

NOVAG[®]

SAPPHIRE II

• **INSTRUCTION**

INSTRUCTIONS

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I. INTRODUCTION

The NOVAG SAPPHIRE II is the world's strongest Travel Chess Computer running on a H8 RISC-Style processor with 160K program memory and 129K working area. It offers an array of new features and has also incorporated Hash-Tables to significantly improve the chess computer's play, especially the end-game play.

The SAPPHIRE II is also compatible with the NOVAG SUPER SYSTEM. This will enable its full thought processes to be recorded on a PC (most types) or the game to be displayed or recorded onto a domestic TV through the NOVAG DISTRIBUTOR and the TV-INTERFACE (optional). Watch as your chess game gains a whole new dimension.

We recommend that you read the instruction manual thoroughly in order to learn how to fully operate and enjoy your SAPPHIRE II. Section II on Playing the SAPPHIRE II, will provide you with basic information on getting started and on how to play a game of chess against your computer. After you are comfortable with the basic functions, you will enjoy learning to use the many special features the SAPPHIRE II offers.

BATTERIES

The SAPPHIRE II runs on 4 x 1.5V UM 4 type, or size "AAA" **alkaline** or heavy duty batteries (**not included**).

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. 30 hours (continuous operation). If you don't use your computer over a long period of time, please remove the batteries.

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

LOW BATTERY INDICATION

When the LCD display shows [**LobATT**] this indicates that the battery set of the NOVAG SAPPHIRE II has to be replaced. The old batteries however will still work for approx. 5 hours.

To replace the batteries: turn off the unit first - the internal capacitor will keep the memory for 30 seconds. To be on the safe side we recommend to use the adaptor during this procedure to make sure that the memory will be kept.

ADAPTOR

The NOVAG adaptor (Art.No.8210) is not included with your set, but is available separately from your dealer. Please note that it is a DC 9V adaptor with 300 mA and it has a negative center. If you cannot get the NOVAG adaptor, please make absolutely sure that you do not buy an adaptor which does not have these specifications. If you use a too powerful adaptor it might burn the components in your unit. Before using the adaptor, check that the voltage of your electric mains is within the range specified on the adaptor label.

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

MEMORY

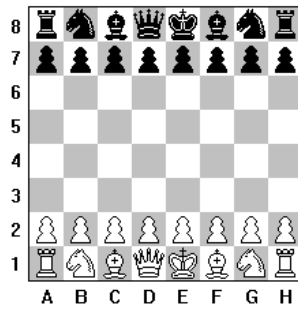
The SAPPHIRE II has a long term memory and will retain the last board position. However, make sure that there are batteries in the chess computer or an adaptor connected otherwise you will lose the memory contents.

II. PLAYING THE SAPPHIRE II

If you wish a quick game of chess without having to use all the special functions of the SAPPHIRE II, you may refer to the following instructions:

Step 1: The power switch is a 2-position switch and is located at the right side panel. This switch operates both adaptor and batteries. If you use an adaptor the batteries will be automatically disabled.

Step 2: SET UP all the chess pieces on the chessboard attached to the NOVAG SAPPHIRE (or any chessboard of your choice) in the opening position.



step 3 : Press NEW GAME Key. You will hear 3 beeps and you will see [01.-- --] on the LCD, you are now ready to begin to play for the White side.

Step 4 : If you want to increase the level of skill, press the LEVEL key (see section IV.2 for level setting and their time control). On the LCD display you will see a number indicating the present level set.

Step 5 : Once you have set the level, press GO to exit the LEVEL mode. After this procedure you may enter your move for White using the keypad; for example E2-E4 is entered by pressing the following keys:
E5 B2 E5 D4 (your completed move will be shown on the LCD).

Once the SAPPHIRE II has registered your move it will immediately start computing its counter move if your move was a legal one. Illegal moves are not accepted and the SAPPHIRE II will beep 3 times and show [Error] on the LCD.

Note: Since the NOVAG SAPPHIRE II has no sensor chessboard to indicate its moves you will have to execute all your moves as well as the computer's counter-moves on the attached chessboard to keep track of the game in progress.

When the SAPPHIRE II is ready to move it will beep and show its move on the LCD.

SLEEP MODE FEATURE: To activate this feature you will find the necessary switch on the left side panel of the NOVAG SAPPHIRE II. It is a special keyboard lock to prevent accidental interruption whilst the computer is analysing its moves. If you do not need this feature please make sure to set this switch to NORMAL position.

III. GAME FEATURES

a) Making moves

Moves are entered using the algebraic notations which is the standard adopted by the World Chess Federation (F.I.D.E.) each move is specified by the co-ordinates of each square from **a1** to **h8**. To complete a move you have to press the respective keys in sequence. For example to enter E2-E4 press the following keys:

E5 B2 E5 D4

Your entered move is shown on the LCD together with the colour to move, a white box means that White is to move whereas a solid black box would indicate that it is Black's move.

On the last key press the computer will start computing its reply.

When the SAPPHIRE II is computing all key presses will be ignored except for the GO key which will interrupt the calculation of its counter-move and force the current move being analysed to be played at once.

Note: Since moves are entered using the long algebraic notation there is no need to indicate captures, castlings or en passant captures. However, in the event of a promotion the NOVAG SAPPHIRE II will prompt you for the piece that you wish to promote to. Please press one of the Piece Symbol Keys indicating your choice.

b) Capturing a Piece

If the SAPPHIRE II makes a capturing move it will show on the LCD the symbol "x" and in cases of en passant pawn captures it will also show "ep". Please remove the captured piece from the chessboard.

c) Impossible and Illegal Moves

The SAPPHIRE II 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.

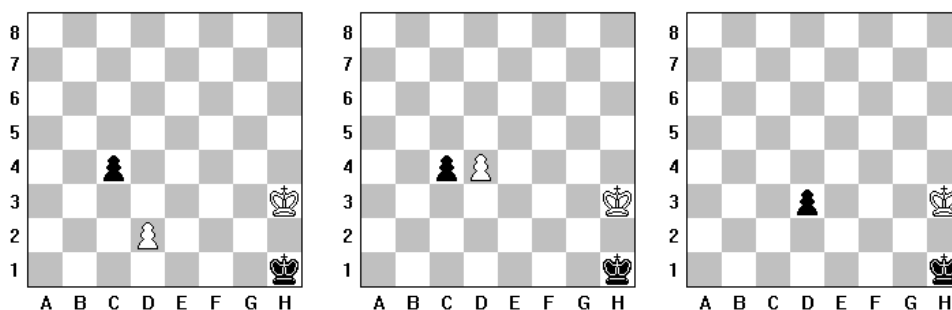
- If you try to make an illegal move, you hear 3 beeps and on the LCD display you will see the **[Error]** sign. You can now make another legal move.

d) Castling

According to the rules of chess you must first move the King then the Rook to complete this move. Enter the square from which the King is located first and then the square to which the King has to be moved for this castling move. Do NOT enter the Rook move. The computer accepts and executes castlings in set-up 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. The captured pawn is automatically removed by the computer and no further action is required from you. When the NOVAG SAPPHIRE II makes an en passant capture it will show the signs "ep" along with an "x" on the LCD display. You or respectively the computer can capture en passant in set-up 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".

f) Pawn Promotion / Underpromotion

If one of your pawns reaches the 8th rank, the SAPPHIRE II will allow you to promote or underpromote it to any desired piece. As soon as this happens the computer will prompt you for the piece that you wish to promote to and the word **[Prom ?]** will be shown on the LCD. Press the appropriate Piece Symbol Key to enter your choice for promotion.

THE SAPPHIRE II PROMOTES :

When the computer promotes one of its pawns, it will flash the promoted piece on the LCD. If you missed this display you can use the VERIFY function to find out which piece has been selected by the computer. The SAPPHIRE II also accepts and executes pawn promotions in set-up positions.

g) Stalemate / Draw

A draw is announced on the LCD with the appropriate message :

- [dr Stl] no legal moves, but not in check, therefore draw
- [dr 3rd] position repeated 3 times
- [dr 50] 50 moves made without capture and pawn move
- [dr ins] insufficient material for either side to check mate the other

h) Check and Checkmate

Check announcements are made with the "+" sign on the right side of the move shown on the LCD. Checkmate will be indicated on the LCD with **[nAtE]**.

i) **Early Mate Announcements**

The SAPPHIRE II will always announce mate if it sees it and will show the number of moves to mate on the LCD.

Example : [nAtE 2]

j) **Resignation**

The SAPPHIRE II will recognise positions which are lost or seriously behind in material and will resign the game showing [rESiGn] on the LCD. You may reject this resignation and play on but please NOTE that the SAPPHIRE II will only resign once per game. When you are about to checkmate the SAPPHIRE II, it will not resign and spoil your moment of glory.

Note: If either side's time runs out, the LCD display will flash [FLAG] and you may continue the game by entering your next move.

IV. MAJOR FUNCTION KEYS

1. NEW GAME Key

The NEW GAME key will reset the board to the starting position and the LCD shows [01-- --]. When all the pieces are set up in their starting position, you are ready to play. Press NEW GAME every time you switch the computer on, or whenever you wish to commence a new game.

Note: The SOUND, BOOK SELECT, RANDOM, LEVEL function will remain the same. EASY and REFEREE are turned off.

2. LEVEL Key

The SAPPHIRE II has 8 different types of Levels and 64 unique time controls to suit every type of players. You may enter different playing levels for WHITE and BLACK.

To set the NOVAG SAPPHIRE II to any of the 8 different types of levels press the LEVEL key. Each further press will advance to the next level Group and you will see on the LCD the abbreviation of the level that you have selected.

TR = Tournament Level, **AT** = Average Time Level, **SD** = Sudden Death Level, **FD** = Fixed Depth Level, **AN** = Analytical Level, **EA** = Novice Level, **BE** = Beginner Level, **IN** = Find Mate Level.

Please refer to the Level Chart for the meaning of each of the 64 time controls.

Example: If you wish to set level "At 4", press LEVEL until the display shows "At 1" and then press the number key D4 . On the LCD display you will see [LE.At4] indicating the level which is set up. Once you have selected the desired skill level press GO to exit this mode.

You can always check or change the skill level during a game, however not whilst the computer is calculating. Changing level resets the clocks.

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

LEVEL CHART

Level	Square	Time Control	Level	Square	Time Control	
TR	1	a1	AN	1	e1	9 nlv search
	2	a2		2	e2	10 ply search
	3	a3		3	e3	11 ply search
	4	a4		4	e4	12 ply search
	5	a5		5	e5	13 ply search
	6	a6		6	e6	14 ply search
	7	a7		7	e7	15 ply search
	8	a8		8	e8	Infinite search
AT	1	b1	EA	1	f1	1 ply search with limited capture search: 1 ply + 2 captures
	2	b2		2	f2	1 ply + 3 captures
	3	b3		3	f3	1 ply + 4 captures
	4	b4		4	f4	1 ply + 5 captures
	5	b5		5	f5	1 ply + 6 captures
	6	b6		6	f6	1 ply + 7 captures
	7	b7		7	f7	1 ply + 8 captures
	8	b8		8	f8	1 ply + 9 captures
SD	1	c1	BE	1	g1	2 ply + 2 captures
	2	c2		2	g2	2 ply + 3 captures
	3	c3		3	g3	2 ply + 4 captures
	4	c4		4	g4	2 ply + 5 captures
	5	c5		5	g5	2 ply + 6 captures
	6	c6		6	g6	2 ply + 7 captures
	7	c7		7	g7	2 ply + 8 captures
	8	c8		8	g8	2 ply + 9 captures
FD	1	d1	IN	1	h1	mate in 1
	2	d2		2	h2	mate in 2
	3	d3		3	h3	mate in 3
	4	d4		4	h4	mate in 4
	5	d5		5	h5	mate in 5
	6	d6		6	h6	mate in 6
	7	d7		7	h7	mate in 7
	8	d8		8	h8	mate in 8

Description of level time controls:

- **Tournament Level TR 1 - TR 8**

For tournament time controls. All moves are pre-set which have to be played within a fixed time, e.g. 40 moves in 120 min. (level 8 is the strongest). If you or the computer exceeds the specified time control, the game will be declared lost.

- **Average Time Level AT 1 - AT 8**

These levels are to be used for casual play. They allow you to enter the average response time per move for the computer. The computer tends to play faster during opening and end games.

- **Sudden Death Level SD 1 - SD 8**

For play to the finish. The computer has to finish its game within a given time. If you or the computer exceed the specified time control, the game will be declared lost (clocks count down to zero and LCD shows [FLAG] and 3 beeps to warn you if you overstep). If you wish you can continue to play and finish the game. On the LCD display the total time used will be shown and will count continuously.

- **Fixed Depth Level FD 1 - FD 8**

Important for analysis purpose. The computer will only compute up to the depth selected. This provides a means of limiting the SAPPHERE II play to suit a wide range of opponent's abilities.

- **Analysis Level AN 1 - AN 8**

These levels provide deeper searches for more difficult problems.

- **Novice Level EA 1 - EA 8**

1 ply search with limited capture search. These levels provide a level of play even suitable for novice players.

- **Beginner Level BE 1 - BE 8**

2 ply search with limited capture search. These levels provide a level of play for mediate beginner.

Note: All of the above levels can be modified by turning on the EASY mode (see section 17). This keeps the computer from searching while you are thinking and weakens its play.

- **Find Mate Level mate-in-1 to mate-in-8**

On Find Mate levels the computer will find the shortest mate up to the stipulated depth. The Find Mate levels use a different program than the normal playing levels. The normal playing levels will generally find a check mate in any given position in less time, and generally in much less time than the Find Mate levels. However, the normal playing levels do not guarantee that the check mate found is the *shortest* mate possible.

The following position illustrates this point. On Find Mate level 4, it takes the computer 40 seconds to find Bxa7 and announce mate in 3 more moves. However, on the normal playing levels it takes the computer only 11 seconds to find e2-e4 which is in this case a Mate-in-5 moves! (Figure 1.)

Figure 1:

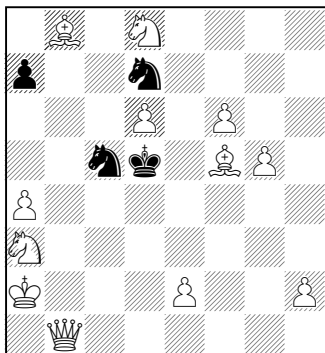
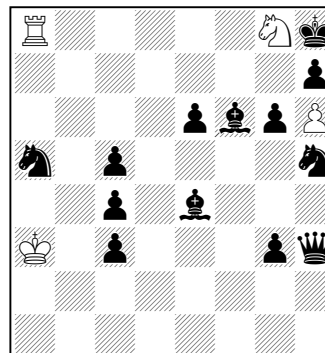


Figure 2:



On the other hand, the mate in 6 moves is found much faster by Find Mate level 6. (Figure 2.)

Generally expect the Find Mate levels 5, 6, 7 and 8 to take a long time. If there is no mate in the stipulated number of moves the LCD display will show **[no nE]**.

The solution to this position is Rb8 and takes about 46 seconds on Find Mate level 6 but takes a couple of hours on regular search!

Whilst the NOVAG SAPPHIRE II is searching it will show the main variations which it is presently considering and will rotate a variety of informations 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 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 the computer's point of view
- f) (example : " 0 21", means + 0.21 pawns up)
- g) Depth of search (example: d 6 means now searching 6 halfmoves)
- h) Moves not searched during current iteration (example: 15 21, means 15 moves out of 21 are not searched during the current iteration)
- i) If there is no solution you will see **[no nE]**

- **INDEPENDENT LEVEL SETTINGS FOR BLACK AND WHITE**

- a. Press LEVEL key to enter level mode. Follow procedure on pages 7 & 8 to set level for WHITE.
- b. Then press COLOR key (to toggle to BLACK). Repeat procedure on pages 7 & 8 to set level for BLACK.
- c. Press GO to exit.

Note: Setting a WHITE level will change the level for both BLACK & WHITE.
Setting a black level will change BLACK only.

• USER PROGRAMMABLE TIME CONTROLS

You may set your own time controls either for both sides or independently for each side.

Use the procedure on pages 7 & 8 to choose any **TR** (tournament level) or any **AT** (average time) or any **SD** (sudden death) level. For **TR** levels you can now program the number of moves to the time control and the time control for **AT/SD** levels you can program the time control only, using the following procedure:

After selecting your level type press VERIFY / SET UP key to enter user programming mode.

- 1) If a **TR** level is programmed, then the display will show [n 40] with '4' blinking. This shows the number of moves to be played in the designated time and the active digit is the '4' (10s of moves). Press TRACE FORWARD () key or TAKE BACK () key to increment or decrement.
Press VERIFY/SET UP key to advance to the next editing digit. Press TRACE FORWARD ()key or TAKE BACK () key to increment or decrement.

When both digits of the number of moves have been programmed, the time control will be displayed. Continue with the instructions below to set the time control.

- 2) If an **AT** or **SD** level is programmed, then the display will show [00:00:00] with the first '0' (10s of hours). The display will show [hh:mm:ss] (hours:minutes:seconds) which can be programmed using TRACE FORWARD or TAKE BACK key and Verify as above.
Once you have programmed the White level, either press GO to save your programmed level and play with both WHITE & BLACK set to this level, or press COLOR to toggle to black. You may now repeat the above procedure for programming move number and time controls for the Black side. Press GO to exit.

The number of moves may be set 01-99 inclusive and the time may be set to 00:00:00-17:59:59 inclusive. The user is never allowed to violate the min/max moves and time.

- 3) When reprogramming the level settings the listed keys perform the following functions:
 - VERIFY - select the next digit.
 - OPTION I/II - select the previous digit.
 - TRACE FORWARD () - increment the current digit.
 - TAKE BACK () - decrement the current digit.
 - CLEAR - return to default table settings.
 - LEVEL - exit without saving the new time control. Use LEVEL to exit after viewing programmable levels.
 - COLOR - set a different level for BLACK.
 - GO - exit procedure and save setting and then return to game.

3. GO Key

The GO Key is used in conjunction with many of the SAPPHIRE II special functions and normally acts as an Exit key. Please note that in many cases when Error appears, the GO key has not been pressed to exit the last function used.

MAIN USES:

- To make the SAPPHIRE II compute for the colour to move, even if in REFEREE mode.
- To exit from the VERIFY / SET UP / LEVEL mode.
- To start the SOLVE MATE search.
- To start the AUTOPLAY/ DEMO mode.
- To interrupt the computing time and force 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 colour, and you will play the other colour 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 playing levels.
- To accept a HINT. If the first Hint is shown on display, pressing GO accepts the Hint as though keyed in.

4. REFEREE Key

This is a toggle function which allows the user to play a game on the computer with the computer only checking the legality of the moves and declaring DRAW, CHECK MATE, and STALE MATE. This is also how games can be entered into the computer to be analysed (see ANALYSE function).

All games played could be stored in one of the 64 games slots (see STORE GAME) or could be entered for processing to a PC (see INTERFACE).

The LCD display will show [rEF] where REFEREE is off and [rEF ≡] when REFEREE is on. The first press shows the current status of REFEREE. Press the REFEREE key a second time within two seconds that the REFEREE message is on the LCD display to change that function. The REFEREE mode may be selected at any time during a game except while the SAPPHIRE II is computing.

Note: The SAPPHIRE II may be called upon to compute for the side to move by pressing the GO key. All features are available whilst REFEREE mode is on.

5. HINT Key

The SAPPHIRE II can suggest moves if you are not sure how to continue your game. This is a great tutoring feature. When pressing the HINT key you may recall the following information:

ON YOUR MOVE :

Pressing the HINT key when it is your turn to move will show the move which the computer thinks is your best move. Pressing the GO key while the computer displays the first Hint, makes the computer accept this move as though you played it. You may make also a move of your own choice whilst any Hint is being displayed.

Note: The displayed Hint move is the move which the computer is thinking on when EASY is off.

WHILE COMPUTING :


If you press the HINT key whilst the computer is calculating, the display will show the move the computer thinks is so far the best for itself.

Press HINT key to display the move(s) being considered by the computer as the best line of play up to 9 ply (the display shows the "from" and "to" square of the considered move and [h int#], where # represents a number from 1-9 showing the depth of the move).

- Press HINT to cycle through the best line.
- Press CLEAR to remove the Hint display.
- Press GO when [h int1] is displayed during the human's turn to play the Hint move on the board.

6. TRAINING Key

This function is provided for the novice player. It could be useful for the novice player who is in check and does not know what choices he or she has to get out of check.

Step 1: When it is your turn to move press the TRAINING key and the computer will show the "from" square (indicated on the LCD) of the first piece with a legal move. If you continue to press the TRAINING key, the SAPPHIRE II will show you all pieces with at least one legal move. You may cycle through this step as often as you wish. When no more pieces are available to be legally moved, then the display shows [ xx - - - -].

Step 2: 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 3: If you accept the move as displayed, press the GO key and 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 1, use the CLEAR key to reset the LCD display and then press the TRAINING key to go to Step 1.

7. TAKE BACK Key (key is marked)

Use this key to retract a bad move or just try a different line of play. Wait until it is your turn to move. Press the TAKE BACK key and the move to be taken back will be alternately flashed on display along with the captured piece and square if any (remember to replace this piece). Press TAKE BACK several times to take back multiple moves. When you reach the beginning of the current game the display will show [bEG in].

To exit this mode make your next move or recall a computer move by pressing the GO key.

To clear the display press the CLEAR key.

Note: If you select the 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 colour or position. If no moves are in the game history the LCD will show [bEG in].

8. TRACE FORWARD Key (key is marked)

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. To clear the display press the CLEAR key.

9. COLOR Key

This key has different functions :

- When in VERIFY or SET UP mode this key changes the colour for the entry or verification of the board position.
- The computer is generally programmed to play White first. In some cases if you want to play Black and move first press:

Key sequence: NEW GAME → COLOR → enter your first move for Black

The computer will make its move for White.

- The COLOR key can be pressed at any time during a game and the colour 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.
- When in LEVEL mode this key will allow the setting of separate levels for White and Black.

10. CLEAR / CLEAR BOARD Key (key is marked C/CB)

This key has different functions :

- When in SET UP mode the CLEAR BOARD key will clear the entire board of all pieces to make setting up a position easier.
- When in LEVEL mode and while the LEARNING message [LEArn≡] is on display, this key will clear all the current learned positions from the computer memory.
- When the CLEAR BOARD key is pressed at all other times, it will act as a clear entry key.

For example: 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. Pressing this key will clear the LCD display back to [xx - - - -] showing the symbol of the colour to move.

11. VERIFY Key

This key has a double function:

- On the first press you will enter the VERIFY mode and the LCD will show [VEr - -].
- On the second press you will enter the SET UP mode and the LCD will show [SEt - -].
- To exit either of these modes press 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.

- Enter the square you wish to verify and the NOVAG SAPPHIRE II will show the symbol of the piece which is occupying this square and its colour. If the square is empty the left side of the LCD display will be blank. (Only the entered square position will be displayed).
- Press any Piece Symbol Key and its present position will be displayed. If the required piece is not on the board you will just see the Piece Symbol and the message [VEr – –]. If there are more pieces of the selected type you will see their respective locations with subsequent presses of the same Piece Symbol Key until all verified pieces are recalled, then again the message [VEr – –] will appear.
- Press the COLOR key to verify opposite colour chess pieces.
- 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.

12. 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 colour . . . 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 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 cancelled 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 [SEt – –] on display.

To exit this mode press the GO key or change to the VERIFY mode.

a. Removing a piece / clearing the entire board

- Press the SET UP key.
- To remove a piece just enter the square on which it presently stands.
- To clear the entire board of all pieces press the CLEAR BOARD key.
- To end this mode press the GO key or change to the VERIFY mode to check the new board position.

b. Entering or moving a piece / setting up a board position

- Press the SET UP key, if you are not yet in the SET UP mode.
- To enter a piece, first make sure that the colour symbol on the LCD display is correct. If not, press the COLOR key to change this. Next, press the key with the Symbol of the Piece you wish to enter, then enter the square position to where you wish to place this piece.
Entering the position of an occupied square clears that square and selects that piece as the current piece and colour.

Examples: If a black Pawn is on E2 and the user wishes to place white Knight on E2, enter square E2 to clear the square first, then select the white Knight and finally enter square E2 again and replace the piece on your chessboard. You cannot select just a white Knight and enter it on square E2, this will only empty square E2 and leave the black Pawn as the current piece and colour.

- To move a piece from one square to another, simply enter the present square position of the piece that you wish to move. Next enter the square that you wish to move this piece to.
- To set up a board position clear the board by pressing the CLEAR BOARD key. Select the pieces to be entered via the Piece Symbol Keys and then enter the square positions. Change the colour whenever required.
- To end this mode press the GO key.

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

13. SOUND Key

The NOVAG SAPPHIRE II has four different sound settings, which will be indicated on the LCD display.

- a) Setting 1 [**Sound**] : There will be no acoustic signals at all. This is useful for those late night games when you don't want to bother anyone.
- b) Setting 2 [**Sound** –] : There will be an acoustic signal only when the computer answers with its counter-move.
- c) Setting 3 [**Sound** =] : There will be an acoustic signal when pressing any key and when the computer or you make a move.
- d) Setting 4 [**Sound** ≡] : The same sound setting as mentioned under c) and in addition this option turns on the WARNING feature, where the computer will indicate when one of your pieces is threatened. You will hear a double beep and the position of the threatened piece will be on display. This is an useful feature for the novice player.

Note: Press the SOUND key to display the current sound setting. Press the SOUND key within 2 seconds to change the sound setting. The SOUND setting mode will be terminated automatically after 2 seconds.

14. 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 clock of the side to move. On display you will see the message [**totAL**] for 1 second and the colour symbol of the side whose clock is being shown.
- **Second** press on the INFO key shows the clock of the side not to move, [**totAL**] and the colour symbol will be displayed).
- **Third** press on the INFO key shows the score [**Score**] for the current side to move. This gives you some idea of how the computer thinks you stand in the current position.

Example: If the computer sees that it can force a mate, the display will show the mating depth as [**n 03**], which means a mate-in-3.

Disadvantageous evaluations are marked with a " – " sign. For example if the computer sees you or it is going to be mated then the score could be [**–n 03**].

- **Fourth** press on the INFO key will show the current move count. The display will show [**count**] and the colour symbol.

Note: Use the CLEAR key to clear the INFO display. When the computer is calculating 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.

The rotating display shows the current search status while the computer is calculating:

- The time spent on this search so far
- The first 3 ply of the line of play the computer calculates the game will follow from this point
- The computer's evaluation of the position
- The current search depth
- The number of legal moves remaining to search and the total number of legal moves.

Note: Each display stays for 2 seconds.

15. SAVE GAME Key

This function saves a game to the computer's memory or erases a game from its memory. It allows up to 64 games (from A1, A2, A3, to H8) to be saved.

- Pressing the SAVE GAME key when it is your turn to move allows you to enter the SAVE GAME menu. The LCD display will show [**SAVE xx**] where the "xx" represents an empty square. Once SAVE GAME has been activated the display shows for example [**SAVE b1**], whereas square "B1" stands for the first empty square available. The cycle continues from A1-A8, A2-H2, etc. to A8-H8. The user may enter any square of his choice by selecting the A1-H8 keys.

EXAMPLE: To save a game on C5 press SAVE GAME then press C3 and the LCD will show [SAVE c-]. To complete the entering of the game location press now the E5 key.
Press SAVE GAME during the cycle to save the game history onto the displayed square location.

- To erase a game from the game memory location press NEW GAME, then SAVE GAME and enter the square location you wish to erase.

EXAMPLE: To erase a game from location C5, press NEW GAME, SAVE GAME and enter C3 and E5.
To terminate the SAVE GAME function press the CLEAR key any time during the cycle.

Note: The SAVE GAME function only works when the game starts from a New Game position. You cannot save a game if you are in Set Up mode.

16. LOAD GAME Key

This function loads a game stored in memory.

- Always press NEW GAME and SAVE GAME before loading a game. The LCD will show [LOAd xx] where “xx” represents a saved game location. Supposingly square A1 is empty and B1 occupied, the LCD shows [LOAd b1] representing square B1 as the first saved game location. The cycle continues viewing all locations containing a saved game. You may enter any location of your choice by using the A1-H8 keys.

EXAMPLE: Press E5 and the LCD will show [LOAd e-] prompting for the completion of the location entry.

- To load the game currently displayed on the LCD from the memory press LOAD GAME during the cycle.
- To terminate the LOAD GAME function press CLEAR during the cycle.

Note: LOAD GAME only works from a New Game position. You cannot load a game if you are in Set Up mode. To view the stored game use the TRACE FORWARD or TAKE BACK key. All clock information is saved or restored during the SAVE/LOAD GAME function.

V. LEVEL FUNCTIONS

(The following functions are accessed by first pressing the LEVEL KEY)

17. NEXT BEST Key

Key Sequence : LEVEL → NEXT BEST (take back move as indicated)

This feature enables you to check if another good move is possible to play instead of the one just played. After you have taken back the last move indicated, the SAPPHIRE II will immediately begin computing the Next Best move that is available in the position. If such a move is found it will be played.

To activate this function press LEVEL then NEXT BEST key to have the SAPPHIRE II generate the move the computer considers to be second best in the position. The LCD and the LEDs on the chess board will indicate which move has to be taken back. When you have taken back the move, the SAPPHIRE II will begin calculating the best alternative move.

If any of the Find Mate levels are set, then this would be the same as searching for 'cooks'. After pressing the NEXT BEST key the computer will prompt you to take the last move back. You may press the CLEAR key. Then the computer will calculate of another alternative. You may continue this process for up to 8 alternative moves.

Note: This function only works if there is at least one move played in the current game.

18. EASY Key

The NOVAG SAPPHIRE II 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. To activate this mode press EASY twice and 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.

Note: This feature is automatically disabled when the NEW GAME key has been pressed.

19. RESTORE (GAME) Key

Pressing this key will immediately make the computer go to the first move of the game. The LCD display will show [bEGin] to indicate the beginning of the game history. You may then use the complementary function key TRACE FORWARD to step through the game move by move.

Note: If you play any move on the board during the RESTORE or TAKE BACK function, this will clear the remaining game history.

20. RANDOM Key

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

There are 4 options with RANDOM. The default is [rAnd] which means little randomness and will generally make the computer play its very best. The next options designated as [rAnd-], [rAnd=] and [rAnd≡], make the computer vary its play more and more. The [rAnd≡] will provide quite varied games but the computer will play somewhat weaker.

Note: Press the RANDOM key to select one of the four Random levels. The RANDOM setting mode will be terminated automatically after 2 seconds.

21. PRO PRINT Key (this function requires a PC and the NOVAG Distributor)

This function prints the user's programmable opening book via the *serial* interface.

Press NEW GAME key → LEVEL key → PRO PRINT key

PRO PRINT only works from a New Game position and at least one programmable opening book move must have been saved via PRO SAVE or PRO PRIORITY function.

22. PRO PRIOR Key (this function requires a PC and the NOVAG Distributor)

This function allows the user to save the user programmable opening book at the highest priority, which means each new entry will be placed in front of all stored opening books.

- Press NEW GAME key
- Switch on Referee mode [REF≡]
- Enter opening book moves
- Press LEVEL key → PRO PRIOR key

No Set Up position or colour to move changes are allowed before a PRO-OP PRIORITY entry.

23. PRO SAVE Key (this function requires a PC and the NOVAG Distributor)

This function saves any opening lines to the user programmable opening book. This function is the same as PRO PRIOR function, with the only difference that the new opening moves are saved at the lowest priority which means each new entry will be stored at the end of the already entered opening books.

- Press NEW GAME key
- Switch on Referee mode [REF≡]
- Enter opening moves
- Press LEVEL key → PRO SAVE key

No Set Up positions or colour to move changes are allowed before a PRO-OP SAVE entry. The currently played game history is saved in the user programmable opening book.

24. PRO DELETE Key (this function requires a PC and the NOVAG Distributor)

This function deletes one or all opening lines from the user programmable opening book. To delete opening moves proceed as follows:

- Press NEW GAME key
- Switch on Referee mode [REF≡]
- enter the complete opening line
- Press LEVEL key → PRO DELETE *twice*

Pressing PRO DELETE key for the first time will show on display [dEL?]. Press PRO DELETE again to confirm that you wish to delete these opening lines.

Note: If you have stored more PRO-OP Books containing e2-e4 opening lines you may delete ALL of these opening lines starting with e2-e4 by pressing NEW GAME → REFEREE mode ON → entering e2-e4 → and then pressing LEVEL → PRO DELETE *twice*. Press CLEAR to avoid deleting the line after pressing PRO DELETE *once*.

25. ANALYSE Key (this function requires a PC and the NOVAG Distributor)

By using this feature you can ask the NOVAG SAPPHIRE II to play through a game in memory and suggest alternative moves. The computer can be set to analyse for White, Black or both colours.

This function offers 4 choices:

- The default mode is [AnALY] which means no analysis.
- Pressing the SAVE GAME key again will show [AnALY _] which means the White moves will be analysed.
- Another press will show [AnALY ^] which means the Black moves will be analysed.
- Finally another press will show [AnALY =] which means both sides will be analysed.

Use the ANALYSE function after a game has been played against the computer or after entering your own game using the REFEREE function. Then select the level at which you wish each move to be analysed and then select the colour for which you wish the computer to analyse the game. Press GO to exit this mode. The computer will start now with the analysis.

Note: The computer will analyse each move and send the results to the interface. You may stop the analysis by pressing the GO key while the last move is being displayed. Now press LEVEL and then ANALYSE until [AnALY] is shown on the LCD. In this way your game will not be lost in the game history and you will still be able to use the TRACE FORWARD and TAKE BACK keys after you exit this function.

26. BOOK SELECT Key (BK)

This mode is used to tell the computer whether you wish to use just the *normal built in opening book* or if you wish to use your *own programmable opening book*.

Refer to PRO-OP Book function for more information how to enter your book into the computer. Once you have entered some moves into your PRO-OP Book, you may select the order in which the computer will scan through the two opening books for its moves.

- The default mode is [nor] which means the computer will only look into its *normal built in opening book*.
- The second option shown as [Pro] on the LCD means the computer will only search the PRO-OP Book for its opening moves and will ignore its normal built in opening book.
- The third option allows the computer to use both, the *normal built in opening book* and the *user programmable opening book*. You may now choose between the option [nor Pro] or [Pro nor]. Selecting option [nor Pro] makes the computer search the normal built in opening book first for its next move and only if it does not find a solution it will search the user programmable opening book. Selecting [Pro nor] reverses the computer's search.

VI. OPTION I/II KEYS

A. OPTION I KEYS

The following functions can be accessed by pressing OPTION-I/II *once* (the LCD will show [oPt 1]) followed by the appropriate key.

Whenever this function is activated press GO to return to the playing mode.

Note: All functions marked "*" only apply when the SAPPHIRE II is connected to the NOVAG Distributor and a PC.

27. *PRINT MOVES (Key A1)

This function determines to send moves to the interface whilst the game is in progress. The LCD will show [intEr≡] when moves will be sent to the interface.

28. *AUTO CLOCK (Key B2)

Activating this function will select AUTO CLOCK on or off. The LCD will show [autcl≡] or [autcl]. When AUTO CLOCK is on, the computer will send the clock times of both players to the interface.

29. AUTOPLAY/DEMO (Key C3)

Pressing this key allows the user to select either mode.

- AUTOPLAY is shown on LCD as [auto ≡] and DEMO as [dEno ≡]. If either AUTOPLAY or DEMO mode is selected, press the GO key and the computer will begin to play against itself from the current position and at the preset level. All moves are executed automatically by the computer and shown on the LCD display. You may keep track of the game by making the moves on the board without applying pressure.
- At the conclusion of the game the DEMO setting will allow the computer to play against itself continuously (at the end of a game the computer will start with another new game), whereas in AUTOPLAY mode the computer will play up to the conclusion of the game (1 game only).
- Press the GO key or NEW GAME key will exit AUTOPLAY or DEMO mode.

Note: Pressing any key during the AUTOPLAY / DEMO or REPLAY mode will cause the repeat cycle to end. To speed up the opening during AUTOPLAY / DEMO or getting to a certain position in the game, press REPLAY and then press TRACE FORWARD key up to the required position, then press the CLEAR key.

30. *HUMAN MODE (Key D4)

Pressing this key will show [hunAn] on the LCD and this means the format of the information sent to the interface is more readable for the human player.

31. *VIDEO MODE (Key E5)

When this key is pressed, the LCD will show [VidEo] which means the format of information sent by the computer to the interface is compatible with the NOVAG TV interface.

32. REPLAY (Key F6)

Using this function will cause the current game to be set back to the beginning and be played forward with each move flashing 3 times as it is played. Press the CLEAR key to terminate this function.

Note: When using the REPLAY function in connection with the NOVAG interface, type [CtrlS] to pause, type CtrlIS again to resume and type [CtrlIC] to exit replay.

33. *PRINT GAME (Key G7) - (immediate action)

Pressing this key will send the current game to the interface.

34. *PRINT BOARD (Key H8) - (immediate action)

Pressing this key will send the current position to the interface.

35. *GAME RATING (Ver/Set Key)

By using this feature you can ask your NOVAG SAPPHIRE II to rate your game according to the FIDE ELO rating system.

Press the OPTION I/II key *once* and then press the Ver/Set key to obtain the current rating.

The SAPPHIRE II will assign you with 1400 ELO points (shown on the LCD as [rt 1400]) to start with and your rating will be adjusted whilst you are playing games.

To operate this function proceed as follows:

- **To exit the RATING function:** Press the GO key .
- **To reset the RATING function to 1400 ELO points:** Press the CLEAR key.
- **To rate a game:** Press the key with the Pawn symbol. A game can only be rated under the following conditions: the SAPPHIRE II must have resigned or there must be a draw or mate condition, otherwise you will hear 3 beeps and the [Error] sign will be displayed.
- **To offer a draw :** Press the key with the Knight symbol. The SAPPHIRE II will only consider a draw based upon your current rating and score. You can only claim a game as a draw position after 20 moves have been played. The LCD will show [rEJECT] if a draw is not accepted.
- **Resign a game:** Press the key with the Bishop symbol to ask the SAPPHIRE II to rate this game as a losing game.

Note: To qualify for a game rating the SAPPHIRE II must play one and only one side (black or white) and no moves to be taken back are allowed.

The rating system used here is similar to the US Chess Federation two tiered formula. These first tier is suitable for new players and enables rapid advancement.

The first tier formula:

Win: $((PELO \times G) + (OELO + 400)) \div (G + 1)$

Draw: $((PELO \times G) - (OELO + 0)) \div (G + 1)$

Loss: $((PELO \times G) + (OELO - 400)) \div (G + 1)$

New players only stay in this tier for the first 20 games then they move up to the second tier which will stop the dramatic changes and stand to settle down to the actual rating.

The second tier formula:

Win: $(PELO - ((OELO - PELO) \times .04) + 16)$

Draw: $(PELO - ((OELO - PELO) \times .04) + 0)$

Loss: $(PELO - ((OELO - PELO) \times .04) - 16)$

Note: "PELO": stands for Players ELO.

"OELO": stands for Opponents ELO and

"G": stands for number of games played

B. OPTION II KEYS.

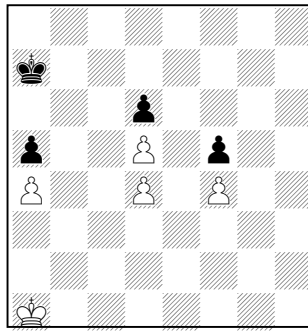
The following functions can be accessed by pressing OPTION-I/II *twice* followed by the appropriate key. Pressing this key again within 2 seconds will toggle between OPTION-I or OPTION-II functions.

36. HASH TABLES (Key A1)

The default mode is [hASH≡] which means Hash Tables on.

Using Hash Tables is a technique which allows the computer to search much deeper into many positions, especially in the end game.

For example the following well known end game position takes the computer about 28 seconds to find the correct solution = move KB1!. With Hash Tables turned off this would take perhaps many hours to find!



37. SELECTIVE SEARCH (Key B2)

The default mode is [SEL≡] which means Selective Search ON. Normally the Selective Search allows the computer to find combinations much faster than a Brute Force Search. Selective Search ON should play about 120 rating points stronger than having Selective Search OFF.

38. PASSIVE BOOK (Key C3)

Turning on Passive Book [PASS≡] will make the computer prefer to play certain opening book lines that are more passive in nature.

39. ACTIVE BOOK (Key D4)

Turning on the Active Book [Act≡] will make the computer prefer to play certain opening book lines which are more active in nature. Both Active and Passive Book may be on at the same time!

40. OPENING BOOK (Key E5)

Turning off the opening book [booH] will disable both the normal built in opening book and the PRO-OP book.

41. LEARN (Key F6)

Turning Learn mode on [LEAr≡] will allow the computer to learn from some of its mistakes. When the computer plays a move in which it becomes worse off, it will remember the position and how deeply it searched into the position. When it comes to this position again it will remember that things turned out badly and will try and find a different move to play.

To clear all remembered positions, press the CLEAR key while the LCD shows [LEAr≡]. The display will then show [cLEAR] to indicate that you have cleared the current learning table.

42. EXTENSIONS (Key G7)

The chess playing program in your computer uses a number of intelligent heuristics to direct the search to look deeper into relevant positions and to try to resolve tactical skirmishes. Turning off this mode will disable the Extension possibility. This makes the search faster in most positions but means the computer may miss some important tactical threat.

43. *TEST (Key H8)

This function is mainly provided for the authorised NOVAG service technician.

Pressing the TAKE BACK key twice will cause the internal test to be performed which checks the hardware of your computer and reports any problems to the interface. Do not be alarmed when the LEDs and LCD behave erratically for a few seconds while the tests are being performed. This is because all the memory is being tested which affects the operation temporarily of the LEDs and LCD.

VII. LCD DISPLAY OF THE NOVAG SAPPHIRE II/ EXAMPLES & EXPLANATIONS

A. LCD Display of the NOVAG SAPPHIRE II

The LCD display of the NOVAG SAPPHIRE II has a 6-digit display. The listed symbols below are used on the display.

1. Figures

0 1 2 3 4 5 6 7 8 9

2. Letters and symbols

A B C D E F G H I K L M N

O P R S T U V X Y ?







THE DISPLAY



- 1 = Indication for the colour
- 2 = 6-digit display
- 3 = Separation for time indication
- 4 = Symbols for chess pieces

- 5 = Symbol for En Passant
- 6 = Symbol for Stalemate/Draw
- 7 = Symbol for Check/Checkmate
- 8 = Symbol for captured figures

Symbols of the chess pieces on the display

-  Pawn
-  Knight
-  Bishop
-  Rook
-  Queen
-  King

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

B. Examples & Explanations

The following are examples of the most important displays of the NOVAG SAPPHIRE II.

This display indicates that the computer is ready and its your move or the move for White.

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 SAPPHIRE II 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 .

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.

02.c5xd4

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

Err or

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

rESIGN

The SAPPHIRE II resigns the game.

dr StL

Shows the announcement for a draw, due to stalemate.

dr 3rd

Shows a draw with 3 time repetition of the position.

dr 50

Shows a draw according to the 50 move rule.

dr ins

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

nAtE

The announcement of a checkmate.

VEr --

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

SEt --

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

cLEAr

The use of the CLEAR key is confirmed.

SEt 'AB

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

Auto ≡

The AUTOPLAY Function is on and the SAPPHIRE II will start playing itself after pressing GO.

rEF ≡

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

Sound

The SOUND is switched off.

rAnd ≡

The RANDOM Function is activated.

EASy ≡

The EASY Mode is activated.

Pro ?

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

12. 'A1

The SAPPHIRE II wishes to promote its pawn which has just moved onto the square a1 and request a Rook in its place.

bEG in

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

End

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

LE

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

LE.tr 1

Tournament level 1 has been selected and is now effective.

LE.At 2

Average Time playing level 2 has been selected and is now effective.

LE.Sd 3

Fixed Time level 3 has been selected and is now effective.

LE.Sd 4

Sudden Death playing level 4 has been selected and is now effective. Clocks will count down to zero time.

LE.Fd 2

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

LE.An 3

Analysis level 3 is selected and is now effective.

LE.EA 5

Easy level 5 is selected and is now effective.

LE.bE 4

Novice playing level 4 is selected and the SAPPHIRE II will play less strongly.

LE.in 4

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

25.h4xG3+

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

ALT

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

nALtE 1

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

FLAG

Time out.

AnAL Y

You have selected the interface ANALYSE GAME Option for both white and black colour.

dE no ≡

The DEMO function is on and the NOVAG SAPPHIRE II will start playing itself after pressing GO key.

dEL ?

The NOVAG SAPPHIRE II prompts for your confirmation to delete the user programmable opening book.

Autc L≡

Interface autoclocks has been turned on.

Auto ≡

The Autoplay function is on and the NOVAG SAPPHIRE II will start playing itself after pressing Go key.

intEr

Moves will be sent to the INTERFACE as they are played on the chessboard.

hUnAn

INTERFACE HUMAN mode has been selected.

UIdEo

INTERFACE VIDEO mode has been selected.

nor

The built in opening book is selected.

Pro

The user programmable opening book is selected.

norPro

Both books as above but the built in opening book will be looked at first.

Pr on or

Both books as above but the user programmable opening book will be looked at first.

hint 1

The NOVAG SAPPHIRE II shows you the first HINT.

hASH

To select the NOVAG SAPPHIRE II Hash Table Generation function.

SEL

To select the NOVAG SAPPHIRE II selective search

PASS

Certain opening book lines which are more PASSIVE in nature have been selected.

Act

Certain opening book lines which are more ACTIVE in nature have been selected.

booh

The NOVAG SAPPHIRE II will consult the opening book.

LEAr n

The NOVAG SAPPHIRE II learning mode is has been selected.

tEst

The extensive search algorithm will be employed by the NOVAG SAPPHIRE II.

EHt

To start the NOVAG SAPPHIRE II self-test function.

IX. TROUBLE SHOOTING

All NOVAG computers are extensively tested before leaving the factory to ensure trouble free performance. However, if you encounter any problems during play, please check the following list first before calling your dealer or sending it in for repair.

1. The computer does not work and the LCD is blank:
 - Check if your batteries have sufficient charge, always use heavy duty or alkaline batteries for reliable performance.
 - Check if the adaptor plug sits properly in the socket, as tight as possible with minimal movement. If this is loose it may interrupt the power supply to the SAPPHIRE II.
2. The letters on the LCD display are faint and get dimmer as you use the NOVAG SAPPHIRE II:
The batteries are run down, please change them.
3. The keys do not work and pressing them will bring no response from the NOVAG SAPPHIRE II:
Please check that the **key board lock switch** has not been accidentally left in the LOCK position. This switch is on the left side panel of the SAPPHIRE II. When using the computer, please ensure that this switch is always set to NORMAL.
4. The NOVAG SAPPHIRE II keeps returning error messages [**Err or**] on entering moves:
Please check that your position is correct using the VERIFY function (see. section IV. 11). Or if the SAPPHIRE II is requesting you to enter a pawn promotion, please press one of the Piece Symbol Keys.
5. The SAPPHIRE locks up and will not respond to any key press:
Please reset the computer by switching it off and removing the batteries or the adaptor. You may set it up again after a few seconds and continue using the SAPPHIRE II normally.

Care of the NOVAG SAPPHIRE II:

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

IX. TECHNICAL DATA AND FEATURES

Microprocessor	H8 - RISC STYLE TECHNOLOGY
Program Size	160K Byte ROM 129K Byte RAM
Hash -Table Size	118K Byte
System Clock Speed	32 MHz
Power Consumption	1.3 W Max., 150mA Max.
Battery	4 x 1.5V, UM-4 or size "AAA" (alkaline batteries)
Adaptor	9V DC rating 300mA (Novag Art. No. 8210)
LCD Display and Information LCD	Yes
Novag Super System Connection	Yes
Playing Levels	64
To Make a Move	Rubber Function Keys
Showing Move	LCD
Opening Book Size (ply)	>> 123,000
Maximum Opening Book Depth	60 ply
Programmable Opening Moves	3,000 ply
Game and Opening Memory	Yes
Games can be saved	up to 64 games or approx. 10,000 ply
Take Back Move	up to 400 ply
Set Up / Verify Function	Yes
Solves Mate	most mate - in - 8
Mate Announcement	up to mate - in - 14
Depth of Search	28 ply
Shows Depth (in ply)	Yes

Strategy of Endgame	Yes
Special Learning Function	Learning up to 140 position.
Random Generator	Yes
Restore Function	Yes
Replay of Game	Yes
Autoplay	Yes
Shows Score and can Resign	Yes
Portable unit	157 x 82 x 21 mm

Connection to the NOVAG UNIVERSAL CHESSBOARD:

Challenge your NOVAG SAPPHIRE II on this beautiful, full-sized wooden auto-sensory chessboard. It also can be connected to any PC and therefore it is compatible with most of the popular chess software-programs: WChess, Chess Genius, Fritz, Mephisto Advantage, Rebel 7 etc. It can be upgraded the minute new exciting chess software is available. Enjoy now your favourite chess software and play a game of chess the traditional way instead of using the keyboard or mouse of your PC.

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

Data subject to change without notice.

X. 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" (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 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 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 is 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!

NOVAG®

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This chess computer has been manufactured under the traditionally high quality and safety standards of Perfect Technology 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.