

## Procedure TEST\_FONCTION

---

### 1 Goal

---

To extract a digital value or an attribute from a function for comparison with a value of reference. The function is a structure of data of the type `function` or `tablecloth`.

This procedure writes a conventional message then "OK" (if it is good) or "NOOK" (if not).

It does not stop the execution if the test is not checked; this makes it possible systematically to use it either for the tests of validation, or to extract and print a value of a function or a tablecloth for a particular value of a parameter.

This order is used primarily by the cases tests to validate the not-regression of the results.

## 2 Syntax

```
TEST_FONCTION      (
  ◆ / VALUE = _F (   ◆ FUNCTION = F,           / [function]
                   / [fonction_C]
                   ◇ NOM_PARA = lnom,       [l_Kn]
                   ◆ VALE_PARA = will lpara, [l_R]

                   # Definition of the value of reference:
                   # to see TEST_RESU [u4.92.01]
                   ),

  / ATTRIBUTE = _F (   ◆ FUNCTION = F,           /
  [function]                                     / [fonction_C]
                   ◇ PARA = reality,         [R]
                   ◇ | PREC_PARA = / prec,     [R]
                   / 1.0E-3,                [DEFECT]
                   | CRIT_PARA = / 'RELATIVE', [DEFECT]
                   / 'ABSOLUTE',

  ◆ ATTR = / 'NOM_PARA',
           / 'NOM_RESU',
           / 'PROL_DROITE',
           / 'PROL_GAUCHE',
           / 'Interpol',
           / 'PROL_GAUCHE_FONC',
           / 'PROL_DROITE_FONC',
           / 'INTERPOL_FONC',
           / 'NOM_PARA_FONC',

  ◇ ATTR_REFE = attr,           [KN]
  ◇ LEGEND = legend,           [KN]
  ◇ REFERENCE = / 'ANALYTICAL',
                / 'SOURCE_EXTERNE',
                / 'AUTRE_ASTER',

  ),

  ◇ TEST_NOOK = / 'NOT',       [DEFECT]
               / 'YES',
  )
```

The functions are is with actual values [function], that is to say with complex values [fonction\_C].

## 3 Operands

---

### 3.1 Keyword VALUE

- ◆ VALUE =  
Keyword factor to test a value of a function or a tablecloth.

#### 3.1.1 Operand FUNCTION

- ◆ FUNCTION = F  
Name of the function (with a parameter) or tablecloth (with two parameters) on which is carried out the operation.

#### 3.1.2 Operand NOM\_PARA

- ◇ NOM\_PARA = lnom  
In the case of a function, this keyword is not treated.  
  
In the case of a tablecloth, the user will give 2 names of parameter: the first defining the parameter of the tablecloth, the second defining the parameter of the function which one wants to test (see the order DEFI\_NAPPE [U4.31.03]).

#### 3.1.3 Operand VALE\_PARA

- ◆ VALE\_PARA = will lpara  
In the case of a function, the user gives the value of the parameter for which the value of the function is tested.  
  
In the case of a tablecloth, the user gives the 2 values corresponding to the names of the two parameters (that of the tablecloth and that of the function).

#### 3.1.4 Keywords common to the orders TEST\_XXX

The definition of the values of nonregression and reference, as well as acceptable tolerances, the comparison criterion is detailed in the documentation [u4.92.01] of the order TEST\_RESU.

Specificities of TEST\_FONCTION are:

- pas de whole values or character strings,
- pas de tolerance on the value of the parameter (TOLE\_MACHINE and CRITERION takes only one value).

### 3.2 Keyword ATTRIBUTE

- / ATTRIBUTE =  
Keyword factor to test an attribute of a function or a tablecloth.

#### 3.2.1 Operand FUNCTION

- ◆ FUNCTION = F  
Name of the function or the tablecloth on which the operation is carried out.

#### 3.2.2 Operand PARA

- ◇ PARA = real  
In the case of a function, this keyword is not necessary.

In the case of a tablecloth, the user gives the value of the parameter to recover the function in order to test the attribute.

### 3.2.3 Operands `PREC_PARA` / `CRIT_PARA`

◇ `PREC_PARA` = `prec`

One searches the function defined by the value of the parameter in an interval defined by the absolute or relative position:

"inst ± prec" (confer CRITERION [§3.2.3]).

By default `prec` = 1.0D-3.

◇ `CRIT_PARA` =

'RELATIVE' : the interval of research is: [`inst` (1-`prec`), `inst` (1+`prec`)]

'ABSOLUTE' : the interval of research is: [`inst-prec`, `inst+prec`]

### 3.2.4 Operand `ATTR`

◆ `ATTR` =

Name of the attribute to be tested. For the significance of the attributes to refer to `DEFI_FONCTION` [U4.31.02] or with `DEFI_NAPPE` [U4.31.03].

### 3.2.5 Operand `ATTR_REFE`

◆ `ATTR_REFE` = `attr`

Attribute of reference. For the significance of the attributes to refer to `DEFI_FONCTION` [U4.31.02] or with `DEFI_NAPPE` [U4.31.03].

## 3.3 Operand `TEST_NOOK`

◇ `TEST_NOOK` =

This option, to use with precaution, makes it possible to simulate that the attributes of a function (in particular to limit its field of definition) will be well interpreted.

Example:

On a function with `PROL_GAUCHE` = 'EXCLUDED', if one tests the function with a value of parameter lower than the value of the lower limit of the interval of definition of the function, one should obtain an error.

With `TEST_NOOK` = 'YES', `TEST_FONCTION` return the result 'OK'.

## 4 Examples

### 4.1 Checking of a tablecloth

```
df1= DEFI_FONCTION ( NOM_PARA = 'INST', NOM_RESU = 'DEPL',
                    VALE = (0. , 0. , 1. , 1. , 2. , 2. , 3. , 3. ,
4. , 4. ) )
df2= DEFI_FONCTION ( NOM_PARA = 'INST', NOM_RESU = 'DEPL',
                    VALE = (3. , 3. , 4. , 4. , 5. , 5. ) )
dn1= DEFI_NAPPE ( NOM_PARA = 'AMOR', NOM_RESU = 'DEPL',
                 VALE = (0.01, 0.02),
                 FUNCTION = (df1, df2 ) )

TEST_FONCTION (
# the attribute is checked 'NOM_PARA' function df1 in the tablecloth dn1
  ATTRIBUTE = ( _F (FUNCTION = dn1,
                   PARA = 0.01, # 0.01 reached df1
                   ATTR = 'NOM_PARA_FONC',
                   ATTR_REFE = 'INST' ),
# the attribute is checked 'NOM_PARA' tablecloth dn1
  _F (FUNCTION = dn1,
      ATTR = 'NOM_PARA',
      ATTR_REFE = 'AMOR' )),
# a value of the tablecloth is checked dn1 (in practice on the function df1)
  VALUE = _F ( FUNCTION = dn1,
              NOM_PARA = ('AMOR', 'INST' ),
              VALE_PARA = (0.01, 1. ),
              VALE_REFE = 1. )
)
```

### 4.2 Checking of a function

```
lil=DEFI_LISTE_REEL ( DEBUT=0.,
                    INTERVALLE=_F (JUSQU_A=2*pi, PAS=2*pi/20), )

f1=FORMULE ( NOM_PARA=' INST',
            VALE=' sin (INST) + cos (INST) ',)

fonc=CALC_FONC_INTERP ( FONCTION=f1,
                       LIST_PARA=lil,
                       NOM_RESU=' DEPL',
                       INTERPOL=' LIN', )

TEST_FONCTION (
# an attribute of the function is tested
  ATTRIBUT=_F ( FONCTION=fonc,
               ATTR=' INTERPOL',
               ATTR_REFE=' LIN LIN ',),
# a value of the function is tested
  VALEUR=_F ( FONCTION=fonc,
             VALE_PARA=pi,
             REFERENCE=' ANALYTIQUE',
             VALE_CALC=-1.,
             VALE_REFE=sin (pi) +cos (pi), ), )
```