



## HEATING CABLE TYPE VC

### PARALLEL CIRCUIT – CONSTANT WATT FOR FROST PROTECTION

217-116

Parallel circuit heating cable is designed to be cut from reel lengths and site terminated to suit pipework. The heating cable consists of a number of short heating zones, up to 1m long, each connected across a pair of continuous bus-wire conductors.

Each complete heating zone will give its full rated design output, 8, 12 or 16 W/m, with circuit voltage applied to the bus-wire conductors. Normal rated voltage is 110V or 240V AC/DC.

### CONSTRUCTION

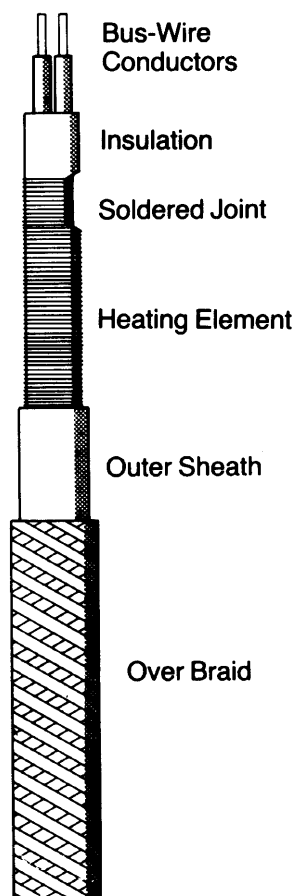
The heating cable has a core comprising two bus-wire conductors contained within an extruded silicone rubber sheath. This sheath is notched on alternative sides, at predetermined intervals, to expose a short section of bus-wire conductor.

Nichrome resistance wire is wound, at regular spacing, around the core as a continuous conductor, making contact with the bus-wires at the exposed points.

After completion of heater conductor winding a high temperature soldered joint is made at each contact point ensuring that a number of conductor strands are securely bonded to the bus-wires.

An extruded outer sheath is then placed over the core and heater element to complete the heater cable assembly.

For certain applications a heating cable may have a nickel plated copper braided outer cover.



### RANGE

Type	Volts	Watt/m	Heater Zone Length (m)	Max. Circuit Length (m)
VC 8	110	8	1.0	100
VC12	110	12	1.0	80
VC16	110	16	0.5	70
VC 8	240	8	1.0	250
VC12	240	12	1.0	170
VC16	240	16	1.0	140

Braided = B

e.g. Ref: VC16B/110V = Braided 16 W/m at 110V.

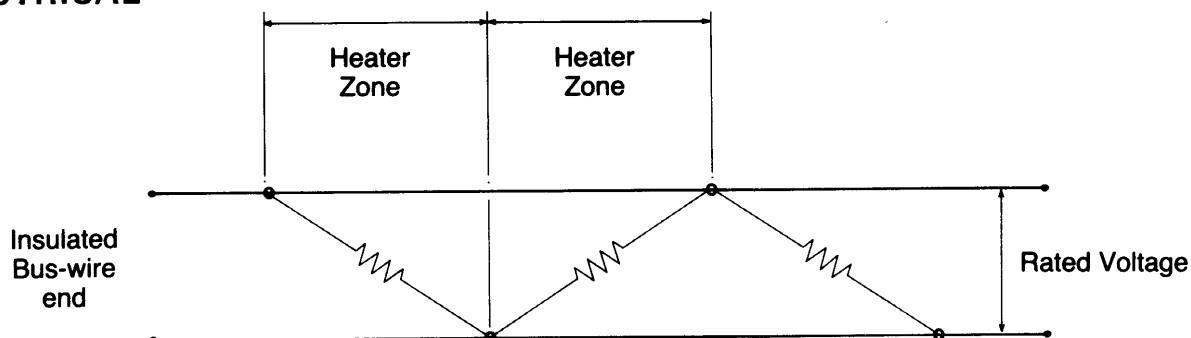
## SPECIFICATION

**Conductors** Nickel plated stranded flexible  
 26/0.25mm (1.3mm<sup>2</sup>/16 AWG).  
**Core** Silicone rubber.  
**Heater element** Nickel/chrome 80/20.  
**Solder** High melting point 296°C.  
**Outer sheath** Silicone rubber.

**DIMS** 9.75mm x 5.25mm

**Heater zone** 0.5 or 1m according to design output.  
**Braid** Nickel plated copper.  
**Temperature** Min. 60°C.  
 Max. 200°C.  
**Standard** To BS 6351 Grade 2.2.

## ELECTRICAL



Rated Voltage – 220V/240V or 110V/120V AC/DC.  
 Heater Zone (according to design) – 0.5/1.0m.

## HEATING CABLE ASSEMBLY

Cut off required length from reel – allow extra heating zone for formation of termination lead. Zones are identified by alternate depressions in the outer sheath.

Remove outer sheath and exposed heater element for required length of termination.

Place gland onto the outer sheath.

Apply heat shrink sleeve onto outer and inner sheath and seal cold leads.

Remove exposed heater element from back end of tape and seal tape end with heat shrink sleeve.

Do not connect bus-wires together.

Cable is ready for installation.

## HEAT LOSSES

To calculate heat loss per metre of pipe:-

Heat losses W/m =  $\Delta t \times k_e \times \text{Loss Factor}$  where  $\Delta t$  = Pipe temp. – min. ambient temp.  
 $k_e$  = Thermal Conductivity.

Loss Factor (from BS 6351)	Pipe NB (mm)	Thermal Insulation Thickness (mm)		
		25	38	50
	13	5.16	4.13	3.58
	25	6.91	5.36	4.56
	38	8.74	6.63	5.54
	50	10.28	7.69	6.36
	75	13.90	10.15	8.24
	100	17.08	12.30	9.88
	150	23.82	16.82	13.30

Thermal Conductivity ( $k_e$ ) for Mineral/Glass Fibre

$\Delta t$ °C	30	40	60
$k_e$	0.034	0.035	0.036

To comply with BS 6351 allowance should be made for supply voltage variation ( $\pm 6\%$ ) and element resistance tolerance ( $\pm 10\%$ ) =  $\frac{1.1}{(0.94)^2} = 1.25 \times \text{Heat loss}$ .

A further design factor of 10% may be added.