

NAG Library Routine Document

D02NRF

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

D02NRF is an enquiry routine for communicating with D02NMF or D02NNF when supplying columns of a sparse Jacobian matrix.

2 Specification

```
SUBROUTINE D02NRF (J, IPLACE, INFORM)
  INTEGER J, IPLACE, INFORM(23)
```

3 Description

D02NRF is required when D02NMF or D02NNF is being used with sparse matrix linear algebra. After an exit from D02NMF or D02NNF with IREVCM = 8, D02NRF must be called to determine which column of the Jacobian is required and where it is to be placed in the array RWORK (a argument of D02NMF or D02NNF).

4 References

See the D02M–N Sub-chapter Introduction.

5 Arguments

- 1: J – INTEGER *Output*
On exit: the index j of the column of the Jacobian which is required.
- 2: IPLACE – INTEGER *Output*
On exit: indicates which locations in the array RWORK to fill with the j th column.
 If IPLACE = 1, the (i, j) th element of the Jacobian must be placed in RWORK(50 + 2 × LDYSAV + i), otherwise the (i, j) th element must be placed in RWORK(50 + LDYSAV + i).
 If JCEVAL = 'F', in the previous call to D02NUF, then IPLACE = 2 always, hence the j th column of the Jacobian must be placed in RWORK(50 + LDYSAV + i), for $i = 1, 2, \dots, \text{NEQ}$.
 RWORK, NEQ and LDYSAV are arguments of D02NMF and D02NNF.
- 3: INFORM(23) – INTEGER array *Communication Array*
On entry: contains information supplied by the integrator.

6 Error Indicators and Warnings

None.

7 Accuracy

Not applicable.

8 Parallelism and Performance

D02NRF is not threaded in any implementation.

9 Further Comments

None.

10 Example

See Section 10 in D02NNF.
