#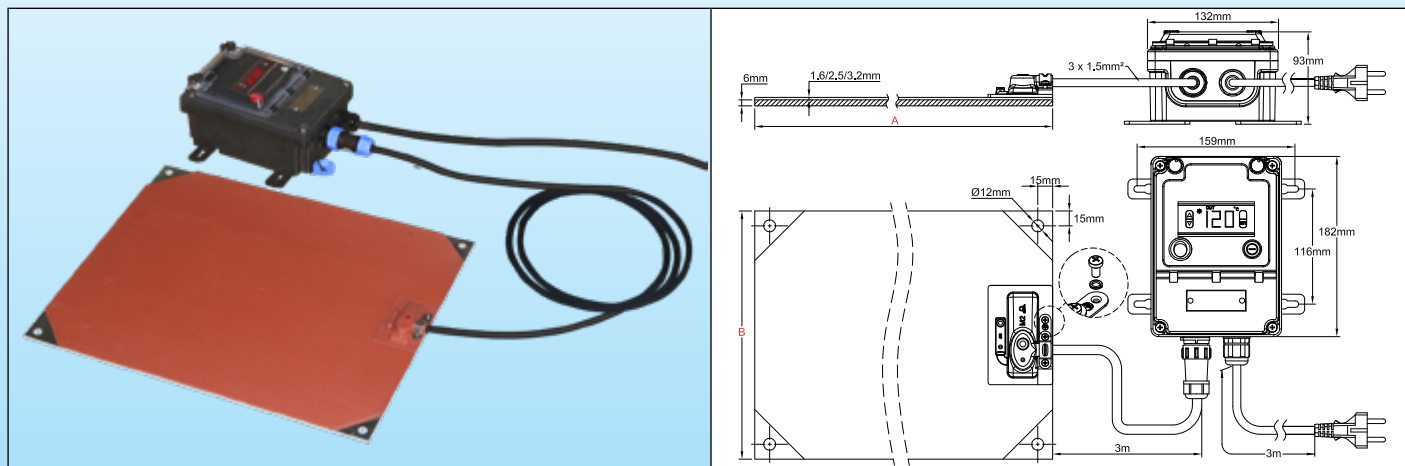 Non flexible silicone heaters vulcanized on aluminium board, with remote electronic temperature control, on-off action.

Temperature limiters	Maximum temperature	Mounting	Temperature control	Silicone + aluminum thickness (mm)	Type
Optional	200°C	4 holes	Electronic temperature controller, on-off action	2,5 + 6	**9AL**

Main features

Non-flexible silicone rubber heaters are made of fiberglass reinforced laminated silicone rubber sheets, vulcanized together through heat and high pressure on both sides of an embedded specially formed heating wire element. Fiberglass-reinforced silicone rubber gives the heater dimensional stability.
The intimate bonding of the heater on a thick aluminum plate allows to increases the power surface load, and eases the mounting on flat surfaces in industrial applications
Silicone is used because of its high temperature resistance (Permanent temperature up to 200°C (390°F), high thermal conductivity (~7 10^{-4} W/cm.K) and good electrical insulation properties (~12KV/mm)
This series is distinguished by the use of a remote electronic control system, on-off action, simple to use, with digital display of the measured value, connection by waterproof connector for easy disconnection of the heater, and IP65 ingress protection class for the whole assembly. This allows its use in most of industrial applications
Other general particularities of these heaters are:
- Not affected by vibration or flexing,
- Lightweight,
- Comply with UL94-VO (flame retardant) and ROHS,
- Low smoke and low Toxicity,
- Silicone is non-toxic, and moisture and chemical resistant

Main applications

Silicone heating elements on aluminum plates are a simple and industrial solution for heating flat surfaces. They are sturdy, easy to install and heat quickly and evenly.

Some typical examples of applications are:

Heating of hoppers, electrical cabinets, hot plates for the food industry, reheating tank bottoms.
In addition to their temperature control system, they can receive temperature sensors, temperature limiters, thermal fuses.

Technical features

Mounting: By 4 holes dia. 12mm located at the 4 corners, at 15mm from edges
Length (Dimension A): Upon customer request (minimum 300mm)
Width (dimension B): Upon customer request (minimum 100mm)
Ingress protection: IP65.
Minimum ambient temperature: -10°C (+15°F)
Voltage: 220-240VAC.
Power tolerance: ±10% at 20°C
Temperature control:
By electronic controller with sigital display, On-Off action, set point adjustment range up to 120°C (NTC sensor), or 200°C (Pt100 sensor), relay output, located in an independent waterproof housing, designed for wall mounting. It is connected to the flexible silicone rubber heater by a cable equipped with a 5-pin waterproof quick connector, facilitating the connection and disconnection with the heater. It controls the temperature by means of a probe placed under a silicone boot on the outer surface of the heater.

Maximum rating 16A 230V (3600W).

Power density:
- 0.2 w/cm^2 (1.3W/in^2) for plastic materials
- 0.75 w/cm^2 (4.8 w/inch^2), for usual applications.
- 1 w/cm^2 (6.5 w/inch^2) for fast heating applications.
- 1.4 w/cm^2 (9.1 w/inch^2) for huge power applications
Other values on request.

Thickness of the flexible silicone foil: 2.5mm

Thickness of the aluminum board: 6 mm (other values on request).

Quality control routine tests: Each element is 100% tested for continuity, resistance and insulation. Tests are made according to EN 60335-1 and EN 50106 standards. See technical introduction.

Dielectric Strength: 1750V AC.

Insulation resistance: ≥ 10 Megohms.

Operating temperature:
See in the technical introduction examples of the temperatures reached by these heaters. They represent the temperature that they may reach if they are not correctly installed.

Connection cable:
Insulated rubber power supply cable, for industrial environments, 3 x 1.5mm^2 (3xAWG15) length 3m, Euro plug. UL plug on request.

Options:
- Power supply 110/115V
- Power cord with industrial plug 2-pole + earth 16A CEE (IEC60309).
- Surface mounted temperature limiter.
- Grounded mesh wire shield layer
- Silicone foam insulation layer vulcanized on the external surface

Safety standards:

The heaters have been designed in compliance with EEC Low Voltage Directive (LVD) 2006/95/EC and EMC directive 2004/108/EC. They must be installed in accordance with all local applicable instructions, codes, and regulations.

Main parts numbers in 220/240V

Temperature setting range	W/cm² (W/in²)	300x350mm	Power (Watts, 230V)	350x400mm	Power (Watts, 230V)	400x 450mm	Power (Watts, 230V)	500x600mm	Power (Watts, 230V)
Part number with temperature controller adjustable up to 120°C (250°F)	0.2 (1.3)	9ALB2AAB6A814F30	140	9ALB2ABC6A820F30	200	9ALB2ACD6A828F30	280	9ALB2AEA6A850F30	500
	0.75 (4.8)	9ALB8AAB6A832F30	320	9ALB8ABC6A845F30	450	9ALB8ACD6A862F30	620	9ALB8AEA6A8--F30	1100
	1 (6.5)	9ALBBAAB6A870F30	700	9ALBBABC6A8A0F30	1000	9ALBBACD6A8A4F30	1400	9ALBBAEA6A8B5F30	2500
	1.4 (9.1)	9ALBFAAB6A8A0F30	1000	9ALBFABC6A8A4F30	1400	9ALBFACD6A8A9F30	1900	9ALBFAEA6A8C5F30	3500
Part number with temperature controller adjustable up to 200°C (390°F)	0.2 (1.3)	9ALB2BAB6A814F30	140	9ALB2BBC6A820F30	200	9ALB2BCD6A828F30	280	9ALB2BEG6A850F30	500
	0.75 (4.8)	9ALB8BAB6A832F30	320	9ALB8BBC6A845F30	450	9ALB8BCD6A862F30	620	9ALB8BEG6A8A1F30	1100
	1 (6.5)	9ALBBBAB6A870F30	700	9ALBBBBC6A8A0F30	1000	9ALBBBCD6A8A4F30	1400	9ALBBBEG6A8B5F30	2500
	1.4 (9.1)	9ALBBLAB6A8A0F30	1000	9ALBBLBC6A8A4F30	1400	9ALBBLCD6A8A9F30	1900	9ALBBLEG6A8C5F30	3500

* For UL plug instead of Euro plug, replace F3 with E3 in the part number.