

NAG Toolbox for MATLAB

d02nr

1 Purpose

d02nr is an enquiry function for communicating with d02nm or d02nn when supplying columns of a sparse Jacobian matrix.

2 Syntax

```
[j, iplace] = d02nr(inform)
```

3 Description

d02nr is required when d02nm or d02nn is being used with sparse matrix linear algebra. After an exit from d02nm or d02nn with **irevcn** = 8, d02nr must be called to determine which column of the Jacobian is required and where it is to be placed in the array **rwork** (a parameter of d02nm or d02nn).

4 References

See the D02M/N Sub-chapter Introduction.

5 Parameters

5.1 Compulsory Input Parameters

- 1: **inform(23)** – **int32** array
Contains information supplied by the integrator.

5.2 Optional Input Parameters

None.

5.3 Input Parameters Omitted from the MATLAB Interface

None.

5.4 Output Parameters

- 1: **j** – **int32** scalar
The index j of the column of the Jacobian which is required.
- 2: **iplace** – **int32** scalar
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 $\text{RWORK}(50 + 2 \times \text{ldysav} + i)$, otherwise the (i,j) th element must be placed in $\text{RWORK}(50 + \text{ldysav} + i)$.
If **JCEVAL** = 'F', in the previous call to d02nu, then **iplace** = 2 always, hence the j th column of the Jacobian must be placed in $\text{RWORK}(50 + \text{ldysav} + i)$, for $i = 1, 2, \dots, \text{neq}$.
rwork, **neq** and **ldysav** are parameters of d02nm and d02nn.

6 Error Indicators and Warnings

None.

7 Accuracy

Not applicable.

8 Further Comments

None.

9 Example

```
inform = [int32(8134736);  
         int32(28);  
         int32(-1081767268);  
         int32(0);  
         int32(8138846);  
         int32(8183732);  
         int32(-1081766732);  
         int32(8134570);  
         int32(1);  
         int32(8184256);  
         int32(0);  
         int32(0);  
         int32(-1208726936);  
         int32(8184256);  
         int32(0);  
         int32(-1081766784);  
         int32(134515047);  
         int32(-1081767356);  
         int32(8133896);  
         int32(1);  
         int32(0);  
         int32(0);  
         int32(1)];  
[j, iplace] = d02nr(inform)
```

```
j =  
    1  
iplace =  
    1
```