US
	STOCK NUMBER				
TS#32650X		PRINTED W. HTAPD			
2.244.0.20.004		PITARY SPITCH		<u>S1</u>	
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PART NAM	E PART CODE				<b>.</b>				
PART CODE	STOCK NUMBER	PART NAME	SPECIFICA	TIONS	SYMBO	LIC OR E	XPLODED	VIEW NO.	Q'TY USED
אַנְי <b>ַנו</b> יּבְּנָרַי		CAPRON FILM R.	0.25W 1K 04M	5₹	R723	;			1
2125T J 104X		TADIN FILM P.	0.25W 100K 7HM	5.8	R 709				1
X151L19401		CAPTIN FILM 2.	0.25% 470 0HM	5⊀	8777		· · · · · · ·		1
<u>1251J021</u> X		CANANN FILM P.	<u>אשר רכפ פייר</u>	58	+ 722				4 4
אצרונעיינו		TARRIN FILM P.	2.25 N 13K 0HM	5 K	R720				1
<ul> <li>วาฐ<u>ขมาก</u>ระ</li> </ul>		CARRIN FILM P.	0.25W 100K 11M	5%	+ + 702	8710	R725		 3
: <u>5259.152X</u>		TAPATN FILM P.	0.256 1.5K 0HM	5%	R711				, <u>1</u>
1969JLF3X		CARRIN FILM R.	0.25W 15K 0HM	58	R701	9703	R 71 3		3
- J 264 J 22 L X		CARBIN FILM R.	0.25W 220 1HM	55	<u>714</u>				1
0.056A1555X		DATECN FILM R.	0.25W 2.2K OHM_	5%	R705				1
212571223X		CARSON FILM R.	3.25 N 27K 34M	58	P 7 2 1		·		1
oubeAlasiX		CASSIN FILM R.	0.25 N 330 14M	5%	2704	8715			2
אַכָּפּרַעָּפּרַג		CARRON FILM R.	0.25W 3.3K 34M	5%	R 7 06			-	1
-125011.02X		CARDON FILM R.	0.25* 6.3K OHM	5 %	P (7 ) P	2712	₽719		3
\$1.12120579		LEVÉR SWITCH			\$5	S 6	\$7	58	5
					59				
								-	

PART NAME P.W.BOAPD ASSY	PART CODE								
PART CODE	STOCK NUMBER	PART NAME		SPECIFIC	ATIONS	SYMB	OLIC OR E	XPLODED VIEW NO	Q'TY USED
CC082714-0M		CERAMIC CAP.	270PF	50V	-10, +1)% SL	5702			1
CEED470ALX		ELYT. CAPACITOR	47MFD	167		c705	C706		. ;
CERE383ALX		FLYT. CAPACITOR	3.3MED	25V	·	C715			1
36664974LX		FLYT. CAPACITOR	4.7MED	25 V		6731	C704		
CEF-GORIZYN		FLYT. CAPACITOR	9.1MED	50V	MS	C 713			1
гольтожен		MYLAR CARACITOR	1000P5	50 V	-10, +13%	C 7 0 3			
CDVR103KEH		HYLAS CAPACITOR	0.01MFD	50V	-10, +13%	£712	6716	· ÷ · · · · · · · · · · · · · · · · · ·	
1348123KEH		MYLAR CAPACITOR	0.312 MED	50V	-13, +13%	C 710			
C 349153K≓H		HYLAR CAPACITOR	0.015850	50V	-10, +10%	6779			ı
114223KF4		MYLAR CAPACITOR	3.322MED	50V	-10, +10%	<u></u>	C714	C717	
суливаамен		MYLAR CAPACITOR	0.133M÷0	50 V	-LO+ +1J%	¢708.			
с Линорокти		MYLAP CAPACITOR	8230PF	50V	-10, +10%	<u>c 707</u>			1
-v420192033		TERMINAL							. 26
4#401CX031		2-ниат димеез				J1	J2		2
Mwanito Xñoa		SHOPT JUMPER				14			1
4440158004		SHORT JUMPER				FL.	J5		
2T5W07200X		PRINTED W.BOARD							1
2001460XXT		: <u>Sermantum otude</u>	NO-RANK			U712	D704		2
0354115320		STITCON DIDDE	₩4150 VF=1.	? V , V? = ?	15V NO-RANK 2441	N 0701			. 1
JT 1062 BYAE		TRANSTSTOR	251628 1-94	NK		0704			1
DTC:DOCKRA		TONNSISTOR	250900 F-24	NK		9702		1	1
0700345464		TRANSISTOR	2509451 P-R	5NK		0703	3707		2
TU1312XAF		TRANSTSTOR	2501312 6-8	ANK		0701			1

PART NAME	PART CODE							
PART CODE	STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBO	LIC OR EX	PLODED	VIEW NO.	Q'TY USED
PTSWO7640X		PRINTED W.BOARD			·			1
UDSN4448XZ		SILICON DIODE	LN4448 VRM=100V NO-RANK	0251	0252	D253	0254	14
				0255	D256	D257	0258	
				D2 59	0260	D261	D262	
				0263	0264		_	<u> </u>
0 10182M079		RESISTOR ARRY		4RY 251	4PY 257			2
			·					+ +
					<u> </u>			+
								+
						-		
						-	-	+
	· · · · · · · · · · · · · · · · · · ·							+
								-
·			· · · · · · · · · · · · · · · · · · ·					
								+
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PART NAME	PART CODE		<u> </u>			
PART CODE	STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR E	XPLODED VIEW NO.	Q'T USE
51549 711 X		CLYT. CAPACITOP	4.7MED 25V	c		
12425 1001		สถายเล				
577744 NX		PRINTED W. HOAKD				
011341017		2 EL 1 Y		PY1		1
		-				
						1
					T	+
			· · · · · · · · · · · · · · · · · · ·			-
						+
						+-
						+
						+-
						+
						+
						1

PART NAME	PART CODE • APTOSOD6CA						1				QTY
PART CODE	STOCK NUMBER	PART NAME			SPECIFIC	ATIONS	SYMB	OLIC OR 1	EXPLODE	VIEW NO.	USEL
CBD1F102KM		CERAMIC CAP.					C16	C18	C 2 5	C 3 9	<u> </u>
							C40				
CB01E103KM		CERAMIC CAP.					<u>c34</u>	C 37			
CB01F122KM		CERAMIC CAP.					C19				
53015223KM		CERAMIC CAP.	L				c7				1
C8D1E47?KM		CERAMIC CAP.					C38	C.6			
08016473KM		CERAMIC CAP.					C 36	_			
00080205PM		CERAMIC CAP.	РК ;	2 PF	50V	-0.25, +0.25PF	C35				
1008030CPM		CERAMIC CAP.	PJ	3PF	50V	-0.25, +0.25PF	C 20				
5558059CPM		CERAMIC CAP.	рн	5 PF	5 O V	-3.25, +3.25PF	¢13				<u> </u>
CCDB120KPM		CERAMIC CAP.	1	2 PF	50V	-10, +1)% PH	¢14				
CC13150KPM		CERAMIC CAP.	1	5 PF	50V	-10, +13% PH	C.21				
COB220KPM		CEPANIC CAP.	2	2 PF	50 <u>v</u>	-10, +13% PH	C1 ?				
CC03221KPM		CEPANIC CAP.	2.2	OPF	50V	-10, +10% PH	223				
5035630KPM		CERAMIC CAP.	61	9 PF	50V	-13, +13% РН	¢10	C17			+
ссовазокри		CERAMIC CAP.		ZPF	50V	-10, +10% PH	C.9				
CE4847041 X		ELYT. CAPACITOR	4	7 MED	6.34		<b>C</b> 4				
CEADLOOMLX		FLYT. CAPACITOP	1	OMED	16V		C3	C42			
C=49330/LX		ELYT. CAPACITOR	3	3 MED	167		C 3 3				
CENODIONUX		FLYT. CAPACITOP	-	1 ME D	50V		C 2 8	<u>C32</u>	C41		
сковтозкы		CERAMIC CAP.	0.0	1 MED	50V	-10, +13% 8	C 26	C 2 7	C29	C30	+
CK0P4737FM		CERAMIC CAP.	0.04	7 MF D	50V	-2), +2)% F	C 2 2	C.5			
COVR102KEN		MYLAR CAPACITOR	100	0P₽	50V	-10, +138	C 3				

PART NAME 2.4.30423 ASSI	PART CODE							
PART CODE	STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMB	DLIC OR	EXPLODE	D VIEW NO.	QTY USED
10MP1548EH		MYLAP CAPACITOR	0.15MED 50V -10, +108	C 31				1
7 Э <b>ЯВ57 1</b> КЕН		MYLAR CAPACITOR	560PF 50V -10, +1)#	c11				1
C\$\$55922MDC		TANTALUM CAR.	0.224ED 35V -20, +205	C.2				1
CSSEDR 1MDC		TANTALUM CAP.	0.1 MED 35V20, +23%	C 1				1
CT76200H31		TRIMMER CAP.		C 7 1	CT2	CT3	CT4	5
				C T 5				
LEISIKBOIS		RE COLL		L3				1
LEPRZKROZS		RE COLL		L 1				1
1 568065015		RE COLL		12				1
4820145002		TERMINAL						28
N#4010K001		SHOPT JUMPER						3
		SHOPT JUMPER						2
MJ401CX004		SHORT JUMPER						2
PTOSODGADX		PRENTED W.BOARD						1
JACTISTOXO		VARI-CAP. DIDDE	1TT310 12V NO-BANK 26MIN	<u> </u>	05	D6	-	3
3115N4448XZ		SLUICON DIODE	1N4448 VRM=100V NO-RANK	01	010	D2	70	ĥ
				na	09		-	
002MZ 305CF		ZENER DIODE		D3				1
00MAN 240PN		1.0.	4N240P	103				1
00403001AT		1.0.	TA7310P D-RANK C30014-0 9-PIN	102				1
DODELL OPAN		1.0.	PLL02A(MN6040)	101				1
010071085		TRANSISTOR	2 SC 71.0 D-RANK	Q?	Q3	Q4	05	4
OTCOONNEA		TRANSISTOR	25C900 F-RANK	<b>Q</b> 1				1

PART NAME	PART CODE Y. APTOSO05CA							
PART CODE	STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMB	OLIC OR	EXPLODE	D VIEW NO.	Q'TY USED
0100636894		TRANSISTOR	250636 0.P-RANK	0.5	27	0.8		્ય
2025VJ101X		CARBON FILM R.	0.25% 100 0HM 5%	R.7.6				1
2025VJ102X		CARBON FILM R.	0.25W 1K 2HM 5%	R 15	325			2
<u>20257 J1 23X</u>		CAPSON FILM R.	0.25W 10K 0HM 55	8.23			_	1
C725VJ174X		CAPRON FILM R.	0.25% 100K 0HM 5%	R 17	R 2 0	₽a		3
2025VJ105X		CARSON FILM R.	0.25W LM 0HM 5%	8.3				1
2725V J153X		CARBON FILM R.	0.25W 15K 04M 58	e 1 9 -	R ? 2			2
2725VJ222X		CARBON FILM R.	0.25W 2.2K OHM 53	810	22 <b>7</b>			2
P.025V J223X		CAPBON FILM R.	0.25% 22K 04M 5%	R21				1
2725VJ272X		CARBON FILM R.	0.25W 2.7K OHM 5%	213				1
€025VJ <u>322X</u>		CAPBON FILM R.	0.25% 3.3K 0HM 5%	2.1	P24	831	57	4
2125VJ471X		CARBON FILM R.	0.25W 470 3HM 58	<u> 14</u>	216	P (		3
2025VJ472X		CAPPON FILM R.	0.25W 4.7K 0HM 54	529				,
° )25V J473X		CARDN FILM R.	0.25W 47K 14M 58	0 <u>? 9</u>	830	·		2
2 125V.1474X		CARBON FILM R.	0.25W 470K 0HM 5%	F. 4	25			
0725VJ563V		CARBON FILM R.	0.25W 55K DHM 58	F19				י <u>-</u>
277573691X		CAPBON FILM R.	0+25W 680 0HM 58	22				1
-025VJ682X		CARBON FILM R.	0.254 6.3K 7HM 5%	- 12	837			2
<u>257 1620X</u>		CARRON FILM P.	1.25W 32 3HM 5%	811	÷ 9			2
2000420201		SEMT-FIXED VP.	2K OHM B-CURVE					_ '_
SDIAN420301		SEMI-EIXED VO.	20K OHM B-CURVE	F V1	۹V2			2
TR 07LA 005N		1.5.7.		T4				1
TROTLADON		I.F.T.		15	1			. 1

PART NAME	PART CODE				
PART CODE	STOCK NUMBER	PART NAME	SPECIFICATIONS	SYMBOLIC OR EXPLODED VIEW NO	Q'TY USE
111280225		RE COLL		Τ1	
110480137		T.F.T.		т?	1
10450155		RECOL		T3	_
K11150001		SPACER			
( <u>15139701X</u>		XTAL OSCILLATOR		×1	
X101011X		XTAL OSCILLATOR		X 2	1_
CS101072X		XTAL OSCILLATOR		×3	_
CS1C1073X		XTAL OSCILLATOR		X4	
SKOLOOOLZ		XTAL SPOKET			.!
22000043		V.C.D. BLOCK		vco :	
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