

# ELLIOTT

# 903

Volume 2: PROGRAMMING INFORMATION

Part 2: PROGRAM DESCRIPTIONS

Section 2: QBINOUT (T. 17)

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## Chapter 1: DESCRIPTION

### 1.1 INTRODUCTION

#### 1.1.1 Purpose

QBINOUT (T. 17) is used to output a binary version of a stored program for re-input into the top end of the first store module. The program must be held in consecutive store locations.

#### 1.1.2 Internal Structure

When the binary version is read in by the initial instructions the program will be placed immediately below location 8180. Prior to output T. 17, however, the program may be held anywhere in store.

#### 1.1.3 Form of Distribution

The program is distributed as a machine-code tape for input by SYMBOLIC INPUT ROUTINE (SIR) or by T. 2.

#### 1.1.4 Method of Use

A parameter tape, which is read in by T. 2 or by SIR., is used to specify what locations are to be output.

QBINOUT runs in program level 1. It may be run in any store module.

### 1.2 FUNCTIONS

#### 1.2.1 Position of Stored Program to be Output

The program to be output may be held in any part of the store. When the binary version is input by the initial instructions it will be placed immediately below location 8180.

After reading all the words of the binary program, the initial instructions transfer control to location 8177 and the computer obeys whatever instruction is held there. This must be considered when a program is prepared for conversion to binary: suitable instructions to be held in 8177 are:

- |     |  |             |                             |
|-----|--|-------------|-----------------------------|
| (1) | a dynamic stop   | 8           | 8177                        |
| (2) | a routine to set up triggers<br>at the low end of store,<br>followed by a dynamic stop | 4<br>5<br>8 | TRIGGER<br>LOCATION<br>8179 |
| (3) | a jump to the start of the<br>program<br>(for a self-triggering program)               | 8           | START                       |

If the data to be converted by QBINOUT is not held immediately below the initial instructions; then care must be taken that instructions to be converted are stored correctly. All locations are treated as constants by QBINOUT and therefore absolute addresses must be used when preparing data for conversion.

#### 1.2.2 Parameter Tape

Two parameters must be placed in 39; and 40; of QBINOUT. The parameter tape is read in by T. 2 or SIR or the parameters may be placed by editing the library tape. If SIR is being used it is recommended that QBINOUT is located by the user at a known address by use of a patch. The parameter tape has the following format:

(for assembly by SIR)	(for translation by T. 2)	Comments
++M	& +M	39; of QBINOUT as an absolute address.
-n	* -n	n is the number of words to be output.
+N	+N	N is the address where the first word to be output is held.
<halt>	<halt>	End of tape symbol.

These parameters are not destroyed by running

QBINOUT.

### 1. 3 METHOD USED

The first three words output by QBINOUT will be placed in locations 8177 - 8179 by the initial instructions. These are followed by the binary version of the user's data.

These three words are 0 8179  
8 8182  
-n see Sub-paragraph 1. 2. 2

Note that these words will be overwritten by the user's program when it is read in by the initial instructions.

A location is output as 4 characters in which the parity bit is always zero:

- (1) a marker: L (non-parity-checked) is used.
- (2) bits 18 - 15 of the location.
- (3) bits 14 - 8 of the location.
- (4) bits 7 - 1 of the location.

### 1. 4 OPERATING INSTRUCTIONS

#### 1. 4. 1 For Assembly by S. I. R.

Load tape-reader with:	Enter at:
(1) Patch for QBINOUT	8
(2) QBINOUT	9
(3) Final %	9
(4) Parameter tape	8
(5) -	0; of QBINOUT

#### 1. 4. 2 For Translation by T. 2

Load tape-reader with:	Enter at:
(1) Directory for QBINOUT	8
(2) QBINOUT: ignore first and last groups of characters	10
(3) Parameter tape	8
(4) -	0; of QBINOUT

1.5 STORE USED

46 consecutive locations.

1.6 TIME TAKEN

QBINOUT operates at the speed of the tape-punch.