

NOVAG®
TOURMALINE

INSTRUCTION

CONTENTS 1

1.	GENERAL HINTS	2
2.	NOTES.....	2
3.	GETTING STARTED	2
4.	NOTATIONS.....	3
5.	MAKING A MOVE	3
6.	GAME FEATURES.....	4
	a) Castling.....	4
	b) En passant.....	5
	c) Pawn promotion/ - underpromotion	5
	d) Check / Mate / Stalemate.....	6

SPECIAL FUNCTIONS.....6

7.	NEW GAME (New Game Key)	6
8.	SETTING LEVEL OF SKILL (Level Key)	6
9.	TRAINING FUNCTION (Training Key).....	11
10.	MOVE SUGGESTION (Hint Key)	11
11.	TAKE BACK A MOVE (Take Back Key).....	12
12.	CHANGING SIDES (Enter Key)	12
13.	VERIFYING POSITIONS (FP/EP Key).....	12
14.	SETTING UP A POSITION (FP/EP Key).....	13
15.	ENTER FUNCTION (Enter Key).....	15
16.	MEMORY	16
17.	CARE OF THE NOVAG CHESS COMPUTER	16
18.	TECHNICAL INFORMATION.....	16

RULES OF CHESS17

1. GENERAL HINTS

Playing with this NOVAG chess computer is very simple. However we recommend reading the instruction before starting to play.

The NOVAG TOURMALINE runs on 4 x 1,5V UM 4-type (or AAA) **alkaline** batteries, which allow about 1000 hours of play. Do not use ordinary batteries as they will result in irregular performance. To insert the batteries, open the BATTERY DOOR on the underside of the unit and place the batteries as indicated by the +/- signs.

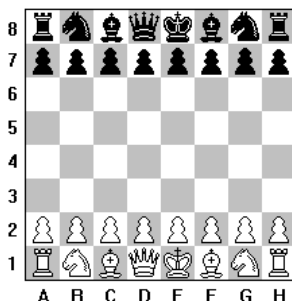
2. NOTES

Symbols:	Explanation:
H	King
q	Queen
r	Rook
b	Bishop
n	Knight
P	Pawn
x	Capture
ep	Capture en Passant
=	Draw
+	Check
♠	Checkmate
♞ ♞ ♞ ♞	White move indication
♟ ♟ ♟ ♟	Black move indication
♞ ♞ ♞ ♞	Error indication

3. GETTING STARTED

Set up the chess pieces on the chess board with yourself playing White. The White pieces should be placed on the 1st and 2nd rows and the Black pieces on the 7th and 8th rows. (see Board Setup). Turn on the NOVAG chess computer with the switch on the right side of the computer unit. The LCD should display "♞ ♞", which means you are ready to play and it is White's turn. If the display is not showing this, press NEW GAME and it should appear. The computer is now waiting for you to make a move, should you choose to play the White pieces. If you prefer Black, press ENTER and the computer makes a move for White (probably something like "d2 d4").

Board Setup: The White pieces should be on the 1st and 2nd rows and the Black pieces on the 7th and 8th rows.



4. NOTATIONS

The moves of your NOVAG TOURMALINE are indicated in standard algebraic notation. The columns (known as files) are labeled A, B, C....., to H. The rows (known as ranks) are labeled 1, 2, 3....., to 8. Each square is known by its column and its row or its file and its rank in that order.

5. MAKING A MOVE

Each square on the board is represented in the computer by its respective letter (column) and number (row) printed on the board's perimeter. To move a piece within the computer memory from one square to another, you must press four keys. The first two specify the column and row (in that order) of the square that the piece starts "**from**". The third and fourth presses specify the square that the piece moves "**to**".

Example:

To enter a move from the square "E2" to the square "E4", press the key with an "E" on it (E5) then the key with "2" on it (B2). You have entered the first part of your move and can now press "E" (E5) and then "4" (D4) to complete the move. The moment that you press the last key, the chess computer will immediately begin to compute its reply - if your entry is a legal one. The LCD will then show the "**from**" and "**to**" squares of the computer's counter-move.

Note: Please move the pieces on the board (for yourself and the computer) as you play.

Impossible and Illegal moves:

The NOVAG TOURMALINE is programmed in accordance with the International Chess Rules and does not accept nor make illegal moves. If you enter an illegal move you will see this display " ♖ ♖ ♖ ♖ ". Simply re-enter your move correctly.

If you started wrongly and wish to cancel your move, simply press the CLEAR key to clear the display. You may then enter your move again. If you accidentally enter a move other than the move you intended the computer will immediately start to compute its reply. Wait for the computer to reply and then use the TAKE BACK facility (see section 11). You may now enter your move again.

Capturing a piece:

If you wish to capture an opponent's piece, simply enter the co-ordinates of the "from" and "to" square.

If the computer makes a capturing move it will show on the LCD the symbol "x".

Example:

D5 x D4 means that the piece on square D5 captures the piece on square D4.

6. GAME FEATURES

The NOVAG TOURMALINE understands all the chess rules and will execute them correctly. Please refer to chess literature for the full explanation of these chess terms.

a) Castling

Castling is only indicated by the King's move, please move the Rook on your board to its correct position.

Example:

Castling kingside for White E1G1.

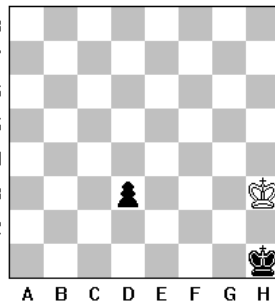
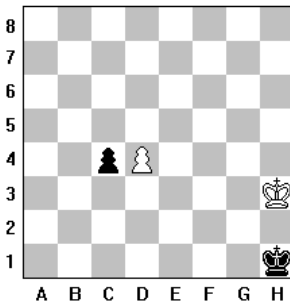
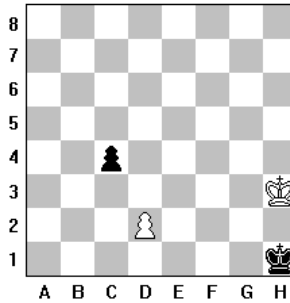
Please move the Rook from square H1 to square F1.

Note: You may not castle your King into check, out of check or through check.

The NOVAG TOURMALINE accepts and executes castling in set-up board positions.

b) En Passant

If you or the computer make an en passant capture, do not forget to remove the captured pawn. When the computer makes an en passant capture it will show the symbol "ep". You or the computer may capture en-passant in set-up board positions.



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" .

c) 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 following signs " ♖ ♖ c 8" will be shown on the LCD display. (c8 in this case stands for the square to which your Pawn has advanced). You can now choose the piece you wish to promote/underpromote to by pressing the respective **piece symbol key**. The computer will then start computing its counter-move.

If the computer Pawn reaches the opposite side of the board it would always promote its Pawn to a Queen. To verify the computer's promotion, please use the VERIFY function any time you wish. (See section 13.)

d) Check / Mate / Stalemate

- When the computer puts your King in check, you will see the symbol "+" on the display.
- Checkmate is indicated by the symbol "♂" at the end of the game.
- If your computer cannot make a legal move the result will be a stalemate draw and you will see the symbol "=" on the display.

SPECIAL FUNCTIONS

7. NEW GAME (New Game Key)

Press NEW GAME every time you switch the computer on or whenever you want to commence a new game. The previous game is cancelled and in the computer memory all pieces are now in the opening position and the display will show " LL LL ".

8. SETTING THE SKILL LEVEL (Level Key)

Your NOVAG chess computer has **56 playing levels** plus **7 Solve Mate Levels**. To set the computer to any of these playing levels, press the key marked LEVEL and you will see the current level setting. Each time you press the LEVEL key you can select "L - A" position, "L - B" position, "L - C" position, "L - G" position.

If you are set on "L - A" position, press any key from A1 to H8 to choose level A1 - A8 and if you are on "L - B" position press any key from A1 to H8 to choose level B1 - B8 and so on. To exit the level setting mode press the ENTER key within 3 seconds or if you wait longer, the computer will adjust itself and you may continue with your game.

If you want to change the level of skill during a game, use the above procedure when it is your turn to move.

If you want to check which level the computer is set to press LEVEL and the display will indicate the current skill level. Press ENTER to exit the level setting mode without altering the level and the display will indicate which side is to make the next move.

Note: If you switch the computer off to continue your game at a later time or if you start a new game, the previous set skill level will be retained.

The 63 levels and their characteristics are shown below:

- **Fixed Time Levels**

Level	Time per move	Level	Time per move
L - A1	2 sec.	L - B1	60 sec.
L - A2	3 sec.	L - B2	90 sec.
L - A3	5 sec.	L - B3	120 sec.
L - A4	10 sec.	L - B4	150 sec.
L - A5	15 sec.	L - B5	180 sec.
L - A6	20 sec.	L - B6	210 sec.
L - A7	30 sec.	L - B7	230 sec.
L - A8	45 sec.	L - B8	255 sec.

The first 16 levels are the Fixed Time Levels. When you select one of these levels, you are asking the computer to make its counter-move within the specified time limit.

- **Average Time Levels**

Level	Time per move	Level	Time per move
L - C1	4 sec.	L - D1	120 sec.
L - C2	6 sec.	L - D2	180 sec.
L - C3	10 sec.	L - D3	240 sec.
L - C4	20 sec.	L - D4	300 sec.
L - C5	30 sec.	L - D5	360 sec.

L - C6	40 sec.	L - D6	420 sec.
L - C7	60 sec.	L - D7	460 sec.
L - C8	90 sec.	L - D8	500 sec.

On Average Time Levels, the computer uses half of the specified time to search for its counter-move and continues until it finishes the current iteration.

Note: These are average times of a larger number of moves. In the opening and endgame, the computer tends to play faster, but in complicated middle game positions it may take longer for the computer to make its move.

- **Fixed Depth Levels**

<u>Level</u>	<u>Ply</u>	<u>Level</u>	<u>Ply</u>
L - E1	1 ply	L - F1	9ply
L - E2	2 ply	L - F2	10 ply
L - E3	3 ply	L - F3	11 ply
L - E4	4 ply	L - F4	12 ply
L - E5	5 ply	L - F5	13 ply
L - E6	6 ply	L - F6	14 ply
L - E7	7 ply	L - F7	15 ply
L - E8	8 ply	L - F8	infinite

On Fixed Depth Levels, the computer's search depth is limited to the number of ply (halfmoves) corresponding to the current level. On these levels, especially on the first few depth levels, the computer may overlook a capture. This results in a weaker play, giving beginners and average players a better chance to win.

On the Infinite Level, the computer will search indefinitely, until it finds a forced mate or you stop the search by pressing the ENTER key. If you halt the search, the computer makes the move it currently thinks is the best. You can use this level to have your Novag chess computer analyze complicated positions for hours or even days.

- **Novice Levels**

Level	Capture	Depth	Search
L - G1	1		ply
L - G2	2		ply
L - G3	3		ply
L - G4	4		ply
L - G5	5		ply
L - G6	6		ply
L - G7	7		ply
L - G8	8		ply

The Novice Levels are especially for beginners. On these levels, the computer plays like a human beginner for whom the computer's depth search is limited to 1 ply search with various specified Capture Depth Searches.

- **Problem Solving Levels**

Level	Problem
L - H1	Mate in 1
L - H2	Mate in 2
L - H3	Mate in 3
L - H4	Mate in 4
L - H5	Mate in 5
L - H6	Mate in 6
L - H7	Mate in 7

Your Novag chess computer can solve most chess problems as well as mate problems up to Mate-in-7. Press New Game and set up the required board position (see section 14.). Before you start with the mate search, it is advisable to verify the Set-up board position via the VERIFY function and make sure that the colour to move is correct, if not change this by pressing the BLACK/WHITE key ("G7" key). Set now one of the Problem Solving Levels as described above.

Press ENTER once to exit the setting up of the mate search and then press ENTER a second time and the computer begins with the mate search.

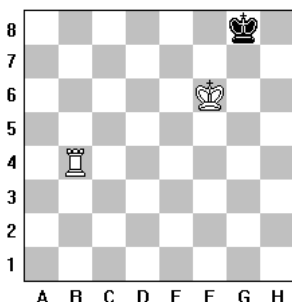
Mates-in-1 to Mates-in-4 are usually found quickly, whereas Mates-in-5 to Mates-in-7 require quite a long time.

If there is a solution, the computer will show you first the move to execute then the display will indicate the mate solution. If there is no solution, the computer will display "**no nE**".

If you wish to continue the game, select another level and enter your next move.

Example:

If you wish to solve a Mate-in-2 problem, place the 3 pieces on your chess board as shown on the diagram.



Proceed now as follows and press: -

NEW GAME

→ LEVEL → set the display to L - H2

→ ENTER

→ FP/EP → FP/EP

→ CL → CL (CLEAR)

→ King piece symbol → enter square F6

→ Rook piece symbol → enter square B4

→ G7 to change colour

→ King piece symbol → enter square G8

→ G7 to change colour, it is White to move

→ ENTER: to clarify the above setting

→ ENTER: to start the mate search

TOURMALINE will answer with the first half move:

1. B4-H4. The Black King can only move G8-F8, please execute this move.
TOURMALINE will make its counter-move with 2. H4-H8 MATE!

9. TRAINING FUNCTION (Training Key)

This function is to help the novice player.

- When it is your turn to move press the TRAINING key and the display will show the "**from**" square of the first piece with a legal move. If you continue to press the TRAINING key the computer will show you the "**from**" square of all pieces with at least one legal move. You may cycle through this step as often as you wish.
- Once you have chosen a piece (square position is shown on display) press the ENTER key to confirm this and then press the TRAINING key again, this time the display will show each legal square to which the piece can be moved to.
- If you wish to make the move shown on the display press ENTER key and your NOVAG TOURMALINE will make its counter-move. If you like to make any other move simply key in the "**from**" and "**to**" square and the computer will reply accordingly.

Note: To clear the display whilst in TRAINING mode press the CLEAR key and the display will show " ♠ ♠ ♠ ♠ " or " ♣ ♣ ♣ ♣ " .

10. MOVE SUGGESTION (Hint Key)

The computer can suggest moves if you are not sure how to continue your game, which is a great tutoring feature.

When it is your turn to move press the HINT key and the computer will show the move it considers the best for the colour to move. You can accept any suggested move or may make a move of your own choice. If you accept the suggested move (shown on display) press the ENTER key and the computer will then reply with its counter-move. If you decide to make a move of your own choice enter this move and the computer will then show its counter-move.

Note: The suggested move is the best possible move in this position calculated by the NOVAG TOURMALINE at the level preset by you.

11. TAKE BACK A MOVE (Take Back Key)

If you make a move which is legal but weak and you wish to retract it (not normally allowed in chess but your computer is also a learning aid) this is achieved as follows:

The computer will compute its response to your weak move. When it has finished press the TAKE BACK key once to take back the computer move. Every time you press TAKE BACK the computer will reverse the last move which is shown on the LCD. The computer will also display any captured pieces on the LCD.

Press the TAKE BACK key a second time to take back your weak move. You may now resume your game entering a new and hopefully stronger move - don't forget to update your board position and to replace any captured pieces! Use the VERIFY facility (see section 13.) to verify the position if in doubt.

Note: You may take back the last 32 halfmoves, this enables you to rectify an earlier mistake or to play a different strategy.

12. CHANGING SIDES (Enter Key)

The computer is generally set to play Black and you White. If you want to begin the game with the computer playing White and moving first, press the NEW GAME key and then the ENTER key. The computer will compute the opening move for White.

If you wish to change sides during a game, press ENTER when it is your turn to move. The computer will compute for your colour and you may continue the game playing the other side. This operation may be performed any number of times during a game, but not whilst the computer is calculating.

Note: Repeated use of the ENTER key makes the computer play against itself.

13. VERIFYING A POSITION (FP/EP Key)

To verify that your board position is correct press the "FP/EP" key **once**, the display will now show "FP --".

You are now in the **FP = FIND** mode and this enables you to ask the computer the position of any chosen piece.

- Select now the type of piece(s) to be verified by using the keys labeled "A1" to "F6" above which you will see corresponding piece symbols.
- The colour can be changed by pressing the BLACK/WHITE key ("G7" key).
- You can end the verification at any time by pressing the ENTER key and the display will show the symbols for the colour to move.

Note: When in "FP" or "EP" mode the following keys represent the piece type:

P	=	Pawn
n	=	Knight
b	=	Bishop
r	=	Rook
q	=	Queen
H	=	King

Example:

If you wish to find the position of the White Queen press "FP" to select the FIND mode. Press "E5" for Queen and if the pieces were in their initial positions you will see the display "**┌ q d 1**". The leading figure "**┌**" tells you the piece is White, the "q" tells you it is a Queen and the "d1" tells you that the White Queen is on square D1. Now press the "G7" key for Black and you will see the display "**┐ q d8**". The leading symbol "**┐**" indicates Black and the remaining display indicates Black Queen on square D8.

Now press the key "A1", the display will change to "**┐ P H7**" where now the "P" indicates a Pawn and the whole display indicates Black Pawn on H7. Now press "A1" again the display will change to "**┐ P G7**" indicating a Black Pawn on G7 and each time you press the "A1" key you will find the position of any further Black Pawn until the display changes to "**┐ P --**" indicating all Pawns displayed. Same goes for White colour.

If there are no pieces left of the type for which you are searching, the display will show "**--**" for the piece position. To exit FIND mode press ENTER then make your next move or call off a move from the computer.

14. SETTING UP A POSITION (FP/EP Key)

This mode allows you to create board positions for experimentation or practice. You can also add or delete any piece at any time during the game.

The procedure is as follows:

Press "FP/EP" key **twice**. The display will show "EP --", you are now in the EP = ENTER mode. If you now merely wish to alter a position by adding pieces or deleting pieces proceed as follows.

A. To Add:

1. Select the colour ("G7") of the piece.
2. Select the piece by using keys "A1" through "F6".
3. Select the letter and number of the square corresponding to the position on the board.
4. Repeat for each piece/position desired.
5. Press ENTER to exit the EP mode to begin to play.

Example:

To create a White Rook on square C1. Press "G7" key to select the colour for White, then "D4" for the Rook and "C3" followed by "A1" for the square. The display will show " ♖ r c1". You can tell the computer about all the other pieces with choosing Black/White and piece symbols independently until your position is complete. To exit this mode press ENTER. We recommend to verify your set-up position before you start to play.

B. To Delete A Piece:

In the EP mode press CLEAR key then use the keys "A1" through "H8" to address the square you wish to clear.

Example:

To clear square C7 press always CLEAR key then "C3" and "G7". The display will show " ♖ c7" indicating no piece on C7. Press ENTER to exit the EP mode to begin to play.

Note: For a single piece you do not have to specify the type or colour of the piece deleted, simply enter the letter and number co-ordinates associated with the square on which the piece stands. Repeat for any additional pieces to be deleted.

C. Clearing The Board:

In the EP mode press CLEAR key. You see " ♖ -- ". When this display is showing, you have to press CLEAR once more to clear the entire board and the display will show "EP -- " again.

Note: This procedure can be followed any time in **EP** mode. For example to restart position entry if you have made a mistake.

Example:

If you wish to set up a new position, you have to clear first the entire board otherwise the NOVAG TOURMALINE will retain the last board position in its memory and then you can enter any board position you like.

This is the procedure step by step:

- FP/EP key → FP/EP key
- CL key → CL key
- piece symbol key → coordinates of square
- piece symbol key → coordinates of square → etc.
- G7 key (Black/White)
- piece symbol key → coordinates of square → etc.
- G7 key (Black/White): to continue the game
- ENTER

D. Continuing The Game:

When you have entered your position and are satisfied that it is correctly entered, press the ENTER key to return to the PLAY mode, the display will show " ♞ ♞ ♞ " indicating White's turn to move. You may now either enter a move or press the ENTER key again to cause the computer to make the move for White.

If you wish to resume play from your entered position with Black to make the next move press "G7" and ENTER. The display will show " ♜ ♜ ♜ " indicating Black's turn to move. You may either move for Black or press ENTER to have the computer move for Black.

15. ENTER FUNCTION (Enter Key)

The ENTER key is generally used to enter a command (LEVEL, FP/EP function) or to exit from a function:

Furthermore it is used:

- To change sides during the game.
- To make the NOVAG TOURMALINE compute for the side to move. Repeated press on the ENTER key will make the computer play against itself.
- To change sides at the beginning of the game. Press NEW GAME and ENTER and the computer will play with the White pieces.

16. MEMORY

The NOVAG TOURMALINE has a long term memory and will retain the last board position. However, make sure that there are batteries in the chess computer otherwise you will lose the memory contents.

17. CARE OF THE NOVAG CHESS COMPUTER

- ◆ Handle the game carefully.
- ◆ Store the game away from dusty or dirty areas.
- ◆ Keep the game away from moisture or temperature extremes.
- ◆ Do not disassemble the game. If a problem occurs, remove and replace the batteries to reset the computer.

WARRANTY: For details please refer to the enclosed warranty card.

18. TECHNICAL INFORMATION

- Program Size 4 KByte ROM, 768 Byte RAM
- CPU Clock Speed 8 Mhz
- Conductive Rubber Keyboard 16 Keys
- Power Consumption 6V DC 5ma
- Battery Operated 4 x 1,5V UM-4 type (or AAA size)
- 56 Levels + 7 Solve Mate Levels
- Take Back Function 32 halfmoves
- Large LCD Display showing:
Moves, Checkmate, Check,
En Passant, Capture, Draw.....etc.
- Set Up and Verify Function
- Hint and Training Function
- Miniature Size 198 x 176 x 31 mm

All data subject to change without notice.

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 captures 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" (displayed on the computer by "+") 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" (displayed by "♚").

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 row,
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 row, column 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 row or column 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 I.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 row, it must be immediately exchanged for a Queen, Rook, Bishop, or a Knight of the same colour 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 is also described under section **6.b** 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.

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