


```

PPPPPPP      AAAAAA      SSSSSSSS      EEEEEEEEEEE      XX      XX      TTTTTTTTTT      EEEEEEEEEEE      RRRRRRRR      NN      NN
PPPPPPP      AAAAAA      SSSSSSSS      EEEEEEEEEEE      XX      XX      TTTTTTTTTT      EEEEEEEEEEE      RRRRRRRR      NN      NN
PP      PP      AA      AA      SS      EE      XX      XX      TT      EE      RR      RR      NN      NN
PP      PP      AA      AA      SS      EE      XX      XX      TT      EE      RR      RR      NN      NN
PP      PP      AA      AA      SS      EE      XX      XX      TT      EE      RR      RR      NNNN      NN
PP      PP      AA      AA      SS      EE      XX      XX      TT      EE      RR      RR      NNNN      NN
PPPPPPP      AA      AA      SSSSSS      EEEEEEEEEEE      XX      XX      TT      EEEEEEEEEEE      RRRRRRRR      NN      NN
PPPPPPP      AA      AA      SSSSSS      EEEEEEEEEEE      XX      XX      TT      EEEEEEEEEEE      RRRRRRRR      NN      NN
PP      AAAAAAAAAA      SS      EE      XX      XX      TT      EE      RR      RR      NN      NNNN
PP      AAAAAAAAAA      SS      EE      XX      XX      TT      EE      RR      RR      NN      NNNN
PP      AA      AA      SS      EE      XX      XX      TT      EE      RR      RR      NN      NN
PP      AA      AA      SS      EE      XX      XX      TT      EE      RR      RR      NN      NN
PP      AA      AA      SSSSSSSS      EEEEEEEEEEE      XX      XX      TT      EEEEEEEEEEE      RR      RR      NN      NN
PP      AA      AA      SSSSSSSS      EEEEEEEEEEE      XX      XX      TT      EEEEEEEEEEE      RR      RR      NN      NN

```

```

RRRRRRRR      EEEEEEEEEEE      QQQQQQ
RRRRRRRR      EEEEEEEEEEE      QQQQQQ
RR      RR      EE      QQ      QQ
RR      RR      EE      QQ      QQ
RR      RR      EE      QQ      QQ
RR      RR      EE      QQ      QQ
RRRRRRRR      EEEEEEEEEEE      QQ      QQ      QQ
RRRRRRRR      EEEEEEEEEEE      QQ      QQ      QQ
RR      RR      EE      QQ      QQ      QQ
RR      RR      EE      QQ      QQ      QQ
RR      RR      EE      QQ      QQ      QQ
RR      RR      EE      QQ      QQ      QQ
RR      RR      EEEEEEEEEEE      QQQQ      QQ
RR      RR      EEEEEEEEEEE      QQQQ      QQ

```

LINKAGE and EXTERNAL definitions for VAX-11 Pascal Run-Time Library
 File: PASEXTERN.REQ, Edit: SBL1007

```

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```

Edit History:

- 1-001 - Created. SBL 1-April-1981
- 1-002 - Add PASS\$END READ. SBL 24-May-1982
- 1-003 - Make PASS\$CLOSE NOVALUE. SBL 28-June-1982
- 1-004 - Delete PASS\$K_INVFIESPE, no longer used. SBL 2-July-1982
- 1-005 - Add the symbol PASS\$VALIDATE PFV END. This is not a routine
 but an address that PASS\$IO HANDLER uses to see if the PC of
 an access violation was in PASS\$VALIDATE PFV. SBL 14-July-1982
- 1-006 - Add PASS\$GOTO HANDLER and PASS\$UNWIND GOTO. SBL 8-Feb-1983
- 1-007 - Add PASS\$AB_KEYWD_NAME_TABLE. SBL 19-Aug-1983

--

Define linkages used for internal calls in the Pascal RTL support

In these linkages, R6 is always used to pass the PFV and R7 is always used to pass the FCB.

```
LINKAGE
JSB_INIT_WRITE =
  JSB (REGISTER=6, REGISTER=7; REGISTER=7):
    NOTUSED(8,9,10,11) NOPRESERVE(2,3,4,5),
JSB_END_WRITE =
  JSB (REGISTER=6, REGISTER=7):
    NOTUSED(4,5,8,9,10,11) NOPRESERVE(2,3),
JSB_DO_WRITE =
  JSB (REGISTER=6, REGISTER=7, REGISTER=8):
    NOTUSED(9,10,11) NOPRESERVE(2,3,4,5),
JSB_INIT_READ =
  JSB (REGISTER=6, REGISTER=7; REGISTER=7):
    NOTUSED(8,9,10,11) NOPRESERVE(2,3,4,5),
JSB_END_READ =
  JSB (REGISTER=6, REGISTER=7):
    NOTUSED(0,1,2,3,4,5,8,9,10,11),
JSB_VALIDATE_PFV =
  JSB (REGISTER=6; REGISTER=7):
    NOTUSED(3,4,5,8,9,10,11) NOPRESERVE(2),
JSB_READ_UTIL =
  JSB (REGISTER=6, REGISTER=7; REGISTER=4, REGISTER=5, REGISTER=7):
    NOTUSED(9,10,11) NOPRESERVE(2,3,8),
JSB_FIND_NON_BLANK =
  JSB (REGISTER=6, REGISTER=7; REGISTER=7):
    NOPRESERVE(2,3,8) NOTUSED(4,5,9,10,11),
JSB_CLOSE_LOCAL =
  JSB : PRESERVE(0,1) NOPRESERVE(2,3) NOTUSED(4,5,6,7,8,9,10,11),
JSB_DO_READV =
  JSB (REGISTER=6, REGISTER=2, REGISTER=3, REGISTER=4; REGISTER=0, REGISTER=1):
    NOPRESERVE(2,3,4,6) NOTUSED(5,7,8,9,10,11),
JSB_DO_WRITEV =
  JSB (REGISTER=6, REGISTER=2, REGISTER=3, REGISTER=4, REGISTER=5):
    NOPRESERVE(2,3,4,5,6) NOTUSED(7,8,9,10,11),
JSB_GET =
  JSB (REGISTER=6, REGISTER=7):
    NOTUSED(4,5,8,9,10,11) NOPRESERVE(2,3),
JSB_LOOK_AHEAD =
  JSB (REGISTER=6, REGISTER=7; REGISTER=7):
    NOTUSED(4,5,8,9,10,11) NOPRESERVE(2,3),
JSB_OPEN_IMPLICIT =
  JSB (REGISTER=6, REGISTER=7; REGISTER=7):
    NOTUSED(3,4,5,8,9,10,11) NOPRESERVE(2),
JSB_PROMPT_FILE =
  JSB (REGISTER=6, REGISTER=7):
    NOTUSED(2,3,4,5,8,9,10,11),
JSB_WRITELN =
  JSB (REGISTER=6, REGISTER=7):
    NOTUSED(8,9,10,11) NOPRESERVE(2,3,4,5),
CALL_VAL01 =
```

```
CALL (;REGISTER=0, REGISTER=1),  
CALL SAVEALL =  
CALL : PRESERVE (0,1),  
CALL SIGNAL =  
CALL (REGISTER=6),  
CALL OPEN =  
CALL (;REGISTER=7),  
CALL VM =  
CALL (REGISTER=6);
```

* Define all globals declared in all Pascal-specific BLISS modules and those non-BLISS modules which are referenced by BLISS modules.

EXTERNAL ROUTINE

```
! Module PASSBIN
  PASSBIN: NOVALUE,

! Module PASSCLOSE2
  PASSCLOSE2: NOVALUE,
  PASS$CLOSE: NOVALUE,

! Module PASSCVTRT
  PASSCVT_F_T,
  PASSCVT_D_T,
  PASSCVT_G_T,
  PASSCVT_H_T,

! Module PASSEOF2
  PASSEOF2,

! Module PASSEOLN2
  PASSEOLN2,

! Module PASSDELETE
  PASSDELTE: NOVALUE,

! Module PASS$FILE_UTIL
  PASS$ADD_FILE: NOVALUE,
  PASS$REMOVE_FILE: NOVALUE,
  PASS$PROMPT_ALL: NOVALUE,
  PASS$PROMPT_FILE: JSB_PROMPT_FILE NOVALUE,
  PASS$CLOSE_ALL: NOVALUE,
  PASS$CLOSE_LOCAL R3: JSB_CLOSE_LOCAL NOVALUE,
  PASS$CLOSE_LOCAL: JSB_CLOSE_LOCAL NOVALUE,

! Module PASS$FIND2
  PASS$FIND2: NOVALUE,

! Module PASS$FINDK
  PASS$FINDK: NOVALUE,

! Module PASS$GET
  PASS$GET: NOVALUE,
  PASS$GET_UNLOCK: NOVALUE,
  PASS$GET: JSB_GET NOVALUE,

! Module PASS$GOTO
  PASS$GOTO: NOVALUE,
  PASS$GOTO_HANDLER,
  PASS$UNWIND_GOTO,

! Module PASS$HALT
  PASS$HALT: NOVALUE,
```

```
! Module PASSHANDLER
  PASSHANDLER,

! Module PASSHEAP
  PASSNEW2,
  PASSDISPOSE2: NOVALUE,
  PASSMARK2,
  PASSRELEASE2: NOVALUE,

! Module PASSHEX
  PASSHEX: NOVALUE,

! Module PASS$IO HANDLER
  PASS$IO_HANDLER,

! Module PASSLINESLIMIT2
  PASSLINESLIMIT2: NOVALUE,

! Module PASSLOCATE
  PASSLOCATE: NOVALUE,

! Module PASSLOOK AHEAD
  PASSLOOK_AHEAD: CALL_SAVEALL NOVALUE,
  PASS$LOOK_AHEAD: JSB_LOOK_AHEAD NOVALUE,

! Module PASSOCT
  PASSOCT: NOVALUE,

! Module PASSOPEN2
  PASSOPEN2: NOVALUE,
  PASS$OPEN: CALL_OPEN NOVALUE,
  PASS$OPEN_IMPLICIT: JSB_OPEN_IMPLICIT NOVALUE,

! Module PASSPAGE2
  PASSPAGE2: NOVALUE,

! Module PASSRAB
  PASSRAB,

! Module PASSREAD BOOLEAN
  PASSREAD_BOOLEAN,
  PASSREADV_BOOLEAN,

! Module PASSREAD_CHAR
  PASSREAD_CHAR,
  PASSREADV_CHAR,

! Module PASSREADLN2
  PASSREADLN2: NOVALUE,
  PASS$INIT_READ: JSB_INIT_READ NOVALUE,
  PASS$END_READ: JSB_END_READ NOVALUE,
  PASS$DO_READV: JSB_DO_READV NOVALUE,

! Module PASS$READ UTIL
  PASS$GET_UNSIGNED: JSB_READ_UTIL,
```

PASS\$GET_INTEGER: JSB_READ_UTIL,
PASS\$GET_REAL: JSB_READ_UTIL,
PASS\$GET_ENUMERATED: JSB_READ_UTIL,

! Module PASS\$READ_ENUMERATED
PASS\$READ_ENUMERATED,
PASS\$READV_ENUMERATED,

! Module PASS\$READ_INTEGER
PASS\$READ_INTEGER,
PASS\$READV_INTEGER,

! Module PASS\$READ_REAL_D
PASS\$READ_REAL_D: CALL_VAL01_NOVALUE,
PASS\$READV_REAL_D: CALL_VAL01_NOVALUE,

! Module PASS\$READ_REAL_F
PASS\$READ_REAL_F,
PASS\$READV_REAL_F,

! Module PASS\$READ_REAL_G
PASS\$READ_REAL_G: CALL_VAL01_NOVALUE,
PASS\$READV_REAL_G: CALL_VAL01_NOVALUE,

! Module PASS\$READ_REAL_H
PASS\$READ_REAL_H: NOVALUE,
PASS\$READV_REAL_H: NOVALUE,

! Module PASS\$READ_STRING1
PASS\$READ_STRING1: NOVALUE,

! Module PASS\$READ_STRING
PASS\$READ_STRING: NOVALUE,
PASS\$READV_STRING: NOVALUE,

! Module PASS\$READ_UNSIGNED
PASS\$READ_UNSIGNED,
PASS\$READV_UNSIGNED,

! Module PASS\$READ_VARYING
PASS\$READ_VARYING: NOVALUE,
PASS\$READV_VARYING: NOVALUE,

! Module PASS\$RESET2
PASS\$RESET2: NOVALUE,

! Module PASS\$RESETK
PASS\$RESETK: NOVALUE,

! Module PASS\$REWRITE2
PASS\$REWRITE2: NOVALUE,

! Module PASS\$\$SIGNAL
PASS\$\$SIGNAL: CALL_SIGNAL_NOVALUE,
PASS\$\$BUGCHECK: NOVALUE,


```

! Module PASSTATUS
  PASSTATUS,

! Module PASSTRUNCATE
  PASSTRUNCATE: NOVALUE,

! Module PASSUFB
  PASSUFB,

! Module PASSUNLOCK
  PASSUNLOCK: NOVALUE,

! Module PASSUPDATE
  PASSUPDATE: NOVALUE,

! Module PASSVALIDATE_PFV
  PASSVALIDATE_PFV: JSB_VALIDATE_PFV NOVALUE,

! Module PASSVM
  PASSGET_VM: CALL_VM,
  PASSFREE_VM: NOVALUE,

! Module PASSWRITE_BIN
  PASSWRITE_BIN: NOVALUE,
  PASSWRITEV_BIN: NOVALUE,

! Module PASSWRITE_BOOLEAN
  PASSWRITE_BOOLEAN: NOVALUE,
  PASSWRITEV_BOOLEAN: NOVALUE,

! Module PASSWRITE_CHAR
  PASSWRITE_CHAR: NOVALUE,
  PASSWRITEV_CHAR: NOVALUE,

! Module PASSWRITE_ENUMERATED
  PASSWRITE_ENUMERATED: NOVALUE,
  PASSWRITEV_ENUMERATED: NOVALUE,

! Module PASSWRITE_HEX
  PASSWRITE_HEX: NOVALUE,
  PASSWRITEV_HEX: NOVALUE,

! Module PASSWRITE_INTEGER
  PASSWRITE_INTEGER: NOVALUE,
  PASSWRITEV_INTEGER: NOVALUE,

! Module PASSWRITE_OCT
  PASSWRITE_OCT: NOVALUE,
  PASSWRITEV_OCT: NOVALUE,

! Module PASSWRITE_REAL_D
  PASSWRITE_REAL_D: NOVALUE,
  PASSWRITEV_REAL_D: NOVALUE,

! Module PASSWRITE_REAL_F
  PASSWRITE_REAL_F: NOVALUE,
  
```

```

    PASSWRITEV_REALE_F: NOVALUE,
! Module PASSWRITE REALE G
  PASSWRITE_REALE_G: NOVALUE,
  PASSWRITEV_REALE_G: NOVALUE,
! Module PASSWRITE REALE H
  PASSWRITE_REALE_H: NOVALUE,
  PASSWRITEV_REALE_H: NOVALUE,
! Module PASSWRITE REALF D
  PASSWRITE_REALF_D: NOVALUE,
  PASSWRITEV_REALF_D: NOVALUE,
! Module PASSWRITE REALF D1
  PASSWRITE_REALF_D1: NOVALUE,
! Module PASSWRITE REALF F
  PASSWRITE_REALF_F: NOVALUE,
  PASSWRITEV_REALF_F: NOVALUE,
! Module PASSWRITE REALF F1
  PASSWRITE_REALF_F1: NOVALUE,
! Module PASSWRITE REALF G
  PASSWRITE_REALF_G: NOVALUE,
  PASSWRITEV_REALF_G: NOVALUE,
! Module PASSWRITE REALF H
  PASSWRITE_REALF_H: NOVALUE,
  PASSWRITEV_REALF_H: NOVALUE,
! Module PASSWRITE STRING
  PASSWRITE_STRING: NOVALUE,
  PASSWRITEV_STRING: NOVALUE,
! Module PASSWRITELN2
  PASSWRITELN2: NOVALUE,
  PASSWRITELN: JSB WRITELN NOVALUE,
  PASSINIT_WRITE: JSB INIT WRITE NOVALUE,
  PASSSEND_WRITE: JSB_END WRITE NOVALUE,
  PASSDO_WRITEV: JSB_DO_WRITEV NOVALUE,
! Module PASSWRITE UNSIGNED
  PASSWRITE_UNSIGNED: NOVALUE,
  PASSWRITEV_UNSIGNED: NOVALUE,
! Module PASSWRITE VARYING
  PASSWRITE_VARYING: NOVALUE,
  PASSWRITEV_VARYING: NOVALUE;

EXTERNAL

! Module PASSFV INPUT
  PASSFV_INPUT: $PASSPFV_FILE_VARIABLE WEAK,

```

!+
!-
MA

!+
!-
ST

```
! Module PASS$FV OUTPUT
  PASS$FV_OUTPUT: $PASS$PFV_FILE_VARIABLE WEAK,

! Module PASS$OPEN2
  PASS$GV_INPUT_OPENED: BYTE,
  PASS$GV_OUTPUT_OPENED: BYTE,
  PASS$AB_KEYWD_NAME_TABLE: VECTOR [PASS$K_OPEKEYHI+1, BYTE],

! Module PASS$READ BOOLEAN
  PASS$GR_BOOLEAN_PETD: VECTOR [4, LONG];
```

EXTERNAL

```
! Module PASS$VALIDATE PFV
  PASS$VALIDATE_PFV_END; ! Not a routine!
```

EXTERNAL LITERAL

```
! Module PASS$MSGDEF
  PASS$K_MSGV2LO: UNSIGNED(16),
  PASS$K_MSGCONTLO: UNSIGNED(16),
  PASS$K_MSGCONTHI: UNSIGNED(16),
  PASS$K_MSGPFVHI: UNSIGNED(16),
  PASS$K_MSGCHKBAS: UNSIGNED(16);
```

Define non-Pascal routines called by Pascal RTL.

EXTERNAL ROUTINE

LIB\$CVT_DT8,
LIB\$FREE_VM,
LIB\$GET_OPCODE,
LIB\$GET_VM,

OT\$SCVT_L_TB,
OT\$SCVT_L_TI,
OT\$SCVT_L_TO,
OT\$SCVT_L_TZ,
OT\$SCVT_TB_L,
OT\$SCVT_TI_L,
OT\$SCVT_TO_L,
OT\$SCVT_TZ_L,
OT\$SCVT_T_F,
OT\$SCVT_T_D,
OT\$SCVT_T_G,
OT\$SCVT_T_H;

! Define condition codes used by Pascal RTL routines.

EXTERNAL LITERAL

! Errors signalled with \$PASSIO_ERROR

PASSK_ACCMETINC: UNSIGNED(8),
 PASSK_AMBVALENU: UNSIGNED(8),
 PASSK_CURCOMUND: UNSIGNED(8),
 PASSK_DELNOTALL: UNSIGNED(8),
 PASSK_ERRDURCLO: UNSIGNED(8),
 PASSK_ERRDURDEL: UNSIGNED(8),
 PASSK_ERRDURGET: UNSIGNED(8),
 PASSK_ERRDURFIN: UNSIGNED(8),
 PASSK_ERRDUROPE: UNSIGNED(8),
 PASSK_ERRDURPRO: UNSIGNED(8),
 PASSK_ERRDURPUT: UNSIGNED(8),
 PASSK_ERRDURRE: UNSIGNED(8),
 PASSK_ERRDURREW: UNSIGNED(8),
 PASSK_ERRDURTRU: UNSIGNED(8),
 PASSK_ERRDURUNL: UNSIGNED(8),
 PASSK_ERRDURUPD: UNSIGNED(8),
 PASSK_ERRDURWRI: UNSIGNED(8),
 PASSK_FAIGETLOC: UNSIGNED(8),
 PASSK_FILALRCLO: UNSIGNED(8),
 PASSK_FILALROPE: UNSIGNED(8),
 PASSK_FILNAMREQ: UNSIGNED(8),
 PASSK_FILNOTOPE: UNSIGNED(8),
 PASSK_FILNOTTEX: UNSIGNED(8),
 PASSK_FILNOTFOU: UNSIGNED(8),
 PASSK_FILNOTKEY: UNSIGNED(8),
 PASSK_FILNOTINS: UNSIGNED(8),
 PASSK_FILNOTDIR: UNSIGNED(8),
 PASSK_FILNOTGEN: UNSIGNED(8),
 PASSK_FILNOTSEQ: UNSIGNED(8),
 PASSK_GETAFTEOF: UNSIGNED(8),
 PASSK_GENNOTALL: UNSIGNED(8),
 PASSK_KEYNOTDEF: UNSIGNED(8),
 PASSK_KEYDEFINC: UNSIGNED(8),
 PASSK_KEYCHANOT: UNSIGNED(8),
 PASSK_KEYDUPNOT: UNSIGNED(8),
 PASSK_KEYVALINC: UNSIGNED(8),
 PASSK_INSNOTALL: UNSIGNED(8),
 PASSK_INSVIRMEM: UNSIGNED(8),
 PASSK_INVARGPAS: UNSIGNED(8),
 PASSK_INVFILVAR: UNSIGNED(8),
 PASSK_INVFILSYN: UNSIGNED(8),
 PASSK_INVKEYDEF: UNSIGNED(8),
 PASSK_INVRECIO: UNSIGNED(8),
 PASSK_INVRECLEN: UNSIGNED(8),
 PASSK_INVSYNINT: UNSIGNED(8),
 PASSK_INVSYNREA: UNSIGNED(8),
 PASSK_INVSYNENU: UNSIGNED(8),
 PASSK_INVSYNUNS: UNSIGNED(8),

```

PASSK_LINTOOLON:  UNSIGNED(8),
PASSK_LINVALEXC:  UNSIGNED(8),
PASSK_NEGWIDDIG:  UNSIGNED(8),
PASSK_NOTVALTYP:  UNSIGNED(8),
PASSK_ORGSPEINC:  UNSIGNED(8),
PASSK_RECLEININC:  UNSIGNED(8),
PASSK_RECTYPINC:  UNSIGNED(8),
PASSK_RESNOTALL:  UNSIGNED(8),
PASSK_REWNOTALL:  UNSIGNED(8),
PASSK_SEQNOTALL:  UNSIGNED(8),
PASSK_TEXREQSEQ:  UNSIGNED(8),
PASSK_TRUNOTALL:  UNSIGNED(8),
PASSK_UPDNOTALL:  UNSIGNED(8),
PASSK_WRIINVENU:  UNSIGNED(8),
    
```

! Errors signalled with LIB\$STOP

```

PASS_BUGCHECK,
PASS_CONTINUE,
PASS_ERRDURDIS,
PASS_ERRDURMAR,
PASS_ERRDURNEW,
PASS_ERRDURREL,
PASS_FILALRACT,
PASS_GOTO,
PASS_GOTOFAILED,
PASS_HALT,
PASS_INVFILVAR,
PASS_NEGDIGARG,
    
```

```

PASS_ARRINDVAL,      ! Used by PASSHANDLER
PASS_BASE,
PASS_FACILITY:      UNSIGNED(6),
PASSR_IGNORE:      UNSIGNED(6);  ! Used by PASSHANDLER
    
```

! End of PASEXTERN.REQ

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