



International Specification for Orienteering Maps - ISOM 2017

What has changed from ISOM 2000?

The IOF Map commission has been working on a revision of the International Specification for Orienteering Maps for some years now. The ISOM 2017 was approved by the IOF Council in March 2017.

In the following document, you will find some information that we hope will help you understand the changes that have been made.

Goals of the ISOM revision

- Extract all rules related text from the map specifications. This was a strong request from the Foot Orienteering Commission and the Rules Commission and supported by the Council.
- There shall only be one ISOM. This means that the drawing shall not depend in any way on the map scale that is used for the printed map. The 1:10000 variant shall be a strict enlargement of the 1:15000 version. Consequently, scale dependent symbols (ISOM2017 601, magnetic north lines, and the overprint symbols 701-713) have been modified.
- Focus on generalisation. More emphasis on minimum dimensions and distances. Add symbol footprints. Restricting the use of individual symbols that are part of area symbols (broken ground, stony ground).
- Fix inconsistency with the green runnability screens.
- Higher precision and greater consistency.
- Adapt the ISOM colours according to developments in print technology. High quality printing is now possible using non-spot colour offset printing, but colour fidelity is a problem with alternative printing, and there is a need to adapt the ISOM colour system to these alternative technologies while continuing to support orienteers with colour vision impairment. Note: This point has not yet been addressed, so colour recommendations for non-spot colour printing will have to be handled in a separate document later.

Changes in the introductory pages

Modification on the cover page :

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Modification in paragraph 1 :

To clarify the meaning of words used in the specification, an explanation of terminology (shall, should, may, ...) has been added.

Modifications in paragraph 2 :

To help mappers to understand the runnability issues a classification has been added in paragraph 2.3.

To help mappers understand the need for legibility, more focus has been put on minimum dimensions and minimum distances between symbols in paragraph 2.6 and 2.11.

The IOF competition rules are now being referred to when it comes to the use of map scales in 2.9.

Issues related to colour vision impairment are described in paragraph 2.12. Peripheral information to be printed with the map is defined in the same paragraph.

The symbol part

Mappers are most concerned with the symbol part. So, this will be treated in more detail.

The way the dimensions of the symbol and spacing is to be made has been clearly defined: Outside measure, Inside measure or centre to centre.

Deletion of a ISOM2000 symbol or insertion of a new ISOM2017 symbol has led to re-numbering the following symbols in the same class (land form, rocks, ...).

In order to help colour vision impaired runners to identify the prominent features symbols, a single form /colour combination (except for black) has been defined:

- brown/triangle for landform ISOM2017 115;
- blue/asterisk for water ISOM2017 313,
- green/cross for vegetation ISOM2017 419.

- For man-made feature, there are still 2 symbols;
 - the circle ISOM2017 530
 - and the cross ISOM2017 531.
- All symbols shall now be enlarged for larger map scales. This has consequences only for symbols ISOM2017 601 and ISOM2017 701-713.

LANDFORMS

- ISOM2017 103 Form line: Thinner line (0.14->0.10). Reason: reduce the visual impact of the form line and reduce the potential problems of gap positions.
- ISOM2000 slope line symbol (104) has been deleted and the slope line is now included in the ISOM2017 101 symbol
- ISOM2000 contour value (105) has been deleted and the contour height value has been included in the ISOM2017 102 symbol
- ISOM2017 113-114: Specifying maximum and minimum densities and introducing a second broken ground symbol for reduced runnability. Reason: Emphasize that this is an area symbol and add a variant that shows reduced runnability.

ROCK AND BOULDERS

- ISOM2000 Rock pillars/cliffs (202) has been deleted and is now included in the ISOM2017 201 symbol.
- ISOM2000 Cave (205) has been deleted and is now included in the ISOM2017 203 symbol.
- ISOM2017 gigantic boulder 206 has been inserted
- ISOM2017 208-209: Specifying maximum and minimum densities and introducing two densities - one for runnable boulder fields and the other for boulder fields with reduced runnability. Reason: Emphasize that this is an area symbol and add a variant that shows reduced runnability.
- ISOM2017 210-212: Specifying maximum and minimum densities and introducing three levels of runnability for stony ground, corresponding to the runnability classification defined in paragraph 2.3. Reason: Emphasize that this is an area symbol that shall communicate reduced runnability.
- ISOM2017 Trench 215 has been added

WATER AND MARSH

- ISOM2017 301-302: Alignment with ISSOM by introducing a signature for shallow water.
- ISOM2000 Uncrossable River (304) has been deleted and is now included in the ISOM2017 301 symbol
- ISOM2017 Well 311 is now using a square in order to avoid issue with the green circle for colour vision impaired runners.

VEGETATION

- ISOM2017 402 and 404: 402 inverted, and the holes can now be white or green – colour percentages adjusted. Reason: Consistency in the representation, demand for green dots to be able to show areas with patches of dense / less runnable vegetation in a generalised way.
- ISOM2017 406-409: The vertical line screen of symbol 409 has been made denser (from 28.6% to 40%) to give a green impression that corresponds better with the runnability (shall correspond to 408). Reason: Make the greens consistent with respect to runnability and green percentage.
- The green percentages of 406 and 408 have been changed back to the ISOM1990 values of 20% green and 50% green respectively to restore the logic of the ISOM.
- ISOM2017 416 distinct vegetation boundary could also use a green dashed line. This green dashed line solution is recommended for maps with a lot of rock features. However only one representation shall be used on a single map: either black dotted line or green dashed line, but not both.
- ISOM2000 419 green circle and 420 green dot are now specified as prominent large tree ISOM2017 417 and prominent bush or tree ISOM2017 418, in order to be consistent with ISSOM2010

MAN-MADE FEATURES

- In order to align with ISSOM a few symbols have been added
 - ISOM2017 501 Paved area
 - ISOM2017 502 Wide road
 - ISOM2017 522 Canopy
- This had led to the deletion of the ISOM2000 Motorway (501) and Major Road (502) symbols which are now included in the ISOM2017 502 symbol
- ISOM2000 visible path junction and 511 Indistinct junction are deleted and now included in the 504-506 ISOM2017 symbols.
- ISOM2017 508 Narrow ride includes now a colour background to indicate runnability

- ISOM2017 509 Railway was made consistent with ISSOM2000
- ISOM2017 512 Bridge/Tunnel, the same symbol is now used for bridge and tunnel ISOM2000 518 (Tunnel) is deleted. ISOM2000 512-514 (footbridge and crossing points) are also deleted and the dash drawing is included in the ISOM2017 512 symbol
- ISOM2017 521 building can use either black or black 65% for the inner colour to be consistent with the ISSOM2010
- ISOM2000 Firing range 531 has been deleted.
- ISOM2000 Grave 532 has been deleted

TECHNICAL SYMBOLS

- ISOM2017 601: The distance between the magnetic north lines has been adjusted so that it will be reasonable when enlarged to 1:10000. Reason: Larger scale maps shall be strict enlargements.

OVERPRINTING SYMBOLS

- ISOM2017 701-: Overprint symbols shall behave as the map symbols (strict enlargement for larger scale maps). Control circle, start triangle, finish circles have been reduced in size to cater for different formats.

Changed semantics

- ISOM2000 418-420 -> ISOM2017 417 Prominent big tree and ISOM2017 418 Prominent bush or tree and ISOM2017 419 Prominent vegetation feature x: Align with ISSOM.
- ISOM2000 501-503 Roads -> ISOM2017 502 Wide road: These are applications.
- ISOM2000 509 Narrow ride -> ISOM2017 508 Narrow ride or linear trace through the terrain: Allow this symbol to be used also for traces over open areas (often caused by forestry machines). This symbol can be combined with lines of different colour to indicate runnability.
- ISOM2000 533-534 Pipelines -> ISOM2017 528-529 Prominent line features: Open up for other prominent line features.

Smaller changes

There have been a number of small changes. For instance, the spacing between dots on most of the dotted lines been reduced to make it easier to understand that these are line features (108 small erosion gully, 309 narrow marsh, 416 distinct vegetation boundary). The changes are listed below (grouped by category).

Removed and added symbols

Removed symbols:

- ISOM2000 104 Slope line: Moved to 101, 102, 103
- ISOM2000 105 Contour value: Moved to 102
- ISOM2000 111 Knoll: Application of 101, 102, 103
- ISOM2000 114 Depression: Application of 101, 102, 103
- ISOM2000 205 Cave: Combined with 204 rocky pit to ISOM2017 203 Rocky pit or cave
- ISOM2000 302 Pond: Application of 302
- ISOM2000 304 Uncrossable river: Application of ISOM2017 301
- ISOM2000 411 Forest runnable in one direction: Application of 406, 408 and 410.
- ISOM2000 501 Motorway: Applications of ISOM2017 502 Wide road
- ISOM2000 502 Major road: Applications of ISOM2017 502 Wide road
- ISOM2000 510 Visible path junction: Application of the path / track symbols
- ISOM2000 511 Indistinct junction: Application of the path / track symbols
- ISOM2000 512 Footbridge: Moved to ISOM2017 512 bridge / tunnel
- ISOM2000 513 Crossing point with bridge: Application of the path / track symbols (described in ISOM2017 512)
- ISOM2000 514 Crossing point without bridge: Application of the path / track symbols (described in ISOM2017 512)
- ISOM2000 527 Settlement: ISOM2017 520 Area with forbidden access is an alternative
- ISOM2000 531 Firing range: Could use forbidden area if in use
- ISOM2000 532 Grave: Problematic with religious connotations
- ISOM2000 710 Dangerous area: Dangerous areas must be forbidden, so there should be no use for this symbol. Use ISOM2017 709 forbidden area. Align with ISSOM.

Added symbols:

- ISOM2017 114 Very broken ground: Distinguish broken ground with reduced runnability
- ISOM2017 115 Special prominent landform feature triangle.
- ISOM2017 209 Dense boulder field: Distinguish boulder fields with reduced runnability
- ISOM2017 211 Stony ground, walk: Represent runnability of stony ground in the same way as for vegetation
- ISOM2017 212 Stony ground, fight: Represent runnability of stony ground in the same way as for vegetation
- ISOM2017 215 Trench: Useful for representing war-time trenches (request from Finland and experiences from WOC 2014 Italy, middle distance terrain).
- ISOM2017 302 Shallow water body: Alignment with ISSOM
- ISOM2017 411 Vegetation, impassable: Alignment with ISSOM
- ISOM2017 522 Canopy: Useful for passages through buildings. ISSOM symbol
- ISOM2017 702 Map issue point: It is useful to be able to show the position of the map issue point when that point is not at the start triangle (or the start of the marked route to the start triangle).

Changed symbols

- ISOM2000 314: Changed from x to square (ISOM2017 311)
- ISOM2000 202: Split. One part included in ISOM2017 201 (with minimum dimensions) and the other turned into ISOM2017 206 (gigantic boulder) with minimum dimensions.
- ISOM2000 212 (ISOM2017 214): Black percentage adjusted from 30% to 25%

Changes - dimensions**Change of dimensions for point symbols:**

Dimensions are mostly the same, but descriptions are now more clear (some difficult to interpret centre-to-centre measures in ISOM2000 have been changed to outside measures in ISOM2017). The way these symbols have been implemented in drawing software may vary due to the interpretation possibilities of ISOM2000.

Symbols that have been adjusted in size due to the outside measures specifications:

- ISOM2000 115 and 313 (ISOM2017 111 and 312);
- ISOM2000 116, 303 (ISOM2017 112 and 303);
- ISOM2000 118, 418 (ISOM2017 115 and 419);
- ISOM2000 204/205 (ISOM2017 203);
- ISOM2000 312, 419 (ISOM2017 311 and 417);
- ISOM2000 530 (ISOM2017 523) minimum;

- ISOM2000 536 (ISOM2017 525);
- ISOM2000 537 (ISOM2017 526);
- ISOM2000 538 (ISOM2017 527);
- ISOM2000 539 (ISOM2017 530);
- ISOM2000 540 (ISOM2017 531).

Change of width for line symbols

- ISOM2000 103 ISOM2017 103: Thinner line (0.14->0.10)
- ISOM2000 106 ISOM2017 104: Thick (0.25) base line alternative removed
- ISOM2000 107 ISOM2017 105: Thicker line (0.14->0.18)
- ISOM2000 108 ISOM2017 106: Thicker line (0.14->0.18)
- ISOM2000 203 ISOM2017 202: Thinner line (0.25->0.2) and removed the thin option (0.18)
- ISOM2000 305 ISOM2017 304: Thicker line (0.25->0.30)
- ISOM2000 306 ISOM2017 305: Thicker line (0.14->0.18)
- ISOM2000 307 ISOM2017 306: Thicker line (0.14->0.18)
- ISOM2000 521 ISOM2017 515: Thicker line (0.18->0.25)
- ISOM2000 524 ISOM2017 518: Thicker line (0.18->0.25)
- ISOM2000 534 ISOM2017 529: Thicker line (0.18->0.25)

Change of styling of line symbols

- ISOM2000 103 ISOM2017 103: Shorter gaps (0.25->0.20)
- ISOM2000 107 ISOM2017 105: Dots closer (2.5->2)
- ISOM2000 108 ISOM2017 106: Dots closer (2.5->2), dashes shorter (2.25->2), gaps longer (0.25->0.35)
- ISOM2000 110 ISOM2017 108: Dots closer (0.5->0.45)
- ISOM2000 308 ISOM2017 309: Dots closer (0.5->0.45)
- ISOM2000 416 ISOM2017 416: Dots closer (0.5->0.45)
- ISOM2000 509 ISOM2017 508: Dashes shorter (3.0->2.0) and gaps shorter (0.5->0.25)
- ISOM2000 519 ISOM2017 513: Dots closer (2.5->2)
- ISOM2000 520 ISOM2017 514: Dots closer (2.5->2) and gaps longer (0.25->0.35)
- ISOM2000 521 ISOM2017 515: Dots larger (0.5-> 0.6) and spacing increased (0.7->0.8 and 2.5->3.0)
- ISOM2000 523 ISOM2017 517: Tags closer (2.5->2) and gap increased (0.25->0.35)
- ISOM2000 530 ISOM2017 523: Dash lengths specified (0.5)
- ISOM2000 533 ISOM2017 528: Spacing decreased (2.5->2)

- ISOM2000 534 ISOM2017 529: Spacing decreased (2.5->2)
- ISOM2000 711 ISOM2017 711: Gap specified (between 4.0 and 6.0 - centre to centre)

Changes to vegetation

Yellow

Yellow percentages have been adjusted, so that there is a decrease in yellow percentage from 401 to 404, according to runnability and openness.

402 has been inverted to align it with 404 (that has the same kind of semantics).

For 402 and 404, it is now allowed to use green instead of white in the holes.

Green

A new green has been added for impassable vegetation, aligning the ISOM2017 with the ISSOM2010.

It has been recognised that the green impression (% green) for 407 and 409 needs to be consistent with 406, 408 and 410. That meant that 409 has been made denser and 406 and 408 have been adjusted to 20% and 50% green (as in the ISOM1990).

Other vegetation changes

An alternative graphical implementation (thin green line) for distinct vegetation boundary is introduced. The green line is a better alternative for areas of much rock, as the dotted black line is very difficult to understand when there is a lot of black on the map.

Orchard and vineyard symbols can now be implemented using also 50 % yellow (rough open). Less runnable orchards can now be represented using an undergrowth symbol.

Overprinting symbol changes

Overprinting symbols are now to be scaled as all the map symbols. That means that for the map scale 1:10000, the overprinting symbols shall be scaled to 150%. Because of this, some of the overprinting symbols have been adjusted in size:

- ISOM2000 701 Side lengths changed from 7.0 to 6.0 (outside measure)
- ISOM2000 702 Diameter changed from 6.0 to 5.0 (centre of line)
- 706 Outer circle changed from 7.0 to 6.0 (centre of line); Inner circle changed from 5.0 to 4.0 (centre of line).

Other changes to overprinting symbols:

- ISOM 2000 711: Specified minimum and maximum spacing (centre-to-centre)
- ISOM 2000 712: Made bigger to increase visibility (ISSOM alignment)
- ISOM 2000 713: Made bigger to increase visibility (ISSOM alignment)

Symbols that have not changed graphically:

- ISOM2000 101 ISOM2017 101 Contour
- ISOM2000 102 ISOM2017 102 Index contour
- ISOM2000 109 ISOM2017 107 Erosion gully (except for the specification of minimum dimensions)
- ISOM2000 112 ISOM2017 109 Small knoll
- ISOM2000 113 ISOM2017 110 Small elongated knoll

- ISOM2000 206 ISOM2017 204 Boulder
- ISOM2000 207 ISOM2017 205 Large boulder
- ISOM2000 208 ISOM2017 208-209 Boulder field triangle
- ISOM2000 209 ISOM2017 207 Boulder cluster

- ISOM2000 309 ISOM2017 307 Uncrossable marsh
- ISOM2000 310 ISOM2017 308 Marsh
- ISOM2000 311 ISOM2017 310 Indistinct marsh

- ISOM2000 401 ISOM2017 401 Open land
- ISOM2000 403 ISOM2017 403 Rough open landform
- ISOM2000 405 ISOM2017 405 Forest
- ISOM2000 410 ISOM2017 410 Vegetation very difficult to run
- ISOM2000 412 ISOM2017 413 Orchard (except for allowing light yellow and green stripes)
- ISOM2000 413 ISOM2017 414 Vineyard (except for allowing light yellow)
- ISOM2000 415 ISOM2017 412 Cultivated land
- ISOM2000 414 ISOM2017 415 Distinct cultivation boundary
- ISOM2000 420? ISOM2017 418 Small bush or tree

- ISOM2000 504 ISOM2017 503 Road
- ISOM2000 505 ISOM2017 504 Vehicle track

- ISOM2000 506 ISOM2017 505 Footpath
- ISOM2000 507 ISOM2017 506 Small footpath
- ISOM2000 508 ISOM2017 507 Less distinct footpath
- ISOM2000 516 ISOM2017 510 Power line, cableway
- ISOM2000 518 ISOM2017 512 Tunnel (wide variant)
- ISOM2000 525 ISOM2017 519 Crossing point
- ISOM2000 526 ISOM2017 521 Building (normal size)
- ISOM2000 529 ISOM2017 501 Paved area
- ISOM2000 530 ISOM2017 523 Ruin (normal sizes)
- ISOM2000 535 ISOM2017 524 High tower

- ISOM2000 602 ISOM2017 602 Registration marks
- ISOM2000 603 ISOM2017 603 Spot height

- ISOM2000 704 ISOM2017 705 Course line
- ISOM2000 705 ISOM2017 707 Marked route
- ISOM2000 707 ISOM2017 708 Uncrossable boundary
- ISOM2000 708 ISOM2017 710 Crossing point



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