

SCAMP

SO 1

Compressor-Limiter

- * COMPRESSOR & PEAK LEVEL LIMITER
- * CONSTANT OUTPUT LEVEL - ALL RATIOS (10dB Compression)
- * NOISE \leftarrow -80 dB DISTORTION \leftarrow 0.1% THD
- * SIMPLE OPERATION
- * SUPERB DYNAMIC PERFORMANCE

The SO1 COMPRESSOR-LIMITER is a further development of the well established F700 Series, which this SCAMP module now supersedes. The philosophy behind this design is a 'simple-to-operate' device that for typical amounts of compression maintains a constant output level as ratios are changed. Such a concept has proven popular in many studios where engineers working under pressure consider minimal adjustments to be optimum.

The parameters of the system have been specifically tailored to suit applications in the recording studio; in particular the peak level limiter has attack and release times that will give trouble free performance in extreme situations met on some instrumental tracks. In association with professional electronics the headroom will be sufficient to allow very fast transients to gently clip in the tape medium without audible effect.

The peak level limiter has been given an attack-time of 500 μ S and a fixed release of 250mS (these can be reduced greatly by changing fixed resistors for other special applications). Due to the excellence of the design, there is no over-limiting or undesirable side-effects on transient signals.

Compressor thresholds are linked to the ratio selection, so that for 10dB compression on any slope, the output level remains constant. Above that level of compression the slope tightens to 30:1 as the peak level limiter becomes operational. The peak limit threshold can be switched from this position (+16dBm output unattenuated) to just under clip level at +22dBm. In the latter mode the softer slopes continue to rise until (if ever) the higher limit threshold is reached.

The output threshold is adjusted to suit the maximum output level required (continuously variable from +16dBm to -4dBm). It is only necessary to increase the input potentiometer to obtain compression or limiting.



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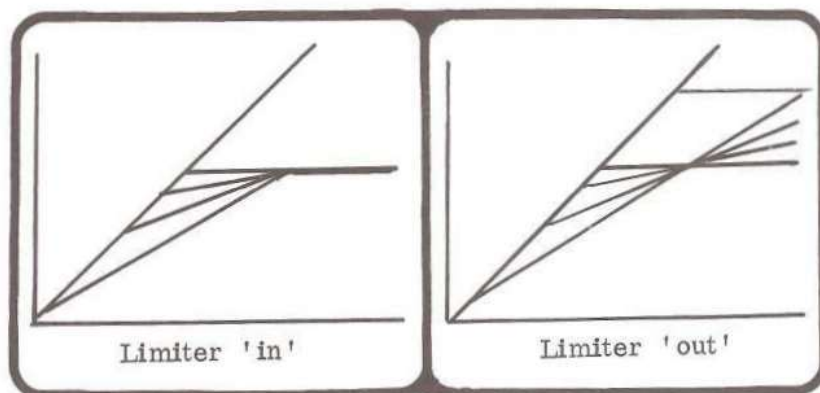
audio & design (recording) ltd.

84 OXFORD ROAD, READING RG1 7LJ, ENGLAND

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The compressor section has variable *release* and *attack* times: The release is continuously variable from 25mS – 2 secs with an *automatic multiple* network position that gives a fast recovery over 5dB gain reduction range on a slowly changing release platform. this forms an excellent general purpose release characteristics, increasing mean level without modulation effects. A three position attack switch gives options of 500 μ S (F); 2mS (M); 25mS (S).

The ratios available in the compressor section are 1:1, 1.5:1, 2:1, 3:1, 5:1 and 10:1. The softest slope is extremely subtle, whilst the 10:1 ratio provides a *musical* limiter operating just under the peak level limiter when in the +16dBm threshold position.



The unit has a useful gain of 30dB which means that fully open the input threshold of limiting can be as low as -14dBm, or even lower for compression. Inputs and outputs are electronically balanced with an output drive capability of +24dBm into 600 Ω .

Control-volt link switches enable the modules to be coupled for stereo or quadraphonic operation; standard units can be expected to match within ± 2 dB over the compression range without special matching.

Gain reduction is shown on a five-section LED column indicator; the red device shows the onset of peak level limiting whilst the green devices (four in number) show overall gain reduction, whether limiting or compression, in 4dB steps. There is also provision for the connection of an external gain reduction meter if required (ADR type 14 gain reduction meter).

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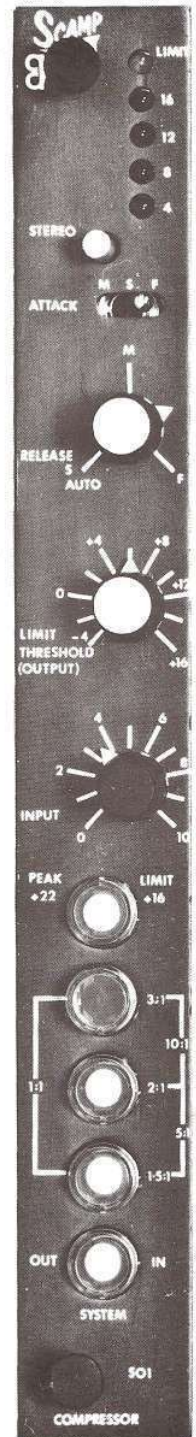
The **S01 COMPRESSOR-LIMITER** is a further development of the well established **F700 Series**, which this **SCAMP** module now supersedes. The philosophy behind this design is a 'simple-to-operate' device that for typical amounts of compression maintains a constant output level as ratios are changed. Such a concept has proven popular in many studios where engineers working under pressure consider minimal adjustments to be optimum.

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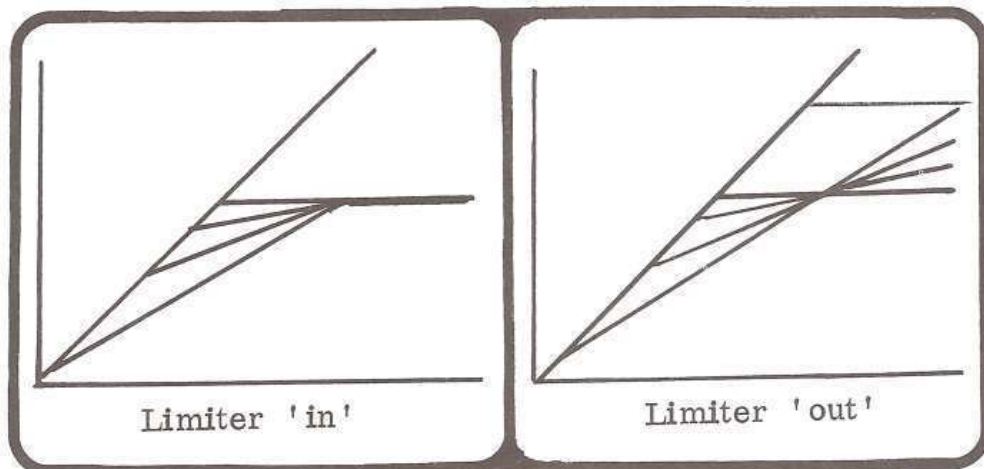


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01
1

3. TECHNICAL SECTION

3.1 TECHNICAL SPECIFICATION

All measurements taken with output feeding into 600Ω load.

INPUT:	>10KΩ balanced.
OUTPUT:	<1Ω unbalanced, max. + 24dBm, min: -4dBm (electronically balanced via board mounted switch).
DISTORTION:	Better than 0.1% THD ref. + 12dBm.
FREQ. RESPONSE:	+ 0, -1dB 20Hz— 25kHz
SIG.-NOISE:	Better than - 78dB ref. + 16dBm
COMMON MODE REJECTION:	Better than - 70dB @ 1kHz Better than - 60dB @ 10kHz
ATTACK:	Compressor Fast -500μS, Med. -2mS Slow -25mS Peak Limiter: 500μS
RELEASE:	Compressor: Variable 25mS — 2 secs Peak Limiter: 250 mS fixed
RATIOS:	Compressor: 1, 1.5, 2, 3, 5 and 10:1 Limiter: 20:1

Any two may be stereo coupled via SCAMP rack mother board and front panel switch.

01 Compressor

3. TECHNICAL SECTION

3.2 Module Connections

- 1 + Ve in
- 2 - Ve in
- 3 Ov
- 4 Ov
- 5 Stereo link S 05
- 6 Stereo link S 06
- 7 + 48v Phantom supply
- 8 Ov Phantom supply
- 9 Stereo link S 01
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18
- 19 + Phase output
- 20 - Phase output
- 21 Chassis Earth
- 22 Side chain Break Point Send
- 23 Side Chain Break Point Return
- 24 Earth
- 25 + Phase input
- 26 - Phase input
- 27 Ov
- 28
- 29
- 30
- 31
- 32
- 33
- 34
- 35
- 36
- 37
- 38
- 39
- 40
- 41
- 42
- 43
- 44
- 45

INPUT CONNECTIONS

From *Balanced*/ floating source: Connect + and - phase as normal.

From *Unbalanced* source: Connect - phase (26) to signal earth of source and + phase (25) to signal output of source.

Earth (27) to chassis earth of source.

OUTPUT CONNECTIONS

To *Balanced*/ floating Load: Switch on board to '*BAL*', connect + and - phase and chassis earth as normal.

To *Unbalanced* load: Switch on board to '*UNBAL*'. Connect - phase (20) to signal earth of load and + phase (19) to signal input of load.

Earth (21) to chassis earth of load

3.3 SETUP PROCEDURE

3.3.1 COMMON MODE REJECTION

Input amp— set up front panel controls:

- a) *System 'Out'*.
 - b) Feed in 0dBm at 1kHz, earth = 27, signal = 25.
 - c) Connect phase and inverted inputs together (pins 25 & 26).
 - d) Adjust preset C.M.R., read output to measure -70dBm or better.
 - e) Increase frequency to 10kHz and check output to measure -50dBm or better.
 - f) Reconnect inputs for normal operation.
- N.B. Ground inverted input (26) for unbalanced system.

3.3.2 INITIAL SETUP

Set front panel controls:

<i>Attack</i>	<i>F</i>
<i>Release</i>	<i>F</i>
<i>Output</i>	<i>Max (+ 16)</i>
<i>Input</i>	<i>Max</i>

- a) Insert FET (E232).
- b) Turn FET bias fully clockwise.
- c) Turn 20dB meter preset midway.
- d) Turn 10dB meter preset midway.
- e) Set peak threshold preset fully anticlockwise.
- f) Set LED brightness preset fully anticlockwise.
- g) Switch line amp output switch to UNBAL.
- h) Connect a voltmeter between TPI and Ov.
- i) Set gain preset to MAX.
- j) Set voltmeter to zero via TPI preset i.e. TPI to Ov.

*Not able to align?
Q44 often is shorted - replace*

3.3.3 LIMIT RANGE/FET BIAS

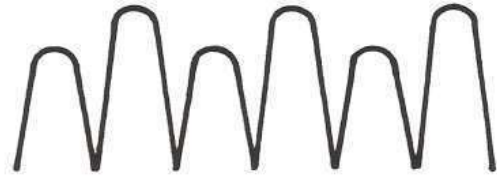
- a) Feed in -26dBm.
- b) Adjust RANGE preset for -21dBm at output.
- c) Adjust FET bias preset for + 12dBm at output.
- d) Ref, measure distortion and null for better than 0.1% at 1kHz.

3.3.4 COMPRESSOR THRESHOLD/RECTIFIER BALANCE

- a) Increase output to + 14dBm (increase input 10dB and back off input pot for + 14dBm).
- b) Adjust rec. bal. preset for a symmetrical wave form at collector of P14 (BC 212B).



Correct



Incorrect

- c) Select 10:1 ratio.
- d) Increase input by 10dB and adjust output to read + 14dBm via rec. off-set (thresh) preset.
- e) Increase input a further 10dB and adjust 20dB preset for + 5v at TP1.
- f) Reduce output by 10dB and adjust 10dB preset for + 2.6v at TP1.
- g) Switch through all compression ratios, and voltage at TP1 should not vary by more than $\pm 0.3v$. Outputs should remain constant, switch back to 10:1 ratio.

3.3.5 RELEASE/AUTO

- a) Increase release pot. to 'S'.
- b) Switch system out and observe meter. Voltage at TP1 should drop in a linear fashion and will take approx. 4 secs to reach 0v.
Auto
- c) switch release to 'A'.
- d) Switch system 'In' then 'Out'; observe there is a fast release on top of a slow release.

3.3.6 ATTACK

- a) Set release pot. to 'F'.
- b) Switch system 'In'.
- c) Decrease input by 10dB (TP1 @ 2.6v).
- d) Select 1.5:1 ratio.
- e) Switch attack to 'S' — output should increase by 2dB.
- f) Switch attack to 'M' — output should increase by 1dB.

3.3.7 PEAK LIMIT/LED 'METER' COLUMN

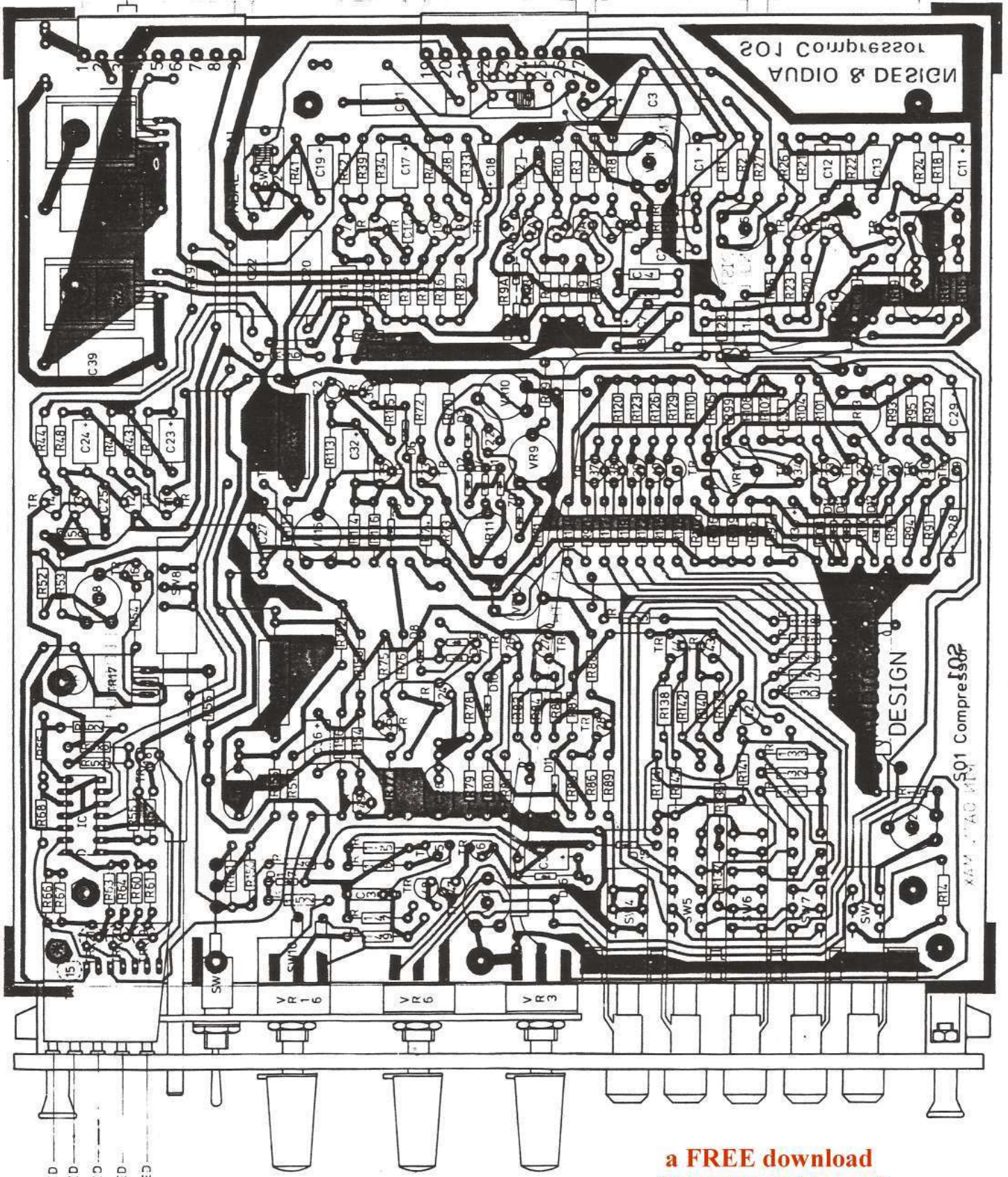
- a) Feed in -16dBm.
- b) Select 1:1 ratio.
- c) Switch 'Pk Limit' to + 16.
- d) Back off input pot. for + 17dBm at the output.
- e) Adjust Pk threshold pre-set for + 16dBm at the output.
- f) Observe red LED is on — indicating peak limiting.

- g) Increase input by 10dB — gain reduction should be indicated by green LEDs showing up to and incl. + 8.
- h) Increase input a further 10dB — all LEDs should be on and output should rise to + 17dBm max.
- i) Increase LED brightness to desired level via LED brightness pre-set. (Approx. halfway.)
- j) Feed in -6dBm.
- k) Turn output pot. fully anticlockwise (-4) and adjust output min. preset for -4dBm at the output.

3.3.8 BAL/UNBAL MODE

- a) Switch 'bal/unbal' switch, located on P.C.B., to 'bal'. The output will now be -10dBm on Pin 19(Phase) and -10dBm on Pin 20 (Inverse Phase).

LIMIT LED
 16dB LED
 12dB LED
 8dB LED
 4dB LED

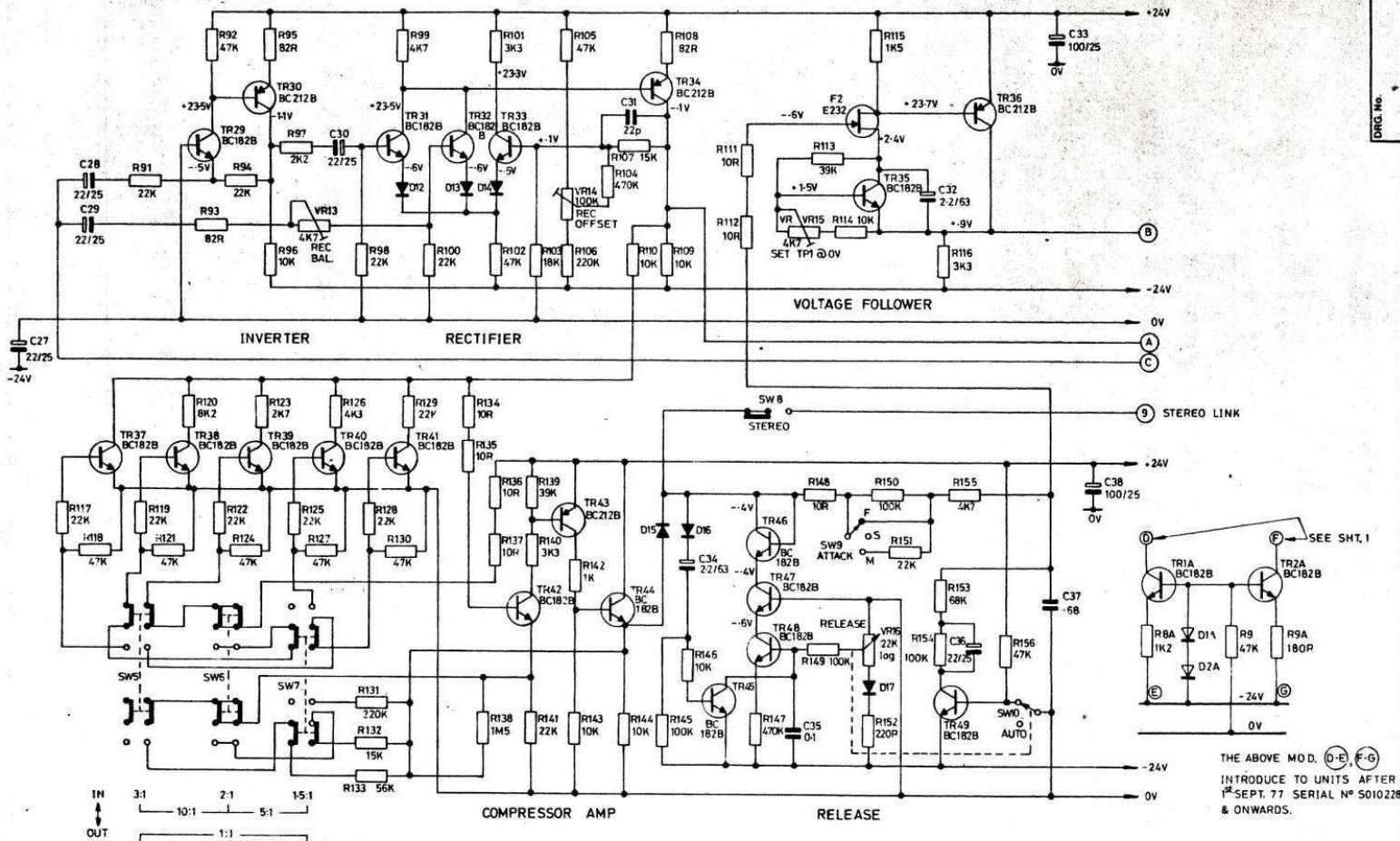


HT +ve
 HT -ve
 0V

O/P + PHASE
 O/P - PHASE
 0V
 SIDE CHAIN I/P
 SIDE CHAIN O/P
 SIDE CHAIN 0V
 I/P + PHASE
 I/P - PHASE
 0V

3. TECHNICAL SECTION
 3.5 Circuit Diagrams
 3.5.1 General Arrangement

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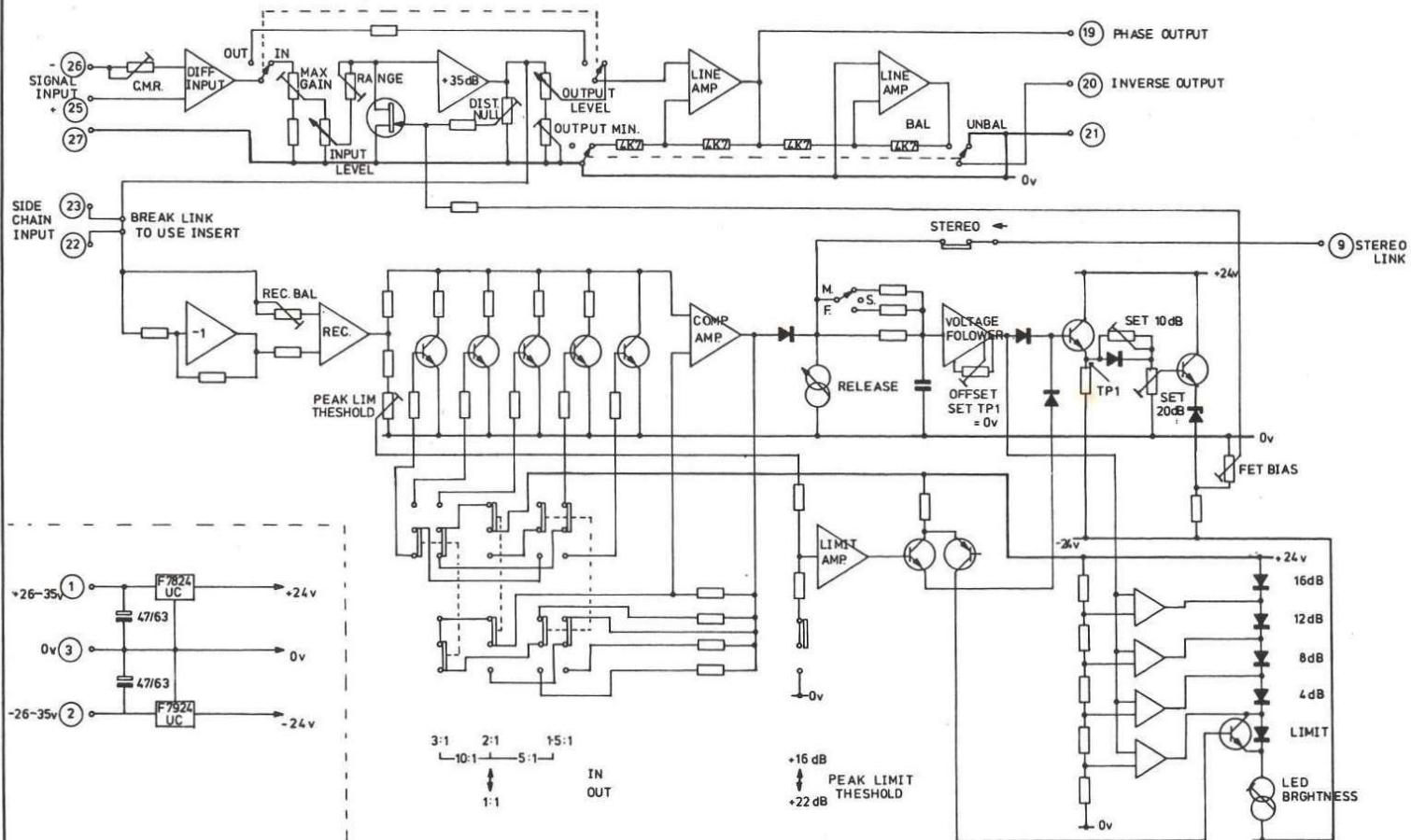


THE ABOVE MOD. (D-E) (F-G)
 INTRODUCE TO UNITS AFTER
 SEPT. 77 SERIAL NO 5010228
 & ONWARDS.

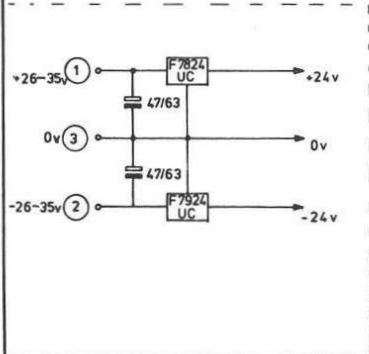
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MATERIAL	FINISH	SCALE	TITLE
8	AUDIO & DESIGN RECORDING CRANBOURNE ASSOCIATES	DATE	S01-1 COMPRESSOR 2 of 2
DATE	DATE	SIG.	ISS.

ALTERATION	USED ON



3.5 Circuit Diagrams
3.5.2 Schematic



ISS	ALTERATION	USED ON

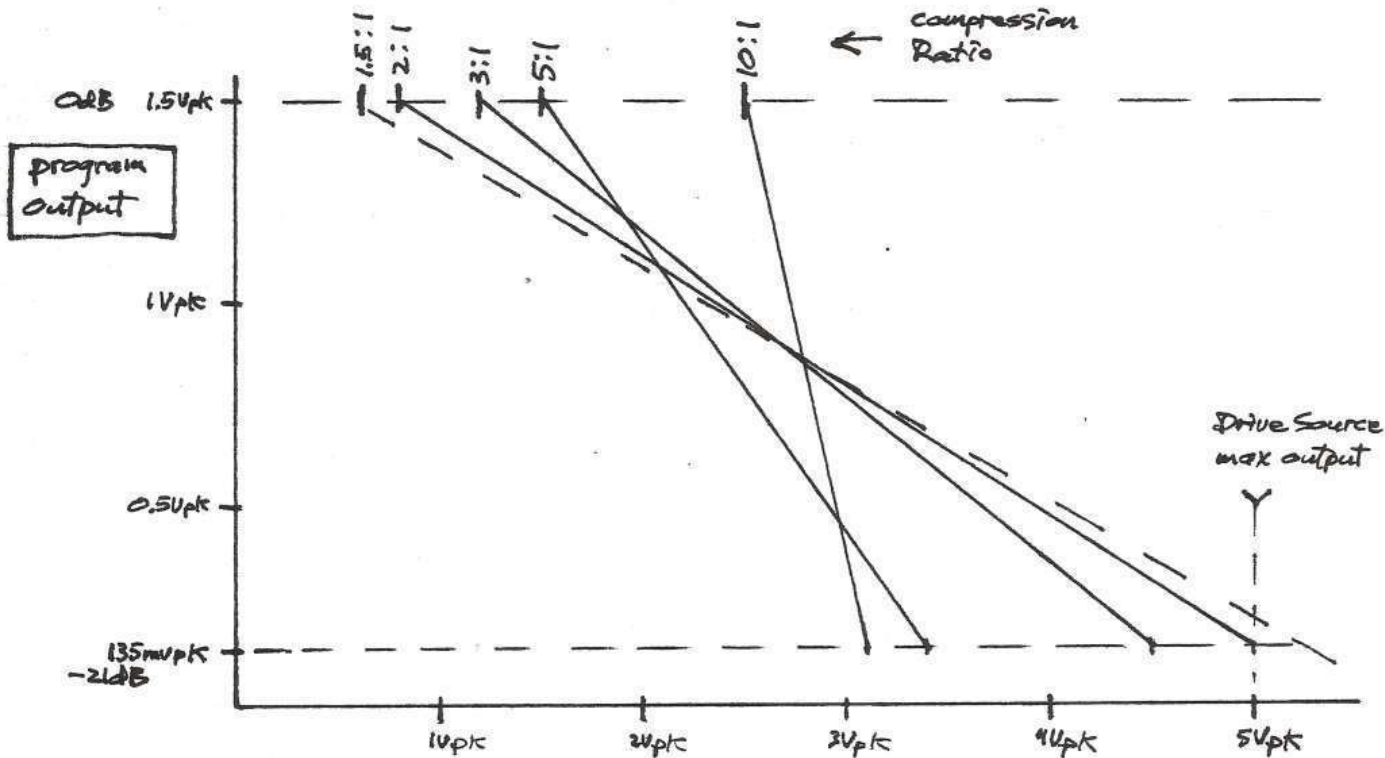
DATE	SCALE	TITLE
		SO1 COMPRESSOR
		SCHMATIC A2
		DRG. No.

MATERIAL	FINISH	SCALE	TITLE
			SO1 COMPRESSOR
			SCHMATIC A2
			DRG. No.

AUDIO & DESIGN RECORDING
CRANBOURNE ASSOCIATES

DATE DATE SIG. ISS.

Scamp SO1 Compressor Ext. Control Input Dynamic Range



Note: Straightness of lines weren't measured. To get compressions in between 0dB & -21dB, use LEDs on compressor front panel.

Conditions:

- Attack & Release times were set to fast (and didn't matter).
- All measurements were done with scope
- Control signal was 5kHz sine wave, applied to edge connector pin # 23 on back of mainframe.
- Program signal was 1kHz sine wave, applied to edge connector pin # 25 on back of mainframe.