

The ANITA BONDING CONSOLE NG9201

for advanced patch repair with dual circuit control



1 Presentation

The ANITA NG9201 since its introduction in 1992 has been permanently updated and is to day offering all the features to cover the more advanced difficult requirements for a repair of composites.

Whether being needed on flight line or in the shop the NG9201 is perfect for the job with unequalled performances .

The NG is the smallest compact bonder on the market .It is the only equipment of this category to offer for one patch bonding the capability of dual heating channels to maintain a balance of temperature on the whole area .

The ANITA is conceived for push button operations for an automatic cycle where all aspects of curing process are handled by an advanced software that benefited from twenty years of experience of GMI in the field of composite repair.

1-1 ANITA NG MAIN ADVANTAGES

1-1.1 A Patch Repair with Appropriate Temperature Control

The ANITA NG is designed to handle a **Patch Repair** .

It is possible to connect one heating blanket to cover the patch and cure its resin . However the NG has an extra asset to deal with the usual difficulty met when dealing with an aircraft part , the various thicknesses of structures that induce different behaviours in terms of heat transfer . It is possible to connect One blanket with **Two Heating areas** for compensation of difference of heat behaviour in two areas of the structure .

To day, it is no more possible to deal with patch temperature control as twenty years ago . A true bonding console must have this minimum feature to deal with modern advanced carbon structures .

Being small or large the ANITA can face the job... because the ANITA offers a switching capacity of 30 Amperes .



**Figure 1: On left, the Anita NG closed showing external connectors of high quality
When opened (right) the Anita appears straightforward to be used ; no complicated keyboard ; a software has been designed so that the ANITA answers automatically to switch selections.**

2 Temperature Control

2-1 Innovative temperature control for automatic profiling

The temperature of the part heated by the heating blanket is under control of a software that manages the set of 6 thermocouples .

As the raise of temperature is the result of a conduction process by a heating mat, the temperatures on various points of the structure may be different because of variable losses of heat according to the area and measurement locations. To face this control dilemma, a special treatment of all the measures is made automatically by the software and the orders to the heating blanket are derived.

Amalgamation of all data is thus used to improve the conduct of heat transfer on the whole surface so that an optimum temperature profile is found no temperature above the tolerated limit and avoid of cold areas.

2-2 Dual Heat Control

2-2.1 Dual Circuit Blankets

When a bonding is made on a structure having obviously a variation of thickness, the use of the second heating channel becomes a necessity .

GMI offers supply of two different circuit mats so that the heat control can be differentiated on the two areas .



Figure 2: Here a blanket with two circuits to control differently two adjacent areas : one being a uniform laminate , the other with stringer constituting a heat sink.

In other cases of repair, laying two separate blankets side by side allow to get similar results

2-2.2 Large area control

The control of temperature in large area is also greatly facilitated with the ANITA dual control feature. Say, the repair patch has a diameter of 600 mm, a two circuit blankets is used. One circuit for the internal area control (40 cm diameter), a second circuit for the periphery. This will allow the control of the center of the area at the rated temperature, while the second peripheral circuit will be also maintained at the same temperature .

Other cases find easily a solution thanks to this feature. For example, when heating a long vertical surface. The two circuit blanket will avoid to overheat the upper area .

2-2.3 The two skin bonding in a single operation

When a sandwich is perforated on both skins , it is thus possible to combine the dual channels to implement the bonding of the two skins simulatenously with a differntiated control.

3 THE GENERAL SPECIFICATIONS

- ⇒ Dimensions : 308 x 206 x 206 mm
- ⇒ Weight: ...13 Lb.- 06 Kg
- ⇒ Volts: 220 or 120 VAC, **automatic switching**
- ⇒ Power Capability: 30 Amps x 220 Volts = 6000 Watts or 30 x 120 Volts = 3600 Watts
- ⇒ **Two Circuit Control : Two** Heating Zones . ONE + a **SECOND** one for temperature balance

Other features : ...

- ⇒ Thermocouples: J, **6 circuits**
- ⇒ Vacuum: Venturi pump installed with **high** performances: -0.87 bar(27 in Hg) - **High Flow for efficient leak compensation**
- ⇒ Vacuum panel gauge for vacuum venturi pump test
- ⇒ Vacuum electronic gauge on return hose from bag to qualify the actual vacuum in bag itself .This value is monitored permanently , displayed, printed , recorded.
- ⇒ Printer with large standard paper
- ⇒ Programming by an innovative dialogue in two immediate steps . Ramp, Plateau and Duration are immediatly keyed . The use is straightforward .
- ⇒ Programs can be saved in memory . Two libraries possible . One (max capacity 19 programs) is delivered with all usual resin programs already installed . A second one can be consituted by the user .The max. capacity for the user being : 19 programs
- ⇒ Panel display of Temperature and Vacuum Instantaneous Values; clear and large digits visible from far ; permanent scanning of all measures of temperature and vacuum
- ⇒ Visual and audible alarms ;
- ⇒ Panel mimics visible from far : lamp for identification of heat on/off, alarms for temperature and vacuum,..end of cycle.
- ⇒ Internal clock and calendar for repair identification
- ⇒ Easy accessible external fuses
- ⇒ Software and electronic safety features
- ⇒ Innovative **PC Software ANITALK** delivered for:
 - Feature configuration, Library Cycles programming,
 - Real Time Supervision Training, Quality control data Files
 - Graphic analysis,
 - Circuit calibration.



The accessory case very convenient to group all necessary items

4 DELIVERY

The ANITA Console comes with all its accessories necessary to implement : as a complete set of cables, hoses, in a nice storing and transportation console.

Console Dim: 18 x 14 x 7" (460 x 350-x 166 mm) ; Weight: 22 Lb. -10 Kg

Content List :

- ⇒ A Power cable: 1 unit of length 5 m (6-ft)
- ⇒ Blanket cable: 2 units of length 3 m (10ft)
- ⇒ Vacuum Silicone Hoses: 2 units , one for vacuum , one for return sensing of length 3 m (10-ft)
- ⇒ Vacuum Valves,
- ⇒ Thermocouple cables: 6-x16 ft (3 m)
- ⇒ Printer consumables,
- ⇒ PC connection cable RS232,
- ⇒ PC software ANITALK,
- ⇒ User and Service Manual.

5 REFERENCES TO ORDER

P/N:GMING9201-1 Dialog in English; units in xC and Bars

P/N:GMING9201-2 Dialog in French; units in xC and Bar

P/N:GMING9201-3 Dialog in English; units in xF and In Hg

6 CONSUMABLES

⇒ A box of 20 printer paper rolls P/N: GMINGI010-01

⇒ A box of 10 printer ink cartridges P/N: GMINGI010-02