

# PHANTOM

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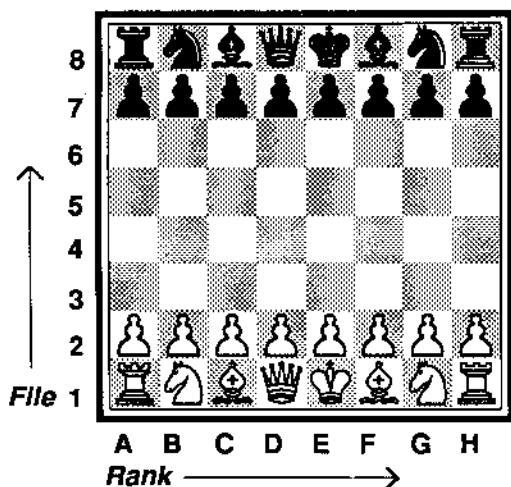
**OWNER'S MANUAL  
INSTRUCTION BOOKLET**

**MODEL 6100**

## EASY STEPS TO PLAYING YOUR FIRST GAME WITH THE PHANTOM

### POWER UP

1. Place the unit on a level surface and set up the pieces in their standard positions, as shown.

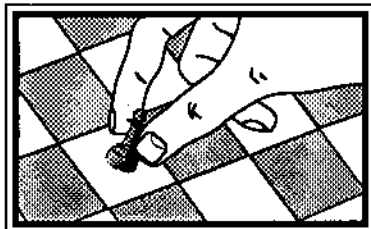


2. Plug the connector of the AC transformer into the wire connector which extends from the back of your unit, and plug the transformer into a wall outlet.

*The computer will take the next 40 seconds or so to adjust the pieces so they are centered in their starting squares.*

### THE FIRST MOVES

1. Let's say you have chosen to move your White pawn located on the E2 square to the E4 square (see diagram for Rank and File designations of the squares).
2. Pick up the E2 pawn and press down on the center of the E2 square. CAUTION: Press only hard enough to register the beep sound.



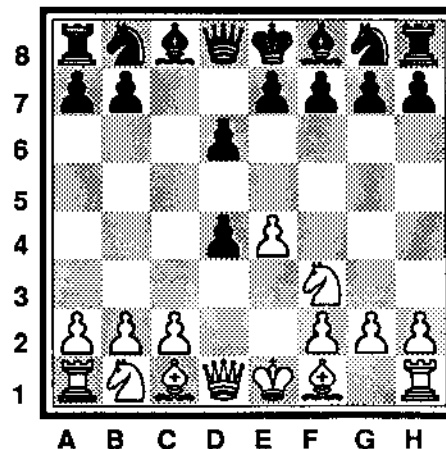
*Moving a Piece: Always press down in the center of the square.*

3. Move the pawn to the E4 square and press down on the E4 square. Your move is automatically entered and the computer will respond by making a move for Black—*automatically!* As the computer moves its piece, its move is shown in the Display Window.
4. When the computer has finished moving its piece, the Display Window will switch to showing the time for your side. You may now make another move, following Steps 2 and 3 once more with another piece. You will be amazed at this unique style of play—you are sure to feel like you are playing against an almost-human opponent!

### CAPTURING PIECES

*Refer to the diagram below. If you are White and you want to capture the Black pawn on D4 with your Knight on F3, proceed as follows:*

1. Pick up the Knight on F3 and press down on the center of the F3 square. CAUTION: Press only hard enough to register the beep sound.



2. Pick up and hold Black's D4 pawn. Move your Knight to the D4 square and press it down on the D4 square. Now you must store the captured Black pawn in the appropriate Border Area...

*At the sides of the chessboard, there are two areas where captured pieces are stored. These are the Border Areas, each one marked by two rows of symbols showing the different pieces of one color, with White pieces stored on the left, and Black pieces stored on the right. Each chess piece has a space assigned to it in the Border Area and, if captured, must be placed there, directly over the symbol that matches its color and type.*

3. Put the captured Black pawn directly over the pawn symbol on the bottom right-hand side of the Black Border Area. Press down on the pawn symbol as you do this.

*As you will see in the manual, the computer wants captured pieces put on the Border Spaces in a certain order. For the purposes of these quick instructions, however, if you should press down on the wrong Border Space for any particular captured piece, be aware that the computer will automatically move the captured piece to its correct Border Space.*

### HOW THE COMPUTER CAPTURES

If the Phantom captures one of your pieces, it will automatically remove it from its square and move it to its correct space in the Border Area.

# QUICK REFERENCE CHART

for The Phantom's Game Options, Rotating Display, and Playing Levels

G A M E  
O P T I O N S

EASY MODE <small>A1</small>	SOUND OFF <small>B1</small>	PLAYER MODE <small>C1</small>	ALL OPENINGS <small>D1</small>	COUNT-DOWN CLOCK <small>E1</small>	BLACK FROM THE BOTTOM <small>F1</small>	CANCEL BOOK <small>G1</small>	FINISH GAME <small>H1</small>
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R O T A T I N G  
D I S P L A Y

MOVE TIME (off) <small>A2</small>	SEARCH DEPTH (off) <small>B2</small>	SCORE (off) <small>C2</small>	NODES PER SECOND (off) <small>D2</small>	1ST MOVE PRINCIPLE VARIATION (off) <small>E2</small>	2ND MOVE PRINCIPLE VARIATION (off) <small>F2</small>	3RD MOVE PRINCIPLE VARIATION (off) <small>G2</small>	4TH MOVE PRINCIPLE VARIATION (off) <small>H2</small>
MOVE TIME (on) <small>A1</small>	SEARCH DEPTH (on) <small>B1</small>	SCORE (on) <small>C1</small>	NODES PER SECOND (on) <small>D1</small>	1ST MOVE PRINCIPLE VARIATION (on) <small>E1</small>	2ND MOVE PRINCIPLE VARIATION (on) <small>F1</small>	3RD MOVE PRINCIPLE VARIATION (on) <small>G1</small>	4TH MOVE PRINCIPLE VARIATION (on) <small>H1</small>

PRESET LEVELS  
Avg. Time/Move  
Total Number  
Moves/Time

COUNTDOWN LEVELS

SELECT ANY SQUARE FOR INFINITE LEVEL

FIXED DEPTH LEVELS

MATEFINDER LEVELS

C H A R T  
O F  
P L A Y I N G  
L E V E L S

AVG. RESPONSE 3.5 MINUTES 40/2.5 HOURS <small>A8</small>	3 HOURS PER SIDE <small>B8</small>	SELECT				8 PLY <small>G8</small>	MATE IN 8 <small>H8</small>
AVG. RESPONSE 3 MINUTES 40/2 HOURS <small>A7</small>	2 HOURS PER SIDE <small>B7</small>	ANY ONE				7 PLY <small>G7</small>	MATE IN 7 <small>H7</small>
AVG. RESPONSE 2 MINUTES 30/60 MINUTES <small>A6</small>	1 HOUR PER SIDE <small>B6</small>	OF THESE				6 PLY <small>G6</small>	MATE IN 6 <small>H6</small>
AVG. RESPONSE 1 MINUTE 60/60 MINUTES <small>A5</small>	30 MINUTES PER SIDE <small>B5</small>	SHADED				5 PLY <small>G5</small>	MATE IN 5 <small>H5</small>
AVG. RESPONSE 30 SECONDS 60/30 MINUTES <small>A4</small>	20 MINUTES PER SIDE <small>B4</small>	SQUARES				4 PLY <small>G4</small>	MATE IN 4 <small>H4</small>
AVG. RESPONSE 15 SECONDS 60/15 MINUTES <small>A3</small>	15 MINUTES PER SIDE <small>B3</small>	FOR				3 PLY <small>G3</small>	MATE IN 3 <small>H3</small>
AVG. RESPONSE 10 SECONDS 60/10 MINUTES <small>A2</small>	10 MINUTES PER SIDE <small>B2</small>	INFINITE				2 PLY <small>G2</small>	MATE IN 2 <small>H2</small>
AVG. RESPONSE 5 SECONDS 60/5 MINUTES <small>A1</small>	5 MINUTES PER SIDE <small>B1</small>	LEVEL				1 PLY <small>G1</small>	MATE IN 1 <small>H1</small>

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# MEET THE *PHANTOM*: A TRULY EXTRAORDINARY CHESS OPPONENT...

## INTRODUCTION

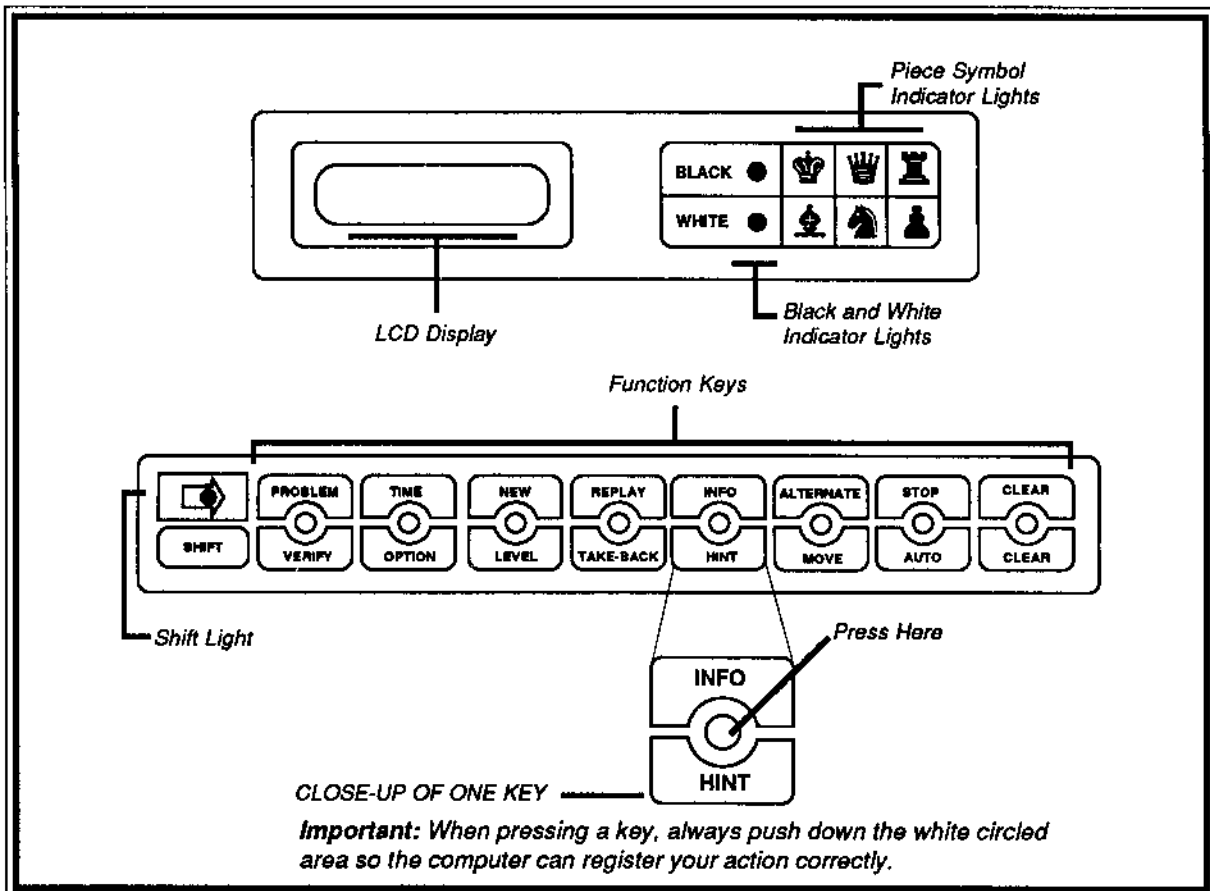
We are extremely proud to introduce to you the *Phantom*, an incredible chess computer that will surprise and delight you with its strong chess program and the unique ability to move its own pieces. If you are a strong chess player, you will find it an admirable opponent which will challenge you to one exciting chess game after another. If you are just learning to play chess, you will be astonished at how helpful the *Phantom* can be as an instructor, giving you a sure grasp of the essentials as you practice against it and play with it.

When you first take a look at the *Phantom*, you will immediately see some of the features which have been incorporated into this product to make it easy to operate and a pleasure to play chess with. Notice the Control

Panel which contains many buttons and indicators, all of which serve different functions during a game. These features are dealt with in detail later on in this manual. Note, also, the large playing surface, and the Border Areas along the sides of the board which are for convenient storing of captured pieces during a game. With a combination of all its special features and the strongest of chess programs, the *Phantom* is an amazing machine and is sure to become your favorite chess adversary.

You will learn more about the *Phantom's* features, controls and lights as you play. Right now, why not sit down "face to face" with your new opponent and challenge the computer to a game. To do so, simply turn to Section One and let play begin.

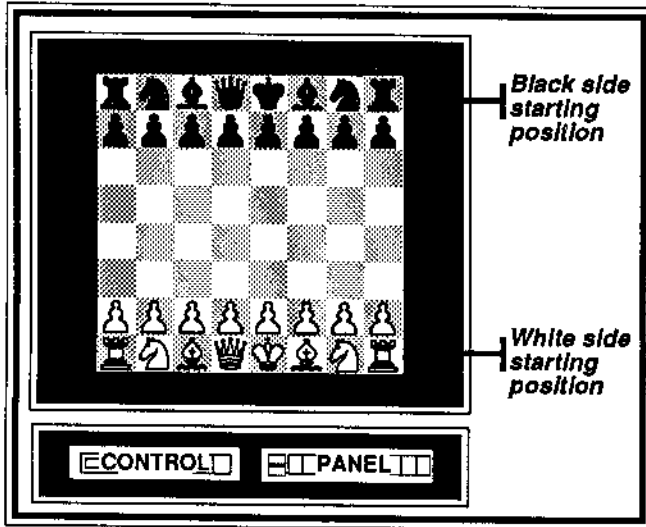
*Close-up of the Control Panel with some of its features highlighted.*



# SECTION ONE: BASIC OPERATION

## 1.1 POWER UP

You must first make sure that the unit is placed on a level surface. Then set up the pieces in their starting positions, as seen below. The *Phantom* expects the White pieces to be positioned at the bottom of the board, near the Control Panel; the Black pieces are positioned on the opposite side. The pieces should always be set up in their starting positions before you initially power the unit up.



Now plug the connector of the enclosed AC transformer into the wire connector which extends from the back of your unit. Plug the power pack end of the transformer into a conventional wall outlet. The unit will *beep* and the light labeled *WHITE* will turn on to signal that the unit is ready for White's first move to be made. The computer will use the next 40 seconds to adjust the pieces so they are centered in their starting squares. The *Phantom* does this all automatically, shuffling the pieces into position. You do not necessarily have to wait for the computer to finish its "housekeeping"—you may make your first move during this time, if you wish. The computer will, however, continue to check the pieces until all have been centered.

**Important:** The transformer provided is the only power source which should be used with the *Phantom*. Use of a different transformer could adversely affect the operation of your computer and/or damage the electronics. If the transformer should become warm during use, this is normal and may be disregarded.

**Adjusting Playing Levels:** Before moving, you may, if you wish, adjust the *Phantom's* playing level, choosing from one of its 24 different playing levels. Section 2.7 describes the playing levels in detail. When you initially turn the computer on by plugging it in, it is automatically set on Level A1. If you prefer to play on

this level, read on and discover how to make your first move. If you prefer to select another level, turn to Section 2.7, *LEVEL Key*, for more information.

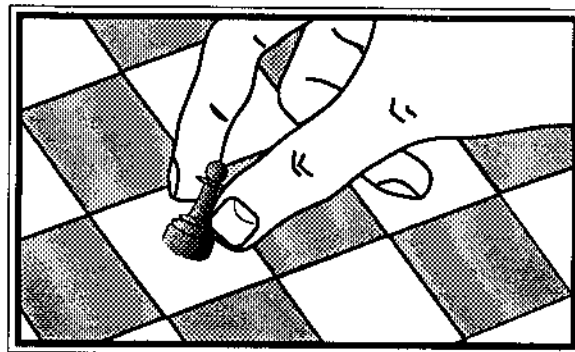
## 1.2 MAKING MOVES

### Playing White

White always moves first. If you choose to play White, the computer will move the Black pieces. Follow these steps to make your first move:

A) Press down on the *CENTER* of the departure square of the piece you want to move (this square is the **from** square). To do this, tilt the piece slightly and use the edge of the base to press down on the *CENTER* of its square (see diagram). You may also press down on the square with your finger, if you wish.

**How the computer reacts:** The *Phantom* will *beep* to signal that the first stage of your move has been properly registered. At the same time, the *WHITE* light will be on and you will see another indicator light turn on—the red light shaped like the symbol of the piece you are moving. The **from** square will also be shown in the Display Window at this time. A dash appears next to it, indicating that this is the square



*Moving a Piece: Always press down in the center of the square.*

you have moved **from**, and that the computer is now expecting the second half of the move, the square you are moving **to**.

B) Now move the piece to its destination square (this square is the **to** square), and press down on the *CENTER* of this square, as above.

**How the computer reacts:** The *Phantom* will *beep* again, the piece symbol light will turn off, and the light labeled *BLACK* will turn on. This indicates that it is now Black's turn to move, and that the computer has registered your White move and will now start thinking of a move for Black. If the computer should make

its move instantly without taking any time to think, this indicates that it is playing out of its pre-programmed Opening Book Library (see Section 1.4).

**Note:** After you move a piece, the *Phantom* will automatically adjust it, shuffling it in its square to center it. This centering action may also occur at other times when you press on a piece to perform a certain function (as in piece verification, selection of options, selection of levels, etc.).

**CAUTION:** When pressing a piece down on a square, do so lightly, pushing only hard enough to register the *beep* sound. Distortion of the chessboard could result if too much pressure is applied.

### Playing Black

If you prefer to play with the Black pieces, do not make the opening move as outlined above. Instead, press the *MOVE* Key to tell the computer to change from Black to White. The *Phantom* will then make the opening move, playing the White pieces. See Section 2.13 (*MOVE* Key) for more details on changing sides with the computer.

**Note:** To play with the Black pieces from the bottom of the board, you must first select Game Option F1 (See Section 3.6, *Black from the Bottom*).

### The Computer's Moves

As long as the *Phantom* is thinking about its own next move, the *BLACK* or *WHITE* light (whichever side it is playing) will be on. When it has finished thinking, the computer will move one of its own pieces on the board—*automatically!* Just sit back and watch the computer actually move a piece from one square to another. This unique style of play makes you feel like you are playing against an almost-human opponent.

**Note:** Each time the word "automatically" is used in this manual, it will describe the action whereby the computer moves pieces on the board by itself.




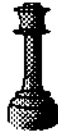














While the computer is actually making its move on the board, the move it is making will be shown in the Display Window. As soon as it has finished physically moving the piece, the Display will return to showing your time. The *WHITE* or *BLACK* light (whichever side you are playing) will also be on, indicating that it is your turn to move.

### Capturing Pieces

At the sides of the chessboard, there are two areas where captured pieces are stored. These are the **Border Areas**, each one marked by two rows of symbols showing the different pieces of one color. With the Control Panel directly in front of you, notice that the *WHITE* pieces are stored in the left Border Area, and the *BLACK* pieces are stored in the right Border Area. Each chess piece has a particular space assigned to it in the Border Area and, if captured, must be placed there,

directly over the symbol that matches its color and type. See below for a chart of the pieces and their symbols.

*The chess pieces are represented by the following symbols:*

Name of Piece	Actual Piece	White Symbol	Black Symbol
KING			
QUEEN			
ROOK			
BISHOP			
KNIGHT			
PAWN			

*Six of the lights on the Control Panel are shaped like these symbols. These piece symbols also appear in the Border Areas at the sides of the chessboard.*

### How to capture one of the computer's pieces:

- A) Press down on the **from** square of the piece you are moving. This square will be shown in the Display Window.
- B) Pick up and hold the piece you are capturing. Then complete the move of your own piece by pressing down on the **to** square with your own piece. The Display will now show the **to** square.
- C) Put the captured piece directly over a symbol of its own color and type in the proper Border Area. When doing so, be sure to press down on the symbol as you would on one of the chessboard



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squares. The computer will then *beep* to show that your move has registered, and it will then automatically adjust the piece moved and the piece captured, shuffling them in the square and space respectively if they need to be centered. If you mistakenly pressed the captured piece down on the wrong space in the Border Area, the computer will automatically move it to the correct space (see *Proper Positioning of Captured Pieces in Border Areas*, below).

**How the computer captures:** If the *Phantom* captures one of your pieces, it will *automatically* remove it from its square and move it to its correct space in the Border Area.

### Proper Positioning of Captured Pieces in Border Areas

The *Phantom* has a very tidy mind. It expects that captured pieces of a particular type be positioned in a particular order—so that the first piece of a type and color captured is positioned in the outer row of the Border Area—and in the case of pawns, the first four pawns of one color captured are positioned in the outer row and the next four pawns in the inner row, starting from the spaces closest to the Control Panel in both cases. Of course, if you did happen to position a captured piece in an incorrect space in the Border Area, the *Phantom* will *automatically* move it to its correct space. Captured pieces must be positioned in their proper Border Area spaces so that the *Phantom* can keep track of where every piece is—whether on or off the board.

### Illegal Move

The *Phantom* will only allow moves that are in compliance with the rules of chess. You will never see it make an illegal move, nor will it allow you to make one. For example, if it is your turn to move and you press a piece that can move, but then press down on a square to which it cannot be moved, you will receive an *illegal move indication*—the *Phantom* will beep and show your **from** square in the Display Window, and the color and piece indicator lights for that particular piece will flash. When this occurs, simply press down on the correct **to** square, or return the piece to the **from** square it was originally on (shown in the Display), and press down on that square. Alternately, pressing the *CLEAR Key* will also clear an illegal move indication. If you choose to *clear* the illegal move, put the piece back on the indicated **from** square without pressing the square, and then press the *CLEAR Key*. You are then ready to try another move.

**Note:** You will also receive a beep indicating an illegal move if you press a vacant square or a piece that cannot be moved legally, or if you press down on a wrong square when you are making a capture, when

you are in the middle of castling, or when you are promoting a pawn. Simply press down on the correct piece or square to continue.

### Accidental Wrong Move

If you press down on a piece and the **from** square is showing in the Display, but you decide not to make that move, you may cancel the move by simply pressing down on that same square again or pressing the *CLEAR Key*. Then press another **from** square of your choice. If the move has already been completed, you must use the *TAKE-BACK Key* to take the move back. For details, see Section 2.9.

## 1.3 SPECIAL MOVES

### Castling

If you wish to castle, you must first make the King's move in the manner described in Section 1.2, *Making Moves*. Then make the Rook's move in exactly the same manner—pressing down on the **from** and **to** squares. At this point, the computer will recognize that you wish to castle, and will show the Rook's **from** move in the Display Window to prompt you to move the Rook. Press down on the indicated square and the Display will show the **to** square where the Rook is to go. Move the Rook to that square and press down, and the castling move has been completed.

**Caution:** Remember that castling is a King move. If you attempt to castle by moving your Rook first, the computer will acknowledge the Rook's move and immediately begin thinking. To recover from such a mistake, use the *TAKE-BACK* feature to take the Rook move back (see Section 2.9).

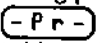
### En Passant

The computer will capture a pawn *en passant* whenever it determines that such a move is desirable, and it will also recognize when you choose to move *en passant*. When performing an *en passant* capture, the *Phantom* will first move the captured pawn off the board to the Border Area, and will then move its pawn to the correct square.

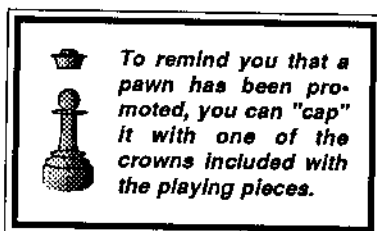
If you capture one of the computer's pawns *en passant*, you must remember to take the captured pawn off the board and put it in the Border Area. To remind you to do this, the Display Window will show the square of the captured pawn, and the lights for the pawn and its color will flash. Press down on the indicated square, and then move the captured pawn to the Border Area and press down on one of the pawn spaces (see Section 1.2 for details on *Proper Positioning of Captured Pieces in Border Areas*).

## Pawn Promotion

As in a normal game of chess, when a pawn reaches the eighth rank, it may be promoted to a higher-valued piece (usually a Queen or a Knight). When your pawn reaches the eighth rank, you must let the *Phantom* know which piece you are replacing it with. The pawn promotion move must be made as follows:

- A) Press down on the **from** square of the pawn that is being promoted.
- B) Press down on the **to** square of the pawn that is being promoted. The Display Window will show  to indicate that a pawn promotion is taking place, and the piece symbol lights for the Queen, Rook, Bishop, and Knight will turn on, indicating that you can promote your pawn to any one of these pieces.  
**Note: If no capture is being made on this square, ignore C), below, and proceed directly to D).**
- C) If a capture is being made on the promotion square, position the captured piece on its correct Border Space (be sure to press down on this space when placing the captured piece there).
- D) Press down on the Border Space occupied by the piece you wish to replace your pawn with.
- E) Move the *replacement* piece onto the promotion square (be sure to press down on this square when doing so).
- F) Move the promotion pawn to its correct Border Space (press down on this space when doing so).

**Notes on pawn promotion:** *If the desired replacement piece is not available in the Border Area at stage D), above, then press down on the empty Border space of the desired piece and leave your pawn on the promotion square. Your move is then complete. Subsequently, the pawn can be moved like the piece it has been promoted to—and, of course, the Phantom will remember the pawn's new status. If you have promoted your pawn to a Queen, you can cap it with one of the plastic crowns included with the playing pieces in order to remind yourself that it has been promoted. See below for a look at a crowned pawn. If a piece of the appropriate*

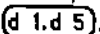




type and color should become available later on in the game, the computer will automatically remove your pawn from the board and replace it with this piece.


**How the computer promotes:** When one of the computer's pawns reaches the eighth rank, the computer will evaluate its present position and will promote

its pawn to the piece it feels will be of most value. The *Phantom* will then *automatically* replace its pawn with the piece it wants—immediately if possible, otherwise, as soon as the piece becomes available. If the replacement piece is not available, the promoted pawn remains on the board and is moved like the piece it has been promoted to. You may *crown* this pawn to indicate its new status.

## Check and Checkmate

If either player puts his or her opponent's King in check, a dot will appear in the move display, as in .

If the *Phantom* determines that you will soon be mated, it will show  in the Display Window (where x is equal to the number of moves until checkmate). Press *CLEAR* to see the computer's move. Once the computer's mating move is entered, the Display Window will read  to indicate checkmate.

If you checkmate the computer, the Display Window will read .

## 1.4 BOOK OPENINGS

A *Book Opening* is a specialized series of moves that is used at the beginning of any chess game. If you have noticed that the computer seems to move very quickly at the beginning of the game, this is because the *Phantom* contains an Opening Book Library of over 24,000 book opening positions from grandmaster play. If the current board set-up is contained in the computer's library, it will play one of the proper responses to that position from its collection of moves and will not have to think about that move choice.

If you wish to cancel the computer's opening book, you may do so (see Section 3.7, *Cancel Opening Book*).

If you want the computer to select from a *greater variety of book opening lines*, you may select the **All Openings** Game Option, (see Section 3.4), which expands the computer's Tournament Opening Book. When the computer is playing from its Tournament Book (i.e., when **All Openings** is not selected), it will play only those opening lines it feels are best.

## 1.5 THINKING ON THE OPPONENT'S TIME

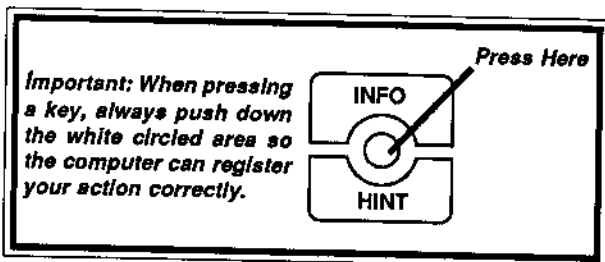
The *Phantom* has the ability to think on its opponent's time, a function which improves playing strength on all levels. While the computer is making its move, you are able to use that time to analyze the position and think of a countermove to the move the computer might make. Similarly, the computer also thinks ahead while you are deciding which move to make. The computer does this automatically, whenever you are thinking about your move.

You may cancel thinking on the opponent's time by selecting the **Easy Mode Option** (see Section 3.1).

## SECTION TWO: SPECIAL FEATURES

Many of the *Phantom's* special features are activated by means of the keys on the Control Panel. Each of these keys is dealt with in detail in this section of the manual. When a key serves more than one function, each separate function is explained fully.

It is important to remember that, when pressing a key, **you should always push down the white circled area** so that the computer can register your action correctly.



Before you begin using the *Phantom's* special features, you need to understand how to correctly use the **SHIFT Key**. Since the **SHIFT Key** is used to access other keys, please be sure to read Section 2.1 so that you will fully understand how the Control Panel Keys work together with the **SHIFT Key**.

a key, you are accessing a function in the *top row*. Whenever the light is off and you press a key, you are accessing a function in the *bottom row*.

**Remember:**

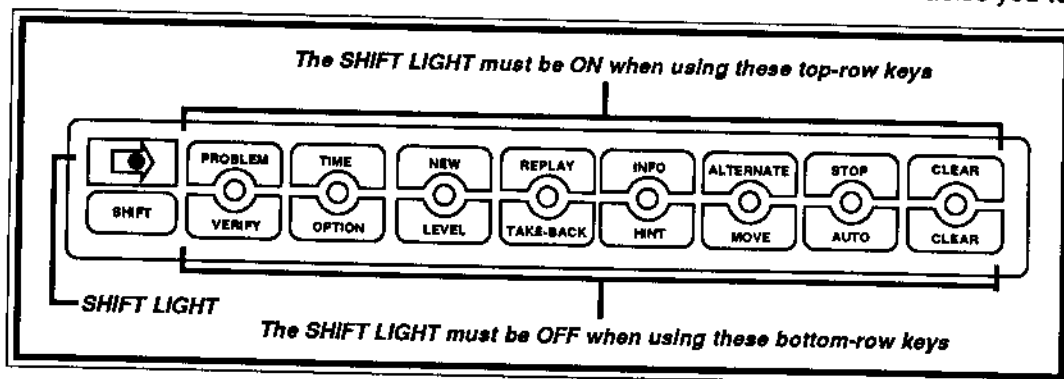
- A) If you want to use a key in the top row and the **SHIFT light** is **off**, you must press the **SHIFT Key** first.
- B) If you want to use a key in the top row and the **SHIFT light** is **on**, simply press the desired key.
- C) If you want to use a key in the bottom row and the **SHIFT light** is **on**, you must press the **SHIFT Key** first.
- D) If you want to use a key in the bottom row and the **SHIFT light** is **off**, simply press the desired key.

The remainder of this section is devoted to explaining the functions of the *Phantom's* many different keys.

### 2.2 PROBLEM KEY

*(Make sure the SHIFT LIGHT is ON whenever you use the PROBLEM Key.)*

**Problem Mode** is a feature which allows you to change the current board position or set up special board positions. This mode enables you to remove or



### 2.1 SHIFT KEY

The **SHIFT Key** is unique, in that it is a key which enables you to access other keys to select their designated options. You will notice in the following diagram that the keys are arranged in two rows—the top row contains **PROBLEM, TIME, NEW, REPLAY, INFO, ALTERNATE, STOP, and CLEAR**, and the bottom row contains **VERIFY, OPTION, LEVEL, TAKE-BACK, HINT, MOVE, AUTO, and CLEAR**. The bottom row of keys is accessed simply by pressing the key; however, to use the functions in the top row, you must first press the **SHIFT Key**. When the **SHIFT Key** is pressed, the **SHIFT light** turns on, pointing to the top row of keys.

**Whenever the SHIFT light is on and you press**

add pieces during a game; relocate pieces from one square to another; set up problems such as mate puzzles for the computer to work out; or start up (or continue) a game from a certain position. You can use these features to change the direction of the game, to strengthen your side or the computer's, to resurrect lost pieces, or even to move your King out of an imminent checkmate situation. To accomplish any of the above, you must enter Problem Mode by pressing the **PROBLEM Key**.

The Display Window will show **(- P b -)** whenever you are in Problem Mode.

**Note:** If you would like to set up a new position, you will normally want to clear the board first (see the next section, *Clearing the Board*). Immediately following

that section, you will find instructions on making changes to existing board positions. **After you have made all desired board changes In Problem Mode, you must press the CLEAR Key to exit Problem Mode and return to normal game play.**

### Clearing the Board

After you have pressed *PROBLEM* to enter **Problem Mode**, if you want the computer to clear the chessboard so that a completely new position can be set up, simply press the *ALTERNATE* Key. This will cause the *Phantom* to remove all the chess pieces from the board.

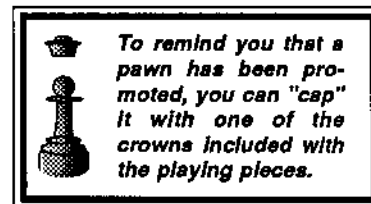
The computer accomplishes this by moving all pieces to their correct spaces in the Border Areas. If you would like to stop this action, press *STOP* and the computer will stop and allow you to manually put the pieces where they belong in the Border Areas. The Display Window will show **(- S p -)** to indicate that the automatic action has been stopped. You do *not* have to press the **from** and **to** squares when manually clearing the board. When you have placed all pieces in their Border Area positions, press *CLEAR* to signal to the computer that you have cleared the board yourself and are now ready to set up a position in Problem Mode. The Display will show **(--)** at this point, since there are no Kings on the board and a legal position requires a King for each side. The King piece symbol indicator will also flash. You may now set up your new position on the board, as described below.

### Adding, Relocating, or Removing Pieces

When the computer is in Problem Mode, and you want to set up a position, you can accomplish this by simply moving pieces where you want them to go. You may move pieces any way—from spaces in the Border Areas to squares on the chessboard, or from one square of the board to another, or from the chessboard squares to the Border Area spaces. All you have to do to move a piece is to press down on its **from** space or square and then press down on its **to** space or square. As long as you press down like this, the computer will know where every piece is positioned. Setting up pieces, then, is accomplished just like making moves in the course of a game, except that in Problem Mode, these “moves” do not have to be “legal moves” (the positions, however, must be legal). The piece symbol lights will indicate which piece is being moved at any given time. If you press down a piece and then decide not to move it, press it down again to clear the action.

If you are setting up a position where you have extra pieces on the board (three White Queens, for example), you should use pawns to take the places of these extra pieces (you may *cap* the pawns with the plastic crowns if desired, in order to remind yourself that they are actually Queens). When adding such a piece

to the board position, first move the pawn to the correct square, and then *promote* the pawn by pressing down on the correct Border Space (the White Queen in this example), and then on the pawn itself. If a piece of the appropriate type and color becomes available later on, the computer will automatically remove the pawn from the board and replace it with the appropriate piece.



### Setting the Correct Color to Move

After you have finished setting up a position on the chessboard, you must make sure that the *Phantom* knows which side is to move next. The rule is that the color of the last piece moved determines the color of the side to move when you exit Problem Mode. Therefore, if the last square or space you pressed was occupied by a White piece, the *WHITE* indicator light will have turned on, showing that the computer expects White to make the next move. If you wish Black to move next, simply press down on any Black piece. The *BLACK* indicator light will turn on, and the computer will then expect Black to make the first move when you exit Problem Mode.

If you exit Problem Mode and then notice that the computer is showing the wrong color to move, simply re-enter Problem Mode and press down on a piece of the opposite color, and then press *CLEAR* to exit Problem Mode. The correct color for the side to move should now be lit.

### Illegal Positions in Problem Mode

If you have set up a position where a player has a pawn on the first or last rank, or you have left one or both Kings off the board, or it is your turn to move and your opponent is in check, the computer will not allow play to proceed because these are illegal positions—they could not possibly have arisen as a result of a legal sequence of moves from the starting positions. If you have set up pieces in illegal positions, the *Phantom* will indicate this as soon as you press *CLEAR* to try and exit Problem Mode. To make you aware of the illegal position, the computer will beep, flash the piece symbol for the offending piece, and display the square that piece is on.

For example, if you try to leave Problem Mode and it is Black to move but the White King is in check, the computer will beep and flash the *WHITE* light and the piece symbol indicator for the King. The square the King occupies will be shown in the Display. If you have put a Black pawn on a back rank square, the computer will flash the *BLACK* light and the pawn symbol, and will

display the square occupied by that pawn. If you try to leave Problem Mode with one or both Kings missing, the Display will show **--** to indicate this, and the indicators will flash for the missing King(s).

Once you have corrected the board position, press **CLEAR** to exit Problem Mode.

## Important Notes on Resuming Play After Problem Mode

- A) You must press the **CLEAR** Key to exit Problem Mode and return to normal game play.
- B) It is very important to realize that if you enter Problem Mode while a game is in progress, you erase the computer's memory of all moves made during that game. The use of the **TAKE-BACK** Key and the **HINT** Key will therefore be limited under these circumstances. You will be able to take back moves only as far as the position you have set up (see Section 2.9, **TAKE-BACK** Key), and you will be able to replay the game only from this same position, not from the very beginning of the game (for details, see Section 2.11, **Play Forward**).
- C) If you have your King and one or both of your Rooks on their starting squares after you have used Problem Mode, the computer will assume that you *have not* moved these pieces yet, and will therefore allow you to castle if you choose to do so.
- D) After exiting Problem Mode, the next move cannot be an *en passant* capture. If you wish to construct a position where an *en passant* capture is possible, set up the position as it would exist a move earlier, then make the move which permits the capture.
- E) If you have put a pawn on the board to take the place of a piece (e.g., if you have put three Queens on the board, and you are using pawns for two of them), and a piece of the appropriate type and color is available in the Border Area or becomes available later on, the computer will automatically remove the pawn from the board and replace it with the appropriate piece.

## 2.3 VERIFY KEY

*(Make sure the SHIFT LIGHT is OFF whenever you use the VERIFY Key.)*

The **VERIFY** Key enables you to verify the positions of all pieces—both White and Black—at any time before or during a game, whenever it is your turn to move. Thus, if you should accidentally knock some or all of the pieces off the board and you don't remember where they belong, the *Phantom* will be able to tell you where they should be positioned.

## Verifying Individual Squares or Spaces

To find out which piece should be on a particular square or Border Area space, do the following in order:

- A) Press down on the **VERIFY** Key (the Display will show **P b** to indicate Verify Mode).
- B) Press down on the board square or space in question. If that square or space is occupied by a piece, the computer will beep three times and a piece symbol light will turn on, along with one of the color indicator lights, identifying the type and color of the piece which should occupy that particular square.  
If the square or space you press down on is vacant, the computer will beep twice, and no piece symbol light will turn on.
- C) Press the **CLEAR** Key to exit Verify Mode.

## Complete Board Verify

If you like, you can make the *Phantom* show you the positions of all pieces on the board. It does this by moving all of the pieces to their correct places automatically. This feature can be very useful if many of the pieces get knocked over. To have the computer put all the pieces back where they belong, do the following:

- A) Put all 32 pieces on their correct spaces in the Border Areas. Simply place them on the Border spaces—there is no need to press down.
- B) Press the **VERIFY** Key and then the **ALTERNATE** Key. The computer will now start moving the pieces one by one to their correct squares on the chessboard.

## 2.4 TIME KEY

*(Make sure the SHIFT LIGHT is ON whenever you use the TIME Key.)*

If you would like to see how much total time the computer has taken to make its moves during a game, press the **TIME** Key while the computer is thinking. The Display will convert from showing the time taken for the computer's current move to the total time taken by the computer thus far in the game. Press the **CLEAR** Key to return to the normal display.

To see the total time you have used to make your moves, wait until it is your turn to move and then press **TIME**. The Display will convert from showing time taken for your current move to total time taken for all your moves thus far in the game. Press the **CLEAR** Key to return to the normal display.

**Note:** When using Playing Levels B1-B8, the *Countdown Levels* (see Section 2.7), the **TIME** Key display will show the time taken so far for the current move.

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## 2.5 OPTION KEY

*(Make sure the SHIFT LIGHT is OFF whenever you use the OPTION Key.)*

In addition to the other Keys and Special Features described in this manual, a number of additional options may be selected to enhance your enjoyment of the *Phantom*. These game options are user-selectable (before the start of a new game or whenever it is your turn to move during a game), and can be activated by pressing various squares on the playing surface. When **Option Select Mode** is chosen by pressing the **OPTION Key**, normal game play is suspended and Squares A1 through H1 are used to select various game options. For a detailed description of the *Phantom's* game options, see Section Three, **GAME OPTIONS**.

## 2.6 NEW KEY

*(Make sure the SHIFT LIGHT is ON whenever you use the NEW Key.)*

A new game of chess may be started at any time—your current game may be over, or you may simply wish to abandon the current game and start another one.

### Starting a New Game (Reset Using Previous Options)

To start a new game, press the **NEW Key**. The *Phantom* will then automatically move all pieces back to their starting positions. When all the pieces have been moved back to their starting positions by the computer, the **WHITE** indicator will turn on, indicating that the opening move can be made. *If you wish to stop the automatic arrangement of pieces at any time, simply press the STOP Key.* The Display Window will show **- S p -** to indicate that the automatic action has been stopped. The computer will now assume that you intend to set up the pieces yourself. After you have set all pieces back in their original starting positions, press the **CLEAR Key**. Note that the **WHITE** indicator light is on to signal that a new game can be started, and that it is White's turn to make the first move.

**Note:** When the **NEW Key** is pressed, any memory of a previous game is erased, but **all game level and option selections are retained and will remain in effect for the next game.** This feature is especially handy for those of you who tend to select the same options for most games—in this respect, the **NEW Key** will provide you with an easy shortcut.

### Starting a New Game (Full Reset)

To start a completely new game *without* the previous level or game options selected (**Full Reset**), first manually return all pieces to their starting positions. This is where the computer will expect to find them, exactly as it would if you were first plugging the unit in. Next, press the **VERIFY Key**, and then the **NEW Key**.

By doing this, you are causing a full reset of the unit, erasing all previous entries and options and **starting a completely new game, with Level A1 in effect and no game options selected.** Using the Full Reset option is exactly the same as if you had unplugged the unit and plugged it back in again.

The computer will take about 40 seconds to make sure that all pieces are correctly centered, and the **WHITE** indicator will be on, indicating that the opening move can be made.

## 2.7 LEVEL KEY

*(Make sure the SHIFT LIGHT is OFF whenever you use the LEVEL Key.)*

The *Phantom* has **24 levels of play** for you to choose from. Level A1 is automatically selected when the computer is first turned on. When the **LEVEL Key** is pressed initially, the Display Window will read **(L E A 1)** to indicate that Level A1 is currently activated. To select a different level, simply press down on the appropriate board square (after you have pressed the **LEVEL Key**). Then press the **CLEAR Key** to exit Level Select Mode.

Each level is described fully in this section. For your reference, a **Chart of Playing Levels** also appears on the next page. This chart shows the board squares used to activate each level, along with brief descriptions of the levels inside each square.

### Preset Levels (Squares A1-A8)

Playing levels with **preset time controls** may be selected by pressing **LEVEL**, one of the A-file (A1-A8) squares, and **CLEAR**. The **Chart of Playing Levels** shows the average response time and the overall time control the computer is using for each of the A-file squares. For example, select Square A1 for an average response time of five seconds per move, with the computer making 60 moves within five minutes.

### Countdown Levels (Squares B1-B8)

Playing levels with **preset total times** for each side may be selected by pressing **LEVEL**, one of the B-file (B1-B8) squares, and **CLEAR**. These levels start at the total time for each player and count down to zero time. If either player should run out of time before checkmate is achieved, the clock will flash to indicate time forfeit for the player with zero time remaining. You have several choices at this point:

- A) If you would like to continue the same game at the same level, simply press the **LEVEL Key**, and then **CLEAR**. The same time controls you had at the beginning of the game will be reinstated.
- B) If you would like to continue the game at another level, press **LEVEL** and choose any desired level. Press **CLEAR** and the new level will be in effect.
- C) If you want to start a new game, press **NEW**.

# CHART OF PLAYING LEVELS

PRESET LEVELS Avg. Time/Move Total Number Moves/Time		COUNTDOWN LEVELS	SELECT ANY SQUARE FOR INFINITE LEVEL				FIXED DEPTH LEVELS	MATEFINDER LEVELS
AVG. RESPONSE 3.5 MINUTES 40/2.5 HOURS	3 HOURS PER SIDE		SELECT				8 PLY	MATE IN 8
A8	B8	C8	D8	E8	F8	G8	H8	
AVG. RESPONSE 3 MINUTES 40/2 HOURS	2 HOURS PER SIDE		ANY ONE				7 PLY	MATE IN 7
A7	B7	C7	D7	E7	F7	G7	H7	
AVG. RESPONSE 2 MINUTES 30/60 MINUTES	1 HOUR PER SIDE		OF THESE				6 PLY	MATE IN 6
A6	B6	C6	D6	E6	F6	G6	H6	
AVG. RESPONSE 1 MINUTE 60/60 MINUTES	30 MINUTES PER SIDE		SHADED				5 PLY	MATE IN 5
A5	B5	C5	D5	E5	F5	G5	H5	
AVG. RESPONSE 30 SECONDS 60/30 MINUTES	20 MINUTES PER SIDE		SQUARES				4 PLY	MATE IN 4
A4	B4	C4	D4	E4	F4	G4	H4	
AVG. RESPONSE 15 SECONDS 60/15 MINUTES	15 MINUTES PER SIDE		FOR				3 PLY	MATE IN 3
A3	B3	C3	D3	E3	F3	G3	H3	
AVG. RESPONSE 10 SECONDS 60/10 MINUTES	10 MINUTES PER SIDE		INFINITE				2 PLY	MATE IN 2
A2	B2	C2	D2	E2	F2	G2	H2	
AVG. RESPONSE 5 SECONDS 60/5 MINUTES	5 MINUTES PER SIDE		LEVEL				1 PLY	MATE IN 1
A1	B1	C1	D1	E1	F1	G1	H1	

While using one of the Countdown levels, the computer's Display will split into two 2-digit clocks so that time for both sides may be viewed simultaneously (first minutes are counted down; then seconds will appear during the last minute). A colon in the Display separates the two clocks.

**Note:** If you activate Game Option E1 (*Countdown Clock*) while using one of these levels, the clock will show only one player's time remaining (while it is that player's turn to move) in a 4-digit format. This enables the player to see the more exact time that remains for his side, because seconds will also be shown. For more information on this option, see Section 3.5, *Countdown Clock*.

Note also that when using the Countdown Levels, pressing the *TIME* Key will show the time taken so far for the current move (see Section 2.4).

### Fixed Depth Levels (Squares G1-G8)

**Fixed Depth Levels** may be selected by pressing *LEVEL*, one of the G-file (G1-G8) squares, and *CLEAR*. On these levels, the only preset condition is the computer's ability to look ahead. For example, Level G2 restricts the computer's lookahead to two ply, or two half-moves (one half move = one move for one player). When you use the Fixed Depth Levels, you will always know how far ahead the *Phantom* is analyzing its next move. Using these levels can train you to improve your ability to see further into a game and you can measure your success by the number games you win.

### Mate Finder Levels (Squares H1-H8)

**Mate Finder Levels** may be selected by pressing *LEVEL*, one of the H-file (H1-H8) squares, and *CLEAR*. These are not playing levels, but levels which allow you to set up mate problems for the computer to solve. For example, if you set up a problem and want the *Phantom* to search for a Mate in 6 moves, set the computer to Level H6. Press *CLEAR* to enter that level into the computer, and the *Phantom* will start searching for the mate. If a Mate in 6 is found, the Display Window will show **n 6**. Press *CLEAR* and the computer will make its move. At this point, there are two possibilities:

- A) If you would like to see an alternate Mate in 6 solution, press the *ALTERNATE* Key immediately after the computer has made its move and it will search for an alternate solution; or
- B) If you would like to see the computer's next move for the mate it has found, activate Level H5 (because the problem is now a Mate in 5), enter your move, and the computer will make the next move to mate.

**Note:** If no mate is found, the Display Window will show **- n n -**.

### Infinite Level (Squares C1-C8; D1-D8; E1-E8; and F1-F8)

To select the **Infinite Level**, press *LEVEL* and any board square in files C, D, E, or F. This level allows no limit to the time used in making each move. The computer will continue to search, looking deeper and deeper until it finds a forced mate or until the search is halted by you. When halted, the *Phantom* will make the best move it has found thus far in its search. You can halt the computer's thinking at any time by pressing the *MOVE* Key. If desired, you may follow the computer's thought and search processes as they take place (see Section Four, *ROTATING DISPLAY*).

## 2.8 REPLAY KEY

*(Make sure the SHIFT LIGHT is ON whenever you use the REPLAY Key.)*

After a game is played, most chess players find it interesting to review their moves. As you will see, you can re-examine the whole course of a game from beginning to end by using the *TAKE-BACK* and *HINT* Keys. A simpler way of doing this, however, is to use the *REPLAY* function. To do so, simply press the *REPLAY* Key. The *Phantom* will then return the pieces to their starting positions, and will automatically replay all the moves made in the game.

One distinct advantage of the *REPLAY* function is that it allows you to *double check your notation* (if you have been writing down the moves during the game), thus allowing you to correct any errors. Or, if you prefer, you can take notation during the replay itself if you have decided that it is a game you wish to keep. This is a nice option for a new player, since sometimes taking notation during an actual game can disturb one's concentration.

### Starting a Replay

A replay is not only possible at the end of a game—you may also conduct a replay while the game is still in progress (in this case, the game can be resumed in the normal manner after the moves have been replayed to the current position).

To start a replay, press the *REPLAY* Key, and the *Phantom* will now begin to replace the pieces in their starting positions, and will then start to replay the game automatically. If you press *STOP* while the computer is rearranging the pieces, this action will stop and the *Phantom* will assume that you wish to move the pieces back to their starting positions by hand. The Display will show **- S P -** to indicate that you have temporarily stopped the automatic action. Put the pieces back manually, and then press *CLEAR* to let the computer know that you are ready for it to replay the game.

After the computer has replayed the game and all pieces are back in their actual board positions, the



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*Phantom* will take about 40 seconds to adjust all of the pieces so that they are centered in their squares. Pieces which are off-center will be shuffled into place by the computer.

The *Phantom* replays a game at the rate of about two or three seconds per move. When the replay is over, an interrupted game can be resumed in the normal manner.

**Note:** If you used Problem Mode to set up a position and you want to replay the game that has been played from that position, you cannot use the *REPLAY* Key to do this; instead, use the *TAKE-BACK* Key (see Section 2.9, *Taking Back Completed Moves*) to get back to the original position, and then use the *HINT* Key (see Section 2.11, *Play Forward*) to replay the game.

### Stopping a Replay

You may want to stop a replay that is in progress, especially if you would like to take a closer look at a particular position that occurred in the game. To do this, press the *STOP* Key, and then press the *CLEAR* Key. If the *Phantom* was moving a piece, it will complete the move, and the replay will then stop. You now have the following options:

- A) Using the *HINT* Key will enable you to either step forward in the game one move at a time or start up the replay again from that position (see Section 2.11); using the *TAKE-BACK* Key will allow you to go backwards in the game or even all the way back to the beginning (see Section 2.9); or
- B) You may press the *REPLAY* Key again to have the computer return the pieces to their starting positions and begin the replay all over again; or
- D) You may continue play from the position you arrived at in the replay.

**WARNING:** If you want a replay to be finished, you must be careful not to do anything that might affect the computer's memory of the moves made in the game. Suppose, for example, that you interrupt a game to conduct a replay after 40 moves have been made. When the *Phantom* has replayed as far as move 30, you make a move on the board or press the *MOVE* Key or the *AUTO* Key. The computer will then begin computing a move from the position at move 30. It is important to understand that the computer's memory of moves 30 to 40 in the game you have been playing is now erased. It is thus impossible to finish your replay up to the position you had reached at move 40. As you can see, pressing either *MOVE* or *AUTO* during a replay will erase any forward memory of that game. You will erase all previous game memory any time you press *NEW* for a New Game or change the position using Problem Mode.

## 2.9 TAKE-BACK KEY

*(Make sure the SHIFT LIGHT is OFF whenever you use the TAKE-BACK Key.)*

The take-back feature allows you to take back any move you make or any move made by the computer. The *Phantom* will allow you to take back up to 256 moves per side (512 half-moves) in a single game. To use this feature, follow the instructions below.

### Taking Back an Incomplete Move

If it is your turn to move and you press one of your pieces down on its square, but then decide not to move this piece after all, simply press it down a second time to negate this move. The piece symbol light for this piece will go out and you are free to move another piece.

### Taking Back Completed Moves

If you have pressed a piece down on its square and then press a square to which this piece can legally move, but then you decide to make an entirely different move, you can take your move back by pressing the *TAKE-BACK* Key. The moment this key is pressed, the computer will automatically take back the move you just completed. If the computer was thinking, it will simply stop thinking and take your move back. You can then make another move of your choice. **Note:** If the move you wish to take back involves a capture, castling, or a pawn promotion, the full sequence of operations must be completed before you can take that move back.

In order to take back all the moves automatically, going all the way back to the beginning of the game, press the *TAKE-BACK* Key twice in a row. The computer will automatically take back up to 256 moves in succession. You may freeze this take-back procedure at any time by pressing *STOP*. Then press *CLEAR* to have the computer finish the current retraction and stop the take back procedure.

It is also possible to take back any number of moves made by both sides, one by one. To do so, press the *TAKE-BACK* Key, then the *CLEAR* Key, and then the *TAKE-BACK* Key again. This will cause the computer to take back two moves in a row. Continuing to alternate the pressing of these two keys will allow you to take back as many individual moves as you wish. You may go forwards in an identical manner by using the *HINT* Key (see Section 2.11).

### Replaying a Move After a Take Back

If you press the *HINT* Key after you have just taken a move back, the computer will replay the move that was taken back. Press *HINT* again, and the computer will play forward to the current game position. For more details on the *HINT* Key, see Section 2.11.

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## 2.10 INFO KEY

*(Make sure the SHIFT LIGHT is ON whenever you use the INFO Key.)*

The *Phantom's* built-in Display Window communicates additional game information to you upon request. If you activate certain squares while the computer is thinking, the Display will show you various pieces of information about the computer's current move: the move time, the search depth, the score, the number of nodes per second being examined, and the first four moves of the computer's *principle variation* (the line of play the computer currently believes to be best). For a detailed description of how to activate this **Rotating Display Option**, see Section Four.

As described in Section Four, the Rotating Display information is normally accessed while the computer is thinking, so that you can follow its thought and search processes as they take place. However, you also have the option of calling up this information *after* the computer has already made its move. This is where the *INFO Key* comes in. Pressing *INFO* after the computer has made its move will get you into a static Rotating Display Mode, and you can repeatedly press the *INFO Key* to see information on the computer's last move. With each press of the *INFO Key*, the Display will show the amount of time it took for the move, the search depth, the game score, and the first four moves of the computer's principle variation, in that order. The only piece of information that you will not see that was available as part of the actual Rotating Display is the *nodes per second* display. This display of how many chess positions the *Phantom* is examining per second can obviously only be called up while the computer is actually thinking and examining moves.

After you have obtained the desired move information, press *CLEAR* to exit Info Mode.

**Note:** When repeatedly pressing the *INFO Key*, if the Display Window should show **----** at any point, this indicates that no information was available for that particular part of the rotating display. This could occur, for example, if the computer has not conducted a move search because it is still playing from its Opening Library.

## 2.11 HINT KEY

*(Make sure the SHIFT LIGHT is OFF whenever you use the HINT Key.)*

### Move Suggestion

If it is your turn to move and you would like the computer to suggest a move for you to make, press the *HINT Key*. The *Phantom* will then display a suggested move in the window, and will also shuffle that particular piece in its square on the board, showing you that this is the piece it advises you to move. If you opt to use the suggested piece to make your move, simply enter your

move as you normally would. If you decide to make a different move, press *CLEAR* and make the move of your choice, or simply go ahead and make your move on the board.

**Note:** Move suggestions are available whenever the previous move was made by the computer after a two-ply or deeper search, or whenever the computer is playing from its Opening Book Library. If you should ask for a hint in other circumstances, a move suggestion may not be available. If this happens, the Display will show **----**, indicating that no hint is available. Press the *CLEAR Key* to cancel this display.

### Play Forward

As noted in the section on the *TAKE-BACK Key*, if you press the *HINT Key* after you have taken back a move, the computer will replay the move that was just taken back. Press *HINT* again, and the computer will play forward to the current position.

If you want to have the computer play forward a few moves, but not necessarily all the way up to the current position, press the *HINT Key*, then the *CLEAR Key*, then the *HINT Key* again. Continuing to press *CLEAR* in between using the *HINT Key* will allow you to *step forward* in the game for as many moves as you wish. You may play backwards in an identical manner by using the *TAKE-BACK Key* (see Section 2.9).

### Show Legal Moves

The *Phantom* is able to demonstrate all the legal moves available to any piece in a given position. This is yet another function of the *HINT Key*. Press down on whatever piece you choose, and then press the *HINT Key*. **You will automatically be shown all legal moves for that piece in that position, one after another.** The piece will be returned to its square after each move is demonstrated. To stop the demonstration of legal moves, press the *STOP Key* during this action. While the game is stopped, the Display will show **- S p -** to indicate this. Note that the piece may stop at a place other than the square it was on when you asked for the demonstration. When you press the *CLEAR Key* to continue with the game, that piece will automatically be returned to its home square.

If the chosen piece has no legal moves, the computer will simply beep, rather than moving the piece.

**Note:** The piece you choose for a demonstration of legal moves must be of the same color as the Indicator Light which is presently on.

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## 2.12 ALTERNATE KEY

*(Make sure the SHIFT LIGHT is ON whenever you use the ALTERNATE Key.)*

### Show Alternate Move

After the *Phantom* has made a move on the board, you may request that the computer show you another move as an alternative. Pressing *ALTERNATE* will cause the computer to take back the move it just made and start the move search over again. It will then come back with a different move (the next-best move) for that position. Each move is shown in the Display Window as the piece is being moved. You may repeat this process as many times as you wish, and eventually the computer will have shown you all legal moves for that side in that position. Be aware of the fact that each time you ask for an Alternate Move, the computer comes up with a less desirable move than the last. This is because it will always make the best possible move first, and then the next-best, and then the next, etc. Some of these moves, especially if you have asked for many alternate moves, will therefore not be good moves—and under normal conditions, the computer would never play them. If the *Phantom* finds that there are no more legal moves in the position, it will simply beep when the *ALTERNATE* Key is pressed.

If you ask to see alternate moves while the computer is still playing from its Opening Book Library, the *Phantom* will show you alternate move choices that are present in its book (see Section 1.4, *Book Openings*). If the *All Openings* option is in effect (see Section 3.4), the computer will cycle through *all* of the available book moves for that position. If the *All Openings* option is *not* in effect when you ask for alternate moves, the *Phantom* will only cycle through the moves that are present in its *Tournament Book*.

Once the computer has shown you all of the book choices in that position, it will simply beep when the *ALTERNATE* Key is pressed.

### Clear Board

This is a feature which is extremely valuable when it comes to setting up problems. Pressing the *ALTERNATE* Key after entering *Problem Mode* will cause the *Phantom* to remove all the chess pieces from the board (see Section 2.2 for details on *Problem Mode*).

The computer clears the board by moving all pieces to their correct spaces in the Border Areas. If you would like to stop this action, press *STOP* and the computer will stop and allow you to manually put the pieces where they belong in the Border Areas. The Display will show **- S p -** to indicate that the computer's automatic action has been stopped. Note that you do *not* have to press the *from* and *to* squares when you are manually clearing the board. Once you have put the pieces where they belong, press the

*CLEAR* Key to signal to the computer that have cleared the board yourself and are now ready to set up a position in *Problem Mode*.

**Note:** If you try to exit *Problem Mode* immediately after clearing the board, the computer will beep and flash the piece symbol indicator for the King, and the Display will show **--**. This is because the board is void of all pieces, including the Kings. You must set up a position with at least two Kings on the board in order to clear this illegal position indicator and exit *Problem Mode*.

### Complete Board Verify

As described previously under the *VERIFY* Key, the *ALTERNATE* Key is also as a part of the board verification process. If it should happen that some or all of the pieces on the board get knocked over, you can use this feature to make the *Phantom* show you the positions of all pieces on the board. It does this by moving all of the pieces to their correct places automatically. To have the computer put all pieces back where they belong, do the following:

- A) Put all 32 pieces on their correct spaces in the Border Areas.
- B) Press the *VERIFY* Key and then the *ALTERNATE* Key. The computer will now start automatically moving the pieces one by one to their correct squares on the chessboard.

## 2.13 MOVE KEY

*(Make sure the SHIFT LIGHT is OFF whenever you use the MOVE Key.)*

### Changing Sides with the Computer

If, during a game, you decide to change sides with the computer, press the *MOVE* Key when it is your turn to move. The computer will then take over your pieces and start playing for that color. You can switch as often as you wish during a game.

### Forcing the Computer to Make a Move

At any time when it is the computer's turn to move, you may force the *Phantom* to stop thinking and make a move immediately on any level. To force the computer to move, press the *MOVE* Key. The computer will then stop thinking and play the move it considers to be the best one it has found in its search so far.

To see other moves the computer might make in that same position, use the *ALTERNATE* Key (see Section 2.12).

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## 2.14 STOP KEY

**(Make sure the SHIFT LIGHT is ON whenever you use the STOP Key.)**

The *STOP* Key is used in many different modes. One of its primary purposes is to allow you to *stop* the computer once it has started moving pieces automatically, so that you may manually move the pieces yourself during a particular function. For example, if you are in Problem Mode and you press *ALTERNATE*, the computer will commence clearing the board for you. If you decide you would rather not wait for the computer to clear the whole board, but you want to clear the board yourself, press *STOP*. The Display will show **(- S p -)** to indicate that the automatic action has been stopped. The *Phantom* will stop moving its pieces and will allow you to clear the board manually. Press *CLEAR* to let the computer know when you have finished clearing the board.

In other instances, the *STOP* Key will stop some particular action, and then the *CLEAR* Key will finish up the action. An example of this would be if you stopped the computer's replay of a game, but it happened to be in the middle of making a castling move on the board. Pressing *STOP* would freeze the action, and the Display would show **(- S p -)** to indicate this. Pressing *CLEAR* would then make the computer finish up the move it was in the middle of making.

Whenever you have the option of using the *STOP* Key/*CLEAR* Key combination with any of the *Phantom's* special features, this will be noted in the description of that particular feature. Refer to the appropriate sections for details.

## 2.15 AUTO KEY

**(Make sure the SHIFT LIGHT is OFF whenever you use the AUTO Key.)**

If you would like to sit back and watch the computer play itself, simply press the *AUTO* Key. The *Phantom* The computer will take over both sides of the game, making one move after another, until it has played out a complete game of chess. When the first game ends, the computer will set the board up for a second game, and will again start playing. **If you do not stop the computer, it will play a total of 30 games in a row, one after the other.**

You may stop the *Phantom* at any time during these games, simply by pressing the *STOP* Key. The Display will show **(- S p -)** to indicate that you have stopped all action. Press *CLEAR*, and the computer will finish making any move it may have been making, and will then stop. You can now continue the game as you wish—play against the computer, set up a new game, or set up a problem.

The time taken for the computer to play games in this mode depends entirely on the game level you have chosen. Obviously, if you choose one of the faster

levels, the games will go rather quickly. Choosing some of the higher levels, on the other hand, can lead to lengthy chess games. Be sure to choose a playing level before entering Auto Mode (or the computer will play using the default level, A1). For details, see *LEVEL* Key, Section 2.7.

If you would like to get back into Auto Mode and have the computer continue the same game, simply press the *AUTO* Key. If you want the computer to finish playing the current game and then stop, you may use the *Finish Game* option (see Section 3.8).

## 2.16 CLEAR KEY

**(The CLEAR Key can be used when the SHIFT LIGHT is either ON or OFF.)**

Since the *CLEAR* Key is used in conjunction with many different modes, this key can be used when the *SHIFT* light is either on or off. This enables you to simply press *CLEAR* whenever you need to, rather than having to decide whether or not you need to press the *SHIFT* Key first.

The *CLEAR* Key is often used to tell the computer that you have finished some particular operation and you would like to exit that mode. For example, you must always press *CLEAR* to exit Problem Mode (after setting up or changing a position), to exit Verify Mode (after verifying a position), to exit Option Mode (after selecting or de-selecting game options), and to get back to normal game play after you have used the *STOP* Key to stop the computer's action. You also must press the *CLEAR* Key after choosing your playing level, in order to enter that level into the computer.

Another use of the *CLEAR* Key occurs whenever the computer makes a mate or draw announcement. Before making a mating or drawing move, the Display Window will indicate either the number of moves to mate or the type of draw which is occurring. In order to have the computer play out the next move, you must press the *CLEAR* Key. The *Phantom* will then make that move on the board.

## SECTION THREE: GAME OPTIONS

### INTRODUCTION TO OPTION SELECT MODE

*(Make sure the SHIFT LIGHT is OFF whenever you use the OPTION Key to enter Option Select Mode).*

In addition to the Keys and Special Features described previously, a number of additional options may be selected to enhance your enjoyment of the *Phantom*. These game options are user-selectable (before the start of a new game or whenever it is your turn to move during a game), and can be activated by pressing various squares on the playing surface. When **Option Select Mode** is chosen by pressing the **OPTION Key**, the Display Window will read **(- O P -)**, and normal game play is suspended. Squares A1 through H1 can then be used to select and deselect various game options, as illustrated below.

EASY MODE	SOUND OFF	PLAYER MODE	ALL OPENINGS	COUNT-DOWN CLOCK	BLACK FROM THE BOTTOM	CANCEL BOOK	FINISH GAME
A1	B1	C1	D1	E1	F1	G1	H1

Game options are turned on and off by **pressing down on the square(s) designated for the desired option(s) while in Option Select Mode.**

When you press any one of the option squares, the Display will show code letters for that particular option, and will indicate whether or not the option is currently in effect. If the option code is displayed **with dashes around it**, this indicates that the option indicated **is in effect**. If the code is displayed **without dashes around it**, the option is currently **not in effect**. As an example, when you first press Square C1, the Display will show **(P d)**, indicating that Square C1 is used to choose Player Mode, but it is not currently in effect. Pressing Square C1 again at this point would display **(- P d -)**, indicating that the Player Mode option has been selected and is now in effect. If you decide after selecting an option that you would rather not have that option turned on, simply press the option square again. Each successive press of the square will turn the option on or off.

You may choose any number of options at the same time, as desired. After selecting your option(s), always press the **CLEAR Key** to exit **Option Select Mode**.

If you decide you want to cancel an option after you have already pressed the **CLEAR Key** to get out of **Option Select Mode**, simply press the **OPTION Key**

again to get back into that mode. Then press down on that same option square until the dashes disappear from the Display to indicate that the option is no longer in effect. Press the **CLEAR Key** to exit **Option Select Mode**.

### 3.1 EASY MODE (Square A1)

*Note:* When the Easy Mode option is in effect, the Display will show **(- E d -)**.

**Easy Mode** is an option which weakens all playing levels without affecting the computer's time controls. This is accomplished by restricting the computer's use of its allotted time. Ordinarily, the *Phantom* will do some of its thinking on your time—while you are contemplating your next move. This feature is part of what makes the *Phantom* such a tough opponent. For example: If you set the computer on Level A1 to give it roughly five

seconds per move, but you take two minutes to consider your move, and the computer guesses what you are going to play, the computer would have used the whole two minutes to think about its reply. You might as well have selected a much higher level!

Selecting **Easy Mode** will prevent the computer from thinking on your time. Since this weakens all of the skill levels, you are thus given many more playing levels to choose from.

### 3.2 SOUND OFF (Square B1)

*Note:* When the Sound Off option is in effect, the Display will show **(- S d -)**.

For completely silent operation of the game, use Square B1 to select the **Sound Off** option. To turn the sound on again, go back into **Option Select Mode** and use Square B1 to deselect this option. The sound can be turned off or on as often as desired during a game.

### 3.3 PLAYER MODE (Square C1)

*Note:* When the Player Mode option is in effect, the Display will show **(- P d -)**.

This option allows humans to play both sides of the game, while the computer acts as referee, checking each move for legality and keeping track of times taken per move by each player. The computer will also give

move suggestions for either player, and will demonstrate all possible legal moves for any piece upon request (see Section 2.11 for details on both these features). Other features which remain active during **Player Mode** are the **TAKE-BACK** function, the **Play Forward** feature (**HINT**), and pressing the **TIME** Key to show the total time of the player yet to move. The **MOVE** Key will also function, but after the computer makes the move, **Player Mode** will remain in effect. To turn **Player Mode** off and continue playing the game against the computer, simply re-enter **Option Select Mode** and turn off the **Player Mode** option. **Player Mode** is turned off when the display shows **( P d )**. Press **CLEAR** to exit **Option Select Mode**, and make your next move. The computer will then respond as in a regular chess game.

### 3.4 ALL OPENINGS (Square D1)

*Note:* When the All Openings option is in effect, the Display will show **( - R O - )**.

Choosing option D1 expands the computer's *Tournament Opening Book Library*. When this option is in effect, the computer will select from a greater variety of book opening lines. If this option is *not* selected, the computer will play only those opening lines it feels are best.

If the **All Openings** option is in effect and the computer is playing from its **Opening Book** when you use the **ALTERNATE** Key to see alternate moves (see Section 2.12), the computer will cycle through all of the available book moves for that position. If the **All Openings** option is *not* in effect when you ask for alternate moves, the *Phantom* will only cycle through the moves that are present in its *Tournament Book*.

### 3.5 COUNTDOWN CLOCK (Square E1)

*Note:* When the Countdown Clock option is in effect, the Display will show **( - C C - )**.

This feature is especially handy if you play the computer at its higher levels and want to be able to walk away from the board for a few minutes. While this option is engaged, the *Phantom* will display the amount of total time it expects to take for the move, and **count down** the time instead of up. The computer knows the approximate amount of time it will allot itself based upon the level selected and, therefore, is able to tell you ahead of time approximately how long it will take to move. If the computer sees any major obstacles while searching for the best move, it may allot itself more time and the clock will change to reflect this.

Since **Levels B1-B8** are already **Countdown Levels**, activating **Option E1** while using one of these levels will provide you with a different option. Normally, the computer will display both players' time remaining using a *split clock format* (two-digit display for each player, side by side) while using the **Countdown**

**Levels**. If **Option E1** is activated in conjunction with one of these levels, however, the clock will show only one player's time remaining (while it is that player's turn to move) in a four-digit format. In this way, the player can see the more exact time that remains for his side because seconds will also be shown. For more information on **Countdown Levels**, see Section 2.7.

### 3.6 BLACK FROM THE BOTTOM (Square F1)

*Note:* When the Black from the Bottom option is in effect, the Display will show **( - b b - )**.

Selecting **Black from the Bottom** allows you to play with the Black pieces set up at the bottom of the board. When you choose this option, the *Phantom* will reverse the board for you automatically. If you are reversing the board in the middle of a game, pressing **STOP** during the automatic reversal procedure is *not* advised. Once the board reversal has been completed, press the **MOVE** Key to make the computer start thinking for White.

### 3.7 CANCEL OPENING BOOK (Square G1)

*Note:* When the Cancel Opening Book option is in effect, the Display will show **( - C b - )**.

Selecting the **Cancel Opening Book** option completely locks out the computer's opening book (for details on the opening book, see Section 1.4). When this option is in effect, the *Phantom* will have no opening library from which to draw its moves, so it will be forced to take time to think in order to determine its own best move from the beginning of the game.

### 3.8 FINISH GAME (Square H1)

*Note:* When the Finish Game option is in effect, the Display will show **( - F G - )**.

The **Finish Game** option is a method by which you may ask the computer to finish up a game for you. If, for instance, you are playing a game and you think you are beating the *Phantom* but you have to leave the house or go to bed, you can have the computer continue the game, playing for both sides. This will enable you to see how the game might have turned out. In contrast to **AUTO** mode, where the computer plays many games in a row, **Finish Game** tells the computer to play to the end of that one game, and then stop.

If you would like to halt the game at any time, press **STOP** and the computer will discontinue the game. The Display Window will show **( - S p - )** to indicate that the action has been stopped. Pressing the **CLEAR** Key will finish up anything the computer might have been doing when **STOP** was pressed (i.e., moving a piece).

## SECTION FOUR: ROTATING DISPLAY

### INTRODUCTION TO THE ROTATING DISPLAY

The built-in Display Window is provided to communicate additional information to you upon request. You will normally want to obtain this information while the computer is thinking, so that you can follow its thought and search processes as they take place. Therefore, in this section on the **Rotating Display**, the phrase *while the computer is thinking* will be used over and over. This simply serves to remind you that this feature is only activated while the *Phantom* is thinking about its next move. If you wish see the same information *after* the computer has made its move, you must use the *INFO Key* (see Section 2.10).

If you simply turn on the computer and begin to play, the Display will automatically show time for the player to move while each side is thinking. To start up the Rotating Display during the computer's search, simply press down on one of the squares in the first rank while the computer is thinking. The following chart shows which squares to activate for the type of information which may interest you.

MOVE TIME (off) A2	SEARCH DEPTH (off) B2	SCORE (off) C2	NODES PER SECOND (off) D2	1ST MOVE PRINCIPLE VARIATION (off) E2	2ND MOVE PRINCIPLE VARIATION (off) F2	3RD MOVE PRINCIPLE VARIATION (off) G2	4TH MOVE PRINCIPLE VARIATION (off) H2
MOVE TIME (on) A1	SEARCH DEPTH (on) B1	SCORE (on) C1	NODES PER SECOND (on) D1	1ST MOVE PRINCIPLE VARIATION (on) E1	2ND MOVE PRINCIPLE VARIATION (on) F1	3RD MOVE PRINCIPLE VARIATION (on) G1	4TH MOVE PRINCIPLE VARIATION (on) H1

If, further into the game, you choose to *deactivate* a Rotating Display feature you selected earlier, simply press down on the appropriate square in the second rank (see chart) while the computer is thinking, and the Display will no longer show that particular information. If you have selected multiple display features, the information will be *rotated in one-second increments*. If you turn all of the display options off, the Display Window will simply show two dots (.), indicating that the computer is thinking, but none of the display options are currently on. The remainder of this section contains descriptions of each individual display feature.

### 4.1 DISPLAY MOVE TIME (Squares A1,A2)

Since move time is automatically activated when the *Phantom* is turned on, there is no need to activate A1 to select time initially. You may, however, wish to deactivate move time if you are using other display features and are not interested in the time display. To deactivate move time, press down on Square A2 while the computer is thinking. If you wish to reactivate this feature later in a game, press down on Square A1 again.

### 4.2 DISPLAY SEARCH DEPTH (Squares B1,B2)

If you would like to see how far ahead the computer is looking as it ponders a move, press down on Square B1 while the computer is thinking. The Display will show the ply (half-move) depth and the number of computer moves in that ply which have been examined thus far. For example, ( 2 3 ) means that the computer is currently examining the third ply and has reviewed 12 moves so far. To deactivate the search depth display, press down on Square B2 while the computer is thinking. If you wish to reactivate this feature later in a game, press down on Square B1 again.

### 4.3 DISPLAY SCORE (Squares C1,C2)

If you would like to see the computer's opinion of the current board position, press down on Square C1 while the computer is thinking. The *Phantom* will display the current game score, with a positive number showing if the computer thinks it has the advantage, and a negative number showing if the computer feels that it is at a disadvantage. The numerical values indicate the extent of how good or how bad things are for the computer. Material scores are based roughly on the value scale of 100 points for a pawn, 300 points for a Knight or Bishop, 500 points for a Rook, and 900 points for a Queen. The score is also interpreted in terms of positional value—whether the computer considers its position good or bad.

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As an example, a display of (491) would indicate that the *Phantom* is up a Rook, and a display of (-103) indicates that the computer is down a pawn. To deactivate the score display, press down on Square C2 while the computer is thinking. If you wish to reactivate this feature later in a game, press down on Square C1 again.

#### 4.4 DISPLAY NODES PER SECOND (Squares D1,D2)

If you would like to see how many chess positions (*nodes*) the computer is examining per second, press down on Square D1 while the computer is thinking. The number displayed will usually be a four-digit number, due to the speed at which the computer processes information. To distinguish this display from the score or other displays you may have activated, the nodes per second display is always shown with two dots. As an example, if the display is (2.2 5.6), this means the computer is examining 2,256 nodes per second at that time. To deactivate the nodes per second display, press down on Square D2 while the computer is thinking. If you wish to reactivate this feature later in a game, press down on Square D1 again.

#### 4.5 DISPLAY FIRST MOVE OF PRINCIPLE VARIATION (Squares E1,E2)

If you would like to see the first move of the computer's *principle variation* (the line of play which the computer currently believes to be best), press down on Square E1 while the computer is thinking. To deactivate this display, press down on Square E2 while the

computer is thinking. If you wish to reactivate this feature later in a game, press down on Square E1 again.

**Note:** *The first move of the principle variation is the move the computer is currently thinking of making.*

#### 4.6 DISPLAY SECOND MOVE OF PRINCIPLE VARIATION (Squares F1,F2)

If you would like to see the second move of the computer's *principle variation*, press down on Square F1 while the computer is thinking. To deactivate this display, press down on Square F2 while the computer is thinking. If you wish to reactivate this feature later in a game, press down on Square F1 again.

#### 4.7 DISPLAY THIRD MOVE OF PRINCIPLE VARIATION (Squares G1,G2)

If you would like to see the third move of the computer's *principle variation*, press down on Square G1 while the computer is thinking. To deactivate this display, press down on Square G2 while the computer is thinking. If you wish to reactivate this feature later in a game, press down on Square G1 again.

#### 4.8 DISPLAY FOURTH MOVE OF PRINCIPLE VARIATION (Squares H1,H2)

If you would like to see the fourth move of the computer's *principle variation*, press down on Square H1 while the computer is thinking. To deactivate this display, press down on Square H2 while the computer is thinking. If you wish to reactivate this feature later in a game, press down on Square H1 again.



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## SECTION FIVE: MATE AND DRAW ANNOUNCEMENTS

The *Phantom* has the ability to announce forced mates against its opponent. In addition, the computer can recognize and claim three different types of draws: *draw by stalemate*, *draw by the 50-move rule*, and *draw by three-time repetition*. Please refer to the appropriate sections that follow for details regarding specific draw announcements.

### 5.1 CHECKMATE

If the *Phantom* determines that you will soon be mated, it will show  in the Display Window (where *x* is equal to the number of moves until checkmate). Press *CLEAR* to see the computer's move. Once the computer's mating move is entered, the Display Window will read .

If you checkmate the computer, the Display Window will read .

### 5.2 DRAW BY STALEMATE

A game of chess is drawn by stalemate if the player whose turn it is to move has no legal moves, but his King is not in check. The computer claims this draw by displaying  in the Display Window. If this occurs,

the game is over and cannot be continued. If desired, however, you may replay the game (see Section 2.8), take back moves (see Section 2.9), or change the position in Problem Mode (see Section 2.2).

### 5.3 DRAW BY THE 50-MOVE RULE

If 50 consecutive moves have been played in a game without either side having moved a pawn or captured a piece, a 50-move rule draw may be claimed by the side whose turn it is to move. If the computer detects that 50 such moves have been made, it will claim a draw by displaying  in the Display Window.

### 5.4 DRAW BY THREE-TIME REPETITION

If the same position occurs three times in a game of chess where the same side has the move each time, the game is drawn by repetition of position. If the computer is about to make a move that will result in the same position being repeated for the third time, it will display . If the computer recognizes that its opponent has made a move that results in a third repetition, it claims the draw by displaying .



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