NOVAG®

EMERALD CLASSIC plus

INSTRUCTION

TABLE OF CONTENTS

I. GENERAL HINTS

ll. SHORT INSTRUCTION

III. GAME FEATURES

a) Making a Move
b) Capturing a Piece
c) Impossible and Illegal Moves
d) Castling
e) En Passant
f) Pawn Promotion / Underpromotion
g) Stalemate and Draw
h) Check and Checkmate
i) Mate Announcement
j) Resignation

IV. SPECIAL FUNCTIONS

1) NEW GAME Key
2) SET LEVEL Key
3) SOLVE MATE FUNCTION
4) GO KEY
5) RANDOM Key
6) REFEREE Key
7) HINT Key
8) TRAINING Key
9) TAKE BACK Key
10) TRACE FORWARD Key
11) CHANGE COLOR Key
12) CLEAR Key
13) VERIFY Key
14) SET UP Key
15) RESTORE Key
16) SOUND Key
17) AUTOPLAY Key
18) INFO Key
19) EASY Key
20) NEXT BEST Key

V. APPENDIX

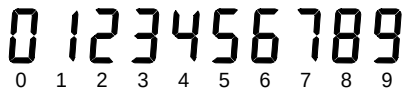
A. Care of the NOVAG Chess Computer
B. Trouble Shooting List
C. Technical Data and Features
D. Examples of the LCD Display

VI. RULES OF CHESS

LCD DISPLAY OF THE NOVAG EMERALD CLASSIC *plus*

The LCD display of the EMERALD CLASSIC *plus* has a six character alphanumeric display. The listed symbols below are used on the display for the EMERALD CLASSIC *plus*:

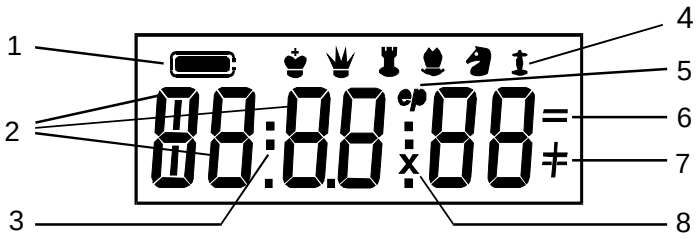
1. Figures



2. Letters and symbols

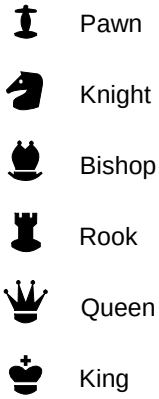


THE DISPLAY



1	=	Indication for the color	5	=	Symbol for En Passant
2	=	6 character alphanumeric display	6	=	Symbol for Stalemate/Draw
3	=	Separation for time indication	7	=	Symbol for Check/Checkmate
4	=	Symbols for chess pieces	8	=	Symbol for captured figures

Symbols for the chess pieces on the display



Note: All LCD displays showing 3 bars " ≡ "indicate that a function is ON or the function is now at value 3.

I. GENERAL HINTS

Playing with the NOVAG EMERALD CLASSIC *plus* is easy compared to other chess computers, however we recommend reading the general instructions before starting to play. The detailed instructions are laid out in such a way that each section is self-contained, so you do not have to read everything at once.

BATTERIES
The EMERALD CLASSIC *plus* runs on six 1,5V UM-2 type, or size 'C' **alkaline** or heavy duty batteries (**not included**).

Note: Do not use regular batteries, as they will result in irregular performance.

To insert the batteries open the BATTERY DOOR on the backside of the unit and place the batteries as indicated by the +/- signs. A set of new alkaline batteries runs approx. 250 hours. (continuous operation). If you don't use your computer over a long period of time, please remove the batteries.

ADAPTOR
The EMERALD CLASSIC *plus* uses the Novag adaptor Art. No. 8210 which is separately available. Before using the adaptor check that the voltage of your electric output is within the range specified on the adaptor label. The adaptor socket is located at the back panel of your computer. Please only use the adaptor specified for your computer. The use of any other adaptor automatically invalidates the warranty.

Note: Make sure you first connect the adaptor with the computer before you plug it into the mains.

MEMORY
The EMERALD CLASSIC *plus* has a long-term memory and will retain the last board position. However, make sure that there are batteries in the chess computer or an adaptor connected otherwise you will lose the memory contents.

II. SHORT INSTRUCTIONS

1. Before commencing to play set up the chess pieces in the opening position. White pieces on rank 1 and 2, Black pieces on rank 7 and 8.



2. The power switch is a 2-position switch and is at the backside of the cabinet. It is marked ON/OFF. Push this switch towards ON (towards the power socket). This switch operates both adaptor and batteries. If you use an adaptor, the batteries will automatically be disabled.

3. Press NEW GAME. You will hear 3 beeps and the LCD will show [01.-- --] with the white bar. You can now make your opening move for White.

4. If you wish to increase the level of skill press the SET LEVEL key and select one of the two LEVEL GROUPS before you press the square corresponding to the desired level (**a1, a2, a3,** up to **h8**). On the LCD display you will see a number indicating the present level set. (See IV. 2. for level setting and their time controls).

5. Once you have set the level, press GO to exit the SET LEVEL mode. After this procedure you may enter your move as White. Gently press down on the piece that you want to move and the two respective rank and file LEDs will light up. Then set the piece down onto the square you wish to move to and gently press down again. (Your completed move will be shown on the LCD). Once the EMERALD CLASSIC *plus* has registered your move it will immediately start computing its counter move.

III. GAME FEATURES

a) Making a Move

The EMERALD CLASSIC *plus* has a Sensor-chessboard, which registers your moves automatically when the appropriate squares are gently pressed. Moves to be executed for the computer are indicated by the 2x8 rank and file LEDs and on the LCD display. Each square on the chessboard is named according to the standard adopted by the World Chess Federation (F.I.D.E.), which are the coordinates of each square from **a1** to **h8**, all moves are also shown on the LCD.

The color to move is indicated by the top row of the LCD and a white box indicating that White is to move whereas a solid black box would indicate that it is Black's move. To make a move, gently press on the piece that you wish to move (thereby pressing on the square that it stands on) and you will see the rank and file LEDs corresponding to this square light up. To complete your move please lift that piece and place it on the square that you wish to move it to and gently press down on that square. The completed move and color indication will be shown on the LCD display. The EMERALD CLASSIC *plus* will then immediately start computing its counter-move.

To make a move for the computer when the counter-move has been computed, your computer will show on the LCD its move and also light up the rank and file LEDs that correspond to this move. Gently press on the square indicated, lift up this piece and complete the move as if making this move for yourself and put down the piece on the square indicated. Please note to remove any captured pieces for the computer without applying any pressure on that square.

Note: When the EMERALD CLASSIC *plus* is computing (the black box will blink on the LCD) all key presses will be ignored except for the GO key which will interrupt its computing and force the current move being analyzed to be played at once.

b) Capturing a Piece

If the EMERALD CLASSIC *plus* makes a capturing move it will show on the LCD the symbol "**x**" and in case of En Passant pawn captures it will also show "**ep**". Please complete this move for the EMERALD CLASSIC *plus* and remove the captured piece without applying any pressure. If you wish to make a capture, make this move as for a normal one and remove the captured piece.

c) Impossible and Illegal Moves

The EMERALD CLASSIC *plus* is programmed in accordance with the International Chess Rules and does not accept nor make illegal moves. Corrections of illegal moves or mistakes in executing computer moves are very simple.

- If you try to make an illegal move, you hear 3 beeps and the LCD display will show the "**Error**" sign. Retract your move without pressing on any square. You can now make another legal move.
- If you try to move the wrong piece when executing a computer move, you hear 3 beeps and the rank and file LEDs of the correct square will light up. To execute this move correctly, press gently on the square indicated.

d) Castling

According to the rules, a castling move is first made with the King then with the Rook. The computer will indicate all the squares that you will need to press. The computer accepts and executes castlings in set-up board positions.

e) En Passant

If you make this special pawn capture you only have to enter the "**from**" and "**to**" squares of this move as in a normal move. Please remember to remove the captured pawn from the board and to gently press that square. When the computer makes an En Passant capture it will show the words "**ep**" along with an "**x**" on the LCD.



Official Rules of Chess:
A pawn attacking a square crossed by an enemy pawn which has been advanced two squares in one move from its original square may capture this enemy pawn as though the latter had been moved only one square. This capture may be made only on the move immediately following such an advance and is called capturing **En Passant**.

f) Pawn Promotion / Underpromotion

If one of your pawns reaches the opposite side of the board, the chess computer will allow you to promote or underpromote it to any desired piece.

As soon as this happens, the rank and file LEDs of the square flash and the word "**Pro ?**" will be shown on the display. You can now choose the pieces you want to promote to by pressing the respective **Piece Symbol Key**. The LEDs will disappear and the computer will start computing its counter-move.

If a computer pawn reaches the opposite side of the board, the computer indicates on the LCD display into which piece the pawn will be promoted/underpromoted.

The computer also accepts/executes pawn promotions in set-up board positions.

g) Stalemate and Draw

- The computer announces a Stalemate by the word "**dr StL**" on display.

The EMERALD CLASSIC *plus* recognizes the following special draw conditions as stated by the World Chess Federation:

- Draw due to insufficient material is announced by the word "**dr in5**" on display.
- 50 moves without a capture or a pawn moves is displayed with "**dr 50**".
- And 3 times repetition of position is displayed with "**dr 3rd**".

h) Check and Checkmate

Check announcements will be shown as a "**+**" sign on the right corner of the LCD display. If this check is the last check of the game i.e. checkmate, "**MATE**" will appear on the display along with the last move of the game and the winning color.

i) Mate Announcement

The EMERALD CLASSIC *plus* will always announce mate if it sees it and will show the numbers of moves to mate on the LCD. Example: "**n 4**" means Mate-in-4.

j) Resignation

If the computer believes its position is hopeless, it will announce "**rESiGn**" for resign. If you wish you might finish the game, however note, the computer will only once announce its resignation.

Note: If either side's time runs out, the LCD display will flash "**FLAG**". You may continue the game by entering the next move.

IV. SPECIAL FUNCTIONS

1) NEW GAME Key

Pressing NEW GAME will reset the computer's chessboard to the starting position. This key is effective even while in the special modes like SET UP, VERIFY and SET LEVEL.
Press NEW GAME every time you switch the computer on, or whenever you wish to commence a new game.

Note: The SET LEVEL, RANDOM and SOUND values will be retained.

2) SET LEVEL Key

Your NOVAG EMERALD CLASSIC *plus* has 128 different level settings (including Solve Mate Levels) to choose from. You can learn and improve your chess skills with this computer.

The levels are divided into 12 basic sections and are listed in 2 groups as described in this chapter. On the LCD you will see the following abbreviations for these 12 level sections:

Tr = Tournament Level Section - **At** = Average Time Section - **Ft** = Fixed Time Section - **Sd** = Sudden Death Section **Fd** = Fixed Depth Section - **An** = Analysis Section - **EA** = Easy Level Section - **BE** = Beginner Section
IN = Solve Mate Section - **Fn** = Fun Level Section - **EG** = End Game Section and **Gn** = Classical Game Section

As shown on the charts of LEVEL GROUP I and LEVEL GROUP II, each playing level corresponds to one of the 64 board squares. To set the computer to any of the 128 level settings, press the SET LEVEL key to select either LEVEL GROUP I or LEVEL GROUP II and then press the corresponding chess board square (A1, A2, to.....H8). On the LCD the chosen level setting will be displayed. To confirm the level setting and exit this mode press the GO key.

For example, if you wish to set level 12 (= Tr 12 of LEVEL GROUP I - Tournament Level Section), press the SET LEVEL key once or twice to select LEVEL GROUP I (the LCD will show "**LEtr1**") and then press square B4. This will be indicated by the corresponding rank and file LEDs as well as on the LCD. Once you have set the desired level press GO to exit this mode. Now you may enter your first move.

Note: You may check or change the playing levels at any time during a game, but not whilst the computer is calculating. If you wish you could interrupt the computing time and call-off a computer move instantly by pressing the GO key. This will be the best possible move the computer has calculated up to that moment.
If you switch the computer off to continue your game at a later time, or press the NEW GAME key, the previous set playing level will be retained provided you have batteries in your computer or it is connected to the adaptor.

Numbering system to select the playing levels on the chessboard:

LEVEL GROUP I:

	A	B	C	D	E	F	G	H
8	Tr8	Tr16	At8	At16	Ft8	Ft16	Sd8	Sd16
7	Tr7	Tr15	At7	At15	Ft7	Ft15	Sd7	Sd15
6	Tr6	Tr14	At6	At14	Ft6	Ft14	Sd6	Sd14
5	Tr5	Tr13	At5	At13	Ft5	Ft13	Sd5	Sd13
4	Tr4	Tr12	At4	At12	Ft4	Ft12	Sd4	Sd12
3	Tr3	Tr11	At3	At11	Ft3	Ft11	Sd3	Sd11
2	Tr2	Tr10	At2	At10	Ft2	Ft10	Sd2	Sd10
1	Tr1	Tr9	At1	At9	Ft1	Ft9	Sd1	Sd9

LEVEL GROUP II:

8	Fd8	An8	EA8	BE8	IN8	Fn8	EG8	Gn8
7	Fd7	An7	EA7	BE7	IN7	Fn7	EG7	Gn7
6	Fd6	An6	EA6	BE6	IN6	Fn6	EG6	Gn6
5	Fd5	An5	EA5	BE5	IN5	Fn5	EG5	Gn5
4	Fd4	An4	EA4	BE4	IN4	Fn4	EG4	Gn4
3	Fd3	An3	EA3	BE3	IN3	Fn3	EG3	Gn3
2	Fd2	An2	EA2	BE2	IN2	Fn2	EG2	Gn2
1	Fd1	An1	EA1	BE1	IN1	Fn1	EG1	Gn1
	A	B	C	D	E	F	G	H

DESCRIPTION OF THE 12 BASIC LEVEL SECTIONS:

LEVEL GROUP I:

- **TOURNAMENT LEVEL SECTION : Tr 1 - Tr 16**

  The Tournament Levels require you to make a specific number of moves within a given amount of time, which simulates a tournament game. There are 40 moves pre-set which have to be played within a fixed time, e.g. 40 moves in 120 min.

  (Please note that level Tr 8 is the strongest of this section). If you or the computer exceeds the specified time, the game will be declared lost.

Level		Description
Tr	1	40 moves in 4 min.
	2	40 moves in 5 min.
	3	40 moves in 8 min.
	4	40 moves in 10 min.
	5	40 moves in 15 min.
	6	40 moves in 20 min.
	7	40 moves in 30 min.
	8	40 moves in 40 min.
	9	40 moves in 50 min.
	10	40 moves in 60 min.
	11	40 moves in 70 min.
	12	40 moves in 80 min.
	13	40 moves in 90 min.
	14	40 moves in 100 min.
	15	40 moves in 120 min.
	16	40 moves in 150 min.

- **AVERAGE LEVEL SECTION: At 1 - At 16**

  The computer will use half of the specified time to calculate the counter-move and use the remaining time to complete the search. The time varies in the opening game, the middle game and end game position accordingly. The computer tends to play faster in the openings and endgame positions, but in complicated middle game positions it may take longer to make its move. Depending on the position the computer may take up to four times the set time on these levels.

Level		Description
At	1	5 sec. per move
	2	7 sec. per move
	3	10 sec. per move
	4	13 sec. per move
	5	20 sec. per move
	6	30 sec. per move
	7	45 sec. per move
	8	60 sec. per move
	9	75 sec. per move
	10	90 sec. per move
	11	100 sec. per move
	12	115 sec. per move
	13	135 sec. per move
	14	150 sec. per move
	15	175 sec. per move
	16	220 sec. per move

- **FIXED TIME LEVEL SECTION: Ft 1 - Ft 16**

  The computer will only use the time selected to calculate each counter-move.

Level		Description
Ft	1	2 sec. per move
	2	4 sec. per move
	3	6 sec. per move
	4	8 sec. per move
	5	10 sec. per move
	6	15 sec. per move
	7	20 sec. per move
	8	25 sec. per move
	9	30 sec. per move
	10	35 sec. per move
	11	40 sec. per move
	12	45 sec. per move
	13	50 sec. per move
	14	55 sec. per move
	15	60 sec. per move
	16	90 sec. per move

- **SUDDEN DEATH LEVEL SECTION: Sd 1 - Sd 16**

  On the Sudden Death Levels the computer will try to finish the game within the given time you have set. The time the computer uses for each move depends on the time already used so far and the actual position.
  If you or the computer exceeds the specified time control the game will be declared lost. To keep track of the remaining time these levels use countdown clocks. The total time clock starts at the set level (e.g. 20:00 on level Sd 5) and counts down to 00:00. When the clock reaches 00:00 you will hear 3 beeps and the LCD will show "**FLAG**". The side to move loses on time. If you wish you could continue to play and finish the game; in this case the total time will be displayed and will be counted continuously.

Level		Description
Sd	1	3 min. per game
	2	5 min. per game
	3	10 min. per game
	4	15 min. per game
	5	20 min. per game
	6	25 min. per game
	7	30 min. per game
	8	35 min. per game
	9	40 min. per game
	10	45 min. per game
	11	50 min. per game
	12	55 min. per game

13	60 min. per game
14	90 min. per game
15	100 min. per game
16	120 min. per game

LEVEL GROUP II:

- **FIXED DEPTH LEVEL SECTION: Fd 1 - Fd 8**

On these levels you set the computer's search depth and it can only search to the depth you have entered.
Please note that the time the computer needs to reach the set search depth will vary with the board position. As a general rule the computer needs 3 to 6 times as much time to reach the next depth as it is needed to reach the current depth.

Level		Description
Fd	1	search only 1 half move
	2	search only 2 half move
	3	search only 3 half move
	4	search only 4 half move
	5	search only 5 half move
	6	search only 6 half move
	7	search only 7 half move
	8	search only 8 half move

- **ANALYSIS LEVEL SECTION: An 1 - An 8**

These levels provide deeper searches for more complicated positions. On level An 8 the computer searches indefinitely until a Check Mate is found or you stop the search by pressing the GO key.

If the search is halted the computer makes the move it currently thinks is the best. On this level it might be very interesting to watch the computer analyze complicated positions four hours or even days!

Level		Description
An	1	search only 9 half move
	2	search only 10 half move
	3	search only 11 half move
	4	search only 12 half move
	5	search only 13 half move
	6	search only 14 half move
	7	search only 15 half move
	8	search INFINITELY

- **NOVICE LEVEL SECTION: EA 1 - EA 8**

&

- **BEGINNER LEVEL SECTION: BE 1 - BE 8**

These levels are designed for novice players. On these levels the computer restricts its search, which produces a weaker play giving the beginners a better chance of winning against the computer. The computer tends to search for more captures rather than trying to balance its game.

Level		Description
EA	1	1 ply full search + 2 ply capture search
	2	1 ply full search + 3 ply capture search
	3	1 ply full search + 4 ply capture search
	4	1 ply full search + 5 ply capture search
	5	1 ply full search + 6 ply capture search
	6	1 ply full search + 7 ply capture search
	7	1 ply full search + 8 ply capture search
	8	1 ply full search + 9 ply capture search

Level		Description
BE	1	2 ply full search + 2 ply capture search
	2	2 ply full search + 3 ply capture search
	3	2 ply full search + 4 ply capture search
	4	2 ply full search + 5 ply capture search
	5	2 ply full search + 6 ply capture search
	6	2 ply full search + 7 ply capture search
	7	2 ply full search + 8 ply capture search
	8	2 ply full search + 9 ply capture search

- **SOLVE MATE LEVELS SECTION: IN 1 - IN 8**

If you have a position where there might be a mate and you want the computer to find it, set the computer on one of the Solve Mate Levels. The EMERALD CLASSIC *plus* will search for the shortest possible solution to a mate problem up to Mate-in-8. If the computer discovers a forced mate it will display a mate announcement. If there is no mate present or the computer cannot find a mate you will see **"nonE"** on display.

Level		Description
IN	1	Solve mate in 1 problem
	2	Solve mate in 2 problem
	3	Solve mate in 3 problem
	4	Solve mate in 4 problem
	5	Solve mate in 5 problem
	6	Solve mate in 6 problem
	7	Solve mate in 7 problem
	8	Solve mate in 8 problem

Example: To solve a Mate-in-3 problem, setup the chess positions on your chessboard as shown on the diagram. To set up the board position proceed as follows:



→ NEW GAME key
→ SET UP key → SET UP key
→ CLEAR key
→ COLOR key to select WHITE
→ Set up all White pieces as described in section IV.14.
→ COLOR key to select BLACK
→ Set up all Black pieces as described in section IV.14.
→ COLOR key, it is White to move
→ GO key: to exit SET UP mode
→ LEVEL key → Set Solve Mate Level In-3
→ GO key: to exit LEVEL mode
→ GO key: to start the mate search

Solution:

	White	Black
1.	c2–d4	d3 x d4
2.	e5–g3+	f7–e5
3.	f5 x e5+	mate

- **FUN LEVEL SECTION: Fn 1 - Fn 8**

On these levels the computer makes some very human mistakes and plays almost instantaneously with very little strategy or tactical insight. Even rank beginners should be able to beat the computer on these levels!

Level		Description
Fn	1	2 sec. per move
	2	5 sec. per move
	3	10 sec. per move
	4	20 sec. per move
	5	30 sec. per move
	6	60 sec. per move
	7	120 sec. per move
	8	180 sec. per move

- **END GAME POSITION SECTION: EG 1 - EG 8**

EG 1 - LUCENA Position:

This is the basic winning method for King, Rook and Pawn versus King and Rook.
This specific position and winning method was first described by Luis Ramirez de Lucena in 1497. He also provided other helpful tips for playing chess such as 'Try to play soon after your opponent has eaten or drunk freely'.

Setting the END GAME POSITION EG 1:

- Press SET LEVEL key once or twice to select LEVEL GROUP II and then press square G1.
- Press GO to exit the level mode.
- **"Ver – –"** will appear on the display. Place the chess figures without applying pressure on the chessboard as shown on the diagram below and verify the position as described in section IV.13. Press now GO again and make the move for White.
- Should you make a move other than the indicated solution, the computer will show on the LCD **"Off bH"** . Take back this wrong move (by applying pressure on the respective squares) and try again.



Solution:

1	f1f4 h2h1	2	f4e4 e8d7
3	g8f7 h1f1	4	f7g6 f1g1
5	g6f6 g1f1	6	f6g5 f1g1
7	e4g4		

EG 2 - d5-OUTSIDE SQUARE:

This position comes from the famous book by Grand Master Ruben Fine "Basic Chess Endgames" (fig.51). The position demonstrates how to create a passed Pawn, which is outside the reach of the opponent's King by sacrificing a Pawn.

Setting the END GAME POSITION EG 2:

- Press SET LEVEL key once or twice to select LEVEL GROUP II and then press square G2.
- Press GO to exit the level mode.
- **"Ver – –"** will appear on the display. Place the chess figures without applying pressure on the chessboard as shown on the diagram below and verify the position as described in section IV.13. Press now GO again and make the move for White.
- Should you make a move other than the indicated solution, the computer will show on the LCD **"Off bH"** . Take back this wrong move (by applying pressure on the respective squares) and try again.



Solution:

1	d4d5 c6d5	2	b4b5 d5d4
3	h4g3 d4d3	4	g3f2 d3d2
5	f2e2 h6g5	6	b5b6

EG 3 - b6 - SNEAKY PAWN:

This position also comes from “Basic Chess Endgames” (fig.61) and illustrates another method of forcing a passed Pawn when the only advantage is that the White Pawns are more advanced than the Black Pawns.

Setting the END GAME POSITION EG 3:

- Press SET LEVEL key once or twice to select LEVEL GROUP II and then press square G3.
- Press GO to exit the level mode.
- **"Ver – –"** will appear on the display. Place the chess figures without applying pressure on the chessboard as shown on the diagram below and verify the position as described in section IV.13. Press now GO again and make the move for White.
- Should you make a move other than the indicated solution, the computer will show on the LCD **"Off bH"** . Take back this wrong move (by applying pressure on the respective squares) and try again.



Solution:

1 b5b6 a7b6	2 c5c6 b7c6
3 a5a6 b6b5	4 a6a7

EG 4 - KC2-IN FRONT OF PASSER:

This position is contrived to show the proper method of getting the King in front of a passed Pawn to aid the Pawn's advancement. If the Pawn is played forward first, then the opponent's King will be able to block the Pawn from ever queening.

Setting the END GAME POSITION EG 4:

- Press SET LEVEL key once or twice to select LEVEL GROUP II and then press square G4.
- Press GO to exit the level mode.
- **"Ver – –"** will appear on the display. Place the chess figures without applying pressure on the chessboard as shown on the diagram below and verify the position as described in section IV.13. Press now GO again and make the move for White.
- Should you make a move other than the indicated solution, the computer will show on the LCD **"Off bH"** . Take back this wrong move (by applying pressure on the respective squares) and try again.



Solution:

1 d1c2 f8e7	2 c2b3 e7d6
3 b3b4 d6c6	4 b4c4 c6d6
5 c4c5 d6c7	6 6b5c 5c7d
7 c5b6 d7c8	8 b6c6 c8d8
9 c3c4 d8c8	10 c4c5 c8d8
11 c6b7 d8d7	12 c5c6 d7d6
13 c6c7	

EG 5 - PAWN SACRIFICE FOR KING IN FRONT:

This position is also derived from Fine's book (fig 30). The winning method shows how to again sacrifice a Pawn in order to force the King to be on the 6th rank in front of a passed Pawn. This wins no matter which side has the move.

Setting the END GAME POSITION EG 5:

- Press SET LEVEL key once or twice to select LEVEL GROUP II and then press square G5.
- Press GO to exit the level mode.
- **"Ver – –"** will appear on the display. Place the chess figures without applying pressure on the chessboard as shown on the diagram below and verify the position as described in section IV.13. Press now GO again and make the move for White.

– Should you make a move other than the indicated solution, the computer will show on the LCD **"Off bH"** . Take back this wrong move (by applying pressure on the respective squares) and try again.



Solution:

1	d6d7 d8d7	2	e5f6 d7d8
3	f6e6 d8c7	4	e6e7 c7c8
5	e7d6 c8b7	6	d6d7 b7b8
7	d7c6 b8a7	8	c6d7 a7a6
9	c5c6		

EG 6 - DISTANT OPPOSITION:

This position is contrived to show the 'distant opposition'. The method is to not move the White King directly forward but instead move sideways so that if the Black King moves forward. White can gain the 'distant opposition' or simply go and take the nearer Pawn. Such subtleties are what make chess endgames so interesting.

Setting the END GAME POSITION EG 6:

– Press SET LEVEL key once or twice to select LEVEL GROUP II and then press square G6.
– Press GO to exit the level mode.
– **"Ver – –"** will appear on the display. Place the chess figures without applying pressure on the chessboard as shown on the diagram below and verify the position as described in section IV.13. Press now GO again and make the move for White.
– Should you make a move other than the indicated solution, the computer will show on the LCD **"Off bH"** . Take back this wrong move (by applying pressure on the respective squares) and try again.



Solution:

1	e2d2 d8e8	2	d2c3 e8d7
3	c3d3 d7e6	4	d3e4 e6f6
5	e4d5 f6f7	6	d5c5 f7e6
7	c5b5 e6d5	8	b5a5 d5c5
9	a5a6 c5c6	10	a4a5 c6c7
11	a6b5 c7b7	12	b5c5 b7a6
13	c5d5 a6a5	14	d5e5

EG 7 - QUEEN vs KING and KNIGHT PAWN:

This position is also derived from Fine's "Basic Chess Endings" (fig. 544). The method shows how the Queen is used to check the opponent's King until the opponent's King blocks the advancement of the Pawn, at which point the other King steps closer until finally mate is delivered. It should be noted that because of stalemate possibilities this method does not work against a Pawn on the Rook or Bishop file on the 7th rank. Normally such positions will be drawn.

Setting the END GAME POSITION EG 7:

– Press SET LEVEL key once or twice to select LEVEL GROUP II and then press square G7.
– Press GO to exit the level mode.
– **"Ver – –"** will appear on the display. Place the chess figures without applying pressure on the chessboard as shown on the diagram below and verify the position as described in section IV.13. Press now GO again and make the move for White.
– Should you make a move other than the indicated solution, the computer will show on the LCD **"Off bH"** . Take back this wrong move (by applying pressure on the respective squares) and try again.



Solution:

1	c8h3 h1g1	2	c7d6 g1f2
3	h3h4 f2f1	4	h4f4 f1e2
5	f4g3 e2f1	6	g3f3 f1g1
7	d6e5 g1h2	8	f3f4 h2h1
9	f4h4 h1g1	10	e5e4 g1f1
11	h4h3 f1f2	12	h3f3 f2g1
13	e4f4 g1h2	14	f3h5 h2g1
15	f4g3 g1f1	16	h5d1

EG 8 - KNIGHT and BISHOP MATE:

This position is again from "Basic Chess Endings" (fig 5) and shows the proper method to mate with Bishop and Knight versus the lone King. This is the most difficult of the basic mates. To mate with Knight and Bishop it is necessary to do so in the corner of the board, which is of the same color as the Bishop. The matter is complicated by the fact that it is impossible to directly drive the King to one of the correct corners. Hence, the King must first be driven to the corner, which is not the same color as the Bishop, then use this method to drive the King into the correct corner where mate is administered.

Setting the END GAME POSITION EG 8:

- Press SET LEVEL key once or twice to select LEVEL GROUP II and then press square G8.
- Press GO to exit the level mode.
- **"Ver – –"** will appear on the display. Place the chess figures without applying pressure on the chessboard as shown on the diagram below and verify the position as described in section IV.13. Press now GO again and make the move for White.
- Should you make a move other than the indicated solution, the computer will show on the LCD **"Off bH"** . Take back this wrong move (by applying pressure on the respective squares) and try again.



Solution:

1	d3e4 g8f8	2	e4h7 f8e8
3	f7e5 e8d8	4	f6e6 d8c7
5	e5d7 c7b7	6	h7d3 b7c6
7	d3a6 c6c7	8	a6b5 c7d8
9	d7b6 d8c7	10	b6d5 c7d8
11	e6d6 d8c8	12	d6e7 c8b7
13	e7d7 b7b8	14	b5a6 b8a7
15	a6c8 a7b8	16	d5e7 b8a7
17	d7c7 a7a8	18	c8b7 a8a7
19	e7c6		

- **CLASSIC GAME SECTION: Gn 1 - Gn 8**

Gn 1 - LEGALS's MATE:

This pretty check mate idea comes down to us from M. de Kermur Legal (1702-1792). Many an unwary beginner may be caught in this trap which is so exciting because of the sacrifice of the Queen.



Solution:

1	f3e5 g4d1	2	c4f7 e8e7
3	c3d5		

Gn 2 - CLASSIC BISHOP SACRIFICE:

This position shows a variation of the classical Bishop's sacrifice which comes out of a French Opening. By sacrificing the Bishop, White destroys the Black King position and then engages in what is known as a “King hunt”. When Black plays the French defense in particular it is always wise to keep a lookout for the possibility of this sacrifice.



Solution:

1	d3h7 g8h7	2	f3g5 h7g8
3	d1h5 f8d8	4	h5f7 g8h8
5	f2f4 c7d7	6	f1f3 e7f5
7	f3h3 f5h6	8	f7g6 h8g8
9	h3h6 c6d4	10	h6h8 g8h8
11	g6h7		

and ...

2	h7g6	3	d1g4 f7f5
4	g4h4 f5f4	5	h4h7 g6g5
6	h2h4 g5g4	7	f2f3 g4g3
8	h7g7 e7g6	9	g7g6 g3h4
10	g6g4		

Gn 3 - Qxc6 and Ba6 MATE:

A nice combination by Esteban Canal, White sacrifices both Rooks to allow a pretty Queen sacrifice ending in checkmate



Solution:

1	a3b4 a5a1	2	e1d2 a1h1
3	f3c6 b7c6	4	e2a6

Gn 4 - PHILIDOR's LEGACY:

This pretty mating idea has been known since the time of Philidor (late 18th Century). The finish is a pretty smothered mate following the Queen sacrifice.



Ssolution:

1	f3d5 g8h8	2	g5f7 h8g8
3	f7h6 g8h8	4	d5g8 d8g8
5	h6f7		

Gn 5 - MORPHY MATE:

This position comes from a famous game played by Paul Morphy versus the Duke of Brunswick and the Count Isouard during a performance of “The Barber of Seville” in 1858. The culmination of the attack is a strong statement of the importance of development. Paul Morphy's superior development crashes though in fine fashion.



Solution:

1	c3b5 c6b5	2	c4b5 b8d7
3	e1c1 a8d8	4	d1d7 d8d7
5	h1d1 e7e6	6	b5d7 f6d7
7	b3b8 d7b8	8	d1d8

Gn 6 - ED LASKER MATE:

The sparkling Queen sacrifice played by Edward Lasker shows how the opponent's King can be hunted down when driven out from the protection of the castled king position.



Solution:

1	h5h7 g8h7	2	e4f6 h7h6
3	e5g4 h6g5	4	h2h4 g5f4
5	g2g3 f4f3	6	d3e2 f3g2
7	h1h2 g2g1	8	e1c1

Gn 7 - TORRE QUEEN SACRIFICE:

Actually, this brilliant series of Queen offers was made by the American amateur E.B. Adams against the Mexican Grandmaster Carlos Torre ! The combination exploits the weakness of Black's back rank.



Solution:

1	d4g4 d7b5	2	g4c4 b5d7
3	c4c7 d7b5	4	a2a4 b5a4
5	e2e4 a4b5	6	c7b7

Gn 8 - LASKER 2 BISHOP SACRIFICE:

This excellent example of a double piece sacrifice to expose the enemy King position comes from a game played by World Champion Emanuel Lasker against Bauer in 1889.



Solution:

1	d3h7 g8h7	2	e2h5 h7g8
3	e5g7 g8g7	4	h5g4 g7h7
5	f1f3 e6e5	6	f3h3 c6h6
7	h3h6 h7h6	8	g4d7

Note: If you exit the **EG** or **Gn** Level by pressing the GO key, the computer will change into verify mode which requires you to set up the chess pieces according to the game position you have selected. Press the GO key again to exit the Verify mode once you have checked that all chess pieces are correctly placed. Then execute your move. If your move is correct, the computer will respond with its counter-move. However, if your move is not correct, the computer will alert you with 2 beeps and the LCD display shows "**oFF BH**". You may then take back your previous made move and try the next move or press the GO key to force the computer to calculate the counter-move. At the end of the move list the computer displays "**End BH**".

At the "**oFF BH**" or "**END BH**" situation the INFINITE Level (An 8) time control setting will be used to calculate the move infinitely. (Please refer to INFINITE Level (An 8) for details).

Whenever you press NEW GAME key and RESTORE key this will take you to the beginning of the selected game.

3) SOLVE MATE FUNCTION (use key marked SET LEVEL)

The NOVAG EMERALD CLASSIC *plus* can solve most chess problems as well as mate problems up to Mate-in-8 even those that require castlings, en passant captures or pawn promotion / underpromotions. Press NEW GAME and set up the required board position. Before you start the mate search, it is advisable to verify the set-up board position via the VERIFY key and make sure that the color to move is correct, if not, change this by pressing the CHANGE COLOR key.
To set the depth of mate search press the SET LEVEL key until the correct indication "**in 1**" shows on the display. Select now the number of moves to mate by pressing any of the squares G1 to G8.
Press the GO key once to exit the setting of the mate search and then press GO a second time and the computer begins with the mate search.

If there is no solution you will see "**no nE**" on display. Whilst the computer is searching it will show the main variations that it is presently considering and will rotate a variety of information on the LCD display in the following order:

a) Time used up so far (example : " 01 : 35 ")
b) First move of main line (example : " G5 G4 ", display of the most anticipated next move for Black).
c) Second move of main line (example : " F3 H4 ", display of the thereafter expected counter-move for White).
d) Third move of main line (example : " D6 D5 ", display of the anticipated counter-move for Black).
e) Evaluation of the position = score from computer's point of view (example : " 0 21 ", means + 0.21 pawns up).
f) Depth of search (d 6 means now searching 6 half moves).
g) Iterations not completed (29 30 means 29 out of 30 still to be calculated).
h) If there is no solution you will see "**no nE**" on display.

4) GO Key

The GO key is used to enter a command or to exit from the following special functions:

SET UP / VERIFY / SET LEVEL / AUTOPLAY or DEMO / SOLVE MATE. These functions are explained in their respective paragraphs.

Furthermore the GO key is used:

- To make the EMERALD CLASSIC *plus* compute for the side to move, even if in REFEREE mode.

- To interrupt the computing time and call-off a computer move instantly. The computer will make the move it currently considers the best. Please allow at least 5 seconds of search time before pressing this key in order to let the computer calculate a reasonable move. The evaluations of these moves do not correspond with the evaluation of the set-up level.

- To change sides during a game. Wait until it is your turn to move then press GO. The computer will now compute a move for your color, and you will play the other color from now on.

- To let the computer play against itself, which might be of special interest at a certain point during the game or for learning purposes. Every time you press GO the computer calculates for the side to move. All moves will be computed according to the set skill levels.

- To accept a HINT. If a hint is shown on display, pressing GO accepts the hint as though keyed in.

5) RANDOM Key

Every time you switch the computer on automatically the move with the highest rating is chosen, based on the depth of the search which is determined by the skill level. This is always the case after the opening is finished. However, this may not always provide the desired variety.

If you press the RANDOM key you can choose various levels of randomness (**rAnd /r And - / rAnd = / rAnd ≡**) Level "**rAn**" is the least random. The computer will select a move at random from a list of possible moves, which are similar in their evaluation.

6) REFEREE Key

In this mode you disable the computing of moves by the computer so you may make moves for White and Black, while the computer still checks their legality. This feature may be used to enter particular book openings or to allow 2 players to challenge each other.

You may enter into this mode at the beginning or during a game before you make your next move. Press the REFEREE key and the LCD will show "**rEF ≡**" if REFEREE mode is on and just "**rEF**" when it is off. Press REFEREE while displayed to change the current status. The following features are still available whilst in this mode:

TAKE BACK / CHANGE COLOR / HINT / SET UP / VERIFY / SOUND / GO.

7) HINT Key

The EMERALD CLASSIC *plus* can suggest moves if you are not sure how to continue your game which is a great tutoring feature. When it is your turn press the HINT key and the computer will show the move it considers the best for the color to move (the move will be shown on display). You can accept any suggested move or may make a move of your choice even whilst a HINT is being displayed. If you accept the suggested move simply press GO and the computer will immediately reply with its counter-move.

If you press the HINT key whilst the computer is calculating, the display will show the move the computer would play if the GO key was pressed. Press CLEAR key to clear the LCD display and go back to the rotating info display.

The suggested move is the best possible move in this position computed by the computer at the level preset by you.

8) TRAINING Key

This function is to help the novice player:

Step One :
When it is your turn to move press the TRAINING key and the computer will show the "**from**" square (indicated by the lit up LEDs and on the LCD) of the first piece with a legal move.
If you continue to press the TRAINING key, the EMERALD CLASSIC *plus* will show you all pieces with at least one legal move. You may cycle through this step as often as you wish.

Step Two :
Once you have selected a piece, press GO to have this square accepted as though keyed in. If a "**from**" square has been entered then each press of the TRAINING key will show now each legal "**to**" square by this piece.

Step Three :
If you accept the move as displayed, press the CLEAR key to clear the display and then key in this move. The computer will then make its counter-move.

If you wish to make a move other than displayed clear first the display by pressing the CLEAR key and then execute the move of your choice.

Should you wish to go back to Step One, use the CLEAR key to reset the LCD display and then press the TRAINING key to go to Step One.

9) TAKE BACK Key

The EMERALD CLASSIC *plus* allows you to take back 112 half moves to enable you to rectify an earlier mistake or to play a different strategy.

Wait until it is your turn to move. Press the TAKE BACK key and the move is shown on display and the LEDs of the "**to**" square are on. Execute this move as any other ordinary one, i.e. by applying pressure on both squares as indicated.

Every time you press TAKE BACK the computer will reverse the last move. If a captured piece has to be replaced, the rank and file LEDs of that square light up and the piece type and square is also shown on the LCD. Place the captured piece on that square by applying gently pressure and the LEDs will disappear. To exit this mode makes your next move or ask for the computer's next move by pressing the GO key.

For your convenience and additional option the EMERALD CLASSIC *plus* offers a direct Take Back feature:

You do not have to press each time the TAKE BACK key before taking back your last move. Wait until it is your turn and then simply take your last move back by pressing the last "**to**" and "**from**" squares of the chess piece you wish to take back.

The next move to be taken back will be indicated on the LCD display as well as by flashing LEDs. Using this method you may take back up to 112 half moves. You can continue the game any time by either making a move for your side or pressing the GO key to recall a computer move.

Note: If you select the CHANGE COLOR or SET UP function to alter the position of any of the pieces, all prior moves will be deleted and you may not TAKE BACK moves before the change of color or position. If no moves are in the game history the LCD will show "**bEG in**".

10) TRACE FORWARD Key

This key is mainly used for tracing forward all moves after using the TAKE BACK or RESTORE function. Every press of this key will replay a move of the current game until all moves in memory have been replayed. This is indicated by the word "**En d**" on the LCD.

11) CHANGE COLOR Key

The computer is generally set to play Black and you White. If you wish to play Black in a new game, set up the Black pieces on rank 1 and 2 and the White ones on rank 7 and 8, in that case disregard the notations along the chessboard.

Now press: NEW GAME key - CHANGE COLOR key - GO key

The computer will make its opening move for White from the top of the board and you will have your Black pieces in front of you.

The CHANGE COLOR key can be pressed at any time during a game and the color to move will be reversed. Any moves made prior to pressing this key will be erased and the game history will begin with this position.

If you are in the SET UP mode you can choose the color to move first via the CHANGE COLOR key (see section IV.14.). Should you wish to take over the computer's game simply press the GO key. The computer will now compute a move for your color and you will play the other color from now on.

12) CLEAR Key

This key has several uses:

- In SET UP mode this key clears the board of all the pieces.
- If there are messages on the LCD display like "**rAnd ≡**", "**EASY ≡**" etc. You can clear them by pressing this key.
- If you start entering a move and wish to cancel it you may press this key to clear the LCD display and start over again.

13) VERIFY Key

This key has a double function:
a) On the first press you will enter the VERIFY mode and the LCD will show "**VEr – –**".
b) On the second press you will enter the SET UP mode and the LCD will show "**SEt – –**".
c) To exit either of these modes presses the GO key.
At any point in a game or after entering a board position you can check the position of any number of pieces. You can also check each square to see if it is occupied and by which piece. In this mode there are two ways to verify the position of pieces.

- Choose the piece(s) to be verified via the **Piece Symbol Keys** one after the other and as often as needed. The piece symbol and its square position appears on display and the rank and file LEDs of the corresponding square will light up accordingly.
  If there are no pieces or no more pieces (to be verified) on the board the display will just show the symbol of the piece and the right side of the LCD will be blank.

- Press any square and check the information on display. If the square is occupied, the **Piece Symbol**, the correct **Color Sign** and the corresponding **Square Position** will appear on the LCD.
  If the square is not occupied, you only see the square position but not the piece symbol and its color on display.

You may exit this mode any time by pressing the GO key. Enter now your next move or call off a move for the computer.

14) SET UP Key

This mode is designed to enable you to set up board positions to solve chess problems or to set handicaps by removing or entering a piece, as well as changing the positions of pieces. In SET UP mode the computer's legality check as to the movement of pieces is disabled and you can enter, remove or change positions of any piece. However you cannot set up an incorrect position, e.g. play without both Kings or with more than one King for each color. . . . etc.

If you exit the SET UP mode with an illegal position, you will hear three beeps and the "**Error**" sign will be on display. Use the VERIFY mode to see what is illegal about the position.
The computer will accept and execute castlings, pawn promotion and en passant captures if you play from a set up board position.

Note: All previous stated moves are canceled as soon as you enter the SET UP mode.

To enter this mode press the SET UP / VERIFY key twice or if you are already in the VERIFY mode once. You will see the word "**SE t – –**" on display. To exit this mode press the GO key or change to the VERIFY mode.

a. Removing a piece :

If you wish to remove one or more pieces proceed as follows:
- Press the SET UP key twice, so that "**SE t – –**" comes on display.
- Remove the piece(s) one by one by applying gentle pressure. The piece symbol and the position of each square appear on display.
- To end this mode press GO.
- If necessary change colors via the CHANGE COLOR key then enter your next move or call off a computer move.

b. Entering a piece :

If you wish to enter one or more pieces proceed as follows:
- Press the SET UP key twice, so the "**SE t – –**" comes on display.
- You can change the color of the piece(s) to be entered with the CHANGE COLOR key.
- Select the piece to be entered via the Piece Symbol Key and the respective piece symbol comes on display.
- Enter the piece by gently pressing it on the desired square and the respective rank and file LEDs will light up.
- Subsequent pieces of the same kind and same color can be entered without using any further function keys.
- Only change color or use the Piece Symbol Key if the piece varies from the preceding piece.
- To end this mode press GO.

c. Moving a Piece to another Square:

If you wish to change the position of one or more pieces whilst the game is in progress proceed as follows:
- Press the SET UP key twice, so the "**SE t – –**" comes on display.

– Move the piece(s) by proceeding as you would in a normal move (the rank and file LEDs light up and on display you will see this move).
– To end this mode press GO.

d. Clear the entire board:

If you want to set up a board position it is best to clear the entire chessboard before entering the desired position. First remove all pieces from the board and set up your new position without pressing down on any square; then enter this position as follows:

– Press the SET UP key twice, so the "**SE t – –**" comes on display.
– Now press CLEAR key to cancel all pieces from the computer's memory (on the LCD display first "**cLEAr**" and immediately after "**SE t – –**" will appear).
– Now enter your position piece by piece into the computer as described above.
– To end this mode press GO.
– The color to move can be changed via the CHANGE COLOR key.

Note: After having left the SET UP mode if a change of color is required press the CHANGE COLOR key. You may now enter a move for the indicated color or make the computer move by pressing the GO key.

15) RESTORE Key

This function of the EMERALD CLASSIC *plus* allows you to restore the board position to the very beginning of the game. The computer can store 112 half moves in its memory, which normally will allow you to go back to the new game position. If, however the game was started from a SET UP position or if more than 112 half moves have been played the game will not be at the new game position. After pressing the RESTORE key the display will show "**bEG in**" and then [] to indicate the beginning of the game history.

Note: You may use the complementary function key TRACE FORWARD to replay through the entire game.

Should you enter a move for your color you will erase all of the game history and the computer will treat this as a new game.

16) SOUND KEY

The EMERALD CLASSIC *plus* has four different sound settings, which will be indicated on the LCD display.

Setting 1 (**Sound**) : There will be no acoustic signals at all.
Setting 2 (**Sound –**) : There will be an acoustic signal only when the computer answers with its counter-move.
Setting 3 (**Sound =**) : There will be an acoustic signal when pressing any key and when the computer or you make a move. This setting will be automatically on when you start a new game position.
Setting 4 (**Sound ≡**) : In addition to the same sound setting as mentioned under Setting 3, there are two more features available on Setting 4:

a) ***Piece warning feature:***
If one of your higher value piece is threatened you will hear a double beep to warn you and you will see the square position and the piece symbol of the threatened chess piece on display. This is valuable learning feature for the novice player.

b) ***Opening book tutoring:***
The EMERALD CLASSIC *plus* has a built-in opening book of about 8900 half moves.
When you play a game from a New Game position and you are making a move "off book" the computer will warn you with a double beep and the LCD display will show **"OFF BH"** indicating that your move is not played according to the opening book list.

The LCD will keep your "off book" move displayed until you confirm this move by pressing the GO key or take back your “off book” move (see section IV.9.) and make another move which corresponds to the openings list.
Once the book move line is completed and terminated, this will be indicate by **"EndBH"** on the LCD display.
Make use of this interesting feature to learn more about the opening book game.

17) AUTOPLAY Key

Your computer may be set to play against itself and you may want to do this to watch an interesting game or to analyze a problem position overnight.

Press the SET LEVEL key and select the level of skill. Press now the AUTOPLAY key and select the required setting (display shows "**Auto≡**", "**demo≡**" or "**nor**"). To start any of the selected settings press the GO key. This immediately starts the EMERALD CLASSIC *plus* playing against itself at the current level setting. All moves are executed automatically by the computer and are shown on the LCD display. You may keep track of the game by making the moves on the board.

Setting " **Auto≡**" = autoplay on : will allow the computer to play against itself until the end of the game (1 game only).

Setting " **demo≡** " = demo on : will allow the computer to play against itself continuously (at the end of a game the computer will restart with another game).

Setting " **nor** " : means autoplay and demo mode are off.

Note: To exit this mode whilst the computer is still executing opening moves, press the NEW GAME key but please bear in mind that this will cancel the current game.

Once the game is more advanced (out of the opening book) you can press the GO key to exit the AUTOPLAY mode. The move currently being calculated will be executed before the computer exits this mode.
If you want to learn more about chess we suggest to call off single moves for each side via the GO key, which gives you more time to study each move.

18) INFO Key

This key provides information on the current game as it progresses and has a rotational display to show many messages.

- First press on the INFO key shows the time of the side to move, (on display you will see the message "**totAL**" for 1 second and the color symbol of the side whose clock is being shown).

- Second press on the INFO key shows the time of the side not to move, (format as above).

- Third press on the INFO key shows the evaluation of the current position adjusted to the number of pawns advantage or minus so many pawns disadvantage.

The LCD shows "**ScorE**" and then some figures like "**o 41**" which means almost half a pawn advantage to the side to move. Disadvantageous evaluations are marked with a " **–** " sign. For example if the computer sees it is going to be mated then the score could be "**– n 03**"

- Fourth press on the INFO key will show the number of moves made so far. (The display will show "**count**" and the color symbol and after 1 sec. the number of moves made so far).

Note: Use the CLEAR key to clear the INFO display. When the computer is thinking the display will show either the rotating display or one of the above INFO displays. To get back to the rotating display press the CLEAR key again.

Once the computer has finished it's computing, the INFO display will disappear and the display will show the computer's next move.

The rotating displays are:

– The time spent on the current search.
– The first 3 ply of the best line found so far.
– The score displayed as above.
– The current depth of search.
– The number of legal moves in current position still needed to search out of total number of legal moves.

Note: Each display stays for 2 seconds.

19) EASY Key

The EMERALD CLASSIC *plus* always uses the opponent's time to compute its best response which is quite an advantage as it will sometimes reply instantly (even if the move appears difficult) since it has predicted your move and completed its assessment of your move. To disable this advantage please use the EASY key. When this mode is activated you will see the message "**EASY ≡** " on the LCD and if turned off you will see "**EASY**". This key acts as a toggle with alternate key presses turning it ON and OFF.

20) NEXT BEST Key

It may be of interest to you to know which move in a given position is the next best choice with its evaluation equal or just less than the move just played by the computer.

- To activate this function press SET LEVEL then NEXT BEST. The LCD display will show "**Alt**" and the previous made move will be shown in reverse order on the LCD and via the corresponding rank and file LEDs. Please execute this TAKE BACK for your chess computer and remember to replace any captured pieces. The moment that you have completed this TAKE BACK the computer will immediately compute the best alternative move in the current position and if there is none then the same move will be played.

- NEXT BEST MODE to solve mate problems:
  If there are more possibilities to solve a mate problem you can ask the computer to find a second solution. Execute first the move you wish to move and then press SET LEVEL - NEXT BEST. Now please take back the first suggested move and your chess computer will start to compute the next best move.

IV. APPENDIX

A. Care of the NOVAG chess computer

Dirt or dust can be removed with a soft cloth. Do not use any chemical solvents or water on the set. Any damage caused by their use invalidates the warranty.

Always keep the computer in a dry and cool place (normal room temperature). Avoid exposing the computer to heat, e. g. spot lights, radiators, sunshine etc. as this may lead to permanent damage caused by overheating, which is not covered by the warranty.

Warranty: **For details please refer to the enclosed Warranty Card.**

B. Trouble shooting list

All NOVAG chess computers are extensively tested before leaving the factory to ensure trouble free operation. However if you encounter problems when using the NOVAG EMERALD CLASSIC *plus* please refer to the list below before sending the unit back to your dealer.

1. The computer does not work and the LCD is blank. Please check if your batteries have sufficient charge; always use heavy duty or **alkaline batteries** for reliable performance.

2. The letters on the LCD display are faint and get dimmer as you use your chess computer. The batteries are run down, please change them.

3. The chess computer keeps returning error messages ("**Error**") on entering moves. Please check that your position is correct using the VERIFY function (see section IV. 13). Or if the computer is requesting you to enter a pawn promotion please press one of the Piece Symbol keys.

4. The EMERALD CLASSIC *plus* locks up and will not respond to any key press or all light up and the computer is completely blocked. Please reset the computer by following these instructions:

- Switch off the chess computer, turn it on its back and locate a hole marked RESET.
- Use a thin instrument (ball pen) to poke into this hole and hold it for 5-10 seconds.
- The memory has been reset and you may continue using your EMERALD CLASSIC *plus* normally.

5. The blinking of the LEDs is slower:
The power of the batteries is insufficient, please change the batteries.

6. One of the LEDs does not light up:
Go into the VERIFY mode and check all the rank and file LEDs by pressing on every square. If that particular LED still does not light up, you have to send your computer in for service.

7. One of the squares does not register a move:
Go into VERIFY mode and check the square. Depending whether it is occupied or not, you should get a positive response. If you get any type of response the square is in working order, you may have entered something irregular. If, after several attempts, there is no response on that particular square, you will have to send the computer in for service.

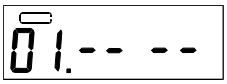
C. Technical Data and Features

• Progamme Size	32K Byte ROM (Read-Only-Memory)
1K Byte RAM (Random-Access- Memory)	
• System Clock Speed	26.6 MHz
• RISC Style Processor	
• Power Supply	50 mA max.
• Power Consumption	450 mW max.
• Batteries	6 x 1.5V UM-2 or size "C" **alkaline** batteries
• Battery Playing Life	250 hours
• Adaptor	9V DC rating 100mA (Art. No. 8210)
• Opening Book	more then 8900 halfmoves
• Playing levels	128
• Game Memory	Game kept on power off and will keep while the batteries last
• Takes Back Moves	112 half moves
• Hint and Training function	
• Estimated ELO (USA)	2294
• Solves Mate	up to Mate-in-8
• Mate Announcement	up to Mate-in-8
• Depth Search	18 half moves
• Elegant Slim Board	370 x 266 x 35 mm

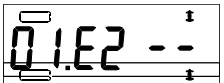
Technical data subject to change without notice in the interest of progress.

D. EXAMPLES OF THE DISPLAY:

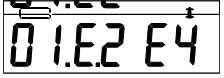
The following are examples of the most important displays of the NOVAG EMERALD CLASSIC *plus*.



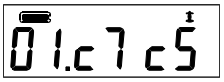
This display indicates that the computer is ready and it's your move.



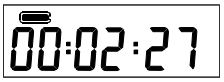
Display after input of the first half move, the location where you wish to move FROM.



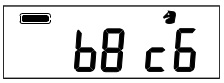
Display after input of the destination square that you wish to play TO.



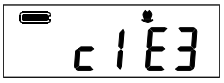
Display of the computer's counter-move.



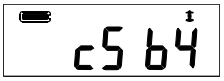
INFO-Display: Shows the total time used so far for Black, while the computer is computing.



INFO-Display: The computer's counter move.



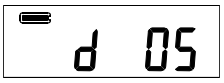
INFO-Display: The EMERALD CLASSIC *plus* expects this move after the previous b8 c6.



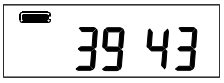
INFO-Display: On c1 e3 this would be the computer's reply.



INFO-Display: Score for Black currently being computed.



INFO-Display: Number of half moves the computer has searched so far



INFO-Display: Out of 43 variations there are still 39 to compute.



INFO-Display: The display for the scoring is selected and will appear after 1 second.



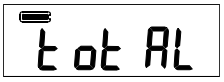
INFO-Display: Position evaluation for White, and it is White to move.



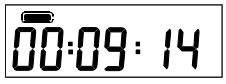
INFO-Display: Shows that the total time for White is selected and will appear after 1 second.



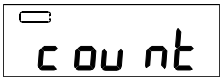
INFO-Display: Shows the total time used by White so far.



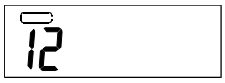
INFO-Display: Shows that the total time for Black is selected and will appear after 1 second.



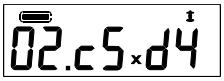
INFO-Display: Shows the total time used so far for Black so far.



INFO-Display: The display for the number of moves is selected and will appear after 1 second.



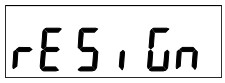
INFO-Display: Shows the total number of moves made so far.



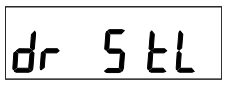
The piece on square d4 gets captured during Black's moves c5 x d4.



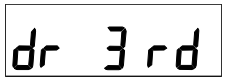
Any illegal move or input will be indicated by the ERROR message.



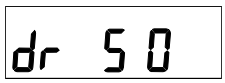
The EMERALD CLASSIC *plus* resigns the game.



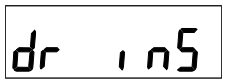
Shows the announcement for a draw, due to stalemate.



Shows a draw with 3 time repetition of the position.



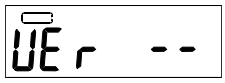
Shows a draw according to the 50 move rule.



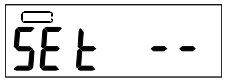
Draw due to insufficient mating material (see F.I.D.E. rules)



The announcement of a checkmate.



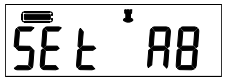
The VERIFY-Function is selected and you may verify the position of any piece on the board.



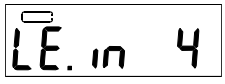
The SET UP-Function is selected and you may remove or add any chess piece to make up a new position.



The use of the CLEAR BOARD key is confirmed.



A Black Rook is set up on square a8 by using the SET UP-Function.



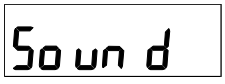
A mate-in-4 is entered by using the SOLVE MATE-Function.



The AUTOPLAY-Function is on and the EMERALD CLASSIC *plus* will start playing itself after pressing GO.



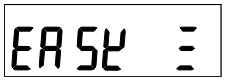
The REFEREE-Function is activated by pressing the REFREE key.



The SOUND is switched off.



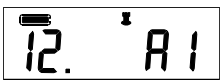
The RANDOM-Function is activated.



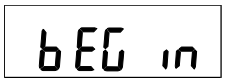
The EASY-Mode is activated.



The computer asks into which piece your pawn will be promoted/under promoted.



The EMERALD CLASSIC *plus* wishes to promote its pawn, which has just moved onto the square a1 and request a Rook in its place.



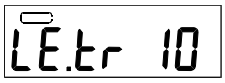
Shows that the game is set back to the beginning of the game by activating the RESTORE key.



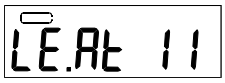
The last move of the game has been made, there are no other moves stored in the memory.



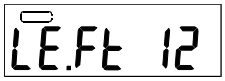
The SET LEVEL key has just been pressed. You will see the selected level after 1 second.



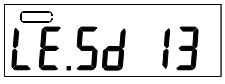
Tournament level 10 has been selected and is now effective.



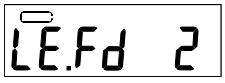
Average Time playing level 11 has been selected and is now effective.



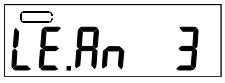
Fixed Time level 12 has been selected and is now effective.



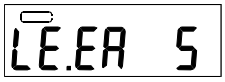
Sudden Death playing level 13 has been selected and is now effective. Clocks will count down to zero time.



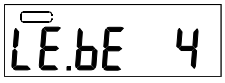
Fixed Depth playing level 2 is selected and now effective. The computer will only analyze every move for only 2 half moves.



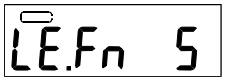
Analysis level 3 is selected and is now effective.



Easy level 5 is selected and is now effective.



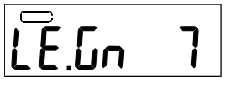
Novice playing level 4 is selected and the EMERALD CLASSIC *plus* will play less strongly.



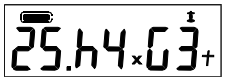
Fun level 5 is selected and is now effective.



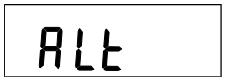
End Game No. 6 is selected and is now effective.



Classical game No.7 is selected.



Black's Pawn move was from h4 and captures on the square g3 and announces check.



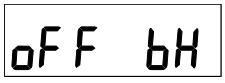
The NEXT BEST-Function has been selected and you will be prompted to take back the last move. Computing will then begin.



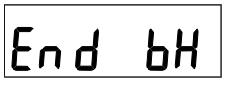
The computer announces a mate-in-1, the game is lost for you.



Time out.



Off book.



End of the book.

VI. RULES OF CHESS

I. GENERAL MOVES

1. The two players must alternate in making one move at a time. The player with the white pieces moves first to start the game.
2. With the exception of castling (section II.1.), a move is the transfer of a piece from one square to another square, which is either vacant or occupied by an enemy piece.
3. No piece, except the Rook when castling and the Knight (section II.5) may cross a square occupied by another piece.
4. A piece moved to a square occupied by an enemy piece capture it as part of the same move. The captured piece must be immediately removed from the chessboard by the player making the capture.
5. When one player moves a piece into a position whereby he can attack the King, the King is in "Check" (announced by the CHECK LED and on the LCD display) and must either
   a) move the King,
   b) block the path of the attacking piece with another piece,
   c) or attack the attacking piece.

6. The game is over when there is no escape for the King from an attacking piece. This is known as "Checkmate" (the CHECK and MATE LED and on the LCD display).

II. INDIVIDUAL MOVES

1. KING

Except when castling, the King can move only one space to any adjoining square (including diagonally), which cannot be attacked by an enemy piece.

Castling is a move of both the King and either Rook which counts as a single move (of the King) and is executed as follows:
a) The King is moved from its original square two squares toward either Rook on the same rank, and
b) The Rook is moved to the opposite side of the King.

Castling cannot occur if:
a) the King has already been moved.
b) the Rook has already been moved.
c) the King's original square or the square which the King must cross or the one which it is to occupy is attacked by an enemy piece.
d) there is any piece between the King and the Rook.

2. QUEEN

The Queen can move to any square along the same rank, file or diagonal on which it stands (except as limited by Article I.3).

3. ROOK

The Rook can move to any square along the same rank or file on which it stands (except as limited by Article I.3).

4. BISHOP

The Bishop can move to any square along the same diagonal on which it stands (except as limited by Article 1.3).

5. KNIGHT

The Knight's move is in the shape of an "L", moving two squares horizontally vertically, and then one square at 90° angle from the first move. These two moves can be reversed (one square and then two) if desired.

6. PAWN

The Pawn can move either one or two squares forward on its original move, and then one square forward at any time afterward. When capturing, it advances one square diagonally (forward). When a Pawn reaches the last rank, it must be immediately exchanged for a Queen, Rook, Bishop, or a Knight of the same color as the Pawn, at the player's choice and without taking into account the other pieces still remaining on the chessboard. This exchange is called a "promotion".

A Pawn can attack a square crossed by an enemy Pawn which has been advanced two squares in one move from its original square as though the latter had been moved only one square. This capture may be made only on the move immediately following such an advance and is called capturing "en passant". (When your computer makes an en passant capture it will display the symbol "ep".) The en passant moves are also described under section **III.e.** in this instruction.

III. HINTS & TIPS

Get a feel for the values of different pieces, which will be useful when making decisions on captures and exchanges. In general, try to capture the more valuable pieces. Some important principles:
- Castle your King into safety as soon as possible.
- If you control the center squares, this will give you the advantage. To do this, move your center pawns and develop your Bishops and Knights early in the game.
- Take advantage of capture situations, particularly if you will gain material.
- Concentrate – don't be caught off guard by your opponent!

This chess computer has been manufactured under the traditionally high quality and safety standards of Novag Industries Ltd. and complies with the European standard which is guaranteed by the importer whose name is marked on the enclosed warranty card. Not suitable for children under 36 months due to inclusion of small parts.

NOVAG®
PERFECT TECHNOLOGY LTD.
Room 406, Yu Yuet Lai Building
43-55 Wyndham Street, Central
Hong Kong
Tel: (852) 28108202
Fax: (852) 28108177
E-Mail: sales@novag.com
Web Site: http://www.novag.com