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ITTC Quality System Manual

Recommended Procedures and Guidelines

Work Instructions

Work Instruction for formatting ITTC Recommended Proce- dures and Guidelines

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| 4.0 | QUALITY MANAGEMENT SYSTEM |
| 4.2 | Document and Data Control |
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| 4.2.3-01 | Recommended Procedures and Work Instructions |
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| Updated / Edited by | Approved |
| Quality Systems Group of the 29 th ITTC | 29 th ITTC 2021 |
| Date: 01/ 2021 | Date: 06/ 2021 |




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Work Instruction for formatting ITTC Recommended Procedures and Guidelines

1. OVERVIEW

To simplify formatting ITTC Recommended Procedures the Quality System Group has prepared a template, which comes in a file called ProcTemplate_XXXX.dotx. The XXXX group is generally updated according to the year of the next Conference. This template is a Microsoft Word template file that includes the basic elements that constitute a formatted text, e. g. headings, captions etc.

When starting to write a procedure one has to double click on the ProcTemplate_XXXX.dotx file. Microsoft Word will open a new document that will be based on the ProcTemplate_XXXX.dotx model. The new file will contain all of the formatting styles that have been prepared by QS Group, it can be saved as a regular docx file.

The right formatting is necessary in order to be able to correctly transform the text structure when producing the pdf files containing hyperlinks.

1.1 General settings

In order to properly see the hyperlinks and fields embedded in the document, you should select the Tool menu, then Options. A box opens, and you have to select the View tab. You have to set Field Shading to Always. Then press OK. From now on all hyperlinks and fields will be shaded in grey.

The formatting of ITTC documents relies on the proper use of the Styles.

In order to see the style list, you have to make sure that your Microsoft Word is showing the Formatting Tool Bar. To do this, select the Show menu then the Instrument bar menu and see if Formatting is checked. If it is not, check the box.

2. PAGE GEOMETRY


The procedures and guidelines shall be formatted for A4 paper (210 mm x 297 mm, 8.27" x 11.69").

2.1 Top and Bottom Margins

The bottom margin for all pages is 25 mm (0.98") for A4 paper. This is the distance between the *bottom* of the last line of text and the bottom edge of the sheet of paper. The top margin is measured from the top edge of the paper to the *top* of the first line of text. The top margin for all pages is 30 mm (1.18") below the top edge of the paper.

2.2 Columns and Side Margins

The document is to be prepared in double column format. The column width is to be 81 mm (3.19"), the spacing between the columns is to be 8 mm (0.31"). The left side margin is to be 20 mm. (0.79") The corresponding right-hand margin for A4 paper is 20 mm. (0.79").

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3. STYLES

3.1 Page Header

Fill in the name of the recommended procedure both on first and second page. The procedure number will be filled by the QS Group.

3.2 Page Footer

Fill in the name of the Committee and the date.

3.3 Table of Contents

The table of contents will be automatically updated. To obtain this, when the procedure is complete, you have to go to the first page of the document. Once there, you have to position your mouse pointer or the cursor on one of the listed contents and click with the right button. A list of possible actions pops up, and you have to choose Update Field. A box will open asking if you want to update page number only or the whole summary. Select the whole summary option and then OK. The Table of contents will be automatically updated.

3.4 Headings

Four levels of headings have been provided in order to automatically get the right numbering. The first three levels have the same appearance and the corresponding styles are:

- ITTC-L1
- ITTC-L2
- ITTC-L3

the fourth level format can be chosen between the numbered style

- ITTC-L4-N

and a style without numbering

- ITTC-L4

3.5 Text Body

The text body shall be written using ITTC-TB style. Two further styles can be used for particular needs regarding the text body:

- ITTC-TB-Centered
- ITTC-TB-Left

that produce the following effects respectively:

ITTC-TB-Centered

ITTC-TB-Left

3.6 Lists


Four styles are available for lists:

L_{PP} example of ITTC-List Style
 C_B example of ITTC-List Style
 γ example of ITTC-List Style

- ITTC-List-D
- ITTC-List-D
- ITTC-List-D

1. ITTC-List-N
2. ITTC-List-N
3. ITTC-List-N

ITTC-List-L
ITTC-List-L
ITTC-List-L

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4. LEVEL 1 HEADINGS

Major, or Level 1, Headings can be obtained selecting style ITTC-L1 from the Microsoft Word Style list.

4.1 Level 2 Headings

Subheading, or Level 2 headings, can be obtained selecting style ITTC-L2 from the Microsoft Word Style list.

4.1.1 Level 3 Headings

Sub-Subheading, or Level 3 headings, can be obtained selecting style ITTC-L3 from the Microsoft Word Style list.

Level 4 Headings

Sub-Sub-Subheading, or Level 4 headings, can be obtained selecting style ITTC-L4 from the Microsoft Word Style list.

4.1.1.1 Level 4 Headings

Numbered Sub-Sub-Subheading, or Level 4 headings, can be obtained selecting style ITTC-L4-N from the Microsoft Word Style list.

5. APPENDIXES

Four styles are available for dealing with appendixes:

- ITTC-Apdx_L1
- ITTC-Apdx_L2
- ITTC-Apdx_L3
- ITTC-Apdx_L4

For the usage of these four styles refer to Appendix A.

6. SYMBOLS

6.1 Symbols contained in ITTC Symbols List

Symbols should comply with the ITTC Symbols List, ITTC (2017). The formatting of the ITTC Symbol and SI Unit columns in the ITTC (2017) follow BIPM (2019), JCGM (2012), and ISO (2013). The seven (7) SI base units are listed in Table 1, while derived units typically applied in ITTC are in Table 2. SI units are in regular font. A space is inserted between the numerical value and the relevant SI unit.


6.2 Symbols not contained in ITTC Symbols List

These Symbols shall also follow the principles of notation given in ISO (2013). For clarification a short excerpt is given also here:

In Figure 1, the principles of notation in according to ISO (2013) are shown.

Symbols representing physical quantities normally are one Latin or Greek letter with Subscripts for further identification. They are written in *italic* style letters. As an example, the symbol for mass is *m* in kg. The symbol for mass also appears in the displacement mass as a subscript, Δ_m .

Symbols that represent physical SI units are in regular font. Examples are presented in Table 1 and Table 2. Multiple units such as in SI Base column of Table 2 should have a space between the units or other appropriate operator. For example, torque, Q , is in newton-metre and may be marked as N m or N·m with a centre dot. As another example, metre-second should be m s or m·s to avoid confusion with ms for milli-second. The units of velocity may either be m/s or m·s⁻¹.

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Numbers are normally written in **roman** style letters, regular font. Trigonometric functions such as sin and cos are also in regular font. The following rules with numbers should be followed.

- Decimal fractions. Numbers with absolute values with less than 1 should have a leading zero (0), e. g. 0.5.
- Significant figures. Ambiguity in the number of significant figures is eliminated by reporting the number as a power of ten (10^n). For example from ISO (2013), 401 000 should be 401×10^3 for three significant figures. An uncertainty estimate should be reported to two significant figures. A value should be indicted to the same number of digits.
- Groups of digits. A number should be reported in groups of three (3) digits with a space between each group. For example from BIPM (2019) and JCGM (2013), the value for the standard acceleration of gravity is 9,806 65 m/s². The value in the previous version of this work instruction was in error.
- SI units. A space is inserted after the numerical value and before the SI unit as indicated in the example for standard gravity.

Superscripts signify Operators, ITTC (2017)

- exponentiation
- the various aspects of complex quantities
- the various aspects of spectra and
- the various aspects of random quantities and stochastic processes e. g. probability operators.

Subscripts signify Identifiers, ITTC (2017)

- matrix components
- identifiers tested, e. g. ship S or model M, appendages (APP) or the various bodies in a

multi-body problem. As an example, scale ratio is defined as $\lambda = L_S/L_M$, where L_S is ship length and L_M is the model length.

- identifiers of coordinate systems and of the reference points, quantities (L_{PP})

Table 1: SI base units

| Quantity | ITTC Sym- bol | SI Unit | |
|---------------------------|---------------------|---------------|-------------|
| | | Name | Sym- bol |
| Length | <i>L</i> | metre | m |
| Mass | <i>m</i> | kilo- gram | kg |
| Time | <i>t</i> | second | s |
| Electric current | | ampere | A |
| Thermodynamic temperature | <i>t</i> | kelvin | K |
| Substance amount | | mole | mol |
| Luminous inten- sity | | candela | ca |


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Table 2: SI derived units with special names and symbols

| Quantity | ITTC Symbol | SI Unit | | | |
|-------------|----------------|----------------|--------|------------------------------------|------------------|
| | | Name | Symbol | SI Base | Other |
| Energy | <i>E</i> | joule | J | kg·m ² /s ² | N·m |
| Frequency | <i>f</i> | hertz | Hz | s ⁻¹ | |
| Force | <i>F</i> | newton | N | kg·m/s ² | |
| Power | <i>P</i> | watt | W | kg·m ² /s ³ | J/s |
| Pressure | <i>p</i> | pascal | Pa | kg·m ⁻¹ s ⁻² | N/m ² |
| Temperature | <i>t</i> | degree Celsius | °C | K | |

Superscripts signify Operators:

Numbers in roman

(power of *n*)

Symbols representing numbers

(*n* = 1, 2, 3 etc.) in *italic*

SYMBOLS
in *italic*

$$K_{TM}^2 \times 10^n$$

NUMBERS
in roman

Subscripts signify Identifiers:

Symbol for **physical quantity** in *italic*

(*T* = Thrust)

Other symbols in roman

(M = Model)

Figure 1: Principles of notation

7. TABLES AND FIGURES

7.1 Tables

When you have to insert a table, the usual procedure can be followed. The only thing you have to do is: place the cursor inside the table, choose the Table menu and the select table. Once the table is selected (highlighted) select the centre button on the Formatting Tool Bar.

Tables should have captions. To place a caption select the Insert menu, and then select Caption. A box opens, and you have to choose the label you want to use (Table). Then press OK.

Table 3: Example table and caption

| | | |
|----------|-----------|----------|
| AAAAA | BBBBBB | CCCCC |
| A1a1a1a1 | B1b1b1b1 | C1c1c1c1 |
| A2a2a2a2 | B2b2b2b2b | C2c2c2c2 |

A caption will appear over your table. At this point you should highlight the whole line (or lines) and select style ITTC-Caption from the list.

Table 3 at the beginning of the next paragraph should appear grey shaded on your screen. If it is not, follow the procedure described in 1.1.

Table 3 illustrates This is a reference to a numbered object. It is automatically updated in case you add another element of the same kind before this reference. With Microsoft Word 2013, it is obtained choosing Insert menu, Reference, Cross reference. A box pops up in which you have to select the type of object you are referring to, e. g. figure or table (in the upper left box). Then you have to choose the right object (from the list in the lowermost box), and at

last you have to specify to insert only label and number (in the upper right box).

7.2 Figures

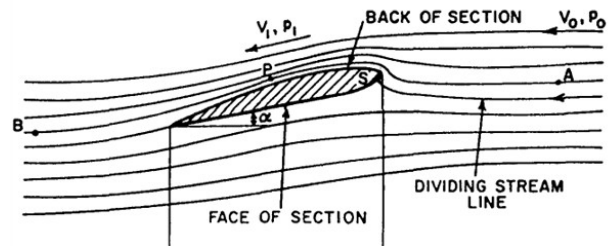


Figure 2 Example figure and caption


To insert a figure, first change the style of the paragraph that will contain the figure to style ITTC-TB-Centered. After that, the figure can be inserted in the usual way.

Figures should have captions. To place a caption, select the Insert menu, then Caption. A box opens, and you have to choose the label you want to use (Figure). Then press OK.

A caption will appear under your figure. At this point, you should highlight the whole line (or lines) and select style ITTC-Caption from the list.

Figure 2 at the beginning of the next paragraph should appear grey shaded on your screen. If it is not, follow the procedure described in 1.1.

Figure 2 illustrates This is a reference to a numbered object. It is automatically updated in case you add another element of the same kind before this reference. With Microsoft Word 2013, it is obtained choosing Insert menu, Reference, Cross reference. A box pops up in which you have to select the type of object you are referring to, e. g. figure or table (in the upper left box). Then, you have to choose the right object (from the list in the lowermost

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box), and last you have to specify to insert only label and number (in the upper right box).

8. MATHEMATICS

All equations should be numbered consecutively, beginning with (1) to the end of the report, including any appendices. The number should be enclosed in parentheses (as shown above) and set flush right in the column on the same line as the first line of the equation. This is the number that should be applied when referring to equations within the text. An Example is given below with the equation format from Microsoft Office 2013.

$$\frac{\partial \phi}{\partial t} = \frac{1}{2} |\Delta \phi|^2 + \frac{p}{\rho} + gy = C(t) \quad (1)$$

where g is the gravity acceleration.

The Navier-Stokes equation is

$$\rho \frac{Du}{Dt} = \rho f - \nabla p + \Delta(\mu D) \quad (2)$$

The numbered equations should be given the style ITTC-Equation Numbered, which provides the correct line spacing.

The style ITTC-TB-Left should be used in case the sentence has to be continued without starting a new paragraph, as shown in the line after Equation (1).

8.1 Equation Format

Equations (1) and (2) above were formatted as follows:

1. With the cursor on the line into which you want to place a numbered equation select the style ITTC-Equation Numbered,
2. With the Equation tool, insert the equation,

3. Push the Tab button on your Keyboard to place a “Tab” character,
4. Place the equation number as illustrated in paragraph 8.2

The outcome of this operation should look like in Figure 4.

$$\frac{\partial \phi}{\partial t} = \frac{1}{2} |\Delta \phi|^2 + \frac{p}{\rho} + gy = C(t) \quad \rightarrow \quad (1)¶$$

Figure 3 appearance of a numbered equation

The Tab character is shown by a right pointing black arrow \rightarrow . To correctly see the Tab characters in the document you should select the ¶ symbol into the Paragraph section of the Home tab into the Quick Access bar on top of your Word window, as illustrated in Figure 3.

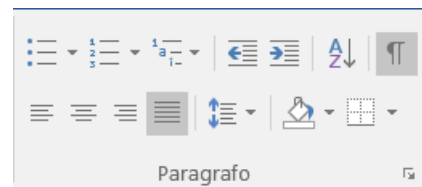



Figure 4: Paragraph section of the Home tab of the Quick access bar

8.2 Equation Number

Equation numbering is performed in the following step sequence after having placed the equation. With the cursor before the symbol ¶, go to Insert. Select Quick Parts then Field. In the dropdown menu, select Seq. In the window after SEQ, type Equation and press enter. Add parentheses to the equation number.

For referencing the equation number in the text, perform the following steps. Go to Insert and select Cross-reference. In the drop-down

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menu, select Equation, and then select the appropriate equation number. The equation is now hyperlinked to the equation.

9. REFERENCE LIST FORMAT

References should look like the following example. To obtain this select style ITTC-R1 from the list. References are listed alphabetically.

Author, A.B., Author, C.D., 2005, “Something Funny”, ITTC Journal of Extreme Fluid Dynamics, Vol. 1, pp 1 - 100.

10. TEMPLATE

A template in word format has been prepared. To write a new procedure open the new file using the following template:

[ProcTemplate_XXXX.dotx](#)

The file ProcTemplate_XXXX.dotx is available at the ITTC web site and from the ITTC Quality Systems Chairman.


11. REFERENCES

BIPM, 2019, “The International System of Units (SI),” 9th Edition, Bureau International de Poids Mesures (BIPM), Sèvres, France.

ISO, 2013, “Quantities and units,” ISO 8000-1, International Standards Organization, Geneva, Switzerland.

ITTC, 2017, “ITTC Symbols and Terminology List – Alphabetic,” 28th International Towing Tank Conference.

JCGM, 2012, “International vocabulary of metrology – Basic and general concepts and associated terms (VIM),” 3rd Edition, JCGM 200:2012, Joint Committee for Guides in Metrology (JCGM), Bureau International de Poids Mesures (BIPM), Sèvres, France

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Appendix A. : Style ITTC-Apdx-L1

Examples of usage of the appendix styles.

A.1. Style ITTC-Apdx-L2

The text body shall be written using ITTC-TB style.

The text body shall be written using ITTC-TB style.

The text body shall be written using ITTC-TB style.

A.1.1. Style ITTC-Apdx-L3

Two further styles can be used for particular needs regarding the text body:

- ITTC-TB-Centered
- ITTC-TB-Left

that produce the following effects respectively:

ITTC-TB-Centered

ITTC-TB-Left

A.1.1.1. Style ITTC-Apdx-L4

Figure 5 illustrates

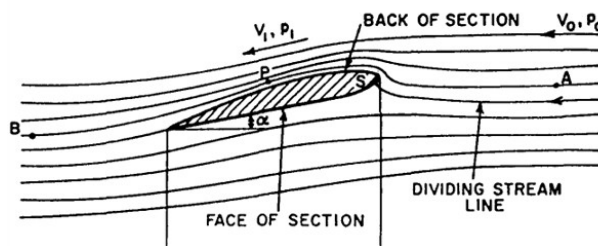


Figure 5: Example figure and caption