

**NOVAG<sup>®</sup>**  
**star diamond**

- **INSTRUCTION**
- **ANLEITUNG**
- **MODE D'EMPLOI**
- **INSTRUCCIONES**

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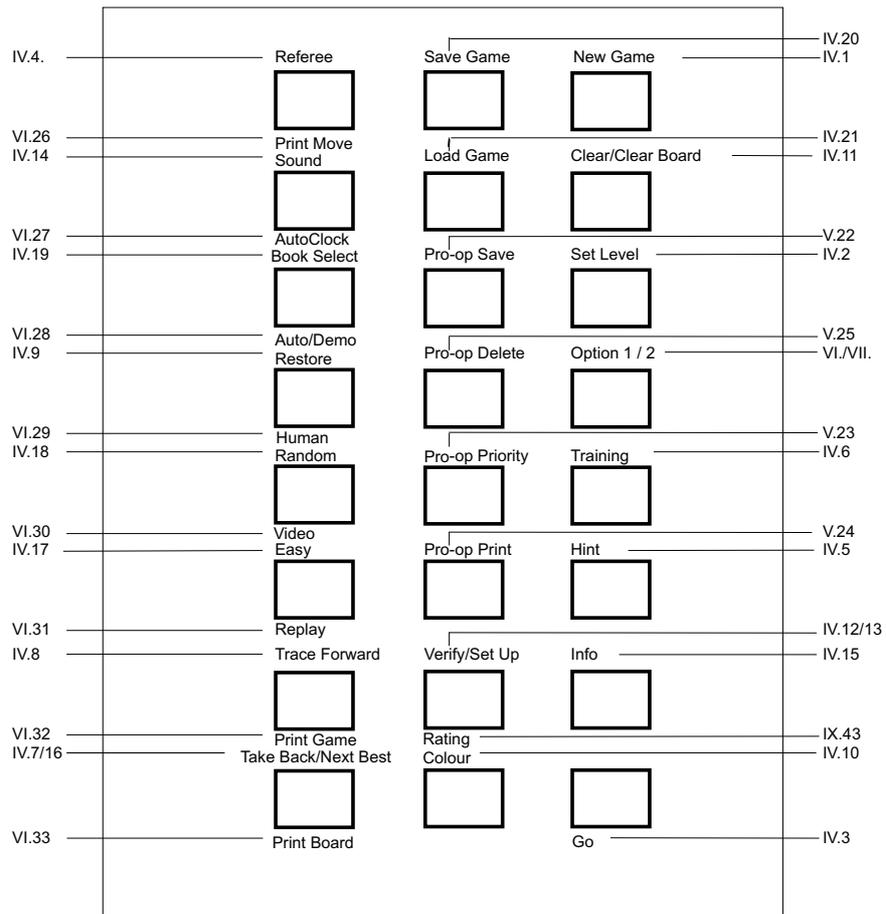
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## KEYBOARD OF THE NOVAG® STAR DIAMOND



For details information of each function key, please refer to the respective sections of this manual.

## I. INTRODUCTION

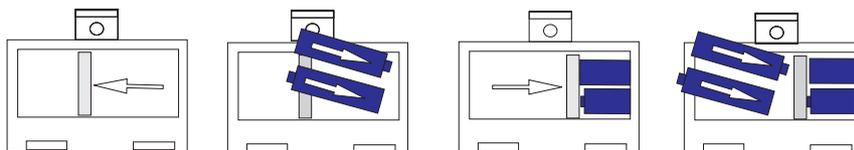
The STAR DIAMOND offers an array of features including an extensive opening book of more than 123,000 ply or option for active, passive, tournament or user programmable book. Amongst others, it also has a rating-system and a warning-system which beeps when you have committed a blunder or when one of your pieces is threatened. The STAR DIAMOND is compatible with the NOVAG SUPER SYSTEM. This will enable its full thought processes to be recorded on a PC (most types).

We recommend that you read the instruction manual thoroughly in order to learn how to fully operate and enjoy your STAR DIAMOND. Section II on Playing the STAR DIAMOND, 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 STAR DIAMOND offers.

### A. BATTERIES

The STAR DIAMOND runs on 4 x 1.5V UM-3 type, or size "AA" **alkaline** or heavy duty batteries (**not included**). A set of new alkaline batteries runs approximately 50 hours (continuous operation).

**IMPORTANT NOTICE:** Before taking out/ replacing/ inserting batteries, turn the unit off by moving the ON/OFF switch to the "OFF" position and unplug the adaptor. To replace/ insert batteries, unscrew the battery door on the back of the unit and lift it off. To take batteries out, pull on the ribbon on which the batteries are placed. To insert batteries, place them on the ribbon according to the correct polarity as indicated by the +/- signs.



After removing/inserting batteries, push the battery door back into place and screw it to the unit. Do not place any other object(s) in the battery compartment but the 4 x "AA" size batteries as described above and remember, batteries must be removed when exhausted. Always use new alkaline or heavy duty batteries of the same type only never mix old and new batteries or batteries of different type, e.g. disposable and rechargeable batteries. Do not recharge non-rechargeable batteries. Remove rechargeable batteries from the chess computer before charging and charge rechargeable batteries under adult supervision only. Any battery charger (for use with rechargeable batteries) or adaptor/ transformer should be examined regularly for potential hazards, such as damage to the cable or cord, plug, enclosure or other parts, and that, in the event of such damage, the battery charger/ adaptor must not be used until that damaged part has been properly removed or repaired. Please also note that a battery charger/ adaptor is not a toy. If you do not use your computer over a long period of time, please remove the batteries. Never short-circuit the unit, the battery charger, or any other electrical appliance or any supply terminals. This chess computer is not intended for children under 3 years old. Packing has to be kept since it contains important information.

### B. ADAPTOR

The NOVAG adaptor is not included with your set, but is available separately from your dealer. Please note that it is a d.c. 9V adaptor with 300 mA and it has a negative centre. 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 and automatically invalidates the warranty. Before using the adaptor, check that the voltage of your electric mains is within the range specified on the adaptor label. The adaptor socket is located at the back of the panel of your computer.

**Note:** Make sure you first connect the adaptor with the computer before you plug it into the mains and that the unit is turned off before connecting it to the mains.

### C. MEMORY

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

## II. PLAYING THE STAR DIAMOND

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

- Step 1:** Turn the power switch (located at the back of the unit) to the "ON" position (if you use an adaptor the batteries will be automatically disabled).
- Step 2:** SET UP all the chess pieces on the chessboard in the opening Position.



- Step 3:** Press NEW GAME Key. When all the pieces are in their respective positions you will see [01-- --] on the LCD and 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 SET LEVEL key and the square corresponding to the desired level (a1, a2, a3, up to f8). On the LCD display you will see a number indicating the present level set. (See IV.2 for level setting and their time controls).
- Step 5:** Once you have set the level, press GO to exit the SET LEVEL mode. After this procedure you may enter your move as White. Gently press down on the piece that you want to move and the two respective rank and file LEDs will light up. Then set the piece down onto the square you wish to move to and gently press down again. (Your completed move will be shown on the LCD). Once the STAR DIAMOND 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 STAR DIAMOND will beep 3 times and show [Error] on the LCD. When executing a capturing move please remove the captured piece first before moving your piece to that square. When the STAR DIAMOND is ready to move it will beep and show its move on the LCD and at the same time the rank and file LEDs which correspond to this move will light up. For example if the STAR DIAMOND wishes to make a move from E2 to E4, the rank LED marked 2 and the file LED marked E will be lit. Execute this move for the computer by gently pressing on the piece standing on the "from" square. Now the "to" square will light up. Pick up the piece on E2 and move it to square E4 by pressing gently on the "to" square to complete the move. Remember to remove the captured pieces first when making a capturing move for the STAR DIAMOND.
- Note:** If you wish to play the Black side, press NEW GAME then set up the pieces so that the Black pieces are in front of you and the White pieces are on the opposite side of the board. When the STAR DIAMOND is ready to start the LCD shows [01-- --]. Press the COLOUR Key then the GO Key and the STAR DIAMOND will make a move for White but playing from the top of the board. When indicating its move the display will show the correct algebraic notation (e.g.: E2E4) but the lights on the board will indicate different squares (e.g.: the move E2E4 will appear as D7D5). When using the computer with Black playing from the bottom of the board always read the computer's move by looking at the indicator lights and not the LCD display.

### III. GAME FEATURES

#### a) Making Moves

The NOVAG STAR DIAMOND has a SENSOR-chessboard which registers all moves automatically when the appropriate squares are gently pressed. Moves to be executed for the computer are indicated by the 2x8 rank and the file LEDs and on the LCD display. Each square on the chessboard is named according to the standard adopted by the World Chess Federation (F.I.D.E.) which are the co-ordinates of each square from a1 to h8, all moves are also shown on the LCD. To make your/the computer's move, gently press the "from" square with the chess piece first and then the "to" square. The colour to move is indicated by the LCD and a white box means that White is to move whereas a solid black box would indicate that it is Black's move.

**Note:** When the STAR DIAMOND is computing all key presses will be ignored except for the GO key which will interrupt its computation and force the current move being analysed to be played at once.

#### b) Capturing A Piece

If the STAR DIAMOND makes a capturing move it will show on the LCD the symbol "x" and in cases of en passant captures it will also show "ep". Please complete this move for the NOVAG STAR DIAMOND and remove the captured piece without applying any pressure. If you wish to make a capture, make the move normally but please remember to remove the captured piece.

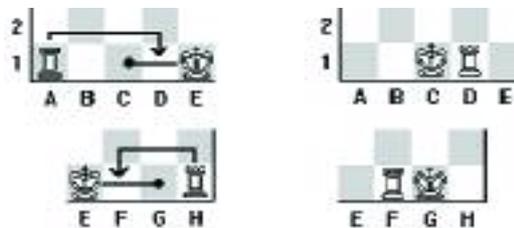
#### c) Impossible And Illegal Moves

The STAR DIAMOND 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. Retract your move without pressing on any square. You can now make another legal move.
- If you try to move the wrong piece when executing a computer move, you hear 3 beeps and the rank and file LEDs of the correct square will light up. To execute this move correctly, press gently on the square indicated.

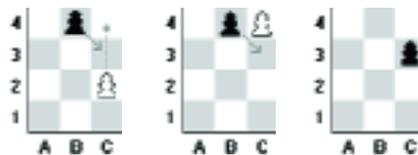
#### d) Castling

According to the rules of chess you must first move the King then the Rook to complete this move. The STAR DIAMOND will indicate all the squares that you will need to press. The computer accepts and executes castlings in set-up positions (also see Official Rules of Chess for more details).



#### e) En Passant

If you make this special pawn capture you only have to enter the "from" and "to" squares of this move as in a normal move. Please remember to remove the captured pawn from the board and to gently press that square. When the computer makes an en passant capture it will show the words "ep" along with an "x" on the LCD (also see Official Rules of Chess for more details).



**f) Pawn Promotion / Underpromotion**

If one of your pawns reaches the 8th rank, the STAR DIAMOND will show this message on the LCD [Pro ?] Press the appropriate Piece Symbol Key to enter your choice for promotion. WHEN THE STAR DIAMOND PROMOTES, the LCD will show the piece that the STAR DIAMOND wishes to promote to and the square where this promotion takes place. Exchange the pawn with the promoted piece and put it onto the lit "to" square. WHEN YOU PROMOTE, the LCD will show [Pro ?] and you will have to press one of the four possible Piece Symbol Keys to indicate your choice. Please exchange your pawn with the piece that you have selected.

**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 STAR DIAMOND 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 STAR DIAMOND will recognise positions where it is 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 STAR DIAMOND will only resign once per game. When you are about to checkmate the STAR DIAMOND, 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 and column H options will remain the same. EASY and REFEREE are turned off.

**2. SET LEVEL Key**

**NUMBERING SYSTEM FOR THE SELECTION OF PLAYING LEVEL ON THE CHESSBOARD**

8	TR8	AT8	SD8	FD8	AN8	EA8	BE8	IN8
7	TR7	AT7	SD7	FD7	AN7	EA7	BE7	IN7
6	TR6	AT6	SD6	FD6	AN6	EA6	BE6	IN6
5	TR5	AT5	SD5	FD5	AN5	EA5	BE5	IN5
4	TR4	AT4	SD4	FD4	AN4	EA4	BE4	IN4
3	TR3	AT3	SD3	FD3	AN3	EA3	BE3	IN3
2	TR2	AT2	SD2	FD2	AN2	EA2	BE2	IN2
1	TR1	AT1	SD1	FD1	AN1	EA1	BE1	IN1
	A	B	C	D	E	F	G	H

**Selecting a level:**

The STAR DIAMOND 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.

There are two ways to select a level :

**a.** By pressing the SET LEVEL Key as many times as necessary until the LCD shows the desired type of level (**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** = Fixed Mate Level). To set the required level of each level group press the corresponding square on the "A" through "H" column. Please refer to the Level Chart for the meaning of each of the 64 time controls.

**b.** A better alternative in setting the playing Level is by pressing gently any of the squares corresponding to the level you wish to set (LCD will show the level number). For example if you wish to set level At 4, press SET LEVEL and the square B4. On the LCD display you will see [LE.At4] indicating the level which is set up.

**Note:** 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. 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 ply 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		73	e7	15 ply search
	8	a8		8	e8	Infinite search
AT	1	b1	EA	1	f1	1 ply search with capture search:
	2	b2		2	f2	1 ply + 2 captures
	3	b3		3	f3	1 ply + 3 captures
	4	b4		4	f4	1 ply + 4 captures
	5	b5		5	f5	1 ply + 5 captures
	6	b6		6	f6	1 ply + 6 captures
	7	b7		7	f7	1 ply + 7 captures
	8	b8		8	f8	1 ply + 8 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		42	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		42	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 STAR DIAMOND 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!

### 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 COLOUR 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 for level settings 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/SETUP 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 COLOUR 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.
  - PRO-OP PRINT - 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.
  - COLOUR - 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 STAR DIAMOND 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 STAR DIAMOND compute for the colour to move, even if in REFEREE mode.
- To exit from the VERIFY / SET UP / SET 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 can be stored in one of the 16 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 the 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 STAR DIAMOND is computing.

**Note:** The STAR DIAMOND may be called upon to compute for the side to move by pressing the GO key.

#### 5. HINT Key

The STAR DIAMOND 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 calculates as 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.

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

##### WHILE COMPUTING:

When the computer is calculating, pressing the HINT key will cause the move which the computer calculates so far best for itself to be displayed on the LCD and alternately it will flash on the board.

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 STAR DIAMOND 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: [x-----].

**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

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]. You do not have to press the squares shown on the board. To exit this mode press the square lit or make your next move or ask for the computer's next move by pressing the GO key. To clear the display press the CLEAR key.

**Note:** If you select the COLOUR 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

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. You do not have to press the squares shown on the board. To clear the display press the CLEAR key.

#### 9. 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.

#### 10. COLOUR 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.
- Press the COLOUR key after pressing NEW GAME key at the start of a new game to reverse the board with White playing down the board. Remember to set up the White pieces on the top of the board and the Black pieces in front of you. In this case disregard the notations along the chessboard.  
Key sequence: NEW GAME → COLOUR → GO
- The COLOUR 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 SET LEVEL mode this key will allow the setting of separate levels for White and Black.

**Note:** When the STAR DIAMOND plays WHITE the display will show the correct algebraic notation (e.g.: E2E4) but the lights on the board will indicate different squares (e.g.: the move E2E4 will appear as D7D5). When using the computer with Black playing from the bottom of the board always read the computer's move by looking at the indicator lights and not the LCD display.

#### 11. CLEAR / CLEAR BOARD Key

This key has different functions :

- When in SET UP mode the CLEAR BOARD key will clear the entire board 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. It will also clear the chess board of any lit squares, for example after the computer has moved or during TAKE BACK or TRACE FORWARD. Pressing the key will clear the LCD display back to [ - - - ] showing the symbol of the colour to move.

#### 12. VERIFY Key

This key has a double function:

1. On the first press you will enter the VERIFY mode and the LCD will show [Ver--]. To exit press the GO key.
2. On the second press you will enter the SET UP mode and the LCD will show [Set--]. To exit 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.

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

2. Press any square and check the information on display. If the square is occupied, the piece symbol, the correct colour sign and the corresponding square position will appear on the LCD. If the square is not occupied, you only see the square position but not the piece symbol and its colour on display.

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

### 13. 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 press onto 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 at the bottom of the LCD display is correct. If not, press the COLOUR key to change this. Next, press the key with the symbol of the piece you wish to enter, then press the square where you wish to place this piece. Entering an occupied square clears that square and selects that piece as the current piece and colour.

**Example:** If a White Pawn is on E2 and the user wishes to place White Knight on E2, press square E2 to clear the square first, then select the White Knight and finally press square E2 again and place the piece on the square.

- To move a piece from one square to another, simply press the present location of the piece that you wish to move. Next press 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 key then enter the square. 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 COLOUR key. You may now enter a move for the indicated colour or make the computer move by pressing the GO key.

### 14. SOUND Key

The NOVAG STAR DIAMOND 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.
- 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 threatened piece will be on display.

**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.

### 15. 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.

### 16. 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 STAR DIAMOND 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 STAR DIAMOND 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 STAR DIAMOND 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 for 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.

### 17. EASY Key

The NOVAG STAR DIAMOND 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.

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

### 18. 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.

#### 19. BOOK SELECT Key

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.

#### 20. SAVE GAME Key

This function saves a game to the computer's memory or erases a game from its memory. It allows up to 16 games 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**] and the LEDs on the left hand side of the board will light up and cycle from row 1-8 for a few seconds. If any game has already been saved to one of the 16 squares on the chessboard, then the row and column LEDs for that square will also light up.

- To save a game press any free square during the cycle to save the game history on that square. After that square has been pressed the LCD display will show [**x---**] and the save game menu will be turned off. If you save a game on a square which stores already another game, the previous stored game will be lost for ever.
- To erase a saved game, press NEW GAME, then the SAVE GAME key and the respective square of which the game history is to be erased. Pressing the CLEAR key during the LED cycle will cause the SAVE GAME function to be terminated.

**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. Additional games can also be stored in your PC.

#### 21. LOAD GAME Key

This function loads a game stored in memory.

- Always press NEW GAME before loading a game.
- Now press LOAD GAME and like in SAVE GAME mode the respective LEDs will light up to show which squares have saved games stored.
- Just press any square which has a game stored and the game will be loaded into the game history and then it will be traced to the final position.
- You can now use VERIFY to set up the chess pieces. To get back to the beginning of the game just press RESTORE.
- Press the CLEAR key during the LED cycle to terminate LOAD GAME function.

**Note:** LOAD GAME works only from a New Game position. You cannot load a game if you are in Set Up mode. All clock information is saved or restored during the SAVE/LOAD GAME function.

#### V. PRO-OP BOOK (Programmable Opening Book):

The Pro-Op Book is the user programmable opening book.

Press NEW GAME → REFEREE ON → then play the moves you want to save in the opening book. Once you get to the end of the move line press the PRO-OP SAVE key to save your entry.

#### 22. PRO-OPSAVE Key (this function requires a PC)

This function saves any opening lines to the user programmable opening book. This function is the same as the PRO-OP PRIORITY 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 PRO-OP SAVE key

**Note:** 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.

**23. PRO-OPPRIORITY Key (this function requires a PC)**

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 PRO-OP PRIORITY key

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

**24. PRO-OPPRINT Key (this function requires a PC)**

This function prints the user's programmable opening book via the *serial interface to your PC/local printer*.

Press NEW GAME key → PRO-OP PRINT key

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

**25. PRO-OPDELETE Key (this function requires a PC)**

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 PRO-OP DELETE *twice* Pressing PRO-OP DELETE key will show on display [dEL?]. Press PRO-OP DELETE again to confirm that you wish to delete these opening lines.

To delete your entire PRO-OP BOOK press NEW GAME → PRO-OP DELETE key *twice*.

**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 PRO-OP DELETE *twice*. Press CLEAR to avoid deleting the line after pressing PRO-OP DELETE *once*.

**VI. OPTION-I FUNCTION**

The following functions can be accessed by pressing OPTION-I/II *once* 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 STAR DIAMOND is connected to an IBM compatible PC.

**26. \*PRINT MOVES**

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.

**27. \*AUTO CLOCK**

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.

**28. AUTO/DEMO**

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.

**29. \*HUMAN MODE**

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.

**30. \*VIDEO MODE**

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.

**31. REPLAY**

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, "CtrlS" to resume and "CtrlC" to exit replay.

**32. \*PRINT GAME (immediate action)**

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

**33. \*PRINT BOARD (immediate action)**

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

**VII. OPTION-II FUNCTION**

The following functions can be accessed by pressing OPTION-1/2 *twice* followed by the appropriate key. Pressing this key again within 2 seconds will toggle between OPTION-I or OPTION-II functions.

**34. HASH TABLES (Referee Key)**

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!



**35. SELECTIVE SEARCH (Sound Key)**

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.

**36. PASSIVE BOOK (Book Select Key)**

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

**37. ACTIVE BOOK (Restore Key)**

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!

**38. OPENING BOOK (Random Key)**

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

**39. LEARN (EASY Key)**

Turning Learn mode on [LEArn≡] 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 [LEArn≡]. The display will then show [cLEAR] to indicate that you have cleared the current learning table.

#### 40. EXTENSION (Trace Forward Key)

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.

#### 41. \*TEST (Take Back Key)

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.

### VIII. ANALYSIS FUNCTION

#### 42. \*ANALYSE (Save Game Key)

This function can be accessed by pressing SET LEVEL key followed by the SAVE GAME key.

**Note:** To make use of this function your STAR DIAMOND has to be connected to a PC.

By using this feature you can ask the NOVAG STAR DIAMOND 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:

1. The default mode is [AnALY] which means no analysis.
2. Pressing the SAVE GAME key again will show [AnALY \_ ] which means the White moves will be analysed.
3. Another press will show [AnALY - ] which means the Black moves will be analysed.
4. 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 SET LEVEL and then SAVE GAME 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.

### IX. GAME RATING FUNCTION

#### 43. GAME RATING (Rating Key)

By using this feature you can ask your NOVAG STAR DIAMOND to rate your game according to the FIDE ELO rating system. Press the OPTION-1/2 key *once* and then press the RATING key to obtain the current rating. The STAR DIAMOND 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 STAR DIAMOND 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 STAR DIAMOND 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 STAR DIAMOND to rate this game as a losing game.

**Note:** To qualify for a game rating the STAR DIAMOND 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. The 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:  $(PELO - ((OELO - PELO) \times 0.04) + 16)$   
 Draw:  $(PELO - ((OELO - PELO) \times 0.04) + 0)$   
 Loss:  $(PELO - ((OELO - PELO) \times 0.04) - 16)$

**Note:** "PELO" stands for Players ELO.  
 "OELO": stands for Opponents ELO and  
 "G": stands for number of games played

## X. LCD DISPLAY OF THE NOVAG STAR DIAMOND/ EXAMPLES & EXPLANATIONS

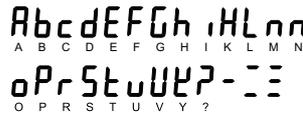
### A. LCD Display of the Star Diamond

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

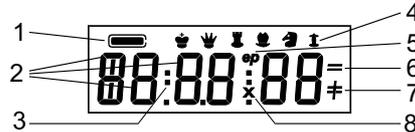
1. Figures



2. Letters and symbols



THE DISPLAY



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

#### Symbols 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 STAR DIAMOND.

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 STAR DIAMOND 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.

Error

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

RESIGN

The STAR DIAMOND resigns the game.

draw stl

Shows the announcement for a draw, due to stalemate.

draw 3rd

Shows a draw with 3 time repetition of the position.

draw 50

Shows a draw according to the 50 move rule.

draw ins

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

checkmate

The announcement of a checkmate.

VERIFY --

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

SETUP --

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 'A8

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

Auto ☰

The AUTOPLAY Function is on and the STAR DIAMOND will start playing itself after pressing GO.

REFER ☰

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

Sound

The SOUND is switched off.

rand ☰

The RANDOM Function is activated.

EASY ☰

The EASY Mode is activated.

Prom ?

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

12. 'A1

The Star Diamond 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 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 STAR DIAMOND will play weaker.
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.
nAtE 1	The computer announces a mate-in-1, the game is lost for you.
FLAG	Time out.
AnAL E-	You have selected the interface ANALYSE GAME option for both White and Black colour.
dE no ≡	The DEMO function is on and the NOVAG STAR DIAMOND will start playing itself after pressing the GO key.
dEL ?	The NOVAG STAR DIAMOND prompts for your confirmation to delete user programmable opening book.
Autc L≡	Interface autoclock has been turned on.
Auto ≡	The AUTOPLAY function is on the NOVAG STAR DIAMOND will start playing itself after pressing the GO key.

intEr

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

hUnAn

INTERFACE HUMAN mode has been selected.

U id Eo

INTERFACE VIDEO mode has been selected.

no r

The built in opening book is selected.

Pr o

The user programmable opening book is selected.

no r Pr o

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.

h int 1

The NOVAG STAR DIAMOND shows you the first HINT.

h AS h

To select the NOVAG STAR DIAMOND Hash Table Generation function.

S EL

To select the NOVAG STAR DIAMOND selective search.

P ASS

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

A ct

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

bo oH

The NOVAG STAR DIAMOND will consult the opening book.

LE Ar n

The NOVAG STAR DIAMOND learning mode is has been selected.

E Ht

The extensive search algorithm will be employed by the NOVAG STAR DIAMOND.

t E St

To start the NOVAG STAR DIAMOND self-test function.

## XI. 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. YOUR COMPUTER DOES NOT WORK:

- If the computer is powered by batteries, check if they 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 STAR DIAMOND.
- Check that the small adaptor plug that connects to the STAR DIAMOND is fully inserted.
- Check the operating voltage of your adaptor to see if it matches your local power supply.
- Check if your power supply fluctuates by more than 10% as this may cause irregular performance.

### 2. ALL LEDS LIGHT UP AND THE COMPUTER IS COMPLETELY BLOCKED:

- Switch off the chess computer and disconnect the power supply.
- Turn the STAR DIAMOND over and you will find a hole marked RESET with a switch in it.
- Use a thin instrument (ball pen) to poke into this hole and hold it for 5-10 seconds.
- This will reset the internal memory of the STAR DIAMOND and all games stored and the Pro-Op Book will be erased.

### 3. ONE OF THE LEDS DOES NOT LIGHT UP:

- Use this key sequence: VERIFY / SETUP → CLEAR BOARD → (press any square) → NEW GAME
- Use your finger and press on every square one after the other, to check if the LCD display the rank and file LEDs indicating the squares pressed are correct. If any of the squares do not light up you should send your set to your dealer for replacement of the faulty LED.

### 4. ONE SQUARE DOES NOT REGISTER A MOVE:

Use this key sequence: SET LEVEL (test all squares) → NEW GAME

Use your finger and press on every square one after the other. You should hear 2 beeps and the LCD should show the level number of the square that you have activated. If any of the squares has no response. Please contact your dealer for repairs.

## XII. TECHNICAL DATA AND FEATURES

Microprocessor	RISC Processor
Program Size	512 K Byte ROM, 256K Byte RAM
Hash -Table Size	118K Byte
System Clock Speed	25 MHz
Power Consumption	1.3 W Max., 150mA Max.
Battery	4 x 1.5V, UM-3 or size "AA" (alkaline batteries)
Adaptor	9V d.c. rating 300mA
LCD Display and Information LCD	Yes
Novag Super System Connection	Yes
Playing Levels	64
To Make a Move	64 Touch Sensors
Showing Move	LCD /LEDs
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
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
Measurement (Slim Board)	355 x 300 x 27mm

PERFECT TECHNOLOGY LTD. reserves the right to make technical changes without notice in the interest of progress.

### **XIII. RULES OF CHESS**

#### **A. 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).

#### **B. 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 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 III.e. in this instruction.

## C. 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 centre squares, this will give you the advantage. To do this, move your centre 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!

## XIV. CARE OF THE NOVAG STAR DIAMOND

Dirt and dust can be removed with a soft cloth (please remove all batteries or connections to the mains prior to cleaning the unit). Do NOT use any chemical solvents, water or any other fluids on the STAR DIAMOND or expose it to rain or moisture (it is not water resistant!). Any damage caused by their use/exposure invalidates the warranty. Always keep the chess computer in a dry and cool place (normal room temperature). Avoid exposing the computer to heat, e.g. spot lights, radiators, sunshine, etc. as this may lead to permanent damage caused by overheating which is not covered by the warranty. Be careful not to scratch the LCD and be reminded that the LCD screen is made of glass. Breakage of the LCD screen is not covered by the limited warranty.

### ADDITIONAL INFORMATION REGARDING WARRANTY:

**For details regarding the warranty of this product and how to obtain warranty service please refer to the enclosed Warranty Card.** In addition, Perfect Technology Ltd. or the Distributors of Novag branded products shall not be liable under the product's warranty if its testing and examination disclose that the alleged defect in the product does not exist or was caused by Customer's or any third person's misuse, neglect, improper installation or testing, unauthorised attempts to repair or modify, or any other cause beyond the range of the intended use, or by accident, fire, lightning, or other hazards or acts of God. The product's warranty does not cover physical damage to the surface of the product, including cracks or scratches on the LCD screen. The product's warranty does not apply when the malfunction results from the use of this product in conjunction with accessories, other products, or ancillary or peripheral equipment and Perfect Technology Ltd. or the Distributors of Novag branded products determine that there is no fault with the product itself. **LIMITATION OF LIABILITY.** To the full extent allowed by law Perfect Technology Ltd. also excludes for itself and its suppliers any liability, whether based in contract or tort (including negligence), for incidental, consequential, indirect, special, or punitive damages of any kind, or for loss of revenue or profits, loss of business, loss of information or data, or other financial loss arising out of or in connection with the sale, installation, maintenance, use, performance, failure, or interruption of this product, even if Perfect Technology Ltd. or the Distributors of Novag branded products have been advised of the possibility of such damages, and limits its liability to replacement or repair of the product or part at the option of Perfect Technology Ltd. or the Distributors of Novag branded products. This disclaimer of liability for damages will not be affected if any remedy provided herein shall fail of its essential purpose. **GOVERNING LAW:** The product's limited warranty shall be governed by the laws of the Hong Kong Special Administrative Region unless otherwise specified.

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.