

TERMINATION OF INTER-P.B.X. CIRCUIT  
 SWITCHBOARD AT 3796 & N 1070 INSTALLATIONS  
 SIGNALLING GROUP L: S.S.A.C. 13 (I.V.F.)

N 761  
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REFERENCES

Relay Set SA 7571	Diagrams SA 7571	SAW 75710 & SAJ 75710
Relay Set 1/SA 8299	SA 8299	SAW 82990 & SAJ 82990
Relay Set 2/SA 8299	SA 8299	SAW 82990 & SAJ 82990
* Oscillator No.119A	SA 8295	SAW 82950
* PBX Alarm	SA 8296	SAW 82960
* PBX Tone Distribution	SA 8292	SAW 82920
∅ Receiver V.F. No.4A	SA 8297	SAW 82970
∅ Capacitor Unit No.14A	SA 8291	SAW 82910
∕ Filter Frequency No.176A	SA 8294	SAW 82940
Power Unit No.50A	N 635	
Power Unit No.51A	N 636	
Power Unit No.52A	N 637	
Lamp Alarm Indicating No.4	N 2304	
Supervisory Flashing Circuit	N 990	
Description of Equip. Signalling No.24/...	E.I. TELES. P.B.X.s ...)	In course of preparation
Description of S.S.A.C.13	E.I. TELES. P.B.X.s ...)	
Circuit Operation	Diagram Notes SA 7571, SA 8299	

- \* Part of Equip. Signalling No.24/...
- ∅ Part of Relay Set 1/SA 8299
- ∅ Part of VF Receiver
- ∕ Only when required in lieu of Capacitor Unit  
 (See Notes on Lining-up)

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TABLE 1. STORES LIST

Number of Inter-PBX Ccts.	Stores Required (See also Installation Note 3)							
	Equip. Signalling	Power Unit	R/S SA7571	R/S 1/SA8299	R/S 2/SA8299	Covers (See Note C)	Lamp Alarm Indic.No.4	Case No.24 (See Note 3)
1	No.24/1A	No.50A	1 OFF	1 OFF	1 OFF	D 92416	1	1
2	No.24/2A	No.51A	2 OFF	2 OFF	2 OFF	D 92417	1	1
3	No.24/3A	No.52A	3 OFF	3 OFF	3 OFF	D 92418	1	1

TABLE 2. CABLING SCHEDULE FOR FIG. 1

Straps per Circuit to be provided on Strip Connexion on Equip. Sig. No.24/...	Cabling to be provided					
	From	To	Colour	Type		
SC 1 - 41	SC 82	TIP ) Call & RING ) Ans. AUX.) Jack S ) XA KDE	W/B	} Cable PVC No.1 6 Wire 6½ per Circuit		
2 - 42	SC 73		B			
3 - 35	SC 69		W/O			
7 - 47	SC 59		W/G			
8 - 48	SC 64		G			
9 - 39	SC 81		FS		B	} Cable PVC No.1 3 Wire 6½ per Circuit
12 - 34	SC 24		FR		O	
13 - 83	SC 25		FT		G	
14 - 46	SC 84	Line A	W/B	} Cable PVC No.1 2 Wire 6½ per Circuit to Line		
16 - 86	SC 85	Line B	B			
17 - 37	Misc.100	Term.A	W/B	Cable PVC No.1 2 Wire 6½ to L.A. Ind. No.4		
18 - 44	Fuse PBX-VE	PBX 24V-VE	BK	Cable PVC No.1 2 Wire 20 Equip.Sig.No.24/...& PBX Batt.		
20 - 50	Fuse 50V-VE	PU 50V-VE	BK	} Cable P.V.C. No.1 - 2 Wire 20 P.O. No. ... & 50V Fuse & Eth.		
27 - 36	50V+VE	50V+VE	R			
28 - 38	Eth.	P.U/Rect. +VE	-	Wire Copper Soft 3/20		
32 - 45	PBX 24V-VE	LA Indicating Term-	BK	} Wire P.V.C. No.1-2 Wire 6½ P.B.X. Batt. & Eth. to LA Ind. No.4 Cord Flexible 250V P.V.C. 3 Core.		
*57 - 59	24V+VE	Term. E	R			
	P.U.No..	Mains Plug	-			

\*Exchange Line Prohibition

TABLE 3. DIMENSIONS OF EQUIPMENT SIG. No.24/...

	Equip. Sig. No.24/1A	Equip. Sig. No.24/2A	Equip. Sig. No.24/3A
Overall Rack Dimensions	3'9 $\frac{7}{8}$ " x 1'9" x 10 $\frac{1}{2}$ "	5'3 $\frac{7}{8}$ " x 1'9" x 10 $\frac{1}{2}$ "	6'10 $\frac{7}{8}$ " x 1'9" x 10 $\frac{1}{2}$ "
Overall Cover Dimensions	3'10" x 1'9 $\frac{1}{4}$ " x 1'6 $\frac{5}{8}$ "	5'4" x 1'9 $\frac{1}{4}$ " x 1'6 $\frac{5}{8}$ "	6'11" x 1'9 $\frac{1}{4}$ " x 1'6 $\frac{5}{8}$ "

INFORMATIVE NOTES

A. Equipment Signalling No.24/...

Equipment Signalling No.24/... comprise open type racks, Rack Apparatus No.74/... catering for one, two or three Inter-PBX S.S.A.C. 13 circuits and are supplied complete with shelving, shelf wiring and jacks onto which the appropriate relay set, power units and covers are mounted.

Table 1 gives a list of stores required for one, two or three circuit installations, and Fig.1 shows the mounting positions of, and Table 2 the cabling schedule to these items. Table 3 gives the dimensions of the three sizes of Equipment Signalling No.24/...

B. Inter-PBX 1VF (SSAC13) Circuits

When it is known that additional Inter-PBX S.S.A.C. 13 circuits may be required in the near future, an Equipment Signalling No.24/... large enough to cater for these extra circuits should be provided. In these cases it may be more economic to provide the size of power unit appropriate to that Equipment Signalling No.24/... to avoid changing the power unit at a later date.

C. Covers

Covers finished in Elephant Grey colour are available as shown in Table 1 to enclose the Equipment Signalling No.24/... These should only be provided when it is considered that the extra cost can be justified by local circumstances.

D. Operating Instructions

The operating staff should be instructed to report the "Oscillator Failed" condition so that the maintenance engineer may take a spare oscillator to the installation.

## INSTALLATION NOTES.

## 1. Equipment Signalling No.24/...

The Equipment Signalling No.24/... should be sited taking into account the following:-

- A. Maintenance access to the front and rear of the rack.
- B. Floor loading.
- C. Cabling access.
- D. Possible growth.

The Equipment Signalling No.24/... shall be secured to the floor by means of suitable screws or bolts and supported at the top by fixing to an adjacent wall or rack. To achieve this at some installations it may be necessary to use suitable locally made metal straps.

Before connecting battery supplies to the Equipment Signalling No.24/... check that all relay armatures on the equipment and in the relay sets are on their knife edges.

## 2. Power Supplies.

With the exception of Relay Set(s) SA 7571 the apparatus on the Equipment Signalling No.24/... is operated from a mains connected power unit providing a 50V D.C. output. Relay Set(s) SA 7571 requires a nominal 24V supply and it may be necessary to replace the existing P.B.X. supply to achieve this.

Suitable three pin mains plug and Cord Flexible 250V to be purchased and fitted locally to the power unit. Fused mains plug must be fitted with 2 Amp. Fuse.

P.O. earth to be independent of mains earth. Must be Wire Copper Soft 3/20 direct to power unit/rectifier, not to be taken via any other cabling.

## 3. Lamp Alarm Indicating No.4.

The Lamp Alarm Indicating No.4, in a Case No.24 to be mounted on, or adjacent to the switchboard. The labels should be reversed and signwritten or marked with similar wording but substituting the word "Oscillator" for "Power".

The appropriate Resistor Coil No.12 should be fitted in accordance with Table 1 of Diagram N 2304.

## 4. Supervisory Flashing Circuit. (Forward Operator Recall).

Units Auxiliary Apparatus N 990 and associated apparatus should be provided and mounted in accordance with Diagram N 990. The circuitry arrangements will be similar to that shown in Fig.2 of Diagram N 990.

## 1. LINING UP PROCEDURE

## 1.1 Adjustment of Oscillator (Diagram SAW 82950)

Disconnect the alarm distribution circuits from OSC1 and OSC2 and connect a Resistor No.12 - 200 ohms in their place. Connect OSC1 to C24 on Transformer T2. Switch on oscillator and allow to run for 30 minutes before commencing tests, to ensure stability. Connect a suitable Transmission Measuring Set - Measuring Set 26, Transmission Set S.T.C. 74214, Level Measuring Set 5B or similar instrument-across OSC1 and OSC2, and take a "through level measurement". This should be  $0 \pm 1$  dbm.

Adjust to this figure by altering the resistor chain tap (see Note 3 Diagram SAW 82950).

Reconnect the alarm and distributor circuits.

Verify that the output to line on any convenient Relay Set SA 8299, measured at TJA9 and 10 with Relay TK manually operated is  $-6 \pm 1$  dbm.

## 1.2 Level of Signalling Tone transmitted to Line.

Where the 2-wire line loss from Renter to 2W/4W termination is less than 2 dbm at 2280 c/s adjust the sending level to -9 dbm. Set up the oscillator as described above and strap OSC1 to C25 (Diagram SAW 82950 Note 3a).

Where the loss in the 2-wire is between 2 and 6 dbm approximately, strap OSC1 to C24 to give a sending level of -6 dbm.

If the overall loss Renter to Renter is between 17 and 23 dbm at 2280 c/s due to long 2-wire end(s); than as an exceptional measure the sending level may be adjusted to -3 dbm. The initial setting up of the oscillator is performed with OSC1 connected to C25. Adjust the sending level by connecting OSC1 to C24 (Diagram SAW 82950 Note 3b).

## 2. V.F. Receiver SA 8297.

Setting up Receiver (SAW 8297). Arrange for continuous 2280 c/s tone to be fed from the distant end by the insertion of links "N" in TJB1 and 2 (Diagram SAW 82950 Note 9).

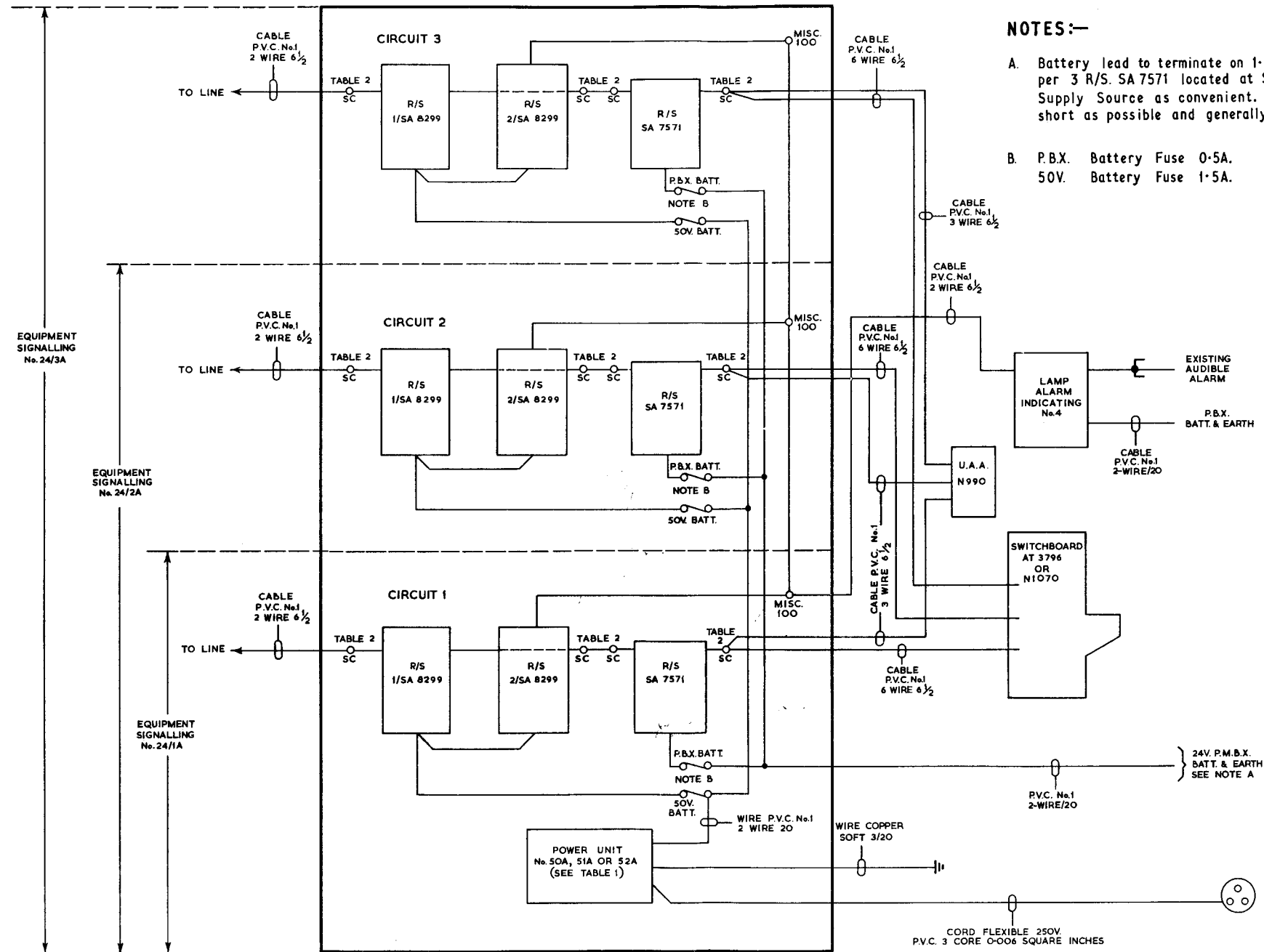
Connect a local measuring set across terminals TBB2 and 3 and take a "through level measurement". If the incoming signal level is between -3 and -17 db remove the strap between E7 and E8 (See Note 2 Diagram SAW 8297). For levels between -17 and -23 db the strap should remain in.

3. V.F. Signalling Relay Set SA 8299.

Note 4 of Diagram SA 8299 calls for a timing test which can only be performed readily with a Tester TRT 150. This tester may not be available in the field on the introduction of S.S.A.C.13 but the units should not require adjustment as they are accurately set in the manufacturer's works.

Where trouble does occur and the pulse corrector is suspected, reference should be made to the Engineering Department S3/1.

EQUIPMENT SIGNALLING No. 24/-----  
FIG.1. BLOCK SCHEMATIC AND CABLING ARRANGEMENTS.



NOTES:-

- A. Battery lead to terminate on 1.5 Amp. Distribution Fuse per 3 R/S. SA 7571 located at Switchboard or Power Supply Source as convenient. Cable run should be as short as possible and generally not to exceed 25 yds.
- B. P.B.X. Battery Fuse 0.5A.  
50V. Battery Fuse 1.5A.

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Relay Set 2/SA 8299	SA 8299	SAW 82990 & SAJ 82990
* Oscillator No.119A	SA 8295	SAW 82950
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Ø Receiver V.F. No.4A	SA 8297	SAW 82970
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Power Unit No.52A	N 637	
Lamp Alarm Indicating No.4	N 2304	
Supervisory Flashing Circuit	N 990	
Description of S.S.A.C.13	T.I. C3 P 5000	
Circuit Operation	Diagram Notes SA 7571, SA 8299	

- \* Part of Equip. Signalling No.24/...
- Ø Part of Relay Set 1/SA 8299
- Ø Part of VF Receiver
- ∕ Only when required in lieu of Capacitor Unit  
(See Notes on Lining-up)

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		A	LINING UP PROCEDURE CHANGED <i>MCH</i>	13-3-73
		✓	<i>De J. R. Miller</i> S 3/2	9.10.67

TABLE 1. STORES LIST

Number of Inter PBX Ccts.	Stores Required (See also Installation Note 3)							
	Equip. Signalling	Power Unit	R/S SA7571	R/S 1/SA8299	R/S 2/SA8299	Covers (See Note C)	Lamp Alarm Indic.No.4	Case No.24 (See Note 3)
1	No.24/1A	No.50A	1 OFF	1 OFF	1 OFF	D 92416	1	1
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TABLE 2. CABLING SCHEDULE FOR FIG. 1

Straps per Circuit to be provided on Strip Connexion on Equip. Sig. No.24/...	Cabling to be provided			
	From	To	Colour	Type
SC 1 - 41	SC 82	TIP ) Call & RING ) Ans. AUX. ) Jack S ) XA KDE FS FR FT Line A Line B Term.A PBX 24V-VE PU 50V-VE 50V+VE Eth. P.U/Rect. +VE PBX 24V-VE 24V+VE P.U.No..	W/B	} Cable Distn. 35... per Circuit
2 - 42	SC 73		B	
3 - 35	SC 69		W/O	
7 - 47	SC 59		W/G	
8 - 48	SC 64		G	
9 - 39	SC 81		B	
12 - 34	SC 24		O	
13 - 83	SC 25		G	
14 - 46	SC 84	Line A	W/B	} Cable Distn. 35... per Circuit to Line
16 - 86	SC 85	Line B	B	
17 - 37	Misc.100	Term.A	W/B	Cable Distn. 35... to L.A. Ind. No.4
18 - 44	Fuse PBX-VE	PBX 24V-VE	BK	Cable Eqmt. 49... Equip. Sig. No.24/... & PBX Batt.
20 - 50	Fuse 50V-VE	PU 50V-VE	BK	} Cable Eqmt. 49... P.O. No. ... & 50V Fuse & Eth.
27 - 36	50V+VE	50V+VE	R	
28 - 38	Eth.	P.U/Rect. +VE	-	Wire Earthing 9141 or 9142.
32 - 45	PBX 24V-VE	LA Indicating Term-	BK	} Cable Eqmt. 49... P.B.X. Batt. & eth. to LA Ind. No.4 Cord Flexible 250V P.V.C. 3 Core.
*57 - 59	24V+VE	Term. E	R	
	P.U.No..	Mains Plug	-	

\*Exchange Line Prohibition



TABLE 3. DIMENSIONS OF EQUIPMENT SIG. No.24/...

	Equip. Sig. No.24/1A	Equip. Sig. No.24/2A	Equip. Sig. No.24/3A
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Overall Cover Dimensions	3'10" x 1'9 $\frac{1}{4}$ " x 1'6 $\frac{5}{8}$ "	5'4" x 1'9 $\frac{1}{4}$ " x 1'6 $\frac{5}{8}$ "	6'11" x 1'9 $\frac{1}{4}$ " x 1'6 $\frac{5}{8}$ "

INFORMATIVE NOTES

A. Equipment Signalling No.24/...

Equipment Signalling No.24/... comprise open type racks, Rack Apparatus No.74/... catering for one, two or three Inter-PBX S.S.A.C. 13 circuits and are supplied complete with shelving, shelf wiring and jacks onto which the appropriate relay set, power units and covers are mounted.

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B. Inter-PBX 1VF (SSAC13) Circuits

When it is known that additional Inter-PBX S.S.A.C. 13 circuits may be required in the near future, an Equipment Signalling No.24/... large enough to cater for these extra circuits should be provided. In these cases it may be more economic to provide the size of power unit appropriate to that Equipment Signalling No.24/... to avoid changing the power unit at a later date.

C. Covers

Covers finished in Elephant Grey colour are available as shown in Table 1 to enclose the Equipment Signalling No.24/... These should only be provided when it is considered that the extra cost can be justified by local circumstances.

D. Operating Instructions

The operating staff should be instructed to report the "Oscillator Failed" condition so that the maintenance engineer may take a spare oscillator to the installation.

## INSTALLATION NOTES.

## 1. Equipment Signalling No.24/...

The Equipment Signalling No.24/... should be sited taking into account the following:-

- A. Maintenance access to the front and rear of the rack.
- B. Floor loading.
- C. Cabling access.
- D. Possible growth.

The Equipment Signalling No.24/... shall be secured to the floor by means of suitable screws or bolts and supported at the top by fixing to an adjacent wall or rack. To achieve this at some installations it may be necessary to use suitable locally made metal straps.

Before connecting battery supplies to the Equipment Signalling No.24/... check that all relay armatures on the equipment and in the relay sets are on their knife edges.

## 2. Power Supplies.

With the exception of Relay Set(s) SA 7571 the apparatus on the Equipment Signalling No.24/... is operated from a mains connected power unit providing a 50V D.C. output. Relay Set(s) SA 7571 requires a nominal 24V supply and it may be necessary to replace the existing P.B.X. supply to achieve this.

Suitable three pin mains plug and Cord Flexible 250V to be purchased and fitted locally to the power unit. Fused mains plug must be fitted with 3 Amp. Fuse.

P.O. earth to be independent of mains earth. Must be Wire Earthing 914; or 9142 direct to power unit/rectifier, not to be taken via any other cabling.

## 3. Lamp Alarm Indicating No.4.

The Lamp Alarm Indicating No.4, in a Case No.24 to be mounted on, or adjacent to the switchboard. The labels should be reversed and signwritten or marked with similar wording but substituting the word "Oscillator" for "Power".

The appropriate Resistor Coil No.12 should be fitted in accordance with Table 1 of Diagram N 2304.

## 4. Supervisory Flashing Circuit. (Forward Operator Recall).

Units Auxiliary Apparatus N 990 and associated apparatus should be provided and mounted in accordance with Diagram N 990. The circuitry arrangements will be similar to that shown in Fig.2 of Diagram N 990.

## 1. LINING UP PROCEDURE

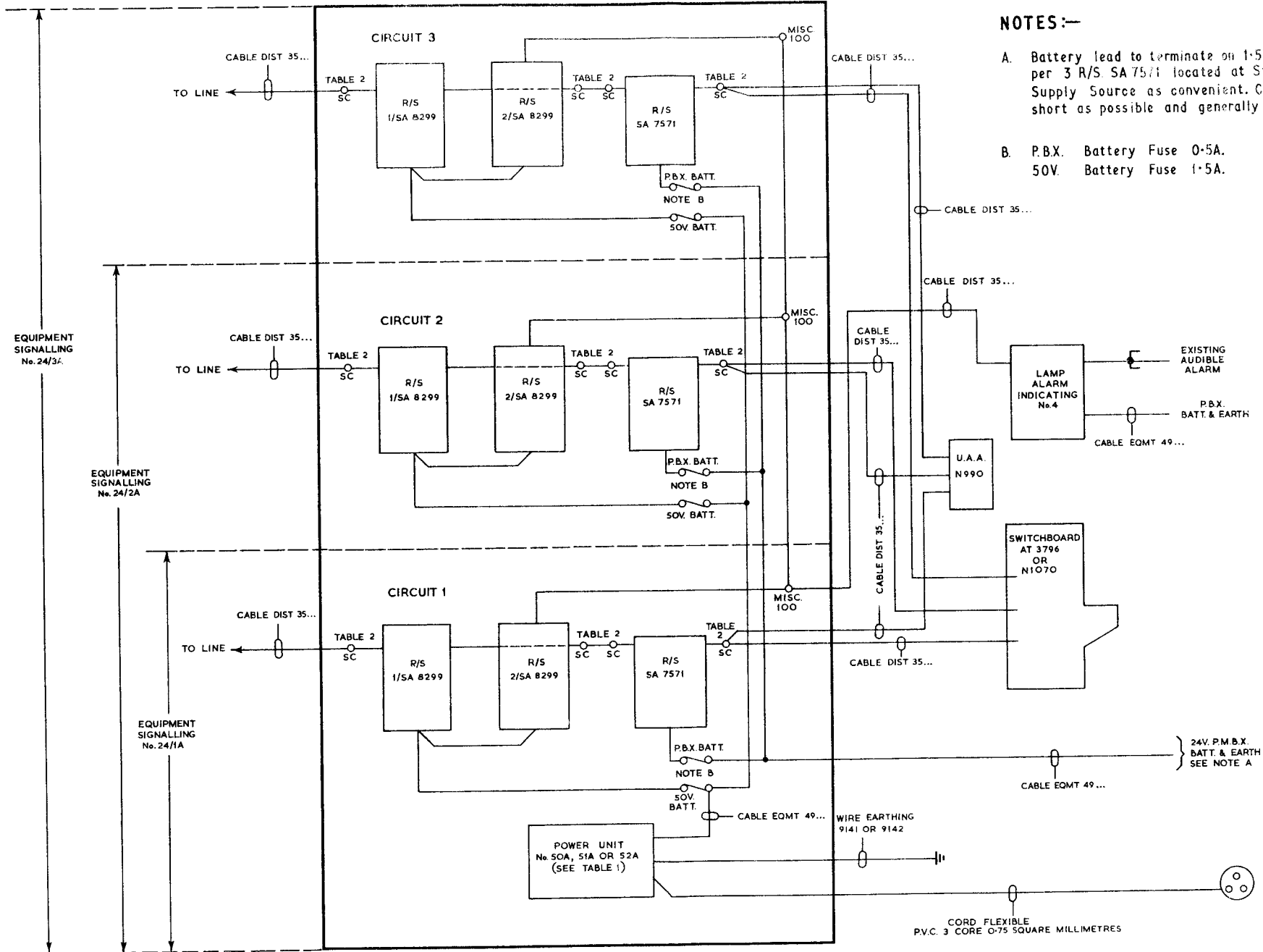
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SPARE

# EQUIPMENT SIGNALLING No. 24/\_\_\_\_

## FIG.1. BLOCK SCHEMATIC AND CABLING ARRANGEMENTS.



### NOTES:-

- A. Battery lead to terminate on 1.5 Amp. Distribution Fuse per 3 R/S. SA 7571 located at Switchboard or Power Supply Source as convenient. Cable run should be as short as possible and generally not to exceed 25 yds.
- B. P.B.X. Battery Fuse 0.5A.  
50V. Battery Fuse 1.5A.