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SUPER CROWN

User manual



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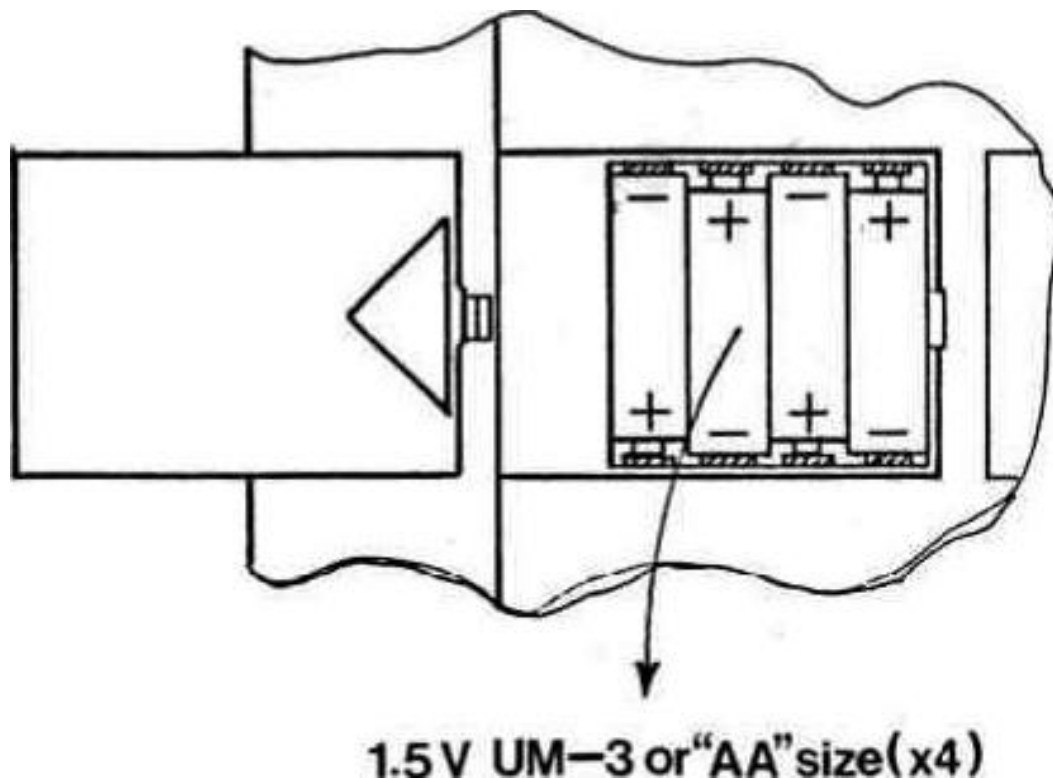
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PART ONE: GENERAL OPERATION

1. THE BATTERIES

To insert the batteries, open the battery door at the bottom of the unit and place the batteries as indicated by the +/— signs. A new set of batteries lasts for approx. 100 hours play.



If you want to use an adaptor, first check that the voltage specified on the adaptor label is the one used in your country. The adaptor socket is located at the back of your computer. Note that you must only use the adaptor specified for your computer. The use of another adaptor automatically invalidates the warranty.

2. STARTING A GAME

Set up the pieces on the chess board in their starting position, and switch on the computer. You will hear a characteristic signal, and a color light will come on, indicating that it is white's turn to move.

3. MAKING MOVES

To make a move, press down gently on the center of the square occupied by the piece you want to move. The most convenient way is to tilt your piece slightly and press down with the edge of its base. Your computer is very sensitive, so a very light press is enough. If you press very hard it can in the long run damage your computer



The computer gives a beep and you will now see two lights on. The horizontal lights at the bottom of the computer are called file lights, the vertical lights at the left side of the computer are called rank lights. The two lights will indicate the square you have just pressed down. Then set the piece on the square you wish to move to and press it lightly down again.

The computer gives a beep again. It has now registered your move, and starts computing its reply

4. COMPUTER MOVES

While the computer is thinking, it will flash the color light of the side it is playing. At the beginning of a game the computer will be able to move immediately because of its extensive opening library. When the computer has decided its move, it gives a characteristic beep, and switches on two lights. These two lights show which piece the computer wants to move. Press gently on the square and pick it up. The lights change and show the square that the computer wants to move to. Set the piece down on this square, pressing it gently again. The computer will change the color light, indicating that it is your turn to move.

5. SPECIAL MOVES

CAPTURES are performed just like any other move. The moving piece is pressed down on the 'from' and 'to' squares, while the captured piece is removed from the board without being pressed.

EN PASSANT CAPTURES are performed in the same way. The computer will automatically remind you to remove the captured pawn. Press down on the square, as you remove the pawn.

CASTLING is done by first making the king's move in the usual way. The computer will automatically remind you to move the rook. Press down on the 'from' and 'to' squares, as you move the rook.

PAWN PROMOTION is performed automatically by the computer. The computer will assume that you want to promote to a queen. If you want to promote to a rook, bishop or knight, you must press the key marked by the appropriate piece. You must do this after pressing down the 'from' square, but before pressing down the 'to' square.

When the computer promotes one of its own pawns, it will indicate which piece it wants by lighting one of the piece lights as soon as you press down the 'from' square. If you did not pay attention, you can always check the position (see section 15). The computer will nearly always choose a queen, but in some positions it might decide to take a different piece.

6. ILLEGAL MOVES

If you try to make an illegal or impossible move, or try to do something else which is not possible, you will hear the error signal, and the ERROR light will come on. Whenever you hear this signal, it means that you have done something wrong, and that your last entry have been ignored.

If e.g. you have tried to make an illegal move, you can just continue and place the piece on a legal square, or you can place it on its original square and move a different piece.

You will also hear the error signal if e.g. you try to move one of the opponent's pieces.

7. CHECK, MATE, DRAW. RESIGN AND MATE ANNOUNCEMENT

When one of the players gives check, the CHECK light will flash.

A checkmate is announced by flashing the CHECK and MATE lights, and the color lights will indicate the losing color.

If a draw occurs, the DRAW light will come on. The computer recognizes draw by stalemate. 3rd repetition and the 50 move rule. When a draw occurs you can always choose to ignore the draw and continue the game.

If the computer decides to resign, the RESIGN light will come on. The computer will resign if it is heavily behind in material. It will however not resign if it is being mated by the opponent, since it would be unfair to deprive the player of this moment of glory. When the computer resigns you can always choose to ignore the resignation and continue the game.

If the computer finds a forced mate, the MATE light will come on, and a column of rank lights will show the number of moves necessary to mate you. Thus if the MATE and 1-light is on, and the CHECK light is flashing, it means that you are in check and will be mated on the next move.

8. NEW GAME

To start a new game, simply press the NEW GAME key and set up the pieces in their starting position again

9. LEVELS

Your computer has 44 different levels.

For simplicity we shall start with the first 16 levels.

The rest of the levels will be discussed in the next part of this manual.

LEVEL	TIME PER MOVE
A1	1.5 sec.
A2	4.5 sec.
A3	7.5 sec.
A4	10.5 sec.
A5	15 sec.
A6	22.5 sec.
A7	30 sec.
A8	45 sec.

B1	1 min.
B2	1.5 min.
B3	2.25 min.
B4	3 min.
B5	3.75 min.
B6	4.5 min.
B7	6 min.
B8	15 min.

When you press the LEVEL key you will enter the LEVEL mode. The computer will show the current level using two lights. When you switch on the computer it will start on level A2.

You change the level simply by pressing down the square of the level on which you want to play.

When you have entered the correct level, press the LEVEL key once more to exit from the LEVEL mode (if you are an experienced user, you can also use one of the other function keys).

You have to switch the LEVEL mode off before you e.g. enter a move.

The level can of course be changed at any time during the game, when it is your turn to move.

10. **SOUNDS**

If you prefer your computer to operate without its audio signals, just press the SOUND/COLOR key. The sounds can be switched on again by pressing the SOUND/COLOR key again.

11. **CHANGING SIDES**

If you press the MOVE key, the computer will make a move. Thus if you want to change sides with the computer, just press the MOVE key. The computer will make a move and expect you to move for the other side.

If you press the MOVE key again the computer will move again, and in this way you can even let the computer play the whole game itself.

If you want to play a game with the back pieces, press MOVE key in the starting position. The computer will then turn the board around and play with the white pieces from the top of the board, while you will play with the black pieces from the bottom of the board.

12. TAKING BACK MOVES

If you press down one of your pieces but then decide not to move it after all, press on its square a second time. The lights indicating the square will go out, and you may move a different piece.

If you have already completed a move, it is not too late to retract. While the computer is considering its reply or is showing the 'from' square of the move, press TAKE BACK key. and the computer will stop thinking. Then press the TAKE BACK key again, and the computer will show you the piece you moved last. Press it down on its square, and the computer will show you the square it came from. Move the piece back to this square, pressing it again. If the move was a capture, the computer will remind you to replace the captured piece, by indicating the square and the type of the captured piece. Press down on the square as you replace the piece.

If you have already performed the computer's move, you must first press the TAKE BACK key and take back the computer's move, then press the TAKE BACK key again and take back your own move. If you want to take back more moves, simply continue taking back moves as long as you wish, The computer normally remembers the last 60 moves for each player.

13. HINT

If you press the HINT key. the computer will give you a piece of advice on what to move. This is done by flashing the move by first showing the 'from' square (long period) and then the 'to' square (short period). The computer will continue flashing the move until you press another key. The move showed is the move the computer expects you to make. Whenever it is your turn to move and you are considering your move, the computer is also considering

its reply! So if you actually make the move the computer expects you to make, it will often be able to respond immediately.

If you press the HINT key while the computer is thinking, it will flash the move it at the moment thinks is the best. You can then start considering your own next move instead of just waiting.

14. TERMINATE SEARCH

If you press the MOVE key while the computer is thinking, it will immediately terminate the search and play the move It at that moment considers the best (the same move which is flashed if you press the HINT key).

15. CHECKING THE POSITION

In case of confusion, for instance if you accidentally upset the board and the pieces, you can make the computer show you where every piece should be. according to its memory.

Press one of the six keys with a piece on. and the computer will show you where the pieces of that type are by lighting a rank and one or more files. A steady light indicates a white piece while a flashing light indicates a black piece. A piece light will light, indicating the type of pieces, you are checking. Press the same piece key again, and the computer will show you the next rank in the same way. until there are no more pieces of that type on the board.

16. ENTER POSITION

When you press the ENTER POSITION key. the computer will enter the ENTER POSITION mode. The ENTER POSITION mode is used to change or set up a position on the board.

If you then press the LIBRARY/CLEAR BOARD key. the board is cleared (all pieces are removed).

If you want to enter or remove pieces, press one of the six piece keys. The corresponding piece light will flash, indicating the type of pieces you are changing. If there are any pieces of that type on the board, the computer will show you these pieces as described in section 15.

If you want to remove a piece of the type, simply press down the square of the piece, and the file light of that square will come off. You can only remove pieces of the type indicated by the flashing piece light.

If you want to add a piece of the type, simply press down on the empty square, and the file light of that square will come on. A steady file light indicates a white piece, a flashing file light a black piece.

The color of the added piece is determined by the color lights. If you want to add pieces of the other color, simply press the SOUND/COLOR key. and the color lights will change (in the ENTER POSITION mode, the SOUND/COLOR key is used to control the color).

When you have entered the correct position, first check that the color lights are showing the color of the side to move.

If not, press the SOUND/COLOR key to change the color. Second, check that the position is legal. Each player must have one king and no more than 16 pieces, and the player not to move must not be in check. Then press the ENTER POSITION key once more to exit from the ENTER POSITION mode (if you are an experienced user, you can also use one of the other function keys).

You have to switch the ENTER POSITION mode off before you e.g. enter a move.

The position can of course be changed at any time during the game, when it is your turn to move

17. MULTI MOVE

Pressing the MULTI MOVE key places the computer in the player versus player mode. In this mode the computer will not move itself, so you may enter the moves for both players. This feature may be used to enter a particular opening, to replay a game to a certain position, or to use the computer as normal chess board, allowing 2 humans to play against each other, while the computer checks the legality of the moves, offers hints, and keeps track of checks, checkmates.

3rd repetition. 50 move rule and even the time control (see section 21).

18. MEMORY

If you have to interrupt a game and want to resume it later, the OFF/ON/SAVE switch should be turned to the SAVE position. The computer will then retain the chess position in its memory while using a minimum of current. Later on you can switch on again and continue as before. The SAVE position should also be used, if you want to retain the contents of the programmable opening library (see section 24).

PART TWO: ADVANCED OPERATION

19. LEVELS

Your computer has 44 different levels.
which are controlled by the 2 built-in chess docks.

LEVEL	TIME PER MOVE	TIME FOR 40 MOVES	LEVEL	TIME FOR WHOLE GAME
A1	1.5 sac.	1 min.	C1	1 min.
A2	4.5 sec.	3 min.	C2	3 min.
A3	7.5 sec.	5 min.	C3	5 min.
A4	10.5 sec.	7 min.	C4	7 min.
A5	15 sec.	10 min.	C5	10 min.
A6	22.5 sec.	15 min.	C6	15 min.
A7	30 sec	20 mm	C7	20 min.
A8	45 sec.	30 min.	C8	30 min.
B1	1 min.	40 min.	D1	40 min.
B2	1.5 min.	1 hour	D2	1 hour
B3	2.25 min.	1.5 hours	D3	1.5 hours
B4	3 min.	2 hours	D4	2 hours
B5	3.75 min.	2.6 hours	D5	2.5 hours
B8	4.5 min	3 hours	D6	3 hours
B7	6 min.	4 hours	D7	4 hours
B8	15 min.	10 hours	D8	10 hours
F1	DEMO LEVEL		E1	TRAINING 1
F2	QUICK DEMO LEVEL		E2	TRAINING 2
F3	INFINITE LEVEL		E3	TRAINING 3
F4	MATE LEVEL		E4	TRAINING 4
H1	Normal		E5	TRAINING 5
H2	Attacking		E6	TRAINING 6
H3	Very aggressivo		E7	TRAINING 7
H4	Positional		E8	TRAINING 8

Level A1-B8 will play using the specified average response time. The computer maintains a time budget. On each level the computer must make a certa n number of moves within a fixed time. The computer will use more time for complex moves and less for simple ones, but it will average out the time over a number of moves. If it uses a lot of time in the opening

it will play quicker later on. There is a time control after 40 moves and after each succeeding 20 moves. Thus on level B4 the computer will make 40 moves in 2 hours, and then 20 moves per 1 hour the rest of the game.

Level C1-D8 will play the whole game within the specified fixed time, regardless of the number of moves which will be made. This type of setting is mainly used for the very popular blitz and speed chess games.

Level E1-E8 are training levels. On these levels the search depth is limited to the number of half moves corresponding to the level set. E.g. on level E1 the computer will only look one half move ahead, and thus often overlook e.g. mate in one from the opponent. This gives weaker play, and thus gives average players a better chance of winning against the computer, together with the ability of slowly increasing the playing strength of the computer as they get better. The very fast normal levels (A1 and C1) do not necessarily give weak play if you yourself play slowly, as the computer on these levels is also thinking in your time of reflection. Thus level E1 is the weakest level of the computer.

Level F1 is used for demonstration. On this level the computer will play at the same speed as you do, regardless of whether you play quickly or slowly. This level is also used when you want a nice and quiet home-chess game without thinking at time controls.

Level F2 works as level F1, except that the computer will play double as fast as you (in case you are a little impatient).

Level F3 is the infinite level. On this level the computer will think infinitely, unless the position is found in its opening library, it has only one legal move, it finds a mate or you terminate the search. This can e.g. be used for postal chess where you let the computer think a couple of days at each move.

Level F4 is a special level used for solving mate problems. The computer will first try to find a mate in 1, then a mate in 2, 3, 4, 5 etc.

When the computer has found a mate it will start flashing the first move, and continue searching for a second solution. If it finds a second solution, it will start flashing this instead.

If you are not interested in second solutions, you can of course terminate the search and play on. When the computer has found all solutions it plays the last found solution. You can then enter a defence move, and the computer will find the rest of the mate.

The computer can solve mates in up to 12 moves, although it might take very long time.

When you change the level, the built-in chess clocks are automatically reset. On level C1-D8 and F1-F2 the clocks are set to zero. On level A1-B8 they are set to the average time per move multiplied by the number of played moves.

Thus if you play in a tournament, where the time is 2 hours for 40 moves plus 1/2 hour for the rest of the game, you should start by playing on level B4. and then change to level C8 after 2 hours. If you play on level B4. and after 20 moves press level B4 again, the computer will not change the level, but it will reset the chess clocks, and assume that both players have used 1 hour for the first 20 moves, regardless of the actual time spent. If instead you change the level to A5, the computer will assume that both players have used 10 min. for the first 20 moves, and play the rest of the game on 15 sec. per move.

20. PLAYING STYLES

As the first chess computer in the world, your computer offers you 4 different playing styles! You can choose between the NORMAL playing style (H1), ATTACKING playing style (H2), VERY AGGRESSIVE playing style (H3) and even POSITIONAL playing style (H4), which is normally considered very difficult for computers. Your computer is actually 4 different chess computers in one. This feature truly offers a new dimension to computer chess, and gives you a unique opportunity of training your chess against different types of players. You can even change the playing style of the computer in the middle of a game. The playing style affects both the choice of opening line and the style of play in the middlegame. but not the endgame.

When you turn on the computer, the playing style is set to normal. You change the playing style simply by pressing the LEVEL key (to enter the LEVEL mode) and the square of the style you want to choose (H1-H4). Remember to press the LEVEL key again to exit from the LEVEL mode.

21. **TIME**

Your computer has 2 built-in chess clocks, one for white and one for black. When you press the TIME key, the computer will show you the clock of the side indicated by the color lights. Thus if you press it when it is your time to move, it will show your dock, if you press it while the compu'.er is thinking, it will show the computer's dock. The computer will continue showing the time until you press the TIME key again.

The TIME key only works on level A1-D8. It divides the total time (either for 40 moves or for the whole game) into 60 time ntervals Thus on level A3 and C3 each time interval is 5 sec., on level B4 and D4 each time interval is 2 min.

When you press the TIME key, you will see a column of rank lights.

The number of lights roughly tells you how much time you have left, according to the following scheme (on level A1-B8 it shows the time left till next time control, on level C1-D8 it shows the time left for the rest of the game).

LIGHTS	TIME INTERVALS
8	57-60
7	49-56
6	41 48
5	33-40
4	25-32
3	17-24
2	9-16
1	1- 8

One of the file lights will also be on, telling you the exact number of time intervals. The file lights count from H to A.

If your time shows 1A, you have less than 1 time interval left. If your time shows 1H, you have less than 8 time intervals left. If your time shows 8A, you have less than 57 time intervals left. If your time shows 8D, you have less than 60 time intervals left.

If all 8 rank lights are flashing, it means that you have used all your time.

Thus if you are playing on level B4, and the time shows 1F. it means that you have less than 12 minutes left till next time control. The computer will not give you any signal, when you lose on time. If you want to play on time with the computer, you must check your own time yourself. Nothing happens when you lose on time, you can always continue the game normally.

22. SEARCH DEPTH

When playing with your computer it may interest you to know how many half moves the computer is looking ahead. The search depth is of course linked to the level set. meaning that on level A1 the search is by far not as deep as on level A8 etc. On the training levels (E1-E8) the search depth is fixed.

If you press the LEVEL key while the computer is thinking, the current search depth will be indicated by a rank light E.g. the 3-light means that the computer is looking 3 halfmoves ahead. On the Mate level (F4) the computer shows the number of moves, in which it is trying to find a mate. If the search depth exceeds 8 half moves, the computer will start counting from 1 again. Thus if the computer is looking e.g. 11 halfmoves ahead, the 3-light will be on.

23. ANTICIPATED LINE OF PLAY AND EVALUATION

When you press the HINT key, the computer will flash the move it expects to be the next move in the game (see section 13). If you, after having pressed the HINT key. press it a second time, the computer will flash the move it expects to be the 2nd next move in the game, and so on, up to a maximum of 6 half moves. In this way you can see how the computer expects

the game to develop. You can of course use this function both when it is your turn to move and while the computer is thinking. The number of half moves, the computer will display, depends of course on how many half moves it looks ahead, but the number will not necessarily be identical with the search depth.

When the computer has displayed the whole anticipated line of play, it will flash one of the rank lights. This Indicates the computer's evaluation of the position. If the flashing light is near the top of the board, it means that this player is better of, if it is near the bottom of the board, it means that this player is better of. Normally you are playing with the p eces at the bottom of the board, giving the following table.

LIGHT	EVALUATION
8	Winnmg advantage for computer (at least a piece)
7	Superior position for computer (at least a pawn without compensation)
6	Positional advantage for computer (at least 1/4 pawn)
5	Slightly belter for computer
4	Slightly better for you
3	Positional advantage for you (at least 1/4 pawn)
2	Superior position for you (at least a pawn without compensation)
1	Winning advantage for you (at least a piece)

24. PROGRAMMABLE OPENING LIBRARY

Your computer has ah extensive opening library with mare than 1000 variations containing more than 6000 half moves.

If this is not enough, your computer offers you as the second chess computer in the world, the ability-to program openings and variations into the computer yourself! This feature allows you to build an opening library of your own choice. Up to 240

half moves can be stored in your opening library (only different moves are counted, if you enter several variations starting with 1. e4, the move only counts for one half move).

Programming your opening library is as simple as you can dream of. With this chess computer you do not have to use a key overlay or to read 6 pages of manual instructions. All you have to do is learn to use one single key !

As usual you start a new game by pressing the NEW GAME key.

You then play the variation, you want to enter in the library, The easiest way is to use the MULTI MOVE function (section 17). You can of course use the TAKE BACK key, let the computer offer advice or let the computer analyse the moves. When you have reached the end of the variation you want to enter, simply press the LIBRARY key. and the variation is entered. It is as simple as that.

You can of course also use the LIBRARY function, if in a game against the computer you reach an interesting variation, which you would like to enter in the library. Just press the LIBRARY key. and the variation is entered. If the storage capacity of 240 half moves is exceeded, the computer will give the error signal. This means that only the first part of the variation has been entered. The computer will also give the error signal, if the length of a variation exceeds 60 full moves.

When the computer is playing, it will at random pick either a move from its own opening library or from your opening library. This means that you can also use the library to give priority to certain openings. If e.g. you enter the move 1. f4 (Birds opening) in the computer, this opening will be played more often by the computer than otherwise. The order in which you enter the different variations is important, since the first entered variations will be played most often.

The computer handles transpositions automatically. Thus If e.g. you enter a line starting with 1. e4 e5 2. f4. and later on in a game play 1. f4 e5 2. e4, the computer will still be able to use the opening library.

The contents of your opening library will be retained when you put the computer to the SAVE position (see section 18). If you want to erase the whole opening library, just put the computer to the OFF position.

It is thus very important that you use the SAVE position and not the OFF position, when you have programmed your own opening library.

If you want the computer to play without its opening library, just press the ENTER POSITION key twice before you start the game. The computer will then start thinking from the beginning of the game.

25. GAME LIBRARY AND REPLAY GAME

If you are not interested in programming your own opening library, you can instead use the library memory to save chess positions.

When you want to save a position in the library, simply press the LIBRARY key as described in the last section. The position is then saved in the library, and you can play some other games, or put the computer to SAVE position.

You can have several different positions in the library at the same time. The computer does not save the position itself, instead it saves the whole game leading to the position. The number of positions, you can save at one time thus depends on the length of the games. Up to 120 full moves can be stored (e.g. 2 games of each 60 moves or 6 games of each 20 moves). No game may however be longer than 60 moves, and you cannot save a game if you have used the ENTER POSITION function

When you want to resume a saved game do the following.

First press NEW GAME to reset the computer. If you have more than one game saved in the library, then play the first few moves of the game you want to resume (so that the computer can distinguish it from the other games) e.g. by using the MULTI MOVE function.

Then press LEVEL and LIBRARY. The computer will then automatically set up the position. Wait until the color lights stop flashing, then set the level and playing style, and press LEVEL (to exit from LEVEL mode). If you set the level

before pressing the LIBRARY key, the clocks may not be reset correctly (see section 19). Then check the position (see section 15) and set up the position on the board, and resume the game. If later on you want to save the game again, simply press the LIBRARY key, and the new moves will be added to the ones already saved.

This unique feature is very useful if e.g. you play postal chess. It, also means that the computer can play simultaneously against several different players at the same time!

You can also use the feature to replay games. If you have played a game, which you want to replay (e.g. if you want to write it down), then save the game in the game library by pressing the LIBRARY key as described above. Later on, when you have time to replay the game, you press NEW GAME and play the first moves of the game as described above (you must however enter all the moves, which the computer played from the opening library, since the computer will otherwise play moves from the opening library instead of from the game library). Then you can replay the rest of the game simply by continuing pressing the MOVE key.

The contents of your game library will be retained when you put the computer to the SAVE position (see section 18).

If you want to erase all the games in the library, just put the computer to the OFF position.

It is thus very important that you use the SAVE position and not the OFF position, when you have saved any games in the game library.

Please note that the saved games will affect the computer's selection of openings. This however also means that to some extent you can save both games and opening moves at the same time.

26. ABOUT THE COMPUTER

All chess computers analyse a position simply by looking a number of moves ahead and evaluating the positions. The computer then chooses the move which leads to best position, assuming that the opponent makes the moves, which the computer considers the best.

Apart from having more features than any other chess computer in the world, your computer also contains one of the best and most sophisticated chess programs ever made.

In a typical middlegame position the computer analyses around 500 chess positions per second.

A good chess computer must however also know a lot about chess. Your computer contains a lot knowledge about piece development, center control, king attacks, king safety, pawn structures, center pawns, open rook files etc. etc. It can find and avoid 50 move rule, eternal check and 3rd repetition, and is one of the very few chess computers, which can mate with king, knight and bishop against king.

If you want to know more about how chess computers work, we recommend the book 'Chess Skill in Man and Machine' edited by Peter W. Frey. Texts and Monographs in Computer Science. Springer-Verlag New York 1983 You can also become a member of one of the computer chess associations around the world (e.g. in Germany, Netherland and Scandinavia).

We hope you will enjoy playing with your new chess computer.