

# NAG Library Routine Document

## E04VNF

**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

E04VNF may be used to supply individual real optional parameters to E04VHF. The initialization routine E04VGF **must** have been called before calling E04VNF.

### 2 Specification

```
SUBROUTINE E04VNF (STRING, RVALUE, CW, IW, RW, IFAIL)
INTEGER           IW(*), IFAIL
REAL (KIND=nag_wp) RVALUE, RW(*)
CHARACTER(*)      STRING
CHARACTER(8)      CW(*)
```

### 3 Description

E04VNF may be used to supply values for real optional parameters to E04VHF. It is only necessary to call E04VNF for those parameters whose values are to be different from their default values. One call to E04VNF sets one parameter value.

Each real optional parameter is defined by a single character string in *STRING* and the corresponding value in *RVALUE*. For example the following illustrates how the *LU* stability tolerance could be defined:

```
FACTOL = 100.0E0
IF (ILLCON) FACTOL = 5.0E0
CALL E04VNF ('LU Factor Tolerance', FACTOL, CW, IW, RW, IFAIL)
```

Optional parameter settings are preserved following a call to E04VHF 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 E04VHF.

A complete list of optional parameters, their abbreviations, synonyms and default values is given in Section 12 in E04VHF.

### 4 References

None.

### 5 Parameters

- 1: *STRING* – CHARACTER(\*) *Input*  
*On entry:* a single valid keyword of a real optional parameter (as described in Section 12 in E04VHF).
- 2: *RVALUE* – REAL (KIND=nag\_wp) *Input*  
*On entry:* the value associated with the keyword in *STRING*.
- 3: *CW*(\*) – CHARACTER(8) array *Communication Array*  
**Note:** the dimension of the array *CW* must be at least *LENCW* (see E04VGF).

4: IW(\*) – INTEGER array *Communication Array*  
**Note:** the dimension of the array IW must be at least LENIW (see E04VGF).

5: RW(\*) – REAL (KIND=nag\_wp) array *Communication Array*  
**Note:** the dimension of the array RW must be at least LENRW (see E04VGF).

6: IFAIL – INTEGER *Input/Output*  
*On entry:* IFAIL must be set to 0, -1 or 1. If you are unfamiliar with this parameter you should refer to Section 3.3 in the Essential Introduction 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 parameter, 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

The initialization routine E04VGF has not been called.

IFAIL = 2

The supplied option is invalid. Check that the keywords are neither ambiguous nor misspelt.

IFAIL = -99

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

See Section 3.8 in the Essential Introduction for further information.

IFAIL = -399

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

See Section 3.7 in the Essential Introduction for further information.

IFAIL = -999

Dynamic memory allocation failed.

See Section 3.6 in the Essential Introduction for further information.

## 7 Accuracy

Not applicable.

## 8 Parallelism and Performance

Not applicable.

## **9 Further Comments**

E04VKF or E04VLF may also be used to supply real optional parameters to E04VHF.

## **10 Example**

See Section 10 in E04VKF.

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