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Fire resistance classification No. LBO – 1587 – K/25E

Classified product:

Independent suspended ceilings Norgips faced with 2 x 12.5 mm thick gypsum plasterboards Norgips GKB type A or Norgips GKBI type H2 or Norgips Acoustic type A or Norgips GKF type DF or Norgips GKFI type DFH2 or Norgips Acoustic Super type DFH2IRE

Sponsor:

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1. This classification has been prepared based on the following documents:

1.1. Standard PN-EN 13501-2:2023-09 Fire classification of construction products and building elements – Part 2: Classification using data from fire resistance tests, excluding ventilation services.

1.2. Standard PN-EN 1364-2:2018-02 Fire resistance tests for non-loadbearing elements – Part 2: Ceilings.

1.3. Standard PN-EN 1363-1:2020-07 Fire resistance tests – Part 1: General requirements.

1.4. Test Report No. LBO-1587/21 Suspended ceiling SP – 2x12.5 GKB A + GKF DF CD 60, S. Fire Tests Laboratory, GRYFITLAB Spółka z o.o., Łozienica 2021.

1.5. Drawings and technical documentation provided by the Sponsor.

2. Technical description of independent suspended ceilings Norgips faced with 2 x 12.5 mm thick gypsum plasterboards Norgips GKB type A or Norgips GKBI type H2 or Norgips Acoustic type A or Norgips GKF type DF or Norgips GKFI type DFH2 or Norgips Acoustic Super type DFH2IRE

2.1 Suspended ceilings SP – 2x12.5 GKB A+GKF DF/CD60, SP – 2x12.5 ACO A+GKF DF/CD60, SP – 2x12.5 GKBI H2+GKFI DFH2/CD60, SP – 2x12.5 GKBI H2+DFH2IRE/CD60, SP – 2x12.5 ACO A+DFH2IRE/CD60, SP – 2x12.5 GKB A+DFH2IRE/CD60 faced with 2 x 12.5 mm thick gypsum plasterboards Norgips GKB type A or Norgips GKBI type H2 or Norgips Acoustic type A or Norgips GKF type DF or Norgips GKFI type DFH2 or Norgips Acoustic Super type DFH2IRE with two level grids made of profiles CD 60

The construction of the ceilings consists of a two level grid. The grid is made of profiles e.g. **Norgips CD 60**. The profiles are made of cold bent galvanized steel; the nominal thickness of the steel used is **0.55 mm** (tolerance: +/- 0.06 mm) or **0.6 mm** (tolerance: +/- 0.06 mm). The profiles of the main (top) layer are placed maximally every **100 cm** and this distance is measured between the axes of the adjacent profiles. The profiles of the loadbearing (bottom) layer are placed maximally every **40 cm** and this distance is measured between the axes of the adjacent profiles. The profiles of the main and loadbearing layer are connected with one another by means of e.g. **Norgips system cross connectors** for profiles CD 60. The profiles of the main layer are suspended by means of system e.g. **rotating hangers with spring Norgips** or **rotating hangers with nonius Norgips** or by applying system hangers e.g. **Norgips ES 60** or e.g. **Norgips ES 60 plus** fixed to the construction of a floor or to the construction of a roof by means of mechanical connectors, such as: steel dowels (minimum dimensions: **Ø 6 x 40 mm**), screws (minimum dimensions: **Ø 4 x 40 mm**), etc. Profiles **CD 60** of the main layer are fixed to hangers **ES 60** or **ES 60 plus** by means of 4 sheet steel screws **Ø 3.9 x 11 mm** or **Ø 3.5 x 9.5 mm** with self-drilling endings. The hangers are placed maximally every **85 cm**.

Cold bent steel profiles e.g. **Norgips UD 30** are fixed to the walls on the perimeter of the ceiling by means of mechanical connectors, such as: steel dowels (minimum dimensions: **Ø 6 x 40 mm**), screws (minimum dimensions: **Ø 4 x 40 mm**), etc. placed maximally every **60 cm**. Between the perimeter steel profiles and the walls it is recommenced to use 30 mm wide e.g. **Norgips sealing tape.**

Additional load may be applied to the construction of the grid of the ceiling. The evenly distributed load applied to the ceiling may be up to 7 kg/m^2.

12.5 mm thick gypsum plasterboards **Norgips GKB type A** or **Norgips GKBI type H2** or **Norgips Acoustic type A** are fixed, as the first layer, to the profiles of the loadbearing layer. The minimum surface density of the boards is equal to at least 6.5 kg/m^2 +/- 0,2 kg/m^2 for boards GKB type A, at least 7.0 kg/m^2 +/- 0,2 kg/m^2 for boards GKBI type H2, and at least 8,0 kg/m^2 +/- 0,2 kg/m^2 for boards Acoustic type A. **12.5 mm** thick gypsum plasterboards **Norgips GKF type DF** or **Norgips GKFI type DFH2** or **Norgips Acoustic Super type DFH2IRE** are fixed, as the second layer, to the profiles of the loadbearing layer. The minimum surface density of the boards is equal to at least 10.1 kg/m^2 +/- 0,1 kg/m^2 for boards GKF type DF and GKFI type DFH2, and at least 11.4 kg/m^2 +/- 0,2 kg/m^2 for boards Acoustic Super type DFH2IRE.

The first layer of the plasterboards is fixed by means of system sheet steel screws e.g. **Norgips Ø 3.5 x 25 mm**, placed at maximally **40 cm** centres. The second layer of the plasterboards is fixed by means of system sheet steel screws e.g. **Norgips Ø 3.5 x 35 mm**, placed at maximally **17 cm** centres. The plasterboards are fixed in such a way as to ensure that their longer edges are perpendicular to the profiles of the loadbearing layer. The joints between shorter edges of boards always have to be placed within profiles **CD 60**. Adjacent shorter edges of boards in the first layer have to be shifted in relation to one another by minimally **40 cm**. Adjacent shorter edges of boards in the second layer have to be shifted in relation to one another by minimally **40 cm** and, at the same time, have to be shifted in relation to the respective shorter edges of the boards in the first layer by minimally **40 cm**. Longer edges of boards in the second layer of boards have to be shifted in relation to the respective longer edges of the boards in the first layer by minimally **40 cm**.

The screw heads as well as the joints between the **Norgips GKB** plasterboards **type A** or the **Norgips GKBI** plasterboards **type H2** or the **Norgips Acoustic** plasterboards **type A** or the **Norgips GKF** plasterboards **type DF** or the **Norgips GKFI** plasterboards **type DFH2** or the **Norgips Acoustic Super** plasterboards **type DFH2IRE** are filled with gypsum filler e.g. **Norgips Start, Norgips Super Filler, or** ready mix jointing compound e.g. **Norgips Start & Finish**. The joints between the boards in the second layer of boards are additionally strengthened with e.g. Norgips self-adhesive reinforcing tape made of glass fibre or with e.g. Norgips reinforcing tape made of interlining. For final covering, it is recommended to use ready mix jointing compound e.g. **Norgips Extra Finish**, **Norgips Start & Finish, Norgips Easy Finish** or gypsum finish e.g. **Norgips Finish**. Details of the construction of the suspended ceilings are presented in **Figures 1 – 6.**

If the diagonal of the suspended ceiling is longer than 15 m or in places where there are constructional expansion joints of a building, one should provide expansion joints in the suspended ceiling (**Figure 12**).

2.2 Suspended ceilings SPJ – 2x12.5 GKB A+GKF DF/CD60, SPJ – 2x12.5 ACO A+GKF DF/CD60, SPJ – 2x12.5 GKBI H2+GKFI DFH2/CD60, SPJ – 2x12.5 GKBI H2+DFH2IRE/CD60, SPJ – 2x12.5 ACO A+DFH2IRE/CD60, SPJ – 2x12.5 GKB A+DFH2IRE/CD60 faced with 2 x 12.5 mm thick gypsum plasterboards Norgips GKB type A or Norgips GKBI type H2 or Norgips Acoustic type A or Norgips GKF type DF or Norgips GKFI type DFH2 or Norgips Acoustic Super type DFH2IRE, with one level grids made of profiles CD 60

The construction of the ceilings consists of a one level grid. The grid is made of profiles e.g. **Norgips CD 60**. The profiles are made of cold bent galvanized steel; the nominal thickness of the steel used is **0.55 mm** (tolerance: +/- 0.06 mm) or **0.6 mm** (tolerance: +/- 0.06 mm). Main profiles are placed maximally every **120 cm** and this distance is measured between the axes of the adjacent profiles. Lateral profiles are placed every **40 cm** and this distance is measured between the axes of the adjacent profiles. The lateral profiles and the main profiles are connected with one another by means of e.g. **Norgips lateral single-sided connectors** for profiles CD 60. These connectors are slid into the lateral profiles and then screwed with them by means of 2 sheet steel screws (**Ø 3.9 x 11 mm** or **Ø 3.5 x 9.5 mm**) with self-drilling endings. Then, the lateral profiles are slid into the main profiles in such a way that a fastener of the lateral single-sided connector is slid into a web of the main profile. Then, the lateral single-sided connector is screwed to the main profile by means of 2 sheet steel screws (**Ø 3.9 x 11 mm** or **Ø 3.5 x 9.5 mm**) with self-drilling endings. The main profiles are suspended by means of **rotating hangers with spring** e.g. **Norgips** or **rotating hangers with nonius** e.g. **Norgips** or by applying hangers e.g. **Norgips ES 60** or e.g. **Norgips ES 60 plus** fixed to the construction of a floor or to the construction of a roof by means of mechanical connectors, such as: steel dowels (minimum dimensions: **Ø 6 x 40 mm**), screws (minimum dimensions: **Ø 4 x 40 mm**), etc. Main profiles **CD 60** are fixed to hangers **ES 60** or **ES 60 plus** by means of 4 sheet steel screws **Ø 3.9 x 11 mm** or **Ø 3.5 x 9.5 mm** with self-drilling endings. The hangers are placed maximally every **70 cm**.

Cold bent steel profiles e.g. **Norgips UD 30** are fixed to the walls on the perimeter of the ceiling by means of mechanical connectors, such as: steel dowels (minimum dimensions: **Ø 6 x 40 mm**), screws (minimum dimensions: **Ø 4 x 40 mm**), etc. placed maximally every **60 cm**. Between the perimeter steel profiles and the walls it is recommenced to use 30 mm wide e.g. **Norgips sealing tape**.
Additional load may be applied to the construction of the grid of the ceiling. The evenly distributed load applied to the ceiling may be up to 7 kg/m^2.

12.5 mm thick gypsum plasterboards **Norgips GKB type A** or **Norgips GKBI type H2** or **Norgips Acoustic type A** are fixed to the main profiles and to the lateral profiles as the first layer. The minimum surface density of the boards is equal to at least 6.5 kg/m^2 +/- 0,2 kg/m^2 for boards GKB type A, at least 7.0 kg/m^2 +/- 0,2 kg/m^2 for boards GKBI type H2, and at least 8,0 kg/m^2 +/- 0,2 kg/m^2 for boards Acoustic type A. **12.5 mm** thick gypsum plasterboards **Norgips GKF type DF** or **Norgips GKFI type DFH2** or **Norgips Acoustic Super type DFH2IRE** are fixed to the main profiles and to the lateral profiles as the second layer. The minimum surface density of the boards is equal to at least 10.1 kg/m^2 +/- 0,1 kg/m^2 for boards GKF type DF and GKFI type DFH2, and at least 11.4 kg/m^2 +/- 0,2 kg/m^2 for boards Acoustic Super type DFH2IRE.

The first layer of the plasterboards is fixed by means of sheet steel screws **Ø 3.5 x 25 mm**, placed at maximally **40 cm** centres. The second layer of the plasterboards is fixed by means of sheet steel screws **Ø 3.5 x 35 mm**, placed at maximally **17 cm** centres. The plasterboards are fixed in such a way as to ensure that their longer edges are perpendicular to the lateral profiles. The joints between shorter edges of boards always have to be placed within lateral profiles. Adjacent shorter edges of boards in the first layer have to be shifted in relation to one another by minimally **40 cm**. Adjacent shorter edges of boards in the second layer have to be shifted in relation to one another by minimally **40 cm** and, at the same time, have to be shifted in relation to the respective shorter edges of the boards in the first layer by minimally **40 cm**. Longer edges of boards in the second layer of boards have to be shifted in relation to the respective longer edges of the boards in the first layer by minimally **40 cm**.

The screw heads as well as the joints between the **Norgips GKB** plasterboards **type A** or the **Norgips GKBI** plasterboards **type H2** or the **Norgips Acoustic** plasterboards **type A** or the **Norgips GKF** plasterboards **type DF** or the **Norgips GKFI** plasterboards **type DFH2** or the **Norgips Acoustic Super** plasterboards **type DFH2IRE** are filled with gypsum filler e.g. **Norgips Start, Norgips Super Filler or** ready mix jointing compound e.g. **Norgips Start & Finish**. The joints between the boards in the second layer of boards are additionally strengthened with e.g. Norgips self-adhesive reinforcing tape made of glass fibre or with e.g. Norgips reinforcing tape made of interlining. For final covering, it is recommended to use ready mix jointing compound e.g. **Norgips Extra Finish**, **Norgips Start & Finish, Norgips Easy Finish** or gypsum finish e.g. **Norgips Finish**. Details of the construction of the suspended ceilings are presented in **Figure 7.**

If the diagonal of the suspended ceiling is longer than 15 m or in places where there are constructional expansion joints of a building, one should provide expansion joints in the suspended ceiling.

2.3 Ceiling linings OSF – 2x12.5 GKB A+GKF DF/CD60, OSF – 2x12.5 ACO A+GKF DF/CD60, OSF – 2x12.5 GKBI H2+GKFI DFH2/CD60, OSF – 2x12.5 GKBI H2+DFH2IRE/CD60, OSF – 2x12.5 ACO A+DFH2IRE/CD60, OSF – 2x12.5 GKB A+DFH2IRE/CD60, faced with 2 x 12.5 mm thick gypsum plasterboards Norgips GKB type A or Norgips GKBI type H2 or Norgips Acoustic type A or Norgips GKF type DF or Norgips GKFI type DFH2 or Norgips Acoustic Super type DFH2IRE with the construction made of profiles CD 60

The construction of the ceiling linings consists of profiles e.g. **Norgips CD 60**. The profiles are made of cold bent galvanized steel; the nominal thickness of the steel used is **0.55 mm** (tolerance: +/- 0.06 mm) or **0.6 mm** (tolerance: +/- 0.06 mm); the profiles are placed every **40 cm** and this distance is measured between the axes of the adjacent profiles.

The profiles used are suspended by applying hangers e.g. **Norgips ES 60 x 75, Norgips ES 60 x 125, Norgips ES plus 60 x 60, Norgips ES plus 60 x 120** or flat hangers e.g. **Norgips L 180, L 270, L 350.** The ES hangers are fixed to the construction of a floor or to the construction of a roof by means of 1 mechanical connector, such as: steel dowels **(minimum dimensions: Ø 6 x 40 mm)**, or two screws for wood **(minimum dimensions: Ø 4 x 40 mm)**, etc. Profiles **CD 60** are fixed to hangers **ES 60** or **ES 60 plus** by means of 4 sheet steel screws **Ø 3.9 x 11 mm** or

Ø 3.5 x 9.5 mm with self-drilling endings. The L hangers are fixed to the wooden construction of a roof or a floor by means of two screws for wood (minimum dimensions: **Ø 3.5 x 35 mm**). The hangers are placed maximally every **85 cm**.

Cold bent steel profiles e.g. **Norgips UD 30** are fixed to the walls on the perimeter of the ceiling by means of mechanical connectors, such as: steel dowels (minimum dimensions: **Ø 6 x 40 mm**), screws (minimum dimensions: **Ø 4 x 40 mm**), etc. placed maximally every **60 cm**. Between the perimeter steel profiles and the walls it is recommenced to use 30 mm wide e.g. **Norgips sealing tape**.
Additional load may be applied to the construction of the ceiling. The evenly distributed load applied to the ceiling may be up to 7 kg/m^2.

12.5 mm thick gypsum plasterboards **Norgips GKB type A** or **Norgips GKBI type H2** or **Norgips Acoustic type A** are fixed to profiles **CD 60** as the first layer of gypsum plasterboards. The minimum surface density of the boards is equal to at least 6.5 kg/m^2 +/- 0,2 kg/m^2 for boards GKB type A, at least 7.0 kg/m^2 +/- 0,2 kg/m^2 for boards GKBI type H2, and at least 8,0 kg/m^2 +/- 0,2 kg/m^2 for boards Acoustic type A **12.5 mm** thick gypsum plasterboards **Norgips GKF type DF** or **Norgips GKFI type DFH2** or **Norgips Acoustic Super type DFH2IRE** are fixed to profiles **CD 60** as the second layer of gypsum plasterboards. The minimum surface density of the boards is equal to at least 10.1 kg/m^2 +/- 0,1 kg/m^2 for boards GKF type DF and GKFI type DFH2, and at least 11.4 kg/m^2 +/- 0,2 kg/m^2 for boards Acoustic Super type DFH2IRE.

The first layer of the plasterboards is fixed by means of sheet steel screws **Ø 3.5 x 25 mm**, placed at maximally **40 cm** centres. The second layer of the plasterboards is fixed by means of sheet steel screws **Ø 3.5 x 35 mm**, placed at maximally **17 cm** centres.

The plasterboards are fixed in such a way as to ensure that their longer edges are perpendicular to profiles **CD 60**. The joints between shorter edges of boards in the lateral layout always have to be placed within profiles **CD 60**. Adjacent shorter edges of boards in the first layer have to be shifted in relation to one another by minimally **40 cm**. Adjacent shorter edges of boards in the second layer have to be shifted in relation to one another by minimally **40 cm** and, at the same time, have to be shifted in relation to the respective shorter edges of the boards in the first layer by minimally **40 cm**. Longer edges of boards in the second layer of boards have to be shifted in relation to the respective longer edges of the boards in the first layer by minimally **40 cm**.

The screw heads as well as the joints between the **Norgips GKB** plasterboards **type A** or the **Norgips GKBI** plasterboards **type H2** or the **Norgips Acoustic** plasterboards **type A** or the **Norgips GKF** plasterboards **type DF** or the **Norgips GKFI** plasterboards **type DFH2** or the **Norgips Acoustic Super** plasterboards **type DFH2IRE** are filled with gypsum filler e.g. **Norgips Start, Norgips Super Filler or** ready mix jointing compound e.g. **Norgips Start & Finish**. The joints between the boards in the second layer of boards are additionally strengthened with e.g. Norgips self-adhesive reinforcing tape made of glass fibre or with e.g. Norgips reinforcing tape made of interlining. For final covering, it is recommended to use ready mix jointing compound e.g. **Norgips Extra Finish**, **Norgips Start & Finish, Norgips Easy Finish** or gypsum finish e.g. **Norgips Finish**. Details of the construction of the ceiling linings are presented in **Figures 8 - 9.**

If the diagonal of the ceiling lining is longer than 15 m or in places where there are constructional expansion joints of a building, one should provide expansion joints in the ceiling lining.

2.4 Ceiling linings OSF – 2x12.5 GKB A+GKF DF/KAP, OSF – 2x12.5 ACO A+GKF DF/KAP, OSF – 2x12.5 GKBI H2+GKFI DFH2/KAP, OSF – 2x12.5 GKBI H2+DFH2IRE/KAP, OSF – 2x12.5 ACO A+DFH2IRE/KAP, OSF – 2x12.5 GKB A+DFH2IRE/CD60, faced with 2 x 12.5 mm thick gypsum plasterboards Norgips GKB type A or Norgips GKBI type H2 or Norgips Acoustic type A or Norgips GKF type DF or Norgips GKFI type DFH2 or Norgips Acoustic Super type DFH2IRE with the construction made of hat profiles

The construction of the ceiling linings consists of e.g. **Norgips hat** profiles. The profiles are made of cold bent galvanized steel; the nominal thickness of the steel used is **0.55 mm** (tolerance: +/- 0.06 mm) or **0.6 mm** (tolerance: +/- 0.06 mm); the profiles are placed every **40 cm** and this distance is measured between the axes of the adjacent profiles.

The profiles are fixed to the construction of a floor or to the construction of a roof by means of 2 mechanical connectors, such as: steel dowels (minimum dimensions: **Ø 6 x 40 mm**), screws (minimum dimensions: **Ø 4 x 40 mm**), etc. placed maximally every **100 cm**.

Additional load may be applied to the construction of the ceiling. The evenly distributed load applied to the ceiling may be up to 7 kg/m^2.

12.5 mm thick gypsum plasterboards **Norgips GKB type A** or **Norgips GKBI type H2** or **Norgips Acoustic type A** are fixed to **hat** profiles as the first layer of gypsum plasterboards. The minimum surface density of the boards is equal to at least 6.5 kg/m^2 +/- 0,2 kg/m^2 for boards GKB type A, at least 7.0 kg/m^2 +/- 0,2 kg/m^2 for boards GKBI type H2, and at least 8.0 kg/m^2 +/- 0,2 kg/m^2 for boards **Acoustic type A 12.5 mm** thick gypsum plasterboards **Norgips GKF type DF** or **Norgips GKFI type DFH2** or **Norgips Acoustic Super type DFH2IRE** are fixed to **hat** profiles as the second layer of gypsum plasterboards. The minimum surface density of the boards is equal to at least 10.1 kg/m^2 +/- 0,1 kg/m^2 for boards GKF type DF and GKFI type DFH2, and at least 11.4 kg/m^2 +/- 0,2 kg/m^2 for boards Acoustic Super type DFH2IRE.

The first layer of the plasterboards is fixed by means of sheet steel screws **Ø 3.5 x 25 mm**, placed at maximally **40 cm** centres. The second layer of the plasterboards is fixed by means of sheet steel screws **Ø 3.5 x 35 mm**, placed at maximally **17 cm** centres. The plasterboards are fixed in such a way as to ensure that their longer edges are perpendicular to **hat** profiles. The joints between shorter edges of boards in the lateral layout always have to be placed within **hat** profiles. Adjacent shorter edges of boards in the first layer have to be shifted in relation to one another by minimally **40 cm**. Adjacent shorter edges of boards in the second layer have to be shifted in relation to one another by minimally **40 cm** and, at the same time, have to be shifted in relation to the respective shorter edges of the boards in the first layer by minimally **40 cm**. Longer edges of boards in the second layer of boards have to be shifted in relation to the respective longer edges of the boards in the first layer by minimally **40 cm**.

The screw heads as well as the joints between the **Norgips GKB** plasterboards **type A** or the **Norgips GKBI** plasterboards **type H2** or the **Norgips Acoustic** plasterboards **type A** or the **Norgips GKF** plasterboards **type DF** or the **Norgips GKFI** plasterboards **type DFH2** or the **Norgips Acoustic Super** plasterboards **type DFH2IRE** are filled with gypsum filler e.g. **Norgips Start, Norgips Super Filler or** ready mix jointing compound e.g. **Norgips Start & Finish**. The joints between the boards in the second layer of boards are additionally strengthened with e.g. Norgips self-adhesive reinforcing tape made of glass fibre or with e.g. Norgips reinforcing tape made of interlining. For final covering, it is recommended to use ready mix jointing compound e.g. **Norgips Extra Finish**, **Norgips Start & Finish, Norgips Easy Finish** or gypsum finish e.g. **Norgips Finish**. Details of the construction of the ceiling linings are presented in **Figures 10 - 11.**

If the diagonal of the ceiling lining is longer than 15 m or in places where there are constructional expansion joints of a building, one should provide expansion joints in the ceiling lining.

3. Fire resistance tests

The fire resistance tests of the Norgips suspended ceiling made of 2 x 12.5 mm thick gypsum plasterboards was carried out in the Fire Tests Laboratory of GRYFITLAB in Łozienica.

Test Report No. LBO-1587/21 [1.4].

4. Fire resistance classification of independent suspended ceilings Norgips faced with 2 x 12.5 mm thick gypsum plasterboards Norgips GKB type A or Norgips GKBI type H2 or Norgips Acoustic type A or Norgips GKF type DF or Norgips GKFI type DFH2 or Norgips Acoustic Super type DFH2IRE

Based on the analysis of fire resistance test results indicated in item 3, independent suspended ceilings Norgips faced with 2 x 12.5 mm thick gypsum plasterboards Norgips GKB type A or Norgips GKBI type H2 or Norgips Acoustic type A or Norgips GKF type DF or Norgips GKFI type DFH2 or Norgips Acoustic Super type DFH2IRE, manufactured and installed in accordance with the technical description presented in item 2, are classified according to standard PN-EN 13501-2:2023-09 [1.1] as belonging to the following fire resistance class:

EI 30 (a←b)

5. Independent suspended ceilings Norgips faced with 2 x 12.5 mm thick gypsum plasterboards Norgips GKB type A or Norgips GKBI type H2 or Norgips Acoustic type A or Norgips GKF type DF or Norgips GKFI type DFH2 or Norgips Acoustic Super type DFH2IRE, used as fire separation

Horizontal fire separation elements, in the form of a floor or a flat roof with suspended ceiling Norgips faced with 2 x 12.5 mm thick gypsum plasterboards Norgips GKB type A or Norgips GKBI type H2 or Norgips Acoustic type A or Norgips GKF type DF or Norgips GKFI type DFH2 or Norgips Acoustic Super type DFH2IRE, manufactured and installed in accordance with the technical description specified in item 2 herein, which – taking into account the classification

provided in item 4 herein – constitute independent fire separation when being exposed to fire from below, meet the respective REI fire resistance criteria according to standard PN-EN 13501-2:2023-09 [1.1], as follows:

- Systems: floor – suspended ceiling and floor – ceiling lining (the construction of a floor is designed according to the Polish Standards and Eurocodes)

  fire resistance class **REI 30 (a←b)**

- Systems: roof – suspended ceiling and roof – ceiling lining (the construction of a roof is designed according to the Polish Standards and Eurocodes)

  fire resistance class **REI 30 (a←b)**

6. Restrictions

The classification provided in item 4 herein is valid for elements made of 12.5 mm thick gypsum plasterboards Norgips, manufactured in accordance with standard PN-EN 520+A1:2012 and of the surface density for 1 m^2 of boards not less than:

6.5 kg/m^2 +/- 0,2 kg/m^2	–	for boards type A
7.0 kg/m^2 +/- 0,2 kg/m^2	–	for boards type H2
8.0 kg/m^2 +/- 0,2 kg/m^2	–	for boards Acoustic type A
10.1 kg/m^2 +/- 0,1 kg/m^2	–	for boards type DF and DFH2
11.4 kg/m^2 +/- 0,2 kg/m^2	–	for boards DFH2IRE.

Classification No. LBO -1587 – K/25E can only be reproduced in its entirety.

7. Validity

This classification is valid until 05.12.2030 on the condition that there are no changes in the construction or materials of the classified products.

Prezes Zarządu
Andrzej Szarycki

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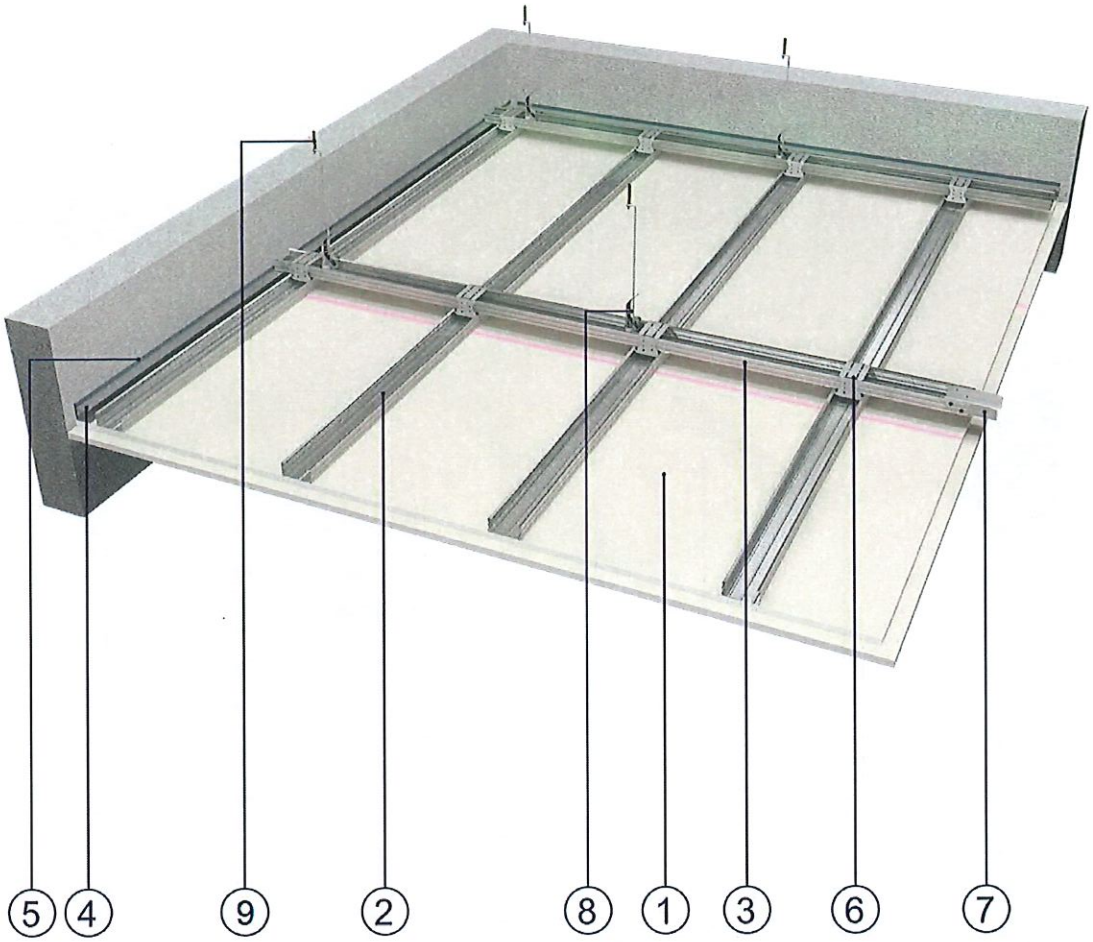
8. Figures

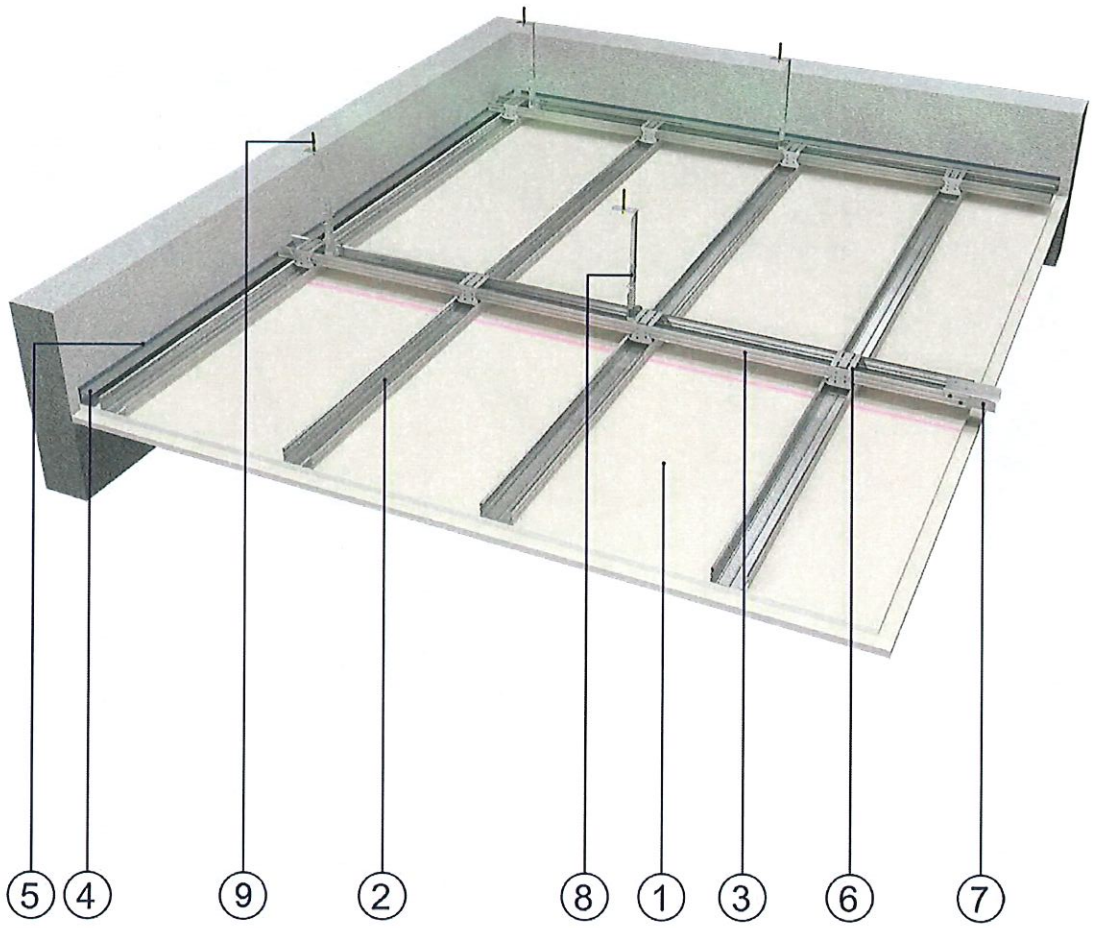
Independent suspended ceilings Norgips
faced with 2 x 12.5 mm thick gypsum plasterboards
Norgips GKB type A + Norgips GKF type DF or
Norgips Acoustic type A + Norgips GKF type DF or
Norgips GKBI type H2 + Norgips GKFI type DFH2 or
Norgips GKBI type H2 + Norgips Acoustic Super type DFH2IRE or
Norgips Acoustic type A + Norgips Acoustic Super type DFH2IRE or
Norgips GKB type A + Norgips Acoustic Super type DFH2IRE



Elements of the ceiling

1. Gypsum plasterboards Norgips GKB type A + Norgips GKF type DF or Norgips Acoustic type A + Norgips GKF type DF or Norgips GKBI type H2 + Norgips GKFI type DFH2 or Norgips GKBI type H2 + Norgips Acoustic Super type DFH2IRE or Norgips Acoustic type A + Norgips Acoustic Super type DFH2IRE or Norgips GKB type A + Norgips Acoustic Super type DFH2IRE, thickness: 2 x 12.5 mm
2. Profiles e.g. Norgips CD 60 of the loadbearing layer, minimum thickness: 0.55 mm, placed maximally every 40 cm
3. Profiles e.g. Norgips CD 60 of the main layer, minimum thickness: 0.55 mm, placed maximally every 100 cm
4. Profile e.g. Norgips UD 30, minimum thickness: 0.55 mm
5. Sealing tape e.g. Norgips, width: 30 mm (recommended)
6. Cross connector e.g. Norgips for profiles CD 60
7. Longitudinal connector e.g. Norgips for profiles CD 60
8. Hanger e.g. Norgips: rotating hanger with spring, placed maximally every 85 cm
9. Mechanical connector, e.g.: screw, steel dowel of the minimum dimensions of Ø 6 x 40 mm

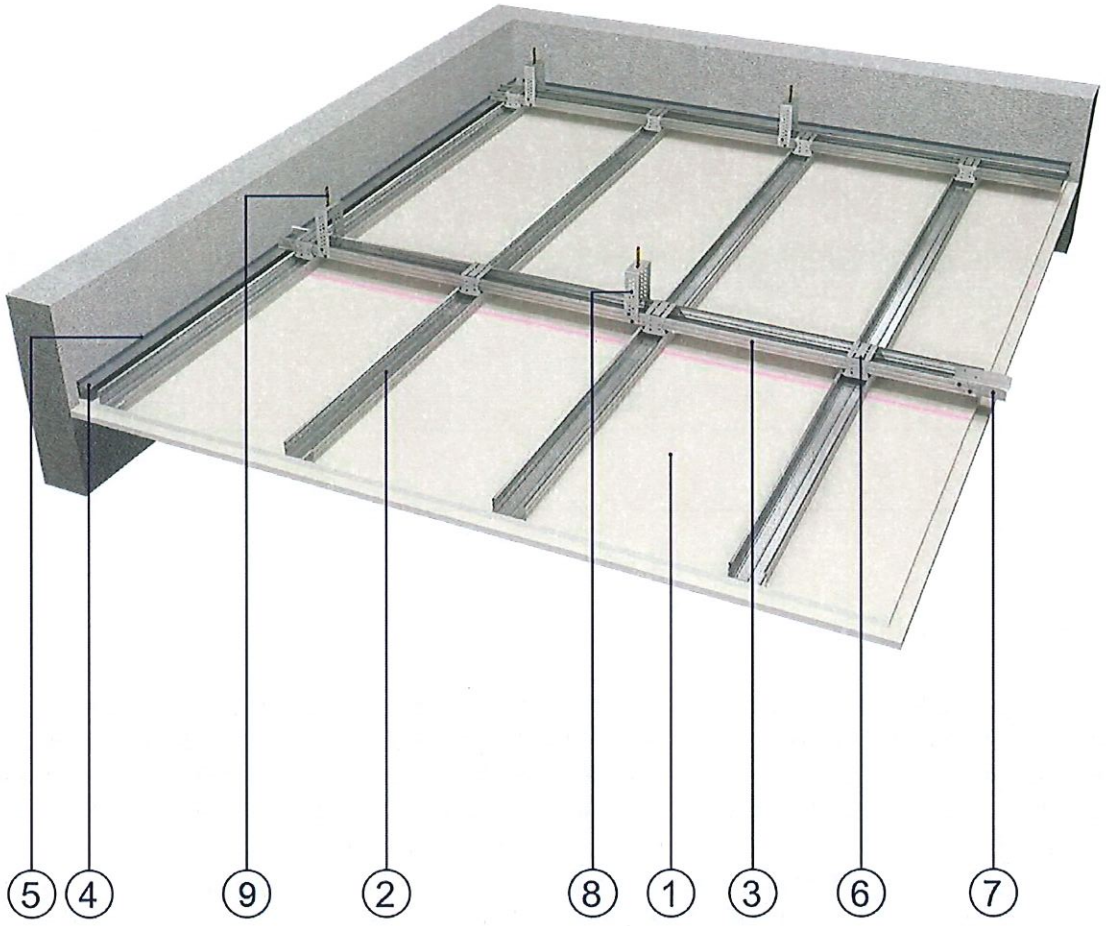
Figure 1 View of the suspended ceiling – two level cross construction with rotating hangers with springs



Elements of the ceiling

1. Gypsum plasterboards Norgips GKB type A + Norgips GKF type DF or Norgips Acoustic type A + Norgips GKF type DF or Norgips GKBI type H2 + Norgips GKFI type DFH2 or Norgips GKBI type H2 + Norgips Acoustic Super type DFH2IRE or Norgips Acoustic type A + Norgips Acoustic Super type DFH2IRE or Norgips GKB type A + Norgips Acoustic Super type DFH2IRE, thickness: 2 x 12.5 mm
2. Profiles e.g. Norgips CD 60 of the loadbearing layer, minimum thickness: 0.55 mm, placed maximally every 40 cm
3. Profiles e.g. Norgips CD 60 of the main layer, minimum thickness: 0.55 mm, placed maximally every 100 cm
4. Profile Norgips e.g. UD 30, minimum thickness: 0.55 mm
5. Sealing tape e.g. Norgips, width: 30 mm (recommended)
6. Cross connector e.g. Norgips for profiles CD 60
7. Longitudinal connector e.g. Norgips for profiles CD 60
8. Hanger e.g. Norgips: rotating hanger with nonius, placed maximally every 85 cm
9. Mechanical connector, e.g.: screw, steel dowel of the minimum dimensions of Ø 6 x 40 mm

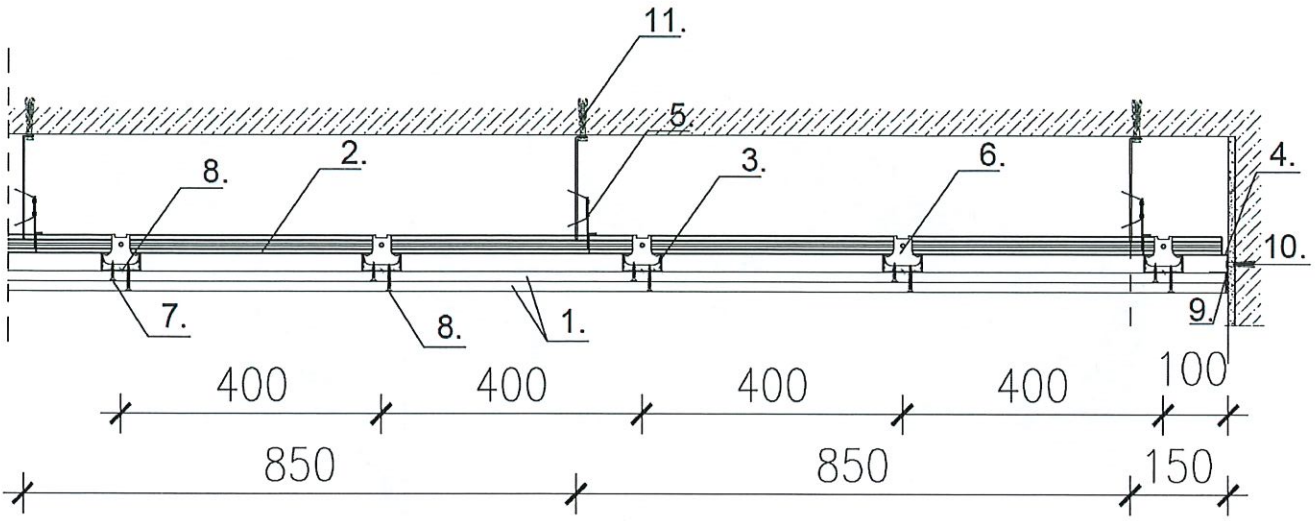
Figure 2 View of the suspended ceiling – two level cross construction with rotating hangers with noniuses



Elements of the ceiling

1. Gypsum plasterboards Norgips GKB type A + Norgips GKF type DF or Norgips Acoustic typu A + Norgips GKF type DF or Norgips GKBI type H2 + Norgips GKFI type DFH2 or Norgips GKBI type H2 + Norgips Acoustic Super type DFH2IRE or Norgips Acoustic type A + Norgips Acoustic Super type DFH2IRE or Norgips GKB type A + Norgips Acoustic Super type DFH2IRE, thickness: 2 x 12.5 mm
2. Profiles e.g. Norgips CD 60 of the loadbearing layer, minimum thickness: 0.55 mm, placed maximally every 40 cm
3. Profiles e.g. Norgips CD 60 of the main layer, minimum thickness: 0.55 mm, placed maximally every 100 cm
4. Profile e.g. Norgips UD 30, minimum thickness: 0.55 mm
5. Sealing tape e.g. Norgips, width: 30 mm (recommended)
6. Cross connector e.g. Norgips for profiles CD 60
7. Longitudinal connector e.g. Norgips for profiles CD 60
8. Hanger e.g. Norgips ES 60 or ES 60 plus, placed maximally every 85 cm
9. Mechanical connector, e.g.: screw, steel dowel of the minimum dimensions of Ø 6 x 40 mm

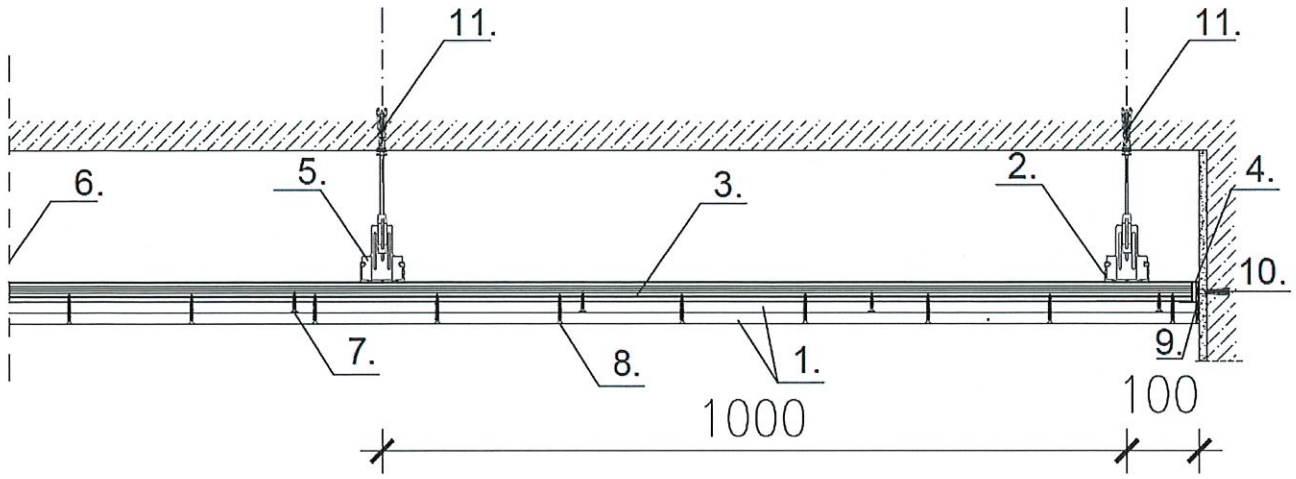
Figure 3 View of the suspended ceiling – two level cross construction with hangers ES 60 or ES 60 plus



Elements of the ceiling

1. Gypsum plasterboards Norgips GKB type A + Norgips GKF type DF or Norgips Acoustic type A + Norgips GKF type DF or Norgips GKBI type H2 + Norgips GKFI type DFH2 or Norgips GKBI type H2 + Norgips Acoustic Super type DFH2IRE or Norgips Acoustic type A + Norgips Acoustic Super type DFH2IRE or Norgips GKB type A + Norgips Acoustic Super type DFH2IRE, thickness: 2 x 12.5 mm
2. Profile e.g. Norgips CD 60 of the main layer, minimum thickness: 0.55 mm
3. Profile e.g. Norgips CD 60 of the loadbearing layer, minimum thickness: 0.55 mm
4. Profile e.g. Norgips UD 30, minimum thickness: 0.55 mm
5. Hanger e.g. Norgips: rotating hanger with spring or rotating hanger with nonius or hanger ES 60 or hanger ES 60 plus
6. Cross connector e.g. Norgips for profiles CD 60
7. Sheet steel screw e.g. Norgips 3.5 x 25 mm placed every 40 cm
8. Sheet steel screw e.g. Norgips 3.5 x 35 mm placed every 17 cm
9. Sealing tape e.g. Norgips, width: 30 mm (recommended)
10. Mechanical connector, e.g.: wall plug, dowel of the minimum dimensions of Ø 6 x 40 mm
11. Mechanical connector, e.g.: screw, steel dowel of the minimum dimensions of Ø 6 x 40 mm

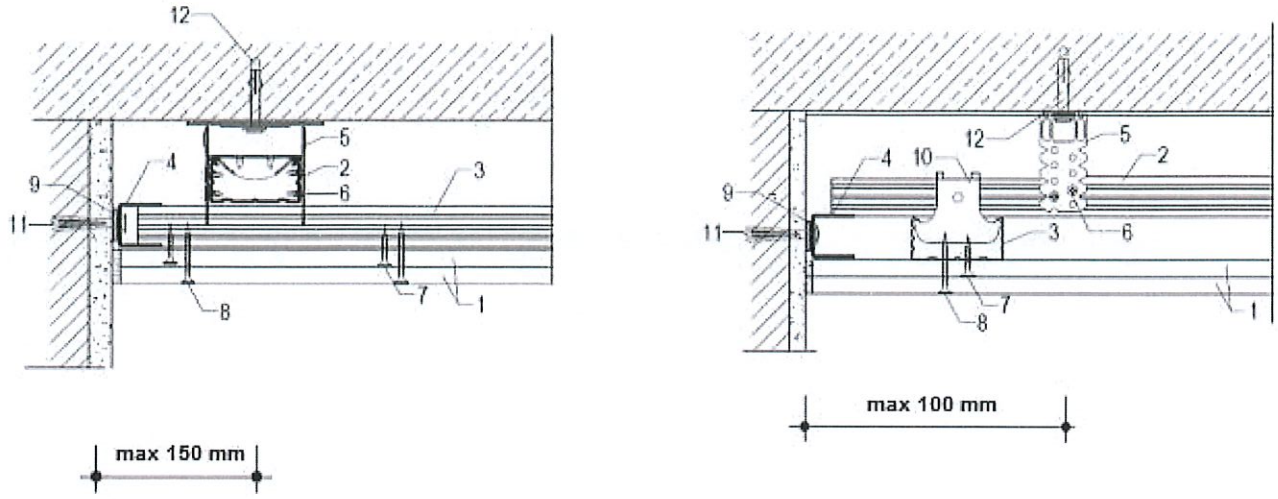
Figure 4 Longitudinal section of the suspended ceiling – two level cross construction



Elements of the ceiling

1. Gypsum plasterboards Norgips GKB type A + Norgips GKF type DF or Norgips Acoustic type A + Norgips GKF type DF or Norgips GKBI type H2 + Norgips GKFI type DFH2 or Norgips GKBI type H2 + Norgips Acoustic Super type DFH2IRE or Norgips Acoustic type A + Norgips Acoustic Super type DFH2IRE or Norgips GKB type A + Norgips Acoustic Super type DFH2IRE, thickness: 2 x 12.5 mm
2. Profile e.g. Norgips CD 60 of the main layer, minimum thickness: 0.55 mm
3. Profile e.g. Norgips CD 60 of the loadbearing layer, minimum thickness: 0.55 mm
4. Profile Norgips e.g. UD 30, minimum thickness: 0.55 mm
5. Hanger e.g. Norgips: rotating hanger with spring or rotating hanger with nonius or hanger ES 60 or hanger ES 60 plus
6. Cross connector e.g. Norgips for profiles CD 60
7. Sheet steel screw e.g. Norgips 3.5 x 25 mm placed every 40 cm
8. Sheet steel screw e.g. Norgips 3.5 x 35 mm placed every 17 cm
9. Sealing tape e.g. Norgips, width: 30 mm (recommended)
10. Mechanical connector, e.g.: wall plug, dowel of the minimum dimensions of Ø 6 x 40 mm
11. Mechanical connector, e.g.: screw, steel dowel of the minimum dimensions of Ø 6 x 40 mm

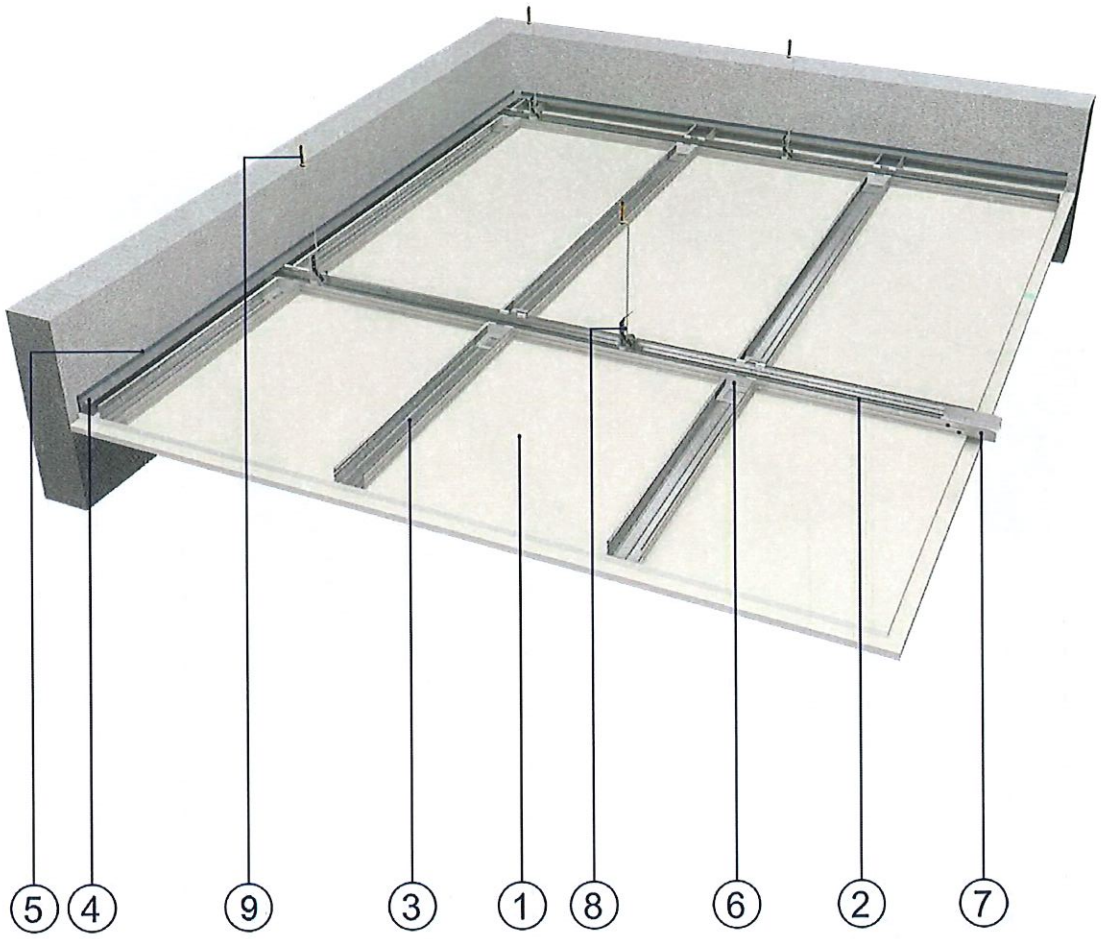
Figure 5 Cross section of the suspended ceiling – two level cross construction



Elements of the ceiling

1. Gypsum plasterboards Norgips GKB type A + Norgips GKF type DF or Norgips Acoustic type A + Norgips GKF type DF or Norgips GKBI type H2 + Norgips GKFI type DFH2 or Norgips GKBI type H2 + Norgips Acoustic Super type DFH2IRE or Norgips Acoustic type A + Norgips Acoustic Super type DFH2IRE or Norgips GKB type A + Norgips Acoustic Super type DFH2IRE, thickness: 2 x 12.5 mm
2. Profile e.g. Norgips CD 60 of the main layer, minimum thickness: 0.55 mm
3. Profile e.g. Norgips CD 60 of the loadbearing layer, minimum thickness: 0.55 mm
4. Profile e.g. Norgips UD 30, minimum thickness: 0.55 mm
5. Hanger e.g. Norgips ES 60 or Norgips ES 60 plus
6. Sheet steel screw with self-drilling ending e.g. Norgips 3.9 mm x 11 mm or e.g. Norgips 3.5 mm x 9.5 mm (4 screws per hanger ES or ES plus)
7. Sheet steel screw e.g. Norgips 3.5 x 25 mm placed every 40 cm
8. Sheet steel screw e.g. Norgips 3.5 x 35 mm placed every 17 cm
9. Sealing tape e.g. Norgips, width: 30 mm (recommended)
10. Cross connector e.g. Norgips for profiles CD 60
11. Mechanical connector, e.g.: wall plug, dowel of the minimum dimensions of Ø 6 x 40 mm
12. Mechanical connector, e.g.: screw, steel dowel of the minimum dimensions of Ø 6 x 40 mm

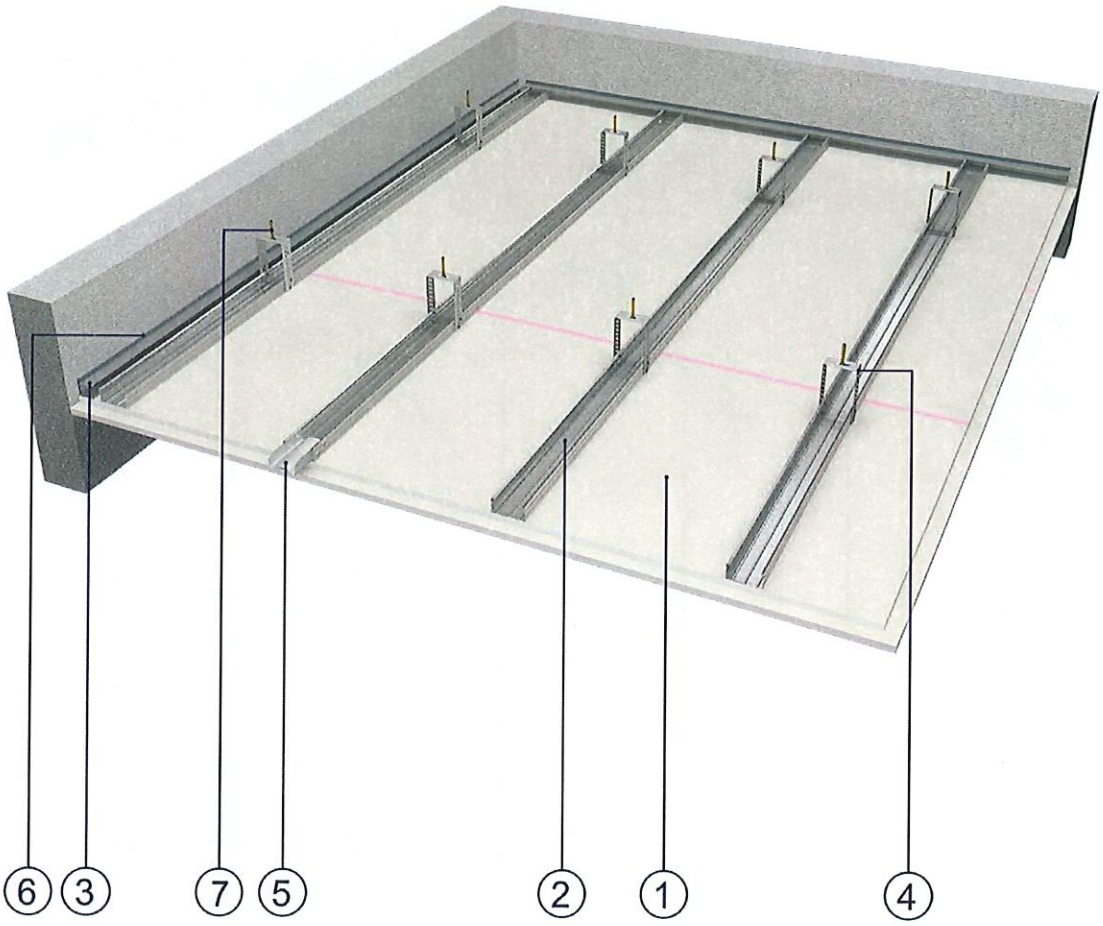
Figure 6 Cross and longitudinal sections of the suspended ceiling – two level cross construction



Elements of the ceiling

1. Gypsum plasterboards Norgips GKB type A + Norgips GKF type DF or Norgips Acoustic type A + Norgips GKF type DF or Norgips GKBI type H2 + Norgips GKFI type DFH2 or Norgips GKBI type H2 + Norgips Acoustic Super type DFH2IRE or Norgips Acoustic type A + Norgips Acoustic Super type DFH2IRE or Norgips GKB type A + Norgips Acoustic Super type DFH2IRE, thickness: 2 x 12.5 mm
2. Profiles e.g. Norgips CD 60 of the main layer, minimum thickness: 0.55 mm, placed maximally every 120 cm
3. Profiles e.g. Norgips CD 60 of the loadbearing layer, minimum thickness: 0.55 mm, placed maximally every 40 cm
4. Profile Norgips e.g. UD 30, minimum thickness: 0.55 mm
5. Sealing tape e.g. Norgips, width: 30 mm (recommended)
6. Single-sided cross connector e.g. Norgips for profiles CD 60
7. Longitudinal connector e.g. Norgips for profiles CD 60
8. Hanger e.g. Norgips: rotating hanger with spring or rotating hanger with nonius or hanger ES or hanger ES plus placed maximally every 70 cm
9. Mechanical connector, e.g.: screw, steel dowel of the minimum dimensions of Ø 6 x 40 mm

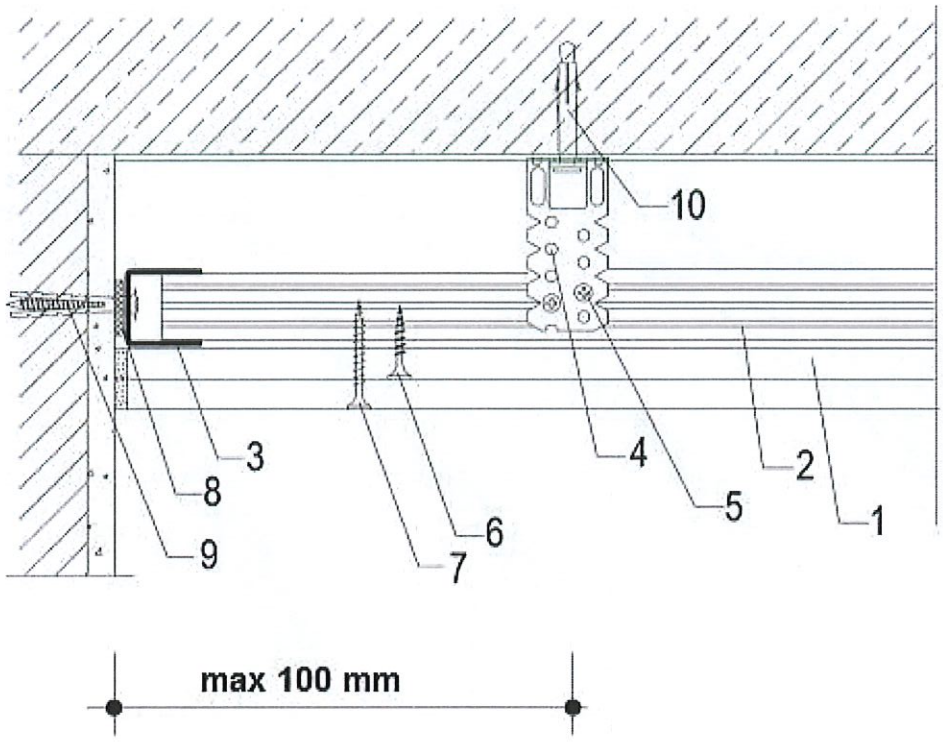
Figure 7 View of the suspended ceiling – one level cross construction



Elements of the lining

1. Gypsum plasterboards Norgips GKB type A + Norgips GKF type DF or Norgips Acoustic type A + Norgips GKF type DF or Norgips GKBI type H2 + Norgips GKFI type DFH2 or Norgips GKBI type H2 + Norgips Acoustic Super type DFH2IRE or Norgips Acoustic type A + Norgips Acoustic Super type DFH2IRE or Norgips GKB type A + Norgips Acoustic Super type DFH2IRE, thickness: 2 x 12.5 mm
2. Profile e.g. Norgips CD 60, minimum thickness: 0.55 mm, placed maximally every 40 cm
3. Profile e.g. Norgips UD 30, minimum thickness: 0.55 mm
4. Hanger e.g. Norgips ES 60/75, 60/125 or ES plus 60/60, 60/120 placed maximally every 85 cm
5. Longitudinal connector e.g. Norgips for profiles CD 60
6. Sealing tape e.g. Norgips, width: 30 mm (recommended)
7. Mechanical connector, e.g.: screw, steel dowel of the minimum dimensions of Ø 6 x 40 mm

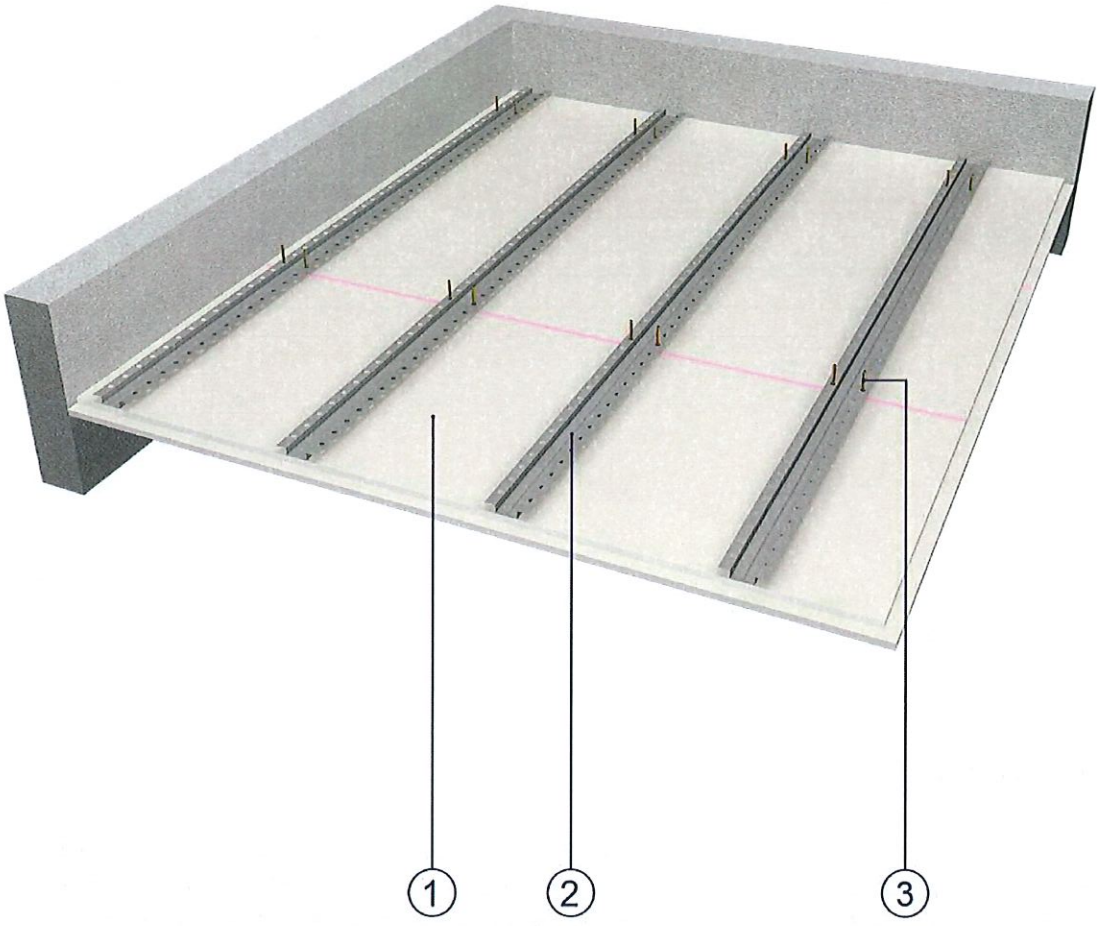
Figure 8 View of the ceiling lining suspended on hangers ES 60 or ES 60 plus



Elements of the lining

1. Gypsum plasterboards Norgips GKB type A + Norgips GKF type DF or Norgips Acoustic type A + Norgips GKF type DF or Norgips GKBI type H2 + Norgips GKFI type DFH2 or Norgips GKBI type H2 + Norgips Acoustic Super type DFH2IRE or Norgips Acoustic type A + Norgips Acoustic Super type DFH2IRE or Norgips GKB type A + Norgips Acoustic Super type DFH2IRE, thickness: 2 x 12.5 mm
2. Profile e.g. Norgips CD 60, minimum thickness: 0.55 mm
3. Profile e.g. Norgips UD 30, minimum thickness: 0.55 mm
4. Hanger e.g. Norgips ES 60 or Norgips ES 60 plus
5. Sheet steel screw with self-drilling ending e.g. Norgips 3.9 mm x 11 mm or e.g. Norgips 3.5 mm x 9.5 mm (4 screws per hanger ES or ES plus)
6. Sheet steel screw e.g. Norgips 3.5 x 25 mm placed every 40 cm
7. Sheet steel screw e.g. Norgips 3.5 x 35 mm placed every 17 cm
8. Sealing tape e.g. Norgips, width: 30 mm (recommended)
9. Mechanical connector, e.g.: wall plug, dowel of the minimum dimensions of Ø 6 x 40 mm
10. Mechanical connector, e.g.: screw, steel dowel of the minimum dimensions of Ø 6 x 40 mm

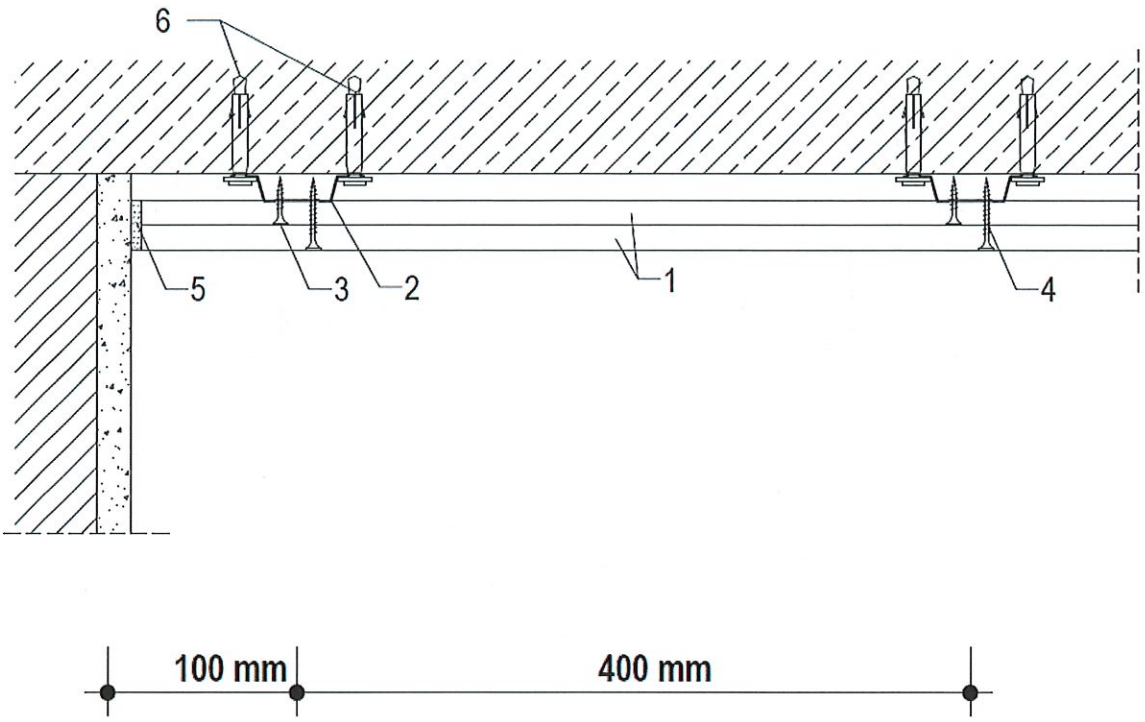
Figure 9 Longitudinal section of the ceiling lining suspended on hangers ES 60 or ES 60 plus



Elements of the lining

1. Gypsum plasterboards Norgips GKB type A + Norgips GKF type DF or Norgips Acoustic type A + Norgips GKF type DF or Norgips GKBI type H2 + Norgips GKFI type DFH2 or Norgips GKBI type H2 + Norgips Acoustic Super type DFH2IRE or Norgips Acoustic type A + Norgips Acoustic Super type DFH2IRE or Norgips GKB type A + Norgips Acoustic Super type DFH2IRE, thickness: 2 x 12.5 mm
2. Hat profile e.g. Norgips, minimum thickness: 0.55 mm, placed maximally every 40 cm
3. Mechanical connector, e.g.: screw, steel dowel of the minimum dimensions of Ø 6 x 40 mm

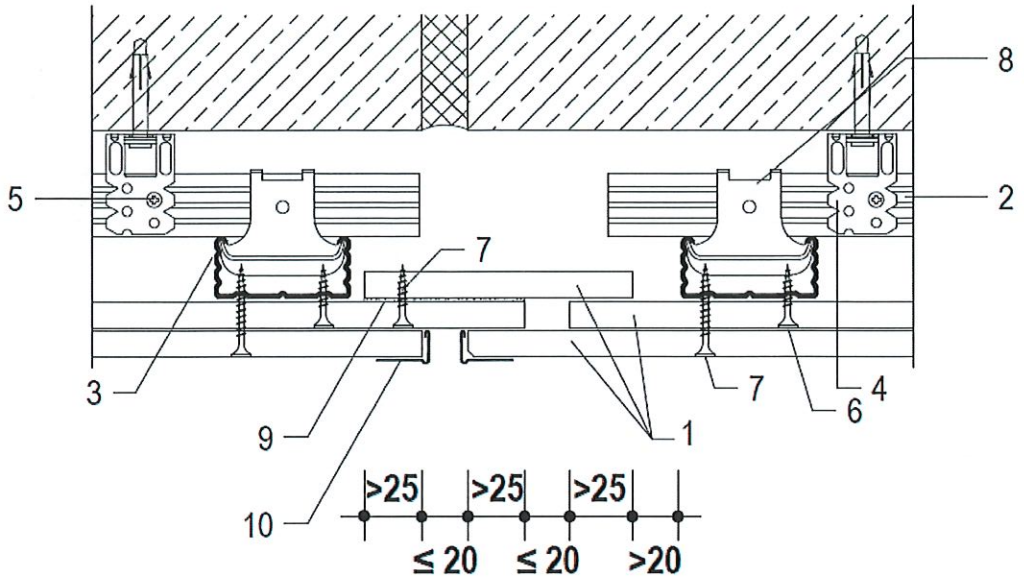
Figure 10 View of the ceiling lining suspended on hat profiles



Elements of the lining

1. Gypsum plasterboards Norgips GKB type A + Norgips GKF type DF or Norgips Acoustic type A + Norgips GKF type DF or Norgips GKBI type H2 + Norgips GKFI type DFH2 or Norgips GKBI type H2 + Norgips Acoustic Super type DFH2IRE or Norgips Acoustic type A + Norgips Acoustic Super type DFH2IRE or Norgips GKB type A + Norgips Acoustic Super type DFH2IRE, thickness: 2 x 12.5 mm
2. Hat profile e.g. Norgips, minimum thickness: 0.55 mm
3. Sheet steel screw e.g. Norgips 3.5 x 25 mm placed every 40 cm
4. Sheet steel screw e.g. Norgips 3.5 x 35 mm placed every 17 cm
5. Gypsum filler Norgips Start, Norgips Super Filler
6. Mechanical connector, e.g.: screw, steel dowel of the minimum dimensions of Ø 6 x 40 mm

Figure 11 Cross section of the ceiling lining suspended on hat profiles



Elements of the expansion joint

1. Gypsum plasterboards Norgips GKB type A + Norgips GKF type DF or Norgips Acoustic type A + Norgips GKF type DF or Norgips GKBI type H2 + Norgips GKFI type DFH2 or Norgips GKBI type H2 + Norgips Acoustic Super type DFH2IRE or Norgips Acoustic type A + Norgips Acoustic Super type DFH2IRE or Norgips GKB type A + Norgips Acoustic Super type DFH2IRE, thickness: 2 x 12.5 mm
2. Profile e.g. Norgips CD 60 of the main layer, minimum thickness: 0.55 mm
3. Profile e.g. Norgips CD 60 of the loadbearing layer, minimum thickness: 0.55 mm
4. Hanger e.g. Norgips: hanger ES 60 or hanger ES 60 plus or rotating hanger with spring or rotating hanger with nonius
5. Sheet steel screw with self-drilling ending e.g. Norgips 3.9 mm x 11 mm or e.g. Norgips 3.5 mm x 9.5 mm (4 screws per hanger ES or ES plus)
6. Sheet steel screw e.g. Norgips 3.5 x 25 mm placed every 40 cm
7. Sheet steel screw e.g. Norgips 3.5 x 35 mm placed every 17 cm
8. Cross connector e.g. Norgips for profiles CD 60
9. Gypsum filler e.g. Norgips Start or Norgips Super Filler or Norgips Start & Finish
10. Protection corner (recommended)

Figure 12 Suspended ceiling – expansion joint