1250

COLOSSUS CHESS X

THE ULTIMATE CHESS PROGRAM

1 LOADING COLOSSUS

Atari ST: Colossus Chess X requires an Atari ST computer with a TV or colour monitor connected.
Turn the power on and insert the 'Program' disk in Drive A. When the desk-top appears, double-click on the file 'COLOSSUS.PRG'. Colossus will then load automatically.
Please note: If you try to load Colossus from the 80 column mode the program loader may force a system reset and require you to double-click again.

Commodore Amiga: Colossus Chess X requires a Commodore Amiga with at least 512k of memory, All external disk drives should be disconnected.
Turn the power on and when prompted for the workbench disk insert the Colossus program disk.

PC: Loading instructions are printed on your disk label.

Program protection: The Colossus program protection system requires you to consult this manual in order to type a keyboard character from those printed under the page numbers.
In order to make this a little simpler, the characters are printed, fifty per page, in groups of 10 with a space between each group. Only when you have correctly typed the character required will the program begin.

After loading: Once the program has loaded the screen will display the board and the computer will beep. At this stage, if you have a separate 'Book' disk insert it in the drive. Please ensure that 'Program' and any 'Book' disks are always 'Write-enabled'. This is required by the program when saving new playing lines or user settings to the disk.

First use of the disk: On the very first use of the brand-new Colossus disk, the 'Language' option box will be displayed.
You should select the language you wish to use, so that on loading the program on later occasions this will be the default language used. To make this permanent please ensure that the program disk is write-enabled - ie not write-protected.
The available options are: English (ENGLISH) French (FRANCAIS) German (DEUTSCH) Italian (ITALIANO) Spanish (ESPANOL)
On future loading of the program you may still change to any language during play, using the 'Language' option, but this change will not be recorded on the disk, unless you decide to save the User settings (see Section 7.k).

2 SCREEN DISPLAY

2.a Menus: The control menus are hidden on the normal screen. They will be displayed either by moving the mouse pointer onto the top line of the display on the Atari ST, ie. the title line, or by pressing the right mouse button on the Commodore Amiga.

2.b Main screen

2.b.i Board Display: The graphical representation of the board shows the current game position.
The letters and numbers around the edge of the board are those used in the algebraic notation for each square. It is these numbers that are displayed in the past move record on the Information screen.

2.b.ii 3D Board tilt and rotate: Colossus gives you the option to swivel its 3D chess board allowing you to view the play from any angle for greater clarity.
Your ideal board angle and tilt can be present every time you start Colossus by saving the User settings (see Section 7.k).
To rotate the board, depress the right mouse button on the Atari ST/PC or move the pointer to the edge of the board and depress the left mouse button on the Commodore Amiga. An outline of the board will appear and move with the mouse. When the board is at the required angle of tilt and rotation, releasing the mouse button will redraw the board.
On PC's with no mouse press and hold CTRL and DEL whilst using the arrow keys to move the board outline.

2.b.iii Prompt & Message line: The bottom line of the main screen is used to issue prompts and messages from the program to the player/s. Messages requiring an input end in a question mark (?).

2.b.iv Championship marker: The top line of this screen initially displays two diamond shaped markers. These remain on the screen unless you use any of the program features which allow you to deviate from normal chess rules, eg.backstep, choose next-best move or even look at the hint move on the Information screen.

2.c Information screen

2.c.i Player names: At the head of each column, under the colour, is the name of the player. The program always plays as Colossus and the opponent is initially described as 'Opponent' but this can be changed using the 'Opponents name' option - Section 8.d.

2.c.ii Clocks: Under the player names are the elapsed-time clocks for white and black. They show the total playing time used by each side in the game so far.
Please note that the clocks start as soon as the program is loaded and the board has been displayed. If you wish to reset the clocks at the actual beginning of a game then use the 'New Game' option described later. The program always issues a beep to indicate that the clocks are starting.
The clocks can also be set or reset by using the Elapsed-time clocks option described later in Section 8.e.

2.c.iii Move record: The move record, ie the last seven moves made by each side, is displayed under the clocks.

2.c.iv Moves: The moves are displayed in the normal algebraic notation.
The separator symbol used between the 'From' and 'To' references changes depending whether the move is a capture, shown by an 'x', or not, shown by a '-'. Castling moves are indicated by referring to the King being moved and its 'From' and 'To' square references.
En-passant captures are indicated by the suffix 'EP'. Promotions are indicated by a suffix of '/', followed by a letter to indicate the promoted piece ('N' - Knight, 'B' - Bishop, 'R' - Rook and 'Q' - Queen). Checks are indicated by a suffix of '+'.

2.d Colossus' thinking: The lower part of the Information screen displays information about the way that Colossus is planning moves. This can be used to observe the way that a good computer chess program works and yet still takes only a minuscule fraction of the computer's processing time to display. There are five items, each displayed next to a symbolic icon.

2.d.i Assumed move - Speaking Icon: Colossus can, and normally does, think on the opponents time, just like a human player. In order to make the most of this time Colossus assumes a certain good move and then plans ahead as if the human opponent has made that move. If the program has no move to assume then it will not think ahead at all.
After the opponent has moved this display is blank as Colossus considers a response to the actual move played rather than an assumed move. This display is permanently blank when Colossus is playing both sides of a game as then it is impossible to think on the opponents time - Colossus is the opponent!

2.d.ii Current line - Thinking Icon: The second line of this display shows the move sequence currently being evaluated by Colossus. This changes rapidly as the search progresses and can be extended or reduced to show more or less of the following moves by pressing the '+' and '-' keys but note that printing longer lines reduces the efficiency of the program quite drastically.
Above this line is the current game stage; Opening, Mid-game or End-game.

2.d.iii Best line - Idea Icon: The bottom line of this display shows the best playing line that Colossus has found during its current search.
This may be used to give you a 'hint' not only about the current move but about future good moves too. Most best lines contain a 'null' move which is shorthand meaning a passive non-capturing move.
The line above indicates the score for this line of moves in terms of the number of pawns up or down. If this is positive it suggests that Colossus is winning, whilst a negative figure suggests that the opponent is winning.

2.d.iv Lookahead - Telescope Icon: As the program considers its move it displays the depth of search here. This is printed in 'ply' or 'half-moves'. Colossus searches most move sequences to at least this depth and some are searched to a much greater depth.

2.d.v Positions examined - Abacus Icon: This displays the total number of positions examined in the tree of move sequences. The display is updated at the end of each iteration and after a new 'best move' is found. During the Mid-game Colossus examines 500 positions per second on average.

3 PLAYING A GAME

3.a New game - {Position - New Game}: When a new game is started the pieces are set-up in their initial positions, the clocks are re-set to 00:00:00 (hours:minutes:seconds), the move display is cleared and you are given the option of moving first. By activating the 'Go' option, {Play - Go (change sides)} - [Control G], Colossus will take white and move first.

3.b Your move: Whenever it is your turn to move, the bottom line of the Main screen displays 'Your move?'. You enter moves either by moving the cursor or by using algebraic notation, see Section 4, in the following manner:
1) 'From': Move the cursor to the square of the piece which you wish to move and press the left mouse button or the [Return] key. The notation for the 'From' square will then be displayed next to the 'Your move?' prompt.
Holding down the left mouse button causes the hand to appear and grab the piece concerned. The piece will then be 'dragged' across the board until this button is released.
If you accidentally enter an incorrect 'From' location this can be cancelled by
a) pressing one of the [Backspace], [Delete] or [Esc] keys,
b) entering the same location again from the keyboard and pressing the [Return] key or left mouse button or
c) releasing the left mouse button with the piece on its original location.
2) 'To': Move the cursor to the square you wish to move to and again press [Return] or the left mouse button. If you are dragging the piece release the left mouse-button when the piece is over the correct square. This causes the 'To' notation to appear on the bottom line next to the 'From' location.
If the move is judged to be illegal then the message 'Illegal' will be displayed and the whole of the move entry line cleared. Return to step 1 to try again.
3) Pawn promotion/Castling/En-passant capture
If this move is a pawn promotion Colossus will automatically display an options box so that you may specify the piece that you wish to promote to.
CASTLING: Move the king two squares either way. EN-PASSANT CAPTURE: Move the pawn as in a normal capture.

3.c Colossus' Move: Whilst Colossus is computing a move the message 'Let me think' is displayed on the bottom line.
The Information screen is constantly updated as this process proceeds and can be viewed by pressing the [SPACE bar].
Pressing [Esc] during the search forces Colossus to abandon searching and make the best move it has found so far.
If Colossus has found a line of moves that leads to checkmate it displays 'Mate in N', where N is the number of moves to the mate. If Colossus believes itself to be hopelessly lost and that things can only get worse it announces its resignation but you are allowed to play on if you so wish.
When Colossus has computed its move a message is displayed at the far right of the Main screen's bottom line showing 'My move' followed by the move in algebraic notation. Then the 'Your move?' prompt appears on the left.

3.d Game Over: At the conclusion of a game the clocks stop and Colossus displays a message to indicate the final game state.
Possible messages are:
'Drawn': The game has been drawn by a three-fold repetition of position; the 50 move rule or by neither side having enough material to mate the opponent. This occurs in the cases of King, King and Bishop or King and Knight against a lone King.
'Checkmate': The side which moved last delivered checkmate.
'Stalemate': The side to move is in stalemate.
'Time up': The side to move lost 'on-time'. This occurs only if you are playing an 'All-the-moves' game - see Section 8.h on the 'Type of play' **command.:** The program then displays the 'What now?' prompt and waits for you to

enter a program command.
To start a new game select the 'New game' option,
{Position - New game} – [Control N]

4 PROGRAM INPUT

4.a Cursor shape: The on-screen cursor can take two shapes, depending upon the current position on screen and action being taken.

1) Pointing finger: The normal cursor is a hand shape with a finger pointing upwards. This is used to point to pieces and their locations on the board.

2) Clasping hand: When a piece has been nominated for moving, the hand cursor is replaced by a large hand which picks up the piece and moves it around the board as long as the left mouse button remains depressed.

4.a.i Hand cursor colour: During a game the colour of the hand cursor changes in order to indicate the player who is to move next. If you leave the game for a period and are unsure which side is to move, simply check the colour of the hand.

4.b Cursor movement: There are three ways of moving the cursor around the screen.

1) Mouse movement: Any movement of the mouse is followed on-screen by the cursor.

2) Cursor keys: The cursor keys, on the central keypad, can be used to move the hand around the board one square at a time. The [Left arrow] and [Right arrow] keys give left/right movement whilst [Up arrow] and [Down arrow] give up/down movement. If the cursor is moved off a board edge it reappears at the opposite edge of the board, ie. it wraps-around. Mouse movement is simulated on the PC and compatibles by pressing the left CTRL key and the cursor keys. The mouse buttons are simulated by CTRL plus INSERT or DELETE on the numeric keypad.

3)Algebraic keys: Colossus can accept movement input in algebraic notation typed on the keyboard with the [Return] key pressed between the 'From' and 'To' locations.
On the board the cursor will move immediately to the correct file when one of the letters [a] - [h] is pressed and to the rank when a number key [1] - [8] is pressed. This provides very fast input of known moves, eg. the common opening move Pe2-e4 can be entered by typing {e 2 Return e 4 Return}.
For even faster input, when the rank or the file of the 'From' and 'To' squares is the same the key sequence can be shortened even more, eg. the example above can be shortened to {e 2 Return 4 Return}.

4.c Numeric input - *Important*: Many program commands and option require the entry of numeric data to change the value of parameters. In order to simplify this process Colossus features an error-proof number entry routine.
For most settings there is a maximum and minimum acceptable value and a default or normal setting. When you first select an option which requires a change in parameter values, the options box displays the current setting in the query position. To increment this value select the up arrow box, repeating until the desired value appears in the box. This is then confirmed by selecting the 'O.K.' box. The value can be decremented by similar actions involving the down arrow box.
The values available in Colossus are cyclic, ie. if the maximum is 59 and the up arrow is used again the value will cycle up to ø. This can be used to speed entry considerably, for example, if you wish to change the move time, in the type of play menu from 58 minutes to 3 minutes, it is much quicker to use the up arrow 5 times, than the down arrow 55 times.

5 PROGRAM COMMANDS AND CONTROL

5.a Menu bar: Colossus uses a series of menus to make command selection using a mouse very simple indeed. The Colossus menu bar has just four options: CDS Features Play Position
These are fully described in the following sections.

5.b Drop down menus: As the mouse is moved left or right on the menu bar the pointer causes the option nearest to the pointer to be displayed in inverse video and the full menu to appear.
On each menu is a 'highlight bar', ie. a line of the menu displayed in inverse video . As the pointer is moved up and down, by the mouse, this highlight bar moves up and down accordingly.

5.c Option Selection: To select a particular option the left mouse button should be depressed once. This is known as 'Clicking' on an option and in future sections of this manual the text '{click}' will be used rather than the longer phrase 'press left mouse button'.
This will cause one of several possible actions to occur.
1) Direct action: Where the option is a simple toggle or requires no other action, the menu disappears and the command is acted upon. For example: to swap screens you select {Features - Swap screen} and press the left mouse button - the menu clears, the screen changes and the normal hand cursor appears.
2) Further menu bar: When you select {Position - Alter-position} another menu bar will appear.
You then select the next option and the menu item required. This is just like selecting items from the main menu bar.
3) Option boxes: When a command requires parameters or direct input from the player 'Option boxes' appear. These boxes have, in most cases, a 'Query line' and a number of options. By pointing and clicking on the options the parameters will change in the appropriate way.
In certain cases, when typing of a name is required, the query line will be displayed with just an 'O.K.' box. To edit the name you must first {click} on it, this will enable the cursor. A default entry will be displayed which can be cleared by pressing [Esc] on the Atari ST and PC or [Right Amiga - X] on the Commodore Amiga. To accept the currently displayed string you {click} on the 'O.K.' box.
4) Item selector - Atari ST only: On the Atari ST when selecting a game or position to load from the disk, a GEM style 'Item selector' appears. Use this in the same way as you would any GEM window. You can select a file name from the list displayed just as you would from the GEM desktop but please note that any alterations made to the folder line will be ignored by the program. All games are saved into the 'GAMES' folder, any other settings will be ignored.
In order to select a file name listed quickly, simply {double click} on the file name.

5.d Returning to the game: If you have selected an item from a menu in error and decide to return to the game then click on the highlighted setting or use the 'O.K.' option to revert to the game.

5.e Quit - (PC only): This option will quit the game at any point and return the system to the MS-DOS prompt.
If the current disk is not the 'Program' disk the message '*Not found*' will be displayed.

6 FEATURES MENU

7.a Swap screen - [SPACE bar]: This option changes the screen display between the Main screen and the information screen. Selecting this option twice will change back to the screen you started from.

7.b Dimensions - [Control V, B, D]: Changes the board display from two to three dimensions and vice versa.

7.c Notation - [Control V, B, N]: To remove the algebraic letter and number notation from the edge of the board select this option. Selecting this again returns the display to normal.

7.d Orientation - [Control V, B, O]: The orientation of the pieces on the board can be changed using this option.
The option box displays these selections: White up the board White left to right Black up the board Black left to right

7.e Blindfold - [Control V, P, B]: If you are a confident player who can keep the current state of play inside your head then this option allows you to play 'Blindfold' as you will see strong players doing on occasions at demonstration matches.
The option box offers:
Both visible: the normal default setting. Black only visible. White only visible. Neither visible: a fully blindfold game
It is not possible to use the 'piece dragging' method of move entry when the pieces are invisible - use the 'point and click' or algebraic methods instead!

7.f Piece-set - [Control V, P, P]: Colossus can use four different chess sets and this option allows you to change them at will. All four chess sets are available in both two and three dimensional representations.

7.g Language - [Control V, T]: If you wish to have the program display in another language select this option. The option box displays a query line ready for you to type the name of the language required.
Languages available on the Program disk are:
ENGLISH FRANCAIS DEUTSCH ESPANOL ITALIANO

7.h Book - [Control U]: Colossus uses an openings book of over 11,000 records (2000 plus lines of average length 12 ply). This is used by the program to play the first few moves of each game quickly and accurately. Lines of play vary from 2 ply to 35 ply deep. When the book contains a choice of moves from a particular position Colossus chooses between them at random with a slight bias towards those moves which Colossus considers to be the best. Selecting this option allows you to adjust or update the openings book as required.
The option box displays:
KEEPER: an extensive book editor which is fully described in Appendix A
LEARN LINE: add the current line of moves to the openings book. This command can be used to extend the book to meet your requirements - Appendix B gives full details and a worked example.
USAGE: allows you to set the manner in which Colossus uses the book.
This causes a further option box to open showing:
OFF: the book will not be used by Colossus.
Maximum variety Colossus will use a variety of moves from those marked 'Poor', 'Fair' or 'Good'.
NORMAL: Colossus will ignore all moves marked 'Poor' and use only 'Fair' and 'Good' moves.
BEST: priority will be given to 'Good' moves
CANCEL: exit from this command list and return to the game.

7.i Games - [Control D]: Selecting this option allows you to delete, load or save move records and positions on disk.
The, self-explanatory, option box offers:
Delete game Load game Save game Cancel
If you select one of the first three options, this box clears and another option box appears. From this you may delete, save or load any filename within the 'GAMES' directory.
Please note that an error on loading, caused by the disk being faulty, can cause the current move record to be lost.

7.j Printer - [Control W]: The current board position or the move record to date can be printed using this option.
The option box reads: Print board Print moves Cancel
The board print-out is always 'White up the board' orientation as found in all chess literature. The white pieces are represented as capital letters and the black pieces as lower case letters with empty squares as dots.
The move record is preceded by a header for clarity and if you have used the 'Alter position' option then the initial position is printed before the move record itself.
Selecting a print option when there is no printer accepting the output will cause one of the following to happen before returning to the Main screen and waiting for a command.
Atari ST and PC - waits 30 seconds and then issues a 'Error -99' message.
Commodore Amiga - issues a 'Error 157' message.

7.k Settings - [Control Y]: If you prefer to play with Colossus set to a certain piece set, board orientation, angle and other options then this command allows you to save and load these parameters. You need to insert the 'Program' disk in order to store this list.
The option box offers:
RESTORE CDS SETTINGS: the default settings described below. LOAD USER SETTINGS: a previously saved list
SAVE USER SETTINGS: write the current settings to disk. CANCEL: exit this command without change.
The settings are stored in the file COLOSSUS.SET. If this file is found during the initial loading sequence or after issuing a 'Load user settings' command this file is used to initialise Colossus's options accordingly.
The CDS settings are:
Board angle: Maximum left rotation. Board tilt: Maximum downward. Board display: 3D. Notation: On. Orientation: White up the board.
Blindfold: Both visible. Piece set: Standard. Sound: Beeps. Replay time: 1 second.

When you save your own settings the 'Language' and 'Opponent's name' settings are also saved.

7.l Sound - [Control Z] - ST and Amiga Only

This option gives you the chance to alter the style of sound Colossus provides.

The option box contains: Beeps - leading to a setting of volume box.

Music - four classical tunes are offered in the next box: Off: No music is played. Prelude No. 28: Chopin.

Claire de Lune: Debussy. Moonlight Sonata: Beethoven. Ave Maria: Gounod

7 PLAY MENU

8.a Go (change sides) - [Control G]: This command forces the program to make the next move by changing sides.

8.b Play self - [Control P]: This forces Colossus to play both sides of the game.

8.c Supervisor - [Control S]: If you wish Colossus to supervise a game between two human players this command is used.

8.d Opponents name - [Control O]: The name at the top of the player's column on the Information screen is set using this command. It displays an option box with a query line. The previous setting can be cleared by pressing [Esc] on the Atari ST and PC and [Right Amiga X] on the Commodore Amiga. Errors can be corrected using [Backspace].

8.e Elapsed-time clocks - [Control E]: The clocks on the Information screen can be set to any value from 00:00:00 to 255:59:59 (Hours:Minutes:Seconds).

The option box presents the current settings in the order: White - hours, minutes and seconds. Black - hours, minutes and seconds

8.f Legal moves - [Control L]: If you wish to learn how to play chess or wish to teach someone else the game, this option is useful. It causes the program to display all the legal moves for the piece nominated one after another.

You first need to select the piece concerned by pointing and {clicking}. Then select the {Play - Legal moves} command or type [Control L]. Each legal move for that piece will then be displayed in sequence. If there are no legal moves for that piece then the command will have no effect.

8.g Choose next-best move - [Control C]: You may wish to examine the effect of using alternate moves from a particular position and this option allows such an examination by forcing Colossus, once or repeatedly, to make the next-best move instead of the one currently nominated. If used repeatedly Colossus will play progressively weaker moves until there are no more in its list, when the program will display the message '*No more moves*' and start to re-examine the play from the beginning. If Colossus is still using its book then this command chooses the next book alternative, selected at random, to be played. This allows you to examine the operation of the openings book and select a particular line to experiment with or which you prefer to play against.

If Colossus is no longer using the book then it will choose the move it considers to be its next-best, in terms of playing strength from those remaining.

8.h Type of play - [Control T]: The program has six different playing modes, allowing a wide variety of differing speeds and playing styles to be set.

1) Tournament - allowing full tournament parameters to be set-up. This involves a number of other option boxes asking:

1st control: enter the move number for this control. 2nd controls: enter the number of moves for secondary controls

1st time: enter the time of the first time control in the order Hours, Minutes, Seconds. 2nd times: enter the time of the secondary controls in the same order

2) Average - this is really a rather simplified use of the Tournament mode which, instead of requiring all four parameters detailed above, simply asks you to enter a 'Move time'.

The program will then control its search routine to use, on average, the time you entered. Colossus plays fastest, and most weakly, when this is set to 0 minutes and 0 seconds.

Note 1: In fact, this mode sets up tournament parameters of 60 moves to each time control, with 60 times the average move-time being allocated for each control.

Note 2: This is the initial mode, with an average of 10 seconds per move.

3) All-the-moves - in many chess club meetings games are played with chess clocks and each player has to aim to complete the game in, say ten minutes, or lose 'on time'. This mode asks you to set the time for the full game and Colossus will then try to play all moves within this period. If either player exceeds the set time the game will be terminated with the message 'Time up'.

If you wish to 'handicap' either yourself or Colossus, you may add time to the particular elapsed-time clock before starting the game. This can be very useful where there is a real skill gap between players and the program.

4) Equal-time mode - in this mode Colossus will try to keep its elapsed-time clock as close to yours as possible - effectively playing at a similar speed to yours.

If you make several quick moves, Colossus will probably have to move more quickly in order to maintain your 'pace'. If, however, you think for a long time over certain moves Colossus, playing an average, will be given longer to improve its play.

5) Infinite mode - this is provided for those problems which involve finding the very best move from a certain set position.

Colossus displays another option box asking:

Search depth? - enter a ply value from 1 to 12

Next an option box appears requesting you to enter the 'Search type'. Setting this to '1' will set Colossus searching in the normal way ie.selectively. Changing this to '2' forces Colossus to search 'full width', ie. all combinations, in order that a sacrifice is not missed.

In this mode Colossus continues searching further and further ahead until:

a) you tell it to stop, by pressing [Esc]. b) it finds a forced checkmate for one side or the other. c) it has searched to the depth required. d) there is only one legal move in the position.

This setting is very useful for postal chess games where you can leave the program running overnight, or even longer, to find the best move. When the search begins the clocks are re-set so that you can check the time taken.

NB: This mode does not use the openings book.

6) Problem mode - used to solve mating problems. This option leads to two further option boxes.

The first requires you to enter the 'Problem type'. There are three possible value settings:

'1' Normal mates of the form 'White to move and mate Black in N moves

'2' Self mates of the form 'White to move and force Black to mate White in N moves

'3' Help mates of the form 'White to move and help Black to mate White in N moves.

Colossus can, of course, find mates of all types for Black just as easily! Colossus Chess X is the first home computer chess program to be able to solve selfmates and helpmates. Just as in infinite mode the clocks are reset and show the time taken to find the solution. When a mate is found the move line is printed at the bottom of the screen, the clocks stop and the prompt 'Continue?' is displayed. If you are satisfied with the move line found [Y] will cause this move to be made immediately. If you wish to see other alternatives press [N], the clocks will restart and Colossus will continue the search.

If no further mating moves can be found Colossus will make the last move it found on the board. If no mates can be found the message 'No mate' is displayed momentarily. Colossus enters the 'Alter-position' sequence so that you may amend the board as required.

8.i Thinking parameters - [Control Q]: If you wish to do so. you can change the way that Colossus thinks by selecting this option.

The first option box requests you to select whether Colossus is allowed to think on your time or not. Setting this to 'Off' considerably handicaps the program. The current setting is highlighted.

The second box requires you to select the goal that Colossus is seeking. The standard setting is that Colossus should try to 'Win' but if you are being beaten too easily you may set this to 'Draw' or even 'Lose'.

When told to 'Draw' Colossus tries to stay about level with you. If you play a worse game than Colossus it will give you plenty of chances to equalise but it may still win if you miss those chances! When playing to lose Colossus will play very badly indeed.

8 POSITION MENU

9.a Alter-position - [Control A]: This command allows you to set-up any legal chess position.

When selected, the current piece type and colour are displayed on the bottom line of the main screen and the menu bar alters to display the 'Alter-position' menu.

Selecting {Alter-position} causes a large menu to drop down giving these options:

Side-to-move - [S]: This toggles the colour of the side to move from white to black and back.

Clear - [C], Pawn - [P], Knight - [N], Bishop - [B], Rook - [R], Queen - [Q], King - [K]

Upon selecting one of these options the current piece type is changed. To alter a particular square place the cursor over it and {click} to insert a piece of the current type on that square. You can then use the {left mouse button} dragging technique to alter the position of a piece.

When using keyboard input this system works differently and much more speedily. First position the cursor and then press the appropriate letter for the piece you require. The piece will appear in position and the cursor will move automatically to the next position. This makes setting up whole rows very fast indeed.

'Clear' is used to remove the piece on the current square.

Get initial position - [G]: If you make a mistake as you alter the board selecting this command will return the board to its original position before you made any alterations.

Wipe board - [Control W]: This removes all the pieces from the board, thus allowing positions with few pieces to be set-up more quickly.

Move number - [M]: If you wish to enter a new starting move number in the move record use this option. You will be prompted to enter the move number required.

New game - [Control N]: This is the same option, detailed later, which re-sets the program ready for a new game of chess. This is a simple way of exiting the Alter-position menu when an illegal position is displayed.

Exit - [E]: Allows you to return to the Main screen from the 'Alter-position' sequence when you have completed the set-up.

If you have made any changes from the position when you entered 'Alter position' the move record will be cleared so that 'Back-step' is impossible. Note that changing side to move or move number are considered by the program to be changes and also cause the move record to be cleared.

Remember to set the correct 'Side-to-move' before you select this option.

If the finalised position is illegal for some reason, Colossus issues an 'Illegal' message and you must correct the position before being allowed to exit this sequence.

The following illegalities are checked:

a) Either side has no king. b) Either side has more than one king. c) The side which moved last is in check. d) Either side has a pawn on the first or eighth rank. e) Either side has more than eight pawns or promoted pieces.

9.b Backward-step - [Control B] and Forward-step - [Control F]

A complete move record for the current game is maintained and updated constantly in memory. This allows you to step backward through previous moves and then forward again should you so desire.

9.c New game - [Control N]: This command clears the board, re-sets the clocks and prepares for a new game.

9.d Replay game - [Control R]: This command causes the board to be re-set and the current game to be replayed step by step for the benefit of a spectator or a play review. You are required to enter the delay between moves as a number of seconds.

The replay can be interrupted by pressing [Esc] during a pause.