

# NAG Library Routine Document

## F06BMF

**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

F06BMF completes the safe computation of the Euclidean length of a vector, following a call to F06FJF or F06KJF.

### 2 Specification

```
FUNCTION F06BMF (SCAL, SSQ)
REAL (KIND=nag_wp) F06BMF
REAL (KIND=nag_wp) SCAL, SSQ
```

### 3 Description

F06BMF completes the safe computation of the Euclidean length of a vector, following a call to F06FJF or F06KJF which return values  $\alpha$  and  $\xi$  such that

$$\|x\|_2^2 = \alpha^2 \xi.$$

F06BMF returns, via the function name, the value

$$\min(\alpha\sqrt{\xi}, flmax),$$

where *flmax* is the value given by 1/(X02AMF).

### 4 References

None.

### 5 Arguments

- |    |  |              |
|----|--|--------------|
| 1: | SCAL – REAL (KIND=nag_wp)  | <i>Input</i> |
|    | <i>On entry:</i> the scaling factor $\alpha$ , returned by F06FJF or F06KJF.     |              |
|    | <i>Constraint:</i> SCAL $\geq$ 0.0.  |              |
| 2: | SSQ – REAL (KIND=nag_wp)   | <i>Input</i> |
|    | <i>On entry:</i> the scaled sum of squares $\xi$ , returned by F06FJF or F06KJF. |              |
|    | <i>Constraint:</i> SSQ $\geq$ 1.0.   |              |

### 6 Error Indicators and Warnings

None.

### 7 Accuracy

Not applicable.

## **8 Parallelism and Performance**

F06BMF is not threaded in any implementation.

## **9 Further Comments**

None.

## **10 Example**

None.

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