

*Western Surgical*®

## Automatic Electronic Tourniquet

### USER MANUAL



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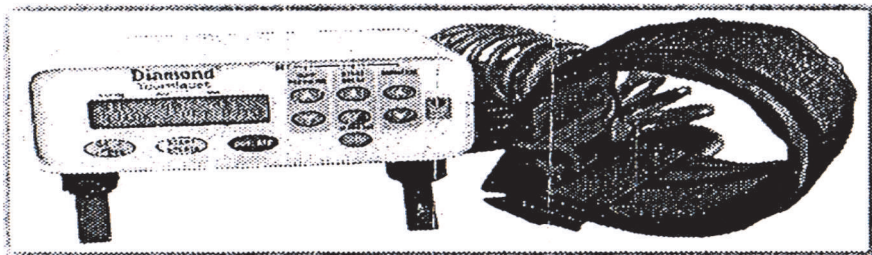
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OPERATION MANUAL  
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# Diamond

## Automatic Electronic Tourniquet



### Features

- \* Fully Automatic
- \* Battery operated
- \* Compact, lightweight, portable
- \* Sophisticated alarms
- \* Choice of modes of operation
- \* Elapsed time display
- \* Soft, armored type cuffs
- \* Cuff pressure setting 50 to 500 mm of Hg

\* Carrying Warranty at Rajkot only on site warranty not provided free of cost.

\* Due to constant upgradation design, price and features are subject to change any time without prior notice.



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### **Introduction :**

Congratulations on your purchase of "**Diamond**" Tourniquet. This compact, programmable, battery operated, single cuff operative automatic electronic Tourniquet is a state of art system specially designed with smart intelligence to meet your all types of Tourniquet application.

### **Features :**

1. The CUFF PRESSURE is always maintained to set value automatically.
2. Set value of CUFF PRESSURE can be altered to any other desired value even while it is in working mode.
3. Sophisticated ALARMS to give better warning message.
4. This Tourniquet can be programmed to suit your operation and post-operation needs by setting the parameters START DELAY and DURATION.
5. Both START DELAY and DURATION can be changed during the operation (before it's individual execution).
6. Manual override for CUFF DEFLATION during programmed timing is also possible.
7. ELAPSED TIME of operation is always in front of you on display in MIN : SEC fashion.
8. Last settings remain in memory when power is turned OFF.
9. This Tourniquet is Battery operated, hence PORTABLE and can be used anytime, anywhere even for post operation.
10. Built in battery charging circuit to re-change the battery immediately by just connecting the power cord.
11. Special cuff design-soft, armored type so that it will last forever even if sharp cutting tools get in touch with it.
12. Elegant, soft keypad to DIAL the settings or parameters at ease.
13. CUFF PRESSURE setting :- 50 to 500 mm of Hg
14. The unit is compact, light weight, very small in size.

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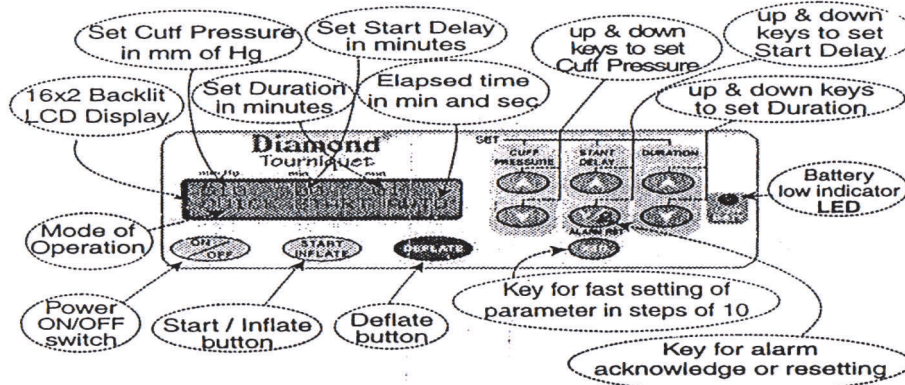
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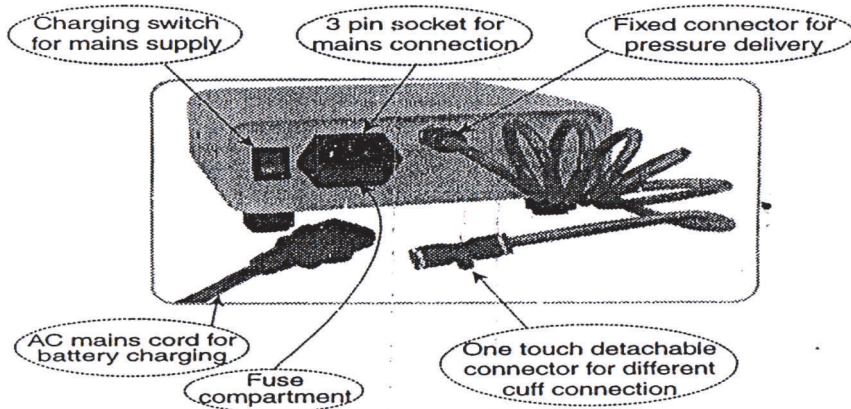


## Know your Automatic Electronic Tourniquet

### Front view



### Back view



### Power supply

6 volt Re-chargeable battery. This Tourniquet is battery operated, hence always keep it in charged condition before it is used for operation.

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**Battery charging procedure :**


The built in battery can be charged by connecting main unit to 230 volts, for which follow the following procedure.

- a) Insert AC mains cord into the 3 pin socket provided on the back plate of the main unit.
- b) Connect power cord plug to 230 volts mains supply.
- c) Switch on the charging switch which is provided on the back plate of main unit.
- d) Normally it will take about 4 to 5 hours to charge the battery fully.
- e) Switch off the supply and disconnect the power cord.

**Operation of the unit :**

**1. Wrapping the cuff**

Select the suitable cuff required for a patient, wrap it comfortably around his arm or leg and insert the tube end of the cuff to the one touch connector of the main unit.

**2. Switch ON the unit by power  switch.**



The unit will display the last settings set for Cuff Pressure, Start Delay and Duration. Also the mode of operation is displayed accordingly. Set the required cuff pressure and the mode of operation by setting start delay & duration by using respective up and down keys of parameter settings. The unit operates in 3 different modes depending on the settings of Start Delay and Duration.

**Modes of operation**


Mode	Start Delay (in minutes)	Duration (in minutes)
Manual Mode	00	00
Quick Start Auto	00	XX
Delay Start Auto	XX	XX

XX.. any number greater than 00

**a) Manual Mode :** For Example  
(Start Delay = 00 & Duration = 00)

Cuff will get inflated immediately to the set pressure value after pressing  button showing the unit in "MANUAL" mode and the elapsed time on the display. Now, the pressure will be maintained constant showing OK on the display till the  button is pressed.

mm Hg	min	min
400	00	00
OK	MANUAL	00:20
		min. sec.

After pressing the  button, the cuff pressure will get deflated showing DEFLATING message on the display.

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**b) Quick Start Auto Mode :** For Example

(Start Delay =00 & Duration =01)

In this mode, the cuff will immediately get inflated to the set pressure value after pressing  button showing unit in "AUTO" Mode and the elapsed time on the display. The cuff pressure will be maintained constant showing OK on the display for the set Duration in minutes.

mm Hg	min	min
400	00	01
OK	AUTO	00:25
		min. sec.

When the elapsed time equals or matches the set Duration time, the cuff pressure **automatically** gets deflated, showing DEFLATING message on the display.

**C) Delay Start Auto Mode :** For Example

(Start Delay =01 & Duration =01)

In this mode, you set the Start Delay time and the Duration time in minutes, and press  button. Now, this will initialize the sequence showing "Starting" and elapsed time in min : sec fashion on the display.

mm Hg	min	min
400	01	01
Starting		00:06
		min. sec.

When the elapsed time matches the set Start Delay time, pressurization starts **automatically** showing unit in "AUTO" mode with elapsed time display starting from 00 : 00 again. Now, the cuff pressure will be maintained constant showing OK on the display for the set Duration in minutes.


mm Hg	min	min
400	01	01
OK	AUTO	00:10
		min. sec.

When the elapsed time matches the set Duration time, the cuff pressure **automatically** gets deflated, showing DEFLATING message on the display.

**Alarms :**

- 1) Cuff pressure has not reached the set pressure value even after 120 sec. after initial start.
- 2) Cuff pressure is not within the limits of set pressure value for more than 10 sec. during the operation of the unit.
- 3) After every 30 min. elapsed time, distinguished beep sound indication.

**Alarm Reset /Acknowledge :**

Audio alarm sounds in case of any malfunction occurs during the operation. You can reset the alarm only when the corrective action has been taken by just pressing the  button.

ALARM RST

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**Note:**

- \* For fast settings of parameters in steps of 10, press **X10** button along with required parameter key either ▲ or ▼
- \* Set value of cuff pressure can be altered to any other desired value even while it is in working mode.
- \* You can deflate the cuff pressure fully at any time during the operation of the unit in any mode of operation by just pressing the **DEFLATE** button.
- \* Last setting remains in memory when the power is turned off.
- \* A low Battery indicator LED starts blinking when the battery charge is low and it needs charging. Follow the battery charging procedure immediately.
- \* Switch OFF the unit by pressing power **ON/OFF** switch when the machine is not in use.

**Specifications :**

CUFF PRESSURE	: 50 TO 500 mm of Hg
START DELAY	: 0 TO 120 Min.
DURATION	: 0 TO 250 Min.
INFLATION	: MOTORISED PUMP
DEFLATION	: EMV AUTOMATIC OR MANUAL OVERRIDE
PRESSURE RESOLUTION	: 2 mm of Hg.
ACCURACY	: +/-3 mm of Hg. (SET PR.)
DISPLAY	: 16 x 2 BACKLIT LCD DISP.
OPERATION METHOD	: MICRO CONTROLLER BASED CONTROL
ELAPSED TIME DISP	: MIN : SEC
POWER	: 6 V DC BATT (BUILT IN CHARGING CIRCUIT)
ALARMS	: PR.LEAKAGE / ELAPSED TIME
TOURNIQUET CUFF TYPES	: SOFT, ARMORED CUFF
CUFF SIZES	: STANDARD LEG 10 X 61 CMS. STANDARD ARM 7 X 35 CMS. CHILD 5 X 30 CMS.
WEIGHT	: 1.5 Kg. Approx.
DIM.	: 165(W) X 75(H) X 140(D) mm.

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## Single Cuff Operative Automatic Electronic Tourniquet



Congratulations on your purchase of "Diamond" Tourniquet

Please Refer This Instruction Sheet Carefully Before Actual Use of Machine

### Battery Charging

This Tourniquet is battery operated, hence always keep it in charged condition before it is used for operation. Connect the AC mains cord to the unit, switch on the charging switch, the battery will get fully charged after about eight to ten hours.

### Operation of the unit.

1. Wrap the suitable cuff to the patient and connect it to the main unit.
2. Turn the unit ON by  switch.
3. Set the required cuff pressure and the mode of operation by setting **START DELAY & DURATION** by using respective up and down buttons of parameter settings.
4. Press  to initialize the sequence.


### Modes of Operation

Mode	Start Delay (in minutes)	Duration (in minutes)
A) Manual Mode	00	00
B) Quick Start Auto	00	xx
C) Delay Start Auto	xx	xx


xx ..... any number greater than 00

**Please refer the Operating Manual for detailed information about the modes of operation.**

A) Manual Mode : Press  button to inflate the cuff to set pressure value.

Press  button twice to completely deflate the cuff pressure.

B) Quick Start Auto Mode : Press  button to inflate the cuff to set pressure value. When the elapsed time matches the set Duration time, the cuff pressure automatically gets deflated.

C) Delay Start Auto Mode : Press  button to initialize the sequence. When the elapsed time matches the set Start Delay time, the cuff gets inflated to the set pressure value, maintains the pressure for the whole Duration. When the elapsed time matches the set Duration time, the cuff pressure automatically gets deflated.

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## Sophisticated Alarms


### SAFETY ALARMS:

1. Cuff pressure has not reached the set pressure value even after 130 seconds after initial start. An alarm sounds immediately. In this case, Switch OFF the power of machine. Check the cuff connections, joint etc. and Start the machine again.
2. Cuff pressure is not within the limits of set pressure value for more than 10 seconds during the operation of the unit. An Alarm sounds immediately. Check the cuff connections, necessary joints etc., re-connect the same if required. Now, see for the OK symbol on the display, then an Alarm can be reset/stopped by just pressing the  button.






### INDICATIVE ALARMS:

1. After every 30 minutes elapsed time, there is a distinguished beep sound indication.
2. Beep.. Beep.. Beep.. Beep indication.  
This alarm indication is to make you alert just 5 minutes before cuff deflation in Auto modes. This Beep... indication is repeated after every 1 minute thereafter to give you warning of getting cuff deflated automatically very shortly.

## Alarm Reset / Acknowledge

Audio alarm sounds in case of any malfunction occurs during the operation. You can reset/stop the alarm only when the corrective action has been taken by just pressing the  button.

## Points to Remember

1. For fast settings of parameters in steps of 10, press  button along with required parameter key either  or .
2. Set value of cuff pressure can be altered to any other desired value even while it is in working mode.
3. Manual over-ride for cuff deflation during programmed timing is also possible by just pressing the  button twice.
4. Last setting remains in memory when the power is turned off.
5. A low Battery Indicator LED starts blinking when the battery charge is low and it needs charging. Follow the battery charging procedure immediately.
6. Switch OFF the unit by pressing power  switch when the machine is not in use.

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Date of Installation	Installed By
Model No.	Serial No.
Warranty Period	
Name of Doctor & Address :	

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Customer Sign. With Stamps

\_\_\_\_\_  
Marketed By: Western Surgical  
Sign. With Stamps

**No Claim Warranty :**

**1) Any Defect Throught Power Supply**

**2) Any Physical Damage**

3) Under Warranty Standby Unit Not Provide

4) Under Warranty When Company Send Parts or Machine we lmidiat send to Buyer.

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## OUR OTHER PRODUCTS RANGE



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