

BALLAST FOR GASEOUS DISCHARGE LAMPS

The invention relates to a ballast for fluorescent lamps having a core of the magnetic circuit constructed in a sleeve-like manner and layered in the direction of the longitudinal axis, having a coil positioned in the core window, the height of the core package being approximately half as large as the breadth of the core package and the breadth of the side limbs and the height of the yoke parts being in each case approximately equal to an eighth of the breadth of the core package.

Such a ballast is known from DE-A-1 917 938. In Sturm's "Ballasts for Discharge Lamps", 4th edition, pages 110 and 111, a ballast having a starter built-in in the longitudinal direction is disclosed.

With the continuing development of fluorescent lamps, such lamps have been developed having a reduced tube diameter of 26mm to which the remaining parts of the lamp including the ballast are adapted so that with the smaller tube diameter miniaturization of the lamp as a whole is possible.

Accordingly, the invention has the object of providing a ballast of the above-described type for modern fluorescent lamps of increased levels of performance, such as for example 36 and 58 Watts, having a reduced tube diameter of for example 26mm which has the smallest

possible constructional height and allows a minimal cross-section of the overall lamp with a compact construction.

This object is achieved according to the invention in that the width of the core package is approximately equal to the diameter of the fluorescent lamp, in that in an extension of the core package on at least one end an isolation part having a cross-section approximately equal to that of the core package is positioned, and in that in this isolation part the components for the lamp, glow ignition, capacitor for the glow ignition, temperature fuse and suppression capacitor are arranged, whereby there results an integrated ballast completed by the components, which ballast is securable in the carrier profile of the lamp. According to this solution, the core package is first of all adapted in respect of its dimensions to the lamp diameter. According to the invention, the isolating parts with suitable cross-section are connected on the ends of such a dimensioned core package and are thus suitable to receive further components of the lamp so that the possibility exists to mount the ballast with these accessories in adaption to the dimensions of the fluorescent lamp as a unit in a lamp housing. Thus there results a compact ballast which can be manufactured rationally by mass production and which is capable of being mounted simply in the lamp, so that the working steps in mounting of the accessories which formerly were carried out separately in the lamp can be already carried out in the manufacture of the compact ballast as a unit in a rational manner in mass production.

Expediently, the necessary electrical connectors such as for starter operation, are provided in the core window

or in a longitudinal recess in a magnetically neutral zone of the core package. By this means, these connectors do not extend beyond the miniaturized core cross-section.

Advantageously, box-shaped isolation parts are mounted in an extension of the core package on both ends and the accessories for the lamp are distributed between the isolating parts.

The box-shaped isolating parts are expediently provided for covering of the accessories with a cover in each case. For the purpose of assembly of the lamp in the simplest possible way, the completed ballast with the accessories is advantageously slidable into the carrier profile of the lamp.

The invention is described in more detail in the following with reference to an exemplary embodiment illustrated in the drawings. In the drawings,

Figure 1 shows a cross-section through a ballast,

Figure 2 shows a perspective view of a core package and coil of the ballast according to Figure 1,

Figure 3 shows a lateral sectional view of a ballast according to the invention in an integrated construction,

Figure 4 shows a plan view of the integrated ballast according to Figure 3, and

Figures 5, 6 and 7 shows cross-sections through the integrated ballast according to Figure 3 along the lines V-V, VI-VI and VII-VII in Figure 3.

Figures 1 and 2 illustrate a ballast without isolating parts on the ends and having a core package 1 having a longitudinally layered sleeve construction, the associated coil 2 and the indicated fluorescent lamp 3. The magnetic circuit of the core package 1 can be constructed from ET sheets, EE sheets, etc.

The width of the core package 1 is B, the height of the core packet 1 H and the length of the core packet 1 L. The diameter of the fluorescent lamp 3 is D. The width of the core package 1 is equal to the diameter D of the fluorescent lamp arranged directly thereabove. The height H of the core package 1 is half of its width B. The width of the center limb of the core package is b equal to a quarter of the width of the core package 1 B, the width of the side limbs of the core package 1 and also the height of the yoke parts of the core package 1 is b/2, thus half the width b of the central limb. Thus square core windows result of height h equal to width b. The following relationship applies:

$$H = h + b = \frac{B}{4} + \frac{B}{4} = \frac{2}{4} B = \frac{1}{2} B.$$

By means of such dimensioning of the core package 1, a flat longitudinally extended choke coil is achieved whilst adhering to the specific material requirements such as the magnetic induction in the magnetic circuit and the current density in the conductor of the coil 2, whilst the amount of material employed for the core package 1 and core 2 is not larger than in the already known approximately square cross-sectioned core package 1. The winding cross-section for the coil 2 is halved and the layer length of the core package 1 doubled so that there is no increase in coil material and core material to achieve the same properties of the choke coil.

In Figures 3 to 7, an exemplary embodiment is illustrated of a ballast according to the invention in which the isolating parts on both ends of the core package 1 of the choke coil are constructed in the longitudinal direction of the choke coil with box-like extensions 4 and a cover 5. The cover 5 has upwardly extending extensions 6 which are adapted to the cross-section of the carrier profile of the fluorescent lamp for sliding into this. The cross-section of the extensions 4 including the cover 5 is slightly larger than that of the core package 1.

On the one extension 4 are mounted a glow ignition 7 and the capacitor 8 for the glow ignition 7 within the cross-section of the extension 4. On the other extension 4 are mounted likewise within its cross-section the suppression capacitor 9 and the temperature fuse 10.

In the core package 1 there is provided a longitudinal recess 11 in the magnetically neutral zone in which are positioned the necessary connection conductors 12 for starter operation.

As a result of the integration of the accessories previously mounted individually in the lamp into the integrated ballast on both ends of the same, it is possible to manufacture what was previously a mere choke coil as a ballast in one unit, so that the working processes previously carried out separately in the lamp can be carried out rationally in mass production with the manufacture of the integrated ballast. The integrated ballast requires after its manufacture only to be adapted to the carrier profile of the lamp, whereupon it is only necessary on each end of the lamp profile to manufacture the two conductor connections for the socket.

(12)

Claims:

1. A ballast for fluorescent lamps (3) having a core of the magnetic circuit constructed in a sleeve-like manner and layered in the direction of the longitudinal axis, having a coil (2) positioned in the core window, the height (H) of the core package (1) being approximately half as large as the breadth (B) of the core package (1), the breadth (b) of the central limb being approximately a quarter of the breadth (B) of the core package (1) and the breadth of the side limbs and the height of the yoke parts being in each case approximately equal to an eighth of the breadth (B) of the core package (1), characterised in that the breadth (B) of the core package (1) is approximately equal to the diameter (D) of the fluorescent lamp, in that in an extension of the core package (1) on at least one end an isolation part (4) having a cross-section approximately equal to that of the core package is positioned, and in that in this isolation part the components for the lamp, glow ignition (7), capacitor (8) for the glow ignition (7), temperature fuse (10) and suppression capacitor (9) are arranged, whereby there results an integrated ballast completed by the components, which ballast is securable in the carrier profile of the lamp.

2. A ballast according to claim 1 characterised in that the necessary electrical connection conductors (12) such as for starter operation, are positioned in the core windows or in a longitudinal aperture (11) in a magnetically neutral zone of the core package (1).

3. A ballast according to claim 1 or 2 characterised in that, in the extension of the core package (1) on both ends, box-like isolation parts (4) are positioned

and the components (7, 8, 9, 10) for the lamp are divided between both isolation parts.

4. A ballast according to one of claims 1 to 3 characterised in that the box-shaped isolation parts (4) are each provided with a cover (5) for covering of the components (7, 8, 9, 10).

5. A ballast according to one of claims 1 to 4 characterised in that the ballast completed with the components (7, 8, 9, 10) is insertable into the carrier profile of the lamp.