



SYMPTOMS	POSSIBLE CAUSES, TESTS	WHAT YOU SHOULD DO
6. Computer does not accept your move in the middle of a game	Batteries are running out.	Replace batteries.
	Computer locks up.	Switch OFF the computer for 10 seconds, check mains connection.
	You are trying to make an illegal move. - Look at the COLOR lamp - Is it your turn? - Is your King in check? (CHECK lamp) - Will your move put your King into check? - Did you move the Rook first when castling?	Press [SET UP], use the [COLOR] and piece keys to confirm where the pieces are.
	Pawn promotion: you must select the piece it promotes to.	Press a piece key to confirm the piece type   (chapter 4)
	You took too long to make your move and now the computer is flashing the square from which you picked up your piece.	Replace piece where computer indicates. Lamps will go out. Now make your move.
7. A pawn moves like a Queen, a Rook, a Bishop or a Knight	The pawn has been promoted.	Press [SET UP], use the [COLOR] and piece keys to confirm the board position. Use the TAKE BACK function to take back as far as necessary and replay the game.
8. King moves like a Queen	The board may have been swapped round, in which case King and Queen change places.	Press [SET UP], use the [COLOR] and piece keys to confirm where Kings are (see chapter 10).
9. Computer will not play 9.1 White or Black lamp on steadily 9.2 White or Black lamp flashing	It has not started computing. Perhaps the MULTI MOVE function is on.	Press [MOVE] to start it computing. Verify status of MULTI MOVE function (chapter 12).
	You have not waited long enough. The computer is still thinking. In complicated positions it may take many times longer than the average response time. Difficult Mate problems may take weeks to solve.	Verify the level, check chapter 2. To interrupt the thinking process see chapter 11.
10. Computer is silent	The sound is off.	Press [SOUND] again to turn it on.
11. Does not work on the mains adapter	Plug loose.	Look at plug. Adjust fit.
	Defective adapter.	If computer works using batteries but not using the adapter, then the adapter is probably defective. Send it to the service centre.
	Wrong adapter type: voltage rating, output voltage, current limit, plug diameter etc.	Check with dealer.

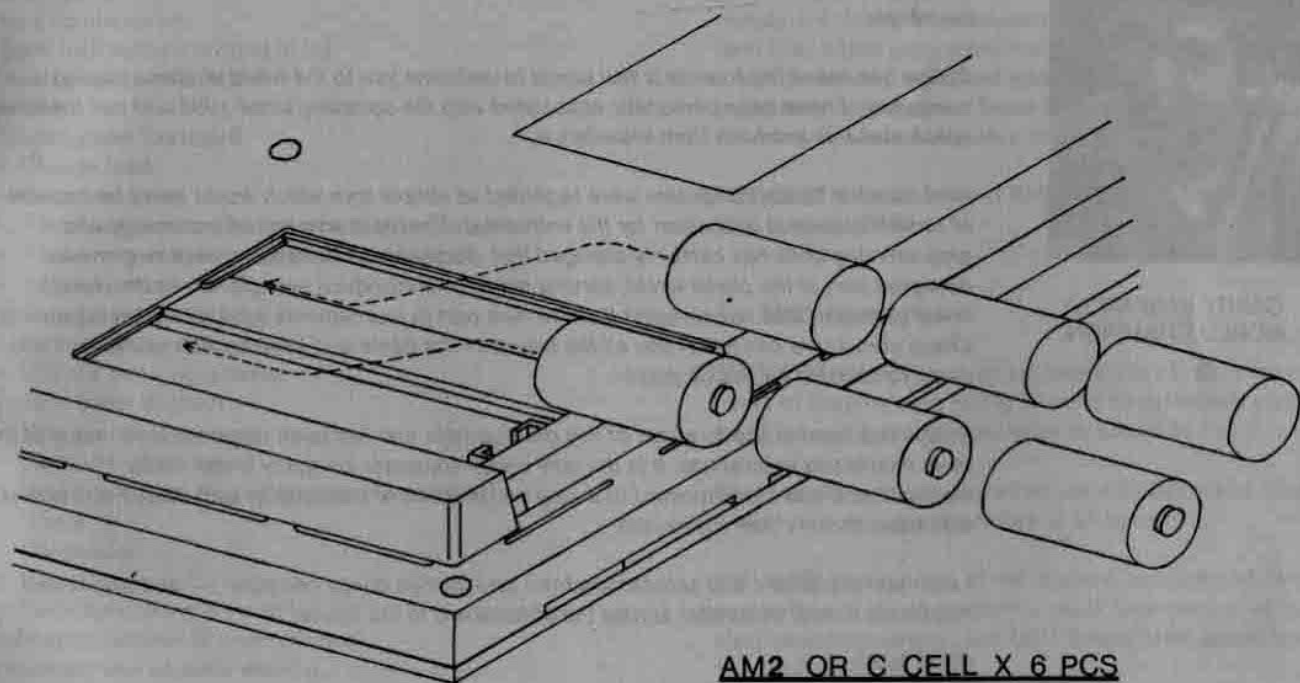


Fig. 2

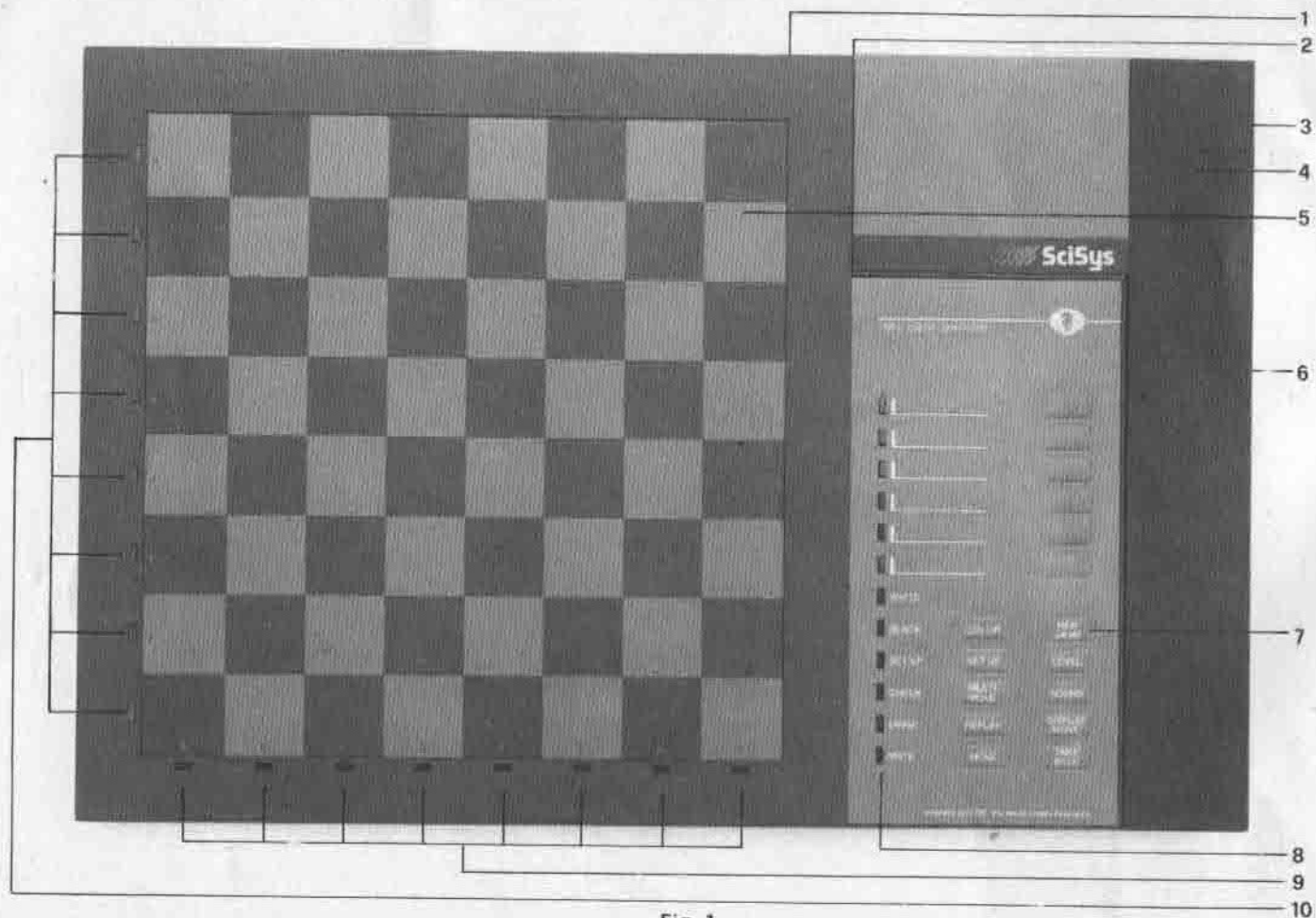


Fig. 1

Dear Fellow Chess Player,



GARRY KASPAROV
WORLD CHAMPION

When computers were first invented just four decades ago few people realized that mankind was witness to the most important single development of our time. Today computers have become freely available and in a few years there will be a computer in almost every household.

SciSys has asked me to write a few words to welcome you to the world of chess playing computers. I have been personally associated with the company since 1983 and can therefore speak about its products from experience.

Until recently chess computers were regarded as simple toys which would never be capable of providing serious opposition for the enthusiast. The rapid advance of technology and programming skills has certainly changed that. Today chess computers have become an accepted part of the chess world, serving not only to introduce new players to the world's finest game but also encouraging them to take part in tournaments against human opponents. Chess computers can teach you all the basics of the game and keep up with you even if you go on to become a top club player.

SciSys has been at the forefront of this development and has been responsible for many of the most interesting innovations. It is the only chess computer company under Swiss management, and I look forward to a long and productive relationship with SciSys and with you who have chosen their computers.

I wish you enjoyment and satisfaction from your SciSys chess computer — and who knows, maybe we'll meet in combat across the chessboard in the future!

Good luck!

A stylized handwritten signature of Garry Kasparov, written in dark ink. The signature is fluid and cursive, with a long horizontal line extending from the end.

Garry Kasparov

Keys and functions

1. Socket for mains adapter (optional)
2. Power switch
3. Piece compartment
4. Quick instructions printed in lid
5. Touch-sensory chessboard
6. Buzzer
7. Control panel keyboard:
 - Change level
 - Start new game
 - Take back any number of moves automatically
 - Replay any number of moves automatically
 - Suggest a move
 - Turn sound On/Off
 - Permit multiple moves
 - Display move considered
8. Control panel displays:—
 - Side to move
 - Computer thinking
 - Set-up position, fix position, verify position
 - Check
 - Checkmate
 - Draw
 - Piece type: King — Pawn
9. Indicator: column of piece moving
10. Indicator: row of piece moving

Introduction

TURBOSTAR 432 is a sophisticated chess computer which automatically registers your moves on its built-in sensor chessboard. It has 31 extremely flexible main levels of skill (and over 4,000 programmable tournament time settings) and a number of very advanced features that will increase your enjoyment of the game. These 'intelligent' features also make the computer especially easy to operate.

TURBOSTAR 432 runs at 4MHz, with 4K bytes of RAM and 32K bytes of ROM.

1. Getting started

TURBOSTAR 432 runs on six heavy duty C-Cells for up to 8 hours of playing time (using alkaline batteries will give you up to 15 hours). Insert the batteries as shown in Fig. 2.

For most economical operation use a SciSys mains adaptor which your dealer will provide as an option.

Set up the chess pieces in the opening position and switch the computer on. It will perform a quick internal test of its electronic components and LED lamps, after which it is ready to play against you.

2. Setting the level of skill

TURBOSTAR has 31 main levels of skill to suit all aspects of the game. Each Pre-set Level corresponds to a square on the chessboard.

Pre-set Levels A1 to A8 are for casual play. On these Levels the computer will typically respond in the times given below. Pre-set Levels B1 to B6 are for tournament games. In tournament mode the computer will play according to the internationally accepted time limits (e.g. Level B3 = 40 moves in the first 2 hours and 20 moves in every hour thereafter). It will always play the move it considers best (randomizer off) and will adhere strictly to the time limits set for the entire game. Pre-set Levels B1 to B6 can be reprogrammed using the Adjustment Levels.

Pre-set Level B7 is designed for the popular club game 10 second chess.

Pre-set Level B8 is for analysis.

Pre-set Levels C1 to C7 are for fixed time (speed) games. C8 is not a Level at all — it gives access to the programmable Adjustment Levels.

Levels H1 to H8 are for chess problems (see section 16).

The typical Pre-set Level response times (casual Levels) and time controls (other playing Levels) are set out in the table below. The response times for casual play are typical times only. Depending on the stage of the game and the tactical complications, the computer may play very much faster or slower on individual moves; it thinks whilst waiting for your move, so occasionally it may have its reply ready immediately.

Pre-set
Levels

Typical response time per move

Casual:

- A1 5 seconds (beginner)
- A2 15 seconds
- A3 30 seconds
- A4 1 minute
- A5 2 minutes
- A6 3 minutes
- A7 6 minutes
- A8 1 second (Handicap Level)

Tournament

Time Controls (No. Moves/Period)

Primary Control	Secondary Control
B1 30 moves in 30 mins.	30 moves in 30 mins (Fast Tournament)
B2 35 moves in 1 hr 30 mins	rest of moves in 15 mins (European Club)
B3 40 moves in 2 hours	20 moves per hour (Slow Tournament)
B4 45 moves in 2 hours	23 moves per hour (Slow Tournament)
B5 50 moves in 2 hr 30 mins	20 moves per hour (U.S. Open)
B6 60 moves in 1 hour	30 moves per 30 minutes (Fast Tournament)

10 second chess

- B7 1 move every 10 seconds with acoustic reminder

Analysis

B8 computer only moves when interrupted—see section 11

“All the moves” games:

C1 5 minutes for the entire game (speed chess)

C2 10 “ “ “ “ “

C3 15 “ “ “ “ “

C4 30 “ “ “ “ “

C5 45 “ “ “ “ “

C6 60 “ “ “ “ “

C7 90 “ “ “ “ “

C8 Special key to program Adjustment Tournament time controls (see section 15); does not of itself select a Level.

To choose the Level you want press LEVEL (the computer will indicate the Level currently set) and then the appropriate square of the chessboard, and finally LEVEL again to turn out the LED lamps (the computer will turn them out anyway if you do nothing more for 7 seconds or so). The Level setting may be changed at the beginning of the game or any time during the game (but only when it is your turn to move).

3. Making moves

To make a move first press down on the piece you wish to move. You will hear a short beep. Place the piece on its destination square and press down again. You will hear a second beep and a color light (BLACK or WHITE) begins to flash. This means that the computer has accepted your move

and has started to compute its reply. If you hesitate long over a move the computer will ask you to replace the piece: it will beep then flash the lamp for the place and its square.

To make a capture you only have to key in the move of the capturing piece. In case of an en passant capture the computer will remind you to remove the captured pawn (press it down before you remove it).

When castling always key in the king's move first. When a pawn promotes you must tell the computer which piece you choose by pressing the appropriate piece key.

4. Computer moves

The computer indicates its own moves by sounding a double beep when it has finished computing and turning on two lights on the side of the chess board. These lights indicate the horizontal rank and vertical column of the piece the computer wishes to move. Press this piece down on its square. The computer will now show you where the piece must go. Move the piece to the square indicated and press down to complete the move.

Note: When the computer promotes a pawn it will use the piece lights to show you which piece it chooses. Press down the appropriate piece key to confirm its choice.

5. Illegal moves

If you attempt to make an illegal move the board lights indicating the TO square will stay on and the computer will not compute a countermove. After a few seconds you will hear a low beep and the **SET UP** light will start flashing. The computer will show you which piece you must move back before you can make your next move.

If you do not execute a computer move properly you will hear a double error beep and the board lights will help you to correct the move.

6. Check, Mate, and Draw

When the computer puts your king in check it will sound a double beep and turn the CHECK light on. If a game ends in checkmate it will turn on the MATE light (the WHITE or BLACK lights indicate which side has been checkmated).

In case of a stalemate or draw by threefold repetition or the fifty move rule, the DRAW light will be turned on.

7. NEW GAME

To start a new game press **NEW GAME**. The level and all other relevant settings remain unchanged.

8. TAKE BACK

To take back moves press **TAKE BACK**. The computer will start retracting moves. It will show you where the pieces came from and where you should put them. It will also remind you to replace captured pieces (watch the piece lights). You can take back all the moves up to the beginning of the game.

After each move you take back it will display the next one; if you ignore it for 6-8 seconds it will turn off the display. To terminate the take back function and resume play simply key in a move (or press **MOVE**).

9. Replay

After taking back moves you may replay them by pressing **REPLAY**. The computer will show you the moves that were made (it turns off the display if you ignore it for 6-8 seconds). You may resume play at any stage by entering a move or pressing **MOVE**.

To replay an entire game (useful for analysis) press **NEW GAME** and **REPLAY**. The computer will show you the entire game you just played.

10. Changing sides

If at any time during a game you wish to change sides with the computer you may do so by pressing **MOVE** instead of making a move. The computer will play the next move for you and you can go on playing for the other side.

You can change sides as often as you like. You can even press **MOVE** repeatedly and make the computer play the entire game against itself. The **MOVE** key is especially useful when you need help and want the computer to suggest a move for you.

If you wish to play a game with the black pieces, set up the board with the black pieces at the bottom. Press **NEW GAME** and **MOVE**. The computer will make the first move for white, playing down from the top of the board.

Note: always wait for 3 seconds before pressing **MOVE**.

11. Display Moves

This is a unique feature that allows you to observe the "thought process" of the computer. To activate this mode press **DISPLAY MOVE**. The computer will now show you the moves it is considering while it computes a move. It will do this by turning on the FROM square for three seconds and then the TO square for one second. You can watch how it changes its mind as it computes deeper. Pressing **DISPLAY MOVE** again switches off this feature.

If you wish to interrupt the computer while it is computing a move simply key in the move it is currently considering. This does not operate in problem levels.

12. MULTI MOVE

The **MULTI MOVE** key puts the computer into a special mode that allows you to enter openings or to force the computer to play a certain continuation. In this mode the

computer will not compute a reply when a move has been entered. It will only keep track of the board position and make sure that all moves entered are legal.

The Multi Move mode is especially useful when you play a game with a friend. The computer will act as a referee and each side can always ask it for advice by pressing **MOVE**.

To return to normal play press **MULTI MOVE** a second time.

13. Verifying piece positions

If you upset the pieces or for other reasons are not sure that the board position is correct you can ask the computer to show you the proper location of each piece.

To do this press **SET UP** (the SET UP light comes on) and then one of the piece keys. The computer will use the board lights to show you where that piece is located. Press the same piece key again to see if there are any more pieces of that kind on the board.

You may verify the position of other pieces in the same manner. To change colors press **COLOR**. The WHITE/BLACK lights always show you which side's pieces are being verified.

Warning: Do not press down any of the pieces while verifying a position as this will remove the piece from the game.

14. Setting up a special position

If you wish to set up a special position first press **SET UP**. (If the position you want to set up contains only a few pieces, press **NEW GAME** immediately after this to clear the board of all pieces). The computer remembers whether white is playing up or down the board.

To remove a piece simply press it down on its current square and remove it from the board.

To add a new piece first select the color (by pressing **COLOR** if necessary). Now press the appropriate piece key and press the new piece on an empty square.

After you have set up the position make sure the WHITE/BLACK lights correctly indicate the side to move next and then press **SET UP**. You may now play on from the position you have entered. If the side to move is on top, it will wait 6-8 seconds and then compute a move.

Note: The computer will refuse to play if the position you have set up is not legal.

15. Programming the Tournament Levels

The 6 Pre-set Tournament Levels are adjustment-programmed by pressing square C8 (after pressing LEVEL) and then the appropriate square or squares as described below. TURBOSTAR strictly respects the time specified.

TURBOSTAR allows you to select all 4 of the important numbers in tournament time setting: the time and number of moves to the Primary time control, then the time and the number of moves to the Secondary time control.

1. Choose the number of moves to the first ("Primary") time control — by selection of your Pre-set (tournament) Level B1-B6 you can choose it to be 30, 35, 40, 45, 50 or 60.
2. Select the number of hours and minutes by which time this number of moves must be played — press C8 and then adjust the Primary time using Adjustment Level settings A1-A8 for 30-150 minutes.
3. If you need different Secondary time controls, press LEVEL and C8 then one of Adjustment Levels B1-B8. Each sets a different number of moves per period of time (these periods are further fine-adjustable with the Adjustment C1-C7 settings). Each time the controlled number of moves is played (from 10 to 30) a fresh Secondary time period is allowed, and unused time may be carried forward.
4. Vary the number of hours and minutes of the Secondary time control by pressing LEVEL and C8 then programming one of the Adjustment Level settings C1-C7 to select a period between 15 minutes and 1 hour for each (repeated) secondary time control.

Primary Time Control		Secondary Time Control	
Number of moves	Time to complete	Number of moves	Time to complete
Select from Pre-set Levels B1-B6	Program with C8 then A1-A8	Program with C8 then B1-B8	Program with C8 then C1-C7

In addition, TURBOSTAR provides 8 "sudden-death" secondary tournament time controls. These are set out in section 15.2.

15.1 Adjustable Tournament Rate Controls

Primary	Secondary Time Control	
Time Adjust	Moves per Period	Time Adjustment
A1 30 mins.	B1 10 moves per 30 mins.	C1 15 mins.
A2 60 mins.	B2 14 moves per 30 mins.	C2 20 mins.
A3 80 "	B3 15 " " " "	C3 30 "
A4 90 "	B4 16 " " " hour	C4 40 "
A5 100 "	B5 20 " " " hour	C5 45 "
A6 105 "	B6 23 " " " hour	C6 50 "
A7 120 "	B7 26 " " " hour	C7 1 hour
A8 150 "	B8 30 " " " hour	C8 —

Programming fresh Tournament Secondary Time Controls:

This redefines the number of moves for the secondary time control and also defines the fresh time period to go with it (this period can be adjusted in turn via the Adjustment Levels C1-C7):

Adjusting the Secondary Time Controls: You can select a new time period for each group of moves in the Secondary time control. The Adjustment only has a meaning if you have selected a full Tournament (not a sudden-death Tournament, Problem or Casual) mode:

15.2 Tournament Sudden-Death Secondary Time Controls:

Press LEVEL and C8 then any key from H1 to H8:

This tells the computer that it must play the whole of the rest of the game in the time period defined:

- H1 5 mins.
- H2 10 minutes
- H3 15 minutes
- H4 30 minutes
- H5 45 minutes
- H6 1 hour
- H7 1 hour 30 minutes
- H8 2 hours

The Level settings you have programmed may be read out by first pressing LEVEL to see the main setting; then repeatedly pressing C8 to read the individually programmed Adjustment Level settings successively.

15.3 Examples

Example 1:

To play 40 moves in 1 hour 30 minutes and a constant rate of play of 26 moves per 50 minutes thereafter press:

LEVEL displays current Level

B3 selects tournament mode with 40 moves to the first time control

C8 specifies that Adjustment Level settings are going to be programmed

A4 the first time control occurs in 90 minutes

B7 the secondary time control (and rate of play thereafter) requires 26 moves per period

C6 each secondary period is 50 minutes long

LEVEL turns the Level display off again

Example 2:

To play 40 moves in 2 hours 30 minutes and a constant rate of play of 20 moves per hour thereafter press

LEVEL — displays current level

B3 — selects tournament mode with 40 moves in 2 hours and thereafter 20 moves per hour

C8 — specifies that Adjustment Level settings are going to be programmed

A8 — the first time control occurs in 150 minutes

LEVEL turns the Level display off again

Example 3:

To play 35 moves in 1 hour 30 minutes and all the rest of the moves in 30 minutes thereafter ("sudden-death") press:

LEVEL displays current Level

B2 selects tournament mode, first time control 35 moves in 1 hr 30 mins

C8 specifies that Adjustment Level settings are going to be programmed

H4 all the rest of the moves are to be played in 30 mins

LEVEL turns off Level display

16. Problem mode

Your computer has a special problem mode (levels H1 to H8) in which it will solve chess problems up to mate in eight moves. In this mode the computer will only make a move if it can see a forced mate in the number of moves corresponding to the level set (e.g. a mate in four or less in level H4).

If the computer finds a forced checkmate it will play the first move — which leads to mate. If you press **REPLAY**, it then displays the best counter move automatically and follows the principal line all the way through to mate. You may try to defend the position for the opposite side (the side being checkmated) by entering moves as usual. The computer will continue playing the checkmating side until the game is over.

If the computer does not find a forced mate in the required number of moves it will sound an error beep and not make a move. Press **SEP UP** twice to abandon the search.

17. Turning sound off

If the computer "beeps" are distracting you or others during a game you may turn off the sound by pressing **SOUND**. Pressing the key again will turn the sound back on. You must watch the indicator lights and press pieces and keys carefully when playing without sound.

18. Care and maintenance

Your TURBOSTAR 432 is a precision electronic device. Do not subject it to rough handling or expose it to extreme temperatures or moisture. Do not use chemical agents to clean the set as these may damage the plastic.

19. Technical specifications

Microprocessor:	6502, 4 million operations per second, address space 64K bytes
Program Memory:	32K bytes
Ram Memory:	4K bytes
LED lamps:	28
Keys:	16
Operating Voltage Range:	7V – 10V DC
Power Consumption:	2 W max.
Battery requirement:	AM-2 or Size 'C' x 6 pcs. Alkaline type recommended
AC Adapter (Optional):	8V DC at 200mA minimum with 2.1 mm ID/5.5 mm OD mini-plug
Dimensions:	371 x 243 x 33 mm
Weight:	1 Kg (excluding batteries)

20. Troubleshooting Guide

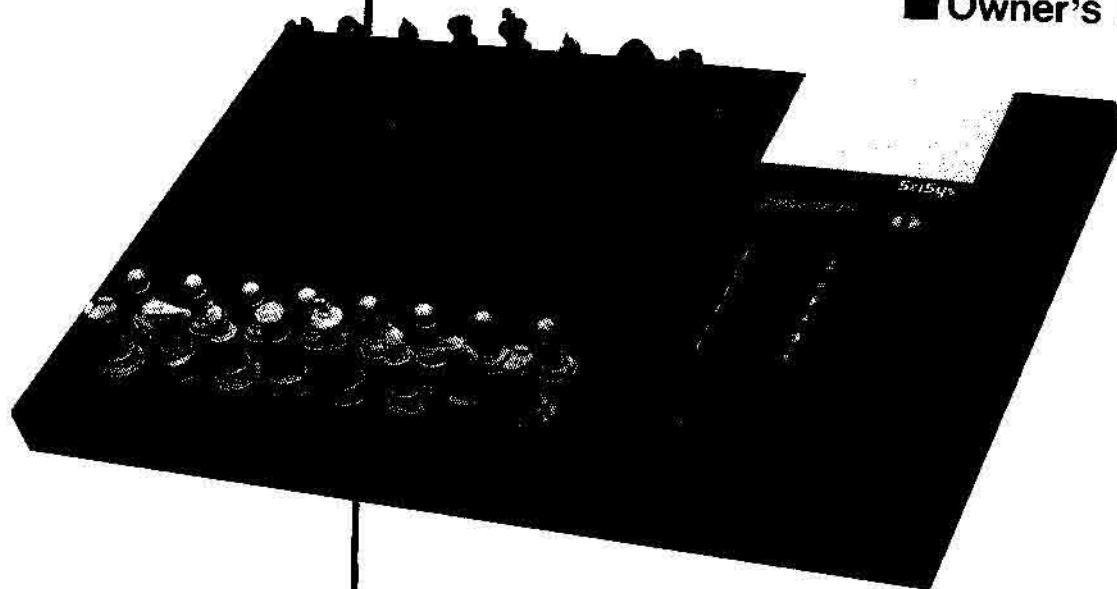
SYMPTOMS	POSSIBLE CAUSES, TESTS	WHAT YOU SHOULD DO
1. Does not work on batteries.	Batteries weak.	Replace batteries.
	Batteries not inserted properly.	Check if batteries are inserted the correct way round.
	Power-on reset problem.	Switch OFF the computer for 10 seconds.
2. All lamps light up together	Power on reset problem or static discharge or mains disturbance.	Switch OFF the computer for 10 seconds, check mains connection.
	Batteries weak.	Replace batteries.
3. Computer 'freezes' in the middle of a game	Batteries weak.	Replace batteries.
	Static discharge or mains disturbance.	Switch OFF the computer for 10 seconds.
	Loose contacts on the expansion module chip.	Remove the module cover, take out the chip with a small screwdriver. Replace the chip carefully and press down firmly.
4.1 Lamp does not work	Lamp dead.	Service Centre.
4.2 Chessboard square or key does not respond correctly when pressed, OR Lamps do not come on correctly.	Faulty contacts: Press [SET UP], [NEW GAME], [X] keys. Press each square on the chessboard in turn to verify board contacts. The proper lamps should light up with a beep in turn – each key should beep once until you reach [SOUND], which turns it off. Press [SOUND] a second time and continue.	Service Centre.
4.3 MATE or CHECK lamps do not light up.	Test the control lamps as follows: Press [NEW GAME], [MULTI MOVE], F2, F4, E7, E8, G2, G4, D8, H4. The CHECK and MATE lamps should light up.	Service Centre.
5. Computer makes illegal move or cheats	It has made a special move like – En passant – Castling (King side or Queen side) – Pawn promotion/underpromotion	Perform the move, then make sure that you are familiar with these rules (Read the 'RULES OF CHESS' manual). Press [SET UP], use the [COLOR] and piece keys to confirm where the pieces are. Use the TAKE BACK function to return to the previous board position and verify again. This will show you exactly what the computer has done. Repeat 4.2 & 4.3 to check computer working correctly.
	You have got pieces on the wrong squares.	Make the computer's move, press [SET UP], use the [COLOR] and piece keys to confirm the board position (see Chapter 13).
	Batteries are running out: – Display dim. – Sound weak. – Lamps blink more slowly.	Replace batteries and try again.

KASPAROV™
CHESS COMPUTER

19 OCT 1987
TURBOSTAR 432™

■ Owner's Manual

MS.DEPT



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