

## FREQUENCY CONVERTER CO2/529

### Introduction

The CO2/529 is a frequency converter designed primarily for use in u.h.f. television monitoring receivers.<sup>1</sup> It accepts vision and f.m. sound i.f. signals in the 30-40 MHz band and produces a second sound i.f. carrier on 6 MHz. This signal is produced either by the intercarrier method or by normal high-quality conversion using a local oscillator.

The unit is built on to a printed board and mounted in a screened chassis type CH1/39A with index pegs 10 and 43. Signal connections are made via BNC sockets on the front panel.

### General Specification

#### Input Frequencies

Vision i.f. carrier	37.5 MHz
Sound i.f. carrier	31.5 MHz

Output Frequency	6 MHz
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#### Input and Output

Impedances	75 ohms nominal
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#### Maximum Input at 37.5

MHz (peak sync carrier)	30 mV
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#### Gain

Normal conversion	27 dB $\pm$ 2 dB
Intercarrier (6 MHz)	Not less than 3 mV r.m.s. output for 300V r.m.s. input, peak sync vision carrier

#### Bandwidth at 31.5 MHz

(1 dB points)	300 kHz $\pm$ 20 kHz
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#### Power Requirements

Normal conversion	45 mA
Intercarrier	85 mA

Weight	2.5 lb.
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### Circuit Description

The circuit diagram is given in Fig. 1 on page 3. The input signal, consisting of sound and vision carriers, is fed via an emitter follower TR1 to a cascode stage having two output transistors, TR7 and TR3. TR7 feeds the intercarrier circuit and TR3 the normal high quality converter circuit. Following TR7, IC1 and IC2 amplify the signal which then passes via an emitter follower TR8 to the detector stage TR9. The rejector circuit in the base lead to TR8 attenuates the sound carrier on 31.5 MHz by approximately 25 dB. This is to match the performance to that of the average commercial receiver. The output from TR9 consists of a 6-MHz signal, frequency modulated by the sound signal and a direct voltage proportional to the carrier level. The 6-MHz signal is fed by an emitter follower to the output via a bandpass filter with a bandwidth of  $\pm$ 150 kHz. The d.c. output is used for a.g.c. purposes and controls the gains of IC1 and IC2.

Following TR3 is a Tchebyscheff filter covering 31.5 MHz with a 1-MHz bandwidth. An f.e.t. converter stage with crystal controlled local oscillator produces a 6-MHz signal which is fed to the output via an emitter follower and the bandpass filter.

A separate output from the oscillator is available for use with associated equipment.<sup>1</sup>

The changeover from intercarrier to high quality sound working is effected by switch SA.

### Maintenance

Routine maintenance is not required and adjustments are not required in use.

### Reference

1. Television Rebroadcast Receiver RC5M/501

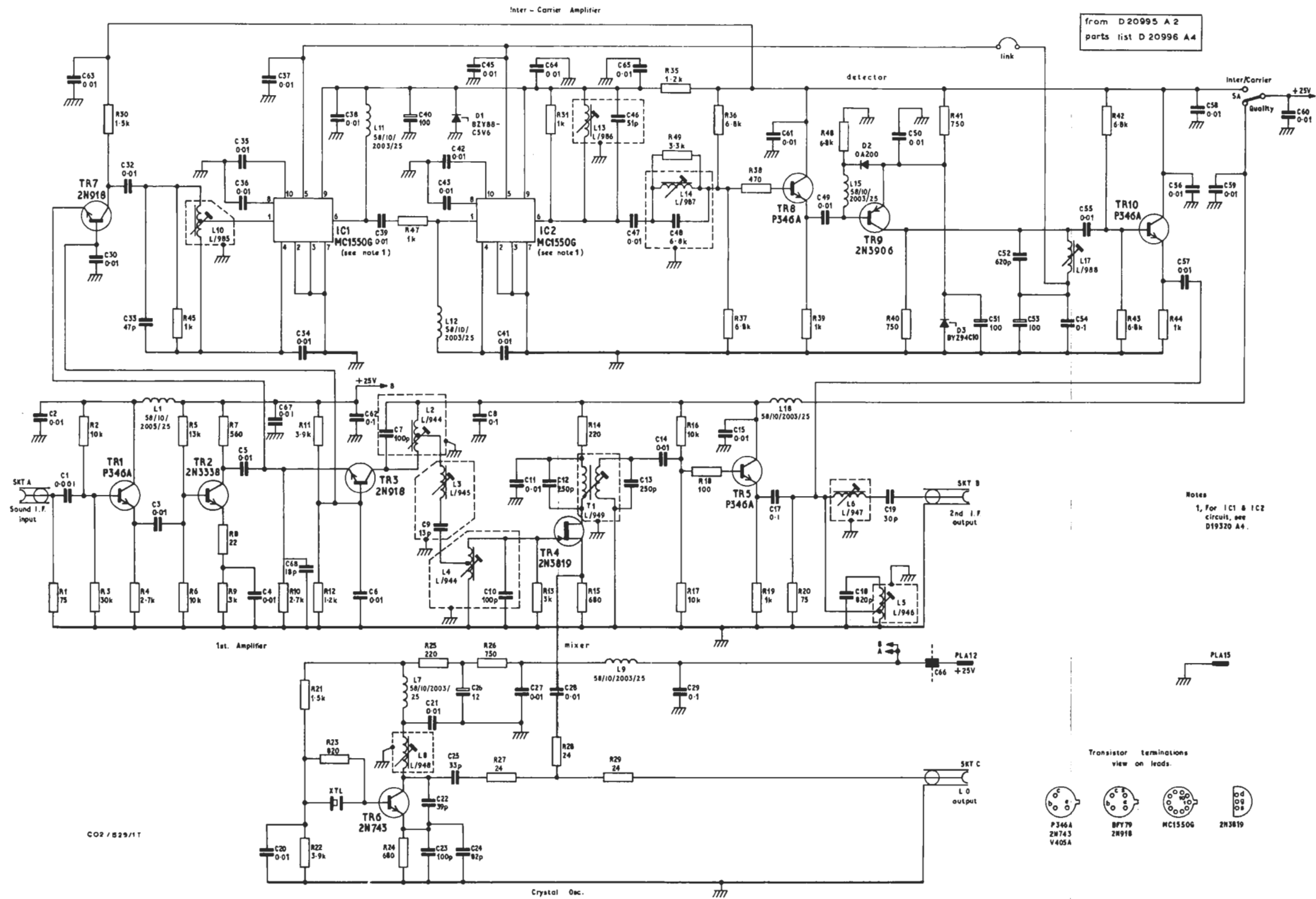


Fig. 1 Circuit of the CO2/529