

Neighbouring file format, version 1.0

The file is divided in two sections, header and data. The extension `.NGH` is highly recommended for files of this type.

```
$NeighbourFormat
1.0 file-type data-size
$EndNeighbourFormat
$Neighbours
number-of-neighbours
neighbour-number type <type-specific-data>
...
$EndNeighbours
```

where

file-type **int** — is equal 0 for the ASCII file format.

data-size **int** — the size of the floating point numbers used in the file. Usually *data-size* = `sizeof(double)`.

number-of-neighbours **int** — Number of neighbouring defined in the file.

neighbour-number **int** — is the number (index) of the n-th neighbouring. These numbers do not have to be given in a consecutive (or even an ordered) way. Each number has to be given only once, multiple definition are treated as inconsistency of the file and cause stopping the calculation.

type **int** — is type of the neighbouring.

<type-specific-data> — format of this list depends on the *type*.

Types of neighbouring and their specific data

type = 10 — “Edge with common nodes”, i.e. sides of elements with common nodes. (Possible many elements)

type = 11 — “Edge with specified sides”, i.e. sides of the edge are explicitly defined. (Possible many elements)

$type = 20$ — “Compatible”, i.e. volume of an element with a side of another element. (Only two elements)

$type = 30$ — “Non-compatible” i.e. volume of an element with volume of another element. (Only two elements)

<i>type</i>	<i>type-specific-data</i>	Description
10	<i>n_elm eid1 eid2 ...</i>	number of elements and their ids
11	<i>n_sid eid1 sid1 eid2 sid2 ...</i>	number of sides, their elements and local ids
20	<i>eid1 eid2 sid2 coef</i>	Elm 1 has to have lower dimension
30	<i>eid1 eid2 coef</i>	Elm 1 has to have lower dimension

coef is of the `double` type, other variables are `ints`.

Comments concerning 1-2-3-FLOW:

- Every inconsistency or error in the `.NGH` file causes stopping the calculation. These are especially:
 - Multiple usage of the same *neighbour-number*.
 - Difference between *number-of-neighbours* and actual number of data lines.
 - Reference to nonexisting element.
 - Nonsense number of side.
- The variables *sid?* must be nonnegative and lower than the number of sides of the particular element.