



TROJAN
CADMASTERTM
AMSTRAD
PCW

USER
INSTRUCTIONS

PLEASE READ CAREFULLY

NEED HELP?

If you need any help or advice
please use the

"HELP LINE"

telephone number printed on
your lightpen or write direct to

TROJAN

The **TROJAN CADMASTER PACK** comprises of a Graphics program plus a Light Pen and this Instruction Booklet. The pack is intended for use by micro users of all ages and any level of expertise. It can be used to produce any type of picture, from art work to technical drawing. The 'Pin Point' function in the program allows pixel accuracy and the various line types can be used to dramatic effect. Please experiment with all the functions which, when combined with the Invert options, give more choices than we mention in this booklet. The program gives full use of the printer in both Normal and High Density in either the Vertical or Horizontal and either Full or Part Screen can be selected for printing. The Keyboard will only be required for input of Text as all other options are controlled completely by easy use of the Light Pen.

A Few Hints and Tips

Leave the Light Pen plugged in if the port is not required for any other use.

Keep the tip of the Light Pen clean. When using the Pen always point it directly at and square to the screen, holding it as you would a normal pen or pencil. Do not apply undue pressure on the tip of the Pen — a light touch is all that is required. When first setting up to use your Light Pen please adjust the brightness on the Monitor to give the best performance.

You are advised to take a copy of your CADMASTER program — a copy on the same disk as CP/M Plus would be doubly useful.

NEVER PLUG IN OR UNPLUG YOUR LIGHT PEN WHILE THE COMPUTER IS SWITCHED ON.

Loading the Software

1. Load CP/M Plus as supplied with your PCW.
2. Insert Cadmaster disk and key:— TYPE README & enter.

When loaded an advice screen will appear.

If you choose the KEYS method please follow the instructions in the Secondary menu in conjunction with this Instruction book.

The Main Menu

To select an option from the MAIN MENU you must point the tip of the pen at the centre of the box at the right hand side of that option.

LINE TYPES

The top line on the MAIN MENU gives you seven LINE TYPES and SOLID or DOTTED to choose from. You should select the required LINE TYPE and either SOLID or DOTTED before selecting any of the GEOMETRIC options or the DRAW or the GRID option.

1. THIN. This option will produce a uniformly thin line.
2. MED. 1, 2 & 3. These options will produce progressively thicker uniform lines.
3. THICK. This option will produce a uniformly thick line.
4. QUILL 1 & 2. These options will produce progressively thicker lines which will be thicker in the "X" direction than in the "Y" direction.
5. The use of any line except THIN after INVERT has been selected on the MAIN MENU will produce many different patterns which can be used as Brushes. Please experiment with these options and you will find numerous effects that will enhance your drawings.

Geometric Options

The second line on the MAIN MENU contains nine GEOMETRIC options. When a GEOMETRIC option is selected the MAIN MENU will leave the screen and SECONDARY MENU will appear along the bottom of the screen:

X=--- Y=--- SCAN ↑↓←→ ERASE MENU

The X & Y shows the position of the point of the cursor in the X and Y directions.

SCAN. When the pen is pointed at the box alongside the SCAN the SECONDARY MENU will disappear and the words SCAN ARMED will appear. You must now point the pen at the point on the screen where you wish to commence that option. Hold the pen in that position until the SCAN has been completed. If SCAN fails the X & Y will be returned to zero and no dot or cursor will appear on the screen. Reselect SCAN and try again. The time allowed to position pen when SCAN is armed can be set to suit the user by using the DELAY option on the MAIN MENU.

ARROWS. When the pen has been scanned and a point or cursor has been left on the screen, you may wish to reposition it to pixel accuracy. To do this you must point the tip of the pen at the box to the right hand side of the appropriate arrow. Hold the pen on the box

until the desired position has been achieved. When completed draw the pen down to the black area below the box to stop movement of the point or cursor.

ERASE. Point the pen at the box to the right hand side of ERASE in the SECONDARY MENU to ERASE whatever you have just drawn.

MENU. Point the pen at the box to the right hand side of MENU in the SECONDARY MENU to return to the MAIN MENU.

LINE

1. Select LINE option.
2. Select SCAN on SECONDARY MENU.
3. Place tip of pen at the point on the screen where you require one end of line to appear.
4. A small point will appear on the screen at the selected position.
5. You may now reposition this point by using ARROWS on SECONDARY MENU.
6. Select SCAN on SECONDARY MENU.
7. Place tip of pen at the point on the screen where you require other end of line to appear on the screen.
8. A line will now be drawn on the screen.
9. You may now reposition the last point by using the ARROWS on the SECONDARY MENU. While the pen is pointed at an arrow box the line will be continuously redrawn until pen is withdrawn.
10. Repeat to draw more lines or point pen at MENU to return to MAIN MENU.

BAND

1. Select BAND option for "Banding" lines.
2. Select SCAN on the SECONDARY MENU.
3. Place tip of pen at the required start point on the screen.
4. A small point will appear on the screen at the selected position.
5. You may now reposition this point by using the ARROWS on the SECONDARY MENU.
6. Select SCAN on the SECONDARY MENU.
7. Place tip of pen at second required position of line.
8. You may now reposition second point by using the ARROWS on the SECONDARY MENU.

9. Continue sequence as 2, 3, 4 & 5 above as often as required to achieve shape required.

RAYS

1. Select RAYS option.
2. Select SCAN on the SECONDARY MENU.
3. Place tip of pen at the point on the screen where you wish centre of RAYS to appear.
4. A small point will appear on the screen at the selected position.
5. You may now reposition this point by using the ARROWS on the SECONDARY MENU.
6. Select SCAN on the SECONDARY MENU.
7. Place tip of pen at the point on the screen where you wish the end of the first RAY line to appear.
8. You may now reposition this point by using the ARROWS on the SECONDARY MENU.
9. Continue sequence as 6, 7 & 8 to draw as many RAY lines as required.

BOX

1. Select BOX option.
2. Select SCAN on the SECONDARY MENU.
3. Place tip of pen at the point on the screen where you wish one corner of the box to appear.
4. A small point will appear on the screen at the selected position.
5. You may now reposition this point by using the ARROWS on the SECONDARY MENU.
6. Select SCAN on the SECONDARY MENU.
7. Place tip of pen at the point where you wish opposite corner of box to appear on screen.
8. You may now reposition this point by using the ARROWS on the SECONDARY MENU. Box will be continuously redrawn until pen is withdrawn from ARROW box.

TRIANGLE

1. Select TRIA option.
2. Select SCAN on the SECONDARY MENU.
3. Place tip of pen at the point on the screen where you wish one corner of your Triangle to appear.
4. A small point will appear on the screen at the selected

- position.
5. You may now reposition this point by using the ARROWS on the SECONDARY MENU.
 6. Select SCAN on the SECONDARY MENU.
 7. Place tip of pen at the point where you wish second corner of your Triangle to appear.
 8. You may now reposition this point by using the ARROWS on the SECONDARY MENU.
 9. Select SCAN on the SECONDARY MENU.
 10. Place tip of pen at the point where you wish the third corner of your Triangle to appear.
 11. You may now reposition this point by using the ARROWS on the SECONDARY MENU. The Triangle will be continuously redrawn until the pen is withdrawn from the arrow box.

CIRCLE

1. Select CIRCLE option.
2. Select SCAN on the SECONDARY MENU.
3. Place tip of pen at the point where you wish centre of your Circle to appear.
4. A small point will appear on the screen at the selected position.
5. You may now reposition this point by using the ARROWS on the SECONDARY MENU.
6. Select SCAN on the SECONDARY MENU.
7. Place tip of pen at the point where you wish the circumference of the Circle to be. This point must be in the "Y" direction, i.e. above or below the centre point.
8. You may now alter the diameter of your Circle by using the "UP" and "DOWN" ARROWS on the SECONDARY MENU. The Circle will be continuously redrawn until the pen is withdrawn from the arrow box.

ELLIPSE

1. Select ELLIP option.
2. Select SCAN on the SECONDARY MENU.
3. Place tip of pen at the point where you wish the centre of your Ellipse to appear on the screen.
4. A small point will appear on the screen at the selected position.
5. You may now reposition this point by using the ARROWS on the SECONDARY MENU.

6. Select SCAN on the SECONDARY MENU.
7. Place tip of pen at the point where you wish the circumference of your Ellipse to appear.
8. You may now reposition this point by using the ARROWS on the SECONDARY MENU. The Ellipse will be continuously redrawn until the pen is withdrawn from the arrow box.

CUBE

1. Select CUBE option.
2. Select SCAN on the SECONDARY MENU.
3. Place tip of pen at the point on the screen where you wish the bottom left hand corner of your CUBE to appear.
4. A small point will appear on the screen at the selected position.
5. You may now reposition this point by using the ARROWS on the SECONDARY MENU.
6. Select SCAN on the SECONDARY MENU.
7. Place tip of pen at the point on the screen where you wish the top right hand corner of the front view of your CUBE to appear on the screen.
8. A box will now appear on the screen.
9. You may now reposition the last point selected by using the ARROWS on the SECONDARY MENU. The box will be continuously redrawn until the pen is withdrawn from the arrow box.
10. Select SCAN on the SECONDARY MENU.
11. Place the tip of the pen at the point on the screen where you wish the top right hand of the CUBE to appear.
12. CUBE will now be drawn on the screen.
13. You may now reposition the last point by using the ARROWS on the SECONDARY MENU. CUBE will be continuously redrawn until the pen is withdrawn from the arrow box.

POINT

1. Select POINT option.
2. Select SCAN on the SECONDARY MENU.
3. Place tip of pen at the point on the screen where you wish POINT to appear.
4. You may now reposition the point by using the ARROWS on the SECONDARY MENU.

The POINT option is useful if you wish to set locations on the screen as

a guide for other operations. Remember to note the "X" and "Y" coordinates given at the left hand side of the SECONDARY MENU.

Before entering the TEXT option:— Select GREEN on MAIN MENU for GREEN TEXT on a BLACK screen. Select BLACK or INVERT for BLACK TEXT on a GREEN screen.

TEXT

1. Select TEXT on the MAIN MENU.

The TEXT option is used by selecting from a sub-menu which will appear on the screen when TEXT is selected.

2. Select EFFECT — use both Green & Black — use Green only or use Black only.
3. Select required size in the "X" direction, i.e. width of TEXT. Width size will be multiplied by the number selected.
4. Select required size in the "Y" direction, i.e. height of TEXT. Height size will be multiplied by the number selected.
5. Select direction of print:— OFF for normal or 90° - 180° - 270° rotation to the right.
6. Select PRINT TEXT or INVERT TEXT and cursor will appear in top left hand corner of the screen. INVERT TEXT will INVERT each colour if BOTH has been selected and will INVERT GREEN or BLACK portions of TEXT depending which has been selected.
7. Move cursor to desired start point by using cursor arrow keys on the keyboard.
8. Input the required text from the keyboard in the normal way. Use cursor arrow keys to move cursor from line to line. Press RETURN key on the keyboard to return to TEXT MENU.
9. Point tip of pen at RETURN TO MENU box to return to MAIN MENU.

COPY

1. Select COPY function on the MAIN MENU.
2. SECONDARY MENU will now appear at the bottom of the screen.
3. Select SCAN on the SECONDARY MENU.
4. Place tip of pen at the point on the screen where you wish the bottom left hand corner of the area to be copied is positioned.
5. A small point will appear on the screen at the selected position.
6. You may now reposition this point by using the ARROWS on the

SECONDARY MENU.

7. Select SCAN on the SECONDARY MENU.
8. Place tip of pen at the point on the screen at the top left hand corner of the area to be copied.
9. A box will now appear on the screen surrounding the area to be copied.
10. You may now reposition the last point selected by using the ARROWS on the SECONDARY MENU.
11. The box will be continuously redrawn until the pen is withdrawn from the arrow box.
12. Select MENU on the SECONDARY MENU.
13. COPY MENU will now appear at the top of the screen.
14. Select EFFECT — use both Green & Black — use Green only or use Black only.
15. Select required size of COPY in the “X” direction, i.e. Width of COPY. Width of COPY will be multiplied by the number selected.
16. Select required size of COPY in the “Y” direction, i.e. Height of COPY. Height of COPY will be multiplied by the number selected.
17. Select from MIRROR. OFF if MIRROR COPY is not required. X ONLY will turn COPY left to right. Y ONLY will turn COPY upside down. X & Y will turn the COPY both left to right and upside down.
18. Select PLACE COPY or INVERT COPY.
19. Select SCAN on the SECONDARY MENU.
20. Place tip of the pen at the point on the screen where you wish the bottom left hand corner of your COPY to appear.
21. The words SCAN ARMED will appear at the bottom of the screen and remain there until the COPY has been drawn.
22. You may now reposition the COPY by using the ARROWS on the SECONDARY MENU. The COPY will be continuously redrawn by one pixel to the arrows direction until the pen is withdrawn from the arrow box.

If the COPY drawn is too far from desired position it may well be better to select ERASE on the SECONDARY MENU and make a new COPY. The COPY option may be used to create copies of any area on the screen and with graphics or TEXT.

FILL

1. Select FILL option on the MAIN MENU.
2. FILL MENU will appear at the top of the screen.

3. Select INVERT to INVERT all the FILL patterns in the FILL MENU.
4. Select a FILL pattern from the FILL MENU.
5. Select FILL AREA.
6. Select SCAN on the SECONDARY MENU.
7. Place tip of pen at a point on the screen within the enclosed area to be filled.
8. Select SCAN on the SECONDARY MENU.
9. Area will now be filled in the selected pattern.
10. Select MENU on the SECONDARY MENU to return to the FILL MENU.

USER DEFINED PATTERNS

It will be noticed that the two right hand squares on the bottom line of the FILL MENU do not contain patterns. These are intended for use by the user to define custom patterns. Each pattern is made up of a 8 x 16 grid. User patterns must be designed in the top left hand corner of the screen. 1st is taken from 0 to 15 by 0 to 7. 2nd is taken from 16 to 31 by 0 to 7. Use the ZOOM option to create your user defined patterns and when completed select the LOAD on the FILL MENU. The defined patterns will then appear on the bottom column of the FILL MENU.

Please note that only the ERASE option on the MAIN MENU will operate in the FILL option.

WASH

1. Select WASH option on the MAIN MENU.
2. Select SCAN on the SECONDARY MENU.
3. Place tip of pen at a point on the screen where the bottom left hand corner of the WASH area is to be positioned.
4. A small point will appear on the screen at the selected position.
5. You may now reposition this point by using the ARROWS on the SECONDARY MENU.
6. Select SCAN on the SECONDARY MENU.
7. Place tip of pen at a point on the screen where you wish the opposite corner of the WASH area to appear.
8. WASH area will now appear on the screen.
9. You may now reposition the last point by using the ARROWS on the SECONDARY MENU.
10. WASH area will now appear in the selected colour.

The WASH option can be used to cover an original area which has been moved to another part of the screen by use of the COPY option.

ZOOM

1. Select the ZOOM option on the MAIN MENU.
2. Select size of ZOOM required.
3. Select SCAN on the SECONDARY MENU.
4. Place tip of pen at a point on the screen where you wish the bottom left hand corner of your ZOOM area to be.
5. A box will appear surrounding the area to be ZOOMED.
6. The box may be repositioned by using the ARROWS on the SECONDARY MENU.
7. Select SCAN on the SECONDARY MENU.
8. The area selected will now be ZOOMED and a copy of original size will appear at the left hand bottom corner of the screen. ZOOM EDIT menu will appear at the bottom of the screen.
9. Carry out the editing function by pointing the pen at an arrow box in the EDIT MENU to cause the small cursor to travel from the top left hand corner of the screen to the area to be edited.
10. Place the cursor over the pixel to be altered and select BLACK or GREEN on the EDIT MENU. Pixel colour will then have changed. Continue this operation until editing is completed. Please note that the original size copy of the ZOOM area in the left hand bottom corner of the screen will be automatically changed as the ZOOM area is edited.
11. Select MENU on the EDIT MENU to return to the MAIN MENU.

GRID

1. Select GRID option from the MAIN MENU.
2. Select SCAN on the SECONDARY MENU.
3. Place tip of pen at a point on the screen where the left hand bottom corner of the GRID area is to appear.
4. A small point will appear on the screen at the selected position.
5. You may now reposition this point by using the ARROWS on the SECONDARY MENU.
6. Select SCAN on the SECONDARY MENU.
7. Place tip of pen at a point on the screen where you wish the top left hand corner of the GRID area to appear.
8. A box surrounding the GRID area will now appear on the screen.
9. You may now reposition the last point by using the ARROWS on the SECONDARY MENU.
10. Select SCAN on the SECONDARY MENU.
11. Place the tip of the pen below the top line of the box and to the right of the right hand vertical line of the box. The position of this

point will determine the dimensions of the intersecting lines of the GRID in the "X" and "Y" axis.

12. You may now reposition the lines on the GRID area by using the ARROWS on the SECONDARY MENU.

The repositioning of the GRID lines can result in the vertical or the horizontal lines being removed completely from the GRID area which can be very useful in many applications. The size of the GRID area can be as small as required or of full screen size. GRIDS may be produced on top of previously produced GRIDS and an endless variety of GRID types can be drawn by use of this option.

SCREEN INVERSE

1. Select SCRINV to inverse whole screen. Any drawings or text on screen will also INVERSE.

PRINT

1. Ensure that the printer is loaded with paper.
2. Select PRINT on the MAIN MENU.
3. PRINT MENU will now appear at the top of the screen.
4. Select SIZE of PRINT required.
5. Select DENSITY of PRINT required.
6. Select DIRECTION of PRINT required.
7. Select either PRINT WHOLE or PRINT PART. If PRINT WHOLE is selected then PRINTING will commence.

If you wish to abort PRINTING then press and hold down SPACE BAR. After a short delay printing will cease and PRINT MENU will reappear at top of screen.

PRINT PART

1. Select PRINT PART on PRINT MENU.
2. SECONDARY MENU will appear at bottom of screen.
3. Select SCAN on SECONDARY MENU.
4. Place tip of pen at a point on the screen which is the bottom left hand corner of the area you wish to print.
5. You may now reposition this point by using the ARROWS on the SECONDARY MENU.
6. Select SCAN on the SECONDARY MENU.
7. Place the tip of the pen at a point on the screen which is the top right hand corner of the area you wish to print.
8. You may now reposition the last point by using the ARROWS on the SECONDARY MENU.
9. Select SCAN on the SECONDARY MENU.

10. PRINT PART MENU will now appear at the top of the screen.
11. To select the exact position along the printer carriage at which you require to start your PRINT PART you must place the tip of the pen on the box alongside either BACKWARD or FORWARD. The number of columns along the carriage will be shown on the PRINT PART MENU.
12. Select PRINT PART to commence printing.
13. PRINT PART MENU will reappear at the top of the screen when printing has been completed.
14. Select MENU to return to the PRINT MENU.

On the NORMAL VERTICAL WHOLE SCREEN PRINT the last 8 pixels at the bottom of the screen are ignored, i.e. from 0 to 239 of the "Y" axis are printed.

If the message PRINTER ON LINE appears along the bottom of the screen — please press EXIT key on the keyboard to return to the PRINT MENU.

SOME USEFUL INFORMATION

There are 480 screen columns on the full width of the printer carriage.

Use 60 columns per inch for positioning.

HORIZONTAL = 90 pixels per inch in the "X" direction and 39 pixels per inch in the "Y" direction.

HORIZONTAL SMALL = 120/inch "X" direction and 72/inch "Y" direction.

VERTICAL = 30/inch "X" direction and 72/inch "Y" direction.

VERTICAL SMALL = 60/inch "X" direction and 72/inch "Y" direction.

You should use these figures when wishing to position a PART SCREEN area accurately onto a sheet.

ERASE

Selection of the ERASE option on the MAIN MENU will ERASE everything drawn on the screen since the last option was selected.

GREEN

Select GREEN on the MAIN MENU for drawing on a BLACK screen.

BLACK

Select BLACK on the MAIN MENU for drawing on a GREEN screen.

INVERT

Selecting INVERT will automatically invert anything drawn in a THIN line. For all other LINE TYPES a "mottled" effect will be achieved. These various "mottled" effects can be used as BRUSHES in the DRAW option. In the DOTTED LINE the INVERT option will enforce the printing of both GREEN and BLACK dots. By experimenting with these options you will achieve many different results:— Select INVERT - SOLID — any LINE except THIN and DRAW will give BRUSH effects of various "mottled" patterns.

CURSOR

1. Select CURSOR on the MAIN MENU.
2. CURSOR MENU will now appear at the top of the screen.
3. Select either POINT CURSOR or TARGET CURSOR on the CURSOR MENU.
4. Select MENU to return to the MAIN MENU. All options except DRAW that use a CURSOR will now have the selected type.

EXIT

1. Select EXIT on the MAIN MENU.
2. EXIT MENU will now appear at the top of the screen.
3. Select EXIT TO CP/M or RETURN TO MENU.

NEW

1. Select NEW on the MAIN MENU.
2. NEW MENU will now appear at the top of the screen.
3. Select NEW screen IN GREEN or IN BLACK or ABORT AND RETURN TO MAIN MENU.

DISK

1. Select DISK on the MAIN MENU.
2. DISK MENU will now appear at the top of the screen.
3. Select SAVE to SAVE screen to disk.
4. Select LOAD to LOAD screen from disk.
5. Select ERASE to ERASE a file off the current disk with current file name.
6. Select DIRECTORY to obtain a full DIRECTORY of disk in current use.
7. Select INPUT NAME to change file name — only legal names are accepted.
8. Select EXECUTE when the other options on the DISK MENU have been selected.

Error messages will appear on screen if any problems arise during the use of this option. If an error does occur an EXIT BAR will appear at the bottom of the screen to allow you to abort.

DELAY

1. Select DELAY on the MAIN MENU.
2. DELAY MENU will now appear at the top of the screen.
3. Select DELAY time required during SCAN operation.
4. Select RETURN TO MAIN MENU.

N.B. Shorter delay times will be required as you gain experience with pen use.

DRAW

1. Select DRAW on the MAIN MENU.
2. DRAW MENU will now appear at the bottom of the screen.
3. Select DRAW on the DRAW MENU.
4. Place tip of the pen at a point on the screen where you wish to start drawing.
5. A cursor will appear under the tip of the pen.
6. DRAW by moving the pen **smoothly** and at a slow speed in the required direction.
7. To stop drawing you must take the pen away from the screen and place the tip of the pen on the EXIT bar at the bottom of the screen.
8. Select ERASE to ERASE the last thing drawn on the screen.
9. Select RETURN TO MAIN MENU when you have finished with DRAW option.

The DRAW option is intended as a support to the GEOMETRIC options and should not be used to draw geometric shapes. Always draw smoothly and keep the pen within the DRAW cursor all the time. Please practise with this option to achieve reasonable results.

We hope that the foregoing INSTRUCTIONS are sufficient to give you a reasonable start in the use of the CADMASTER program and light pen. If you need help or advice regarding the pack please contact Trojan on the telephone number printed on the pen or at the address printed on the booklet and on the back of the box in which this product is packed. We would be pleased to hear from any user who finds novel uses for this pack and from any programmer who has written any programs for use with this pack.

