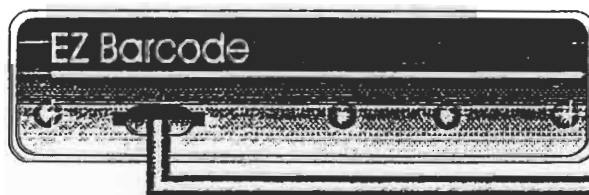
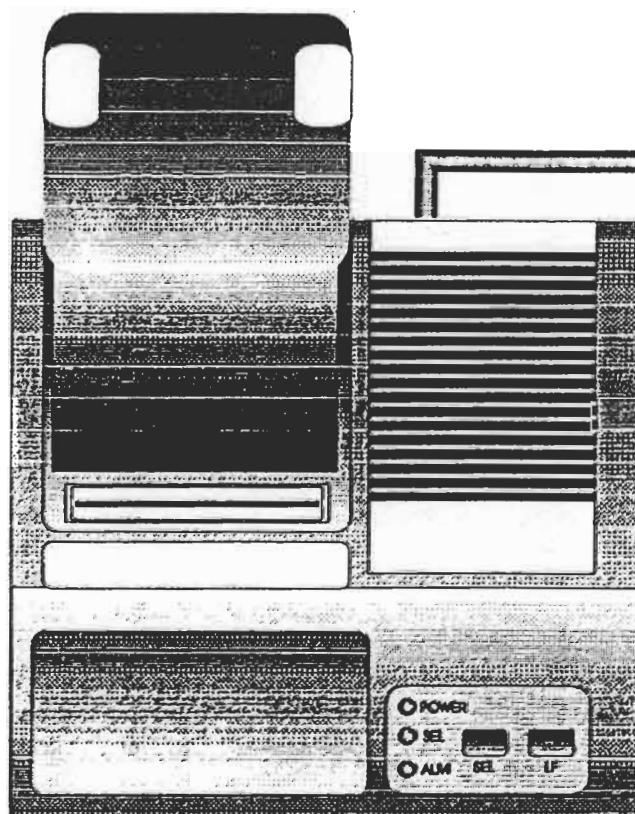
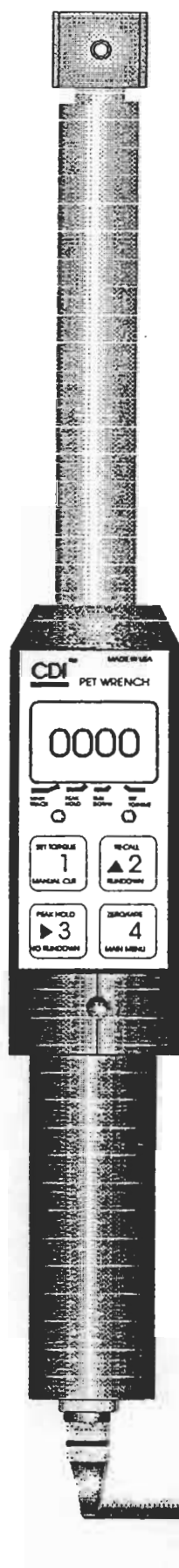


C PET WRENCH

VERSION



INTRODUCTION

C series

The C series is designed to be used on critical fasteners where high confidence and 100% traceability are required.

The C series wrench is used in conjunction with a small belt mountable computer/controller called the PET BOX.

The C series wrench can be used without being attached to the PET BOX but with no data logging, operator prompting and traceability functions.

The PET BOX is used to fully program and control the C series PET wrench. It has an alphanumeric display for operator instructions and a bar code reader interface for quick and reliable data input. With the C series PET wrench the most complicated torquing procedure with multiple bolts and torque levels is fully automatic and 100% traceable. **It virtually eliminates operator error variables by eliminating the need for the operator to set the torque wrench or keep track of bolt numbering. Even the data transfer is automatic upon reaching the required torque value.**

PRECAUTIONS

(1) In order to obtain the best possible performance from your new electronic torque wrench, read this manual thoroughly before operation.

(2) Be careful not to over-torque the unit. This is especially important on low torque range models. Damage due to over-torquing is not covered by warranty.

(3) Do not attempt in any way to disassemble the unit.

(4) The unit is water resistant however do not submerge in liquid.

(5) Connect and disconnect cables only when the power is turned off.

MAINTENANCE

Calibration

Depending on use, the torque wrench should be checked for calibration at a minimum of once per year. Many users have company procedures that require calibration checks every three months.

Refer to the CALIBRATION section of this manual for calibration instructions.

Cleaning

Never clean the torque wrench with gasoline or any organic solvent. Use a damp rag with a mild detergent such as "409".

PROGRAMMABLE ELECTRONIC TORQUE WRENCH

PROBLEMS-HELP! CALL CDI 1-800-525-6319

C SERIES OPERATION

SET UP

The PET wrench batteries can be charged in two ways: 1. Plug the wrench directly into a 110v wall outlet using the wrench power adapter supplied, or 2. Plug the wrench into the PET BOX with the supplied interface cable while the PET BOX is plugged into a 110v electrical outlet with the PET BOX power adapter. Make sure the quick connector on the handle of the wrench is fully engaged. The wrench batteries and the PET BOX batteries will charge simultaneously. The system will charge quicker if both the wrench and the PET BOX are turned off. Charging time for both units is approximately 8 hours.

STAND ALONE MODE

The PET C series wrench comes in two parts; The wrench and the PET BOX. The wrench can be used without the PET BOX but with limited data logging and control capabilities (you will find that the limited capabilities in this configuration still surpass the capabilities of other electronic torque wrenches).

To use the wrench without the PET box simply turn it on without the PET box attached.

The PET wrench will always default to Track mode when turned on.

TRACK MODE

In the Track mode the display will track up and down with the applied load. You will note that the small icon (upside down triangle) on the display will point to MAIN/TRACK. This icon will always prompt you of what mode the wrench is currently in.

Note that the analog bar graph at the top of the display will increase and decrease as torque is applied. Full scale for the graph in Track mode is the maximum torque range of the wrench.

IMPORTANT

The Track mode is also the **Main mode** where all other operating functions such as Peak Hold and Set Torque are accessed from. This is why the icon points to **MAIN/TRACK**. Always return to the MAIN/TRACK mode when any changes are to be made to any parameters or operating modes. To return to MAIN/TRACK mode from any other

mode press key 4  until the icon points to MAIN/

TRACK. If you press key 4  while in MAIN/

TRACK mode the wrench will automatically ZERO tare. When the wrench is zeroing the display will show "---" until a stable zero is sensed and then show "000.0". Do not apply any load to the wrench during zeroing otherwise it will never sense a stable zero.

PEAK HOLD MODE

From the MAIN/TRACK mode press key 3  to enter Peak Hold mode. The icon will move to PEAK HOLD. In Peak Hold mode the wrench will hold the maximum torque value on the display until key 1 is

pressed. Key 1  (Manual Clear), when pressed in any mode that holds data on the display (Peak Hold and Set Torque mode), will clear the display.

Press key 4  to return to MAIN/TRACK when finished with Peak Hold mode.

SET TORQUE MODE

The Set Torque mode will allow the operator to set a minimum and maximum torque range. Upon reaching the minimum torque value the green LED will light and the buzzer will sound one long tone. Upon exceeding the maximum torque value the red LED will light and the buzzer will sound intermittent tones. In addition, upon exceeding the maximum, the wrench display will show "loos". Apply a reverse torque (loosen the over-torqued fastener) and the display will clear. This forces the operator to apply a proper torque.

Enter the Set Torque mode from **MAIN/TRACK mode**

by pressing key 1 . The display will show the current minimum set torque value. One digit will be blinking (NOTE: If the units have been changed or no value has been previously entered then the set torque point will automatically be displayed as zero). Change the value of

the blinking digit by pressing key 2 . Change the

active digit by pressing key 3 . When the display reads the correct minimum set torque value press key

PROGRAMMABLE ELECTRONIC TORQUE WRENCH

1  to enter it. The maximum torque value will now be displayed. The active digit will be blinking. Change this value as you did the minimum torque value and press key

1  to enter it. After pressing key 1 the display will show "2-3". This means that the wrench is asking you to press key 2 RUNDOWN or key 3 NO RUNDOWN (Before pressing key 2 or key 3 read the next two sections).

If you press key 3  (no rundown) the icon will jump to SET TORQUE and the wrench will be set to the programmed min and max set points.

If you press key 2  the wrench will be in Set Torque **Rundown** mode.

Set Torque-No Rundown

Apply a torque to the wrench that exceeds the minimum set torque value. The wrench will light the green light and the buzzer will sound. Clear the display by pressing key 1 . Now apply a torque that exceeds the maximum torque value. The red LED will light, the display will flash and the buzzer will sound intermittent tones. The display will show "loos" and the wrench will expect a reverse torque before continuing. To set a new torque value return to MAIN/TRACK mode by pressing key 4  and follow the above Set Torque procedure.

Set Torque-Rundown

If you press key 2  when prompted "2-3" the wrench will be in the Set Torque **Rundown** mode. In this mode the wrench will automatically take a thread friction reading (rundown or prevailing torque) and add that value to the set torque value, thus compensating for frictional losses resulting in a more accurately tightened joint.

After selecting Rundown by pressing key 2 (at the "2-3" prompt) the wrench will be in a mode (much like Track mode) that will allow the operator to turn the fastener to a point where the rundown reading should be taken. This point is usually when all threads are engaged and prior to the clamping position. When ready to take a rundown reading, remove the wrench from the fastener and press key 2 (you will notice a negative sign in front of the display will appear). Now put the wrench on the fastener and turn the fastener slowly and evenly with the wrench.

The wrench is programmed to automatically sense when the rundown friction torque is at the maximum. Upon sensing a rundown torque value the wrench will sound a tone and the negative sign will disappear. Continue to tighten the fastener to the programmed set torque points.

It is very important that the operator pull on the wrench evenly and smoothly while taking a rundown reading.

Rundown can only be used for lock nuts that have a significant prevailing torque that you wish to compensate for. For example, if the set torque value is 100 in lb and the wrench detects thread friction (rundown) of 30 in lb then the wrench will actually tighten the bolt to 130 in lb therefore resulting in a true 100 in lb to the joint. The display however will still read 100 in lb.

CHANGING UNITS

The units are displayed with a unit code. To display the unit code press key 3 and key 4 simultaneously. The display will show "U-X" where "X" is the value of the current unit setting. To change the unit code press key 1. To save the new unit code and return to the Main mode press key 4.

The following are the available units and the corresponding code:

- 1-In lb
- 2-Ft Lb
- 3-In oz
- 4-Nm
- 5-Cmkg
- 6-dNm
- 7-nmkg

Make sure that the units correspond to the range of the wrench. For example it would not be practical to set a 50 In lb wrench to the Ft Lb unit code. Also, if the unit code is changed the min and max set torque points must be re-entered for the new units selected.

PET with PET BOX

The quickest way to learn how to use the PET wrench with the PET BOX is to go through an exercise.

For this exercise all data will be entered manually via the key board on the PET BOX.

EXERCISE USING PET BOX

You will need to have a method for applying torque to the drive of the torque wrench to simulate the actual tightening of a fastener. If the wrench you are using is in the low torque range it is possible to use an adjustable or socket wrench to apply the torque. Otherwise carefully clamp the square drive in a vice and apply the desired torque by pushing the wrench handle.

For this exercise you will be tightening two bolts. Each bolt must be tightened to one level of torque (some applications require multiple levels of torque for each bolt such as on flanges). The fasteners must be tightened in a defined sequence (therefor the bolts are numbered) and traceability is important so all data must be logged.

PARAMETERS :

The operator ID number is 8732.

The work order number is 453.

The assembly/part number is 221.

The torque minimum is 110 in lb, the maximum is 125 in lb.

No rundown torque measurement is required.

NOTE: When setting the wrench with the PET BOX make sure the wrench is in the MAIN/TRACK mode. This is the mode the wrench is in when it is turned on. If not in MAIN/TRACK mode press key #4. The icon on the wrench should point to MAIN/TRACK.

Step 1. Press the SET DATA key on the PET BOX. (This lets the wrench know it will be getting information from the box).

Enter 8732 by pushing the proper keys. Press the ENTER key. If you make a mistake press the back space key to make corrections before pressing the ENTER key.

Step 2. Enter work order number 453.

Step 3. Enter assembly number 221.

Step 4. Enter 2 for the number of bolts.

Step 5. Enter 1 for the number of levels.

Step 6. Enter the number 1 for inch pounds.

Step 7. Press the NO key for automatic rundown (prevailing) torque measurement.

Step 8. The PET Box now displays "Stand alone?". Answering YES or NO will tell the PET BOX whether or not you will be detaching the wrench from the PET BOX during the torquing operation. If the PET BOX remains attached it will give operator instructions during use, including automatically up-loading and down-loading torque data (this is very convenient for multiple bolt

multiple level operations).

In stand alone mode the wrench will automatically step through the programmed sequence as if the box were attached, however the data will be stored to wrench memory for later transfer rather than immediately. Also, the operator will not have the PET BOX prompting them on the bolt number and current torque level. It is recommended that for complex assemblies the wrench should always be attached to the PET BOX. This will give maximum assurance that all fastening operations were done correctly.

Press the NO key, (for this example we will keep the PET BOX attached).

Step 9. Enter the minimum torque limit (110.0), and the maximum torque limit (125.0) (be sure to enter the decimal point).

The torque data will now be automatically sent to the wrench and the wrench will be automatically set to the programmed torque level. The icon (small upside down triangle) on the display of the wrench will move to SET TORQUE. The PET BOX will now prompt the operator with "Bolt 1 level 1" (the current bolt number and torque level).

Step 10. Apply a torque to the wrench. The wrench display will track up as the applied torque is increased. The bar graph on the top of the wrench will also increase and decrease as the torque is applied.

Upon reaching the minimum set torque value for the first bolt the wrench will sound a tone and the green light will light. The actual torque reading will be automatically sent and logged to the PET BOX and the PET BOX display will now read "Bolt 2 level 1".

Apply the torque to bolt 2 as prompted by the PET BOX.

If you overtighten any of the bolts the wrench will display "LOOS". It will wait for the operator to reverse the torque (loosen the bolt) and then reset to the original set torque value.

After the second bolt is successfully tightened the PET BOX will automatically create a file with all related data included. The PET BOX will display "Main files: 1" Multiple files will be numbered consecutively.

As you can see, once the operator has set the wrench, all programming and data transfer is automatic.

To output the torque data to a serial printer connect the PET BOX to the printer using the printer interface cable. Press the TRANSMIT PRINTER key on the PET BOX. The PET BOX will ask if you want to print all files or the last file. If you wish to store or transfer "Main files" to a computer, attach the appropriate interface cable and press the TRANSMIT COMPUTER key on the PET BOX. Refer to the specifications section of this manual for additional information on hardware and software requirements for

interfacing to a computer or printer.

ERASING PET BOX MEMORY (FILES)

To erase the memory files stored in the PET BOX press the NO key while the PET BOX displays "MAIN FILES: X" (where "X" is the number of files in memory). The PET BOX will display "ERASE DATA?". Press the YES key and all data will be erased. NOTE: all files must be cleared at the same time.

CHANGE PET BOX INPUT DATA

To change or view PET BOX data fields such as operator ID# or the current set torque points without having to re-enter all data press the DISPLAY DATA key. The current information field will be displayed. Press the ENTER key if the displayed field is correct. Press the BACK SPACE key to change the current setting. Once you have made the change press the ENTER key once to enter it and once again to go the next data field.

RE-SENDING DATA TO THE PET WRENCH

To re-send data to the PET wrench (for repetitive operations) press the transmit wrench key on the PET BOX.

INTERRUPTING A SEQUENCE WHEN USING THE

PET BOX

At times it may be necessary to interrupt a torquing sequence and save the partial data when using the PET BOX.

For example: you have programmed the wrench, via the PET BOX, to tighten 100 bolts. However for some reason you want to end the sequence at 75 bolts. To do this Press the BACKSPACE key on the PET BOX while it is prompting with the bolt and level number. The PET BOX will display "QUIT CURRENT FILE? (Y/N). Press the YES key and the PET BOX will display "SAVE PARTIAL DATA ?" Press the YES key and a file will be created with the partial data. Interruptions can only be done with the PET BOX attached.

PET BOX KEY FUNCTIONS:

SET DATA Starts the data input cycle.

TRANSMIT WRENCH Transmits the current torque cycle data to wrench.

RECEIVE WRENCH Receives data from the PET wrench after completing a programmed torque cycle in the Stand alone mode.

TRANSMIT PRINTER Transmits all file data to a printer.

YES Answer yes to questions.

BACK LIGHT Used to turn on and off the illuminated display.

BACK SPACE Used to correct the displayed data.

TRANSMIT COMPUTER Used to transmit cycle data to computer.

DISPLAY DATA Used to display or change current torque cycle information .

SET CLOCK Used to set the internal clock or display current time.

SET UNIT Currently disabled.

NO Answers no to questions or Erases memory.

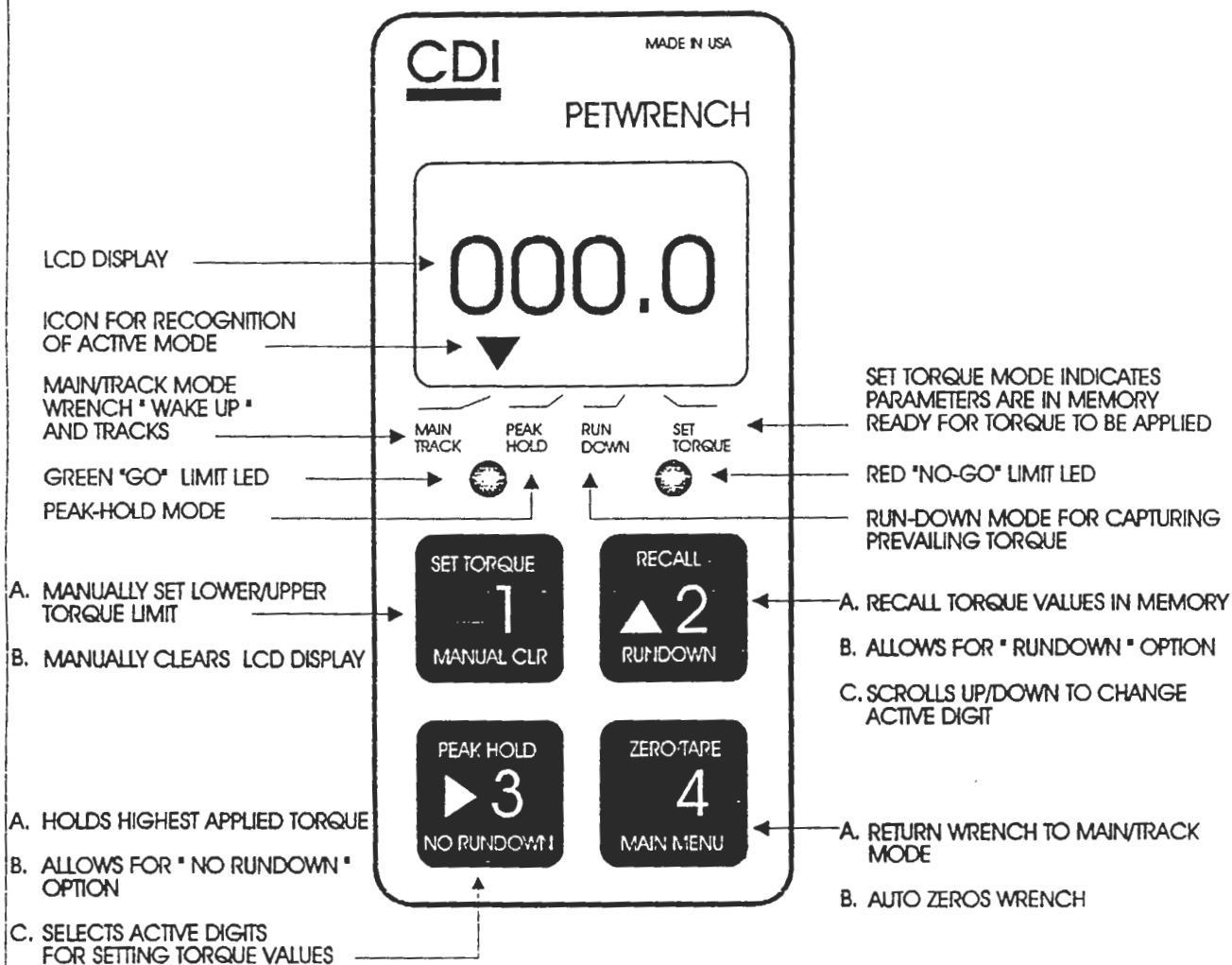
. Decimal Point.

ENTER Enters the current data or re-sends data to the wrench if "wrench not responding" is displayed on the PET BOX display.

GENERAL INFORMATION

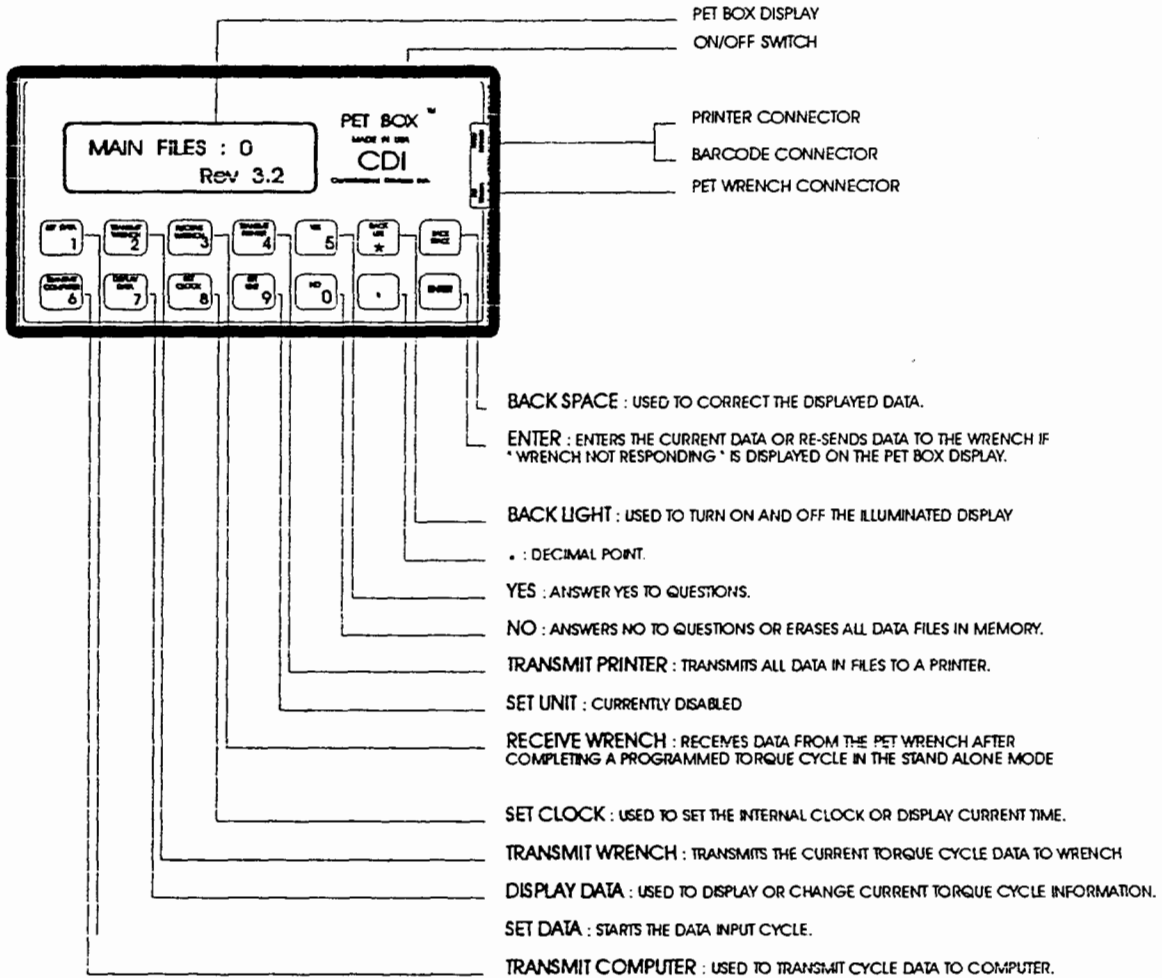
PET-C SERIES

KEYPAD FUNCTIONS:



PROGRAMMABLE ELECTRONIC TORQUE WRENCH

PET BOX KEY FUNCTIONS

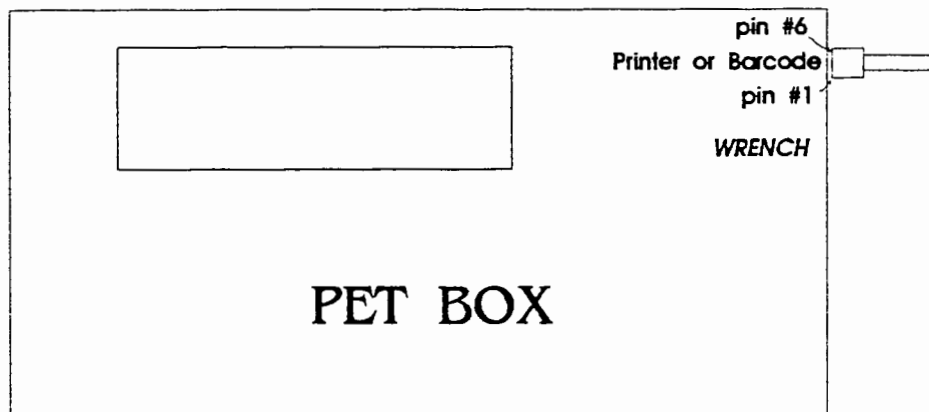


ELECTRICAL CONNECTIONS PETBOX TO PC

PET-BOX	IBM AT (9 pins female)	IBM PC/XT 25 PINS FEMALE
1- BLUE N/C	N/C	N/C
2- YELLOW TxD	3	2
3- GREEN N/C	N/C	N/C
4- RED RxD	2	3
5- BLACK DTR	4	20
6- WHITE Ground	5	7

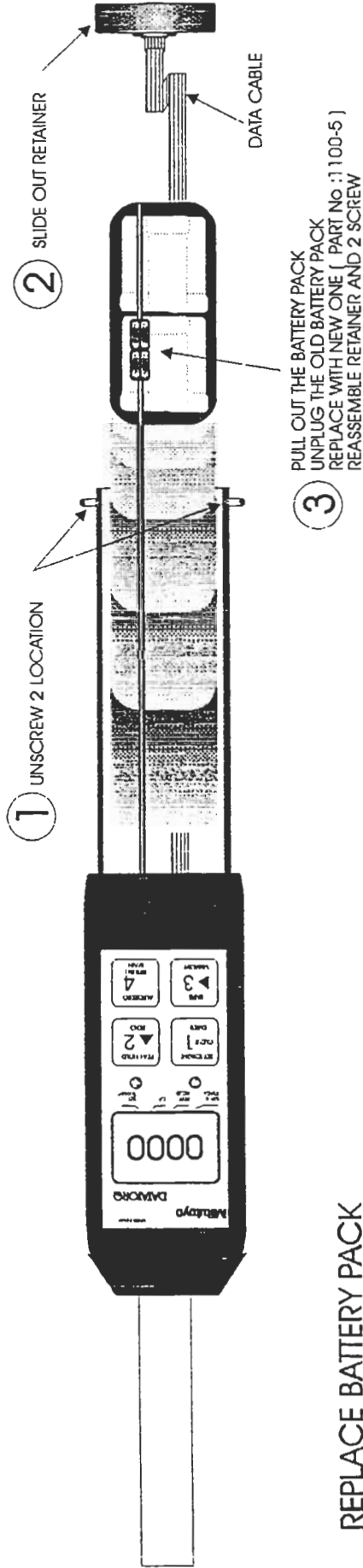
COMMUNICATION PARAMETERS

**9600 BAUD
8 DATA BITS
1 STOP BIT
NO PARITY**



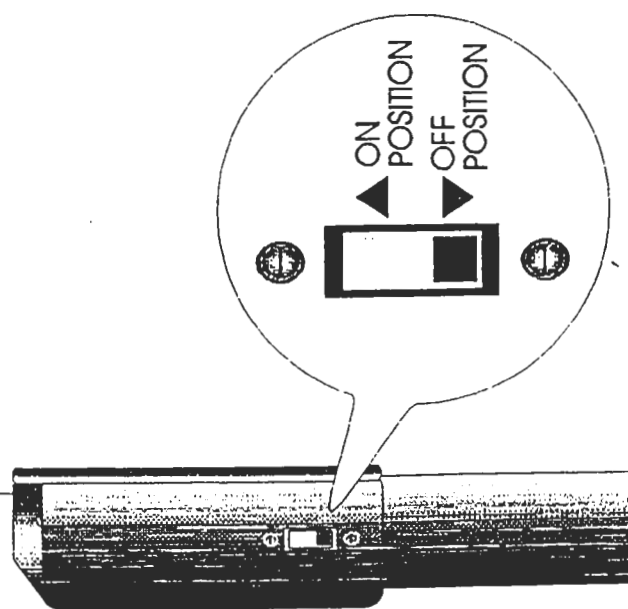
PETBOX TO SERIAL PRINTERS

PETBOX	SERIAL PRINTERS
1 - BLUE (N/C)	NOT CONNECTED
2 - YELLOW (TxD)	2
3 - GREEN (N/C)	NOT CONNECTED
4 - RED (RxD)	3
5 - BLACK (DTR)	20
6 - WHITE (GND)	7
	4&5
	6&8

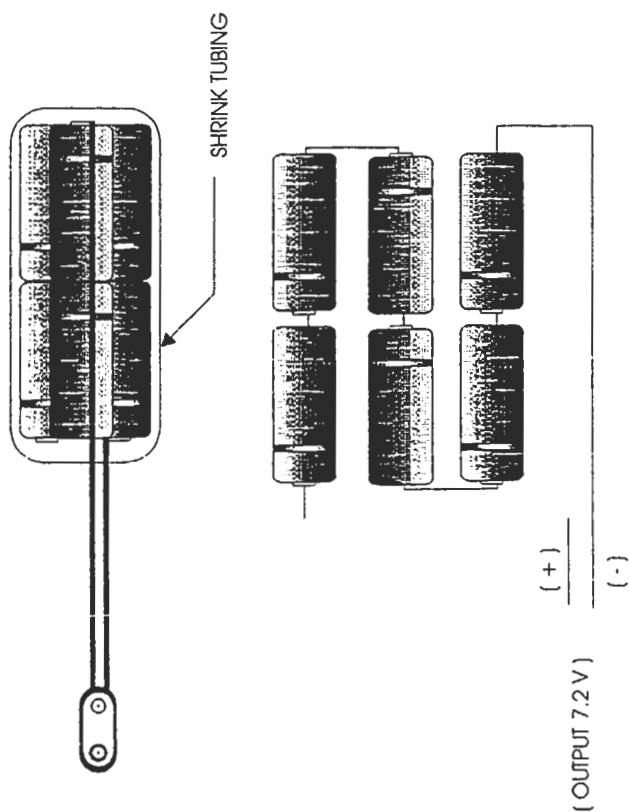


REPLACE BATTERY PACK

POWER SWITCH



BATTERY PACK PART No : 1100-5



CITIZEN PRINTER

SET UP DIP SWITCH FOR USE WITH
PET BOX

CITIZEN MODEL : DP562 (1,6,7 ON)

CITIZEN MODEL : DP560 (1,7,8 ON)

SET UP DIP SWITCH FOR USE WITH
DIGITEST OR PET R VERSION

CITIZEN MODEL : DP562 (1,6,7,9,10 ON)

BAUD RATE : 1200 , PARITY :8 DATA BIT

CITIZEN MODEL : DP560 (1,3,4,7,8 ON)

BAUD RATE : 1200 , PARITY :8 DATA BIT