Tasc ChessSystem®

INTELLIGENT COMPUTER CHESS PRODUCTS

Tasc ChessSystem R30

USER'S MANUAL

Tasc ChessSystem
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1 Introduction

We congratulate you on your purchase of the TASC ChessSystem R30 chesscomputer. It combines user-friendly operation with a beautiful design and superb playing strength.
This is the first chesscomputer with a large LCD display that can display numerous game and analysis data, a diagram of the chessposition, or even analog chessclocks. Another special feature of the R30 is the extremely flat chessboard with automatic piece recognition. It turns input of games and analysis into a sheer delight.

The famous chessprogram "The King" runs on the 32 bit ARM 2 RISC processor, which is particularly well suited for chess. The computer has a clockspeed of 30 MHz and utilises a large memory. The built-in openingbook contains over 55 000 moves. Numerous features can be added using the optional PC-interface which connects the R30 to a personal computer.

2 Getting Started

The R30 comes packaged with :

- The operator module with LCD display and keys. It also contains the very heart of the R30: The processor, the memory and the chessprogram.
- The chessboard.
- A poweradapter to connect the R30 to a wall-outlet.
- A cable to connect the operator module to the
- chessboard.
- Two velvet bags with chesspieces. Each piece has an electronic identification circuit built-in. The board can detect not only the presence of a piece on a particular square, but also the type and colour of the piece. If you want to use pieces other than the ones that came with the R30, the circuits have to be built into each of the pieces feet. Please, contact TASC B.V., on how to do this.
- This manual and a warranty card that has to be returned by you.

Connect the cable to the chessboard. You can use either the left or the right connector on the board, depending on the placement of the operator module. Connect the other end of the cable to the operator module. The connector on this end of the cable will only fit into the right connector on the module.

Now connect the poweradapter to the module and to a wall outlet. Use the adapter that came with the R30 exclusively. Using other powersupplies may damage your R30 and will render product warranty void.

Put the pieces in the starting position. Press the <BACK>-key and while still holding it switch the R30 on, using the switch at the back of the operator-module. Pressing <BACK> while

switching the R30 on will erase memory. In normal use this is not necessary and not recommended, because it will restore all settings to the values given by the manufacturer, the so-called factory settings. Settings entered by you, or an unfinished game will get lost.

After two tones are heard the display will show two analog chess clocks and the message: *RAM cleared.*

You can directly start playing a game now. Just make the first move on the chessboard. The computer will soon indicate its move by flashing the LEDs (small lights) on the corners of two squares. Both the square with the piece that makes the move and the square where this piece should land are indicated. The move is also shown in white against a black background on the bottom line of the display. Make the move indicated whereupon the LEDs will stop flashing. You can now make your next move.

Moves can be taken back easily by making them in the reverse order on the board. If you do not remember the moves press <BACK> and the R30 will indicate the move to be taken back.

If you have made a serious error, first wait for the computer's move. Make this move on the board and press <BACK>. The R30 will now indicate this move to be taken back. Take back the move by making it in the reverse direction. Press <BACK> again and the computer will indicate your (erroneous) last move. Repeating this you can take back more moves, even to the very start of the game. If you know the moves by heart you can simply take them back without pressing <BACK>. When you reach the point where you want to continue playing just make a new move and the R30 will start calculating.

The green lights next to the buttons on top of the operator-module indicate which side is to move. In the starting

The green lights next to the buttons on top of the operator-module indicate which side is to move. In the starting position it is white's move and the left LED is on. When it is black's move the other one lights. If the computer is waiting for you to make a move the LED lights continuously, if it is calculating a move it blinks.

You can start a new game by restoring the starting position. The R30 will automatically recognise your intention. If you want to play with black, put the black pieces on the side nearest to you. By pressing <PLAY> you make the R30 start the game with the white pieces.

2.1 Pawn promotion

When the computer promotes a pawn, it will show the move as usual by lightening the LEDs. At the bottom line of the display the chosen piece is displayed (i.e. "Move b7-b8Q" for promotion to queen).
If in the system menu (p. 46) the entry "pieces" is set at "symbols", the character "Q" in our example would be displayed as a figurine. If in the system menu short notation is set, the move would show "b8Q".

Further on the pawn will be recognized as a queen by the board and therefore you may change it to a queen (if it has been captured already or if you have a second queen at your disposal, or you may leave the pawn at the board. A small chess board which at request can be shown on the display (see p. 19 § 5.2) will display the pawn as a queen.

If you want to promote a pawn yourself, play the move as usual. At the bottom line of the display 4 characters or figurines will be shown, indicating "Queen Rook Bishop kNight". Press <ENTER> to accept the marked choice ("Q") or

press <ARROW LEFT> or <ARROW RIGHT> to choose another piece. Finally confirm this choice with <ENTER>.

From now on the R30 recognizes your pawn as a queen and evidently you can exchange the pawn for a queen as discussed in the previous paragraph or to any other piece you wish to use. For example, after the promotion (say you chose a queen) you may put a knight in place of the pawn on the board. Later on in the game, you can exchange the knight to the queen if your original queen has been captured. Whatever piece is on the square, the computer recognizes it as the piece you chose at the promotion.

3 The Keys and Their Function

3.1 <PLAY>

By pressing this key during the phase of calculation, you can abort the computer's current calculations and make it play the strongest move it has found by then. After you have pressed <PLAY>, the R30, being set online, starts calculating a move for the colour whose move it is. Besides, this key is used for several extra functions.

3.2 <BACK>

This key serves the purpose of taking back moves. After pressing <BACK>, the latest move is indicated and can be taken back on the chessboard.

3.3 <MENU>

This key enables you to enter as well as to exit the function menu. Striking this key introduces nearly all functions and settings.

3.4 The arrow keys

Using the four arrow keys, you can address the various functions provided in the menu, merely by moving the selection-bar in the intended direction.

3.5 <ENTER>

<ENTER> is the key you can confirm your selection with and, thus, render it valid with. Having moved the selection-bar to

the intended function of the menu, <ENTER> activates this function.

4 The Display Modes

While being in the normal operating mode, i.e. when no menu is opened (see next chapter), the LCD-display shows the chessclocks and a broad variety of information on the current position, on the game and on calculations. The display is vertically divided into three columns.

For depicting the time of thinking you can choose between an analog and a digital clock. It is possible to switch from one display mode to another whenever wanted, merely by striking the <ENTER>-key. (Of course, this does not apply when the menu is opened.) Originally, when turning on the R30 for the first time after purchase, it is set to the analog mode.

4.1 Analog mode

Operating in this mode, an analog chessclock is shown in both the right and the left segment of the display, i.e. a clock face with an hour-hand and a minute-hand. The seconds are counted on the right of the clock face in small digital numbers. A small square above the clock face indicates whether the clock is measuring the time of thinking for black or for white (empty square: white, filled square: black). Normally, the white clock is depicted in the left segment of the display whereas the black clock is depicted in the right segment. This setting can be changed with the option *system/white clock* of the menu (see below). Starting a game, the clocks are usually set to 12 o'clock and they cumulatively measure the total time for the moves of one side. On the blitz levels (see chapter LEVEL) one clock shows the remaining time for the complete game for one colour, while the time control is set to 6 o'clock. For instance, when you have chosen blitz level 5 minutes, the clocks are set to 5 minutes to 6 at the beginning of the game. (Quite naturally,

the time passed for each side is cumulated seperately in this case either.) As soon as one of the clocks reaches 6 o'clock this side loses on time.

In the analog mode the segment in the centre of the display is kept free for showing further information. You can choose between four different types of windows which are selected by striking the <ARROW UP>- or the <ARROW DOWN>-key. These windows are explained in detail in the next chapter but one (THE INFORMATION WINDOWS).

4.2 Digital mode

Operating in this mode, the centre segment of the display contains the time for both sides which is depicted digitally (i.e. in numbers). Apart from the total time for each side this mode also shows the time which has been consumed for the last move. The total time of white is preceeded by an empty square in this mode as well, whereas the total time of black is preceeded by a filled one. Right below the total time of thinking the time for the last move is shown.

Using the digital mode you will find further information in the left and the right segment of the display. Like in the analog mode you can choose between the four information windows which are described in the following chapter. The desired information window can be selected separately for the left and for the right segment. For switching from one window to another, the <ARROW LEFT>-key has to be pressed for the left segment and, acccordingly, the <ARROW RIGHT>-key for the right segment. In each segment you can choose from merely three of the possible four information windows as the display of the opposite segment shall sensibly not be shown twice.

Additionally, the digital mode has the so-called 'current line' at the bottom line of the display which contains the currently calculated variation. However, this is not the move which is

by then regarded by the computer to be the most promising, but the move the computer is presently considering. The variation is preceeded by two numbers separated by a slash. The second one gives the number of moves which are possible in the present position. The first one gives the ordinal number of the currently examined move (the first move of the variation) with which the move is marked in the move table of the computer. In addition to the corresponding information window (see next chapter) this indication lets you gain deeper insight in the interesting process of analysis of the R30.

Pressing the <ARROW UP>- and the <ARROW DOWN>-key you can enable and disable the current line when operating in the digital mode. If the current line is disabled *calculating ...* is indicated in the calculation phase and *your move* when set online.

5 The Information Windows

5.1 Game score window

Here, the last seven moves are shown in short or normal notation (for white and black) depending on the settings which were made under *system/notation* (see there) in the menu. With *system/figurines* (see there) you can pre-set whether the depiction shall include piece symbols or exclusively letters (e.g. Qe4). The moves themselves are consecutively numbered. When starting a game this window is, quite obviously, empty.

5.2 Diagram window

This window contains a small, stylized diagram of the present position which enables you to review easily the correctness of the pieces' position on the chessboard.

5.3 Analysis window

The analysis window contains seven lines with interesting information on the analysis. This information is constantly updated in the calculation phase depending on the state of calculation and, when set online, they accordingly refer to the information which have been relevant immediately before making the last move. While no move has been calculated yet (e.g. at the start of the game) this window remains empty.

1 best (best move)

According to the present state of calculation, the move listed here is considered by the computer to be the best possible.

If the process of calculation was aborted this move would be made. Quite naturally the 'best move' can repeatedly alter during the time of calculating the move, namely when the computer draws different conclusions from its analysis.

2 eval (evaluation)

Basing on the calculations of the computer, this line states its evaluation of the present position in so-called pawn units. With a value of +1.08 the R30 regards the side whose move it is to have an advantage over the other side of slightly more than a pawn. An extra piece without compensation would result in a value of roughly +3.00. Accordingly, an evaluation of -0.50 means that the side whose move it is has a disadvantage of circa 'half a pawn'. As this tends to be impossible in physical terms this example already clarifies that the evaluation of the computer thoroughly takes into account positional aspects.

It is possible und fairly common indeed that despite of both sides being equal in material respect the computer regards one side to have an advantage of vastly more than one pawn. If the evaluation swings even more extremely in favour of one side the computer has already discovered a forced variation rendering the material equilibrium into an advantage for that side.

If the R30 recognizes that one side can checkmate the other, it will show the number of moves remaining before the mate together with a mate-symbol (plus-character with a double horizontal line) instead of an evaluation in pawn units. If the side whose move it is will inevitablely get checkmated when the other side plays the best possible moves the mate-symbol is preceeded by a minus.

3 depth (depth of calculation)

This line contains two numbers seperated by a slash, of which the first shows the so-called brute force depth which is currently reached and of which the second shows the selective depth of calculation in half moves. Thus, 04 for example would tell that the computer calculates four half moves in advance, i.e. two moves for white and two for black.
Playing brute force, all theoretically posssible moves are calculated upto the stated depth of calculation. If, for example, 40 moves are possible in a certain position the computer will examine all 40, including possible reactions to each move, and will evaluate each position.

The selective depth of calculation is in principle considerably higher, as it merely includes variations regarded to be most promising by the computer. Thus, the machine simulates the human brain which focuses on a few seemingly sensible alternatives. Most advantageously, this procedure works with great depth of calculation and simultaneously with comparably low effort. However, variations which do not seem plausible at first glance can be overlooked - a typically human problem.

Due to the structure of man's brain he cannot attain a comprehensive brute force examination which the computer, however, carries out downto a certain depth. This helps it to play powerfully at a high level, particularly in tactics. Within the boundaries of the brute force 'horizon' the R30`s algorithms prevent it from overlooking one possible move.

4 time (point of time of latest change)

Formatted as hours : minutes : seconds, this line states the point of time at which the evaluation and / or the best variation (see 5.4) has been altered for the last time. This is,

so to say, the moment in which the computer has gained new insights into the most promising continuation for the last time.

5 curr (currently examined move)

The move indicated here is the move your computer currently examines. Working with a new depth of calculation the computer will set out with examining most thoroughly the move it consider to be most favourable until then (see *best*). Having completed its calculations the computer updates the best variation and / or the evaluation if necessary.

Afterwards all alternatives are examined according to the so-called move table the machine makes up automatically, in general organizing the table with regard to the plausability of each move. The way the computer is working through these alternatives can be followed via this and the next information window (see line 6 *move*). The R30 will examine carefully any alternative if new calculations make it appear promising. If necessary, this alternative (with a new best variation and with a positive evaluation figure) replaces the previously best move.

The move indicated in this line is simultaneously the first move of the currently examined variation which is depicted in the bottom line of the display (see DIGITAL MODE)

6 move (number in the move table)

The number after the slash refers to the number of moves which is presently valid, the number in front of the slash refers to the move which is presently examined in the move table. (The move as such can be found in line 5 *curr*, see there.) If the indicated move has been regarded hitherto to

be the best possible (see line 1 *best*) the display will read 01 as this is always the first move in the move table.

This line equals the corresponding information in front of the currently considered variation which can be shown in the bottom line of the display when operating in the digital mode (see DIGITAL MODE).

7 pos (number of examined positions)

This number states how many positions the computer has generated and evaluated currently when calculating the latest move. The highly efficient processor with which your R30 works, in general enables the chess programme to examine 3000 positions - despite any serious complexity of the position. However, higher marks can be reached in less complicated positions.

5.4 Principal variation window

This information window shows the pre-eminent data of analysis at a glance. The top line contains the brute force and the selective depth of calculation which are separated by a slash. This information corresponds with the Analysis window line 3 *depth* (see previous chapter). On the right side of the top line the evaluation is stated (identical with line 2 *eval* of the Analysis window). The remaining six lines depict the variation which the R30 regards to be the best according to its calculations, i.e. the game which would be played if both sides played their best moves. The evaluation refers to this variation also.The display depends on the settings you can make in the menu with *system/figurines* and *system/notation* (see there). You can choose between piece symbols or abbreviations and between short or normal notation.

After a relatively short time of calculation (e.g. at a lower level) the current variation may be not (yet) displayed in full length of twelve half moves, for the depth of calculation is not sufficient then.

6 The Menu-Layout

Almost all functions of your chesscomputer are operated using so called menus. In a menu the individual items are laid out before you like in a restaurant menu. Selecting among the items is done with a black selection-bar that can be moved on the screen using the four arrow-keys and thus is placed on the appropriate menu-item. Upon pressing of the <ENTER>-key the corresponding function or setting is activated. This is shown by a small ">" in front of the menu-item. Notice that changes in the settings will only be activated if you press the <ENTER>-key.

The advantage of such a menu-system is that basic settings as well as elaborate functions are entered using the same scheme of actions. Once you have learnt this scheme, operating the R30 will appear logical and intuitive, so you will need the manual only in exceptional cases.

You can enter the menu at any moment, whether the R30 is waiting for your move or calculating, by pressing the <MENU>-key. By pressing <MENU> again the menu is exited.

6.1 Operating the menu

Press the <MENU>-key to enter the menu. The menu-structure contains three levels that are shown from left to right on the display. The leftmost (main) level contains the main groups of functions. Each of these groups contains a number of individual functions that are displayed in the centre column. Most functions can have one of a number of possible settings. These settings are displayed in the third and rightmost column.

After you have entered the menu the selection-bar is placed on the topmost item of the main menu: *play*. The word *play*

has a black background and is displayed in inverted colours. The functions displayed in the middle column are always the ones belonging to the selected group. At this moment the functions *mode*, *level*, *clocks* and position are displayed. This means that these functions form the *play* group.

In the third column the current setting for each function is displayed. In this case they will probably read behind *mode* "= player/computer", behind *level* "= 10 sec/move" and behind *clocks* "= automatic". The meaning of these settings is explained in the detailed description of each of the functions.

You can move the selection-bar in all directions using the arrow keys. If you e.g. press the <ARROW DOWN>-key once the selection-bar is placed on the main menu item *game*. At the same time the available functions change to *list game*, *new game* and *restart*. There is no third column here, because these functions have no settings that can be displayed. If you move the selection-bar further down all other functions and current settings are shown in turn. If the selection-bar is on *special* and you press the <ARROW DOWN>-key once more, the bar will move to the uppermost item *play* again. Of course the selectionbar can be moved upward with the <ARROW UP>-key.

By just moving around the menu no settings will get changed. This will only happen if you move into the centre or even right column, select a currently not active setting and confirm your selection by pressing <ENTER>. Before that you can always leave the menu by pressing <MENU>, without any changes taking effect.

6.2 The menu options

In the following each individual menu item will be explained. As all functions of the R30 are operated using this menu all

functions will be dealt with.

1 Play

The most common functions for adjusting the R30s mode of play are grouped in the *play* menu item.

1A Mode

The menu-item *mode* is selected by moving the selection-bar to the right from the main menu-item *play* by pressing <ARROW RIGHT>. In the right column next to *mode* the currently selected setting is displayed. By pressing <ARROW RIGHT> once more all possible settings for menu option *mode* are displayed. The currently selected setting is now marked with a small ">". The selectionbar is on the topmost line.

The selection is changed by moving the selectionbar to the desired mode using the <ARROW UP>- and <ARROW DOWN>-keys and pressing <ENTER>. E.g. if you want to select the mode *computer-computer* position the selection-bar on this option by pressing <ARROW DOWN> three times. Now press <ENTER> to confirm your selection. The ">" will indicate the new setting.

You can now make yet another change to this menu option (e.g. if you have made a mistake), return to the second column by pressing <ARROW LEFT> to make other changes, or leave the menu completely by pressing <MENU>.

This sequence of actions: Enter the menu, move to the right option, select the desired setting, press <ENTER>, leave the menu, is alike for all menu options.

Now we get to the five individual settings of the mode-option.

player-player
In the mode *player-player* you can enter moves for both sides on the chessboard. The R30 will not perform analysis, but only score the moves and check their legality. This mode has two main uses:

a) Two human players play on the chessboard. The R30 will function as the arbiter, check the moves, record them and keep the time. In this case the operation of the chess clocks could be set to *manual* (see menu item play/clocks). The operator module can then be used like a normal chessclock placed next to the chessboard visible to both players who are using the chessclock buttons on top of the module.

b) You want to enter a sequence of moves, after which the computer should play on or analyse the position. E.g. you can force a particular opening for training. Once the position is reached where the computer should start analysing, or should resume play, switch back to *computer-player* or *player-computer* and press the <PLAY>-key. This will let the R30 calculate a move and play from there on.

Player-computer
When *mode* is set to *player-computer* the R30 will play black. This is the factory default mode. If you like the computer to play on with the white pieces, press <PLAY>, without entering the menu system first, when it is white's move. The R30 will start calculating and mode will be set to *computer-player* automatically.

Computer-player
In *computer-player* mode the computer plays white. This mode is automatically selected if you press <PLAY> in the starting position. If you like the computer to play on with the black pieces, press <PLAY>, without entering the menu system

first, when it is black's move. The R30 will start calculating and mode will be set to *player-computer* automatically.

Computer-computer
In *computer-computer* mode the R30 plays both sides and thus plays itself. Once you press <PLAY> it will start calculating and display a move after some time. Once you have made this move, it will start calculating for the other side, and so on. This function can be useful when analysing a position thoroughly and establishing the most likely course of the rest of the game.

Analysis
The *analysis* mode is a unique feature of the R30. In this mode the R30 doesn't try to keep track of moves, it just registers the board position. Whenever the position changes it starts calculating a move. If you have moved a white piece last it assumes that it is black's move, if the last piece moved is black it assumes it is white's move. The side for which it is calculating a move can be verified by looking at the green LEDs on top of the operator-module. Normally it is calculating a move for white if the left LED blinks and for black if the right LED blinks.

1B Level

The R30 offers you a broad range of different levels to choose from. They are divided into six groups. Basically, the strength of the computer (as of humans) depends on the time allowed for considering a move.

The more time it has available, the more operations the R30 can execute, the better-founded its evaluation of a position will be and the better its move finally will be. The R30 always tries to use the given period as efficiently as possible in order to achieve the maximum strength possible with the

settings given. However, this merely applies if you set *settings/strength* to *expert* and *settings/easy* to *Off*.

By moving the selection-bar from the menu-item *level* to the right, using the <ARROW RIGHT>-key, the six groups of levels pop up in the right column (i.e. the third level of the menu). As before, the presently valid level is marked with a little arrow. You will find the selection-bar placed on *40/2:00 moves/hrs* as you entered at this height 'from the left'.

For selecting the desired level you move the selection-bar with the <ARROW UP>- and <ARROW DOWN>-key and confirm your choice with <ENTER>. Except for the level *infinite* all levels allow to alter the parameters arbitrarily. For detailed explanation see the chapters on the different groups of levels.

.. sec / move

For this level you can specify a certain time per move. The computer does not stick to this limitation imperturbablely but it attempts to keep the average time measured during the entire game within the limitation. Thus, the computer tends to consume much more time than specified when dealing with a complex position. Accordingly, it answers other moves immediately or at least swiftly. To sum it up, the computer strives for a sensible allocation of the entire time.

When turning on the R30 the first time after purchase or after having cleared the memory, the setting is 10 sec / move. For activating this level you move the selection-bar to this menu-item and strike <ENTER> twice. The familiar arrow indicates the current level. Leave the menu with <MENU> and start a new game.

It is also possible to enter a different time limit per move. To do so you have to place the selection-bar on the menu-item and press <ENTER>. Thereupon, = *010 sec/move*, the present setting, is printed white on black in the bottom line of the display. Merely the first digit of the figure is familiarly in black

letters and can be altered with the <ARROW UP>- and <ARROW DOWN>-key. Striking the <ARROW UP>-key increases the number by one, striking <ARROW DOWN> reversely decreases it by one. You can skip from nine directly to nought with <ARROW UP> and vice versa (using <ARROW DOWN> then).

For changing other digits you move the blank with <ARROW LEFT> and <ARROW RIGHT> to the one you want to alter and proceed as described above. <ENTER> will confirm your selection. You may change your mind on the changes you have already made. If so, all you have to do is cancel your changings with <MENU> and quit the menu. Changes in the settings will not be activated then.

Example
You want to play at '45 sec/move'. Open the menu with the <MENU>-key and move the black selection-bar to the menu-item *level* (use <ARROW RIGHT> and <ARROW DOWN> for this). Move the black selection-bar to the third level of the menu to where the groups of levels are shown <ARROW RIGHT>. The selection-bar is on *40/2:00 moves/hr*s. <ARROW UP> will move it to = *010 sec/move*. Now you can see the bottom line containing = *010 sec/move* with merely the first digit being printed black on white.

In our example the first digit shall remain unchanged. Therefore, move the blank to the right (i.e. to the second digit from the left) with the <ARROW RIGHT>-key. As you want to play at 45 sec / move you have to increase the "1" three times by striking <ARROW UP>.

Having erroneously increased the digit too high (say, to five) you can decrease it to the intended value with <ARROW DOWN>. At this point, <ENTER> would confirm your input. But it would not be the 45 sec / move you desire but 40 sec / move. Thus, place the blank on the right digit which is at present set to nought. Press <ARROW UP> five times and you will see the resulting five on the display. Make sure that the entire

setting reads "045". If so, you can confirm and activate your changes with <ENTER>.

The indicated (and therefore activated) setting is now *045 sec/move*. Leave the menu as usual (press <MENU>) and start a new game.

(2) **../.:.. moves/hrs**

This level implies the so-called tournament level at which a certain number of moves has to be made within a given time. The computer does not use more than this amount of time as long as it has not made these moves yet. The R30 indicates any loss on time by its opponent. According to tournament rules the human player has lost hereby. However, he or she can continue the game and ignore the loss on time deliberately. In this case the computer will overlook this breach of the rules. 40 moves in two hours is a fairly widespread time limit at tournaments and was therefore chosen as the factory setting for this level. That leaves approximately three minutes per move. For activating this level move the selection-bar to the menu-item and press <ENTER> twice.

When you intend to change the current settings you should press <ENTER> only once. You will find the setting displayed in the bottom line in white on black. It may read = *40/2:00 moves/hrs* with each digit being separately changable as described above (see level .. *sec/move*): both the two-digit number of moves (ranging from 01 to 99) and the time limit (with the number left of the colon representing hours and the two-digit number right of the colon representing minutes).

Example

You want to play at tournament level '5 moves in one hour and 30 minutes'. Having opened the menu, move the selection-bar via *play/level* to *40/2:00 moves/hrs* on the very right and press <ENTER>. The present setting appears in the bottom line with all digits printed white on black except for

the first digit (i.e. "4") which is printed black on white. Now strike the <ARROW UP>-key three times and increase the number to "7". <ARROW RIGHT> moves the blank to the right and marks the second digit (i.e. "0") then. Increase this digit to "5" by striking <ARROW UP> repeatedly. Move the blank right (<ARROW RIGHT> pressed once) and alter the current value ("2") to "1" using the <ARROW DOWN>-key. With <ARROW RIGHT> you can mark the last digit but one ("0"). Pressing <ARROW UP> three times sets it to the desired value of "3". Changes in the rightmost digit are not necessary.

Before activating your new setting with <ENTER> make sure that it reads correctly *75/1:30 moves/hrs*. If further changes are necessary you can either move the blank left with <ARROW LEFT> or leave -with <MENU>- the menu entirely. In the latter case your settings would not be activated as you have not confirmed it with <ENTER> yet. The present settings would remain valid. In contrast, <ENTER> would activate your settings.

③ **. min/game**

With this option the blitz levels can be set which give each player only a certain time for the entire game. The computer does keep to this time limit. As soon as you lose on time the R30 indicates this violation which would end the game according to the rules. However, you can simply ignore this message and continue the game. If so the computer will keep trying to stay within the given time.

The setting of the blitz level lets you enter a two-digit number of minutes. Move the selection-bar to the menu-item *.min/game* and press <ENTER>. For playing at the currently set blitz level (factory setting: 5 min / game) strike <ENTER> a second time. If changes are wanted enter them by changing the minutes with the <ARROW>-keys.

Example
You want to play at blitz level 10 min / game. move the selection bar via *play/level* to *5 min/game*. Press <ENTER>. = *05 min/game* will be depicted in the bottom line then. Merely the first digit is printed black on white. Pressing <ARROW UP> once increases it to "1". Now move the blank to the right with <ARROW RIGHT> and alter the rightmost digit to "0" by striking <ARROW DOWN> five times. As intended the setting reads "10 min / game". Now confirm this setting with <ENTER> and leave the menu with <MENU>.

Having selected a blitz level (which is indicated by a little arrow in the menu) both chess clocks depict the remaining time (count down mode).

(4) **. ply**
At this level you can enter a certain number of half moves. This is how far the R30 will calculate ahead. With a setting of "4" the R30 makes its move just after having calculated four half moves, i.e. two moves for each side, in its brute force search (see *the information window*, *analysis window*, line 3 *eval*).

The time the computer consumes for its calculations depends largely on the complexity of the position, i.e. on the number of pieces on the board and on the possible moves. So be prepared for lenghty waiting when setting up a crowded position and searching seven or more half moves. Please note that the computer calculates all possible variations at the set depth of calculation - which turns out to be an enormous effort even for the R30's highly efficient processor. Thus, the R30 will be only capable of calculating two-digit numbers of half moves in a reasonable time when playing in positions with few pieces on the board.

For *normal* games it is not recommendable to limit the depth of calculation. This is because the time needed for calculations alters considerably during the course of the

game, depending on the complexity of each position. In the middle game you may have to wait very long for a response from the R30, whereas it plays (too) fast in the endgame when only few pieces are left on the board.

The number of half moves can be set similarly to the setting of the blitz level. Move the selection-bar to the menu-item *5 half moves*, press <ENTER> and change the two digits with the <ARROW>-keys if necessary. Activate your new setting with <ENTER> before leaving the menu.

⑤ **. mate**

This level exclusively serves the purpose of solving so-called mate problems at which the opponent's king shall be checkmated within a certain number of moves. The positional and material criteria for evaluation are not taken into account in order to find a solution in as short a time as possible.

For solving a mate problem (e.g. from the puzzle corner of your chess magazine) you have to enter the position first. Please note that you must as well enter the colour which is to move. Usually white starts mate problems and mates black. For setting up a position see *play/position*.

Now move the selection-bar to the menu-item *3 mate* (i.e. mate within three moves). Press <ENTER> and alter the setting as described before. You can find the settings displayed on the bottom line. Having activated the setting and having left the menu, you can start the calculations with <PLAY>.

While the computer is searching for a possible mate you can have various information be displayed: the currently examined variation, time consumed by now, depth of calculation (shown in full moves) and the number of moves examined by then. Evaluation and *best variation* are not availbale when searching for a possible mate.

Having found a solution for the given problem the computer indicates this on the display as well as on the board. If no mate can be found within the given number of moves *no mate* is displayed.

Due to its enormous speed in calculation the R30 is capable of solving most complex problems within a maximum of five moves in a reasonably short time. Problems with more moves and many pieces take longer indeed to be solved as the number of variations to be examined increases considerably. Problems with ten or more moves and with many pieces, mostly cannot be solved within a justifiable time. This comes about as the time for calculation increases exponentially with each additional move.

(6) **Infinite**
On this level no further settings can be made. The computer brings its calculation to an end only if you abort the calculations by pressing <PLAY>. Most typical, this level is applied for intensive positional analyses. The R30 will examine the current position for hours or for weeks on end and accompany its calculations with a detailed and well-based analysis on the display.

For selecting this option you move the selection-bar to the menu-item and strike <ENTER> once before leaving the menu. Now start the calculations with <PLAY>.

1C Clocks

Moving the selection-bar to the second level of the menu you can let the third level pop up with <ARROW RIGHT>. Here the options *automatic* and *manual* can be chosen from. The current setting is indicated with a little arrow. For changing the settings you move the selection-bar to the desired menu-item and press <ENTER> before you leave the menu.

Automatic
In this mode the clock switches automatically as soon as a move is completed. When white completes his move, the clock for white stops automatically while the clock for black starts and vice versa. This mode is recommendable when playing the computer. Thus, it is preset at the factory.

Manual
This mode is designed for games between two human players. This requires the additional setting *player-player* (see *play/mode*). As with a normal chess game, the chessclock buttons on top of the operator module have to be pressed after each move.

If the operator module is placed next to the board like an ordinary chessclock both players will be able to watch the display easily. It is advisable to use the analog mode (which can be changed with <ENTER> if necessary). The factory setting assumes that the chessclock is placed on the lefthand side of the player with the white pieces. If you want to place the clock on the opposite side of the board changes in the settings become necessary (see *system/white clock*).

The chessclock of the R30 operates like a conventional one. Having made his move white presses down the button on top of the operator module which is closest to him. The clock is immediately stopped while black's clock resumes operation. A green LED next to each button lights or extinguishes accordingly. The same applies to black: After having finished his move he presses down his button and thus halts his clock and re-starts the white clock.

Doing so, the total time for both sides can be measured. For playing blitz chess please change the settings in *play/level* as you intend to (e.g. to 5 min/game). In this case both clocks count down the remaining time.

When one clock reaches the six o`clock limit this side loses on time. Besides, a sound is heared unless it has been turned off in *system/speaker* (see there).

On the tournament level, time is similarly measured and announced (when reaching the time limit). When playing *player-player* on one of the remaining levels, time is measured for both sides but no time limits apply.

For halting both clocks simultaneously please press <BACK> twice (This may be necessary for interrupting the game or for clarifying a problem). By making a move and pressing the corresponding button the game is resumed

1D Position

With this menu-item you can enter a position or deliberately alter the present position. With automatically recognizing each piece, the R30 makes it easy to set up a position fast.

For entering a position you preferably set it up directly on the board. Select *position* from the second level of the menu-item *play* by moving the selection-bar there and by pressing <ENTER> afterwards. A diagram which depicts the position appears in the right segment of the LCD-display now. Please compare the position displayed with the actual setting on the board. If you notice certain incongruencies this may be caused by pieces which are not placed on one square accurately and which are, thus, not recognized.

While the display shows the caption --- *set up position* --- alterations can still be made, i.e. moving pieces, taking them from the board or adding them to the position. Having completed the intended position, please check if the right to move first is attributed to the desired side. This information is depicted as *white to move* or *black to move.* Switching from one colour to another can be done with the <PLAY>-key.

It may be that the position you just set up is illegal according to the rules of chess and has to be changed (e.g. a king is missing, or the side which is not to move is in check). This is indicated by *position is not legal*. Otherwise *position is legal* is displayed.

For finishing the setting up of a new position press <ENTER>. <BACK> cancels this option without activating any of the changes made.

There are various examples of what to do with a set up position: you can let it be analyzed (e.g. on the level *infinite*), you can play the computer beginning with this position, let the computer play itself (mode *computer-computer*, see *mode*) or let this position be examined as a mate problem (level *mate*). Select the desired level if necessary and start the calculation by pressing <PLAY> or by making a move.

2 Game

2A List game

This function helps you to recapitulate the current or a previously finished game. You can list the game and jump to any certain position.

Place the selection-bar in the main menu *game* on the menu-item *list game* on the second level of the menu and press <ENTER>. You will find the following on the display:

In the right segment a simplified diagram depicts the current position. The latest seven moves are shown in the centre segment in normal or short notation and with figurine symbols or letters, depending on the setting made in *system/pieces* and *system/notation*. The left segment contains the number of the move which lead to this position. The line *Board OK* tells you that the 'internal' position (i.e.

which is displayed onscreen) and the actual position on the board are identical.

Pressing <ARROW UP> takes back the latest move at each position. You can follow it on the display as you move gradually through the notation reversely. The message *Board not OK* lights up in case you do not accompany the taking back of a move by removing the piece on the board. However, you can refrain from changing the position on the board when you merely follow back the notation in order to recapitulate a previous position. Having found the desired position you can go through the game in the original direction by striking the <ARROW DOWN>-key. For resuming or for analyzing the game at a certain position you should re-set the position on the board according to the information given on the display. *Board OK* assures you of the accurateness of your set position.

For continuing the game at this position you press <ENTER>. However, when you want to return to the position which has been the current position before, you just have to press <BACK>.

2B New game

Selecting this menu-item and confirming it with <ENTER> clears the memory from the previously played game, including the final position and the notation. Now re-arrange the pieces to the starting position for a new game. The settings (level, functions, options) are not affected and remain unchanged. In actual use you will not need this function as a new game is started automatically as soon as the pieces are set to the starting position.

2C Restart

This menu-item also starts a new game but, differing from *new game*, with resetting your settings (except for the set language).

3 Settings

This item of the main menu offers you six sub-items with which you can influence the mode of operation and the opening library of the chess programme.

3A Strength

Basically the strength of your chess computer depends on the time set for one move. The shorter it is, the more inaccurate the calculation of the computer will be and the more probable positional and tactical mistakes become.

However, the R30's programme is equipped with profound chess knowledge which -in conjunction with the extraordinary efficiency of its processor- makes it a real challenge for human players to keep up with - even with short time limits.

To have an equally challenging opponent for players of all levels, the menu-item *settings/strength* offers the settings *strong*, *moderate* and *novice* beside of the original setting *expert*. According to the choice made, the computer restricts its efficiency deliberately.

For changing the setting you proceed as usual. If you regard yourself to be *moderate* you simply have to move the selection-bar to *settings* in the left column in the first place by pressing <ARROW DOWN> twice. Afterwards you press <ARROW RIGHT> and enter the second level of the menu. Press <ARROW UP> twice and <ARROW RIGHT> once again and you

enter the third level of the menu. The pre-set mode of operation is marked with the familiar little arrow. Move the selection-bar to the setting *moderate* by pressing <ARROW DOWN> twice and confirming your selection with <ENTER>. Now your new setting is made and you can strike the <MENU>-key and leave the menu.

3B Style

Having entered the third level of the menu at this menu-item with the <ARROW RIGHT>-key you can choose between five styles. Apart from the factory setting *normal* which stands for a balanced style in playing you can alter the setting to a rather aggressive or rather defensive style. Playing *actively* and especially playing *offensively* the R30 examines particularly thoroughly all opportunities for an attacking game and seeks fierce confrontation. When set to *solid* and even more when set to *defensive* the R30 particularly takes into account your active playing and your active opportunities and plays, accordingly, from a rather cautious defense.

The currently selected style is marked with a little arrow when entering the third level of the menu. Changes have to be selected with the selection-bar and have to be confirmed with <ENTER>.

3C Easy

When set to *on*, this option restricts the calculations of the R30 to the periods it is to move in. Otherwise (i.e. *off*), the computer will calculate continuously during the entire game.

The conjunction of the menu-items *strength* and *easy* results in a subtly differentiated weakening of the computer. Please note that your R30 will reach the maximum of its chess capacity when *strength* is set to *expert* and *easy* is set to *off*.

3D Hash

This option serves the purpose of turning on and turning off so-called hash tables which are essential for the playing strength of a chess programme. Intermediate results are stored highly efficiently in the computer's memory which renders repeated access to these data extraordinarily speedy. Thus, efficiency in calculation and, therefore, depth of calculation increase. This applies to the end-game in particular where changes in moves and calculations of variations are especially needed.

For a high playing strength the hash tables shall recommandably be switched on. Switching them off can be useful in the rare case of analyzing chess problems and wanting to achieve time for solution which can be reproduced and are not influenced by the contents of hash tables.

3E Search

Apart from the factory setting *selective* you can choose the mode *brute force* as well. For more detailed information see chapter THE INFORMATION WINDOWS / The analysis window line 3 *depth*.

In general, the highest strength in playing can be achieved with the setting *selective* which combines powerful selective elements with brute force components with which a respectable tactical steadiness comes along.

Tactical problems often face the R30's algorithm with complex intermediate moves. As the search is far more comprehensive and exhaustive with the setting *brute force* (quite naturally with lower maximum depth of calculation), tactical problems may be solved considerably faster in a brute force search.

3F Book

This menu-item influences the various selections of variations in the opening phase. Having entered the setting *random* the R30 randomly selects a certain opening variation from the comprehensive opening library. Thus, facing various, partly uncommon systems in the opening phase you can be certain of being challenged by colourful games.

Playing with the setting *tournament* limits the opening systems of the computer to a comparably small number. By doing so, its mode of playing and its specific strengths are supported.

Moreover, you can switch off the opening library completely (*off*) when you intend to observe the behaviour of the computer without having the book at its disposal.

4 System

This main menu-item helps you to change some system settings which mainly have optical and acoustic effects.

4A Speaker

The computer confirms moves, the striking of keys and several functions acousticly with sounds that can be set at this menu-item to full volume (*on*), to low volume (*soft*), or can be suppressed entirely (*off*). This is to avoid possible disturbances caused by the sound.

4B Rotate

Choosing *yes* at this menu-item on the third level of the menu will make the board Rotate by 180 degrees. In the original setting the white pieces are to be found in the seventh and eighth row and the black ones in the first and second row of the board.

With a rotated board the pieces are supposed to be set up at the other side.

In general, these functions are rarely used as the R30 rotates the board automatically when you set up the pieces reverse. However, if you intend to enter a position on a rotated board the rotation has to be executed internally via this function.

4C White clock

This function alters the analog clock mode. In the original setting (*left*) the clock of white is displayed in the left segment, the clock of black in the right one. If two human players wish to use the operator-module as a chessclock with white being depicted in the right segment (see description of menu-item *play/clocks/manual*) the setting has to be changed to "Right" which swaps the clocks on the display. A little square above each clock shows to whom the clock belongs (filled for black and empty for white).

4D Pieces

According to the settings made at this menu-item, notations and variations in analysis are depicted in symbols (*figures*) or in letters (*characters*), e.g. Qe4, Nc3.

4E Notation

This menu-item influences the display both of notation and of variations in analysis. Set to *normal* all moves are shown in a detailed notation (e.g. e2 - e4).

4F Language

You can choose from three languages. The factory setting is *English*. Apart from this, *Deutsch* and *Nederlands* are available as well.

5 Board

The settings of the board which are compiled in this menu are in actual use changed only seldomly.

5A Lock board

When set to *yes*, no signals are sent from the board to the computer. This can be recommendable when you want to analyse a position thoroughly without running the risk of aborting the calculations by erroneously changing the position. A normal game requires the setting *no*.

The board can also be locked / reactivated by pressing <PLAY> and <ENTER> simultaneously.

5B Disable LEDs

Choosing *yes* and thus changing the factory settings will suppress indications by the LEDs on the board. This feature is helpful for players who feel confused by the blinking of the

LEDs. In this case moves have to be read from the LCD-display.

5C Auto takeback

When operating with the factory setting *enabled* it is possible to take back moves on the board without pressing the <BACK>-key (see chapter GETTING STARTED). This option can be suppressed by choosing *disabled*.

5D Change move

The original setting *enabled* allows you to replace the last move with a different one of the same piece on the board (see chapter GETTING STARTED). This option can be suppressed by setting the menu to *disabled*.

5E Auto new game

Usually, when set to *enabled*, the R30 recognizes automatically the beginning of a new game when the pieces are rearranged to the starting position. This menu-item can be used to *disable* this function.

6 Special

6A System info

By choosing this function (just move the selection-bar to the menu-item and press <ENTER>) you can start a test of the LCD-display and the LEDs on the board. When pressing one arrow-key repeatedly all LEDs on the board should light up consecutively.

Moreover, the display shows information on the free memory, the version of your programme and the processor speed.

6B Demo play

Having activated this function by pressing <ENTER>, the R30 will play itself without demanding that moves shall be played on the board as well. After finishing one game it will immediately begin a new one. You can abort the demo play, e.g. by choosing *game/new game* from the menu.

6C Clear RAM

With this option you can clear the complete memory of the R30. All settings including language are reset to factory settings. In the rare case of electrostatic disturbances (e.g. after a long period of idleness) this will clear any problems.

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