

Drawing Specifications for International Orienteering Maps

It is of the greatest importance that the maps used for international competitions all use the same symbols and are drawn to a common set of basic rules. Only if these recommendations are followed will competitors have an equal chance of good results.

In 1969 the first international orienteering symbols were approved by the IOF Congress. Since 1969, however, there have been further developments in the mapping field and the IOF Map Committee considers it necessary to produce a revised version.

With these new specifications, approved by the VIII IOF Congress, 5th July 1975, at Bosön, Sweden, the Map Committee hopes to have taken into account all these developments.

Ålsgarde, Denmark, July 1975

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Contents

1. Introduction	3
2. General requirements for O-maps	3
2.1. Orienteering and the map	3
2.2. Scale and vertical interval	4
2.3. Accuracy	4
2.4. Generalisation	5
2.5. Minimum dimensions	6
2.6. Content	7
2.7. Printing	8
3. Map symbols	9
4. Explanations of symbols	10
4.1. Land forms	10
4.2. Rock and boulders	14
4.3. Water and marsh	16
4.4. Vegetation	20
4.5. Man-made features	22
5. Course symbols	28

1. Introduction

In recent years orienteering has developed into a large international sport, and it has become necessary to make the maps for all international events as similar as possible.

It is the aim of the following «Drawing specifications for international O-maps» to standardise the production of orienteering maps, since this is important for the future expansion of the sport and is essential for fair competition.

Maps for international orienteering events must be produced in accordance with these drawing specifications.

2. General requirements

2.1. Orienteering and the map

Orienteering is a sport in which the runner completes a course of control points in the shortest possible time, aided only by map and compass. As in all forms of sport, it is necessary to ensure that the conditions of competition are the same for all competitors. The more accurate the map, the better this can be done, and the greater the opportunity for the course planner to set a good and fair course.

The map is the most important aid in orienteering. Without it the sport in its true form cannot take place at all. It is through a good map that a forest becomes an orienteering area. Orienteering maps are produced specifically for the sport, in contradistinction to multi-purpose official or military topographic maps.

An orienteering map is a very detailed topographic map, which should show all land forms, the ground surface, feasibility, main land uses, hydrography, buildings, path and track network, other lines of communication and features which aid navigation. Because of its detailed nature, a map designed for orienteering is also very suitable for many other purposes.

At the outset, it is from the map that the competition area is chosen. The armchair course planning is based on the map, and then the course planner assesses the map on the ground, and makes any necessary changes in his courses. Finally, it is the quality of the map which governs the performance of the competitors. This means **that accurate maps are a prerequisite for orienteering.**

The aim of the course planner is a course where the deciding factor in the results will be navigational skill. This can be achieved only **if the map is sufficiently accurate, complete and reliable, and is also clear and legible under competition conditions.** The better the map the course planner has, the greater the chance he has of setting good, fair courses, whether it be for the elite or for the novice.

No competitor should obtain an advantage or suffer a disadvantage because of faults in the map.

Great detail on the map offers the planner many features for controls, and hence enables him to choose good legs, vary control sites and check that the controls are correctly placed from the map. From the competitor's point of view, a detailed and legible map is a reliable guide for choice of route, and it enables him to navigate along a route, chosen as suiting his navigational skill and running ability. To orienteer is, above all, to navigate by map reading, and for this a detailed map must show plenty of those features which facilitate map reading.

Skill in route choice loses all meaning if the map is not a true picture of the ground — if it is inaccurate or out of date. When he chooses a route, a competitor bases his decision on the map, but takes into account also his own navigational skill and fitness. Once he has made his choice, he fixes his position and maintains direction as he progresses by either map reading or compass and distance measurement. Hence an inaccurate map leads to unequal conditions for the competitors.

Controls are the most important building blocks of a course. Choice of sites, placing of the markers, checking their positions, and locating controls in competition, all put definite demands on the map. The map must give a complete, accurate and detailed picture of the terrain. For an international event, it must be up to date in all parts which could affect the end result of the competition. **If it is not up to date it must be improved.**

2.2. Scale and vertical interval

Orienteering maps should be drawn at a scale of 1:20,000 or 1:15,000 with a 5 m vertical interval. **A deviation from this is permissible where there is good reason for it, but permission from the national map committee must be obtained.**

Choice of scale and vertical interval should take into account relative height difference, steepness, quantity of detail and the intricacy of the features. However, a large scale must not be used in order to include on the map more detail than is necessary for orienteering. As a general rule, 1:20,000 is a scale large enough to include all the detail which can be used at normal running speed.

If a good legible picture cannot be obtained at this scale, because there is such a quantity of detail, a scale up to 1:15,000 or a different vertical interval can be used.

Where there is good reason, e.g. in ski orienteering, the map may need to be at a smaller scale if it is to be of a convenient size.

2.3. Accuracy

The general rule should be that competitors running at normal speed shall not perceive any inaccuracy.

The accuracy of the map as a whole depends upon the accuracy of measurement (position, height, and shape) and the accuracy of drawing. **Accuracy of position on an**

orienting map must be consistent with that obtained by compass and pacing. A feature must be positioned with sufficient accuracy to ensure that a competitor using compass and pacing will perceive no discrepancy between map and ground. 5% of the distance can be taken as the average accuracy of a competitor in pacing and running on a bearing. Hence a tolerance of at most 5–10 m is acceptable in the positions of nearby features.

Absolute **height accuracy** is of no significance on an orienting map. On the other hand, it is important that the map shows as correctly as possible the relative height difference between neighbouring features.

Accurate representation of shape is of great importance for the runner, because a correct, detailed and sometimes exaggerated picture of the land form is an essential precondition for map reading. However, the representation of a lot of small detail must not disguise the larger shapes.

The drawing accuracy of an orienting map is the degree to which the approved specifications are followed. Drawing accuracy is of primary importance to any map user because it is closely connected with the reliability of the final map.

As a general rule, these specifications should be followed to the letter. However, when drawing a surveyed feature, consideration must be given to its immediate surroundings.

2.4. Generalisation

A good orienting map must be **reliable, accurate and complete and must at the same time be clear and legible in competition**. To achieve this, **cartographic generalisation must be employed**, since the format of the map is very small compared with the ground, and the terrain can be covered with a whole variety of features. Among these, the most important ones for the orienteer, and those most characteristic, must be selected (selective generalisation), and then these must be shown in a clear and simple manner (graphic generalisation). The aim of cartographic generalisation, therefore, is to make the map clear and legible. At the survey stage, completeness and clarity will clash. Legibility must be ensured at the expense of completeness.

A decision as to how many features can be shown (**selective generalisation**) is the first phase of generalisation. The most important aspects of selective generalisation are the representation, and also sometimes the exaggeration, of land forms and features which are essential and characteristic of orienteering. Unnecessary features are omitted.

When deciding whether or not to put a particular feature on the map, account should be taken of the importance of that feature from a map reading point of view. An attempt must be made to establish criteria of selection for the type of terrain in question, and to adhere to these so that the map is as uniform as possible.

In thick forest, very small detail and land forms such as knolls, small depressions, boulders, and small cliffs can only be used as controls when one can navigate right to them by map reading.

The second phase of generalisation — **graphic generalisation** — can greatly affect the clarity of the map. Simplification, displacement and exaggeration are used to this end.

Legibility requires that the size of symbols, line thicknesses and spacing between lines be based on the perception of **normal** sight in daylight. In devising symbols, all factors except the distance between neighbouring symbols are considered.

The size of the smallest feature which will appear on the map depends partly on the graphic qualities of the symbol (shape, format and colour) and partly on the position of neighbouring symbols. When immediately neighbouring features, which take up more space on the map than on the ground, are drawn, it is essential that the correct relationships between these and other nearby features are also maintained.

2.5. Minimum dimensions

An orienteering map will only be legible if certain minimum dimensions are observed. These are based on both printing technology and the need for legibility. With a multi-colour map, the register of the printed colours can be up to 0.2 mm out. This must be taken into account in the drawing of the originals.

The following minimum dimensions for drawing refer to the printed scale of the map.

Dot	Dot screen	Dotted line	Single dot	Line	
Black	0.1 mm	0.13 mm	0.3 mm	Black	0.1 mm
Brown	-	0.2	0.35	Brown	0.1
Blue	0.1	0.2	-	Blue	0.1
Green	0.1	-	-	Green	0.25
Yellow	0.1	-	-	Yellow	0.4
Area	Full colour 0.5 mm ²				
	Dot screen 1.0 mm ²				

Minimum spacing

- The gap between two fine lines of the same colour, in brown or black, must be at least 0.15 mm.
- The smallest gap between two blue lines must be 0.25 mm.

Other minimum dimensions

- Shortest rock face symbol: 0.6 mm
- Shortest stream or ditch symbol: 0.6 mm
- Smallest bend in contour (spur or reentrant): 0.25 mm (from centre to centre of the lines)
- Smallest area of marsh: at least two lines with a length of 0.5 mm and a gap of 0.15 mm
- Shortest dotted line: at least two dots
- Shortest dashed line: at least two dashes
- Smallest area enclosed by a dotted line: \varnothing 1.5 mm with 5 dots
- Smallest area of colour

Blue, green or yellow full colour:	0.5 mm ²
Black dot screen:	0.5 mm ²
Blue, green or yellow dot screen:	1.0 mm ²

All features smaller than the dimensions above must be either exaggerated or omitted, depending on whether or not they are of significance to the orienteer. When a feature is enlarged, neighbouring features must be displaced so that the correct relative positions are retained.

2.6. Content

An orienteering map is a **detailed topographic map**. It must show every feature which could influence map reading or route choice — land forms, the ground surface, feasibility, main land uses, hydrography, settlements and individual buildings, the path and track network, other lines of communication and features useful from the point of view of navigation.

The degree to which a feature is recognisable, the openness of the forest and runnability of the terrain should be taken into consideration at the survey stage.

Boundaries between different types of ground surface provide valuable reference points for the map reader. It is important that the map shows the edges of areas of marsh, solid ground, boulder field, and the fault lines of rocky terrain.

Runnability and the openness of the terrain affect route choice and running speed. Information on these factors must therefore be shown on the map by classifying paths and tracks, and indicating whether marshes, water features, rock faces and thick forest are passable, and by showing the feasibility of the ground surface and the presence of open areas. Clearly visible vegetation boundaries should also appear since they are useful for map reading.

The map must contain the features which are obvious on the ground and which are of value from the point of view of map reading. Nevertheless an attempt must be made when surveying to maintain the clarity and legibility of the map. i.e. the minimum dimensions designed for normal sight must not be forgotten when choosing the degree of generalisation.

There is no sense in producing a map which people will need a magnifying glass to read.

The map should contain some place names to help the competitor to orientate his map to north. These form an aid in addition to north lines and arrows. Names should be written from west to east and chosen and placed to avoid obscuring important features. They should not give an advantage to those competitors who understand the local language. The style of lettering should be simple.

North lines must be black 0.1–0.15 mm lines pointing to magnetic north. **Their spacing on the map should represent 500 m on the ground.** They can be in blue, if there is no possibility of confusing them with, for example, ditches. In blue, the lines should be 0.2 mm.

North lines should be broken if they obscure small features such as small boulders, knolls, cliffs, stream junctions, path ends etc.

2.7. Printing

The features on an orienteering map are shown in several colours. Brown and blue indicate the natural features — land forms, marshes and water. Black is used primarily for man-made features — tracks, settlements, rides, but is also used for some natural features of great importance to the map reader — cliffs, boulders, areas of rock. Yellow indicates open and semi-open areas, and green shows vegetation which could hinder a runner.

An orienteering map must be printed on good, possibly water resistant, paper (weight 80–120 g/m²). It will be in 4–7 colours depending on the level of cartography and the nature of the terrain it covers.

Special care must be taken to ensure an exact register of the colours. On a map printed in several colours the course planner must have the opportunity to check the register via superimposed crosses in the different colours. The maximum acceptable error is 0.2 mm.

Legibility depends on the correct choice of colours. The following recommendations are intended to help standardise maps as much as possible. The alternatives given can be used in preference to the recommended colours, since the ultimate choice of colour also depends on the structure of the terrain. The recommendations are given on the PMS system (Pantone Matching System).

	Recommendation	Alternative
Black	Process black	-
Brown	470	471
Yellow	129	136 143 122
Blue	299	-
Green	339	-
Violet	Purple	-

3. Map symbols

The symbols are divided into 3 classes – A, B and C

- A – symbols obligatory for maps for international events and world championships
 - B – symbols which can be used for certain special types of terrain
 - C – symbols acceptable only for non-international events, and used in certain special types of terrain in order to supplement classes A and B
- Class C will not be included here

Symbols are classified into 5 groups

1. Land forms
2. Rock and boulders
3. Water and marsh
4. Vegetation
5. Man-made features

Dimensions are given at printed scale. If screens of the type «LT» are indicated, a 2:1 reduction is assumed.

The colours are used for the symbols as follows:

- Black:** Man-made features. Important natural features such as cliffs, bare rock, boulders and boulder fields
- Blue:** Water and marsh
- Brown:** Land forms
- Yellow:** Open and semi-open areas with good visibility
- White:** Forest providing typical good running for that type of forest
- Green:** Vegetation which hinders progress and affects running speed
- Violet:** Course overprinting

4. Explanations of symbols

4.1. Land forms

The shape of the land is shown in brown by means of very detailed contours aided by the special symbols for small knolls, small depressions, earth banks, gullies, steep slopes and embankments. This is complemented in black by the symbols for rock.

Choice of vertical interval depends on the relative height difference of the area and the steepness and intricacy of the terrain. Terrain ideally suited to orienteering is normally best shown with a 5 m vertical interval. Another interval between 2 and 10 m can be used when the majority of the area would then be better represented. **It is not permissible to use two different vertical intervals on the same map.**

If the representation of an area requires a large number of form lines, a smaller vertical interval provides a more legible alternative. If this applies only to a small part of an area, the vertical interval should not be reduced. Form lines will be more effective.

Absolute height accuracy is of no importance on an orienteering map. This means that it is permissible to slightly alter the height of a contour if this will improve the representation of a feature. **But the alteration should normally not exceed 25% of the vertical interval** e.g. 1.25 m in 5 m. Attention should be paid to the relationship with neighbouring features when employing this device. The relative height difference of neighbouring features must be represented on the map as accurately as possible.

A 101 Contour



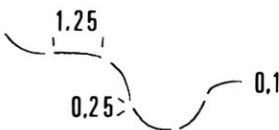
The vertical interval of the contours should generally be 5 m.
Colour: Brown

A 102 Index contour



To make rapid rough assessment of height differences easier, every fifth contour should be drawn as an index contour. When one of these contours coincides with an area of small knolls or depressions a normal contour line may be used.
Colour: Brown

A 103 Form line



To supplement the contour information, use is made of form lines at approximately half the vertical interval. They are employed wherever more information can be given about the shape of the ground. Form lines must only be used if representation is not possible with ordinary contours. Only one form line may be used between two contours.
Colour: Brown

A 104 Slope line



Slope lines are drawn on the lower side of a contour line wherever it is necessary to clarify the fall of the ground.
Colour: Brown

B 105 Contour value

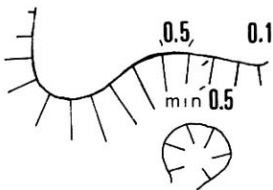


Contour values are often included to aid the assessment of large height differences. They are inserted in the index contours in positions where other detail is not obscured.
Colour: Brown

A 106 Steep bank

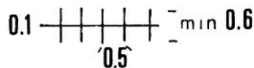
A steep bank is an abrupt change in ground level which can be clearly distinguished from its surroundings, e.g. gravel and sand pits, river, road and railway cuttings. The tags should show the full extent of the slope.

Colour: Brown



A 107 Small earth wall, dam

Colour: Brown



A 108 Gully

The edges of a reentrant which is too deep and steep to be shown by contours are drawn with two lines. The contours are omitted.

Colour: Brown



A 109 Small gully

A single line is used to represent a small gully which is too small to be shown by contours.

Colour: Brown



B 110 Dry ditch

A very small gully or a small ditch, which contains no water and is not marshy.

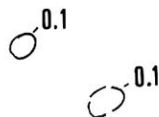
Colour: Brown



A 111 Knoll

A small, easily recognised hill is drawn with the appropriate contour.

Colour: Brown



A 112 Small knoll

A small obvious mound, which cannot be drawn to scale with a contour (diameter of mound less than ca. 7 m). Knolls of any other shape than round should be shown by contours.

The use of the symbol requires a height of at least 1 m from the surrounding ground.

Colour: Brown





A 113 Depression

A natural hollow, which can be shown by contours.
Colour: Brown



A 114 Small depression

Small shallow natural depressions and hollows which cannot be shown to scale by contours are represented by a semicircle (diameter less than ca. 10 m).

Location is the centre of gravity of the symbol.

Symbol 115 is then used only for pits.

The symbol is orientated to north.

Colour: Brown



A 115 Pit

Pits and holes, which cannot be shown to scale by contours (diameter less than ca. 10 m).

The symbol is orientated to north.

Location is the centre of gravity of the symbol.

Pits with any other shape than round should be shown with contours.

The use of the symbol requires a depth of at least 1 m from the surrounding ground.

Colour: Brown



B 116 Broken ground

Extremely jumbled terrain, areas of pits or knolls, which are too intricate to be shown in detail.

Colour: Brown



B 117 Special landform feature

This symbol can be used for a special small landform feature.

The definition of the symbol must be given in the key or in the control description.

Colour: Brown

B 118 Spot height

03-128-1.5

Spot heights are used for the rough assessment of height differences. The height is given to the nearest metre. The figures are orientated to north. Water levels are given without the dot. Colour: Black

4.2. Rock and boulders

Rock is a special category of land form. The inclusion of rock gives useful information about danger and runnability, as well as providing features for map reading.

Rock is shown in black to distinguish it from surrounding features. The outline of the symbol should accurately represent the shape of the rock face projected on to a horizontal plane.

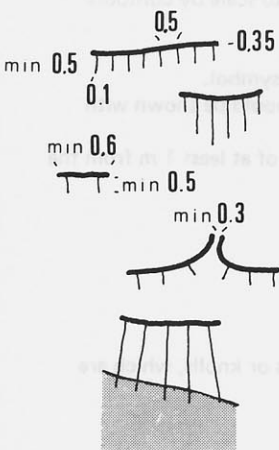
A 201 Impassable rock face

An impassable rock face is shown with a 0.35 mm line and downward tags. A high, inclined, impassable rock face has tags showing its full extent from the top line to the foot. The tags can extend over an area symbol representing detail immediately below the rock face.

The tags can be omitted if space is short. This is to be used particularly for narrow passages. The passage should be drawn with a width of at least 0.3 mm.

When a rock face drops straight into water, making it impossible to pass under the cliff along the water's edge, the tags should clearly extend over the bank line.

Colour: Black

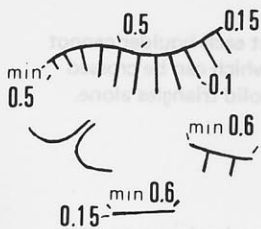


B 202

In the case of unusual features such as sandstone pillars, the rocks can be shown in plan shape without tags. To help clarify the picture, the rocks can be drawn with different line thicknesses according to their height.

Colour: Black





B 203 Passable rock face

A passable rock face that represents neither an obstacle nor a danger to the runner.

The tags can be omitted if space is short.

When the direction of fall of the rock face is not apparent from the map, two short tags should be drawn in the direction of the fall.

Colour: Black



A 204 Rocky pit

Pits or holes which can constitute a danger to the runner. The symbol is orientated to north.

Location is the centre of gravity of the symbol.

Colour: Black



B 205 Cave

A cave is represented with the same symbol as the rocky pit.

The symbol should point in the direction of the entrance.

The centre of gravity of the symbol marks the opening.

Colour: Black



0.4

A 206 Boulder

This symbol is used for obvious boulders — usually large ones.

Every boulder marked on the map should be easily identifiable on the ground.

Colour: Black



0.6

B 207 Larger boulder

Particularly large and obvious boulders.

Colour: Black



0.3... 0.4

30 %

+10 % -12 11n/cm (LT 8)

A 208 Boulder field: Difficult to cross

Areas so covered with blocks of stone that they can only be crossed with difficulty are shown with solid triangles and a dot screen.

Colour: Black



B 209 Boulder field: Crossable

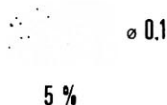
Areas so covered with blocks of stone that each boulder cannot be individually marked on the map, but which can be crossed without difficulty, are represented with solid triangles alone.
Colour: Black



B 210 Stony ground

Stony ground which affects runnability can be shown on the map.
Colour: Black

10% -12 l/m/cm (LT8)



B 211 Sandy ground

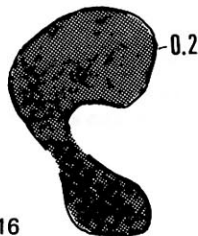
Areas of sand or gravel with virtually no vegetation and where running is slow, are shown as sandy ground. When the area of sandy ground is open and running is good, the area is just shown as open land (similarly semi-open).
Colour: Black and yellow

B 212 Bare rock

Bare rock (Flat rock where running is good)
This symbol is not yet finalised. The IOF Map Committee will approve it in autumn 1976.

4.3. Water and marsh

This category includes both open water and the special types of vegetation caused by the presence of water (marsh). Their classification is important because it indicates the degree of hindrance to the runner, and they provide features for map reading.



A 301 Lake

Large areas of water are shown with full colour or a dot screen of at least 50%. The black bank line indicates that the feature cannot be crossed. The bank line is broken at a ford.
Colour: Blue, black

A 302 Small lake



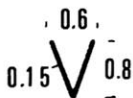
When the lake or pond is smaller than 2.5 mm^2 on the final map, the thickness of the bank line is reduced to 0.1 mm.
Colour: Blue, black

A 303 Pond



When the lake or pond is smaller than 1 mm^2 on the final map, the bank line is omitted. The smallest pond should be at least 0.5 mm^2 on the map.
Colour: Blue

A 304 Water hole



The symbol for a water hole is used for areas of water of diameter less than ca. 10 m which are too small to be shown to scale.

Location is the centre of gravity of the symbol.
Colour: Blue



A 305 Uncrossable river or stream

Uncrossable rivers, streams and canals are drawn with 0.1 mm bank lines. The bank line indicates impassability, and all uncrossable watercourses should have this symbol.

The bank line is broken at a ford.
Colour: Blue, black



A 306 Crossable wide stream

Crossable watercourses, over 5 m wide, are shown to scale without the black bank line.

Colour: Blue



A 307 Crossable stream

Crossable streams or ditches, ca. 2–5 m wide. The watercourse must be clearly visible on the ground.

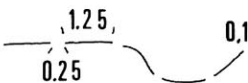
Colour: Blue



A 308 Crossable small stream

Crossable streams or ditches less than ca. 2 m wide. The watercourse must be clearly visible on the ground.

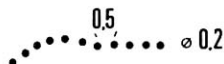
Colour: Blue



A 309 Less distinct ditch

Less distinct ditches which contain water only intermittently.

Colour: Blue



A 310 Trickle of water and narrow marsh

Marshes or trickles of water which are so narrow that they cannot be shown with line screen (less than ca. 7 m wide).

Colour: Blue



A 311 Uncrossable marsh

Marshes and bogs which are uncrossable or dangerous for the runner. A black line surrounds the symbol.

Colour: Blue, black



(LT 70)

A 312 Open marsh

Crossable open marshes are, by nature, treeless. There can however be isolated trees or bushes. They are generally open like a meadow and easy to pick out.

Colour: blue + 100% yellow

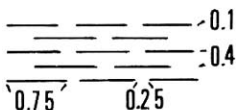


(LT 70)

A 313 Wooded marsh

Crossable wooded marsh, which can be distinguished from the surrounding forest by its vegetation.

Colour: Blue



(LT 121)

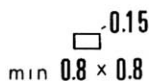
A 314 Marshy forest

Marshy ground, indistinct marshes and areas of gradual transition from marsh to forest, which are crossable but difficult to define.

The edge is generally indistinct, and the vegetation similar to that of the surrounding forest.

Colour: Blue

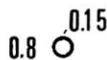
The smallest marsh should be shown by at least two lines on the map.



A 315 Water tank

Tanks of open water.

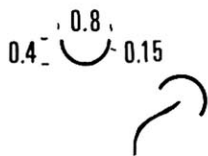
Colour: Blue



A 316 Well

Wells and captive springs, which are clearly visible on the ground.

Colour: Blue



A 317 Spring

When the spring has no outflow, the symbol opens towards the north.

Otherwise, the symbol faces the outflow.

Colour: Blue



B 318 Special water feature

Symbol 318 can be used for a special small water feature. The meaning of the symbol must always be given in the key or control description.

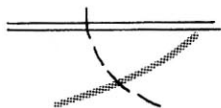
Colour: Blue



A 319 Footbridge

A footbridge with no path leading to it.

Colour: Black



A 320 Crossing point with bridge

A path or track which crosses a river, stream or ditch by a bridge.

Colour: Black



A 321 Crossing point without bridge

Where a path or track crosses a river, stream or ditch without a bridge; a ford.

Colour: Black

4.4. Vegetation

The meaningfulness of an orienteering map is increased by the representation of vegetation as it affects runnability. The representation of vegetation also provides features for map reading.

The runnability depends on the nature of the forest (type of trees, density, brushwood, bracken, brambles, nettles etc.).

The basis for the classification is reduction of running speed in comparison with the normal unhindered speed possible in typical forest in that type of terrain.

In terrain with few other features, a detailed representation of vegetation can provide useful features for map reading. However, for international events, the detailed representation must be limited to the symbols contained in this list.

The basic principle is as follows:

- white represents typical forest for the particular type of terrain
- yellow represents the degree of openness of an area in two categories (open and semi-open)
- green represents the density of the forest according to its runnability (slow run, walk, fight)

A 401 Open land

Cultivated land, fields, meadows, gardens, etc. are shown as open land.

Colour: Yellow



A 402 Semi-open land

Meadow with scattered trees, new plantations, etc. are shown as semi-open land. Very small areas are shown with full colour.

Colour: Yellow



40% - 35 lin/cm

50%

(LT 25)

(LT 107)

B 403 Vegetation: Slow running

An area with light vegetation which reduces running speed to ca. 50–80%.

Colour: Green



35 lin/cm - ca 0.15

(LT 23)

B 404 Vegetation: Difficult to run

An area with vegetation which considerably reduces running speed; thicket. Running speed ca. 20–50%.

Colour: Green



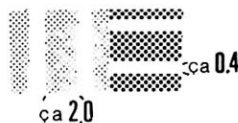
35 lin/cm - ca 0.20

(LT 25)



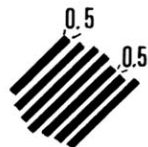
A 405 Vegetation: Fight

An area of dense vegetation which is barely passable.
Running speed ca. 0–20%.
Colour: Green



B 406 Forest runnable in one direction

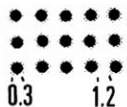
When an area of forest provides good running in one direction but less good in others, white stripes are left in the tone symbol to show the direction of good running.
Colour: Green



(LT 107)

A 407 Felled area

This symbol is used for a felled or newly planted area with good visibility. The area can be completely cleared or be covered with branches, bushes or trees. The runnability is shown in addition using symbols 403–405.
Colour: Yellow



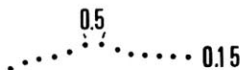
B 408 Orchard

Land planted with fruit trees or bushes is shown as orchard.
Colour: Yellow and green



A 409 Very distinct forest edge

A distinct edge between forest and open land is shown by a continuous line. This symbol can also be used for distinct boundaries in cultivated land.
Colour: Black



A 410 Distinct vegetation boundary

A forest edge which is distinct, but not 100% sharp, and clear vegetation boundaries within the forest.
Colour: Black



A 411 Indistinct vegetation boundary

Indistinct boundaries are shown without a line. The edge of the area is shown only by the change in colour or dot screen.



B 412 Special vegetation feature

B 413

Symbols 412 and 413 can be used for special small vegetation features.

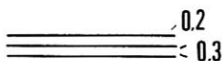
The definition of the symbol must be given in the key or control description.

Colour: Green



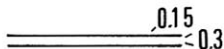
4.5. Man-made features

The track network provides important information about the runnability of an area and the classification must be clearly recognisable on the map. Particularly important for the competitor is the classification of the smaller paths. Account must be taken not only of width, but also of how obvious a path is to the runner.



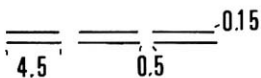
A 501 Motorway

Dual carriageway roads for the use of motor traffic only.
Colour: Black



A 502 Road

All public or private roads with two or more lanes and wider than 5 m.
Colour: Black



B 503 Road under construction

Roads under construction are shown with a special symbol.
Colour: Black

A 504 Dirt road

Well maintained roads or tracks suitable for light motor vehicles in all weathers. Roads ca. 3–5 m wide.

Colour: Black

A 505 Cart track

Narrow, poorly maintained tracks or roads, suitable for motor vehicles only when travelling slowly. Width less than ca. 3 m.

Colour: Black

A 506 Footpath

Footpaths and tracks which are unsuitable for motor vehicles, but which are so obvious on the ground that they cannot be crossed unnoticed at any point.

Colour: Black

A 507 Small path

A path, old cart track or indistinct ride which can be followed at competition speed but which could be crossed unnoticed.

Colour: Black

A 508 Visible path junction

When a junction or intersection of paths or tracks is visible, the dashes of the symbols are joined at the junction.

A 509 Indistinct junction

When the junction of paths or tracks is not clear, the dashes of the symbols are not joined.

A 510 Narrow ride

Obvious rides, less than ca. 10 m wide, ground similar to that of the surrounding terrain.

Colour: Black

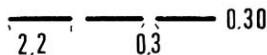
A 511

Ride, less than ca. 10 m wide, open and offering very good running.

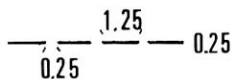
Colour: Black and yellow



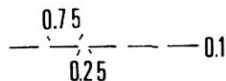
0.30



0.30



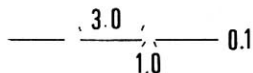
0.25



0.1



0.5



0.1



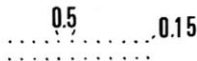
A 512

Ride, less than ca. 10 m wide, overgrown and heavy going.
Colour: Black and green



A 513 Wide ride

Width over ca. 10 m, ground similar to surrounding terrain. The edges are shown with the symbol for a vegetation boundary.
Colour: Black



A 514

Ride wider than ca. 10 m, open and offering good running.
Colour: Black and yellow



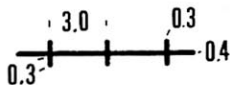
A 515

Ride wider than ca. 10 m, overgrown and heavy going.
Colour: Black and green



A 516 Railway

This symbol should also be used for other kinds of railed track (tramways, truckways etc.).
Colour: Black



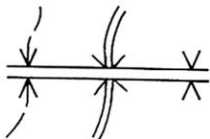
A 517 Power line

Cableways and ski-lifts are also shown with this symbol. The bars indicate the exact locations of the pylons.
Colour: Black



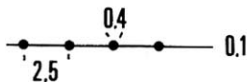
A 518 Tunnel

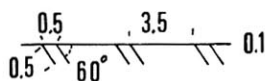
Ways under roads, railways, etc., which may be used by the runner.
This symbol is also used where the tunnel has no track leading to it.
Colour: Black



B 519 Wall

Crossable obvious walls and stone-faced banks.
Colour: Black

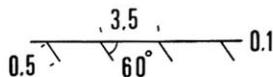




A 520 Uncrossable boundary

Boarded or wire fences, and stone walls which cannot or may not be crossed.

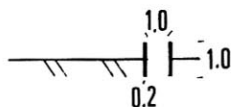
Colour: Black



B 521 Crossable fence

Clearly visible wooden or wire fences which can and may be crossed.

Colour: Black



A 522 Crossing point

All ways through or over uncrossable walls or fences must be indicated.

Colour: Black

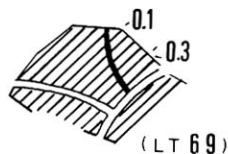


min 0.5 x 0.5

A 523 Building

The ground plan of all buildings must be shown to scale, down to the minimum size shown opposite.

Colour: Black



A 524 Settlement

Built-up area. The most important roads must be shown.

Colour: Black



B 525 Conspicuous building

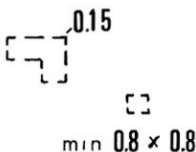
Churches and other conspicuous buildings within a settlement can be shown.

Colour: Black

B 526 Church

A church can be shown with a special symbol.

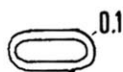
Colour: Black



A 527 Ruin

The ground plan of a ruin is shown to scale, down to the minimum size shown opposite.

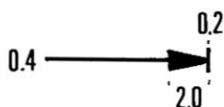
Colour: Black



A 528 Sports track

The plan of a sports track is shown to scale with yellow superimposed.

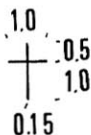
Colour: Black and yellow



A 529 Firing range

A firing range represents danger to the runner and is shown with a special symbol. Associated buildings are individually marked.

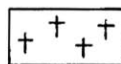
Colour: Black



B 530 Field grave

A field grave can be shown with a special symbol. Location is the centre of gravity of the symbol.

Colour: Black



B 531 Cemetery

A cemetery can be shown using several of the symbols for a field grave.

Colour: Black

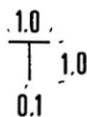


A 532 High tower

Very high free-standing towers which are not shown as buildings.

Location is at the centre of gravity of the symbol.

Colour: Black



A 533 Small tower

High free-standing shooting platform or seat, or small trig. Tower. Location is the centre of gravity of the symbol.

Colour: Black

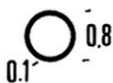


B 534 Fodder rack

Fodder racks which are free-standing or built on to a tree.

Location is the centre of gravity of the symbol.

Colour: Black



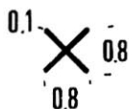
B 535 Special small man-made features

B 536

Special small man-made features are shown with symbols 535 and 536.

The definition of the symbol in each case must be given in the key or in the control description.

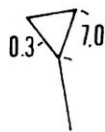
Colour: Black



5. Course symbols

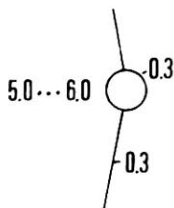
The printing colour of course signatures is to be a transparent **purple (PMS)**.
At least for elite classes, courses should be overprinted. For other classes they can be drawn by hand.

The dimensions given refer to the printed scale.



601 Start

Start or Map Issue Point (if not at start) is shown by an equilateral triangle which points in the direction of the first control.



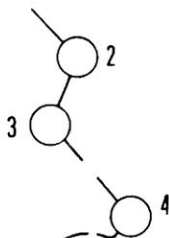
602 Control

The control points are shown with circles. The size of the circles should be chosen to minimise interference with map detail around the controls. Small parts of the circle can be omitted to leave important detail showing.



603 Finish

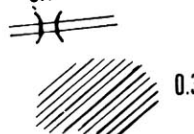
The finish is shown with two concentric circles. The centre of a triangle or circle shows the precise position of the feature but it is not actually marked.



The controls are numbered in order with the figures orientated to north. The start, controls and finish are joined in numerical order with lines. Sections of the lines can be omitted to leave important detail showing. A marked route is shown on the map with a dashed line.



Street- and railway crossings and subways are to be drawn into the map a double line bent to the outside.



An out of bounds area has a 0.3 mm line drawn around it and is diagonally hatched.



A dangerous area has a 0.3 mm line drawn around it and is diagonally cross-hatched (line thickness 0.3 mm).



A route which is out of bounds is shown by a series of crosses.



Signaturen für internationale OL-Karten
Map Symbols for International Orienteering Maps
Signes pour les cartes d'orientation internationales
Signaturer

deutsch
english
français
norsk

Geländeformen
Land forms
Formes du terrain
Terrengformer



A 113
 Senke
 Depression
 Dépression
 Fordypning, grop



A 101
 Normalkurven
 Contour
 Courbes de niveau
 Normalkurver



A 114
 Kleine Senke
 Small depression
 Petite dépression, trou
 Grop naturlig



A 102
 Zählkurven
 Index contour
 Courbes maîtresses
 Tellekurver



A 115
 Loch
 Pit
 Trou, entonnoir
 Hull, grop



A 103
 Hilfskurven
 Form line
 Courbes auxiliaires
 Hjelpekurver



B 116
 Kleinkupiertes Gelände
 Broken ground
 Terrain accidenté
 Bruddfelt e.l.



A 104
 Fallstriche
 Slope line
 Trait de pente
 Fallstrecker



B 117
 Besondere Geländeobjekte
 Special landform feature
 Objets spéciaux du terrain
 Spesielle, små terrengdetaljer



B 105
 Kurvenzahlen
 Contour value
 Cotes de courbes
 Kurvetall

. 248

B 118
 Höhenkote
 Spot height
 Cote d'altitude
 Høydetall



A 106
 Steile Erdböschungen
 Steep bank
 Talus raide
 Grustak o.l.

Felsen und Steine
Rock and boulders
Rochers et pierres
Stup og stein



A 107
 Kleiner Erdwall, Damm
 Small earth wall, dam
 Rempart, digue
 Liten jordvoll, demning



A 201
 Unpassierbare Felswand
 Impassable rock face
 Barrière rocheuse infranchissable
 Stup, ikke passerbart



A 108
 Rinne
 Gully
 Ravin
 Smalt søkk, kløft



B 202



A 109
 Kleine Rinne
 Small gully
 Ravine
 Lite smalt søkk, kløft



B 203
 Passierbare Felswand
 Passable rock face
 Barrière rocheuse franchissable
 Skrent



B 110
 Trockengraben
 Dry ditch
 Coulissses sèches
 Tørr grøft, fure

v v

A 204
 Felsloch
 Rocky pit
 Trou rocheux
 Bergslukt, hull



A 111
 Hügel
 Knoll
 Colline
 Kolle



B 205
 Höhle
 Cave
 Grotte, caverne
 Hule



A 112
 Kleine Kuppe
 Small knoll
 Petite bosse
 Høydepunkt



A 206
 Stein
 Boulder
 Pierre
 Stein

	<p>B 207 Grosser Stein Larger boulder Grosse pierre Stor stein</p>		<p>A 308 Passierbarer kleiner Bach Crossable small stream Petit ruisseau traversable Liten bekk, grøft</p>
	<p>A 208 Schwer passierbares Blockfeld Boulder field: Difficult to cross Champ de blocs rocheux, difficil. travers. Blökkfelt</p>		<p>A 309 Undeutlicher Wassergraben Less distinct ditch Coulisse humide imprécise Flombekk, utydelig grøft</p>
	<p>B 209 Passierbares Blockfeld Boulder field: Crossable Champ de blocs rocheux, traversable Åpent blökkfelt</p>		<p>A 310 Sickerbach und schmaler Moorstreifen Trickle of water and narrow marsh Drainage et marais étroit Smal myr, myrsig</p>
	<p>B 210 Steingebiet Stony ground Champ de pierres Steingrunn, ur</p>		<p>A 311 Unpassierbare Moore und Sümpfe Uncrossable marsh Mare ou marais intraversable Farlig myr</p>
	<p>B 211 Sandfläche Sandy ground Sable Sandområde</p>		<p>A 312 Offenes Moor Open marsh Marais ouvert Myr, åpen</p>
<p>B 212 Nackte Felsplatten Bare rock Dalles rocheuses à fleur «Berg i dagen»</p>		<p>A 313 Bewachsenes Moor Wooded marsh Marais couvert Myr, bevokst</p>	
<p>Gewässer und Moore Water and marsh Cours d'eau et lacs Vann og myr</p>			<p>A 314 Sumpfwald Marshy forest Forêt marécageuse Sumpskog, diffus myr</p>
	<p>A 301 See Lake Lac Sjø, vann</p>		<p>A 315 Reservoir Water tank Réservoir Åpent vanninntak</p>
	<p>A 302 Kleiner See Small lake Petit lac lite vann, tjern</p>		<p>A 316 Brunnen Well Fontaine Brønn</p>
	<p>A 303 Teich Pond Etang Tjern, putt</p>		<p>A 317 Quelle Spring Source Oppkomme o.l.</p>
	<p>A 304 Wasserloch Water hole Trou d'eau Putt, vannfylt grop</p>		<p>A 318 Besondere Gewässerobjekte Special water feature Objets spéciaux d'hydrologie Spesielle små «vanndetaljer»</p>
	<p>A 305 Unpassierbarer Fluss Uncrossable river or stream Rivière intraversable Elv, ikke passerbar</p>		<p>A 319 Uebergang mit Steg Footbridge Passerelle Klopp, uten sti</p>
	<p>A 306 Passierbarer grosser Bach Crossable wide stream Large ruisseau traversable Stor bekk, passerbar</p>		<p>A 320 Uebergang ohne Steg Crossing point with bridge Traversée avec passerelle Klopp, med sti</p>
	<p>A 307 Passierbarer Bach Crossable stream Ruisseau traversable Bekk, grøft</p>		<p>A 321 Uebergang ohne Steg Crossing point without bridge Traversée sans passerelle Overgang uten klopp</p>

Vegetation
Vegetation
Végétation
Vegetasjon, løpbarhet

Bauliche Anlagen
Man-made features
Objets construits
Kultursignaturer



A 401
 Offenes Gebiet
 Open land
 Zone ouverte
 Åpent område



A 501
 Autobahn
 Motorway
 Autoroute
 Motorvei



A 402
 Halboffenes Gebiet
 Semi-open land
 Zone semi-ouverte
 Halv-åpent område



A 502
 Strassen
 Road
 Route
 Hovedvei



B 403
 Langsam belaufbares Gebiet
 Vegetation: Slow running
 Course faiblement ralentie
 Mindre løpbar område



B 503
 Strasse im Bau
 Road under construction
 Route en construction
 Hovedvei under bygging



B 404
 Schwer belaufbares Gebiet
 Vegetation: Difficult to run
 Course fortement ralentie
 Vanskelig løpbar område



A 504
 Fahrweg
 Dirt road
 Chemin carrossable
 Kjørevei, skogsbilvei



A 405
 Durchkämpfbares Gebiet
 Vegetation: Fight
 Course impossible
 Ikke løpbar område



A 505
 Karrweg
 Cart track
 Chemin de dévostiture
 Kjerre-, traktorvei



B 406
 Wald in einer Richtung belaufbar
 Forest runnable in one direction
 Forêt traversable dans un sens
 Skog løpbar i én retning



A 506
 Pfad, Fussweg
 Footpath
 Sentier
 Sti



A 407
 Kahlschlag
 Felled area
 Coupe rase, déboisement
 Hogstflate



A 507
 Kleiner Pfad
 Small path
 Petit sentier
 Liten sti



B 408
 Obstbäume
 Orchard
 Arbres fruitiers
 Frukthage



A 508
 Deutliche Pfadabzweigung
 Visible path junction
 Embranchement du sentier marquant
 Tydelig stidele



A 409
 Sehr markanter Waldrand
 Very distinct forest edge
 Lisière de forêt très précise
 Tydelig skog- og figurgrense



A 509
 Undefinitive Pfadeinmündung
 Indistinct junction
 Embranchement du sentier peu visible
 Utydelig stidele



A 410
 Markanter Figurenrand
 Distinct vegetation boundary
 Limite de végétation précise
 Skog- og figurgrense



A 510
 Kleine Schneise
 Narrow ride
 Petite laie
 Uthogd linje



A 411
 Unbestimmter Figurenrand
 Indistinct vegetation boundary
 Bord imprécis
 Utydelig skog- og figurgrense



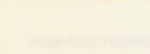
A 511
 Kleine Schneise offen
 Narrow ride open
 Petite laie ouverte
 Uthogd linje, god løpbarhet



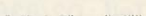
B 412–B 413
 Besondere Vegetationsobjekte
 Special vegetation feature
 Objets spéciaux de végétation
 Spesielle, små vegetasjonsdetaljer



A 512
 Kleine Schneise schwer belaufbar
 Narrow ride heavy going
 Petite laie difficilement traversable
 Uthogd linje, dårlig løpbarhet



B 414
 Breite Schneise
 Wide ride
 Large laie



A 513
 Breite Schneise
 Wide ride
 Large laie
 Bred uthogd linje

	A 514 Breite Schneise offen Wide ride open Large laie ouverte Bred uthogd linje, god løpbarhet		B 525 Auffallendes Gebäude Conspicuous building Bâtiment important Stor bygning
	A 515 Breite Schneise schwer belaufbar Wide ride heavy going Large laie difficilement traversable Bred uthogd linje, dårlig løpbarhet		B 526 Kirche Church Eglise Kirke
	A 516 Eisenbahn Railway Chemin de fer Jernbane, trikk o.l.		A 527 Ruine Ruin Ruine Ruin
	A 517 Starkstromleitung, Skilift Power line, Skilift Ligne de haute tension, Skilift Kraftledning, høyspent, Skitrekk o.l.		A 528 Sportplatz Sports track Place de sport Idrettsplass
	A 518 Tunnel, Unterführung Tunnel Passage sous voies, tunnel Tunnel, Undergang		A 529 Schiesplatz Firing range Champ de tir Skytebane
	B 519 Mauer Wall Mur Mur, Steingjerde		B 530 Feldkreuz Field grave Croix Minnesmerke o.l.
	A 520 Unpassierbarer Zaun Uncrossable boundary Clôture infranchissable Gjerde, ikke passérbart		B 531 Friedhof Cemetery Cimetière Kirkegård
	B 521 Passierbarer Zaun Crossable fence Clôture franchissable Gjerde, passérbart		A 532 Grosser Turm High tower Grande tour Stort tårn
	A 522 Durchgang Crossing point Passage Gjennomgang		A 533 Kleiner Turm Small tower Petite tour Lite tårn
	A 523 Gebäude Building Bâtiment Bygning		B 534 Futterkrippe Fodder rack Mangeoire Forkrybbe e.l.
	A 524 Siedlungsgebiet Settlement Agglomération Tettbebyggelse		B 535-B 536 Besondere kleine Objekte Special small man-made features Petits objets spéciaux Spesielle, små detaljer

Fotogrammetrische Auswertung
Photogrammetric Base Maps
Constructions photogrammétriques
Fotogrammetrisk Spesialkonstruksjon

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