



ICAO

Doc 9303

Machine Readable Travel Documents

Eighth Edition, 2021

Part 6: Specifications for TD2 Size

Machine Readable Official Travel Documents (MROTDs)



Approved by and published under the authority of the Secretary General

INTERNATIONAL CIVIL AVIATION ORGANIZATION



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Doc 9303, *Machine Readable Travel Documents*

Part 6 — *Specifications for TD2 Size Machine Readable Official Travel Documents (MROTDs)*

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AMENDMENTS

Amendments are announced in the supplements to the *Products and Services Catalogue*; the Catalogue and its supplements are available on the ICAO website at www.icao.int. The space below is provided to keep a record of such amendments.

RECORD OF AMENDMENTS AND CORRIGENDA

AMENDMENTS		
No.	Date	Entered by

CORRIGENDA		
No.	Date	Entered by

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1. SCOPE

Note.— Recognizing that States or organizations have standardized on the TD1 size MROTD in lieu of the TD2 format, ICAO will no longer maintain the TD2 specifications beyond the 8th edition of Doc 9303.

Doc 9303, Part 6 defines specifications that are specific to TD2 Size Machine Readable Official Travel Documents (MROTDs) and shall be read in conjunction with:

- Part 1 — *Introduction*;
- Part 2 — *Specifications for the Security of the Design, Manufacture and Issuance of MRTDs*;
- Part 3 — *Specifications Common to all MRTDs*.

Together these specifications provide for global data interchange of MRTDs both by visual (eye readable) and machine readable (optical character recognition) means.

Additional specifications providing for global data interchange of electronic data in eMRPs and eMROTDs may be found in Doc 9303, Parts 9 through 12.

2. DIMENSIONS OF THE TD2 SIZE MROTD

2.1 Dimensions

The dimensions shall be guided by those in ISO/IEC 7810:2019 (except thickness) for the ID-2 type card:

105.00 mm (4.134 in) wide by 74.00 mm (2.913 in) high

2.2 Edge Tolerances

Inner rectangle: 73.25 mm × 104.25 mm (2.88 in × 4.10 in)

Outer rectangle: 74.75 mm × 105.75 mm (2.94 in × 4.16 in)

In no event shall the dimensions of the finished TD2 document exceed the dimensions of the outer rectangle, including any final preparation (e.g. laminate edges). See Figure 1.

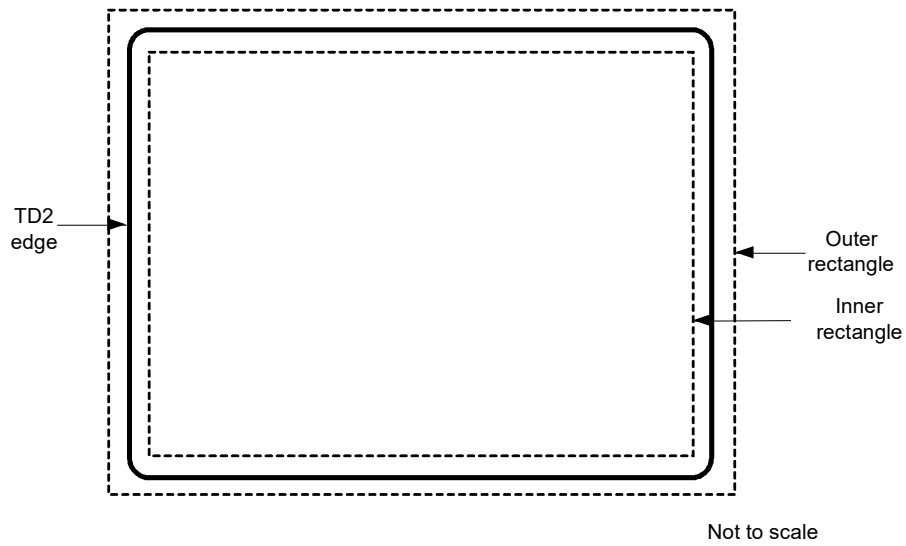


Figure 1. TD2 dimensional illustration

2.3 Margins

The dimensional specifications refer to the outer limits of the TD2. A margin of 2.0 mm (0.08 in) along each outer edge, with the exception of the header zone, must be left clear of data. See Figure 2.

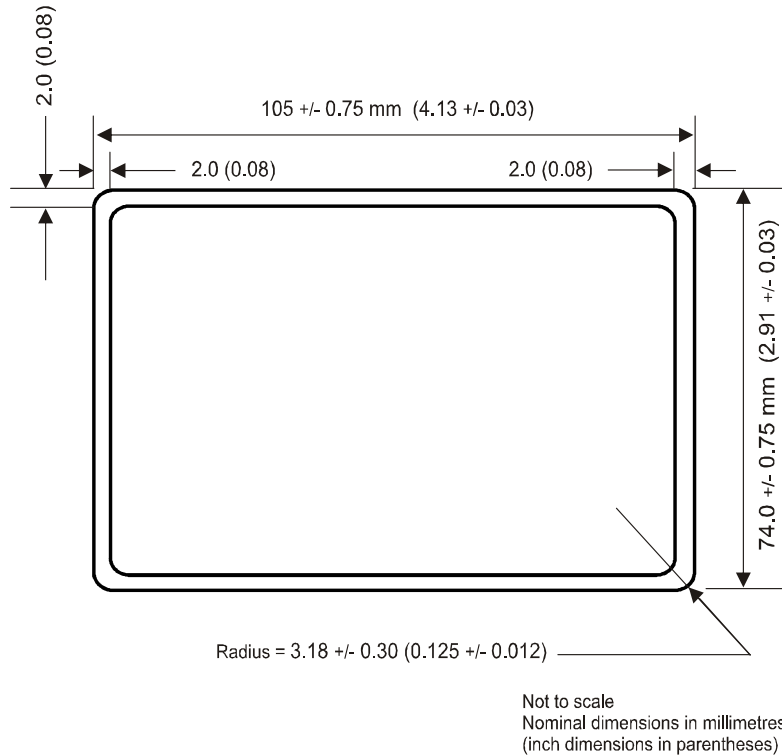


Figure 2. Edge margins and nominal dimensions of a TD2 Size MROTD

2.4 Thickness

The thickness, including any final preparation (e.g. laminate), shall be as follows:

- Minimum:

0.25 mm (0.01 in);

- Maximum:

1.25 mm (0.05 in).

The thickness of the area within the machine readable zone shall not vary by more than 0.1 mm (0.004 in).

Note.— The dimensions and the tolerances specified above differ slightly from those specified in ISO/IEC 7810. This is for historical reasons; TD2 cards were originally produced using encapsulated pouch card methods which are incapable of achieving the permitted tolerances of ISO/IEC 7810. Some cards may still be produced using these techniques and others where the personalization process is incapable of achieving the tight tolerances ISO/IEC 7810 requires. Wherever possible, however, dimensions and tolerances should conform to ISO/IEC 7810.

General note.— The decimal notation used in these specifications conforms to ICAO practice. The ISO practice is to use a decimal point (.) in imperial measurements and a comma (,) in metric measurements.

3. GENERAL LAYOUT OF THE TD2 SIZE MROTD

The TD2 follows a standardized layout to facilitate reading of data globally by both visual and machine readable means (global interoperability).

3.1 TD2 Zones

To accommodate the various requirements of States' laws and practices and to achieve the maximum standardization within those divergent requirements, the TD2 is divided into seven zones as listed below in paragraphs 3.1.1 and 3.1.2. Zones I through VI constitute the visual inspection zone (VIZ). Zone VII is the machine readable zone (MRZ).

3.1.1 Front of the TD2

Zone I	Mandatory header
Zone II	Mandatory and optional personal data elements
Zone III	Mandatory and optional document data elements
Zone IV	Mandatory holder's signature or usual mark
Zone V	Mandatory identification feature
Zone VII	Mandatory machine readable zone (MRZ)

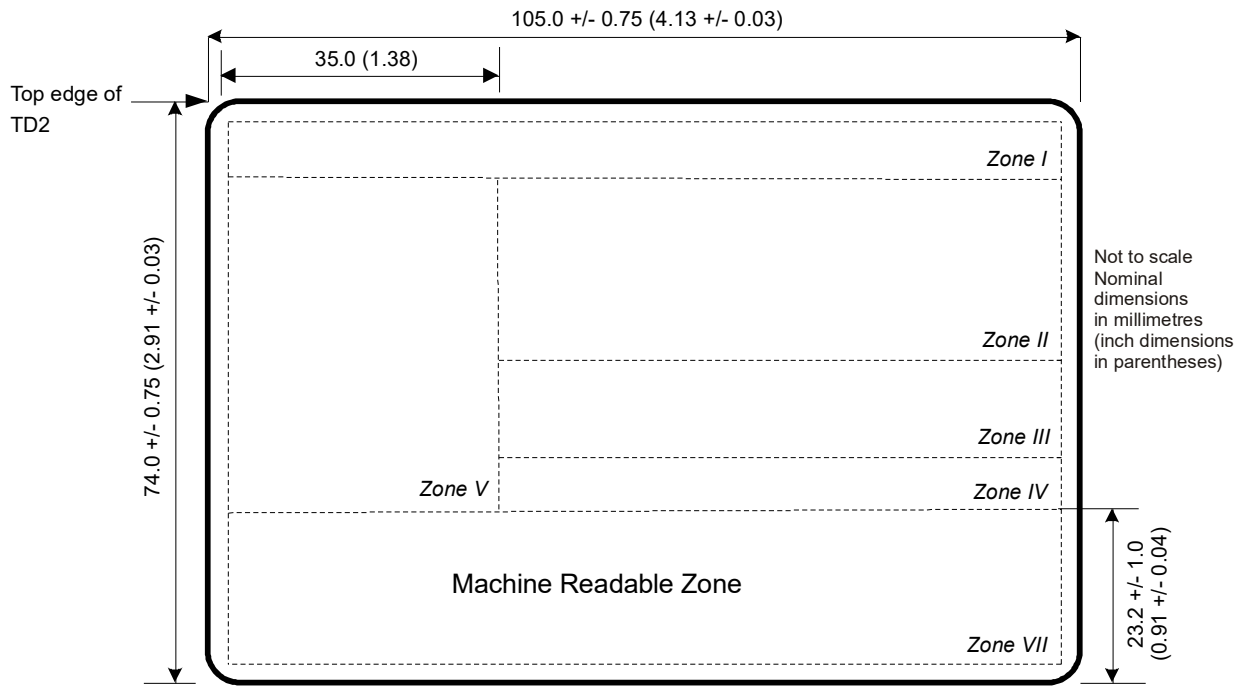


Figure 3. Nominal layout of the Zones on the front side of a TD2 Size MROTD

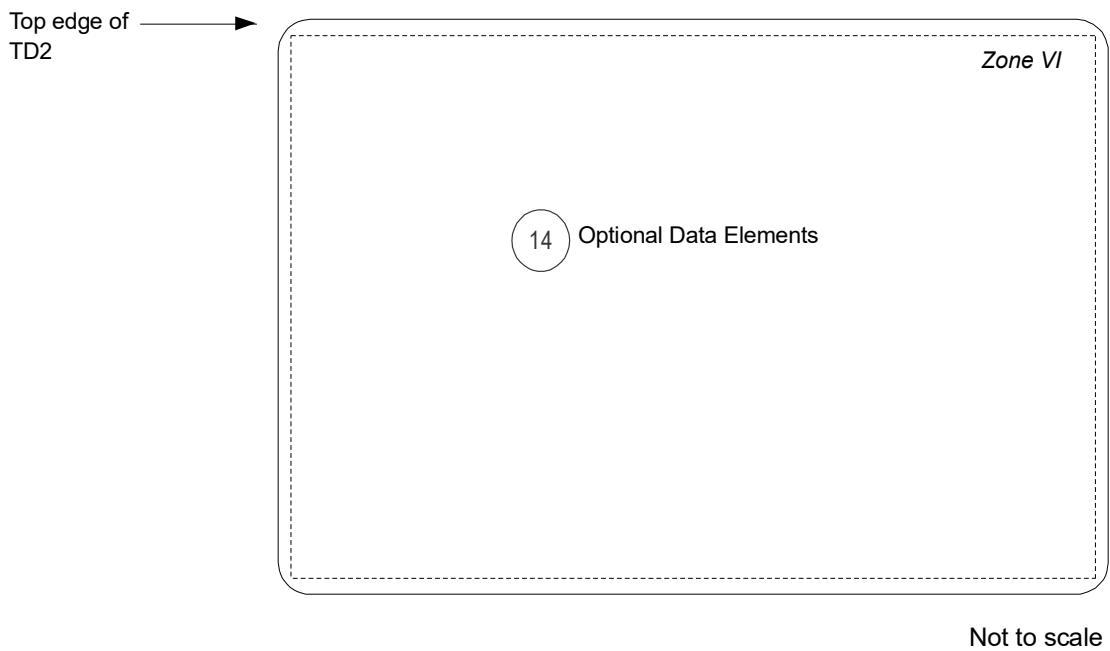


Figure 4. The reverse side of a TD2

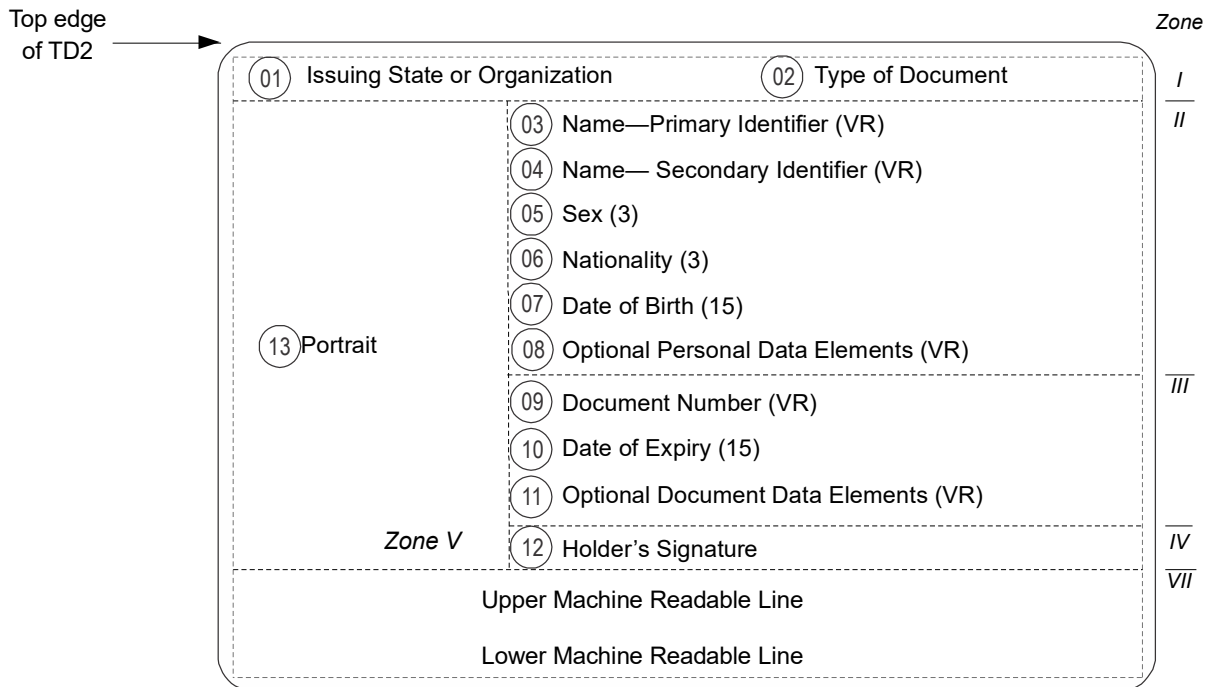


Figure 5. Sequence of data elements on the front side of a TD2

3.1.2 Back of the TD2

Zone VI Optional data elements

3.2 Content and Use of Zones

The data elements to be included in the zones, the preparation of the zones and guidelines for the dimensional layout of zones shall be as described hereunder and illustrated in Figures 4 and 5.

Zones I to V and Zone VII contain mandatory elements which represent the minimum requirements for the TD2. The optional elements in Zones II, III and VI accommodate the diverse requirements of issuing States or organizations, allowing for presentation of additional data, while achieving the desired level of standardization. The location of zones and data elements are set out in Figures 3 through 6. Figures 7 and 8 show some examples for positioning and adjusting the dimensional specifications of Zones I to V to accommodate the flexibility desired by issuing States or organizations. Examples of a personalized TD2 are shown in Appendix A, Figures A-1 to A-4.

3.2.1 Mandatory zones

Zone I on the front of the TD2 identifies the issuing State or organization and the document.

Data elements shall appear in a standard sequence in Zones II and III.

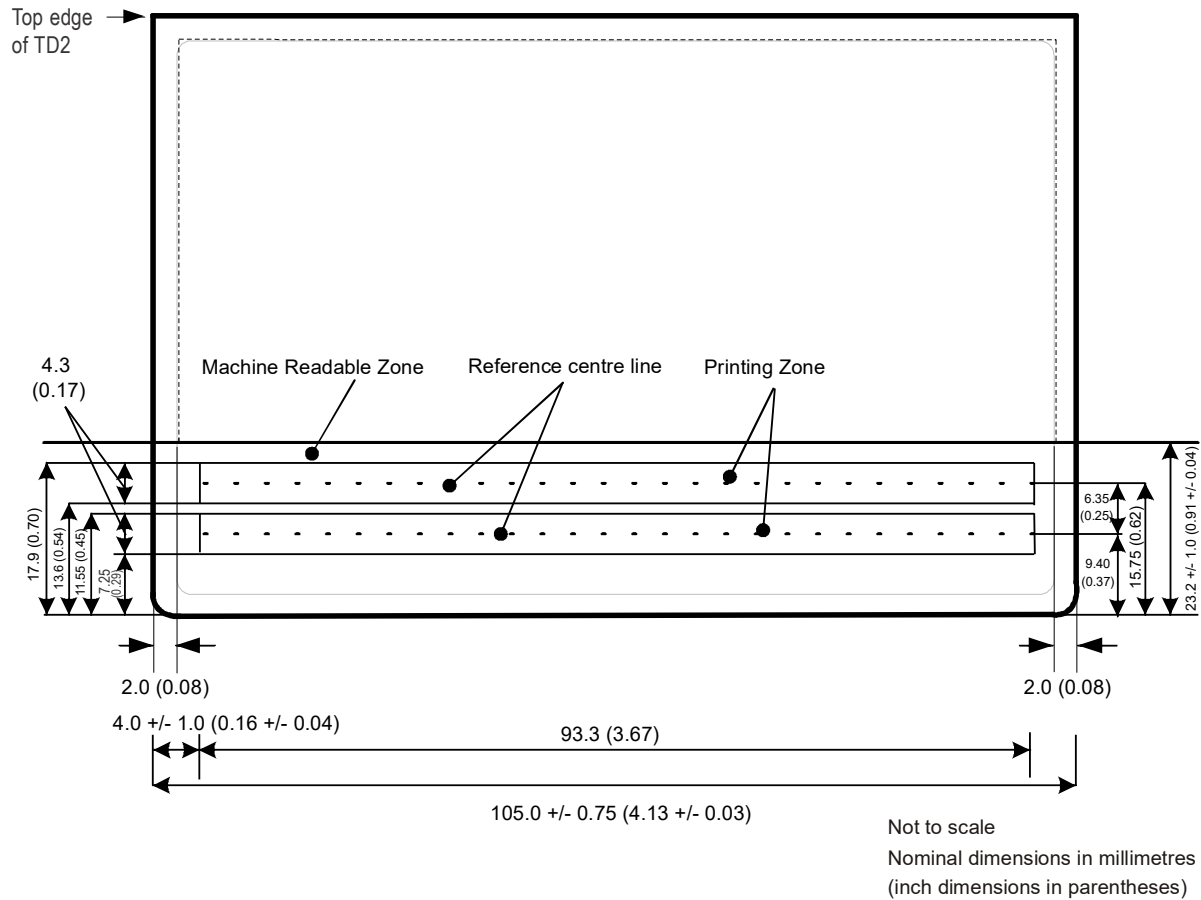


Figure 6. Position and dimensions of Zone VII the Machine Readable Zone

Zones II and III each contain a field in which optional data elements may be included. The optional field in Zone II shall be used for personal data elements and the optional field in Zone III for document-related details. Where an issuing State or organization does not use the optional fields in Zones II and III, there is no need to reserve the space for them on the TD2.

Zone IV contains the holder's signature or usual mark. The issuing State or organization shall decide the acceptability of a holder's usual mark.

Zone V shall contain the personal identification feature(s) which shall include a portrait solely of the holder. At the discretion of the issuing State or organization, the name field in Zone II and the holder's signature or usual mark in Zone IV may overlay Zone V provided this does not hinder recognition of the data in any of the three zones.

The position for the holder's portrait is along the left edge of the front of the TD2, as described in Section 3.3 and illustrated in Figure 3. The size of the portrait is specified in the Data Element Directory (Paragraph 4.1.1.1, Item 13/V).

Zone VII, located on the front of the TD2, shall contain the machine readable data. Zone VII conforms in height to the MRZ defined for all MRTDs so that the machine readable data lines fall within the effective reading zone (ERZ) specified in Doc 9303-3.

All MRZ data elements shall be as defined in the Data Element Directory, paragraph 4.2.2.

3.2.2 Optional data zone

Zone VI, on the back of the MROTD, is an optional zone for use at the discretion of the issuing State or organization. Because the TD2 is a card, Zone VI will always appear, irrespective of whether or not it is used. See Figure 4.

3.3 Dimensional Flexibility of Zones I to V

Zones I to V may be adjusted in size and shape within the overall dimensional specifications of the TD2 to accommodate the diverse requirements of issuing States or organizations. All zones, however, shall be bounded by straight lines, and all angles where straight lines join shall be right angles (i.e. 90 degrees). It is recommended that the zone boundaries not be printed on the TD2. Some examples of flexible positioning of the zones are shown in Figures 7 and 8.

When an issuing State or organization chooses to produce a TD2 that contains a transparent or otherwise unprintable border around the card, this will result in a reduction of the available area within the zones. The full TD2 dimensions and zone boundaries shall be measured from the outside edge of this border, which is the external edge of the TD2.

Zone I shall be located along the top edge of the TD2 and extend across the full width of the document. The issuing State or organization may vary the *vertical* dimension of Zone I, as required, but this dimension shall be sufficient to allow legible interpretation of the data elements in the zone and shall not be greater than 11.0 mm (0.43 in).

Zone V shall be located such that its left edge is coincident with the left edge of the TD2. Zone V may vary in size but the portrait image shall not exceed 45 mm x 35 mm (1.77 in x 1.38 in), the maximum dimensions specified in the Data Element Directory.

Zone V may move *vertically* along the left edge of the TD2 and overlay a portion of Zone I as long as individual details contained in either zone are not obscured. The scope for such movement is illustrated in Figure 8.

The upper boundary of Zone II shall be coincident with the lower boundary of Zone I.

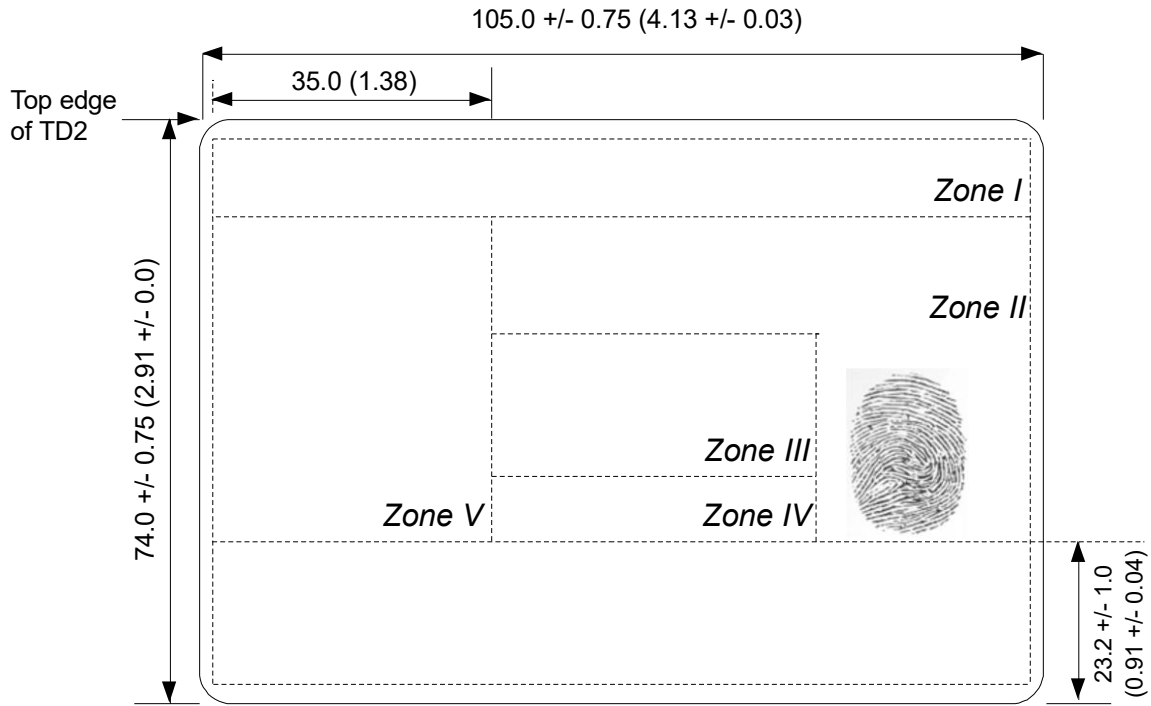
When there is a specific requirement for the name field to extend across the TD2, Zone II may extend up to the full width of the TD2. In the event the full dimension is used, Zone II shall overlay a portion of Zone V, as illustrated in Appendix A, Figure A-4. In this case, issuing States or organizations shall ensure that data contained in either zone are not obscured.

The lower boundary of Zone II may be positioned at the discretion of the issuing State or organization; examples are shown in Figures 7 and 8. Enough space must be left for Zones III and IV. This boundary does not need to be straight across the longer dimension of the TD2. Figure 7 illustrates a Zone II with the lower boundary on two levels. The flexible design for the Zone II illustrated conforms with the specifications defined above.

Zone III may start at the right vertical boundary of Zone V and may extend, at the discretion of the issuing State or organization, to the right edge of the TD2. Figures 7 and 8 also illustrate some options for a flexible layout of Zone III.

The position of Zone IV is illustrated in Figures 7 and 8 and in the examples shown in Appendix A.

Zone IV may overlay Zone V, as illustrated in Appendix A, Figure A-3, although this is not recommended practice. In this case, issuing States or organizations shall ensure that individual details contained in either zone are not obscured.



Not to scale
 Nominal dimensions in millimetres
 (inch dimensions in parentheses)

Figure 7. Zones III and IV have been reduced in size to permit the addition of an optional displayed identification feature e.g. a fingerprint, in Zone II

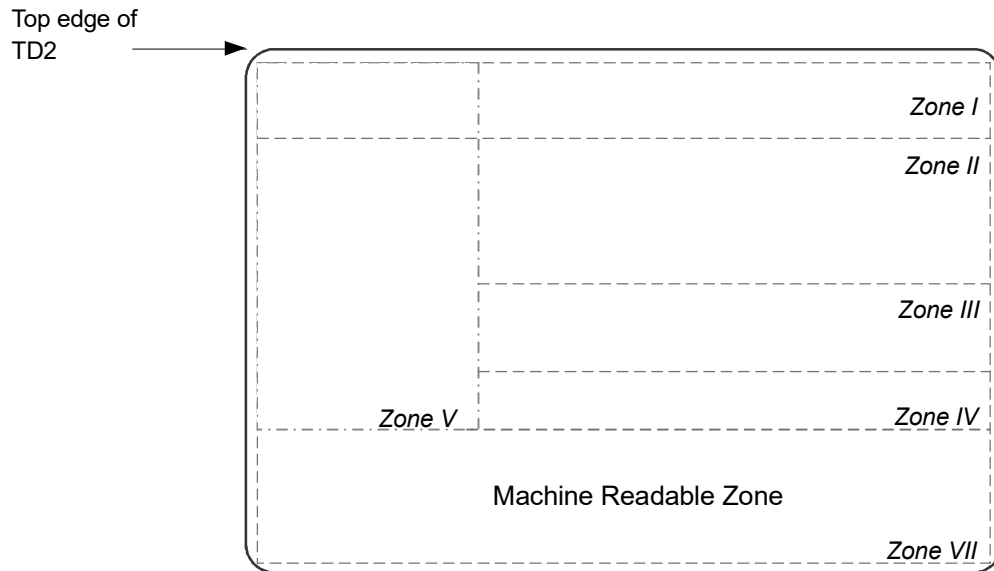


Figure 8. Illustrating the possibility for Zone V to overlay a portion of the Mandatory Header, Zone I

4. CONTENTS OF A TD2 SIZE MROTD

4.1 Visual Inspection Zone (VIZ) (Zones I through VI)

All data in the VIZ shall be clearly legible.

Guidance on the typeface, size and line spacing, the languages and character set, and the field captions to be used in the VIZ may be found in Doc 9303-3.

If any optional field or data element is not used, the data may be spread more evenly in the visual zone of the TD2 consistent with the requirement for sequencing zones and data elements.

4.1.1 Data element directory

4.1.1.1 Visual inspection zone — Data element directory

<i>Field/ zone no.</i>	<i>Data element</i>	<i>Specifications</i>	<i>Maximum no. of character positions</i>	<i>References and notes*</i>
01/I (Mandatory)	Issuing State or organization	The name of the State or organization responsible for issuing the travel document shall be displayed. See Doc 9303-3 for further details.	Variable	Notes a, c, e, h, i.
02/I (Mandatory)	Document	The type or designation of the document. For additional details see Doc 9303-3.	Variable	Notes a, b, c, e, i.
03/04/II (Mandatory)	Name	The full name of the holder, as identified by the issuing State or organization. For additional details see Doc 9303-3.	Variable	Doc 9303-3 Notes a, c, i, l.
03/II (Mandatory)	Primary identifier	Predominant component(s) of the name of the holder as described in Doc 9303-3. In cases where the predominant component(s) of the name of the holder (e.g. where this consists of composite names) cannot be shown in full or in the same order, owing to space limitations of Field(s) 03 and/or 04 or national practice, the most important component(s) (as determined by the State or organization) of the primary identifier shall be inserted.	Variable	Notes a, c, i, l.
04/II (Mandatory)	Secondary identifier	Secondary component(s) of the name of the holder, as described in Doc 9303. The most important component(s) (as determined by the State or organization)	Variable	Notes a, c, i, l.

<i>Field/ zone no.</i>	<i>Data element</i>	<i>Specifications</i>	<i>Maximum no. of character positions</i>	<i>References and notes*</i>
		of the secondary identifier of the holder shall be inserted in full, up to the maximum dimensions of the field frame. Other components, where necessary, may be represented by initials. Where the holder's name has only predominant component(s), this data field shall be left blank. The State or organization may optionally utilize the whole zone comprising Fields 03 and 04 as a single field. In such a case the primary identifier shall be placed first, followed by a comma and a space, followed by the secondary identifier.		
05/II (Mandatory)	Sex	Sex of the holder, to be specified by use of the single initial commonly used in the language of the State or organization where the document is issued and, if translation into English, French or Spanish is necessary, followed by an oblique and the capital letter F for female, M for male, or X for unspecified.	3	Notes a, c, f, i, l.
06/II (Mandatory)	Nationality	For details see Doc 9303-3.	Variable	Notes a, h, l.
07/II (Mandatory)	Date of birth	Holder's date of birth as recorded by the issuing State or organization. For unknown dates see Doc 9303-3.	15	Notes a, b, c, i, l.
08/II Optional element in mandatory zone	Optional personal data elements	Optional personal data elements, e.g. personal identification number or fingerprint, at the discretion of the issuing State or organization. If a fingerprint is included in this field, it should be presented as a 1:1 representation of the original. If a date is included, it shall follow the form of presentation described in Doc 9303-3.	Variable	Notes a, b, c, d, g, i.
09/III (Mandatory)	Document number	As given by the issuing State or organization, to uniquely identify the document from all other MRTDs issued by the State or organization. For additional details see Doc 9303-3.	Variable	Notes a, b, c, i, j, l.

<i>Field/ zone no.</i>	<i>Data element</i>	<i>Specifications</i>	<i>Maximum no. of character positions</i>	<i>References and notes*</i>
10/III (Mandatory)	Date of expiry	Date of expiry of the document. For additional details see Doc 9303-3.	15	Notes a, b, c, i, l.
11/III Optional element in mandatory zone	Optional document data elements	Optional data elements relating to the document. For additional details see Doc 9303-3.	Variable	Notes a, b, c, d, g, i, j.
12/IV	Holder's signature or usual mark (Mandatory)	Signature or usual mark of the holder. For additional details see Doc 9303-3.		Note g.
13/V	Identification Feature (Mandatory)	This field shall contain a portrait of the holder. The portrait shall not be larger than 45.0 mm x 35.0 mm (1.77 in x 1.38 in) nor smaller than 32.0 mm x 26.0 mm (1.26 in x 1.02 in). The position of the field concerned shall be along the left edge of the front of the TD2. See Doc 9303-3 for additional specifications for the portrait.		Note e.
14/VI	Optional data elements (Optional)	Additional optional data elements at the discretion of the issuing State or organization.		Notes a, b, c, d, g, i.

* Notes can be found in the last portion of sub-section 4.2.2.2

4.2 Machine Readable Zone (MRZ) (Zone VII)

4.2.1 Data position, data elements, and print position in the MRZ

4.2.1.1 Data position

Figure 6 shows the nominal dimensions and position of the data in the MRZ.

4.2.1.2 Data elements

The data elements corresponding to specified fields of the VIZ shall be printed, in machine readable form, in the MRZ, beginning with the left most character position in each field in the sequence indicated in the data structure specifications. Details on the data elements to be included in the MRZ are set out in Paragraph 4.2.2. Appendix B, Figure B-1 indicates the structure of the MRZ.

4.2.1.3 Print position

The position of the left-hand edge of the first character shall be 4.0 ± 1.0 mm (0.16 ± 0.04 in) from the left-hand edge of the document. Reference centre lines for the OCR lines and a nominal starting position for the first character of each line are shown in Figure 6. The positioning of the characters is indicated by those reference lines and by the printing zones for the two code lines.

4.2.2 Data structure of machine readable data for the TD2

4.2.2.1 Data structure of the upper machine readable line

MRZ character positions (line 1)	Field no. in VIZ	Data element	Specifications	Number of characters	References and notes*
1 to 2	02	Document code	Two characters, the first of which shall be A, C or I, shall be used to designate the particular type of document. The second character shall be as specified in Note k.	2	Notes a, b, c, e, k.
3 to 5		Issuing State or organization	The three-letter code specified in Doc 9303-3 shall be used. Spaces shall be replaced by filler characters (<).	3	Notes a, c, e.
6 to 36	03, 04	Name	The name consists of primary and secondary identifiers which shall be separated by two filler characters (<<). Components within the primary or secondary identifiers shall be separated by a single filler character (<). When the name of the document holder has only one part, it shall be placed first in the character positions for the primary identifier, filler characters (<) being used to complete the remaining character positions of the MRZ. For additional details see Doc 9303-3.	31 (Primary identifier(s), secondary identifier(s) and fillers)	Notes a, c, e.
		Punctuation in the name	Representation of punctuation is not permitted in the MRZ. For details on apostrophes, hyphens, commas, etc., see Doc 9303-3.		

<i>MRZ character positions (line 1)</i>	<i>Field no. in VIZ</i>	<i>Data element</i>	<i>Specifications</i>	<i>Number of characters</i>	<i>References and notes*</i>
		Name prefixes and suffixes	For details see Doc 9303-3.		
		Filler	When all components of the primary and secondary identifiers and required separators (filler characters) do not exceed 31 characters in total, all permitted name components shall be included in the MRZ, and all unused character positions shall be completed with filler characters (<) repeated up to position 36 as required.		
		Truncation of the name	When the primary and secondary identifiers and required separators (filler characters) exceed the number of character positions available for the name (i.e. 31), they shall be truncated as follows: Characters shall be removed from one or more components of the primary identifier until three character positions are freed and two filler characters (<<) and the first character of the first component of the secondary identifier can be inserted. The last character position (position 36 in the line, 31st character of the name) shall be an alphabetic character (A through Z). This indicates that truncation may have occurred.		Notes: a, c, e and 4.2.3.

<i>MRZ character positions (line 1)</i>	<i>Field no. in VIZ</i>	<i>Data element</i>	<i>Specifications</i>	<i>Number of characters</i>	<i>References and notes*</i>
			<p>Further truncation of the primary identifier may be carried out to allow characters of the secondary identifier to be included, provided that the name field shall end with an alphabetic character (position 36 in the line, 31st character of the name). This indicates that truncation may have occurred.</p> <p>When the name consists of only a primary identifier which exceeds the number of character positions available for the name, i.e. 31, characters shall be removed from one or more components of the name until the last character in the name field shall be an alphabetic character.</p>		

* Notes can be found in the last portion of sub-section 4.2.2.2

4.2.2.2 Data structure of the lower machine readable line

<i>MRZ character positions (line 2)</i>	<i>Field no. in VIZ</i>	<i>Data element</i>	<i>Specifications</i>	<i>Number of characters</i>	<i>References and notes*</i>
1 to 9	09	Document Number	As given by the issuing State or organization, to uniquely identify the document from all other MRTDs issued by the State or organization. Spaces shall be replaced by filler characters (<).For additional details see Doc 9303-3.	9	Notes a, b, e, j.
10		Check digit	Shall be calculated as specified in Doc 9303-3 and positioned as specified in paragraph 4.2.4.	1	Notes b, c, j.
11 to 13	06	Nationality	For details see Doc 9303-3.	3	Notes a, c, e, h.

<i>MRZ character positions (line 2)</i>	<i>Field no. in VIZ</i>	<i>Data element</i>	<i>Specifications</i>	<i>Number of characters</i>	<i>References and notes*</i>
14 to 19	07	Date of birth	For details see Doc 9303-3.	6	Notes b, c, e.
20		Check digit	Shall be calculated as specified in Doc 9303-3 and positioned as specified in paragraph 4.2.4.	1	Note b.
21	05	Sex	F = female; M = male; < = unspecified.	1	Notes a, c, e, f.
22 to 27	10	Date of expiry	For details see Doc 9303-3.	6	Notes b, e.
28		Check digit	Shall be calculated as specified in Doc 9303-3 and positioned as specified in paragraph 4.2.4.	1	Note b.
29 to 35		Optional data elements	For use of the issuing State or organization. Unused character positions shall be completed with filler characters (<) repeated up to position 35 as required. For additional details see Doc 9303-3.	7	Notes a, b, c, d, e, j.
36		Composite check digit	Composite check digit to verify the data elements of the lower machine readable line. Shall be calculated as specified in Doc 9303-3 and positioned as specified in paragraph 4.2.4.	1	Note b.

* Notes for 4.1.1 and 4.2.2:

- a) Alphabetic characters (A–Z). National characters may be included in the VIZ. In the MRZ only the characters defined in Doc 9303-3 shall be used.
- b) Numeric characters (0–9). National numerals may be additionally included in the VIZ. In the MRZ only the numerals 0–9 may be used as defined in Doc 9303-3.
- c) Punctuation may be included in the VIZ. In the MRZ only the filler character specified in Doc 9303-3 may be used.
- d) Optional data elements may appear in Zone VI.
- e) The field caption is not printed on the document.

- f) Where an issuing State or organization does not want to identify the sex, the filler character (<) shall be used in this field in the MRZ and an X in this field in the VIZ.
- g) The use of a caption to identify the field is at the option of the issuing State or organization.
- h) In the case of a document issued by the United Nations Organization, or one of its specialized agencies, to a designated official, the appropriate organization code is used in lieu of nationality. See Doc 9303-3.
- i) A blank space (or spaces) is included. Blank spaces between words shall count towards the maximum number of characters permitted in the field.
- j) The number of characters in the VIZ may be variable; however, if the document number has more than 9 characters, the 9 principal characters shall be shown in the MRZ in character positions 1 to 9. They shall be followed by a filler character instead of a check digit to indicate a truncated number. The remaining characters of the document number shall be shown at the beginning of the field reserved for optional data elements (character positions 29 to 35 of the lower machine readable line) followed by a check digit and a filler character.
- k) The first character shall be A, C or I. Historically these three characters were chosen for their ease of recognition in the OCR-B character set. The second character shall be at the discretion of the issuing State or organization except that V shall not be used, and C shall not be used after A.
- l) The field caption shall be printed on the document.

4.2.3 Truncation of names in the MRZ

The basic rules for writing the name of the holder in the VIZ and the MRZ are contained in Doc 9303-3. Where the name contains more characters than are available in the name field of the MRZ of the TD2, it is necessary to truncate the name. The following methods provide a number of options available for use at the discretion of the issuing State or organization.

4.2.3.1 Truncated names — Secondary identifier truncated

- a) One or more name components truncated to initials:
 - Name: Nilavadhanananda Chayapa Dejthamrong Krasuang
 - VIZ: NILAVADHANANANDA, CHAYAPA DEJTHAMRONG KRASUANG
 - MRZ (upper line): I<UTONILAVADHANANANDA<<CHAYAPA<DEJ<K
- b) One or more name components truncated:
 - Name: Nilavadhanananda Arnpol Petch Charonguang
 - VIZ: NILAVADHANANANDA, ARNPOL PETCH CHARONGUANG
 - MRZ (upper line): I<UTONILAVADHANANANDA<<ARN<PET<CHARO

4.2.4 Check digits in the MRZ

The method of calculating check digits is given in Doc 9303-3. For the TD2, the data structure of the machine readable lines in Paragraph 4.2.2 provides for the inclusion of four check digits as follows:

<i>Check digit</i>	<i>Character positions (lower MRZ line) used to calculate check digit</i>	<i>Check digit position (lower MRZ line)</i>
Document number check digit	1 – 9	10
Date of birth check digit	14 – 19	20
Date of expiry check digit	22 – 27	28
Composite check digit	1 – 10, 14 – 20, 22 – 35 (lower line) <i>Note.— Positions 11 – 13 and position 21 (lower line) are excluded in calculating the composite check digit.</i>	36

4.3 Representation of the Issuing State or Organization and Nationality of the Holder in the MRZ and the VIZ

The use of the three-letter codes listed in Doc 9303-3 is mandatory in the MRZ. In the VIZ, the name of the issuing State or organization should appear in full; the holder's nationality in the VIZ may either appear in full or in the form of the three-letter code. Specific locations are defined in the following table.

	<i>Zone</i>	<i>Field no.</i>	<i>Character position no.</i>	<i>Number of character positions</i>
Issuing State or organization	VIZ	01	–	Variable
	MRZ (upper line)		3 – 5	3
Holder's nationality	VIZ	06	–	Variable
	MRZ (lower line)		11 – 13	3

5. REFERENCES (NORMATIVE)

ISO/IEC 7810	ISO/IEC 7810:2019, Identification cards — Physical characteristics
ISO 1073-2	ISO 1073-2:1976 Alphanumeric character sets for optical recognition — Part 2: Character set OCR-B — Shapes and dimensions of the printed image

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