

# NAG Library Routine Document

## E05JDF

**Note:** before using this routine, please read the Users' Note for your implementation to check the interpretation of *bold italicised* terms and other implementation-dependent details.

### 1 Purpose

E05JDF may be used to supply individual optional parameters to E05JBF. The initialization routine E05JAF **must** have been called before calling E05JDF.

### 2 Specification

```
SUBROUTINE E05JDF (OPTSTR, COMM, LCOMM, IFAIL)
  INTEGER          LCOMM, IFAIL
  REAL (KIND=nag_wp) COMM(LCOMM)
  CHARACTER(*)     OPTSTR
```

### 3 Description

E05JDF may be used to supply values for optional parameters to E05JBF. It is only necessary to call E05JDF for those arguments whose values are to be different from their default values. One call to E05JDF sets one argument value.

Each optional parameter is defined by a single character string, of up to 72 characters, consisting of one or more items. The items associated with a given optional parameter must be separated by spaces, or equals signs [=]. Alphabetic characters may be upper or lower case. The string

```
Static Limit = 100
```

is an example of a string used to set an optional parameter. For each optional parameter the string contains one or more of the following items:

- a mandatory keyword;
- a phrase that qualifies the keyword;
- a number that specifies an integer or real value. Such numbers may be up to 40 contiguous characters.

For E05JDF, each user-specified optional parameter is not normally printed as it is defined, but this printing may be turned on using the keyword **List**. Thus the statement

```
CALL E05JDF ('List', COMM, LCOMM, IFAIL)
```

turns on printing of this and subsequent options. Printing may be turned off again using the keyword **Nolist**.

Optional parameter settings are preserved following a call to E05JBF and so the keyword **Defaults** is provided to allow you to reset all the optional parameters to their default values before a subsequent call to E05JBF.

A complete list of optional parameters, their symbolic names and default values is given in Section 12 in E05JBF.

### 4 References

None.

## 5 Arguments

- 1: OPTSTR – CHARACTER(\*) *Input*  
*On entry:* a string defining a single optional parameter (as described in Section 3 and in Section 12 in E05JBF). The implied data type (character, integer or real) of each value to set **must** match that expected by the optional parameter.
- 2: COMM(LCOMM) – REAL (KIND=nag\_wp) array *Communication Array*  
*On exit:* COMM **must not** be altered between calls to any of the routines E05JBF, E05JCF, E05JDF, E05JEF, E05JFF, E05JGF, E05JHF, E05JJF, E05JKF and E05JLF.
- 3: LCOMM – INTEGER *Input*  
*On entry:* the dimension of the array COMM as declared in the (sub)program from which E05JDF is called.  
*Constraint:*  $LCOMM \geq 100$ .
- 4: IFAIL – INTEGER *Input/Output*  
*On entry:* IFAIL must be set to 0, -1 or 1. If you are unfamiliar with this argument you should refer to Section 3.4 in How to Use the NAG Library and its Documentation for details.  
For environments where it might be inappropriate to halt program execution when an error is detected, the value -1 or 1 is recommended. If the output of error messages is undesirable, then the value 1 is recommended. Otherwise, if you are not familiar with this argument, the recommended value is 0. **When the value -1 or 1 is used it is essential to test the value of IFAIL on exit.**  
*On exit:* IFAIL = 0 unless the routine detects an error or a warning has been flagged (see Section 6).

## 6 Error Indicators and Warnings

If on entry IFAIL = 0 or -1, explanatory error messages are output on the current error message unit (as defined by X04AAF).

Errors or warnings detected by the routine:

IFAIL = 1

Initialization routine E05JAF has not been called.

On entry, LCOMM =  $\langle value \rangle$ .

Constraint:  $LCOMM \geq 100$ .

IFAIL = 2

The supplied optional parameter is invalid. A keyword or keyword combination was not recognized.

IFAIL = 3

Attempt to assign an illegal value of **Local Searches** (*lscrch*): *lscrch* =  $\langle value \rangle$ .

Attempt to assign an illegal value of **Repeatability** (*repeat*): *repeat* =  $\langle value \rangle$ .

Attempt to assign a non-positive value of **Function Evaluations Limit** (*nf*): *nf* =  $\langle value \rangle$ .

Attempt to assign a non-positive value of **Local Searches Limit** (*loclim*): *loclim* =  $\langle value \rangle$ .

Attempt to assign a non-positive value of **Static Limit** (*stclim*): *stclim* =  $\langle value \rangle$ .

Attempt to assign an out-of-bounds value of **Infinite Bound Size** (*infbnd*): *infbnd* =  $\langle value \rangle$ .

Attempt to assign too small a value of **Local Searches Tolerance** (*loctol*): *loctol* =  $\langle value \rangle$ .

Attempt to assign too small a value of **Target Objective Error** (*objerr*): *objerr* =  $\langle value \rangle$ .

Attempt to assign too small a value of **Target Objective Safeguard** (*objsfsg*): *objsfsg* =  $\langle value \rangle$ .

IFAIL = 5

The value to be set could not be parsed. Check that it specifies a valid integer or real value.

IFAIL = -99

An unexpected error has been triggered by this routine. Please contact NAG.

See Section 3.9 in How to Use the NAG Library and its Documentation for further information.

IFAIL = -399

Your licence key may have expired or may not have been installed correctly.

See Section 3.8 in How to Use the NAG Library and its Documentation for further information.

IFAIL = -999

Dynamic memory allocation failed.

See Section 3.7 in How to Use the NAG Library and its Documentation for further information.

## 7 Accuracy

Not applicable.

## 8 Parallelism and Performance

E05JDF is threaded by NAG for parallel execution in multithreaded implementations of the NAG Library.

Please consult the X06 Chapter Introduction for information on how to control and interrogate the OpenMP environment used within this routine. Please also consult the Users' Note for your implementation for any additional implementation-specific information.

## 9 Further Comments

E05JCF, E05JEF, E05JFF or E05JGF may also be used to supply optional parameters to E05JBF.

## 10 Example

See Section 10 in E05JCF.

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