

# NAG Fortran Library Routine Document

## F06HCF

**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

F06HCF performs the operation

$$x \leftarrow Dx$$

where  $x$  is an  $n$  element complex vector and  $D = \text{diag}(d)$  is a complex diagonal matrix.

Equivalently, the routine performs the element-by-element product of the vectors  $x$  and  $d$

$$x_i = d_i x_i, \quad i = 1, \dots, n.$$

### 2 Specification

SUBROUTINE F06HCF (N, D, INCD, X, INCX)

INTEGER N, INCD, INCX

**complex\*16** D(\*), X(\*)

### 3 Description

None.

### 4 References

None.

### 5 Parameters

- |    |  |                     |
|----|--|---------------------|
| 1: | N – INTEGER  | <i>Input</i>        |
|    | <i>On entry:</i> $n$ , the number of elements in $d$ and $x$ .                             |                     |
| 2: | D(*) – <b>complex*16</b> array   | <i>Input</i>        |
|    | <i>On entry:</i> the vector $d$ .  |                     |
| 3: | INCD – INTEGER   | <i>Input</i>        |
|    | <i>On entry:</i> the increment in the subscripts of D between successive elements of $d$ . |                     |
| 4: | X(*) – <b>complex*16</b> array   | <i>Input/Output</i> |
|    | <i>On entry:</i> the vector $x$ .  |                     |
|    | <i>On exit:</i> the updated vector $x$ .   |                     |
| 5: | INCX – INTEGER   | <i>Input</i>        |
|    | <i>On entry:</i> the increment in the subscripts of X between successive elements of $x$ . |                     |

### 6 Error Indicators and Warnings

None.