
International Standard



6415

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Internal combustion engines — Spin-on filters for lubricating oil — Dimensions

Moteurs à combustion interne — Filtres à huile vissés — Dimensions

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 6415 was developed by Technical Committee ISO/TC 22, *Road vehicles*, and was circulated to the member bodies in January 1979.

It has been approved by the member bodies of the following countries :

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The member bodies of the following countries expressed disapproval of the document on technical grounds :

Bulgaria
New Zealand

Internal combustion engines — Spin-on filters for lubricating oil — Dimensions

1 Scope and field of application

This International Standard specifies the essential dimensional characteristics necessary for the interchangeability of spin-on filters of the full flow type for the filtration of lubricating oil for internal combustion engines and also the designation and the marking of these filters.

ISO 965/1, *ISO general purpose metric screw threads — Tolerances — Part 1 : Principles and basic data.*

ISO 965/3, *ISO general purpose metric screw threads — Tolerances — Part 3 : Deviations for constructional threads.*

2 References

ISO 3, *Preferred numbers — Series of preferred numbers.*

ISO 68, *ISO general purpose screw threads — Basic profile.*

ISO 261, *ISO general purpose metric screw threads — General plan.*

3 Required characteristics

3.1 Connection thread¹⁾, sealing surface

The dimensions of the male and female connection thread and of the sealing surface are specified in table 1. The thread shall conform to ISO 68, ISO 261, ISO 965/1 and ISO 965/3.

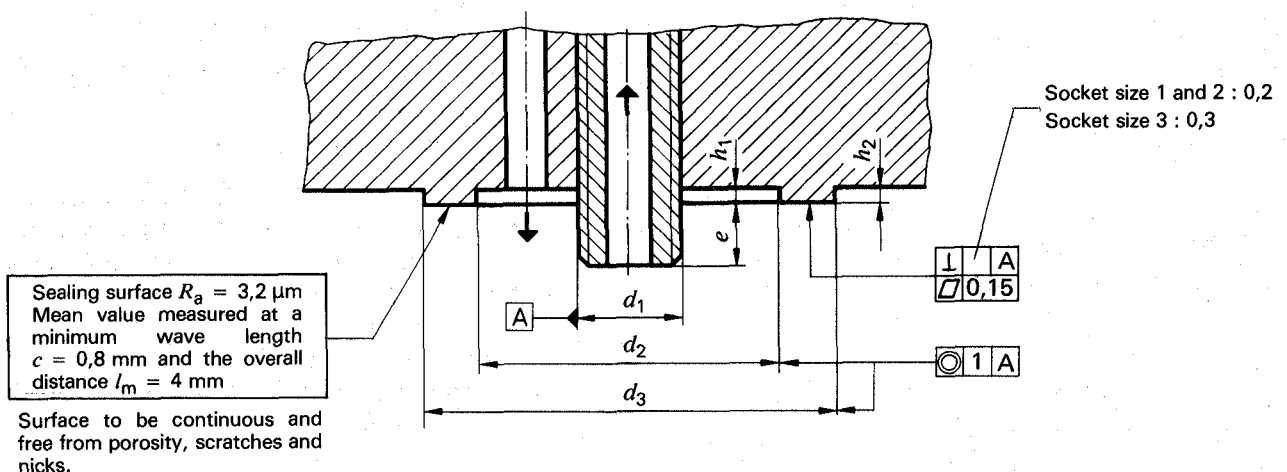


Figure 1 — Connection and sealing surface

¹⁾ The effective canister diameter is not specified but will be inserted in the designation by the filter manufacturer.

Table 1 – Dimensions of connection threads and sealing surface

Values in millimetres

| Socket size | Connection thread | | | | | Sealing surface | | | |
|-------------|-------------------|-------------|---------------|------|------|-----------------|------------|------------|------------|
| | d_1 | Tolerance | | e | | d_2 max. | d_3 min. | h_1 min. | h_2 min. |
| | | Stud thread | Filter thread | min. | max. | | | | |
| 1 | M 20 × 1,5 | 6 g | 6 H | 14 | 20 | 58 | 76 | 2 | 0 |
| 2 | M 24 × 2 | 6 g | 6 H | 14 | 20 | 58 | 76 | 2 | 0 |
| 3 | M 30 × 2 | 6 g | 6 H | 16 | 20 | 90 | 113 | 4 | 0 |

The stud must be threaded full distance e . When the filter has been tightened, at least three full threads shall be in contact.

M 16 × 1,5 has been reserved for spin-on filters for fuel.

3.2 Filter diameter and length (see figure 2)

The maximum dimensions for filter diameter and length are specified in table 2. The maximum dimensions for the diameter conform to ISO 3.

Four diameters (code letter A, B, C, D) and different lengths (identification figure 1, 2, 3, 4, 5) are specified. The combination of both codes designates the filter size.

Table 2 – Filter dimensions

Values in millimetres

| Diameter K max. | | A | B | C | D |
|----------------------|---|-----|-----|-----|-----|
| | | 80 | 90 | 100 | 112 |
| Length L max. | 1 | 80 | 90 | 100 | 115 |
| | 2 | 95 | 115 | 125 | 140 |
| | 3 | 120 | 135 | 150 | 180 |
| | 4 | — | 160 | 210 | 230 |
| | 5 | — | — | — | 265 |

D can use each socket size specified in table 1.

A, B, C can use socket sizes 1 and 2 of table 1.

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3.3 By-pass valve

For equipment protection, each spin-on filter type shall be fitted with a by-pass valve or an equivalent device unless a by-pass valve has been incorporated in the engine design. By-pass valves fitted to the spin-on filter shall operate at one of the following pressures :

- 100 ± 20 kPa
- 160 ± 30 kPa
- 250 ± 40 kPa

The opening pressure shall appear in the designation.

3.4 Design of the canister base

In order to facilitate removal and the installation of the filter, the canister base shall incorporate one of the following features :

- a curved surface i.e. without any impressions as specified in figure 3 – type X
- grooves as specified in figure 4 – type Y
- flats as specified in figure 5 – type Z

The type of canister base shall appear in the designation.

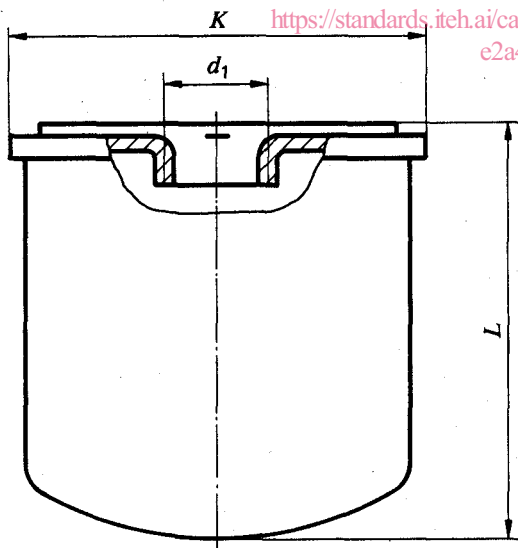


Figure 2 – Filter

Dimensions in millimetres

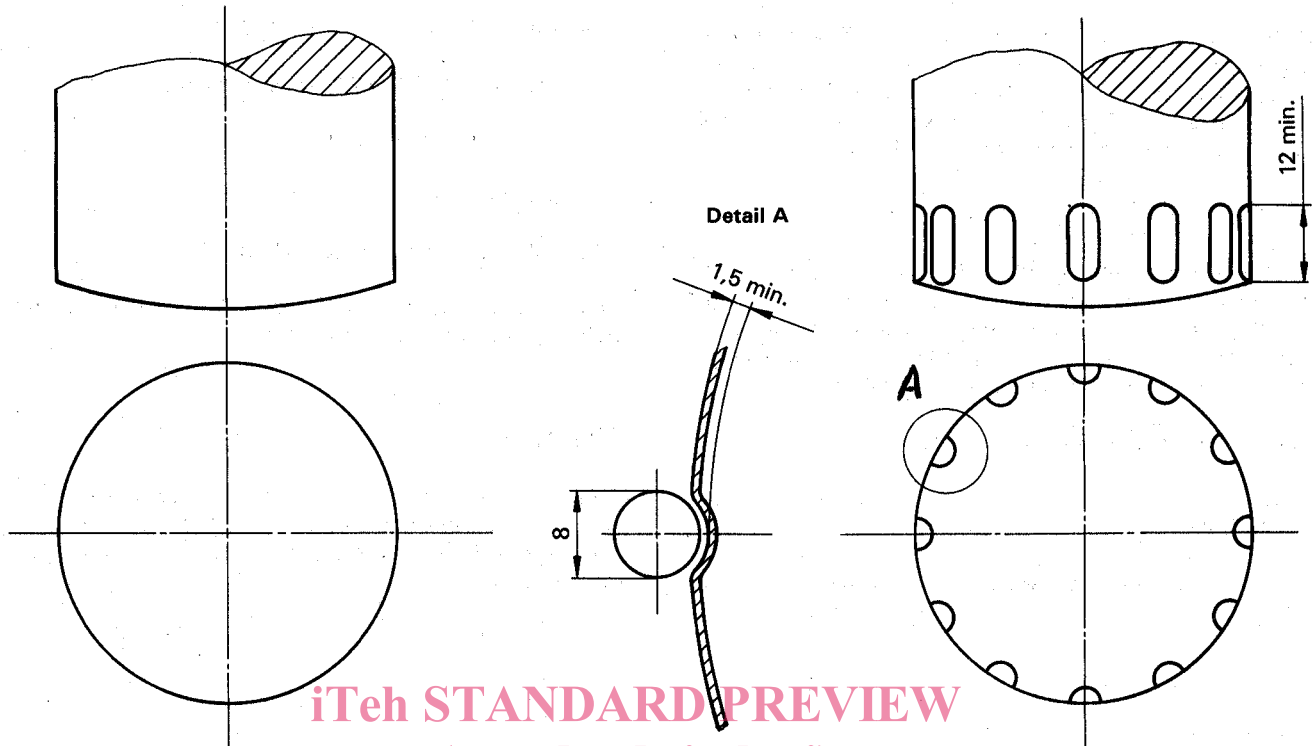


Figure 3 – Canister base type X – Without any impressions

Figure 4 – Canister base type Y – With grooves – Number of grooves : 6 or multiple of 6

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Dimensions in millimetres

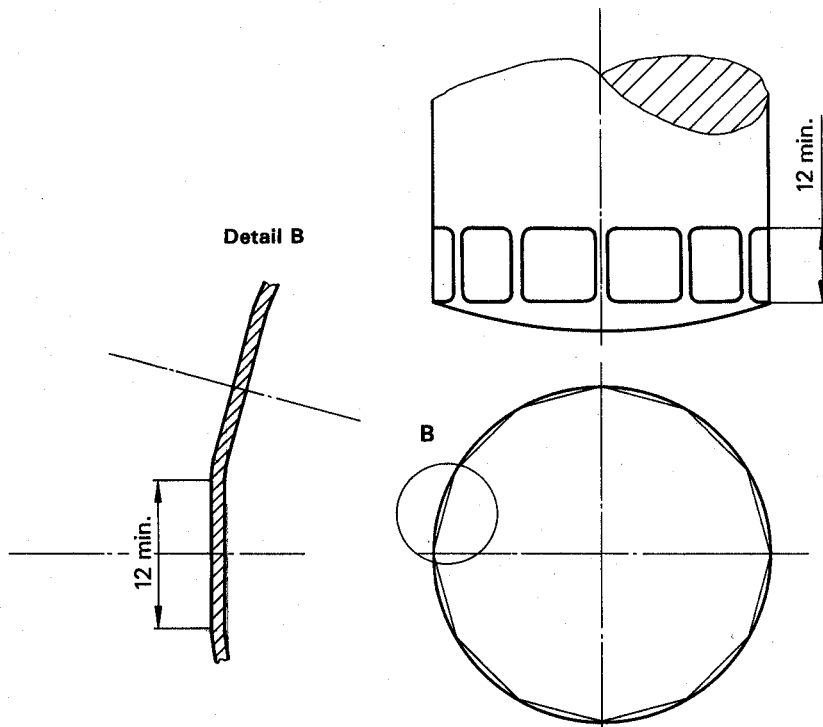


Figure 5 – Canister base type Z – With flats – Number of flats : 8, 10, 12, 14, 15 or more

4 Designation

4.1 Example for the designation of a spin-on filter type with metric thread $M20 \times 1,5$, with diameter K max. = 80 mm (code A), a length L max. = 80 mm (code 1), an effective canister diameter of 76 mm¹⁾ with flats (code Z) as removal design and a by-pass opening pressure of 100 kPa.

Oil filter ISO 6415 M20 \times 1,5A1-76Z1 00

4.2 Example for the designation of a spin-on filter type with metric thread $M24 \times 2$, with a diameter K max. = 112 mm (code D), a length L max. = 230 mm (code 4), an effective canister diameter of 110 mm, with grooves (code Y) as removal design and a by-pass opening pressure of 160 kPa.

Oil filter ISO 6415 M24 \times 2D4-110Y1 60

5 Marking

Each spin-on filter shall be marked with the following informa-

tion :

- a) name of manufacturer or supplier;
- b) type designation (for example catalogue number);
- c) date or code of manufacture;
- d) instructions for installation;
- e) full ISO designation (see clause 4).

The above marking shall appear on each filter body unless the engine manufacturer dictates otherwise.

WARNING

In view of the wide use of unified threads at the present time, a note should be indicated in publicity literature, filter cartons and filter assemblies wherever metric threads are used, to avoid mis-matching.

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1) The use of filters with unified threads is discouraged to avoid danger of mis-matching.