PJB.09/89

Leaflet 40/B487

Strand Lighting

Architectural Division,
Unit 2, Grant Way, Isleworth,
Middlesex TW7 5QD.
Tel: 01 560 3171
Fax: 01 568 2103

Strand Lighting

MULTIDIM

INSTALLATION INSTRUCTIONS

Contents : **Page No.**

WARNING : THIS EQUIPMENT SHOULD BE INSTALLED BY A QUALIFIED ELECTRICIAN. ISOLATE THE SUPPLY PRIOR TO WORKING.

Location: The dimmer must be fixed vertically to a flat wall, with allowance made for heat dissipated by the unit.
Mount with at least 75 mm (3 inches) air gap above and below each unit.
Suitable for (dry) interiors only.

Ventilation: Maximum ambient temperature is 35°C - ensure adequate ventilation, allowing for up to 2% of the connected load being dissipated as heat at the dimmer.

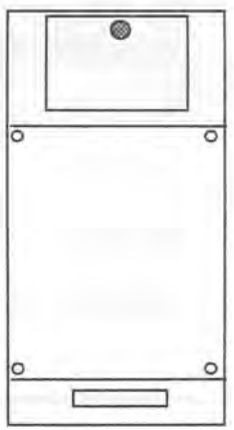
Sound: Avoid mounting in 'silent' areas, as all dimmers produce a small amount of audible humming noise, due to electrical filtering.

Supply: 220/240 Volts Single phase A.C., 50 Hz.

WALL FIXING

1. Loosen the retaining screw and separate the dimmer module from its base - do not rest the dimmer on its pins.

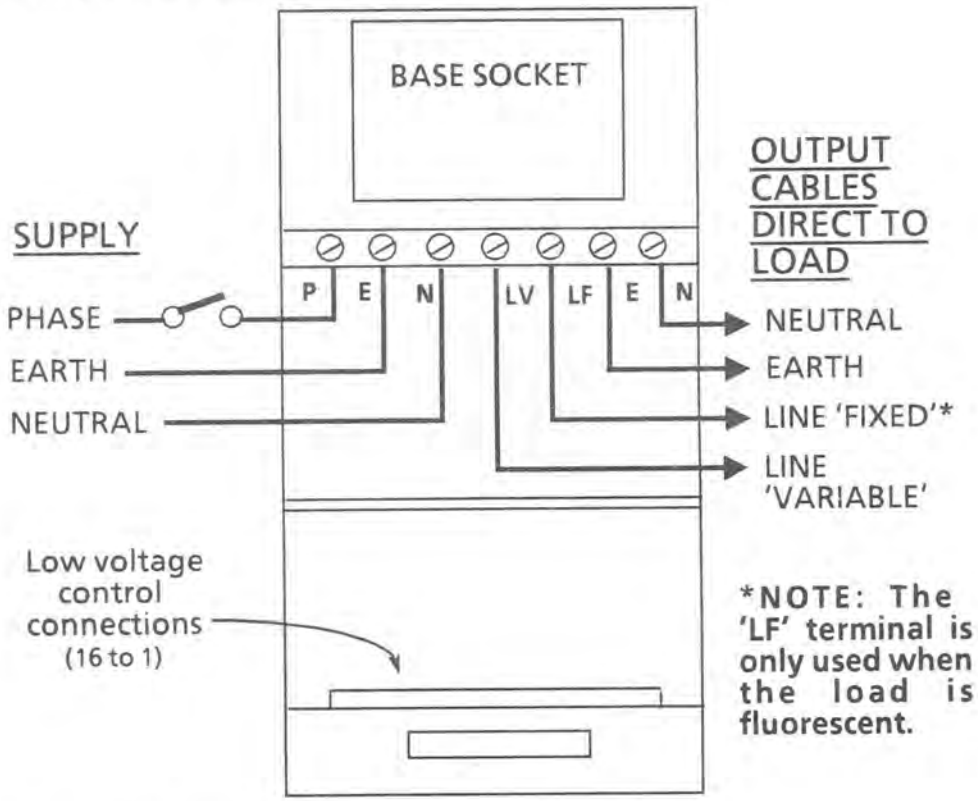
2. Remove the front cover from the base moulding (4 screws)



3. Fix the dimmer base in place using three No. 10 woodscrews. All three fixings should be used. If using Strandrail, first see the **Accessories** section on page 19.

MAINS CONNECTIONS

Complete the mains wiring as shown below:



***NOTE: The 'LF' terminal is only used when the load is fluorescent.**

IMPORTANT NOTES:

1) Route mains cables as shown, and ensure each Neutral conductor runs alongside its associated 'Line' conductor.
2) Dimmer outputs must not be connected in parallel.
3) Do not use high voltage testers (e.g. 'Meggers') on this equipment.
4) Sub-cicuit fuses / MCBs may be installed downstream of the dimmer if required, provided the above point (1) is observed.
5) The two 'live' conductors for fluorescent installations should be separately identified, as they must not be 'mixed up' at the fittings.
6) See overleaf for LOADING information.

DIMMER LOADING

Check that the load being connected is correct for the version of dimmer being used:

TUNGSTEN LOADS

Maximum load is as per the dimmer's MCB rating, providing the dimmer is not enclosed in a way which restricts ventilation.

TRANSFORMER- FED LOADS

Suggested maximum loadings are as in the Table below. These values apply to step-up transformers (e.g. for Cold Cathode) as well as to step down transformers for low-voltage lighting. These values assume that the particular transformers used are approved for dimming by their manufacturer. Multidim **IS** an 'inductive', hard-fired dimmer.
For further guidelines, see Strand Lighting's "Guide to dimming of Transformer-fed loads".

Version	*Loading**
6 Amp dimmer	Up to 900 W
16 Amp dimmer	Up to 2,400 W
32 Amp dimmer	Up to 4,500 W

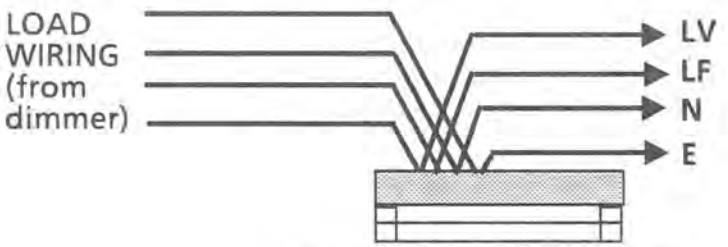
* *Calculate by adding up total lamp 'Wattage'.*

FLUORESCENT LOADS

Fluorescent fittings to be dimmed **must** be equipped with approved type of dimmable ballasts. Consult Strand if in doubt. The two 'line' conductors must not be reversed at the fittings:

Line Variable (LV) is the dimmed line

Line Fixed (LF) is the tube heater supply (connect to "L" in the case of UDTs.)



Fluorescent fitting (incorporating compatible dimmable control-gear)

MAXIMUM LOADINGS (4-WIRE SYSTEMS)

The maximum number of lamps (tubes) to be connected are as follows. Note : In the case of **Electronic high frequency dimming** Ballasts, ignore this Table and instead see Appendix A.

Dimmer version	Max. no. of tubes (tube type)				
	2 ft		4 ft. (40W or 36W)	5 ft. (65W or 58W)	6 ft. (75W or 70W)
	20W*	18W			
6 Amp dimmer	28	15	14	9	7
16 Amp dimmer	76	42	38	24	20
32 Amp dimmer	142	85	71	44	37

* *Assumes 20W tubes are wired in pairs to an 09 320 06 Ballast.*

CONTROL WIRING

The cable between the dimmer and the Control Station(s) should be colour-coded multicore Signal Cable. (the terminals *will* accept up to 1.5mm, but mains cable is not ideal). A typical cable is 7/0.2mm, though many other types may be suitable, since signals are low current and low voltage (-15V d.c.) only.

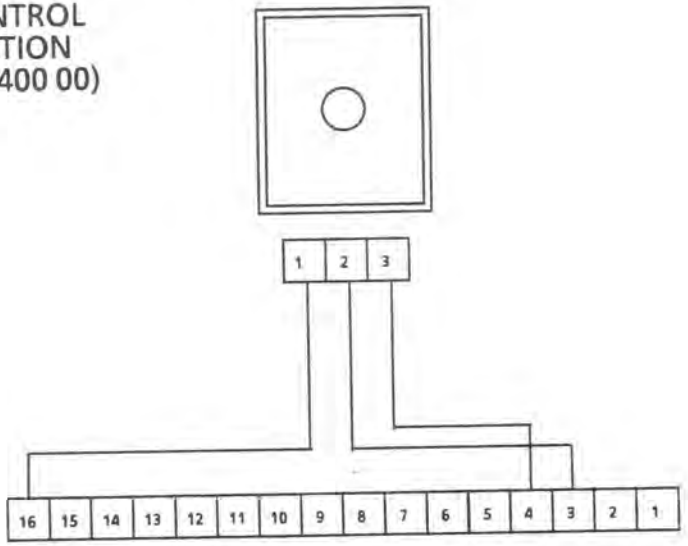
Routing of the control cable should avoid close proximity to other cables which supply equipment likely to induce interference, such as large motors, cinema projectors, HMI lighting etc.

CONNECTIONS

Connections are made on the terminals in the lower part of the dimmer Base. Choose the appropriate diagram from the following examples and wire the Control Station accordingly :

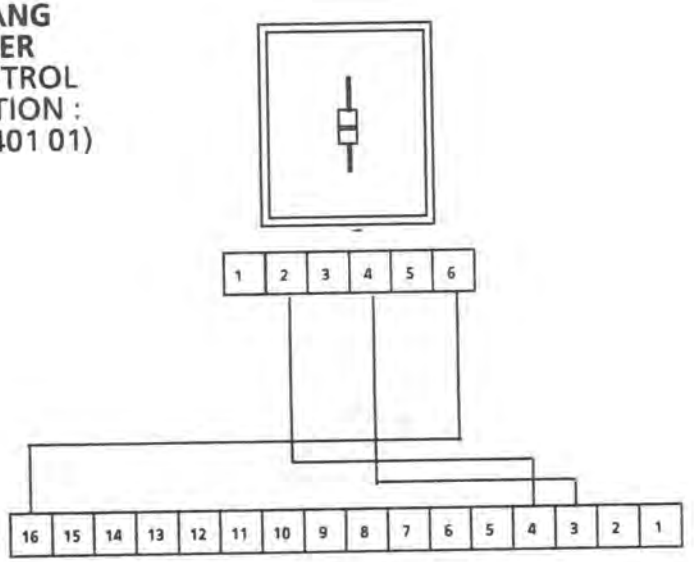
Control Station	Cat. No.	Diagram	Page
ROTARY (1-Gang)	09 400 00	A	6
1-Gang SLIDER	09 401 01	B	6
SLIDER with TAKE CONTROL	09 408 01	C	7
2-Gang SLIDERS	09 402 02	D	7
3-Gang SLIDERS	09 403 03	K	12
6-Gang SLIDERS	09 406 06	L	13
1-Gang PUSHBUTTON (Preset)	09 411 04	E	8
2-Gang PUSHBUTTON (Preset)	09 412 08	G	9
3-Gang PUSHBUTTON (Preset)	09 413 12	M	14
6-Gang PUSHBUTTON (Preset)	09 416 24	N	15
UP / STOP / DOWN PUSHBUTTONS	09 411 03	H	10
INFRA-RED RECEIVER	09 471 00	E	8
SCENE-SET CONNECTION	-	F	9
SLAVING DIMMERS TOGETHER	-	J	11

A. ROTARY CONTROL STATION (09 400 00)



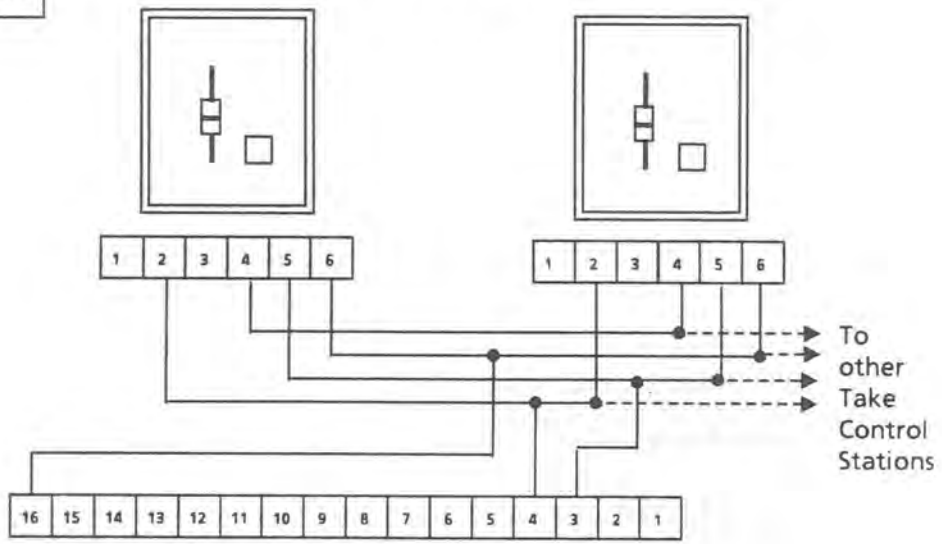
Dimmer Base

B. 1-GANG SLIDER CONTROL STATION : (09 401 01)

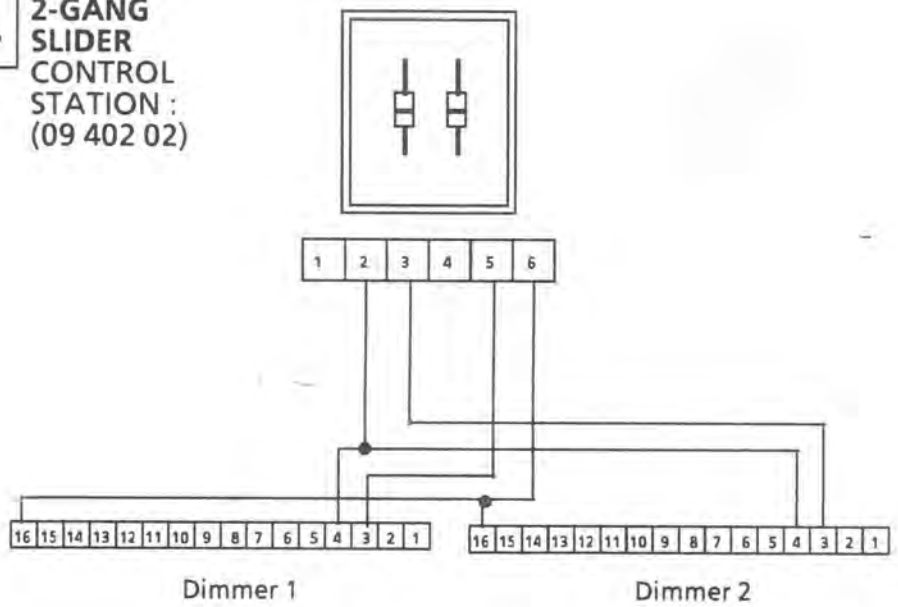


Dimmer Base

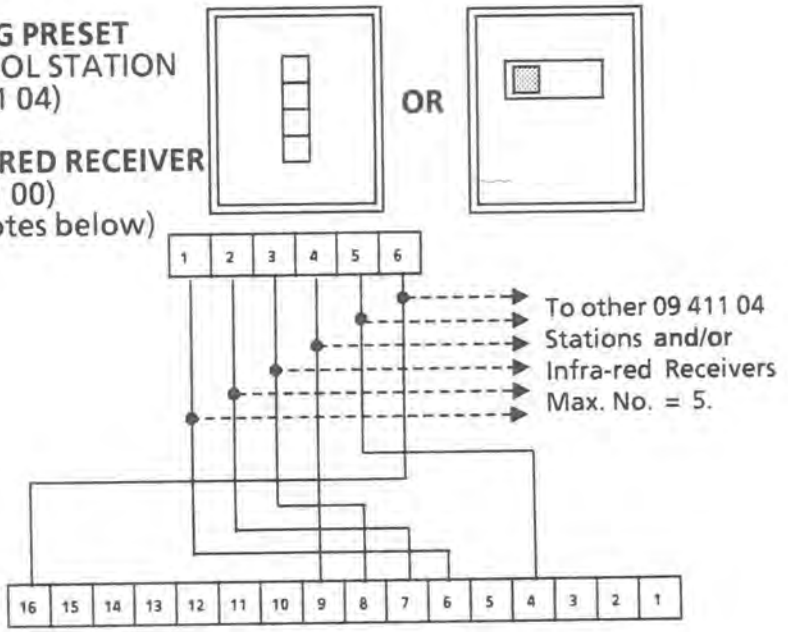
C. SLIDER with TAKE CONTROL : (09 408 01)



D. 2-GANG SLIDER CONTROL STATION : (09 402 02)



E. 1-GANG PRESET CONTROL STATION (09 411 04) OR INFRA-RED RECEIVER (09 471 00) (see Notes below)



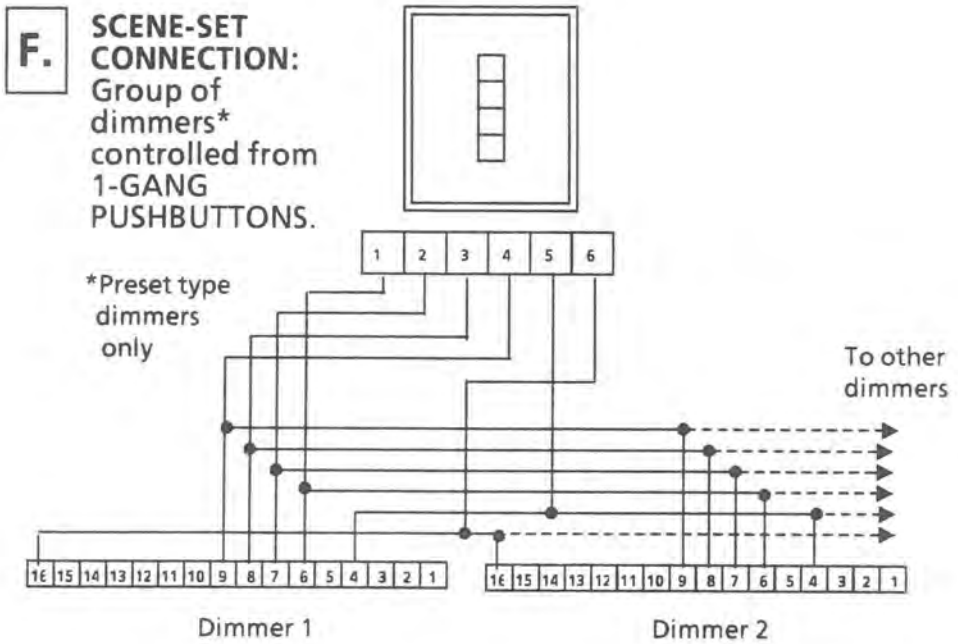
INFRA-RED STATIONS : INSTALLATION NOTES

For reliable operation, observe the following points :

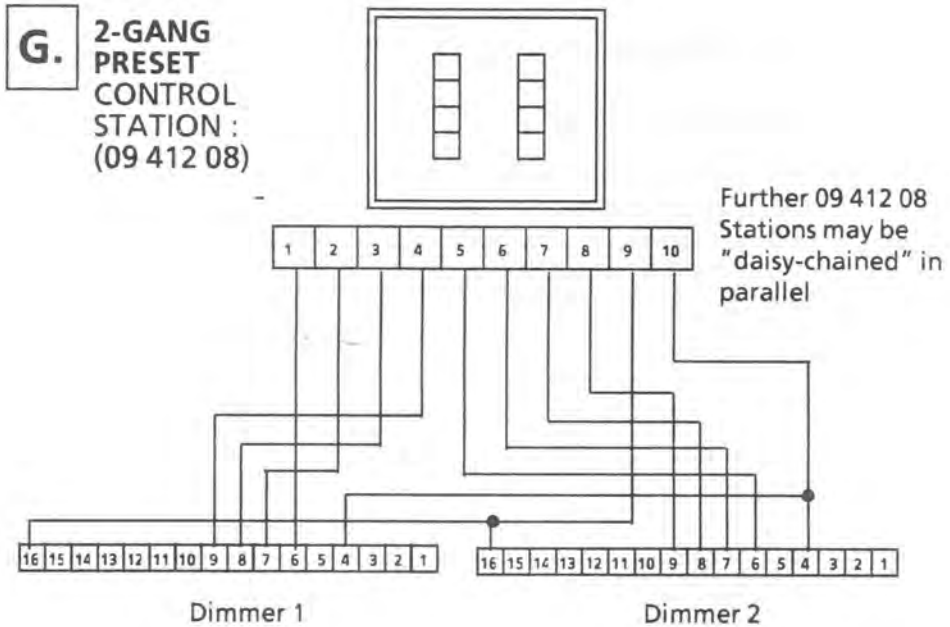
1) The Infra-Red Receiver Station should normally be mounted flush into a vertical wall, and within direct line of sight of the likely operating position of the hand-held Transmitter.
   Maximum operating range in normal conditions is 20 metres, and acceptance angle at this range is approximately 30°, centred around the perpendicular.to
3) Do not position the Receiver within 1 metre of a T.V. monitor or a VDU.
4) Install the battery in its compartment in the Transmitter, direct the beam at the Receiver's window and press a button. An LED within the Receiver window gives a 'message received' signal.

F. SCENE-SET CONNECTION:

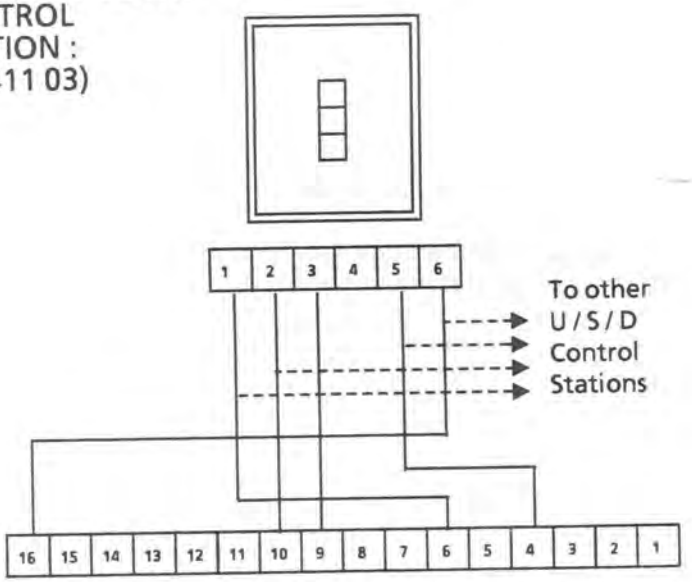
Group of dimmers* controlled from 1-GANG PUSHBUTTONS.



G. 2-GANG PRESET CONTROL STATION : (09 412 08)



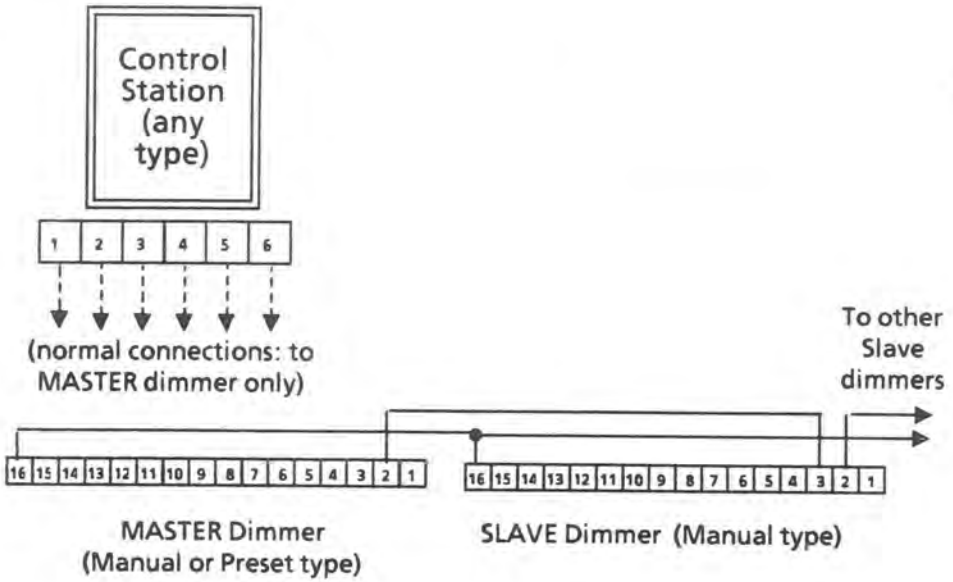
H. UP / STOP / DOWN CONTROL STATION : (09 411 03)



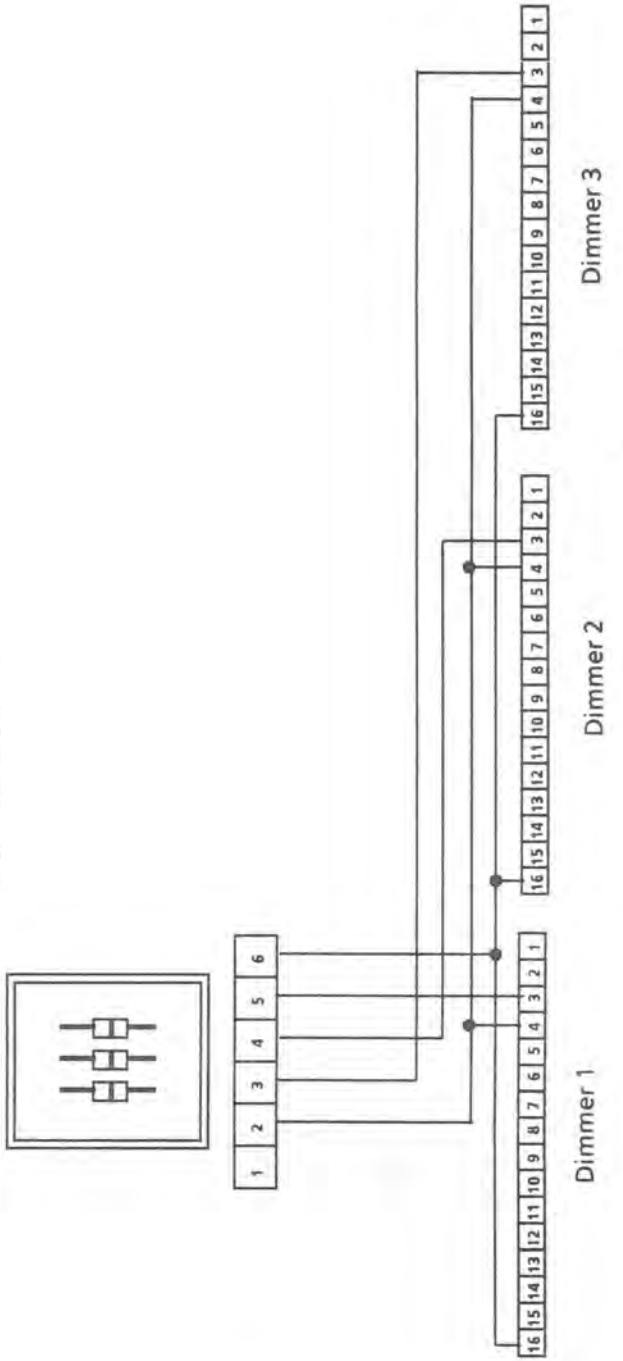
J. DIMMER SLAVING:
Adding on 'Slaves' to follow a 'Master' dimmer.

NOTES:
1) Slave dimmers connected as shown will follow the level of the Master dimmer.

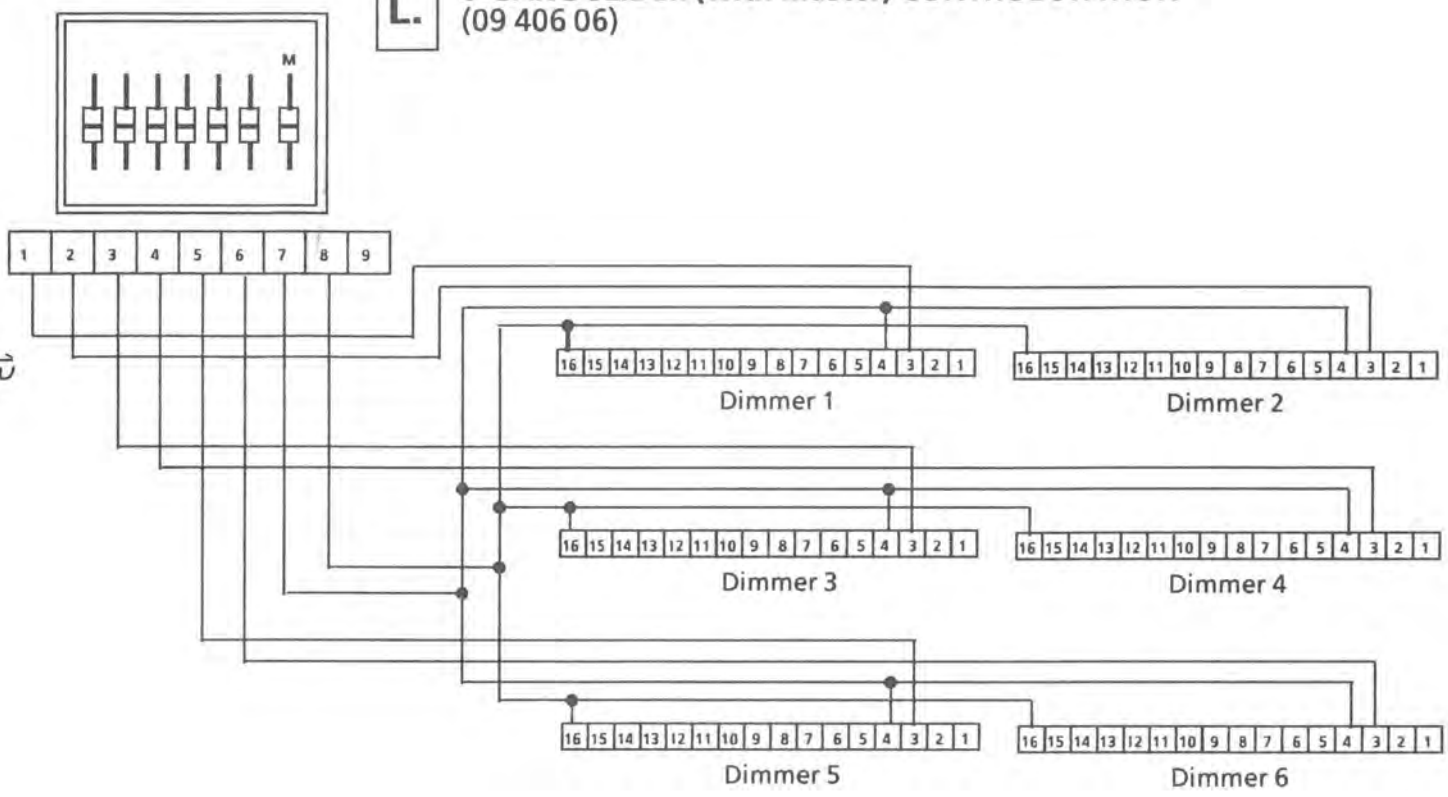
2) Connections to the Control Station are omitted on the drawing below for clarity .



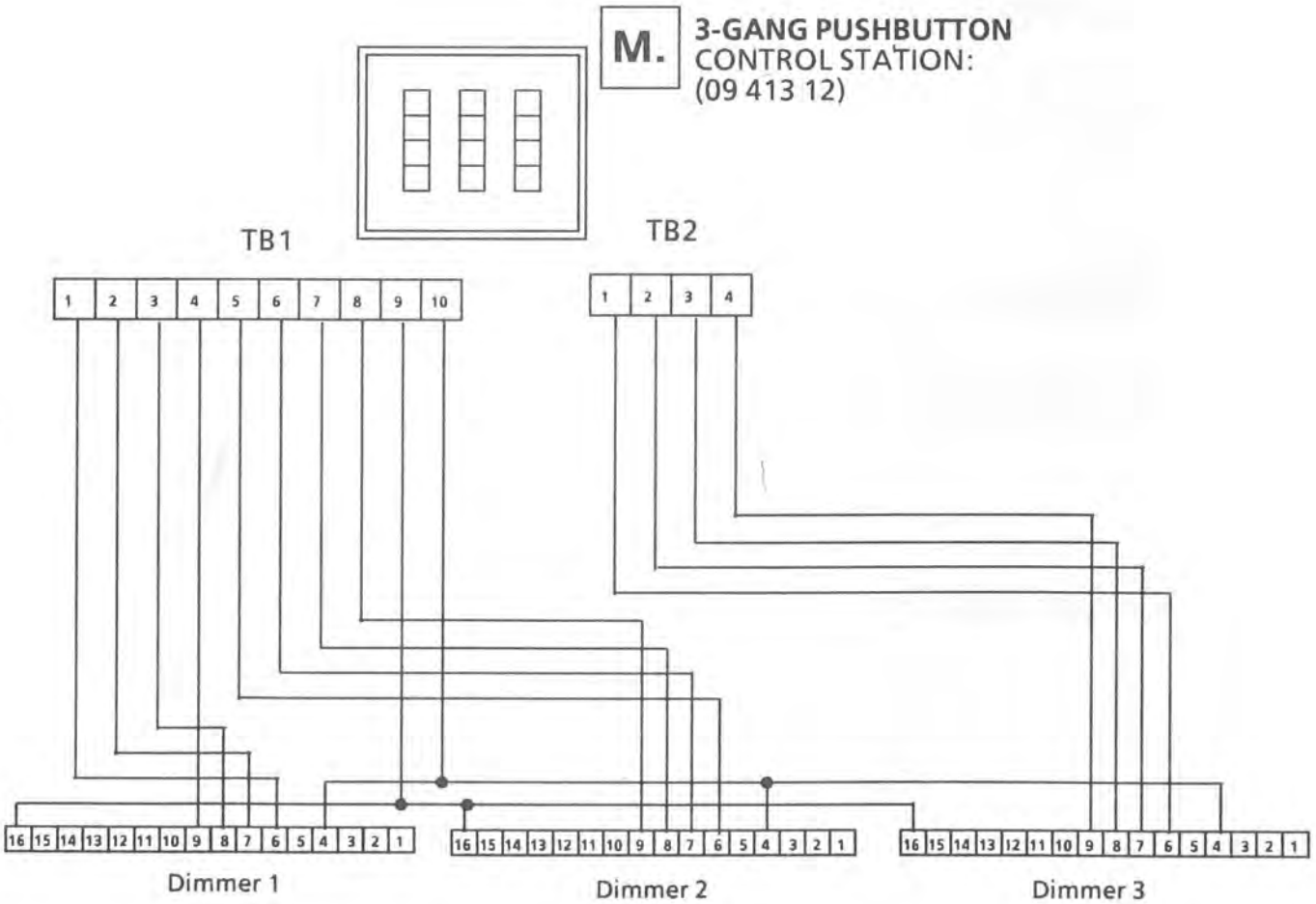
K. 3-GANG SLIDER CONTROL STATION : (09 403 03)

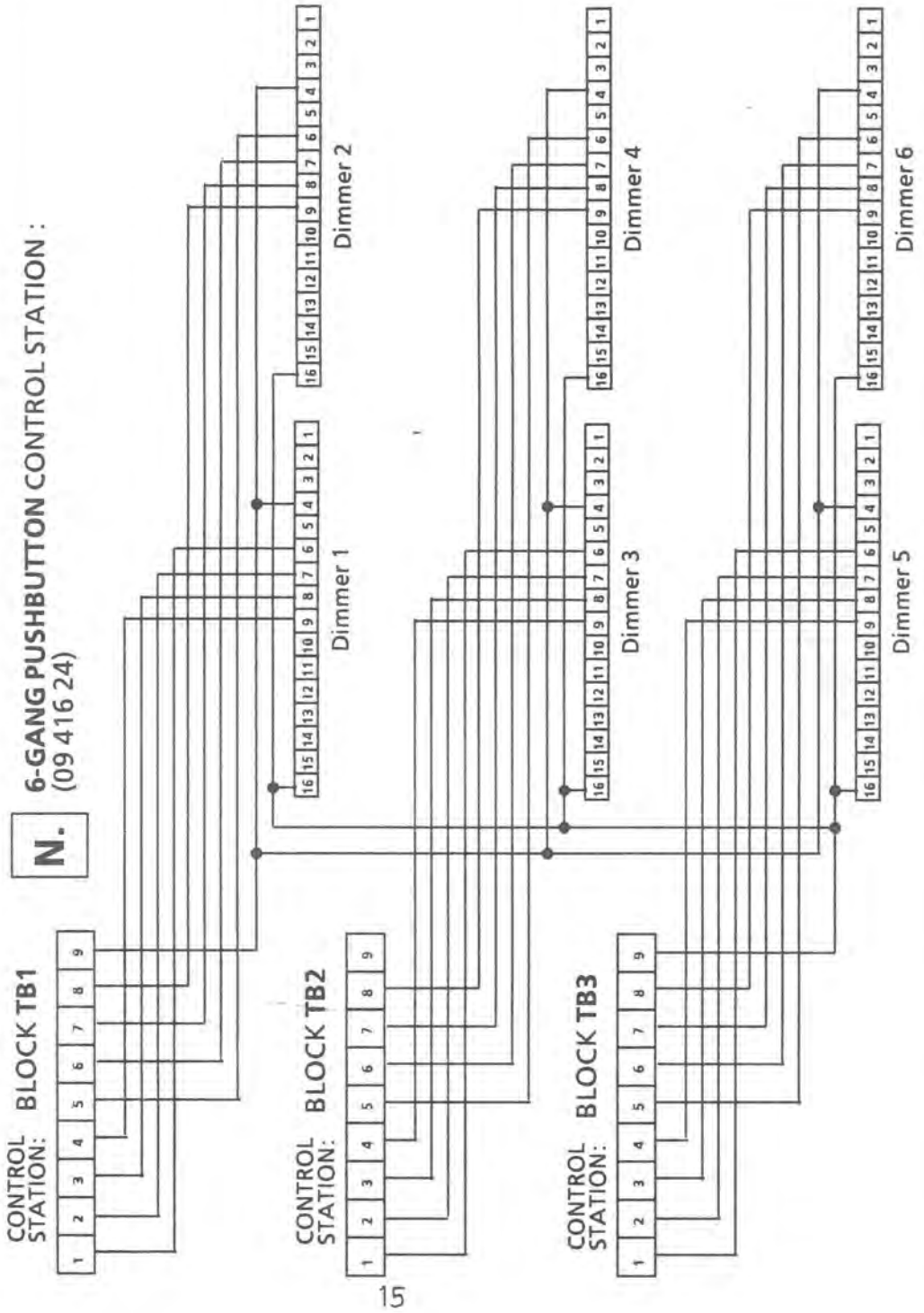


L. 6-GANG SLIDER (with Master) CONTROL STATION (09 406 06)



M. 3-GANG PUSHBUTTON CONTROL STATION: (09 413 12)



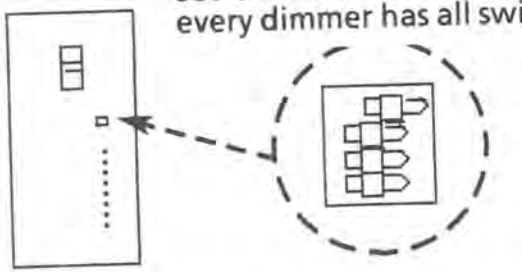


INSTALLING THE DIMMER MODULE

After completing all wiring, replace the front & side covers on the Base socket/s (as appropriate).
The dimmer module must be correctly aligned top and bottom before it may be plugged into the Base.
If it does not fit, DO NOT FORCE IT.
In event of difficulty, view the Module from below, and use a finger to manoeuvre the metal pin into its mating socket on the Base.
Ensure that the dimmer module is fully "home" and rests flat against the dimmer Base, both top *and* bottom.
The captive dimmer-retaining screw should be **finger-tightened only** (over-tightening may cause lower part of the Module to rise from the Base, breaking contact).

SWITCH SETTINGS

Set the switches as appropriate. Note that not every dimmer has all switches fitted.



Speed Switch

Position of switch defines the range of adjustment available on the UP and DOWN speed potentiometers.

"FAST" selects range 0.3 to 30 secs.
"SLOW" selects range 3 to 300 secs.

Usual setting: 'FAST'

Restart Mode

The dimmer may be set so that when mains is applied it will power up in either Preset O or Preset A.
Choose the preferred start-up condition and set the switch accordingly.

Usual setting: 'PRESET 0'

"Fast Start" option (Fluorescent)

This switch should only be set to 'Enable' where approved* type of electronic H.F. dimming Ballasts are used. In these cases, see special instructions in Appendix A.
For normal applications, this switch must be left disabled.

*if in doubt, consult Strand Lighting.

Usual setting: 'DISABLE'

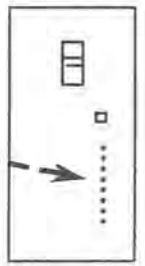
Heater Save (Fluorescent)

This facility will automatically disconnect the supply to the tube heaters whenever tube light output is at full.
Set the switch to 'Enable' if this option is required.

Usual setting: 'DISABLE'

ADJUSTMENTS

Using the trimtool provided, adjust the potentiometers through the holes in the front cover.



Top Set

Adjust (if neccessary) to give the required maximum light output when the dimmer's control is set to 'full'.

Bottom Set

Adjustment is occasionally necessary on fluorescent dimmers to obtain a smooth dim to "off".
Starting from with the dimmer at zero and gently raise the level just until the dimmer's internal relay is heard to click in. Then adjust Bottom Set for the lowest stable light level. Note that if UDTs are used in the fittings, the lowest level obtainable will be approx. 10% light.

Note: The above adjustments do not apply in the case of Electronic High Frequency dimming Ballasts. In these cases see instead Appendix A.

Preset adjustments (where applicable)

Select the Presets in turn from the Control Station pushbuttons, and adjust each potentiometer for the desired light level for that Preset.

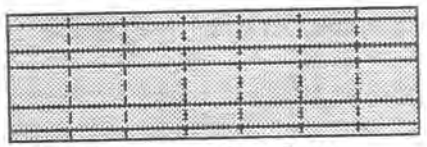
Usual settings : A = 100%
B = Medium;
C = Low
O = Off.

Fade Speed (fine adjustments)

Adjust the "Up" and "Down" potentiometers for the required speed of response when the pushbuttons are pressed.

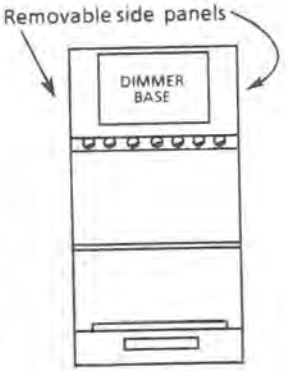
ACCESSORIES

STRANDRAIL
(09 874 07)



Each length of rail is suitable for mounting up to seven dimmers, or five dimmers plus one Mains Connection Box.

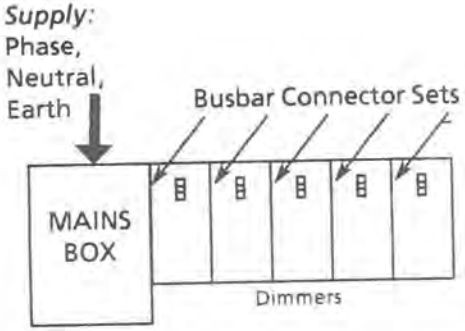
BUSBAR CONNECTORS
(09 873 00)



A Set of three Busbar Connectors is used to link supply busbars between Bases or from a Base to a Mains Box.

To fit the Connectors, first remove the small panel on the appropriate side of the dimmer Base. The panel slides downwards after slightly lifting its lower edge.
The three Connectors may then be pushed on from the side of the Base.

MAINS CONNECTION BOX
(09 872 06)



The Mains Box is used to terminate one cable (Phase, Neutral, & Earth) to feed a row of dimmers. Connection to the row of dimmers either side is made via the Busbar Connectors.

MULTI-PHASE LINK KIT
(09 873 01)

For larger 3-Phase installations, three Mains Boxes are mounted in a vertical column. Each row of dimmers is thus connected onto a different Phase. The Link Kit is a pair of bars designed to link Neutrals and Earths between adjacent Mains Boxes. See page 22 for illustration.

USING THE ACCESSORIES

A. INSTALLING ONE ROW OF DIMMERS

1) Cut Strandrail to the correct length for the required number of dimmers. If a Mains Box is used, this will occupy two slots.

2) Fix the Strandrail to the wall using the woodscrews and rawlplugs provided.

3) Proceed as appropriate:

If using Mains Box

* Mount the Mains Box to the Strandrail using the three screws provided.

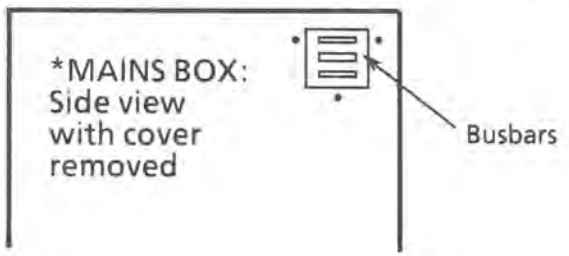
* Remove side cover & fit Busbar Connectors onto the three exposed Busbars*. Offer up the first Base and push onto the Busbar Connectors. Secure the Base to the Strandrail and proceed similarly with the remaining Bases, linking Base to Base.
The P/N/E terminals on the left side of the Bases are not used in this case.

No Mains Box used

* Mount the Bases side by side on the Strandrail using the three screws provided for each.

* Connect individual supply cables onto P/N/E terminals of each dimmer Base and proceed as per earlier Section.

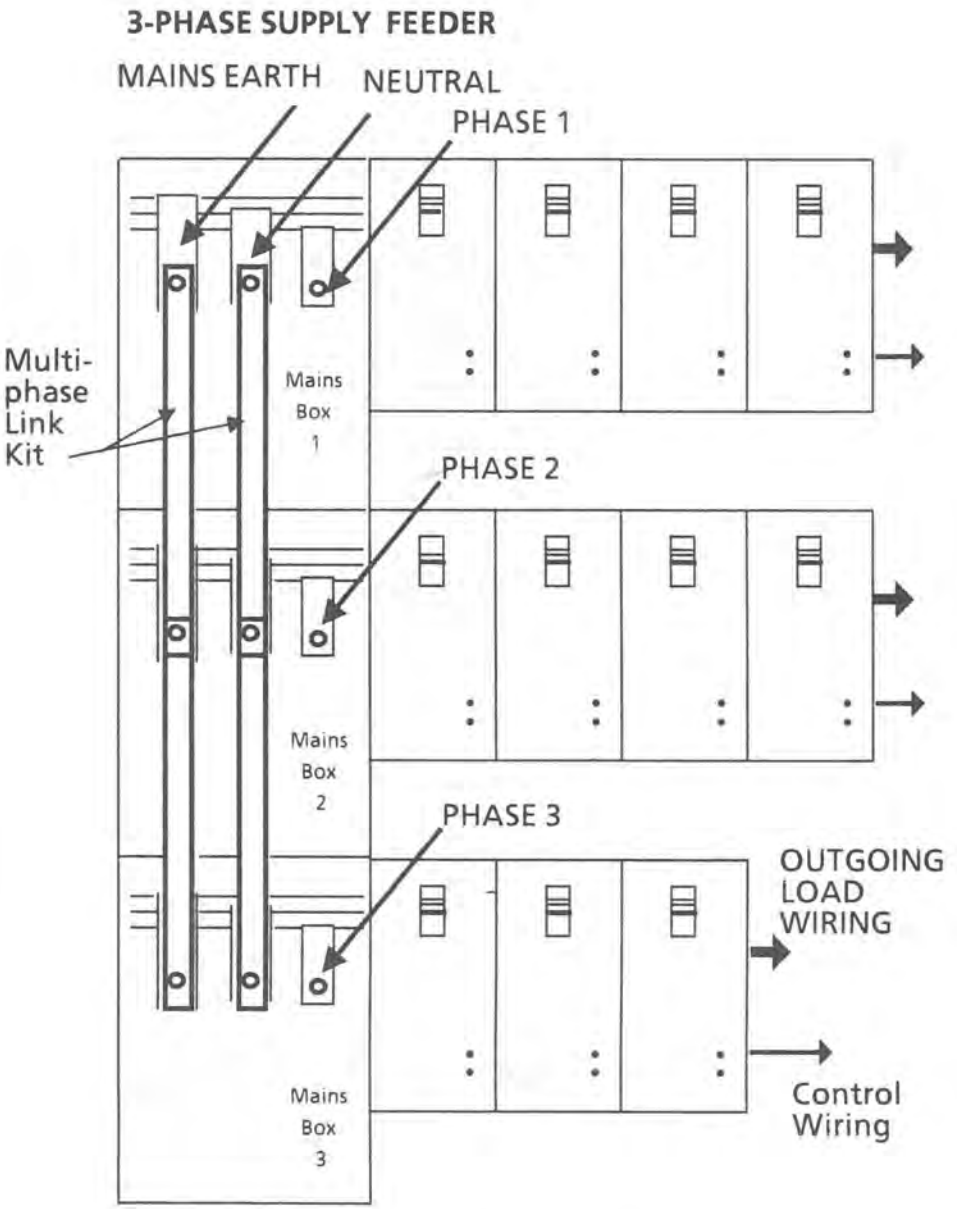
Note: For total current up to 50 Amps, it is permissable to feed a group of 'busbar linked' dimmers from one suitably rated supply cable terminated in one Base.



MORE THAN ONE ROW OF DIMMERS

Large 3-Phase installations are typically arranged as shown in the Diagram opposite.

Remove the cover plates between the boxes and mount them one above the other as shown. Connect one Phase of the supply to each Mains Connection Box, but the Neutral to one box only (maximum loading per row, 130A). Use two Multiphase Link Kits to link the three Neutrals and the three Earths across the Mains Connection Boxes.



Typical 3-Phase installation

APPENDIX A

SPECIAL NOTES ON "2-WIRE" FLUORESCENT DIMMING

The following instructions apply **only** to dimmers being used with approved types of **Electronic high frequency** dimmable ballasts.
Due to the characteristics of these ballasts correct commisioning of the system MUST be carried out to protect lamps and ballasts. Strand Lighting can provide this (chargeable) service, or it may be carried out by the installer. **In the latter case, please note that Strand Lighting cannot be held responsible for any problems resulting from inadequate or incorrect commissioning.**
Permitted dimmer loading is different for this type of Ballast: see the Table below.

DIMMER LOADING WITH **ELECTRONIC H.F.** BALLASTS **ONLY**

Dimmer version	PERMITTED LOADING (NO. OF TUBES)							
	18W		36W		58W		70W	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
6 Amp	6	50	4	27	2	18	2	16
16 Amp	18	130	12	76	6	48	6	46
32 Amp	36	260	24	152	12	96	12	92

COMMISSIONING: ELECTRONIC H.F. BALLASTS ONLY

1) Remove the load cable from the dimmer's LV terminal and temporarily connect it directly to the supply terminal (P).

2) Switch on the supply and check that all fittings give full light : any faults must be cleared before the next step.

3) Using a true RMS voltmeter, measure the (full Mains) voltage now supplying the fittings.

4) Place a light meter at a fixed central point in the room, wait 4 minutes, then measure the 'full' light output.

5) Switch off and reconnect the load cable onto the LV terminal of the dimmer Base.
Cut link LK 2 on the rear of the dimmer module.
Plug the dimmer in and use the trimtool provided to adjust the **Bottom Set** fully clockwise.
Set the Fast start switch to ENABLE, and apply power.

6) Set dimmer to OFF at the Control Station.
Slowly raise the dimmer level until the internal relay just clicks in. Wait for the light level to stabilize.

7) Now adjust the Bottom Set to give **10%** light output compared to 'full' reading measured in step 4. (do not go *below* this level, as this may shorten tube-life).

8) From the Control Station, set the dimmer to Full, and then tune the dimmers **Top Set** adjustment anticlockwise and observe the output voltage. As the dimmer "backs off" from full conduction, the output voltage rises *above* normal Mains. Continue anticlockwise until the output voltage falls just (say 5 volts) below that measured in Step3.

STARTING FROM 'OFF':
The dimmers 'Fast-start' circuit strikes the tubes at approx. 45% light for about 2 secs before settling to the fader (or Preset) level. Following this, dimming is possible between 10% and 100% light.

APPENDIX B

FUNCTION OF THE DIMMER CONTROL TERMINALS

Dimmer Terminal	Function
1	'Panic' input. Connecting to terminal 16 drives dimmer output to Full.
2	Output to Slave dimmer.
3	Dimmer (manual) control input. [0 to ± 10 Volts]
4	Minus 15 Volts DC output. To the Control Station(s).
5	Not Used.
6	"A" Preset, or the "Up" pushbutton.
7	"B" Preset.
8	"C" Preset.
9	"O" Preset, or the "Down" pushbutton.
10	"Stop" function from Up/Stop/Down Control Station.
11-15	Not Used.
16	Technical Earth to the Control Station.