NOVAG®
SUPER CONSTELLATION
INSTRUCTIONS

INSTRUCTIONS

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GENERAL HINTS

Playing with the NOVAG ® SUPER CONSTELLATION is far simpler compared to other chess computers. However, we recommend reading the GENERAL HINTS before you start to play. The detailed instructions are laid out in such a way that each section is self-contained, so you do not have to read everything at once.

If you encounter any problems operating your computer, refer to the **Trouble Shooting List** for advice.

Batteries

The NOVAG ® SUPER CONSTELLATION runs on six 1.5V C-type **alkaline** batteries (not included). Note: **Do not use ordinary batteries as they will result in irregular performance!**

To insert the batteries, open the BATTERY DOOR on the bottom of the unit and place the batteries as indicated by the +/- signs. A set of new alkaline batteries runs approx. 20 hours (continuous operation).

Battery-Low-Indicator

If the batteries are down to approx. 20% of their original capacity, the flashing of the LEDs will become markedly slower. The batteries should be changed soon, otherwise the computer's operation will become irregular.

Adaptor

The adaptor for the SUPER CONSTELLATION has the Art. No. 8220 and is separately available. Before using the adaptor check that the voltage of your electric output is within the range specified on the adaptor label. The adaptor socket is located at the back panel of your computer. Note, that you must only use the adaptor specified for your computer. The use of another adaptor automatically invalidates the warranty.

Beginning to Play

Before commencing play set up the chess pieces that are enclosed with your set in the opening position (white pieces on rows 1 and 2, black pieces on rows 7 and 8).

The power switch is a 3-position switch located at the back panel. It is marked ADTR/OFF/BATT. Switch it to:

— *ADTR:* *if you play with the adaptor*
— *BATT:* *if you play on batteries*
— *OFF:* *to switch any power supply off.*

Then press NEW GAME. You will hear 3 beep tones and the WHITE LED will start to blink. You can now make your white opening move. Note that all entries and functions of the computer are confirmed by various beep tones, which can be switched off via the SOUND Key (see Para. 22)

Opening Book

The 56K program of the NOVAG ® SUPER CONSTELLATION has an amazing, pre-programmed opening book of over **20,000 half moves** (counted without the often complex variations).

At the start of each new game, the computer will search if your opening move is contained in any of the pre-programmed openings. If so, it will reply in compliance with the opening and follow it as long as you continue to play this opening or until its pre-programmed line of play is exhausted.

While playing an opening, the computer will reply instantly. When the computer has left the opening, you will notice that it takes a little while to compute its move depending on the level/training level set.

NEW: Programmable Opening Book

As an exciting **innovation from NOVAG ®** , the SUPER CONSTELLATION is the first chess computer that allows you to program openings and variations into the computer yourself. This feature truly offers a new dimension to computer chess, as you can now build an opening book of your choice.

The Programmable Opening Book has a storage capacity of up to 2,000 half moves. Openings can be replayed as many times as you wish in order to remember and learn them by heart as a training for tournament play or you can simply use them to extend the computer's pre-programmed opening book.

To make the **Programmable Opening Book** as versatile as possible, partial or entire deletion and re-programming capabilities are provided. For details see para. 24.

Opening Memory

The SUPER CONSTELLATION still recognizes and follows the opening if, by mistake, you made a move which is not in compliance with the opening. After making such a wrong move, wait till the computer displays its move and execute it. Then take back the computer move as well as your last move via TAKE BACK (see Para. 17). Now make the move according to the opening, and the computer will continue to follow it.

This feature also applies if you play in MULTI MOVE Mode (see Para. 15), provided the opening is contained in the SUPER CONSTELLATION's opening book, as well as to openings entered into the Programmable Opening Book.

CMOS Memory (Longterm Game Memory)

Your NOVAG® SUPER CONSTELLATION has a CMOS Memory, which stores the board position as well as all moves of the game automatically once the unit is switched off. This way you can interrupt a game if you do not have the time to finish it, and can continue within 3 months from where you left off.

If you want to continue a game stored in the CMOS Memory, you can recreate the previous board position via the VERIFY Mode (see Para. 20.A).

You will cancel your previous game only by pressing NEW GAME.

The CMOS Memory is powered by a battery that recharges itself automatically during play. In case the unit has been stored for a longer period of time the battery power will drop and so will the storage capacity of the memory. To recharge the battery, connect the computer via the adaptor to a power outlet and leave it switched on for 8 — 10 hours.

1. Making a Move

Your NOVAG® SUPER CONSTELLATION has a SENSOR-chessboard which registers your moves automatically. Moves to be executed for the computer are indicated by the 2x8 row and column LEDs (light emitting diodes), working on the principle of coordinates. Each square of the chess board can be called-out by 1 row and 1 column LED, indicating the coordinates of that square.

To start, press NEW GAME and you automatically play white (for CHANGE COLOUR see Para. 18). The WHITE-LED now flashes indicating that it is your move. Gently press down the piece you want to move and the 2 respective row and column LEDs come up. Then set the piece on the square you wish to move to and press it down lightly again. The BLACK-LED lights up immediately indicating that the computer has registered your move and started to compute its counter-move.

When it has found its answer you will hear a beep tone. 2 row and column LEDs indicate the 'from' square of the piece the computer wants you to move. Press it gently and pick it up. Now the row and column LEDs of the 'to' square come on and you set this piece on that square, pressing it gently again. Thus the computer's move is executed. The WHITE-LED will flash now indicating that it is your move again.

Each pressing on a square is accompanied by a beep. If the sound is switched off, the computer will only beep when it makes a move (see Para. 22 SOUND).

2. Capturing a Piece

If the computer indicates a move onto a square that is occupied by an opponent's piece, it means that this piece is captured and must be removed from the game. Simply take it off the board without applying pressure.

For en passant captures the computer will indicate via the flashing LEDs the pawn you have to remove. Gently press the indicated square and remove the piece.

3. Impossible and Illegal Moves

The NOVAG® SUPER CONSTELLATION is programmed in accordance with 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, the row and column LEDs of the illegally occupied square, the ERROR and COLOUR-LED flash at fast intervals. To correct this, reverse this move by pressing the piece gently on both squares. You can now make another, legal move.

If you try to move the wrong piece when executing a computer move, the row and column LEDs of the correct square of the piece to be moved flash at fast intervals, as well as the ERROR and COLOUR-LED. To correct this, move the piece indicated.

If, by mistake, you move a computer piece to the wrong square, the row and column LEDs of the correct square flash at a fast intervals, as well as the ERROR and COLOUR-LED. Press the piece again on the wrongly occupied square, set it on the indicated, correct square by applying gentle pressure and the mistake is corrected.

4. Castling

According to the rules, during a castling first move the King and then the Rook. Both pieces are moved by pressing them down gently like in any other move.

If you take back a castling make sure to also reposition the rook as the computer will indicate. The computer accepts and executes castlings in set-up board positions (see Para. 20).

5. En Passant

If you or the computer make an en passant capture, do not forget to remove the captured pawn. The computer will indicate via the flashing LEDs the pawn you have to remove by gently pressing the indicated square. You or respectively the computer can capture en passant in set-up board positions (see Para. 20).

6. Pawn Promotions/Underpromotions

If one of your pawns reaches the opposite side of the board, the SUPER CONSTELLATION allows you to promote or underpromote it to any desired piece.

As soon as you set your pawn on the 'to' square in the promotion move, the row and column LEDs of the square, the 4 PIECE SYMBOL-LEDs on the right hand side of the computer (Queen, Bishop, Knight, and Rook), and the COLOUR-LED light up. You can now choose the piece you want to promote/underpromote to by pressing the respective PIECE SYMBOL Key. The LEDs will disappear and the computer will start computing its counter-move.

If a computer pawn reaches the opposite side of the board, the computer indicates to you into which piece the pawn will be promoted/underpromoted. As soon as you press the 'from' square in the promotion move, the respective PIECE SYMBOL LED lights up and will disappear when you move on the 'to' square. If you did not pay attention, you can always check in VERIFY Mode (see Para. 20) which type of piece is on that square.

The computer also executes/accepts pawn promotions in set-up board positions (see Para. 20).

7. Stalemate/Draw

A stalemate is announced by flashing the MATE and the DRAW-LED. A draw is indicated by flashing the DRAW-LED. The computer will announce the draw in all positions where there is insufficient mating material as stated by FIDE (World Chess Federation).

8. Check and Check Mate

Check announcements will be made via the CHECK-LED. The player will not be allowed to leave his king in check.

In a checkmate situation the CHECK and MATE-LED will come on together with the LED of the losing colour. Note that the SUPER CONSTELLATION is the first commercial chess computer that has the capability to force a checkmate with King, Bishop and Knight from level 5 to 7! You will be amazed at its execution of this difficult win.

9. Early Check Announcements

The deeper the search of the computer the earlier the computer will see when it can checkmate you. It will indicate this with the 4 lower LEDs on the left hand side of the computer marked MATE ANNOUNCEMENT.

If all 4 LEDs light up, the computer sees an inescapable mate in 4 moves. After the next move only 3 LEDs light up and so on. You may either resign or play up to the mate.

10. The Computer Resigns

If the computer sees no chance of winning or drawing the game in progress (depending on the level set and the thus restricted depth search) it will offer to resign by lighting the CHECK, MATE, and DRAW-LED as well as the COLOUR LED of the resigning colour. However, it will not resign if it is being mated by the consumer shortly — as it would be unfair to deprive the player of this moment of glory!'

It is your choice to either accept the resignation and start a new game, continue to play to the end or to change to a higher level of play.

11. NEW GAME Key

Pressing NEW GAME will start a new game. The previous game stored in the computer's CMOS Memory is cancelled and all pieces are now in the opening position.

Press NEW GAME every time you switch the computer on, during, or at the end of a game, whenever you want to commence a new one.

12. SET LEVEL Key
TRAINING LEVEL Key

The NOVAG® SUPER CONSTELLATION has **7 Regular Levels** of skill, including 4 levels with tournament time controls as well as **1 Analytic Level.**

Since the 56K program offers super strong play which might be too strong for less experienced players, the SUPER CONSTELLATION also has **7 Training Levels** in which the depth search is restricted so that the player has a better chance of winning against the computer.

With this versatile division into 14 levels the SUPER CONSTELLATION is not only a formidable opponent for strong players but offers average players the opportunity of slowly increasing the playing strength of the computer as they get better.

The sophisticated program of the SUPER CONSTELLATION also uses the time you think about your next move, analysing positions, even taking your possible next moves into account.

How to set any of the 7 Regular Levels:

Skill levels are shown by the 8 row LEDs on the left hand side of the computer, when LEVEL is pressed. The computer will always retain the Regular Level previously set in its CMOS Memory, regardless if you start a NEW GAME or switched off the computer.

You can check or change the Regular Level before commencing or during a game, however not while the computer is computing. Press LEVEL and the row LEDs display the level the computer is presently set to. Every time you press LEVEL increases the Regular Level by 1. When you have reached Level 8 you press LEVEL again to go back to Regular Level 1. Once you have set the desired level, press GO to enter it into the computer.

The computing process of the computer can be interrupted at any time, simply by pressing GO. However, the computer will only give you the best move found up to that moment.

When and how to use the Analytic Level:

Set the computer to level 8 as explained above and you are in the Analytic Level. This level is used for analytic purposes or postal chess and offers the computer infinite search time for the best possible move. In Analytic Level 8 the computer will only make a counter move while still in the opening book or if it has found a mate. On this level the computer can find a mate-in-12 if given sufficient time.

Pressing SHOW MOVES will indicate the best move found so far and this may change as its search goes deeper, finding even better moves (see Para. 16).

How to set the computer to any of the 7 Training Levels:

To set the computer to any of the 7 Training Levels, press LEVEL and TRAINING LEVEL. The VERIFY LED lights up to indicate that you can now set the computer to a training level. Then set the desired level as explained under 'Regular Level' above and press GO to enter it into the computer. The VERIFY LED disappears and you can begin or continue your game.

Note: Training Level will not be retained in the CMOS Memory if you start a new game or switch the computer off, so it has to be reset everytime before starting a NEW GAME.

While in Training Level, the depth search of the computer is limited to the number of half moves corresponding to the level set. E.g. if you set the computer to Training Level 3, the overall depth search is limited to 3 half moves. Needless to say, this purposely results in weaker play especially on the lower levels, giving the player a chance of a victory over the computer.

As the computer almost always makes a search according to the limit set, playing on higher training levels (e.g. level 6 or 7) may become a time consuming affair. If your play has improved to that point it is recommended that you switch to any of the lower Regular Levels in which the computer response times are faster.

Average Response Times

Below an indication of the average response times on the different levels. On the levels marked TOURNAMENT, the computer will not exceed the stated time limit for the number of moves. The Tournament Times make some allowance for the manual execution of computer moves by the player. However, if the operator is very slow in executing the computer's moves, this may result in exceeding the time limit.

Some valuable time may also be lost by having the moves printed out by the CHESS PRINTER. In order to avoid exceeding the time limit in tournaments it is recommended to **disable** the CHESS PRINTER. You can print out the entire game as many times as you like after the game is finished as it is stored in the CMOS Memory.

Note that the computer will average out the time, using more for complex moves and less for simple ones.

Regular Level		
1	0 - 5 secs	BLITZ TOURNAMENT (60 moves in 5 minutes)
2	2 - 10 secs	BLITZ TOURNAMENT (40 moves in 5 minutes)
3	30 secs	
4	1 min	
5	1 - 3 mins	
6	1 - 5 mins	TOURNAMENT (40 moves in 1 1/2 hrs)
7	1 - 10 mins	TOURNAMENT (40 moves in 2 hrs)
8	Analytic	infinite, unless you press GO

Once the player has entered its 60th move on Regular Level 1 (BLITZ), you will hear 3 beeps, as in many tournaments BLITZ Games are adjudicated after 60 moves.

Training Level	Search in Half Moves
1	1
2	2
3	3
4	4
5	5
6	6
7	7

13. Depth Search

When playing the SUPER CONSTELLATION it may interest you to know how many half moves deep the computer is searching for its counter move. The number of half moves are indicated on the left hand side of the board by the top four LEDs in binary code marked DEPTH SEARCH. The depth of the search is of course linked to the level set, meaning on level 1 the search is by far not as deep as on level 6, 7, or 8.

You can switch the DEPTH SEARCH on before or during a game, when the computer is not computing. Press LEVEL and DEPTH SEARCH. The SET UP LED will come on indicating that DEPTH SEARCH is switched on. Press GO to enter it into the computer. In order to switch it off during a game, follow the same procedure. Once you switch off the computer, DEPTH SEARCH is cancelled.

Reading the binary code is easy. The top four LEDs are marked 1 - 2 - 4 - 8. Either 1 or several LEDs can light up together. By referring to the respective numbers or adding them, if several LEDs light up, one arrives at the number of half moves of the DEPTH SEARCH.

Examples: LED 2 lights up = Depth Search = 2 half moves
LED 1 and 2 light up = Depth Search = 3 half moves
LED 1, 2 and 4 light up = Depth Search = 7 half moves

If DEPTH SEARCH is set, it will be retained in a NEW GAME, but will be cleared as soon as the computer has been switched off.

14. BEST MOVE/RANDOM Key

Computer programs are designed to compute, compare and rate possible moves. By process of elimination they will choose the move with the highest rating, based on the depth of its search which is determined by the skill level (deeper search on higher skill levels).

However, this may not always provide the desired variety in play and a randomisation may be called for. Every time you switch the computer on, BEST MOVE is automatically activated, meaning the computer will choose as its reply the move with the highest rating.

Pressing RANDOM (2 beeps) activates the randomisation. The computer will now choose a move at random out of several highly rated possibilities. If you press BEST MOVE again (1 beep), you disable RANDOM and activate BEST MOVE again. Once you switch the computer off, RANDOM is automatically cancelled.

15. MULTI MOVE/PLAYER vs PLAYER Key

In this mode you disable the computing of moves by the SUPER CONSTELLATION, so you may make moves for white and black, while the computer still checks their legality. This feature may be used to enter a particular book opening, replaying a game to a certain position or to allow 2 human players to play on the board, while having the legality of their moves monitored (a good feature for beginners).

You can go into MULTI MOVE Mode at the beginning or during a game before you make your (next) move. Just press MULTI MOVE (2 beeps). Apart from being able to enter moves for both sides, the following features are also operational: Take Back, Change Colour (at the beginning of a game) Hint, Set Up, Verify and Sound.

You can terminate this mode at any time by pressing MULTI MOVE again (1 beep). The LED of the colour to move next will flash. Depending on which colour you wish to play, either make a move or make the computer play for the colour displayed by pressing GO.

16. HINT/SHOW MOVES Key

Move Suggestions
Watching the Computer's Analysis of Moves

HINT:

If it is your turn to move, the computer can suggest moves, if you are not sure how to continue. The computer will display all legally possible moves in your present position, which is a great tutoring feature.

The first move shown is the one the computer is analysing (on opponent's time). If you want further hints, the searching on opponent's time is stopped and the hints are based on a search of 1 half move for the remaining legal moves.

Pressing HINT will give you the first suggested move as follows:

1st press = 'from' square LEDs light up
2nd press = 'to' square LEDs light up
3rd press = cancel this move suggestion

Note, that the flashing for the 'to' position is faster than the flashing of the 'from' position.'

The computer will display another move, every time you press HINT three times until you have scanned through all moves legally possible, after which it repeats the process.

You can accept any suggested move as soon as the row and column LEDs of the 'to' square light up. Move the piece as indicated by the computer. The HINT display may be interrupted by making any move of your choice, but do not press GO as this will start the computer computing.

SHOW MOVES:

In longer computing times it may be interesting for you to see which move the computer is presently analysing. Pressing SHOW MOVES gives you the following information;

1st press = 'from' square LEDs light up
2nd press = 'to' square LEDs light up
3rd press = cancel Show Move function

You can repeat this process as often as you wish and you will notice how the moves change when the computer finds better moves. Note that SHOW MOVES cannot be used in a Solve Mate (see Para. 21).

Note: The response times on level 1 and 2 are so fast that the completed computer move will interrupt the SHOW MOVES display. If you had been pressing the square indicated by the SHOW MOVES functions, the ERROR LED will come on, requesting you to execute the computer's move.

17. TAKE BACK Key

The NOVAG® SUPER CONSTELLATION allows you to take back all moves in a game to enable you to rectify an earlier mistake or to play a different strategy. These moves are however cancelled once you go into SET UP Mode (see Para. 20).

Wait until you have executed the computer's move and proceed as follows: press TAKE BACK and the row and column LEDs will show the computer's last move in reverse, e.g. first the 'to' square and then the 'from' square. Execute this move just as any ordinary one, i.e. applying pressure on both squares respectively.

Every time you press TAKE BACK the computer will reverse the next move. If a captured piece has to be replaced, the row and column LEDs will indicate the square and the PIECE SYMBOL and COLOUR LEDs point out the piece to be replaced. Place the piece on that square by applying gentle pressure.

18. CHANGE COLOUR Key

The computer is generally set to play black and you white.

If you want to play black in a new game, set up the black pieces on rows 1 and 2 and the white ones on rows 7 and 8. Press NEW GAME, CHANGE COLOUR and GO. The computer will make its opening move for white from the top of the board, while you have your black pieces in front of you (disregard the notations along the chess board).

To change the colour during a game you use the GO Key (see Para. 19).

After you have set up a board position (see Para. 20) you can choose the colour to move first via the CHANGE COLOUR Key. As soon as the LED of the requested colour flashes you can either enter a move or make the computer move by pressing GO. The position of pieces does not have to be changed under these circumstances.

19. GO Key

The GO Key is used to enter a command or to exit a Special Function. Its function is explained in the respecitve paragraphs.

The GO Key is also used to interrupt the computing time and make the computer move instantly (see Para. 10.)

Furthermore it can be used to change colours during a game. Wait until it is your turn to move, then press GO. The computer wil now compute a move for your colour, while you play its previous colour. The position of the pieces do not have to be changed under these circumstances.

It may also be of special interest at a certain point during a game, or for learning purposes, to let the computer play against itself. Every time you press GO the computer computes a move for white or black alternately. All moves will be computed according to the skill level set.

20. VERIFY/SET-UP Key

The VERIFY/SET-UP Key is a dual function Key. If it is pressed once you enter the VERIFY Mode and the VERIFY LED comes on. If you press it again you are in the SET-UP Mode, indicated by the SET-UP LED. To exit from VERIFY or SET-UP Mode, press GO.

Note that you can only press VERIFY/SET-UP after the computer has stopped computing and you have executed its move.

20.A VERIFY Mode
Verifying a Position
Recreating a Board Position Stored in the CMOS Memory

At any point in a game or after entering a board position you can check the position of any number of pieces. Furthermore the VERIFY Mode allows you to recreate the board position of a game that was stored in the CMOS Memory, in case the pieces were removed from the board.

Method:

1. Press VERIFY/SET-UP once, so that the VERIFY-LED comes on.
2. You can change the colour of the piece(s) to be verified with the CHANGE COLOUR Key which is indicated by the WHITE/BLACK-LEDs.
3. Choose the piece(s) to be verified via the PIECE SYMBOL Key(s) one after the other

OR

4. Press a board square. The computer will flash the WHITE or BLACK LED and a PIECE SYMBOL LED to indicate the piece and colour occupying the square. If the square should be empty, the ERROR, VERIFY and WHITE or BLACK-LEDs will flash rapidly.
5. To end this mode, press GO. You can now enter your next move.

When you press a PIECE SYMBOL Key, the row and column-LEDs of the square of the first piece of this kind light up. Pressing the SYMBOL Key repeatedly will scan through all pieces of this type. The squares they occupy are indicated by the row and column-LEDs.

If, for example, there is only one rook left in the game and you press the SYMBOL Key twice, the row and column-LEDs of the first rook come up again.

If there is no piece left of one type, you will hear an acoustic signal and ERROR will light up. You simply continue to verify the position of the next piece and the ERROR-LED will go out automatically.

If you want to recreate a board position of a game stored in the CMOS Memory, the row and column-LEDs tell you where to place the respective pieces.

20.B SET-UP Mode

This mode is designed to enable you to set up board positions to solve chess problems or to set handicap by removing or entering a piece, as well as changing the positions of pieces.

You can clear the entire board by simply pressing SET-UP and CLEAR BOARD, so that you can easily create your desired board position and subsequently enter it into the computer.

During the SET-UP Mode the computer's legality check is disabled and you can therefore enter, remove or change positions of any piece you wish. However, you cannot set up incorrect positions, e.g. without both kings, with more than 1 king for each colour, with pawns on row 1 or 8 or with the number of pieces exceeding the legal limits for each kind of piece (taking possible promotions/underpromotions into account).

If the position is incorrect in any way, the ERROR-LED comes on if you want to terminate the SET UP Mode and you are automatically put into VERIFY Mode, so you determine the mistake.

The computer will accept and execute castlings, pawn promotions and en passant captures if you play from set up board positions.

Note that any moves stored in the CMOS Memory are cancelled as soon as you go into SET UP Mode.

20.B.1 Removing a Piece

If you wish to remove one or more pieces, proceed as follows:

Method:

1. Press VERIFY/SET-UP twice, so that the SET-UP LED comes on.
2. Remove the piece(s) one by one by applying gentle pressure. The row and column LEDs of each square will light up as you press on it, along with the PIECE SYMBOL and COLOUR LEDs.
3. To end the procedure press GO.
4. You can change the colour to move via the CHANGE COLOUR Key.
   You can now enter your next move or make the computer move.

2O.B.2 Entering a Piece

Enter one or more pieces as follows:

Method:

1st Piece:

1. Press VERIFY/SET-Up twice, so that the SET-UP LED comes on.
2. You can change the colour of the piece(s) to be entered with the CHANGE COLOUR Key which is indicated by the WHITE/BLACK LEDs.
3. Select the piece to be entered via the PIECE SYMBOL Key, and the respective PIECE SYMBOL LED will flash.
4. Place the piece by gently pressing it on the desired square and the respective row and column LEDs will come on.

2nd and subsequent pieces:

— Proceed as described above without pressing SET-UP again
— Only press the PIECE SYMBOL Key if it varies from the preceding piece.
— Only change the colour of the piece if it varies from the preceding piece.

5. To end this mode, press GO.
6. You can change the colour to move via the CHANGE COLOUR Key. You can now enter your next move or call off a computer move.

20.B.3 Moving the Piece to another Square

If you wish to change the position of one or more pieces whilst the game is in progress, proceed as follows:

Method:

1. Press VERIFY/SET-Up twice, so that the SET-UP LED comes on.
2. Move the piece(s) by proceeding as you would in a normal move.
3. To end this mode, press GO.
4. You can change the colour to move via the CHANGE COLOUR Key. You can now enter your next move or make the computer move.

20.B.4 CLEAR BOARD Key
Setting-Up a Board Position

If you want to clear the entire chess board to set-up a board position, proceed as follows. Before you switch the computer on, remove all pieces from the board and set up your position. Now enter this position as follows, after you have switched on the computer:

Method:

1. Press VERIFY/SET-Up twice, so that the SET-UP LED comes on.
2. Press CLEAR BOARD to cancel all pieces from the computer's memory.
3. Now enter your position piece by piece into the computer as described in Para. 20.B.2.
4. To end this mode, press GO.
5. You can change the colour to move via the CHANGE COLOUR Key. You can now enter your next move or make the computer move.

If your board position does not vary too much from the opening position, it might be simpler to change the position of some pieces as described in Para. 20.B.3.

21. SOLVE MATE Key
Chess Problems

The NOVAG® SUPER CONSTELLATION can solve chess problems as well as mate problems up to mate-in-8, even if those require castlings, en passant captures or pawn promotions/underpromotions. On the infinite analytic mate level (level 8), it can even solve up to mate-in-12 problems, if given enough time.

Press NEW GAME and set-up the required board position as described in Para. 20.B. Afterwards you can change the colour to move first via the CHANGE COLOUR Key. This is also the colour for which the computer will execute its mate search.

NEW FEATURES

1.
It is helpful in cases of long mates (e.g. mate-in-7) to speed up the play. Therefore after finding the first move of the mate, the computer will anticipate your best defence. If you then reply with this defence, the comptuer will respond instantly until the mate is played out.

2.
If the Depth Search function is activated before SOLVE MATE, you can observe its speed of search.

The depth of the mate search is set with the SOLVE MATE Key and is indicated by the 8 row LEDs. The number of LEDs coming up correspond with the depth of the mate search, e.g. 3 LEDs for a mate-in-3-moves. Every pressing of SOLVE MATE increases the mate search by one move. When the correct move number is displayed, press GO to start the mate search.

If the computer found a mate in at least the set number of moves, this is displayed by flashing the row and column LEDs of the piece to move and the respective number of row LEDs will come up. Execute the computer's first move and then enter your defence move. The computer will display its next move and the row LEDs will decrease by 1, and so on, until the computer mates you in the set number of moves or earlier.

If there is no solution, e.g. to a mate-in-3, the ERROR-LED will flash. SOLVE MATE clears itself but the board position will be retained. Press SOLVE MATE again and set it to 4 and press GO. This is particularily convenient, as with most other chess computers you would have to go through the trouble of setting-up the board position again.

NEW:

The SUPER CONSTELLATION's newly designed, super fast mate search is seen by experts as a breakthrough in programming. It can solve problems in minutes or even seconds, where other computers need much more time. The search times naturally vary and depend on the depth of the required search and the complexity of the problem.

If solving very difficult mate problems takes longer, just leave the computer on and check from time to time if the response has come up yet. It is recommended in such cases to use the adaptor instead of batteries.

Note: SHOW MOVES cannot be used in SOLVE MATE (see Para. 16)

22. SOUND Key

The different acoustic signals and beep tones can be switched on and off with the SOUND Key. If you hear 2 beeps while pressing SOUND, it is activated, if you hear 1 beep, the sound is switched off. However, even if SOUND is off you will still hear a beep when the computer displays a move.

23. ERROR LED

The ERROR-LED generally flashes if you try to enter an illegal move or make a mistake in executing a computer move (see Para. 3). In VERIFY Mode it indicates if there is no piece left of one type (see Para. 20.A), if you try to terminate SET-UP Mode while the position is incorrect (see Para. 20.B), or if a mate search is negative (see Para. 21).

24. Operating the PROGRAMMABLE OPENING BOOK

As an exciting **innovation from NOVAG®** , the SUPER CONSTELLATION is the first chess computer that allows you to program openings and variations into the computer yourself. This feature truly offers a new dimension to computer chess, as you can now build an opening book of your choice.

The Programmable Opening Book has a storage capacity of up to 2,000 half moves. Openings can be replayed as many times as you wish in order to remember and learn them by heart as training for tournament play or you can simply use them to extend the computer's pre-programmed opening book.

To make the **Programmable Opening Book** as versatile as possible, partial or entire deletion and re-programming capabilities are provided.

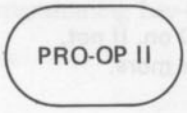
To facilitate the operation of the Programmable Opening Book and to avoid confusion with the normal operating keys, an additional Key Overlay is provided. The slots at the top and bottom of the existing overlay will hold the additional Key Overlay in place.

The operation of the Programmable Opening Book is explained by Flow-Charts, which is easily understandable by laymen and experts alike.

PRO-OP 1: Control Keys and Functions

By pressing PRO-OP I and II you enter PRO-OP Mode, in which all control keys of the Programmable Opening Book are active. (PRO-OP = **Pro**grammable **Op**enings).

Important:



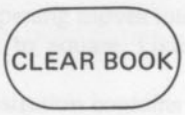
Check, if after pressing PRO-OP I and II the MATE-LED lights up. Otherwise you are **not** in PRO-OP Mode. If not, press PRO-OP II once more. (The MATE-LED goes off when you press GO).

Clears, buffer for the programming of moves into the programmable opening book.

Computer scans through built-in opening book of 20,000 half moves as well as your programmed openings.

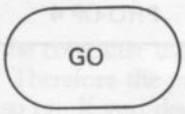
Entering openings/variations into the computer memory.

Priority is given to the opening/variation(s) to be entered next. In play it increases the probability 3 times of this opening/variation(s) to be selected by the computer.



Warning: Clears existing programmable opening book entirely for entry of new openings/variations.

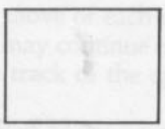
Deletes selected openings/variations; also used in entering variations.



Command key.

Guide to FLOW-CHARTS Symbols:

Key presses



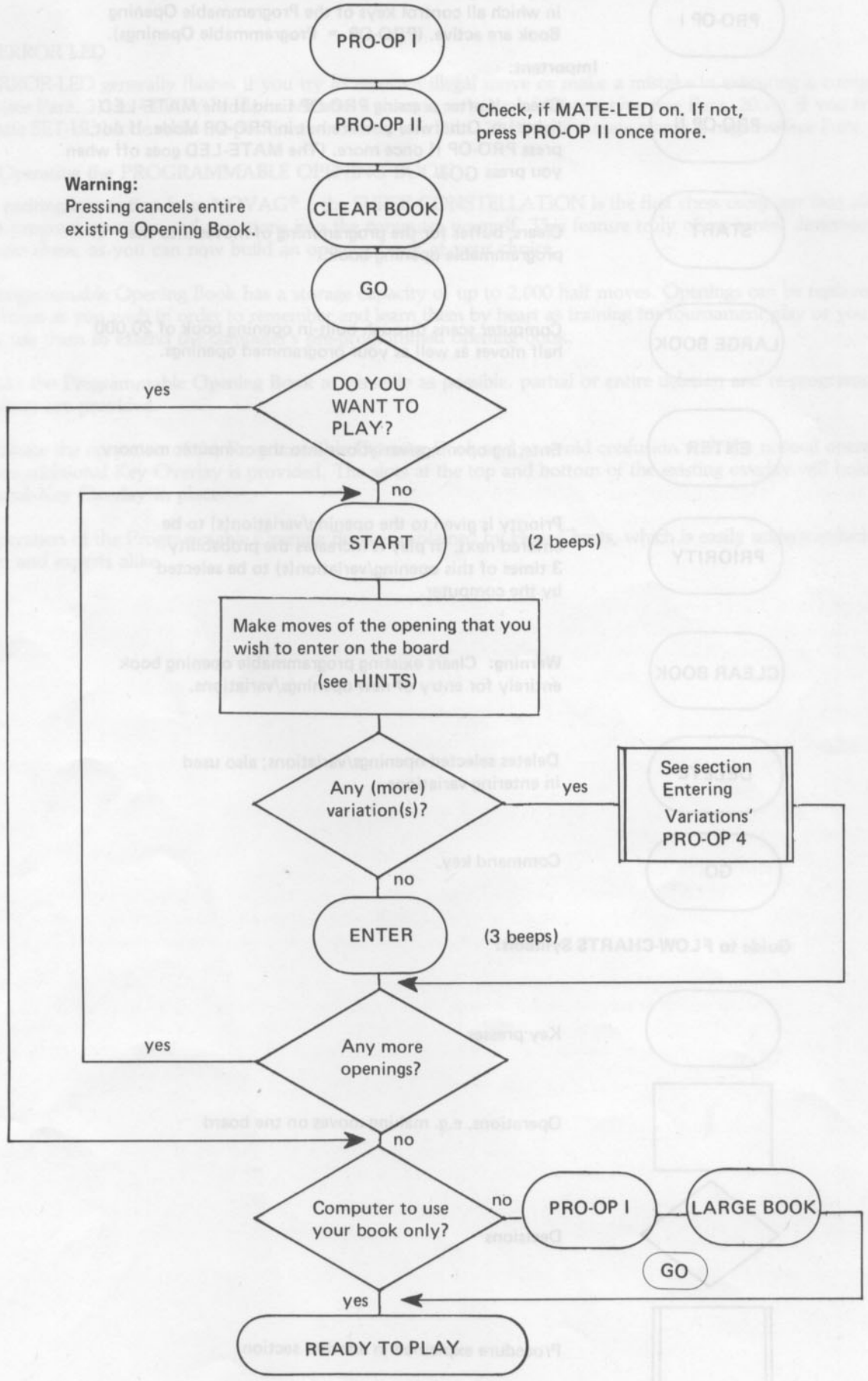
Operations, e.g. making moves on the board

Decisions

Procedure explained in another section.

PRO-OP 2: MAIN FLOW-CHART

– Instructions for Programming an Opening Book into the Computer
– Playing with this Opening Book



PRO-OP 3: Entering Openings and Variations

Example: Programming Lay-Out of several Openings/Variations

Move	1		2		3		4		5	Number of Half Moves
A.	g4	e5	Bg2	d5	h3	Nc6				6
A.1	—	—	—	d6	h3	c6	d3			7
A.2	—	—	—	—	d3	Be7	h3			7
A.3	—	—	—	—	—	Nc6	h3			7
B.	g4	d5	Bg2	Bxg4	c4	dxc4	Bxb7	Nd7		8
B.1	—	—	—	—	—	c6	cxd5	cxd5	Nc3	9
B.2	—	—	—	—	—	Nf6	Qb3			7
B.3	—	—	—	c6	h3	e5	d3			7
C.	e4	g5	d4	Bg7	Bxg5	c5				6
D.	e5	a6	d4	b5	Bd3					5
E.	d4	b5	e4	a6	Bd3					5
F.	f4	d5	Nf3	g6	e3	c5				6
							Total number of Half Moves =			80

HINTS:

1.
Each '—' is the same move as the one above and in the proper sequence of entry it does not have to be entered on the board again, which represents a saving in the number of key presses.

2.
To program opening moves into the computer just execute them on the chess board by pressing the piece gently on the 'from' and 'to' square. Likewise moves are taken back when entering variations (PRO-OP 4).

The above illustration contains 6 openings (A — F), while opening A and B have 3 variations each. The length of any opening/variation is stated in the right most column. The maximum length for any opening/variation is 60 half moves while the Programmable Opening Book can store up to 2,000 half moves.

Before attempting to program your own Opening Book you should plan the layout as illustrated above for easy and convenient entry.

In play, when the computer uses an opening from your own Opening Book the order of priority is from opening A downwards. Therefore the probability of opening A being selected is higher than variation A.1 and A.1 better than A.2, and so on. If you desire any opening to have priority over all others, see PRO-OP 6 for the method of entry of a preferred opening.

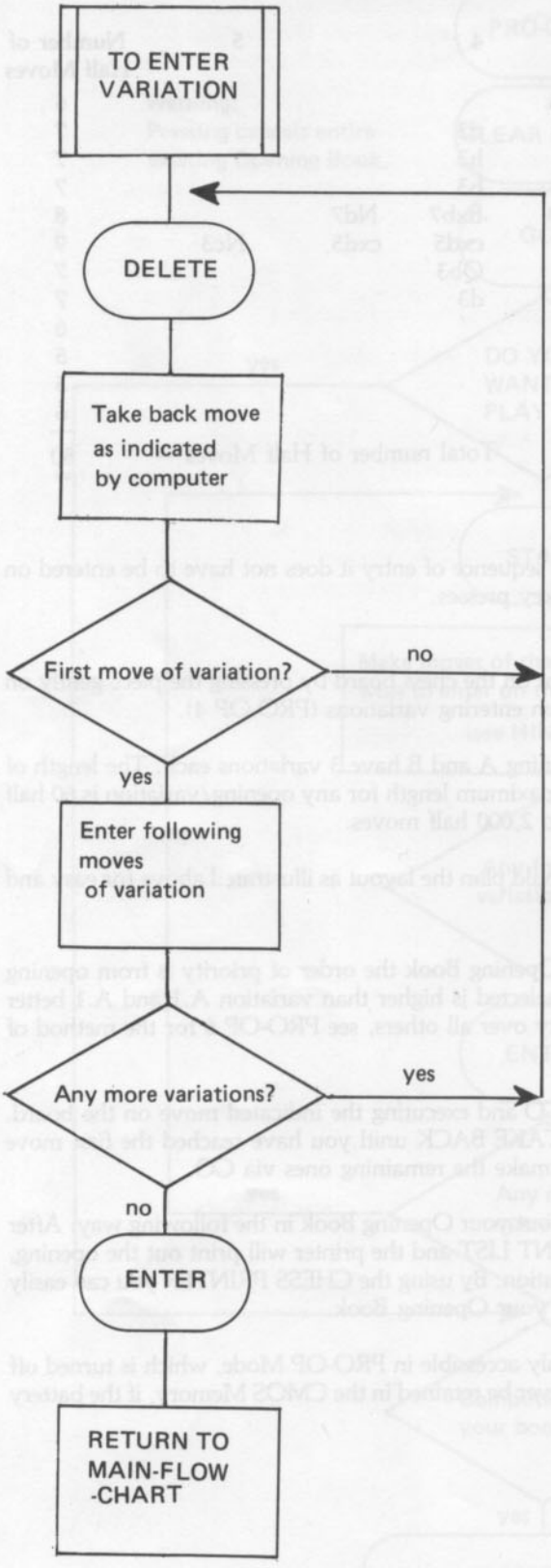
To test an opening, make the moves one by one by pressing GO and executing the indicated move on the board. To test a variation of this opening, take back the moves via TAKE BACK unitl you have reached the first move of the variation. Make the next move on the board and then make the remaining ones via GO.

If you have a CHESS PRINTER (Art. No. 816), you may print out your Opening Book in the following way: After entering the last move of each one of your openings, press PRINT LIST and the printer will print out the opening, after which you may continue entering the next opening or variation. By using the CHESS PRINTER you can easily record and keep track of the openings/variations contained in your Opening Book.

Important: For play or programming, your Opening Book is only accessible in PRO-OP Mode, which is turned off once you switch off the computer. Your opening book will however be retained in the CMOS Memory, if the battery is charged (refer to GENERAL HINTS — CMOS MEMORY).

PRO-OP 4: SUB-FLOW-CHART — Entering Variations

Branches off from MAIN-FLOW-CHART PRO-OP 2 — at 'Variations':



Example: Entering a Variation as per PRO-OP 3:

Entering Opening A

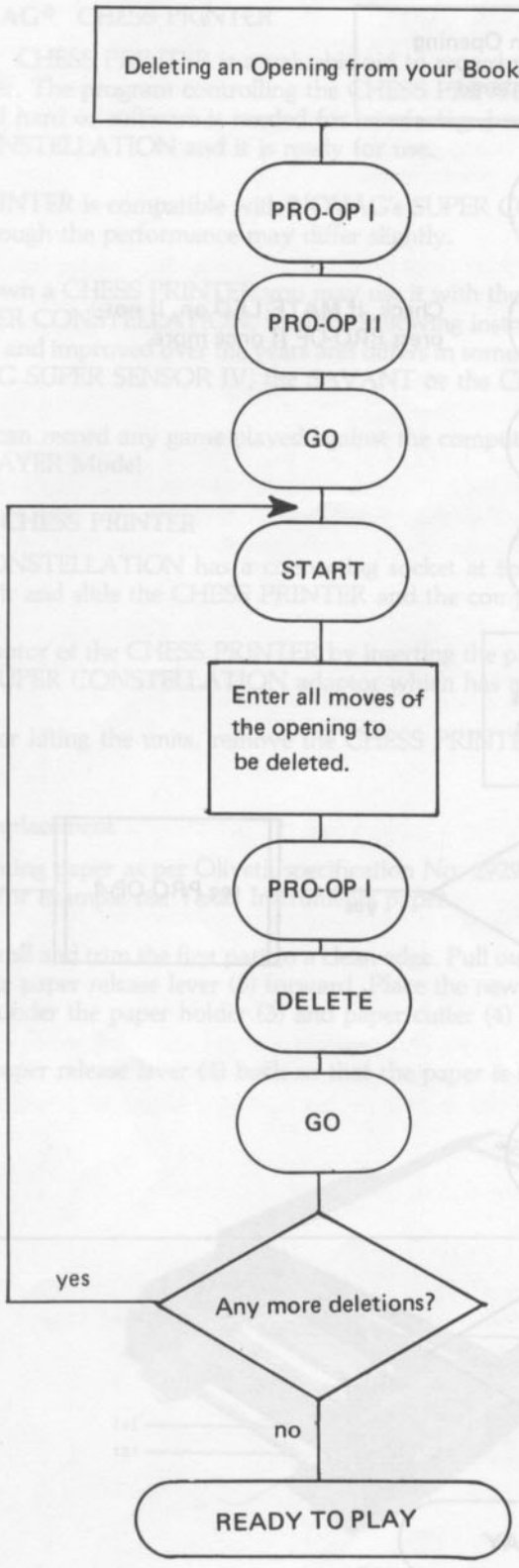
1. g4 e5 2. Bg2 **d5** 3. **h3** **Nc6**

Entering Variation A.1

A.1 branches off after 2. Bg2. Press DELETE and take back the 3 underlined moves via TAKE BACK (Para. 17) (do not forget to replace captured pieces if any) Taking back d5, you have reached Bg2, which is the first move of the variation and you can now proceed to enter the following moves of this line. To enter variation A.2 and A.3 proceed as explained above.

Note: Although opening B is actually a variation of A, it is better to enter it as a new line to avoid taking back too many moves.

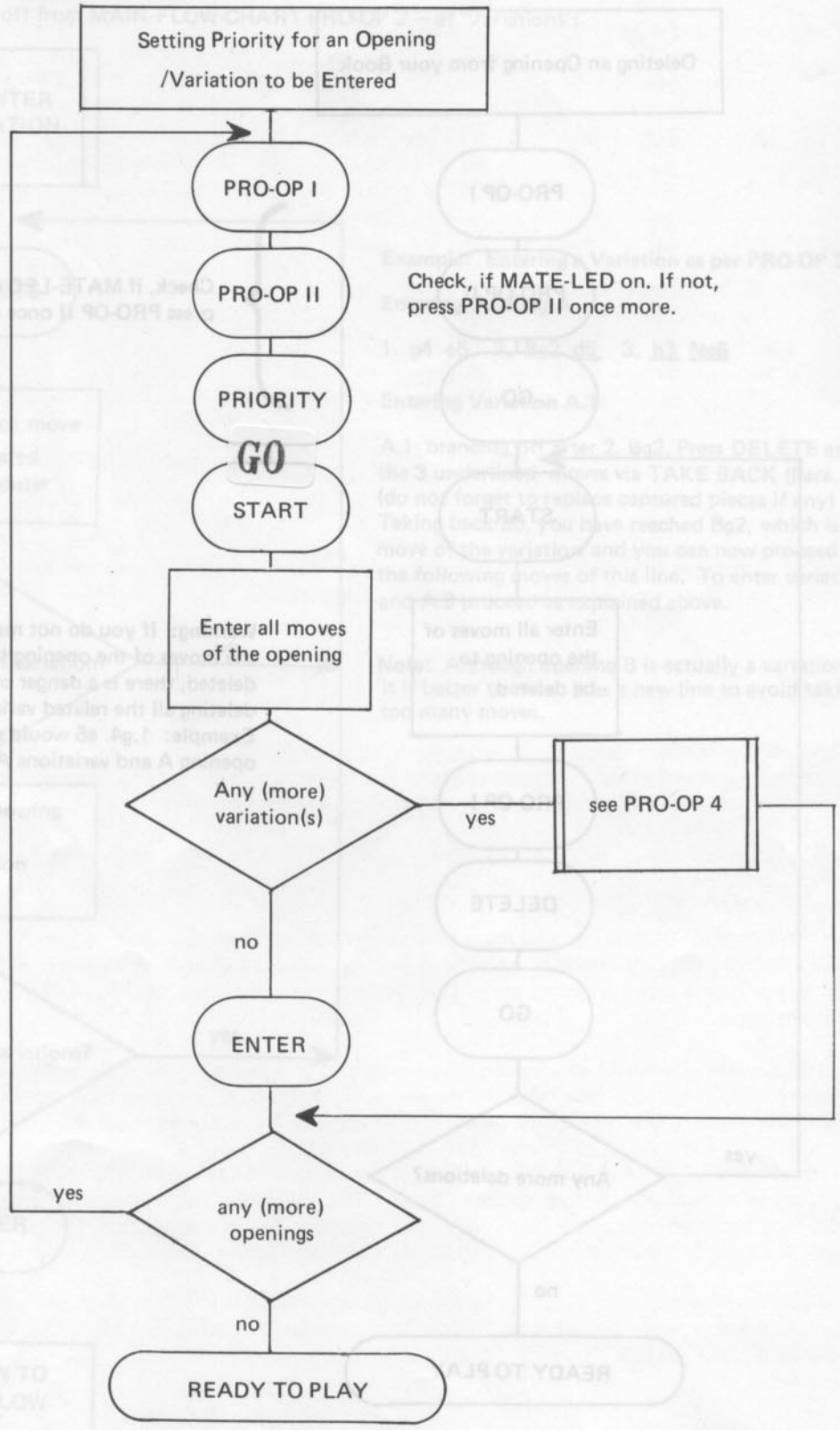
PRO-OP 5: FLOW-CHART



Check, if MATE-LED on. If not, press PRO-OP II once more.

Warning: If you do not make **all** the moves of the opening to be deleted, there is a danger of deleting all the related variations. Example: 1.g4 e5 would delete opening A and variations A. 1—A.3.

PRO-OP 6: FLOW CHART



APPENDIX

A. The NOVAG® CHESS PRINTER

The NOVAG® CHESS PRINTER is a valuable aid to record your games automatically. It is available separately from your dealer. The program controlling the CHESS PRINTER is contained in the SUPER CONSTELLATION, so no additional hard or software is needed for interfacing. Just connect the CHESS PRINTER and its adaptor to the SUPER CONSTELLATION and it is ready for use.

The CHESS PRINTER is compatible with NOVAG's SUPER CONSTELLATION as well as other NOVAG Chess Computers although the performance may differ slightly.

If you already own a CHESS PRINTER you may use it with the SUPER CONSTELLATION. However, to operate it with the SUPER CONSTELLATION, read the following instructions. The performance of the CHESS PRINTER has been refined and improved over the years and differs in some points from the instructions of previous computers, e.g. the NOVAG SUPER SENSOR IV, the SAVANT or the CHESS ROBOT.

The PRINTER can record any game played against the computer as well as games played by 2 human players in PLAYER vs PLAYER Mode!

Connecting the CHESS PRINTER

The SUPER CONSTELLATION has a connecting socket at the left hand side, temporarily closed with a plastic cover. Remove it and slide the CHESS PRINTER and the computer together.

Connect the adaptor of the CHESS PRINTER by inserting the plug into the smaller socket at the back and the unit as well as the SUPER CONSTELLATION adaptor which has a larger plug.

Before moving or lifting the units, remove the CHESS PRINTER from the computer! **Do not lift when units are connected!**

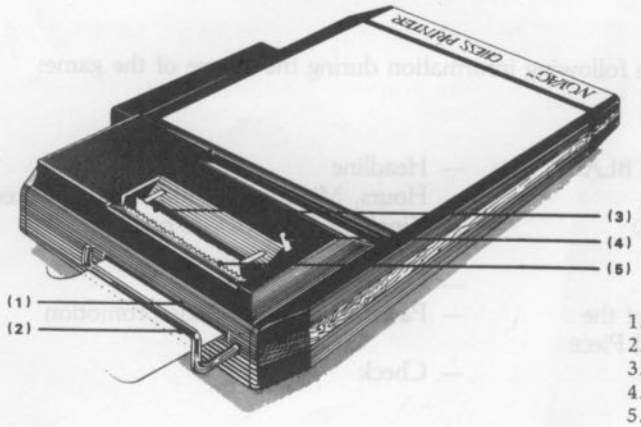
Printer Paper Replacement

Use thermal printing paper as per Olivetii specification No. 292933 R 35 or one that is compatible to Olivetti print heads. Do not, for example use Texas Instruments paper.

Open the paper roll and trim the first part to a clean edge. Pull out the paper roll holder (1). Release the paper holder (3) by pulling the paper release lever (5) forward. Place the new roll on the paper holder. Insert it into the slot (2) until it appears under the paper holder (3) and paper cutter (4) (see Fig. 1).

Now push the paper release lever (4) back so that the paper is firmly inserted.

Fig. 1



1. Paper Roll Holder
2. Slot
3. Paper Holder
4. Paper Release Lever
5. Paper Cutter

Operating the Printer

The NOVAG® CHESS PRINTER is operated from your chess computer with the keys

RPINT MOVES	=	Printing moves (each pair as game progresses)
PRINT LIST	=	Printing entire game stored in the CMOS Memory
ACC. TIME	=	Printing accumulated time for each side/each move
PRINT BOARD	=	Printing board position
FORM SIZE	=	Changing print format

PRINT MOVES Key

The printer will be switched on by pressing PRINT MOVES (2 beeps). It can be switched on at the beginning, during a game (when the computer is not computing) and will always start printing the moves with the correct number according to the course of the game. After every 10 moves the PRINTER automatically prints the accumulated time for both sides. To switch it off press PRINT MOVES again (1 beep).

PRINT LIST Key

As the CMOS Memory retains the game in progress, you can at any point during or at the end of a game get a complete print-out. This is particularly helpful as the PRINTER function may use too much time in tournament play or if the printing noise disturbs you during play. You may get as many print-outs of a game as you wish by pressing PRINT LIST repeatedly, in order to hand them out to your opponent or spectators.

ACC. TIME Key

If you wish to get a print-out of the accumulated time after **every** move, press LEVEL and ACC. TIME. The DRAW-LED indicates that ACC. TIME has been switched on. Press GO to enter it into the computer and the DRAW-LED disappears. If you want to switch this function off, follow the same procedure, but PRINT MOVES will be retained. This function does not work with PRINT LIST.

PRINT BOARD Key

The board position can be printed at any point during a game when the computer is not computing by pressing PRINT BOARD.

On the print-out the white squares are blank, while the black squares are indicated by two brackets. The piece symbols are easily recognisable.

FORM SIZE key

The moves can be printed in two different formats. In the short format a white and black move is printed on each line under the respective headline. In the long format, each half move is printed in one line together with the symbol of the piece moved. The format is generally set to the short form but can be changed by pressing FORM SIZE.

The printer will also print the following information during the course of the game:

WHITE BLACK	— Headline
00:00:00	— Hours, Minutes, Seconds: Accumulated time
0-0, 0-0-0	— King's or Queen's side castling
X	— Capture
EP	— En passant capture
Symbol of the promoted Piece	— Pawn Promotion/Underpromotion
CK or +	— Check

STALEMATE	— Stalemate
½ DRAW ½	— Draw
— INSUF MATERIAL	Draw due to insufficient material*
— 3RD REPETITION	Draw by the 3rd repetition rule*
— 50 MOVE LIMIT	Draw by the 50-move rule*
I RESIGN	— Computer resigns
CHECK MATE	— Checkmate

**As stated by FIDE (World Chess Federation).*

In the long format a pawn promotion is printed out together with the symbol of the promoted/underpromoted piece. In the short format the promoted/underpromoted piece is printed as follows:

Q = Queen	N = Knight
B = Bishop	R = Rook

The PRINTER in Solve Mate Mode

The printer is also a valuable tool in Solve Mate Mode. If connected and switched on before you go into Solve Mate, the PRINTER automatically prints the time of the mate search. This will be printed after you have executed the key move towards the mate.

Note: The printer is automatically switched off when you go in TAKE-BACK, HINT, VERIFY, and will restart printing as soon as you enter a move or call off a move from the computer. The printer will also accommodate a CHANGE OF COLOUR. As soon as you go into SET-UP, all moves stored in the CMOS Memory are cancelled thus making PRINT LIST redundant.

B. TROUBLE SHOOTING LIST

All NOVAG® computers are extensively tested before leaving the factory to ensure troublefree performance. If you encounter any problems during play, please check the following trouble shooting list:

1. Your Computer does not work

If your computer does not work at all, the problem can be the power supply, the batteries or the adaptor.

1.a If you are playing on batteries, replace them with new ones. We only recommend the use of alkaline batteries. Do not use ordinary batteries as they will result in irregular performance! Make sure the batteries are inserted correctly according to the +/- signs.

1.b The on/off switch is marked 'Adaptor-Off-Battery'. To switch the computer on, either slide to 'Adaptor' or to 'Battery' respective of your power supply.

1.c If you are playing with an adaptor, check if you are using the specified NOVAG adaptor. Any damage caused by the use of another adaptor invalidates the warranty (see also GENERAL HINTS).

1.d Check if the adaptor plug sits properly in the socket. If not, this can result in interrupted power supply to the computer.

1.e Check if the small adaptor plug is connected to the computer.

1.f Check if the voltage of your electric output is within the range specified on the adaptor label as recommended under GENERAL HINTS. A voltage fluctuation of more than 10% will result in a non-function or malfunction.

Some areas have greatly fluctuating power supplies, especially during peak consumption times (lunch and dinner time). Wait until the power supply has stabilised.

1.g Connect the adaptor to another power outlet in your house, as the outlet you are using could be defective.

1.h If none of the above remedies the situation, check if your computer plays on batteries. If yes, there is something wrong with our adaptor. Send it for service (no need to send the computer as well) or buy a new one.

2. The blinking frequency of LEDs is slower

Refer to GENERAL HINTS 'Battery-Low-Indicator'. Change batteries. Use only alkaline batteries as ordinary ones will result in irregular performance.

3. All LEDs light up when switching on the computer and it is blocked

3.a Switch the computer slowly on and off several times and press NEW GAME.
3.b If you still cannot get the computer to work, check the power supply carefully (see Appendix B. Para. 1)

3.c If you still cannot get the computer to work properly, you have to send it in for service.

4. One of the LEDS does not light up

Go into VERIFY and check all row and column LEDs by pressing all squares from A1 — A8 and A1 — H1. Press all PIECE SYMBOL Keys and the CHANGE COLOUR Key to check the respective LEDs. If the particular LED does not light up, the LED has to be replaced and you have to send your computer in for service.

5. One square does not register a move

Go into VERIFY and check the square. Depending whether it is occupied or not you should get a positive or negative response. If you get any type of response, the square is in working order and you tried to enter something irregular. If, after several attempts, also in a new game, there is not response on that particular square, you have to send the computer in for service.

6. The Queen, Bishop, Knight, Rook and Colour LEDs light up

These LEDs indicate a pawn promotion (see Para. 6)

7. The Check, Mate, and Draw LEDs light up

The computer resigns (see Para. 10)

8. Blocking of all functions

In case the computer does not accept any move or Special Function, check the power supply (see Appendix B, para 1). If this is not the reason for the blockage the computer may be completely confused by conflicting commands. Switch it off and on again and you should be able to start a new game. Try Appendix 3 if these recommendations do not help.

C. Care of the NOVAG® SUPER CONSTELLATION

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

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

D. Technical Data

Operating Voltage:	9V DC 6 x 1.5 V C-cell batteries 8.5 V AC (through AC to AC adaptor)
Current Consumption:	800 mA max.
Memory Back-Up Voltage:	2.4V DC
Read Only Memory:	56 KB ROM
Random Access Memory:	4 KB RAM

All data subject to change without notice

APPENDIX:

Should the computer not respond occasionally, please use reset switch to clear memory.

Procedure:

1. Switch off the computer.
2. Open "ROM" door at the back.
3. Slide switch at the top right corner to the other side and wait 5 seconds.
4. Slide switch back to original position, marked in black.
5. Switch computer back on and start playing.

Sollte das Gerät ausnahmsweise nicht antworten, können Sie es deblockieren, indem Sie den Speicher löschen.

Bitte verfahren Sie dabei wie folgt:

1. Stellen Sie das Gerät aus.
2. Öffnen Sie die auf der Hinterseite befindliche "ROM"-Klappe.
3. Betätigen Sie den Schalter in der oberen rechten Ecke und warten Sie 5 Sekunden.
4. Stellen Sie den Schalter in die Ausgangsstellung zurück, die schwarz gekennzeichnet ist.
5. Schalten Sie nun das Gerät wieder ein und beginnen Sie Ihr Spiel.

Lorsque l'ordinateur ne répond pas vous pouvez le débloquer en vidant sa mémoire.

Procédure:

1. Débrancher l'ordinateur.
2. Ouvrez la porte "ROM" sur le dos de l'appareil.
3. Poussez l'interrupteur en-haut à droite sur l'autre côté et attendez 5 secondes.
4. Remettez l'interrupteur dans la position originale qui est marquée en noir.
5. Remettez l'ordinateur en marche et commencez votre jeu.