

Description:

Shoe brake for a lift drive

The invention relates to a shoe brake for a lift drive with at least two brake shoes, which generate a braking force at a brake drum and are releasable.

An internal shoe brake with two brake shoes has become known from the specification JP 57107443. Two brake elements are provided per brake shoe, wherein a cut-out into which the brake element is insertable is provided at the brake shoe for each brake element. The brake element consists of a base plate carrying a brake lining, wherein the brake element fits into the shape on the arc of the brake shoe. The brake element inserted into the cut-out in the brake shoe is fixed in place at the brake shoe by means of clips.

The complicated production of the groove-shaped cut-outs is disadvantageous with the known equipment. Moreover, the brake elements can stick in the cut-outs due to contamination and abrasion dust.

Here the invention will create a remedy. The invention, as is characterised in claim 1, fulfils the object of avoiding the disadvantages of the known equipment and of creating a shoe brake, which functions in optimum manner under difficult operating conditions, with brake elements arranged at brake shoes.

Advantageous developments of the invention are indicated in the dependent patent claims.

The advantages achieved by the invention are substantially to be seen in that an optimum setting of the brake linings on the brake drum can be achieved by the brake elements according to the invention. With an optimum setting of the brake linings, small brake moment fluctuations can be made in the final checking at the factory. In addition, tolerances of all brake parts can be absorbed, wherein also greater tolerances are possible. Greater tolerances in turn mean a cheaper production of the brake parts. In addition, it is advantageous that the brake elements are easily releasable from the brake shoes, because they cannot be fixed by either abrasion dust or by contamination. The shape of the brake element and the cut-out at the brake shoe guarantees even after long operating times a precise placing of the brake elements on the brake shoes.

The present invention is explained in more detail on the basis of the accompanying figures, in which:

- Fig. 1 shows a perspective illustration of an internal shoe brake,
- Fig. 1a shows a shoe brake with only two brake shoes,
- Fig. 2 shows a schematic illustration of a brake shoe according to the invention with brake element,
- Fig. 3 shows a side panel for fastening of the brake element,
- Fig. 4 shows a brake shoe for an internal shoe brake and
- Fig. 5 shows a brake shoe for an external shoe brake.

Fig. 1 shows a perspective illustration of an internal shoe brake consisting of a housing plate 2, a housing ring 3, a brake drum 4 and two brake halves 5.1, 5.2 of identical construction. The brake drum 4 can be, for example, part of a drive pulley. The lefthand brake half 5.1 comprises an upper brake shoe 6 and a lower brake shoe 7. The upper brake shoe 6 mounted at an upper brake bearing 6.1 has at the free end an actuating roller 6.2 and is pressed against the brake drum 4 by means of a compression spring 6.3 supported at the housing ring 3. The upper brake shoe 6 is illustrated in section, for which reason the brake lining 6.4 is not apparent in Fig. 1. The section also runs through the roller axis 6.5 at which the actuating roller 6.2 is arranged. The lower brake shoe 7 is constructed in mirror image to the upper brake shoe 6. Parts of the lower brake shoe are provided with the following reference numerals: shoe bearing 7.1, actuating roller 7.2, compression spring 7.3 and brake lining 7.4. The free ends of the brake shoes 6, 7 are adjacent.

An actuator in the form of a brake magnet is provided for release of the brake shoe pair 6, 7. The actuator 8, which is arranged at an actuator plinth 8.1 connected with the housing plate 2, acts by means of a pushrod 9 on an actuating fork 10 at which the actuating rollers 6.2, 7.2 are acted on to roll against the spring force of the compression springs 6.3, 7.3. A

brake lever 11 serves for manual release of the brake shoe 6, 7.

The righthand brake half 5.2 is constructed in mirror image to the lefthand brake half 5.1. The parts of the righthand brake half 5.2 are provided with the following reference numerals: upper brake shoe 12 with shoe bearing 12.1, actuating roller 12.2, compression spring 12.3, brake lining 12.4 and roller axis 12.5; lower brake shoe 13 with shoe bearing 13.1, actuating roller 13.2, compression spring 13.3, brake lining 13.4 and roller axis 13.5; actuator 14 with actuator plinth 14.1, pushrod 15, actuating fork 16 and brake lever 17.

In a lefthand rotation of the brake drum 4 the brake shoes 6, 13 are trailing and the brake shoes 7, 12 leading. In a righthand rotation of the brake drum 4 the brake shoes 6, 13 are leading and the brake shoes 7, 12 trailing. With leading brake shoes the braking action is amplified and with trailing brake shoes the braking is weakened.

Fig. 1a shows a shoe brake with only two brake shoes. The reference numerals of the lower brake shoes of Fig. 1 have been taken over for analogous parts. The brake drum at which the brake linings engage is not illustrated.

Fig. 2 shows the brake shoe according to the invention with brake element. The lower brake shoe 7 of the lefthand brake half 5.1 of Fig. 1 is illustrated in Fig. 2 and Fig. 3. The remaining brake shoes 6, 12, 13 are of the same construction. There can also be a brake shoe of a shoe brake with only two brake shoes, as illustrated in Fig. 1a. There can also be a brake shoe with more than one brake element. A brake element placeable on the brake shoe 7 is denoted by 20. The brake element 20 consists of a segment-shaped base plate 20.1 which fits in a segment-shaped recess 7.5 of the brake shoe 7. The base plate 20.1 carries the brake lining 7.4, which is, for example, glued and pinned. A threaded hole 7.6 is provided at the brake shoe 7 and threaded holes 20.2 are provided at the base plate 20.1. The same threaded holes are provided on the side, which is not visible, of the brake shoe 7 and the brake element 20.

Fig. 3 shows a side panel 21 which releasably connects the brake element 20 with the brake shoe 7. The side panel 21 is connected with the base plate 20.1 by means of screws 20.3, wherein the screws 20.3 fit in the threaded holes 20.2. The side panel 21 has an elongate slot 21.1, wherein a screw 7.7 penetrates the longitudinal slot 21.1 and fits in the threaded hole 7.6. The longitudinal slot 21.1 allows setting of the brake element

20 relative to the brake shoe 7. The base plate 20.1 is displaceable in the segment-shaped recess 7.5, wherein the brake lining 7.4 can be adjusted on the brake drum 4. The same side panel is provided on the side, which is not visible, of the brake shoe 7 of the brake element 20.

Fig. 4 shows, by way of example, the lower brake shoe 13 of the righthand brake half 5.2 with the brake element 20 according to the invention. A projection 13.10 is provided at the brake shoe 13 for reception of the compression spring 13.3. The construction of the brake element 20 with the components brake lining 13.4, recess 13.5, screw 13.7, base plate 20.1, screws 20.3, side panel 21, etc., corresponds with the brake element illustrated in Fig. 2 and Fig. 3.

The brake element 20 can also be used for external shoe brakes. Fig. 5 shows a brake shoe 22 for an external shoe brake, in which the brake drum is braked by means of the brake element 20, which is illustrated in the preceding figures, at the outer side.

Patent claims:

1. Shoe brake for a lift drive with at least two brake shoes (6, 7, 12, 13) which produce a braking force at a brake drum (4), characterised in that at least one brake element (20), which generates the braking force and which is fixedly settable relative to the brake shoe (6, 7, 12, 13), is arranged at the brake shoe (6, 7, 12, 13).
2. Shoe brake according to claim 1, characterised in that the brake element (20) comprises a segment-shaped base plate (20.1) which fits in a segment-shaped recess (7.5) of the brake shoe (6, 7, 12, 13) and carries a brake lining (6.4, 7.4, 12.4, 13.4).
3. Shoe brake according to claim 1 or 2, characterised in that side panels (21) are provided, which releasably connect the brake element (20) with the brake shoe (6, 7, 12, 13).
4. Shoe brake according to claim 3, characterised in that the side panel (21) has a longitudinal slot (21.1) and a screw (7.7) penetrates the longitudinal slot (21.1) and fits in a threaded hole of the brake shoe (6, 7, 12, 13), wherein the longitudinal slot (21.1) allows adjustment of the brake element (20) relative to the brake shoe (6, 7, 12, 13).