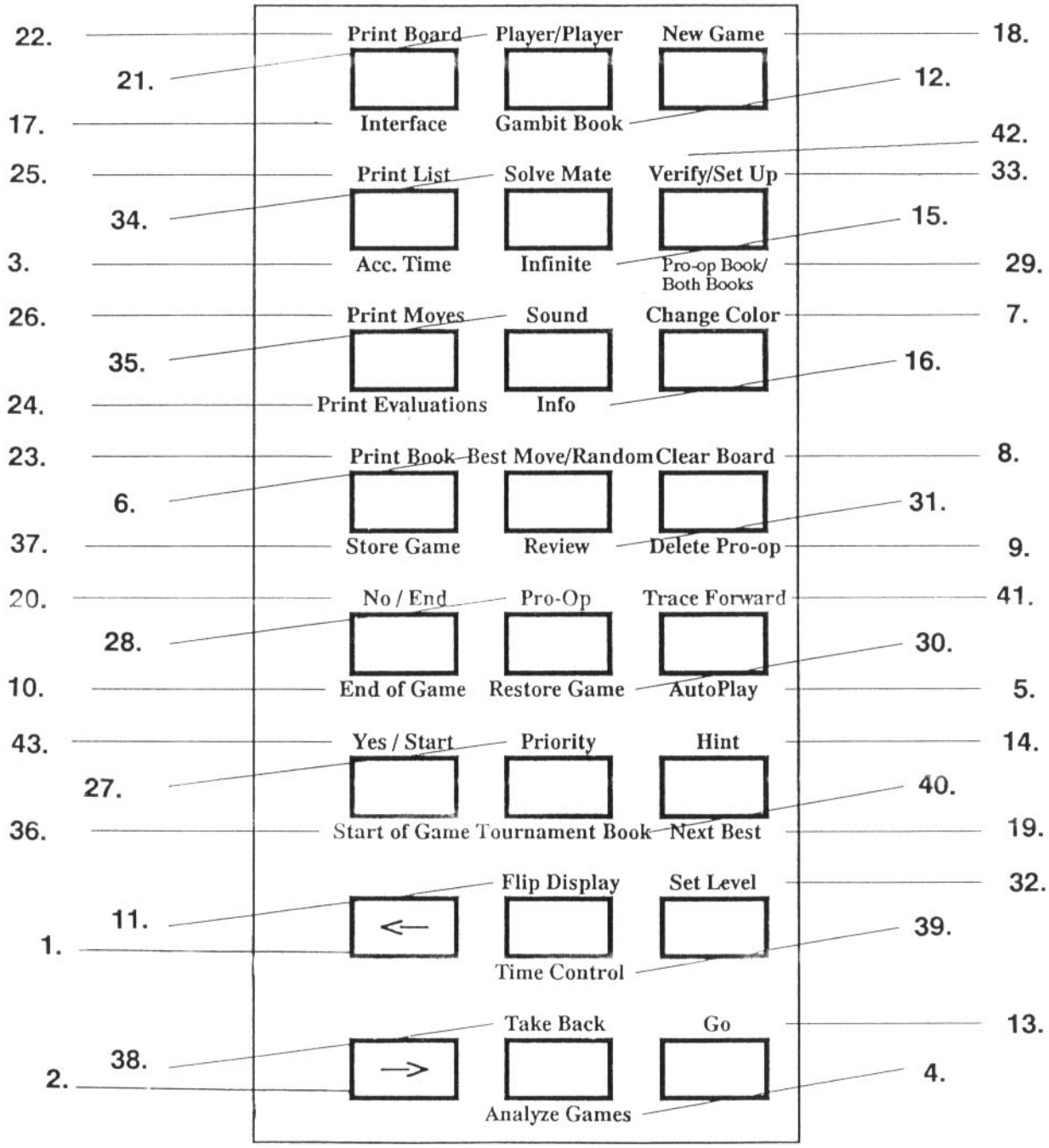
NOVAG®

SCORPIO 68000

INSTRUCTION

KEYBOARD FOR

SCORPIO 68000



The description of the function keys is listed under the marked reference numbers.

INSTRUCTIONS

I. INTRODUCTION

II. PLAYING THE SCORPIO

III. GAME FEATURES
a) Making moves
b) Computing
c) Capturing a piece
d) Illegal moves
e) Castling
f) En passant
g) Pawn Promotion / Underpromotion
h) Stalemate / Draw
i) Check and Checkmate
j) Early Mate Announcements
k) Resignation

IV. SPECIAL FUNKTION KEYS
1. " ← " ARROW Key
2. "→" ARROW Key
3. ACC. TIME Key
4. ANALYZE GAMES Key
5. AUTOPLAY Key
6. BEST MOVE / RANDOM Key
7. CHANGE COLOR Key
8. CLEAR BOARD Key
9. DELETE PRO-OP Key
10. END OF GAME Key
11. FLIP DISPLAY Key
12. GAMBIT BOOK Key
13. GO Key
14. HINT Key
15. INFINITE Key
16. INFO Key
17. INTERFACE Key
    A. ATTRIBUTES:
       HUMAN/VIDEO
       9600/1200 BAUD
    B. FUNCTIONS:
       LEARN ON/OFF
       MOVE FLASH
18. NEW GAME Key
19. NEXT BEST Key
20. NO / END Key
21. PLAYER / PLAYER Key
22. PRINT BOARD Key
23. PRINT BOOK Key
24. PRINT EVALUATION Key
25. PRINT LIST Key
26. PRINT MOVES Key
27. PRIORITY Key
28. PRO - OP Key
29. PRO-OP BOOK / BOTH BOOKS Key
30. RESTORE GAME Key
31. REVIEW Key

32. SET LEVEL Key
33. **SET UP** / VERIFY Key
34. SOLVE MATE Key
35. SOUND Key
36. START OF GAME Key
37. STORE GAME Key
38. TAKE BACK Key
39. TIME CONTROL Key
40. TOURNAMENT BOOK Key
41. TRACE FORWARD Key
42. SET UP / **VERIFY** Key
43. YES / START Key

V. LCD EXAMPLES & EXPLANATIONS

VI. TROUBLE SHOOTING

VII. TECHNICAL DATA AND FEATURES

I. INTRODUCTION

The SCORPIO is the newest 68000 CPU Chess Computer from NOVAG, which offers an array of new features such as : the computer is learning from its play so as not to repeat bad moves and it will also generate chess ratings for your play. The new SCORPIO has incorporated Hash-Tables to significantly improve the chess computer's play, especially the end-game play.

The SCORPIO 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. 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 SCORPIO. Section II on Playing the SCORPIO, will provide you with basic information on getting started and on how to play a game of chess against the SCORPIO. After you are comfortable with the basic functions, you will enjoy learning to use the many special features the SCORPIO offers.

II. PLAYING THE SCORPIO

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

Step 1 : Insert the adaptor plug into the socket marked "8.5V" and switch ON the SCORPIO. (To play with the SCORPIO you need the Novag 8.5 Volt AC adaptor Art.no.8220.)

Step 2 : Press NEW GAME Key.

Step 3 : SET UP all the chess pieces on the chessboard in the starting position. When all the pieces are in their respective positions you will see the move number 1 [-1 ---- ----] on the LCD and you are now ready to begin to play.

Step 4 : Press SET LEVEL Key.

Step 5 : Gently press on the piece standing on the square a1 (White Rook). This will set the SCORPIO's playing skill to the lowest of the regular levels. If this is still too strong for you, please refer to the Section on setting levels to select a training level. If you like to know more about the SET LEVEL, press the TIME CONTROL Key, the display will show [-60 in 00:05:00] for level 1, indicating that the SCORPIO has to play 60 moves within 5 minutes.

Step 6 : Press GO Key to leave the level setting mode, and the display will show again [-1 ---- ----].

You may now begin to play the White side against the SCORPIO. To make a move press gently on the piece that you wish to move (you may also lift up the piece you wish to move and press with your finger on the square that it stood on) then lift up this piece and place it on the square that you wish it to go to by pressing gently on that square. The SCORPIO will begin to compute its counter move if your move was a legal one. Illegal moves are not accepted and the SCORPIO 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 SCORPIO 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 SCORPIO 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 SCORPIO by 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 SCORPIO.

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 SCORPIO is ready to start the LCD shows [-1---- ----]. Press the CHANGE COLOR Key then the GO Key and the SCORPIO will make a move for White but playing from the top of the board.

III. GAME FEATURES

a) Making moves

Making a move on the SCORPIO is simplicity itself. Gently press the piece that you wish to move and place it on the center of the square that you wish to play it to. Of course, illegal moves are not accepted and the SCORPIO will beep three (3) times and will also flash the Error message on the LCD.

When the SCORPIO has made its move, the LEDs of the FROM square light up. Gently press on that square and the LEDs of the TO square will light up, put down the piece on the square indicated by pressing gently on it to complete the computer's move.

Note: Should you wish to switch off the power during a game, please make sure to complete the computer's move, otherwise the memory for this game will be lost.

b) Computing

When the SCORPIO is computing a move it will flash an " * " on the left side of the LCD.

c) Capturing a piece

When capturing please remove the captured piece first, then move your piece to occupy that square. Do the same when making a capture for the SCORPIO.

d) Illegal moves

The SCORPIO will indicate all Errors by making three (3) beeps and will flash an Error message on the LCD. For Errors that need your attention the LCD will show the piece and the square. Correct the Error as indicated. However, most Errors will not need any assistance from you.

e) Castling

According to the rules of chess you must first move the King then the Rook to complete this move. The SCORPIO will indicate all the squares that you will need to press. The computer accepts and executes castlings in set-up positions.

f) En passant

If you or the SCORPIO makes an En passant capture (please refer to chess literature if you do not understand this chess rule) you must remember to remove the captured pawn as indicated by the SCORPIO, by gently pressing on that square.

g) Pawn Promotion / Underpromotion

If one of your pawns reaches the 8th rank, the SCORPIO will show this message on the LCD [pro piece ?]. Press the appropriate piece symbol key to enter your choice for promotion.

THE SCORPIO PROMOTES :
The LCD will show the piece that the SCORPIO 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 piece ?] 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 selected.

h) Stalemate / Draw

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

[stale mate]	no legal moves, but not in check, therefore draw
[draw 3rd]	position repeated 3 times
[draw 50]	50 moves made without capture
[draw - insuf]	insufficient material for either side to check mate the other

i) 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 [checkmate].

j) Early Mate Announcements
The SCORPIO will always announce mate if it sees it and will show the number of moves to mate on the LCD. Example : [mate in 2]

k) Resignation
The SCORPIO will recognize positions where it is lost or seriously behind in material and will resign the game showing [Resign - You Win] on the LCD. You may reject this resignation and play on but please NOTE that the SCORPIO will only resign once per game. When you are about to checkmate the SCORPIO, it will not resign and spoil your moment of glory.

IV. SPECIAL FUNKTIONS

There are 24 Keys on the Control Panel. Most keys control two or more functions. The label above the key is the normal key function. The label below the key is the function after pressing SET LEVEL. The functions are listed below alphabetically.

1. " ← " Key
Pressing this " ← " Arrow Key allows you to search backwards until the beginning of the game.

2. " → " Key
Pressing this " → " Arrow Key allows you to search forward until the end of the game.

Both " ← " " → " Arrow Keys only affect the LCD display and not the actual game. They can be used even while the SCORPIO is thinking. These functions will be interrupted immediately after the computer has prepared its move. To exit both modes whilst the computer is <u>not</u> thinking either make your move or use any of the other permitted keys. To exit whilst the computer is thinking and prior to its announcing a move, press any permitted key.

3. ACC . TIME - ACCUMULATED TIME Key
Key Sequence : SET LEVEL → ACC. TIME [Autoclock off] → ACC. TIME [Autoclock on] → GO

When your SCORPIO is hooked up to a PC or TV via the NOVAG DISTRIBUTOR (for more details, please refer to the instruction manual of the Distributor), press the ACC. TIME Key twice so the LCD shows [Autoclock on]. With Autoclock on, the time on the SCORPIO's clocks will be sent to the PC or TV after each black move has been played.

4. ANALYZE GAMES Key
Key Sequence : SET LEVEL [set skill level] → ANALYZE GAMES [Analyze white?] → NO or YES [Analyze black?] → NO or YES [Analyze both?] → NO or YES → GO

The ANALYZE GAMES function is a versatile learning tool. Your SCORPIO chess computer will analyze each move for white/black, or both sides of a game. The analysis is most useful when sent to a personal computer through the NOVAG DISTRIBUTOR.

If you wish to analyze a game which has not already been played on your SCORPIO, use the PLAYER / PLAYER mode to enter the game on the chess computer.

To send the analysis through the Distributor to the PC press:

a) PRINT MOVES → SET LEVEL [decide how deeply you wish the SCORPIO to analyze your game and set the appropriate level] → INTERFACE [set to "Human"] → GO

b) Press then: SET LEVEL → PRINT MOVES [Set to send info 2, 3 OR 4] → GO

c) Now press: SET LEVEL → ANALYZE GAMES and the LCD will show [Analyze White?]. If you wish to have the SCORPIO analyze only the White moves, press YES Key. Otherwise press NO Key. Now the LCD will show [Analyze black?]. Press YES or NO. If NO has been pressed the LCD will show [Analyze both?]. Press YES to have the SCORPIO analyze both the White and Black's play.

5. AUTOPLAY Key

Key Sequence : SET LEVEL → AUTOPLAY → (AUTOPLAY) → (AUTOPLAY) → GO

Options : There are three (3) options with the AUTOPLAY Key. Press SET LEVEL then AUTOPLAY. The LCD will show the current option :

[autoplay off]
[autoplay on]
[demo on] - DEMO ON will cause a new game to start after a short pause.

The AUTOPLAY mode will make the SCORPIO play against itself at the level that you have selected until the game is decided by a mate or draw. The moves will be indicated on the board by the flashing of the FROM and the TO squares being repeated three times for your convenience, so that you may be able to follow the game in progress. Press the FLIP DISPLAY Key when in AUTOPLAY mode to recall more information as to the calculation of the computer (see FLIP DISPLAY), which gives you many possibilities to analyze the game. You may terminate AUTOPLAY at any time by pressing the GO Key or you may press the SET LEVEL Key and use the AUTOPLAY Key to turn AUTOPLAY or DEMO OFF. This will let the computer finish its current search. To change the number of times each square is flashing, refer to INTERFACE mode.

Note: You may set different levels of skill for each side before you start the AUTOPLAY mode.

6. BEST MOVE / RANDOM Key

Key Sequence : BEST MOVE / RANDOM [Random on] → BEST MOVE / RANDOM → [Random off]

Selecting RANDOM mode will force the SCORPIO to randomly choose between two (2) or more moves which are almost equal in their evaluation. Games of great variety may be played using this mode. [Random on] means the most variety but a slightly weaker play.

Note: When you switch your SCORPIO on, BEST MOVE or [Random off] is automatically selected. The computer will always choose the move with the best evaluation. BEST MOVE / RANDOM can only be selected once the game is out of book.

7. CHANGE COLOR Key

This key has four (4) functions :

a) When in VERIFY or SET UP mode this key changes the color for the entry or verification of the board position.

b) Press the CHANGE COLOR 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.

c) When the key is pressed at any time during a game (except when the SCORPIO is computing) you will be asked to confirm if you wish to change sides [Change color ?]. You will have to press the YES Key to confirm that you wish to do so, otherwise press the NO Key to continue your game.

Note: This will erase all the moves in the game history if you accept the color change.

d) When in SET LEVEL mode this key will allow the setting of separate levels for White and Black.

8. CLEAR BOARD Key

This key has four (4) functions :

a) When in SET UP mode the CLEAR BOARD Key will clear the entire board.
b) When in SET LEVEL mode, pressing CLEAR BOARD Key will prompt you to delete your special opening line or entire PRO-OP book.
c) When adjusting the time controls in SET LEVEL mode, pressing CLEAR BOARD Key will accept the displayed time or move count.
d) When the CLEAR BOARD Key is pressed at all other times it will act as a clear entry key.

9. DELETE PRO-OP Key
See PRO-OP Key.

10. END OF GAME Key
Key Sequence : SET LEVEL → END OF GAME → YES / NO

The END OF GAME function is mainly used for analysis purposes and allows you to go to the end of the game in memory. If for example you have used the START OF GAME Key and a few moves to the beginning of the game, you may then want to use the END of GAME Key to move you forward again to the end of the game.

11. FLIP DISPLAY Key
Key sequence for fixed window on one information display:
FLIP DISPLAY → FLIP DISPLAY → (continue pressing until desired display appears)

The information display allows you to observe how the SCORPIO computes its moves with the evaluation changing as it goes deeper into a position. The automatic information display will show various informations for a short while before cycling to the next display until the best move has been found. When it is your turn to move, the display will show the total time for both sides.

To fix a certain display so that it will always show on the LCD press the FLIP DISPLAY Key until the information you are looking for is displayed. The SCORPIO will then use this at all times until you select another display or press the NEW GAME Key or CLEAR BOARD Key.

Order of display for the Info mode:

a) Display of total time used for both sides.
Example: (* 0:01:19_0:02:40) - this shows first time for White then for Black.

b) Display of accumulated time for side to move and time used for all moves so far.
Example: (* 0:03:11-02:24) - this shows time for Black.

c) Display of best move and evaluation.
Example: (* c7c8-00.55) - evaluation of 00.55 means an advantage of 0.55 pawns. A disadvantage will be indicated by a " - " sign.
Note: If still in opening book the display will show [open].

d) Display of Depth reached in half moves and iteration count.
Example: (* d06 15-35) - this shows that the computer has searched this position to a depth of 6 half moves and there are still 15 legal moves to search out of a total of 34 legal moves in the position.

e) Display of number of nodes or positions searched.
Example: (* 0000306925 n) - this shows the number of positions already searched.

f) Display of current move number.
Example: (* 14 ---- ----) - move 14 is to be played.

12. GAMBIT BOOK Key
Key Sequence : SET LEVEL → GAMBIT BOOK [gambit on] → GAMBIT BOOK [gambit off] → GO

The Gambit Book feature narrows down the choice that the SCORPIO has in deciding which opening to play. This will force the SCORPIO to select a gambit associated with most openings that you wish to play against it. However, if no gambits exist for your selected opening line, then it will use the normal opening book.

13. GO Key
The GO Key is used in conjuction with many of the SCORPIO's special functions and normally acts as an Exit Key. Please note that in many cases when Error appears, the GO Key has not been used to exit the last function used.

MAIN USES:

a) To make the SCORPIO compute for the color to move. (The computer should not be computing).
b) To exit from the VERIFY / SET UP / SET LEVEL mode.
c) To start the SOLVE MATE search.
d) To start the AUTOPLAY mode.
e) To terminate a search in progress by the SCORPIO (whilst it is computing) and call-off a move it currently considers the best. Please note that the evaluation of these moves does not correspond with the evaluation of the Set-Up level.

14. HINT Key

The SCORPIO can suggest moves, if you are not sure how to continue your game, which is a great tutoring feature. When pressing the HINT Key you may recall the following information.

ON YOUR MOVE :

The SCORPIO will show up to 8 half moves ahead of the best variation that it has computed for the move previously. This will usually be quite a good variation and you may use this as your guide. The LEDs will show the FROM and TO squares of the first move of the variation.

WHILE COMPUTING :

The SCORPIO will always display the best variation that it has found so far and this will sometimes change when a better variation is found. (A maximum of 8 half moves can be displayed.) Press HINT Key until the entire variation is displayed.

Sometimes the SCORPIO will show fewer half moves than the iteration number would indicate. There is nothing wrong with your SCORPIO. Sometimes the Hash-Table will cause a short best variation. Also, when the SCORPIO has found a move which scores better than expected it may only show a one half-move variation. Finally if a draw or check mate is found the best variation displayed may be shorter than the iteration number.

The LEDs will show the FROM and TO squares on the chess board.

15. INFINITE Key

Key Sequence : SET LEVEL → INFINITE [infinite on] → INFINITE [infinite off] → GO

The INFINITE LEVEL is for analysis only and the SCORPIO will compute continuously without stopping to play a move unless the conditions below are met:

a) A mating combination is found. The SCORPIO will play this move and announce mate on the LCD.
b) There is only one move possible in the position.
c) The capacity to analyse moves is full and the chess computer cannot continue to calculate. (This happens usually after the maximum depth of 28 ply is used).

16. INFO (INFORMATION) Key

Key Sequence : To see information during search → SET LEVEL → INFO [info on] → INFO [info off] → GO

If the INFO mode is selected, you will be able to observe how the SCORPIO computes a move with the evaluation changing as it goes deeper into a position. The LCD will display various informations, retaining each for a short while before going to the next display and cycling continuously.

Order of Display for INFO mode :

a) Total time used for both sides (* 0:01:29_0:00:03)
b) Accumulated time for side to move and time used for this move so far (* 0:01:39_01:39).
c) Best move and evaluation (* e4d5 - 00.02).
d) Depth and variations remaining to search and total variations (* d08 42 - 43).

17. INTERFACE Key

Key Sequence : SET LEVEL → INTERFACE → [YES / NO] → ["←" or "→"] → GO

There are two Interface attributes selected by using the INTERFACE Key as well as three additional functions. Use the " ←" or " → " Arrow Keys to scroll through the different functions. Use the NO Key to change the displayed status. Use the GO Key to exit this mode and the CLEAR Key to go back to SET LEVEL mode.

Example to cycle through the INTERFACE mode:

Press SET LEVEL → INTERFACE [Video] → "←" [Training on] → "←" [Move flash 3] → "←" [Learn on] → "←" [9600 baud] → "←" [cycle will start again with Video]

A. ATTRIBUTES

1. *HUMAN/VIDEO*
   The HUMAN mode is best to use when the SCORPIO is hooked up to a Personal Computer (PC) through the seperately available NOVAG SUPER SYSTEM DISTRIBUTOR. The VIDEO mode is used when the SCORPIO is hooked up to the TV Interface (available from your NOVAG dealer). This allows the current game and position to be seen on any standard TV.

2. *9600/1200 BAUD*
   This Interface attribute determines the transmission rate of the interface connection to the SUPER SYSTEM DISTRIBUTOR.

   Note: Detailed instruction manuals will be supplied with the NOVAG SUPER SYSTEM DISTRIBUTOR and the NOVAG TV-INTERFACE.

B. FUNCTIONS

1. *LEARN ON/OFF*
   This function controls when the LEARNING is ON or OFF. When LEARNING is ON, the SCORPIO will remember positions from games in which its score has suddenly dropped. In future games, the SCORPIO will try and avoid the same mistake.

2. *MOVE FLASH* (LEDs will flash 1, 3, 5 or 7 times)
   The MOVE FLASH function controls how many times the FROM and TO squares are flashing when in AUTOPLAY and DEMO or when moves are sent to the SCORPIO from the SUPER SYSTEM DISTRIBUTOR.

18. NEW GAME Key

The NEW GAME Key will reset the board to the starting position and the LCD shows [-1 ---- ----]. 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. The playing level set will be retained.

19. NEXT BEST Key

Key Sequence : SET 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 SCORPIO 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 SET LEVEL Key then NEXT BEST Key to have the SCORPIO 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 SCORPIO will begin calculating the best alternative move. If in SOLVE MATE, this key will find if a 'cook' exists to a mate solution.

20. NO / END Key
If you are <u>not</u> in the Level mode, this key will send the displayed move to the end of the game. If you are in the Level mode this key will send the board position to the end of the game after prompting. Using this key during a game does not affect the board.

21. PLAYER / PLAYER Key
Key sequence: PLAYER / PLAYER [referee on] → PLAYER / PLAYER [referee off]

When this mode is entered the display shows [referee on] and you will hear two (2) beeps and a chess game between two parties could then be played. The SCORPIO will take no part in the game (= referee function) unless instructed to by pressing the GO Key. All moves are checked for legality and the SCORPIO may be called upon to compute for the side to move by pressing the GO Key. The PLAYER / PLAYER mode may be selected at any time during a game except while the SCORPIO is computing.

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

22. PRINT BOARD Key
When your SCORPIO is hooked up to a PC or TV via the NOVAG SUPER SYSTEM DISTRIBUTOR, pressing the PRINT BOARD Key will send the board position to the TV or the PC.

23. PRINT BOOK Key
Key Sequence : NEW GAME → PRINT BOOK

The PRINT BOOK function enables you to see what your PRO-OP Book contains. To PRINT BOOK, press NEW GAME before PRINT BOOK. This is due to the fact that PRINT BOOK will overwrite the game in memory.

The PRINT BOOK function will send out the entire PRO-OP book (see also PRO-OP) to the PC through the NOVAG DISTRIBUTOR.

24. PRINT EVALUATIONS Key
Key Sequence : SET LEVEL → PRINT EVALUATIONS → PRINT EVALUATIONS → PRINT EVALUATIONS → PRINT EVALUATIONS → GO

When your SCORPIO is hooked up to a PC or TV, pressing the SET LEVEL Key then PRINT EVALUATIONS Key allows you to select the desired level of information you wish the SCORPIO to report about the search. You have the following four (4) choices:

[Send Info 1]	No search information.
[Send Info 2]	Score, time for move, move and list.
[Send Info 3]	The following list of information is displayed only after the SCORPIO has shown its move: Depth, score, time for move, ply one moves remaining to search, total ply one moves, nodes, nodes searched per second, move played and principal variation.
[Send Info 4]	The same list of information as for [Send Info 3] will be displayed while the computer is calculating.

Note: Please set the computer to HUMAN mode to be able to select the desired level of information.

25. PRINT LIST Key
When your SCORPIO is hooked up to a PC or TV, pressing PRINT LIST will send the current game list to the TV or PC.

26. PRINT MOVES Key
When your SCORPIO is hooked up to a PC or TV, pressing PRINT MOVES twice, so the LCD shows [Print moves on], will cause each move to be sent to the PC or TV as soon as the move is played.

27. PRIORITY Key
See PRO-OP.

28. PRO - OP (PROGRAMMABLE OPENING BOOK) Key
SETTING UP YOUR PRO - OP BOOK

A) *ENTERING AN OPENING*
Key Seqence: NEW GAME → PLAYER/PLAYER → PLAYER / PLAYER → (enter moves) → PRO-OP → YES

To enter your opening into the PRO-OP Book, set up the pieces and press the NEW GAME Key then press the PLAYER / PLAYER Key twice to turn on REFEREE. Now play the moves out you want saved (up to 30 moves deep). Press the PRO-OP Key and you will see [Save opening?] on the LCD. Press YES to save the moves. The PRO-OP Book can store about l000 half moves.

B) *DELETE A LINE*
Key Sequence: NEW GAME → PLAYER/PLAYER → PLAYER/PLAYER (enter moves) → SET LEVEL → DELETE PRO-OP → YES

To delete an opening line, set up the pieces and press NEW GAME Key then press PLAYER / PLAYER Key twice to turn on REFEREE. Now play the moves of the opening you want to delete. Press SET LEVEL and DELETE PRO-OP. The LCD will show [Delete opening?]. Press YES to delete all lines which include the entire line you have just played on the board. For example, if you only make the move "e2-e4" then "Delete Opening", all lines beginning with the move "e2 - e4" in your Pro-op book will be deleted.

C) *DELETE ENTIRE PRO-OP BOOK*
Key Sequence : SET LEVEL → DELETE PRO-OP → NO → YES

To delete the entire PRO-OP Book, press SET LEVEL and DELETE PRO-OP. Answer NO to the [Delete Line?] message on the LCD and YES to the message [Clear Pro-op?].

Note : This will completely erase your current PRO-OP book.

D) *PRIORITY KEY*
Key Sequence : NEW GAME → PLAYER/PLAYER → PLAYER/PLAYER → (enter moves) → PRIORITY → YES

As you enter opening lines, new lines are placed after earlier lines. You may play out a line on the chess board, then press the PRIORITY Key and answer YES to the LCD prompt [First Priority?] to move all the opening lines in your PRO-OP book containing the entered moves to the front of the PRO-OP book.

Example : If you only make the move "e2 - e4", then press PRIORITY → YES, all of your "e2 - e4" openings will go to the start of the PRO-OP Book.

29. PRO-OP BOOK - BOTH BOOK Key

SELECTING BOOK :
After you have entered some openings into your PRO-OP book, you can use the PRO-OP BOOK/BOTH BOOKS Key to select which book you want the SCORPIO to use against you. You have the following five options which are selected by pressing SET LEVEL, then PRO-OP BOOK/BOTH BOOKS. Continue to press the PRO-OP BOOK/BOTH BOOKS Key until the LCD display has cycled to the choice you want.

[Normal book] This means only the built in book will be used.
[Normal first] Both the built in book and your PRO-OP book will be used, with the built in book searched first.
[Pro-op first] Both the built in book and your PRO-OP book will be used, with your PRO-OP book searched first. This selection provides an excellent way to "steer" the opening down the lines you wish to practice.

[Pro-op book] Only your PRO-OP book will be searched.
[Book off] No opening book will be consulted by the SCORPIO. You will find the SCORPIO still plays a very respectable opening even with no book.

30. RESTORE GAME Key

Key Sequence : SET LEVEL → RESTORE GAME → YES → (Select game slot) → YES → YES
(go to start) → YES → Place Forward

To restore any game previously stored refer to STORE GAME. Press now SET LEVEL, then RESTORE GAME Key. The LCD will show [restore game ?]. Press YES and the LCD will show [enter sq --]. The LEDS on the chess board will light up to indicate which squares have saved games associated with them. Set down (or lift) a piece to select a slot associated with a stored game.

For example, to restore a game saved at slot "B1", press RESTORE GAME and YES and then place (or lift) a piece on square "B1". The LCD will now show [Restore b1 ?]. Press YES to restore game into the current game memory.

Note : Restored games are always at the starting position. Press SET LEVEL, END of GAME, then YES to go to final position. Use VERIFY to see where to place all of the pieces.

31. REVIEW (RATE YOUR PLAYS) Key

Key Sequence : SET LEVEL → REVIEW (Rating is 1400 to start) → REVIEW [Rating on] → REVIEW [0+ 0- 0=] → GO

The SCORPIO has the ability to generate a rough rating which reflects your chess playing strength. A rating above 2200 would be considered Master strength. Do not be discouraged if your rating climbs slowly. It requires good play to get a high rating.

Press SET LEVEL then press REVIEW to see your current rating. Press REVIEW again to see your cumulative results against the SCORPIO.

Example: [6 + 2 - 5 =] means you have won 6 games, lost 2 and drawn 5 games. Press REVIEW again to see the current RATING status. Press NO to change the current status [Rating off] or [Rating on] in order to have your games rated. Press REVIEW again, and you will see [New Rating ?] on the LCD. Press YES if you want your rating to be reset to 1400 and the cumulative totals cleared.

Note : Your game does not have to be played until check mate or draw to be rated. The SCORPIO rates a game when the NEW GAME Key is pressed:

a) If the SCORPIO's last score was greater then plus 3 pawns, then the game is scored as your loss.
b) If the SCORPIO is down 3 pawns or more, the game is scored as your win.
c) If the score is between plus or minus 1 1/4 pawns the game is scored as a draw.
d) Any other score is considered unclear and not scored.
e) If you use SET UP, TAKE BACK, CHANGE COLOR or the GO Key during a rated game, the game will not be rated.

32. SET LEVEL Key

A. Playing Levels

The SCORPIO has 64 selectable levels and 1 Analysis Level (INFINITE) which needs quite a long time for calculating. All levels are divided into groups to suit every type of player. You may enter different playing levels for WHITE and BLACK.

LEVEL CHART

Level	Square	Time Control Moves	Time Control Time	Average Time / Move
1	a1	60	5 min	5.00 sec
2	a2	40	5 min	7.50 sec
3	a3	60	30 min	30.00 sec
4	a4	30	30 min	60.00 sec
5	a5	30	60 min	2.00 min
6	a6	40	90 min	2.25 min
7	a7	40	120 min	3.00 min
8	a8	40	150 min	3.75 min
9	b1	60	3 min	3.00 sec
10	b2	40	10 min	15.00 sec
11	b3	40	30 min	45.00 sec
12	b4	40	60 min	90.00 sec
13	b5	40	100 min	2.50 min
14	b6	45	150 min	3.30 min
15	b7	40	9 hr.	18.00 min
16	b8	20	9 hr.	36.00 min
17	c1	game in	3 min	
18	c2	game in	5 min	
19	c3	game in	10 min	
20	c4	game in	15 min	
21	c5	game in	30 min	
22	c6	game in	60 min	
23	c7	game in	90 min	
24	c8	game in	120 min	
25	d1	fix time	2 sec	
26	d2	fix time	5 sec	
27	d3	fix time	10 sec	
28	d4	fix time	15 sec	
29	d5	fix time	30 sec	
30	d6	fix time	1 min	
31	d7	fix time	2 min	
32	d8	fix time	3 min	

Level	Square	Moves	Time / Move	Half Move
33	e1	fix time	1 hr.	
34	e2	fix time	2 hr.	
35	e3	fix time	3 hr.	
36	e4	fix time	4 hr.	
37	e5	fix time	5 hr.	
38	e6	fix time	6 hr.	
39	e7	fix time	8 hr.	
40	e8	fix time	9 hr.	
41	f1	novice 1		1-0 *)
42	f2	novice 2		1-1 *)
43	f3	novice 3		1-2 *)
44	f4	novice 4		1-3 *)
45	f5	novice 5		1-4 *)
46	f6			1
47	f7			2
48	f8			3
49	g1			4
50	g2			5
51	g3			6
52	g4			7
53	g5			8
54	g6			9
55	g7			10
56	g8			11
57	h1			12
58	h2			13
59	h3			14
60	h4			15
61	h5			16
62	h6			17
63	h7			18
64	h8			19

*) The first figure is depth search and the second is mate announcement.

l6 Tournament Levels (Level 1 - 16) :	The Tournament Levels will keep strictly to the time control and will not exceed the time allowed.
8 Sudden Death Levels (Level 17 - 24) :	The clocks will count down and whichever side that does not complete the game within the time allowed is considered lost. The loss will be indicated on the LCD [overstep].
16 Fixed Time Levels (Level 25 - 40) :	The SCORPIO will use only the amount of time indicated and no more for each move. This provides a means of limiting the SCORPIO's play to suit a wide range of opponent's abilities.
5 Novice Levels (Level 41 - 45) :	The SCORPIO will restrict its search so that it will deliberately play weaker to accommodate the beginner.
19 Fixed Depth Levels (Level 46 - 64) :	For really deep analysis the SCORPIO will search the number of plies as selected by you up to 19 half moves deep.
1 Infinite Level (Level 65) :	This level will force the SCORPIO to compute on and on until a mate is found or if there is only one move in the position or if you press GO to terminate the search.

Note: Level 1 - 40 are re-programmable. You may select any time control that you wish to play with and may select different controls for WHITE and BLACK.

B. Selecting a Level

There are two ways to select a level :

Key sequence: SET LEVEL → SET LEVEL → SET LEVEL (and so on until desired level is set) → GO

1. By pressing the SET LEVEL Key as many times as necessary until the LCD shows the desired level.
2. 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 12, press SET LEVEL and the square B4. You may change the playing Level before or during a game, however the computer should not be calculating.

NUMBERING SYSTEM FOR THE SELECTION OF PLAYING LEVEL ON THE CHESSBOARD

8	8	16	24	32	40	48	56	64
7	7	15	23	31	39	47	55	63
6	6	14	22	30	38	46	54	62
5	5	13	21	29	37	45	53	61
4	4	12	20	28	36	44	52	60
3	3	11	19	27	35	43	51	59
2	2	10	18	26	34	42	50	58
1	1	9	17	25	33	41	49	57
	A	B	C	D	E	F	G	H

1. *PRESSING SET LEVEL KEY*
Upon pressing SET LEVEL the LCD will show the current level number and the selective search depth number. The following functions are available to control the level setting.

TIME CONTROL : Pressing TIME CENTROL will toggle the LCD between showing the current level number and selective search depth and the level setting.

Example : [_ level 1 sel 3], press TIME CENTROL - then shows [_ 60 in 0:05:00] which means 60 moves in 5 minutes.

2. *CHANGE COLOR*
The SCORPIO allows setting seperate levels for White and Black. Setting White's level automatically sets Black's level as well. Pressing CHANGE COLOR flips the line on the left most of the LCD from bottom to top to indicate for which color the level is shown.

Key sequence: SET LEVEL (set level for White) → CHANGE COLOR (set level for Black) → GO

Note: To set separate White and Black levels, set the White level first, then the Black level.

3. " → " *RIGHT ARROW*
Pressing " → " (right arrow) increments the selective depth search from 0 to 7. The larger the number, the faster the search.

Note: The search must be sufficiently deep to see a speed up.

"Select 1" - means that on the last ply of the given search the computer will only look at moves which are forcing or better than what has been found so far. This means for example, that when the display shows the computer is doing a 6 ply search, ALL of the moves of the first 5 plies are searched, but only some of the 6th ply moves are looked at. Naturally captures and checks are then examined deeper.
"Select 2" - means that on the last 2 plies of the given search the computer will only look at moves which are forcing or better than what has been found so far.
"Select 3" - means the computer will operate it's selective search on the last 3 plies of the given search depth.
"Select 4" - the last 4 plies.
"Select 5" - the last 5 plies, etc.

Note: Selective search depth 4 and 5 are quite reasonable settings for a game in 2 hours or longer.

"Select 0" - means the computer will look at all moves up to the given ply depth. When set for "Select 0" the computer will not overlook any combination which falls within its current search depth. Solve Mate always uses "Select 0" to make sure no mate is overlooked.

Select level may also be used for "Infinite" time control. Probably the best setting is "Select 4".

Note: The degree of selectivity may be set also independently for Black and White. (see 2. CHANGE COLOR.

4. " ← " *LEFT ARROW*
The SCORPIO allows you to adjust any of the 16 tournament levels, 8 sudden death levels, or 16 fixed time levels. For example, pressing " ← " (left arrow) will show [_ moves 60] with the 6 flashing. Now, you may use the " ← " and " → " Keys to decrement and increment respectively the flashing digit. Press the YES Key to accept the digit. Press the CLEAR Key to accept the entire number.

Note : Use 99 moves for sudden death. Use 0 moves for fixed time.
After setting the number of moves, you will be shown the time control on the LCD. The time control may be adjusted as the moves were adjusted.

Example : To alter the level settings press " ← " Key to decrease number that is flashing or " → " Key to increase that number.

To set a time control of 30 moves in 1 hour.

[m 00] press " → " Key three times to change the 0 to a 3 then press the YES Key

[m 30] press the YES Key to accept the flashing 0 without change

[t 0:00:00] press " → " Key once to change the first flashing 0 to a 1 then press the YES Key

[t 1:00:00] press the CLEAR Key to accept the displayed time.

After following the above sequence you will have set the time control for 30 moves in l hour. The clocks will be reset to this new time control. This time control will be remembered by the SCORPIO until you change levels or turn the power off.

While the SCORPIO is calculating you may view the level setting. However, you may only change the level when it is your move.

33. SET UP Key (SETTING UP A SPECIAL POSITION)

Key Sequence : VERIFY/SET UP → VERIFY/SET UP → CLEAR BOARD (to clear the entire board) → SET UP YOUR SPECIAL POSITION → GO

After the second press of the VERIFY / SET UP Key you will be in the SET UP mode and you may now clear the board of all the pieces by pressing the CLEAR BOARD Key. However, if the current position is only slightly different from the one that you wish to set up there is an easier method, please refer to the examples below.

NOTATION : To show White Pawn on d4 LCD [setup _ d4]
To show Black Knight on f6 LCD [setup _ f6]

Note: The color of the piece(s) to be entered or replaced can be changed with the COLOR Key.

Examples :

TO PLACE A WHITE KING ON THE BOARD :

1. Make sure that the LCD is showing the low dash "_".
2. Press the Key that has the Symbol of the King beside it.
3. Place the White King on the center of any square that you wish, by pressing it on the desired square. (The rank and file LEDs will light up and the set up position is shown on the LCD).

TO PLACE A NUMBER OF BLACK PAWNS ON THE BOARD :

1. Make sure that the LCD is showing the top dash (" - ").
2. Press the Key that has the symbol of the Pawn beside it.
3. Place any number of Black Pawns on the board, by gently pressing on their respective squares.

TO MOVE A PIECE FROM ONE SQUARE TO ANOTHER :

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

Any legal position may be set up using the above procedure. The SCORPIO does not permit the setting up of illegal positions or where there are more than the number of pieces prescribed for a normal game of chess. For example, 9 pawns of the same color, more than 3 bishops of the same color and all other similiar cases will not be permitted.

34. SOLVE MATE Key

Key Sequence : SOLVE MATE → NUMBER OF MOVES TO MATE → GO

Alternative solutions : After mate solution is found → Take back move as indicated

The SCORPIO can solve most chess problems as well as mate problems up to Mate-in-14 even those that require castling, en passant captures or pawn promotions/underpromotions.

SET UP your problem position. Then press the SOLVE MATE Key. The LCD will show the current number of moves to mate. Press the SOLVE MATE Key until the LCD shows the correct number, then press GO to begin the mate search. You may also select the number by placing a piece on the square corresponding to the number that you wish to select.

Example : To select 6, put the piece on a6.

Note : The SOLVE MATE function finds the shortest mate possible in the given position, even if this is a shorter mate than stipulated. In other words, you may stipulate "Mate in 6", but if a "Mate in 5" exists, the SCORPIO will find the mate in 5 before any mate in 6. Do not be surprised if in many situations, putting the SCORPIO on infinite or a selective search level (0-7), it will find a mate much faster than the SOLVE MATE function. This is because the SOLVE MATE function must examine EVERY possible move, while the selective search discards thousands of dubious moves.

35. SOUND Key

The SCORPIO has three different sound settings.

a) SOUND ON - There will be an acoustic signal when pressing any key and when the SCORPIO makes a move.
b) MOVE SOUND- There will be an acoustic signal only when the SCORPIO makes a move.
c) SOUND OFF - There will be no acoustic signals at all.

Pressing the SOUND Key will show the current setting [sound on] , [sound off] or [move sound] on the LCD for about 4 seconds. Continue to press the SOUND Key to cycle through the three choices. You may change the sound setting even when the SCORPIO is thinking.

Note : Power on the computer always sets SOUND ON. NEW GAME retains the sound setting.

36. START OF GAME Key

Key Sequence : SET LEVEL → START OF GAME → YES/NO

The START of GAME Key takes you to the start of the game. Please restore all pieces to the starting position.

37. STORE GAME Key

Key Sequence : SET LEVEL → STORE GAME → YES → (Select game slot) → YES

To store a game into one of the 64 game slots provided by the SCORPIO, press SET LEVEL and then the STORE GAME Key. The LCD will show :

[store game ?] You must now press YES if you wish to store the current game.

Each game slot is associated with a square on the chessboard. Slots which already have a game saved in them will have the LED on the square turned on. Put a piece on the square associated with the slot in which you wish to save the current game. For example, if you wish to save the current game in slot "B1", place (or lift) a piece on square "B1". The LCD will now show [Store b1 ?]. Press YES to save the game to slot "B1".

Note : If you have stored too many long games you may run out of memory to save a total of 64 games. (The computer has a capacity to store 8000 plies).

38. TAKE BACK Key

Key Sequence : TAKE BACK → lift piece on square indicated → place it onto lit FROM square → (replace any piece captured as indicated by the message on the LCD)

If you make a mistake and wish to retract your move, you may press the TAKE BACK Key and follow the above sequence. There is no limit to the number of moves that you may retract but you must remember to replace the captured pieces, castling etc. whenever indicated by the SCORPIO on the LCD.

39. TIME CONTROL

Pressing TIME CONTROL Key within the SET LEVEL mode you will see the true specification of the selected level.

Example: Choose level 43 [-Level 43 set 3]. Press now TIME CONTROL Key and the Display will show : [- novice 3]

40. TOURNAMENT BOOK Key

Key Sequence : SET LEVEL → TOURNAMENT BOOK [Tournament on] → TOURNAMENT BOOK [Tournament off] → GO

Turning [Tournament On] restricts the SCORPIO's choice of openings. After the first three (3) moves the SCORPIO will play only it's "best" choices.

Note: When you switch the SCORPIO on, the big opening book is set on. Playing with the SCORPIO against an human opponent, the big OPENING BOOK should be selected to grant the computer its best playing strength, whereas playing against a chess computer, the TOURNAMENT BOOK function should be on.

41. TRACE FORWARD Key

Key Sequence : TRACE FORWARD → lift piece indicated on LCD → place it onto lit TO square → (if captured, remove captured piece)

The TRACE FORWARD Key is used for tracing forward all the moves of a game after the RESTORE mode has been activated to reset the board position back to the start of the current game in memory. This key is also used after using the TAKE BACK function. Every press of this key will replay a move of the current game until all the moves in memory have been replayed and indicated by the words [End of Game] on the LCD message. You may now continue to play.

42. VERIFY Key

Key Sequence : VERIFY / SETUP → (select color) → (select any piece key) → (adjust misplaced piece, if any) → GO

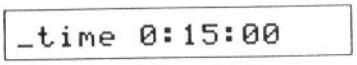
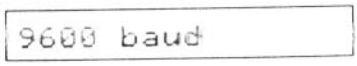
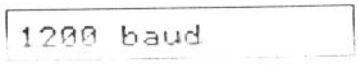
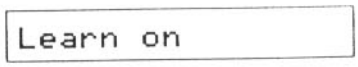
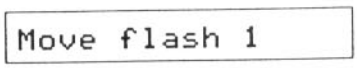
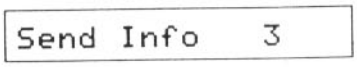
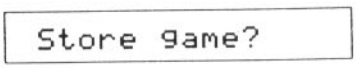
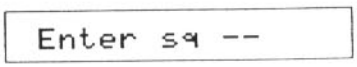
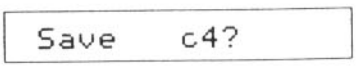
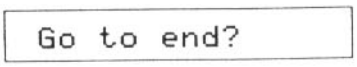
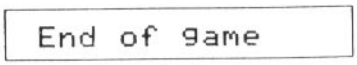
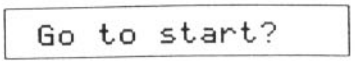
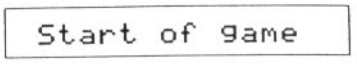
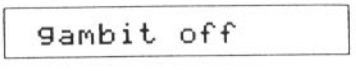
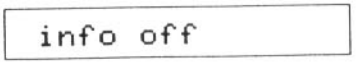
The VERIFY Key is used to check if the position on the board is exactly the same as that held in the SCORPIO's memory. Press the VERIFY Key once. If any piece is misplaced or if a square which contains a piece is in fact empty the SCORPIO will immediately indicate the necessary action required to clear up the error. If the square should be vacant the LCD will just show the name of the square e.g.[ver _d4]. However, if a square is empty but should contain for example the White Knight then the LCD would show [ver N_f3], which would require you to put a White Knight on the square f3. You may use the VERIFY function even while the SCORPIO is thinking.

43. YES / START Key

If you are <u>not</u> in the Level mode, this key will send the display of the first move to the start of the game. If you are in Level mode, this key will send the board position to the start of the game after prompting. Using this key during a game does not affect the board.

V. LCD EXAMPLES AND EXPLANATIONS:

Nova9 Scorpio	The SCORPIO has just been switched on.
Board _♜h1	You are requested to put a White Rook on the square h1.
_ 1 ---- ----	The SCORPIO is ready to play and you may make the first move for White.
- 1 e2e4 ----	The SCORPIO has just played e2e4 and is waiting for your move for Black.
- 1 e2e4 e7e5	The first move of this game is displayed.
0:01:15_0:02:34	Clock display showing that White has used 1 minute and 15 seconds and Black has used 2 minutes and 34 seconds.
_ 12 d1e2+----	White has played its 12th move d1e2 and puts Black into check.
1:12:34_01:32	White has used 1 hour, 12 minutes, 34 seconds for the game and 1 minute, 32 seconds for this move.
e2e4 book	The move e2e4 is in the opening book of the SCORPIO.
d04 07-26	The SCORPIO has searched this position to a depth of 4 half moves and there are still 7 legal moves to search out of a total of 26 legal moves in this position.
0001234567 n	The number of positions searched.
_level 1 sel 3	Display showing the White side is set for level 1 and the selective depth is set at 3.
_60 in 0:05:00	TIME CONTROL mode has been selected and the level number is replaced by the detailed description of level 1. This level is 60 moves in 5 minutes.
_9ame in 0:05:00	As above but now for level 18.
_fix 4:00:00	As above but now for level 36, four hours per move.
_novice 5	Novice level 5 is selected for White. This will make the SCORPIO play weaker.
_ 12 ply	Level selected is 61. The SCORPIO will compute this move to the depth of 12 half moves but this may take a very long time unless in the endgame.
_moves 99	Setting your own time control. Please see SET LEVEL instruction.

	Setting your own time control. Please see SET LEVEL instruction.
	Interface HUMAN mode has been selected.
	Interface VIDEO mode has been selected.
	Interface speed of 9600 baud has been selected.
	Interface speed of 1200 baud has been selected.
	LEARNING mode has been selected.
	One move flash of the LEDs for AUTOPLAY and REPLAY mode has been selected.
	Interface autoclocks have been turned on.
	Print evaluations level 3 has been selected.
	The SCORPIO needs a YES key press to store the current game.
	The SCORPIO is waiting. By placing a piece on the chess board you can indicate which of the 64 game slots you wish to use to save the current game.
	Press YES key to save the current game in slot c4.
	Press YES key to go to the end of the current game.
	You are at the end of the current game in memory.
	Press YES key to go to the start of the current game.
	You are at the start of the current game in memory.
	The Gambit Book is not selected.
	The Infinite level has been selected. The computer continues to calculate until you press the GO key.
	The INFO mode for displaying " search information " is off.

Rating is 1400	Your current rating against the SCORPIO.
1+ 0- 1=	You have won one, lost none and drawn one game with the SCORPIO.
Rating on	The SCORPIO will rate your games.
New Rating?	Press YES key to reset your current rating.
Restore game?	Press YES key to restore a game previously stored.
Tournament on	You have selected the TOURNAMENT BOOK which means the SCORPIO will select the best lines from its opening book.
Analyze white?	You have selected the ANALYZE GAMES option and if you wish the SCORPIO to analyze for the White side, press YES key.
Analyze black?	As above but now for the Black side.
Analyze both?	As above but now for both sides.
Normal book	The built in opening book is selected.
Normal first	Both the built in book and the PRO-OP book will be consulted. The built in book will be looked at first.
Pro-op first	Both books as above but the PRO-OP book will be consulted first.
Pro-op book	As above but only the PRO-OP book will be used.
Book off	The SCORPIO will not consult either opening book.
Delete opening?	Press YES key to delete all openings in the PRO-OP book which include the current position.
Clear pro-op?	Press YES key to erase the PRO-OP book.
autoplay on	AUTOPLAY mode is on, the SCORPIO will play against itself after you press GO key.
demo on	DEMO mode is on. The SCORPIO will continue to play games against itself.
Error	You have pressed a key that is not the appropriate response for the action which is expected by the SCORPIO.
Print moves on	Moves will be sent to the INTERFACE as they are played on the board.

referee on	REFEREE (Player/Player) mode is selected.
mate in 2	You are in the Solve Mate option which is now set to solve a mate-in-2 problem. Alternately, the SCOPRIO has just announced a mate-in-2 moves.
no mate 2	The SCORPIO cannot find a solution for the mate-in-2 problem.
random on	RANDOM mode (more variety) has been selected.
Save opening?	To save the current moves to the PRO-OP book press YES key.
First Priority?	To move all the variations which include the current moves to the top of the PRO-OP book, press YES key.
verify	You are in the VERIFY mode.
verify _♙e1	The White King should be standing on the square e1.
setup _♙	You are in SET UP mode and are ready to place a White pawn on the board.
Change Color?	Do you want to change the side to move? Press YES key to change and NO key to exit.
1 e2e4 d7d6 hlp	The HINT key has been pressed and the SCORPIO shows the first two half moves of the HINT. Press HINT again to continue viewing the suggested line of play.
Pro piece?	The SCOPRIO requires you to press a piece key to select the piece that you wish to promote to.
stale mate	A stalemate draw has been declared.
draw 3rd	Draw because of the three time repetition rule has been achieved.
draw 50	Draw because of the 50 move rule has been achieved.
check mate	The object of the game!
Resign- You win	The SCOPRIO considers himself beaten.

VI. 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**
   - 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 SCOPRIO.
   - Check that the small adaptor plug that connects to the SCOPRIO 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 SCORPIO 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 SCOPRIO 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 → VERIFY / SETUP → CLEAR BOARD → (press any piece key) → (test all squares) → NEW GAME

   Use your finger and press on every square one after the other, to check if 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 then the reed switch that controls the square may be faulty. Please contact your dealer for repairs.

Care of the NOVAG SCORPIO
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 warrenty.

VII. TECHNICAL DATA AND FEATURES

• Microprocessor	68.000
• Program Size	96K Byte ROM 80K Byte RAM
• Hash - Table Size	64K Byte or approx. 8200 positions
• System Clock Speed	16 MHZ
• Integrated Chess Clock	Yes
• Power Consumption	2,55W Max.
• Current	300 mA Max.
• Adaptor	8.5V AC rating 850 mA (Novag Art. Nr. 8220)
• LCD Display and Information LCD	Yes
• Novag Super System Connection	Yes
• Slim Board	355 x 300 x 25mm
• Playing Levels	64
• To Make a Move	64 Touch Sensors
• Showing Move	LCD / LEDs
• Opening Book Size (ply)	> 32.000
• Maximum Opening Book Depth	60 ply

• Programmable Opening Moves	1500 ply
• Game and Opening Memory	Yes
• Games can be saved	up to 64 games or approx. 8000 ply
• Take Back Move	up to 400 ply
• Set Up / Verify Function	Yes
• Solves Mate	most mate - in - 14
• Mate Announcement	up to mate - in - 15
• Depth of Search	28 ply
• Shows Depth (in ply)	Yes
• Strategy of Endgame	Yes
• Special Learning Function	up to 400 ply of history moves allow the computer to remember positions from games in which its score has suddenly dropped.
• Random Generator	Yes
• Restore Function	Yes
• Replay of Game	Yes
• Autoplay	Yes
• Automatic Rating of Players	Yes
• Shows Score and can Resign	Yes

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

All data subject to change without notice.

This chess computer has been manufactured under the traditionally high quality and safety standards of Novag Industries Ltd. and complies with the European standard CE-EN 71 which is guaranteed by the importer whose name is marked on the enclosed warranty card. Not suitable for children under 36 months due to inclusion of small parts.

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