Special Pulse, Coding and Test Equipment for Colour Television

THE first five items of equipment here described, together with Synchronizing Generator Type BD 868 (see page 86), produce all the signals necessary for the synchronization of the camera and receivers, and for adding the subcarrier reference burst to the signal, in order to achieve colour synchronization. The coding equipment generates a compatible colour signal from the subcarrier signal and the three simultaneous colour signals.

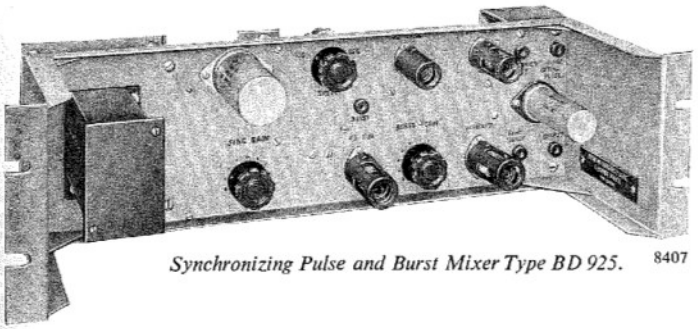
All units are designed to operate on 625, 525 or 405 lines per frame.

Burst Gating Pulse Generator Type BD 924

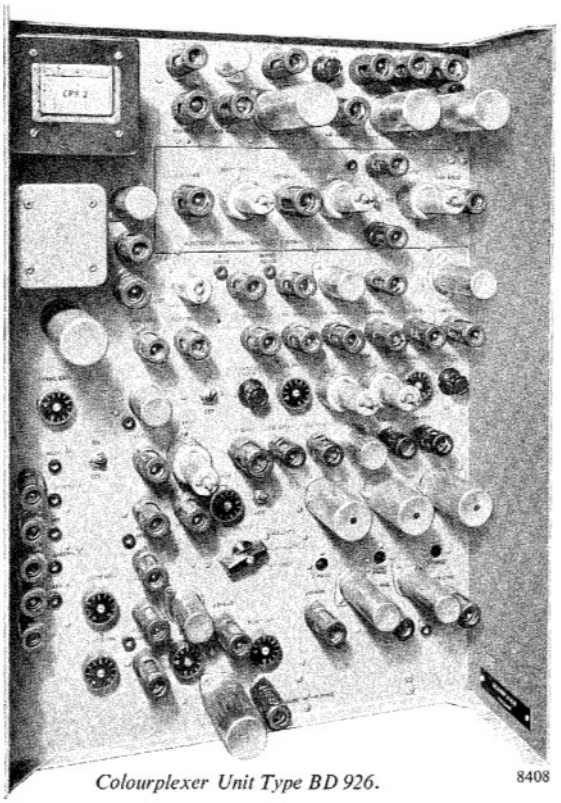
Colour synchronization on colour monitors and receivers is achieved by a short burst of the colour subcarrier on the back porch of the signal at a given phase reference. The Burst Gating Pulse Generator Type BD 924 produces a gating pulse of suitable duration and timing to insert the subcarrier signal on to the back porch of the signal in the colourplexer. The timing and width of this pulse is accurately determined by a pulse-forming delay line and the timing may be varied by a fine switch control.

Sync. and Burst Mixer Type BD 925

This unit combines the subcarrier signal with the mixed synchronizing signal. This signal simulates a 'black' condition and may be used with vision mixers where it is desired to fade to black without loss of colour sync.



Synchronizing Pulse and Burst Mixer Type BD 925. 8407



Colourplexer Unit Type BD 926. 8408

Colourplexer Type BD 926

In order to form a suitable compatible signal for broadcasting within the allocated bandwidth of a normal black-and-white system, the three simultaneous colour signals are encoded to form a single composite colour signal. This composite signal comprises the luminance signal, conveying the standard black-white information, and the chrominance signal conveying the colour information.

The chrominance information is transmitted entirely on the subcarrier, two independent quantities denoting hue and colour saturation being conveyed as phase and amplitude modulation respectively.

Modulation of the subcarrier is produced by two suppressed carrier modulators operating in phase quadrature.

An automatic carrier balance circuit ensures complete cancellation of the subcarrier in those parts of the signal corresponding to neutral colours. The unit has a dual input and may be simultaneously coupled to the output of a colour camera channel and a colour bar generator, the required input being selected by a switch on a central control panel.

Colour Subcarrier Frequency Generator Type BD 927

This unit provides an extremely stable sine wave output at the subcarrier frequency. It also divides this frequency down to the twice line-frequency of the system, the resulting signal being fed to the synchronizing generator to lock the system pulses to the subcarrier signal. Two crystal oscillators and their associated tuned-circuit components are mounted in a single oven, one functioning as a standby. Alternatively, the oscillators may be adjusted to operate on different frequencies, enabling a quick system changeover to be effected.

The frequency stability is better than three parts in 10^6 and the drift is less than 0·1 c/s per second.

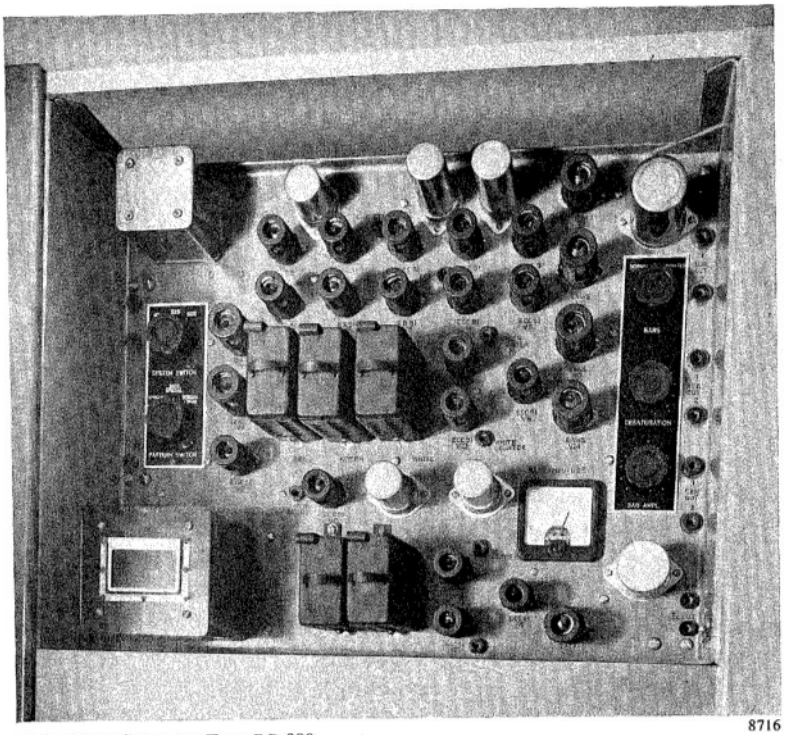
Data Summary

	Type BD 924	*Type BD 925*	*Type BD 926*
Inputs:			
Synchronizing pulses	All types 2 or 4 V p-p		
Gating pulse		4 V p-p	4 V p-p
Sub-carrier (from colour sub-carrier Freq. Gen.)		2 V p-p	2 V p-p
Outputs:			
Burst gating	4 V p-p		
Mixed sync.		0·3 V p-p	
Composite colour signal NTSC		0·7 V +0·3 V sync.	

Power supplies: Mains: 100–125 or 200–250 V (in 5 V steps), 50 or 60 c/s AC. Consumptions: Type BD 924 20 W; Type BD 925 15 W; Type BD 926 117W (max.).

Dimensions:

	Height	Width	Depth	Weight
Type BD 924	5¼ in. (13·3 cm)	19 in. (48 cm)	12 in. (30·2 cm)	12 lb (5·5 kg)
Type BD 925	5¼ in. (13·3 cm)	19 in. (48 cm)	10½ in. (26·7 cm)	11 lb (5 kg)
Type BD 926	24 in. (71 cm)	19 in. (48 cm)	12 in. (30·5 cm)	42 lb (19·1 kg)
Type BD 927	12 in. (30·5 cm)	19 in. (48 cm)	12 in. (30·5 cm)	—



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Colour Bar Generator Type BD 880.

Subcarrier Phase Shifter Type 5467A

This unit controls the relative phase of the subcarrier signal by means of coarse and fine phase-shifting networks. It is essential in a system incorporating more than one colourplexer unit, in order to obtain coincidence of phase of the subcarrier burst component at the output of each colourplexer unit.

Colour Bar Generator Type BD 880

In this unit the output of a camera televising a test chart is simulated. The chart comprises a series of six vertical colour bars, a white bar and a black bar. The colour bars consist of the three primary colours, together with their complementary colours, arranged in descending order of their luminance value. The output consists of three signals which, because they are electronically generated, provide a standard reference source independent of any local factors relating to the camera channel or studio. Thus the hue and saturation may be set to the required degree to check the performance of the system, particularly that of encoding and decoding units.

In addition to the bar signal, two special signals are also provided to simplify the adjustment of the phase of the sub-carrier signals in the coding and decoding equipment. The signals may also be generated as a split-field display. In this case the top half of the picture displays colour bars and the bottom half a white vertical bar together with accurately adjusted I and Q signals.

The pulses are clipped in the output stages to ensure a constant amplitude with respect to one another. This amplitude may be adjusted to provide a standard-level signal, using a calibrated meter on the front panel.

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