FORRTL

```
FFFFFFFFFF   000000   RRRRRRRR   RRRRRRRR   EEEEEEEEEE   AAAAAA    DDDDDDDD   KK      KK    000000
FFFFFFFFFF   000000   RRRRRRRR   RRRRRRRR   EEEEEEEEEE   AAAAAA    DDDDDDDD   KK      KK    000000
FF         00    00   RR    RR   RR    RR   EE           AA    AA  DD    DD   KK      KK   00    00
FF         00    00   RR    RR   RR    RR   EE           AA    AA  DD    DD   KK      KK   00    00
FF         00    00   RR    RR   RR    RR   EE           AA    AA  DD    DD   KK    KK     00    00
FF         00    00   RR    RR   RR    RR   EE           AA    AA  DD    DD   KK    KK     00    00
FFFFFFFF   00    00   RRRRRRRR   RRRRRRRR   EEEEEEEE     AA    AA  DD    DD   KKKKK        00    00
FFFFFFFF   00    00   RRRRRRRR   RRRRRRRR   EEEEEEEE     AA    AA  DD    DD   KKKKK        00    00
FF         00    00   RR  RR     RR  RR     EE           AAAAAAAAAA DD   DD   KK    KK     00    00
FF         00    00   RR  RR     RR  RR     EE           AAAAAAAAAA DD   DD   KK    KK     00    00
FF         00    00   RR    RR   RR    RR   EE           AA    AA  DD    DD   KK      KK   00    00
FF         00    00   RR    RR   RR    RR   EE           AA    AA  DD    DD   KK      KK   00    00      ....
FF          000000    RR    RR   RR    RR   EEEEEEEEEE   AA    AA  DDDDDDD    KK      KK    000000       ....
FF          000000    RR    RR   RR    RR   EEEEEEEEEE   AA    AA  DDDDDDD    KK      KK    000000       ....
                                                                                                       ....

LL          IIIIII    SSSSSSSS
LL          IIIIII    SSSSSSSS
LL            II      SS
LL            II      SS
LL            II      SS
LL            II      SS
LL            II        SSSSSS
LL            II        SSSSSS
LL            II            SS
LL            II            SS
LL            II            SS
LL            II            SS
LLLLLLLLLL  IIIIII    SSSSSSSS
LLLLLLLLLL  IIIIII    SSSSSSSS
```

FOR$READ_KO   f 4
                          - entry point for FORTRAN READ KEYED OBJ 15-SEP-1984 23:58:03   VAX/VMS Macro V04-00   Page   0   FO
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FOR$READ_KO
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- entry point for FORTRAN READ KEYED OBJ 15-SEP-1984 23:58:03 VAX/VMS Macro V04-00   Page 1
                                                6-SEP-1984 10:59:17 [FORRTL.SRC]FORREADKO.MAR;1   (1)

```
0000     1          .TITLE  FOR$READ_KO - entry point for FORTRAN READ KEYED OBJECT-FORMATTED
0000     2          .IDENT  /1-011/        File: FORREADKO.MAR  Edit: JAW1011
0000     3  ;
0000     4  ;****************************************************************************
0000     5  ;*                                                                          *
0000     6  ;*  COPYRIGHT (c) 1978, 1980, 1982, 1984 BY                                 *
0000     7  ;*  DIGITAL EQUIPMENT CORPORATION, MAYNARD, MASSACHUSETTS.                  *
0000     8  ;*  ALL RIGHTS RESERVED.                                                    *
0000     9  ;*                                                                          *
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0000    11  ;*  ONLY IN  ACCORDANCE WITH  THE  TERMS  OF  SUCH  LICENSE  AND WITH THE   *
0000    12  ;*  INCLUSION OF THE ABOVE COPYRIGHT NOTICE. THIS SOFTWARE OR  ANY  OTHER   *
0000    13  ;*  COPIES THEREOF MAY NOT BE PROVIDED OR OTHERWISE MADE AVAILABLE TO ANY   *
0000    14  ;*  OTHER PERSON.  NO TITLE TO AND OWNERSHIP OF  THE  SOFTWARE IS  HEREBY   *
0000    15  ;*  TRANSFERRED.                                                            *
0000    16  ;*                                                                          *
0000    17  ;*  THE INFORMATION IN THIS SOFTWARE IS  SUBJECT TO CHANGE WITHOUT NOTICE   *
0000    18  ;*  AND  SHOULD  NOT  BE  CONSTRUED AS  A COMMITMENT BY DIGITAL EQUIPMENT   *
0000    19  ;*  CORPORATION.                                                            *
0000    20  ;*                                                                          *
0000    21  ;*  DIGITAL ASSUMES NO RESPONSIBILITY FOR THE USE  OR  RELIABILITY OF ITS   *
0000    22  ;*  SOFTWARE ON EQUIPMENT WHICH IS NOT SUPPLIED BY DIGITAL.                 *
0000    23  ;*                                                                          *
0000    24  ;*                                                                          *
0000    25  ;****************************************************************************
0000    26  ;
0000    27
0000    28  ;++
0000    29  ; FACILITY: FORTRAN Support Library - user callable
0000    30  ;
0000    31  ; ABSTRACT:
0000    32  ;
0000    33  ;       This module contains the entry point for the FORTRAN
0000    34  ;       READ KEYED OBJECT-FORMATTED I/O statement.  It is simply
0000    35  ;       a call to FOR$$IO_BEG with bits in R0 which describe the
0000    36  ;       parameter list.  FOR$$IO_BEG interprets the parameters.
0000    37  ;
0000    38  ; MAINTENANCE NOTE:
0000    39  ;       The transfer vector (RTLVECTOR+ALLGBL) must have the following:
0000    40  ;
0000    41  ;       .TRANSFER       FOR$READ_KO
0000    42  ;       .MASK           FOR$$IO_BEG
0000    43  ;       BRW             FOR$READ_KO+2
0000    44  ;
0000    45  ;       This puts the correct mask in entry vector, that is FOR$$IO_BEG entry mask.
0000    46  ;       Furthermore this module must only use R0 and R1
0000    47  ;       since any other register might not be in the entry mask for FOR$$IO_BEG.
0000    48  ;
0000    49  ; ENVIRONMENT: User access mode; mixture of AST level or not
0000    50  ;
0000    51  ; AUTHOR:        Richard B. Grove, CREATION DATE: 28-May-78
0000    52  ;
0000    53  ; MODIFIED BY:
0000    54  ;       T. Hastings, 29-July-78
```

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- entry point for FORTRAN READ KEYED OBJ 15-SEP-1984 23:58:03   VAX/VMS Macro V04-00   Page 2
HISTORY ; Detailed Current Edit History 6-SEP-1984 10:59:17 [FORRTL.SRC]FORREADKO.MAR;1   (2)

FO
Ta

```
0000    56              .SBTTL  HISTORY          ; Detailed Current Edit History
0000    57
0000    58
0000    59  ; Edit History for Version 1
0000    60  ;
0000    61  ; 0-10  - Add comment about vectors.  TNH 23-June-78
0000    62  ; 0-12  - Pass arg in R0, not R0R, add comments.  TNH 29-July-78
0000    63  ; 1-001 - Update version number and copyright notice.  JBS 16-NOV-78
0000    64  ; 1-002 - Change statement type symbols to be LUB$K...  JBS 07-DEC-78
0000    65  ; 1-003 - Change statement type symbols to be ISB$K...  JBS 11-DEC-78
0000    66  ; 1-004 - Add "." to the PSECT directive.  JBS 22-DEC-78
0000    67  ; 1-005 - Add FOR$READ_KF, FOR$READ_KO, FOR$REWRITE_SF, FOR$REWRITE_SO,
0000    68  ;             FOR$READ_IF, FOR$READ_IO, FOR$WRITE_IF, FOR$WRITE_IO,
0000    69  ;             FOR$READ_KU, FOR$REWRITE_SU.
0000    70  ;             SBL 2-May-1979
0000    71  ; 1-006 - Remove all entry points that need object time formatting,
0000    72  ;             putting them in FOR$ENTRY_OBJ so that we can arrange to
0000    73  ;             load the format compiler only when it is needed.
0000    74  ;             JBS 26-JUN-1979
0000    75  ; 1-007 - Remove entry point FOR$ENCODE_MF; we will code a new module
0000    76  ;             for it and FOR$$IO_BEG, to see how much I/O initiation time
0000    77  ;             improves.  JBS 02-JUL-1979
0000    78  ; 1-008 - Do likewuse for FOR$READ_DU and FOR$WRITE_DU.  JBS 03-JUL-1979
0000    79  ; 1-009 - Remove all entry points and add FOR$READ_RO;  each entry
0000    80  ;             point gets its own module do we can selectively load
0000    81  ;             the necessary UDF and REC modules.  JBS 09-JUL-1979
0000    82  ; 1-010 - New parameter format for FOR$$IO_BEG.  SBL 5-Dec-1979
0000    83  ; 1-011 - Change BRW FOR$$IO_BEG+2 to JMP G^FOR$$IO_BEG+2.  JAW 21-Feb-1981
```

```
               0000    85               .SBTTL   DECLARATIONS
               0000    86
               0000    87 ;
               0000    88 ; INCLUDE FILES:
               0000    89 ;
               0000    90
               0000    91          $FORPAR                            ; Define inter-module FORTRAN symbols
               0000    92          $ISBDEF                            ; Define statement type symbols
               0000    93
               0000    94 ;
               0000    95 ; EXTERNAL SYMBOLS:
               0000    96 ;
               0000    97
               0000    98          .DSABL  GBL                        ; Declare all external symbols
               0000    99          .EXTRN  FOR$$IO_BEG                ; common I/O statement processing
               0000   100 ;+
               0000   101 ; The following references are to make sure the necessary UDF and REC
               0000   102 ; modules are loaded.  These are the routines which are called through
               0000   103 ; the dispatch tables in FOR$$DISPAT.
               0000   104 ;-
               0000   105          .EXTRN  FOR$$UDF_RF0, FOR$$UDF_RF1, FOR$$UDF_RF9
               0000   106          .EXTRN  FOR$$REC_RKF0, FOR$$REC_RKF1, FOR$$REC_RKF9
               0000   107 ;+
               0000   108 ; The following reference makes sure the format compiler is loaded.
               0000   109 ;-
               0000   110          .EXTRN  FOR$$FMT_COMPIL
               0000   111
               0000   112 ;
               0000   113 ; MACROS:
               0000   114 ;
               0000   115 ;        NONE
               0000   116 ;
               0000   117 ; PSECT DECLARATIONS:
               0000   118 ;
               0000   119
           00000000   120          .PSECT  _FOR$CODE PIC,USR,CON,REL,LCL,SHR,EXE,RD,NOWRT,LONG
               0000   121
               0000   122 ;
               0000   123 ; EQUATED SYMBOLS:
               0000   124 ;
               0000   125
               0000   126
               0000   127 ;
               0000   128 ; OWN STORAGE:
               0000   129 ;
               0000   130 ;        NONE
               0000   131 ;
```

FOR$READ_KO   J 4
1-011

- entry point for FORTRAN READ KEYED OBJ 15-SEP-1984 23:58:03 VAX/VMS Macro V04-00 Page 4   FO
FOR$READ_KO - READ KEYED OBJECT-FORMATTE 6-SEP-1984 10:59:17 [FORRTL.SRC]FORREADKO.MAR;1 (4)   1-

```
                        0000   133              .SBTTL  FOR$READ_KO - READ KEYED OBJECT-FORMATTED
                        0000   134
                        0000   135  ;++
                        0000   136  ; FUNCTIONAL DESCRIPTION:
                        0000   137  ;
                        0000   138  ;        Initialize the FORTRAN I/O system to perform
                        0000   139  ;        a READ KEYED OBJECT-FORMATTED I/O statement.
                        0000   140  ;
                        0000   141  ; CALLING SEQUENCE:
                        0000   142  ;
                        0000   143  ;        CALL FOR$READ_KO (unit.rl.v, format_adr.rt.r,
                        0000   144  ;                key.rx.dx, keyid.rl.v, match.rl.v
                        0000   145  ;                [, err_adr.j.r [, end_adr.j.r]])
                        0000   146  ;
                        0000   147  ; INPUT PARAMETERS:
                        0000   148  ;
                        0000   149  ;        unit.rl.v                logical unit number
                        0000   150  ;        format_adr.rt.r          format string (needs compilation)
                        0000   151  ;        key.rx.dx                the key of the record to be read
                        0000   152  ;        keyid.rl.v               the number of the key
                        0000   153  ;        match.rl.v               code for how to match (EQL, GEQ, GTR)
                        0000   154  ;        [err_adr.j.r]            optional ERR= address
                        0000   155  ;        [end_adr.j.r]            optional END= address
                        0000   156  ;
                        0000   157  ; IMPLICIT INPUTS:
                        0000   158  ;
                        0000   159  ;        NONE except those used by FOR$$IO_BEG.
                        0000   160  ;
                        0000   161  ; OUTPUT PARAMETERS:
                        0000   162  ;
                        0000   163  ;        NONE
                        0000   164  ;
                        0000   165  ; IMPLICIT OUTPUTS:
                        0000   166  ;
                        0000   167  ;        NONE except those left by FOR$$IO_BEG.
                        0000   168  ;
                        0000   169  ; COMPLETION CODES:
                        0000   170  ;
                        0000   171  ;        NONE
                        0000   172  ;
                        0000   173  ; SIDE EFFECTS:
                        0000   174  ;
                        0000   175  ;        NONE except those of FOR$$IO_BEG.
                        0000   176  ;
                        0000   177  ;--
                        0000   178
                0000'   0000   179  FOR$READ_KO::    .MASK    FOR$$IO_BEG
      50   010E 8F  3C  0002   180              MOVZWL  #IS$B$K_ST_TY_RKF+      -
                        0007   181                      <1@FOR$V_OBJ_FMT>, R0  ; Statement type
   00000002'GF   17    0007   182              JMP     G^FOR$$IO_BEG+2         ; branch past call mask
                        000D   183
                        000D   184
                        000D   185              .END
```

K 4

FOR$READ_KO   - entry point for FORTRAN READ KEYED OBJ 15-SEP-1984 23:58:03   VAX/VMS Macro V04-00   Page   5   FO
Symbol table   6-SEP-1984 10:59:17   [FORRTL.SRC]FORREADKO.MAR;1   (4)   1-(

```
FOR$$FMT_COMPIL                        ********   X   00
FOR$$IO_BEG                            ********   X   00
FOR$$REC_RKF0                          ********   X   00
FOR$$REC_RKF1                          ********   X   00
FOR$$REC_RKF9                          ********   X   00
FOR$$UDF_RF0                           ********   X   00
FOR$$UDF_RF1                           ********   X   00
FOR$$UDF_RF9                           ********   X   00
FOR$READ_KO                            00000000  RG   01
FOR$V_OBJ_FMT                        = C0000008
ISB$K_ST_TY_RKF                      = 0000000E
```

                              +------------------+
                              ! Psect synopsis !
                              +------------------+

PSECT name	Allocation	PSECT No.	Attributes
. ABS .	00000000 (0.)	00 (0.)	NOPIC USR CON ABS LCL NOSHR NOEXE NORD NOWRT NOVEC BYTE
_FOR$CODE	0000000D (13.)	01 (1.)	PIC USR CON REL LCL SHR EXE RD NOWRT NOVEC LONG

                           +----------------------------+
                           ! Performance indicators !
                           +----------------------------+

Phase	Page faults	CPU Time	Elapsed Time
Initialization	31	00:00:00.09	00:00:01.43
Command processing	121	00:00.00.65	00:00:05.46
Pass 1	131	00:00:01.28	00:00:04.80
Symbol table sort	0	00:00:00.19	00:00:00.22
Pass 2	49	00:00:00.50	00:00:01.32
Symbol table output	3	00:00:00.02	00:00:00.03
Psect synopsis output	2	00:00:00.02	00:00:00.21
Cross-reference output	0	00:00:00.00	00:00:00.00
Assembler run totals	339	00:00:02.75	00:00:13.56

The working set limit was 1050 pages.
6735 bytes (14 pages) of virtual memory were used to buffer the intermediate code.
There were 20 pages of symbol table space allocated to hold 188 non-local and 0 local symbols.
185 source lines were read in Pass 1, producing 8 object records in Pass 2.
9 pages of virtual memory were used to define 2 macros.

                           +----------------------------+
                           ! Macro library statistics !
                           +----------------------------+

Macro library name	Macros defined
_255DUA28:[FORRTL.OBJ]FORRTL.MLB;1	2
_255DUA28:[SYSLIB]STARLET.MLB;2	0
TOTALS (all libraries)	2

183 GETS were required to define 2 macros.

There were no errors, warnings or information messages.

MACRO/ENABLE=SUPPRESSION/DISABLE=(GLOBAL,TRACEBACK)/LIS=LIS$:FORREADKO/OBJ=OBJ$:FORREADKO MSRC$:FORREADKO/UPDATE=(ENH$:FORREADKO)+LI

FORREWRSU
LIS

FORREADIF   FORREADIO
LIS   LIS

FORRECPRO
LIS

FORSIGNAL
LIS

FORREADKO
LIS

FORREWIND
LIS

FORREADSF
LIS

FORREWRSO
LIS

FORREADSN
LIS

FORREADDU
LIS

FORREADSU
LIS

FORSECNDS
LIS

FORREADIL
LIS

FORREADKF
LIS

FORREADKU
LIS

FORREWRSF
LIS

FORREADSL   FORREADSO
LIS   LIS