

# CARVIN ENGINEERING DATA CG200 Optical Compressor/Gate INSTRUCTIONS



Congratulations on your purchase of the CARVIN CG200 two channel Optical Compressor/Gate. The CG200 was designed with the professional in mind. Your unit has been engineered and assembled in the U.S.A., using only high quality electronic components and uncompromising workmanship. The CG200 was designed around hand matched analog optoisolators. Unlike many compressor/gates which use higher noise VCA's, the CG200 is based on classic optical compressors from the 60's that had that warmth and softness that cannot be recreated with VCA's. Optoisolators are also known for their extremely low distortion.

## RECEIVING INSPECTION

INSPECT YOUR ITEM FOR ANY DAMAGE which may have occurred during shipping. If any damage is found, please notify the shipping company & CARVIN.

SAVE THE CARTON & ALL PACKING MATERIALS. In the event you have to re-ship your unit, always use the original carton and packing material. This will provide the best possible protection during shipment. CARVIN and the shipping company are not liable for any damage caused by improper packing.

SAVE YOUR INVOICE. It will be required for warranty service if needed in the future.

SHIPMENT SHORTAGE. If you find items missing, they may have been shipped separately. Please allow several days for the rest of your order to arrive before inquiring.

RECORD THE SERIAL NUMBER on the enclosed warranty card or below on this manual for your records. Keep your portion of the card and return the portion with your name and comments to us.

For your records, you may wish to record the following information.

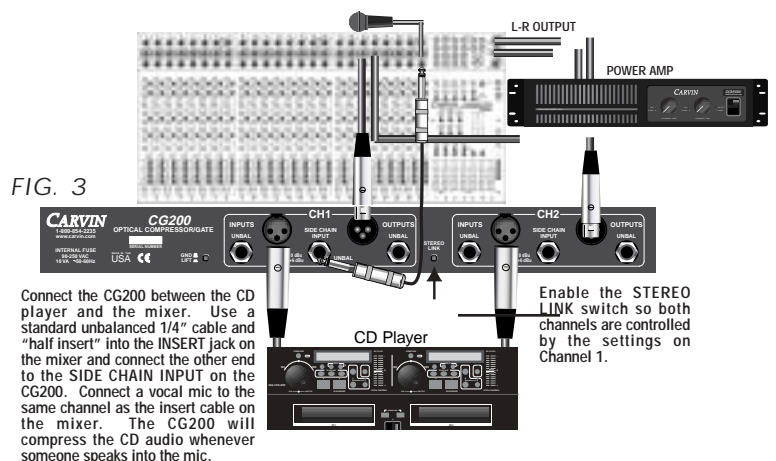
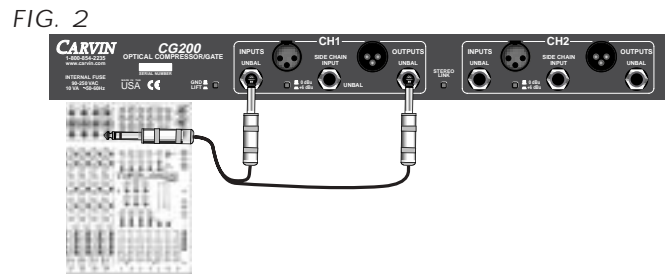
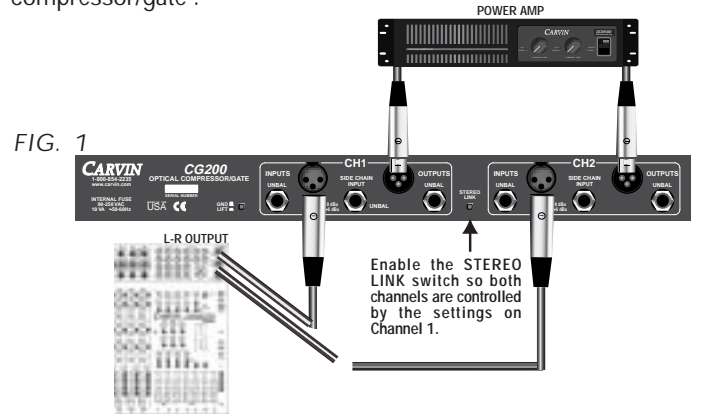
Serial No. \_\_\_\_\_ Invoice Date \_\_\_\_\_

## CG200 SPECIFICATIONS

FREQUENCY RESPONSE:	20Hz TO 20kHz +/- 1dB
DYNAMIC RANGE:	115dB
MAX INPUT LEVEL:	+20dBu
THD+N:	LESS THAN 0.002% 20Hz TO 20kHz, NO COMPRESSION/GATING, 0dB INPUT LESS THAN 0.05%, ANY AMOUNT OF COMPRESSION, 0dB INPUT
ATTACK AND RELEASE TIMES NOMINAL	
INPUT IMPEDANCE:	20K BALANCED XLR
CROSSTALK:	<-90dB 20Hz TO 20kHz
OUTPUT GAIN:	-∞ TO +12dB
<b>COMPRESSOR</b>	
THRESHOLD RANGE:	-30dB to +20dB
RATIO:	2:1 TO 20:1
ATTACK TIME:	4ms TO 400ms
RELEASE TIME:	10ms TO 2 SEC
<b>GATE</b>	
THRESHOLD RANGE:	OFF(OPEN GATE) TO +10dB
RATIO:	1:1(OFF) TO 30:1
RELEASE TIME:	1ms TO 2 SEC
INPUTS AND OUTPUTS:	XLR BALANCED AND 1/4" UNBALANCED
SIDECCHAIN INPUT:	1/4" UNBALANCED
INPUT LEVEL SELECTION:	0dBu or +6dBu
POWER REQUIREMENTS:	4VA 90-250VAC, 50/60Hz SWITCHING SUPPLY
FUSE:	INTERNAL 1.5A FAST BLOW
DIMENSIONS:	1 3/4"H x 19"W x 6"D
SHIPPING WEIGHT:	7 LBS

## CONNECTING UP

The CG200 can be used in various applications that require different configuration within a sound system. Fig. 1 shows the CG200 connected between the stereo output of a mixer and the inputs of a power amp. This is best for compressing or gating an entire main mix of program material. Fig. 2 depicts a channel insert connection. This is done with a TRS (tip send, ring return) Y-cable. The signal is sent out of the channel, compressed/gated and returned into the channel. This is a typical set-up on most vocal or drum microphone channels. Fig. 3 depicts a mic channel direct out to the SIDE CHAIN INPUT. The mic signal triggers the compressor/gate.



# CARVIN

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## FRONT PANEL:

### 1. GAIN REDUCTION LED METER

Shows how much gain reduction (in dB) that is taking place whether compression, gating or both.

### 2. INPUT/OUTPUT LED METER

Shows the incoming signal or output signal level (in dB) depending on the position of the meter in/out switch.

### 3. METER IN/OUT SWITCH

When this switch is "IN", the input/output meter shows the input signal level. When "OUT", the meter shows output level.

### 4. BYPASS SWITCH

With this switch "IN", the signal passes with no processing. Note: The OUTPUT GAIN knob will still control the output level even when the CG200 is set to bypass.

### 5. BYPASS INDICATOR

This LED illuminates when the unit is bypassed.

### 6. POWER INDICATOR

This LED illuminates when power to the unit is on.

### 7. POWER SWITCH

Push this switch to the "ON" position to apply power to the unit. The power indicator LED will light to show the CG200 is on.

### 8. THRESHOLD

The THRESHOLD is the signal level where compression begins. All incoming signals above this threshold will be compressed according to the RATIO control. If no compression is desired, and use of the gate is desired by itself, turn the THRESHOLD control clockwise to "OFF"

### 9. RATIO:

The RATIO is the amount of compression applied to the signal above the threshold setting. The numbers 2 through 20 are the dB of input signal required to achieve a 1 dB output increase. 2:1 is the most

subtle. 20:1 is the most extreme and will produce a more "squashed" sound. High ratio settings can be used for limiting.

### 10. ATTACK:

Delay (in milliseconds) is "before compression takes place." A short attack time will respond much faster to signal dynamics than a longer setting. Increase this setting if you want the initial hit from a snare or punch from a bass to get through before compressing the signal.

### 11. RELEASE:

Time (in milliseconds) in which compression is held after the initial attack. The shorter the release time, the closer the compressor follows the signal dynamics. Longer release times will tend to make the sound more "squashed".

### 12. OUTPUT GAIN:

Output signal level. Use this after setting the compressor to make up the over all signal level lost due to compression.

### 13. GATE THRESHOLD:

Signal level where "gating begins." All incoming signals below this threshold will be attenuated according to the GATE RATIO control. Any signals above this threshold will be passed unaffected (unless compression is on). If no gating is desired, turn this control fully counter clockwise to the "OFF" position.

### 14. GATE RATIO:

Amount of attenuation applied to the signal below the gate threshold level. Setting the GATE RATIO to 1:1 will effectively turn gating off. A setting of 30:1 will attenuate all incoming signals below the gate threshold by 30dB.

### 15. GATE RELEASE:

Amount of time after signal reaches the Gate Threshold before gating turns on. The shorter the setting, the more "choppy" and tighter the effect. The longer the time, the smoother the effect but the more un-wanted noise will pass.

## Compressor/Gate Applications

### COMPRESS A STEREO MIX

#### CONNECTION METHOD: STEREO L-R MIX (see fig. 1)

To compress a stereo mix, depress the STEREO LINK button. Start with a low RATIO setting. Set the THRESHOLD for a bit of Gain Reduction and set the ATTACK on a slow setting. Raise the RATIO for more compression if needed.

### EVEN OUT VARIOUS VOCAL MICS

#### CONNECTION METHOD: CHANNEL INSERT (see fig. 2)

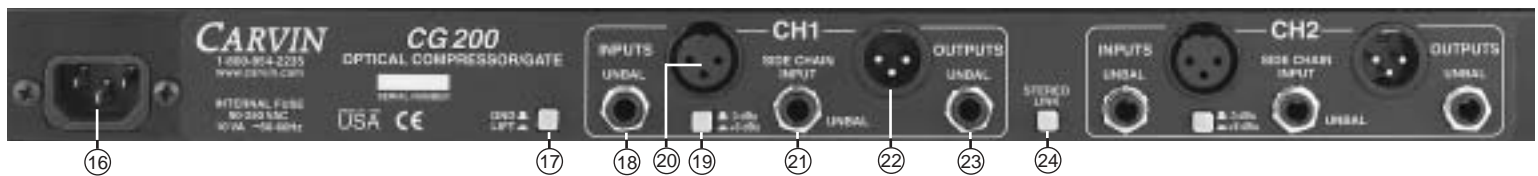
In a situation where there are various vocalists with different dynamics, it is best to compress each mic channel before adding each mic to the mix. Start with a medium ATTACK setting on each mic. Set the RELEASE time

to a slow setting. Set the compression RATIO to 4:1. Set the THRESHOLD so the GAIN REDUCTION meters show 9dB of gain reduction. Increase the compression RATIO as needed. Soft vocal signals may require a higher RATIO setting.

### BASS GUITAR, ELECTRIC GUITAR COMPRESSION

#### CONNECTION METHOD: CHANNEL INSERT (see fig. 2)

To increase Bass sustain and reduce transient spikes, set the compression RATIO around 4:1, set the THRESHOLD at 9dB of gain reduction. Use a higher RATIO setting (5:1 or higher) to add sustain to Guitar signals. Set the THRESHOLD as needed.



## REAR PANEL:

### 16. LINE CORD:

The exclusive built-in auto switching power supply allows you to connect any voltage from 90 to 255v 50-60Hz. Use a 3-conductor line cord for maximum safety. If the CG200 is to be plugged into a 2-prong outlet, use a quality 3-to-2 prong grounded adapter. Do not defeat the grounding pin of your AC line cord.

### 17. GROUND LIFT SWITCH:

This switch lifts the grounds on the inputs and outputs when depressed. Useful in getting rid of ground loops.

### 18. UNBALANCED 1/4" INPUT:

This input will accept an unbalanced input from insert patch cables, amplifier effects sends, etc. The tip is signal, the ring is shield.

### 19. LEVEL SWITCH:

Depressing this switch "OUT" gives a 6 dBu boost to the input signal if a low level signal is to be used.

### 20. BALANCED XLR INPUT:

This input will increase the gain by 3dB because it is balanced and that will be most resistant to any induced noise. The connector wiring is: Pin 1 – ground, Pin 2 – Positive Balance, Pin 3 – Negative Balance.

### 21. SIDE CHAIN INPUT:

Use this if an external source is desired to control the compressor or gate (ducking, de-essing, etc.). For example, if a lower music level were desired when someone is talking on a microphone, the microphone signal would be split, and sent into the side-chain input. The music would be run into the input and back out of the output of the processor. The music would automatically be turned down when ever some one spoke into the mic, according to the compressor settings. The Tip is signal, Ring is shield.

### 22. BALANCED XLR OUTPUT:

The balanced output is also 3dB hotter out the 1/4" output because that's what "active balancing" does to the signal. for the processor. The connector wiring is the same as for the balanced XLR input.

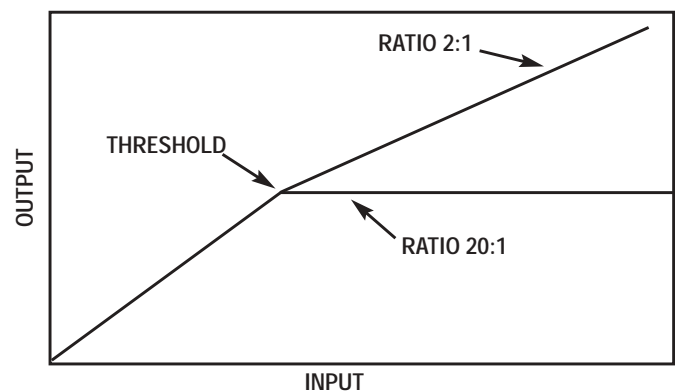
### 23. UNBALANCED 1/4" OUTPUT:

This is the unbalanced output for the processor. Use this to return the processed signal to insert patch cables, or the return on an amplifier effects loop. The tip is signal, ring is shield.

### 24. STEREO LINK:

Depressing this switch links channel 2 to channel 1 for stereo operation. The controls for channel 1 become the master controls for both channels, with the exception of the Output Level controls and Level switch, which remain independent. The signals are effectively processed identically in this mode to give proper stereo imaging.

## CG200 COMPRESSION CURVE



## COMPRESSING DRUMS

### CONNECTION METHOD: CHANNEL INSERT (see fig. 2)

To tighten the sound of a kick drum start with a RATIO around 6:1. Turn up the THRESHOLD until the GAIN REDUCTION LED's light up around 12dB. Increase the compression RATIO if needed. These suggested settings can also be a starting point for snare and tom-toms. Experiment for the best results.

To gate a drum mic signal so adjacent sounds don't "false trigger" the gate, set a fast RELEASE time so the gate closes fairly quick after the signal falls under the THRESHOLD. This will help tighten up the sound of a drum kit by eliminating sustained "ring".

## DISTORTION PREVENTION-SPEAKER PROTECTION

### CONNECTION METHOD: STEREO L-R MIX (see fig. 1)

A compressor can be used to control audio levels from distorting power amps and speakers. If the audio mix being sent to the power amps is loud, a 10:1 or more RATIO setting with the THRESHOLD provide 15dB or more of compression, which will protect against surprise signal spikes. For best results in this application, position the compressor before any EQ's in the system.



This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

### CAUTION

**RISK OF ELECTRIC SHOCK  
DO NOT OPEN**

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.



#### IMPORTANT! FOR YOUR PROTECTION, PLEASE READ THE FOLLOWING:

**WATER AND MOISTURE:** Appliance should not be used near water (near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc.). Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.

**POWER SOURCES:** The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.

**GROUNDING OR POLARIZATION:** Precautions should be taken so that the grounding or polarization means of an appliance is not defeated.

**POWER CORD PROTECTION:** Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.

**SERVICING:** The user should not attempt to service the appliance beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.

**FUSING:** If your unit is equipped with a fuse receptacle, replace only with the same type fuse. Refer to replacement text on the unit for correct fuse type.

#### SAFETY INSTRUCTIONS (EUROPEAN)

The conductors in the AC power cord are colored in accordance with the following code.

**GREEN & YELLOW—Earth BLUE—Neutral BROWN—Live**

**U.K. MAIN PLUG WARNING:** A molded main plug that has been cut off from the cord is unsafe. NEVER UNDER ANY CIRCUMSTANCES SHOULD YOU INSERT A DAMAGED OR CUT MAIN PLUG INTO A POWER SOCKET.



#### LIMITED WARRANTY

Your Carvin product is guaranteed against failure for 1 YEAR unless otherwise stated. Carvin will service and supply all parts at no charge to the customer providing the unit is under warranty. Shipping costs are the responsibility of the customer. CARVIN DOES NOT PAY FOR PARTS OR SERVICING OTHER THAN OUR OWN. A COPY OF THE ORIGINAL INVOICE IS REQUIRED TO VERIFY YOUR WARRANTY. Carvin assumes no responsibility for horn drivers or speakers damaged by this unit. This warranty does not cover, and no liability is assumed, for damage due to: natural disasters, accidents, abuse, loss of parts, lack of reasonable care, incorrect use, or failure to follow instructions. This warranty is in lieu of all other warranties, expressed or implied. No representative or person is authorized to represent or assume for Carvin any liability in connection with the sale or servicing of Carvin products. CARVIN SHALL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

When RETURNING merchandise to the factory, you may call for a return authorization number. Describe in writing each problem. If your unit is out of warranty, you will be charged the current FLAT RATE for parts and labor to bring your unit up to factory specifications.

#### MAINTAINING YOUR EQUIPMENT

Avoid spilling liquids or allowing any other foreign matter inside the unit. The panel of your unit can be wiped from time to time with a dry or slightly damp cloth in order to remove dust and bring back the new look. As with all pro gear, avoid prolonged use in caustic environments (salt air). When used in such an environment, be sure the mixer is adequately protected by a cover.

#### REFER SERVICING TO QUALIFIED SERVICE PERSONNEL!

#### CG200 PARTS LIST

03-50250	3 EACH	STANDOFF LED .250 X .135 T1 "FOR D3, D17, D217"	49-18152	10 EACH	180PF SMT 5% CERAMIC 0805 "C15, C18, C27, C33, C212, C215, C218" "C227, C233, C12"	58-47055	4 EACH	"R2104, R2105, R2115" 470K SMT .25W 1206 1% "R70, R117, R270, R2117"
03-92521	32 EACH	STANDOFF LED .925 x .215 T1 "FOR D1, D2, D4, D6, D7, D8, D9," "D10, D12, D13, D14, D15, D18," "D21, D5, D22, D201, D202, D204," "D205, D206, D207, D208, D209, D210," "D212, D213, D214, D215, D218, D221," D222	49-22035	21 EACH	SMT CAP 22uF 35v ELECTROLITIC "C3, C8, C10, C13, C16, C19, C20, C22" "C23, C24, C32, C166, C203, C208, C210," "C213, C216, C219, C220, C224, C232" 27 PF SMT 5% CERAMIC 0805 "C30, C31, C230, C231"	58-56035	1 EACH	5.6K SMT .25W 1206 1% R85
06-40040	2 EACH	TERMINAL VERT FEML PC MTG .250 S10	49-27052	4 EACH	39PF SMT 5% CERAMIC 0805 "C1, C2, C4, C5, C6, C7, C9, C14, C34," "C36, C37, C201, C202, C204, C205, C206," "C207, C209, C214, C234, C236, C237"	58-68015	9 EACH	68.5 SMT .25W 1206 1% "R23, R33, R51, R84, R97, R223," "R233, R251, R297"
07-01603	4 EACH	"KNOB "6L" 6x6x17.4mm GREY CAP" "FOR S3, S4, S5, S205"	49-39052	22 EACH	0.0047uF SMT FILM 0805 50V C158	58-68035	4 EACH	6.8K SMT .25W 1206 1% "R36, R82, R236, R282"
15-00300	2 EACH	INDUCTOR .3 mH DRUM CORE "L8, L10"	49-47212	1 EACH	0.0047uF SMT FILM 0805 50V C158	58-68045	6 EACH	68K SMT .25W 1206 1% "R29, R37, R39, R229, R237, R239"
15-05002	2 EACH	LINE FILTER 5mh ASE-1303F B L3	58-00035	13 EACH	0.0 SMT JUMPER 1206 "R8, R26, R63, R72, R76, R95, R98," "R208, R226, R272, R276, R295, R298"	58-91025	2 EACH	910.5 SMT .25W 1206 1% "R52, R252"
15-10110	2 EACH	INDUCTOR CHOKE 100uH 1.13Amp "L1, L2"	58-10025	17 EACH	100.5 SMT .25W 1206 1% "R5, R7, R16, R25, R64, R87, R108," "R109, R118, R205, R207, R216, R225," "R287, R2108, R2109, R2118"	60-20060	1 EACH	TRANSIENT VOLT SUPP 200V 600W Z1
15-86020G	1 EACH	XFORM SWITCHING 20W .3/.6AMP T1	58-10035	8 EACH	1K SMT .25W 1206 1% "R55, R57, R100, R103, R255, R257, R2100, R2103"	60-22020	1 EACH	IC PRIMARY VIPER 20 8P DIP VP1
21-40000	2 EACH	XLR FEMALE CONNECTOR W/O GRND "J5, J205"	58-10045	47 EACH	10K SMT .25W 1206 1% "R1, R3, R4, R15, R18, R20, R34, R46, R47," "R59, R60, R61, R62, R66, R67, R71, R73," "R77, R78, R79, R111, R112, R114," "R116, R201, R203, R204, R215, R218," "R220, R234, R246, R247, R259, R261," "R262, R266, R267, R271, R273, R277," "R278, R279, R2111, R2112, R2114, R2116"	60-25011	1 EACH	IC OPTO COUPLER ISOLATOR OP3
21-40001	2 EACH	XLR MALE CONNECTOR "J4, J204"	58-10055	10 EACH	100K SMT .25W 1206 1% "R10, R14, R28, R93, R113, R210, R214," "R228, R293, R2113"	60-40002	1 EACH	THERMISTOR 40ohm 2amp 20% TR1
21-31100	1 EACH	RECEPTACLE AC W/FAST-ON CHASS PL1	58-10065	2 EACH	1M SMT .25W 1206 1% "R88, R288"	60-50253-1	6 EACH	OPTO ISOLATOR VACTROL AXL TEST "OP1, OP2, OP3, OP201, OP202, OP203" LED RED DIFFUSED 3MM T-1.00 "D1, D4, D6, D7, D8, D9, D10," "D17, D18, D21, D23, D201, D204, D206," "D207, D208, D209, D210, D217," "D218, D221, D223"
21-51345	6 EACH	JACK .250 PHONE MONO PLASTIC "J1, J2, J3, J201, J202, J203"	58-15035	2 EACH	1.5K SMT .25W 1206 1% "R80, R280"	60-75320	22 EACH	LED GREEN DIFFUSED 3MM T-1.00 "D3, D5, D12, D13, D14, D15, D205," "D212, D213, D214, D215"
23-05601	2 EACH	FUSE HOLDER BRASS .5mm F1	58-15045	6 EACH	15K SMT .25W 1206 1% "R27, R32, R58, R227, R232, R258"	60-75340	4 EACH	LED YELLOW DIFFUSED 3MM T-1.00 "D2, D22, D202, D222"
23-10308B	1 EACH	"HEADER 8 PIN SIP 1.015"*** H2B	58-15055	2 EACH	150K SMT .25W 1206 1% "R102, R2102"	61-47450	1 EACH	DIODE ZNR REG 1N4745A 16V 1W Z2
23-11004	6 EACH	CONNECT HEADER 4 PIN STRAIGHT "H3A, H4A, H4B, H5A, H5B, H201A"	58-18035	4 EACH	1.8K SMT .25W 1206 1% "R45, R50, R245, R250"	62-06001	7 EACH	DIODE ULTRA FAST 600V 1A SMA "D25, D26, D27, D31, D32, D33, D34"
23-11008	1 EACH	CONNECT HEADER 8 PIN STRAIGHT H1A	58-22015	2 EACH	22.1 SMT .25W 1206 1% "R86, R286"	62-19140	9 EACH	1N914 HI SPD SMT 250mW DIODE "D11, D16, D20, D24, D28, D219, D220, D224"
23-12004	2 EACH	CONNECT HEADER 4 PIN RT/ANGLE "H3B, H201B"	58-22025	2 EACH	220.5 SMT .25W 1206 1% "R9, R209"	62-20430	6 EACH	NJM2043SMT (TESTED) DUAL HFREQ "A1, A2, A11, A201, A202, A211" NJM2901SMT QUAD COMP "A5, A6, A7, A8, A10, A12, A204," "A205, A206, A207, A208, A212"
23-12008	1 EACH	CONNECT HEADER 8 PIN RT/ANGLE H1B	58-22035	13 EACH	2.2K SMT .25W 1206 1% "R11, R21, R43, R44, R99, R101, R107, R211," "R221, R243, R244, R299, R2101"	62-45650	8 EACH	NJM4565 SMT DUAL HI FREQ "A3, A4, A9, A13, A17, A203, A209, A213"
23-13008	1 EACH	CONNECTOR HEADER 8PIN SIP H2A	58-22045	16 EACH	22K SMT .25W 1206 1% "R2, R12, R19, R30, R56, R68, R69," "R74, R94, R202, R219, R256, R268, "R274, R294"	62-54001	10 EACH	MMBT5401L1 PNP SOT-23 SMT "Q1, Q2, Q4, Q5, Q7, Q201, Q202, Q204," "Q205, Q207"
25-02201	3 EACH	SWITCH DPDT PUSH PC MTG LOCKNG "S4, S5, S205"	58-27045	2 EACH	27K SMT .25W 1206 1% "R38, R238"	62-55500	2 EACH	MMBT5550 NPN SOT-23 "Q3, Q203"
25-02200-	4 EACH	ASSEMBLED SWITCH W/5MM CAP "S1, S2, S201, S202"	58-33035	8 EACH	3.3K SMT .25W 1206 1% "R24, R41, R42, R49, R224, R241, R242, R249"	70-12015	1 EACH	FUSE 320 1.50A SLOW 5X 20MM F1
25-04201	1 EACH	SWITCH 4PDT PUSH PC MTG LOCKNG S3	58-39035	1 EACH	3.9K SMT .25W 1206 1% R83	71-09012	2 EACH	POT 9 D-P 25F 10K THREAD "P2, P202"
30-02200D	1 EACH	PCB C200 REV D	58-43045	2 EACH	43K SMT .25W 1206 1% "R35, R235"	71-09210B	2 EACH	"POT 9 "D-P" 25F 10K10K BLACK" "P4, P204"
42-33042	1 EACH	CAP ELEC 33uF 400VOLT C106	58-47025	4 EACH	470.5 SMT .25W 1206 1% "R53, R54, R253, R254"	71-09250	2 EACH	POT 9 D-P 25F B50K THREAD BLK "P7, P207"
46-10242	1 EACH	CAP POLY .0010UF 400VOLT 10% C171	58-47035	7 EACH	4.7K SMT .25W 1206 1% "R17, R22, R40, R106, R240, R217, R216"	71-09251A	2 EACH	POT 9 D-P 25F B10K THREAD LTGR "P1, P201"
41-27322	3 EACH	CAP POLY FILM .027uF 250VAC 10 "C338, C339, C341"	58-47045	12 EACH	47K SMT .25W 1206 1% "R6, R48, R81, R104, R105, R206, R115, R248, R281,"	71-09500	8 EACH	POT 9 D-P 25F 500K THREAD "P3, P5, P8, P9, P203, P205, P208, P209"
41-47422	1 EACH	CAP MYLR 47uF 250VAC BOX C282				71-24450	2 EACH	POT VERT TRIMMER 500ohm "P11, P211"
41-10342	1 EACH	CAP POLY .0100UF 400VOLT 10% C11						
46-47412	2 EACH	CAP MYLR .4700UF 63VOLT 10% "C43, C243"						
47-10225	4 EACH	"CAP ELEC 1,000 MFD .25V 20%" "C159, C160, C162"						
49-10050	10 EACH	CAP SMT 1UF 50V ELECTROLITIC "C28, C29, C39, C40, C42, C228," "C229, C239, C240, C242"						
49-10312	3 EACH	0.01UF SMT 10% FILM 080550V "C47, C167, C168"						
49-10412	4 EACH	0.1UF SMT +80-20% CERAMIC 0805 "C25, C26, C225, C226"						