

**Magnetic tape apparatus with a magnetic head.**

The invention relates to a magnetic-tape apparatus with a magnetic head, which can be turned essentially through  $180^\circ$  between two scanning positions, with a head support, which carries the magnetic head, which head support is rotatably mounted by means of a bearing device, so as to be rotatable between two operating positions in order to reverse the magnetic head, and has a duct leading to the magnetic head, essentially non-shielded parts of conductors of a cable, which outside the duct is shielded by a shield, which conductors are electrically connected to terminals of the magnetic head, being passed to the magnetic head through said duct, which is electrically conductive and is electrically connected to a reference-potential terminal of the apparatus.

A commercially available known apparatus of this type comprises a cable for carrying electric signals to and from the magnetic head, which cable is shielded against interfering electromagnetic radiation by a shield having a comparatively high rigidity and a comparatively high torsional resistance, the shield being removed from the cable at the location of the duct through the head support in order to ensure the required smooth rotatability of the head support, as a result of which the parts of the conductors of the cable which pass through the duct are, in fact, not shielded against interfering radiation. However, since the head support is of an electrically conductive construction and is electrically connected to the reference-potential terminal of the apparatus, these conductor parts are also shielded against interfering electromagnetic radiation. In the known apparatus the head support essentially comprises an aluminium, base on which the magnetic head is mounted, and of a steel supporting tube, which is connected to the base by means of screws and by which the head support is rotatably mounted in a bearing device of the apparatus, the conductors being led to the magnetic head through the supporting tube and a bore in the base, which together form the duct for the passage of the conductors. Such an electrically conductive head support has a complicated multi-part construction and its manufacture is complex and expensive.

EP-A-0,120,518 describes a head support made of carbon-fibre-reinforced nylon (polyamide). Generally, the carbon fibres in such a carbon-fibre-reinforced polyamide, which themselves are electrically conductive, are wholly embedded in the polyamide in order to increase the strength of the synthetic material and hence that of the head support. However, with the carbon fibres wholly embedded in the synthetic material this means that the head support does not consist of an electrically conductive material because the synthetic material, which wholly surrounds the carbon fibres, is electrically non-conductive.

From JP-A-60,111,305 it is known to construct the housing of a magnetic head from an electrically conductive synthetic material. This measure is taken in order to preclude electrostatic charges on the magnetic head, which may be produced during cooperation with the magnetic tape.

It is an object of the invention to avoid the above problems and to provide an electrically conductive head support for an apparatus of the type defined in the opening paragraph, which head support is of an as simple as possible construction and can be manufactured simply and inexpensively. To this end, the invention is characterised in that the head support consists of an electrically conductive synthetic material. This has the advantage that the electrically conductive head support can be produced with high accuracy as an integral part, for example in a single injection-moulding process, resulting in an as simple as possible construction and a particularly simple and inexpensive manufacture of the head support, the non-shielded conductor parts passing through the duct of the head support being shielded against interfering electromagnetic radiation owing to the electrically conductive construction of the support and its electrical connection to a reference-potential terminal of the apparatus.

The state of the art in the field electrically conductive synthetic materials offers various possibilities. However, it has proved to be particularly advantageous if the head support consists of carbon-fibre-reinforced polyamide. This yields an electrically conductive head support which is simple to produce and cheap and owing to the properties of polyamide also has low wear and high durability.

The head support of an electrically conductive synthetic material may, for example, be electrically connected to a reference-potential terminal of the apparatus *via* a separate contact spring pressing against the head support. However, it has proved to be advantageous if the head support is electrically connected to a reference-potential

conductor of the cable, which conductor is led to the magnetic head through the duct and is electrically connected to a reference-potential terminal of the apparatus. In this way, a reference-potential conductor of the cable, which is led to the magnetic head and is present anyway, is also used for electrically connecting the head support of an  
5 electrically conductive synthetic material to a reference-potential terminal of the apparatus.

The invention will be described in more detail hereinafter with reference to an exemplary embodiment, to which the invention is not limited. Fig. 1 is a diagrammatic plan view showing a part of a magnetic-tape apparatus which is relevant  
10 to the invention, with which a magnetic tape which can be driven in opposite tape-transport directions can be scanned and which for scanning the magnetic tape comprises a magnetic head mounted on a rotatable head support, which head can be turned through 180° between two scanning positions, for recording and playback. Fig. 2 is a plan view to a larger scale than in Fig. 1 and showing a part of the apparatus of Fig. 1  
15 comprising the reversible magnetic head, which is supported by the rotatable head support, which support is rotatably mounted by means of a bearing device of the apparatus. Fig. 3 shows the part shown in Fig. 2 in a sectional view taken on the line III-III in Fig. 2.

Fig. 1 shows a part of a magnetic tape apparatus 1, into which a cassette  
20 2, shown diagrammatically in dash-dot lines in Fig. 1, can be loaded. For this purpose, the apparatus 1 has, for example, a tray-shaped cassette holder (not shown). A magnetic tape 3 is accommodated in the cassette 2. The magnetic tape 3 is led from a first hub 4, onto which, in the state shown, the magnetic tape 3 is wound into a tape spool 5, to a second hub 9 via a tape guide 6, along a long narrow side 7 of the cassette, and via a  
25 further tape guide 8.

The magnetic tape apparatus 1 has an essentially plate-shaped chassis 10. A first rotatable reel spindle 11, for the rotary drive of the first hub 4, and a second rotatable reel spindle 12, for the rotary drive of the second hub 9, are rotatably mounted on the chassis 10. A first capstan 13 and a second capstan 14 are also rotatably  
30 mounted on the chassis 10. Each of the two capstans 13 and 14 is rotationally coupled to one of two flywheels 15 and 16, respectively. A belt 17, which is led via a pulley 18, is wrapped around parts of the circumferential surfaces of the two flywheels 15 and 16 in opposite winding directions. The pulley 18 can be driven with constant speed in

an anti-clockwise direction, as viewed in Fig. 1, by a motor 19 secured to the chassis 10. The second reel spindle 12 can be driven by the first capstan 13 and the first reel spindle 13 can be driven by the second capstan 14 in known manner, in each case by means of an intermediate mechanism, which can be activated selectively and which  
5 comprises, for example, a plurality of toothed wheels and a friction coupling to compensate for differences in speed.

On the chassis 10 the apparatus 1 further comprises a mounting plate 23, which is guided by three pin-slot joints 20, 21 and 22 so as to be movable perpendicularly to the long narrow side 7 of the cassette. A first pressure roller 24 and  
10 a second pressure roller 25, each shown in dash-dot lines and pivotally mounted on the mounting plate 23 by means of levers (not shown), are mounted on the mounting plate 23, one of which rollers can be brought selectively into resilient engagement with one of the two capstans 13 and 14, the magnetic tape 3 being situated between the relevant capstan and the relevant pinch roller. In this way, the magnetic tape 3 can be driven  
15 with a constant tape speed by means of a rotationally driven capstan, against which the magnetic tape is pressed by the associated pressure roller. In a "normal forward" mode the first pressure roller 24 is pressed against the first capstan 13, as is shown in Fig. 1. The motor 19 then drives the first capstan 13 with a constant speed in an anti-clockwise direction, as viewed in Fig. 1, so that the magnetic tape 3 is driven in the tape-transport  
20 direction indicated by an arrow 26. The magnetic tape 3 is thus wound onto the second hub 9, driven by the second reel spindle 12. In a "normal reverse" mode, also referred to as "reverse" mode, the second pressure roller 25 is pressed against the second capstan 14, the motor 19 then driving the second capstan 14 clockwise, as seen in Fig. 1, so that the magnetic tape 3 is driven in the tape-transport direction indicated by  
25 an arrow 27. The magnetic tape 3 is thus wound onto the first hub 4, driven by the first reel spindle 11.

A magnetic head 28, for recording and reproducing information signals, for example sound signals, is also mounted on the mounting plate 23 of the magnetic-tape apparatus 1, a fork-shaped tape guide 30 is connected to its mu-metal housing 29.  
30 The magnetic head 28 can be turned through 180° about an axis 31 perpendicular to the long narrow side 7 of the cassette, between two scanning positions, of which one position is shown in Figures 1 to 3. Each scanning position corresponds to one of the two opposite tape-transport directions 26 and 27. In each scanning position the magnetic

head 28 scans a track zone of the magnetic tape 3 by means of two adjacent head gaps 32, shown diagrammatically in Fig. 3, which are disposed eccentrically with respect to the turning axis 31 of the magnetic head 28 and each belong to a magnet system of the magnetic head 28. In Fig. 3 the two track zones of the magnetic tape 3 are referenced 5 33 and 34. As shown in Figures 2 and 3, the magnetic tape 3 is driven in the tape-transport direction 26 and, accordingly, the magnetic head 28 assumes that scanning position in which it scans the track zone 33 by means of its two head gaps 32. If the magnetic tape 3 is driven in the opposite tape-transport direction 27, the magnetic head 28 assumes the reversed other scanning position, in which it scans the other tape zone 10 34 by means of its two head gaps 32. In the present case of a stereophonic recording or reproduction, the magnetic head 28 scans two adjacent tracks in the relevant track zone 33 or 34 by means of its two head gaps 32. It is to be noted that in the case of a monophonic recording or reproduction the magnetic head 28 has only one head gap and for each track zone 33 or 34 in fact scans only one track with this head gap. Fig. 2 15 shows two tape guides 35 and 36 on the cassette in dash-dot lines, which guides ensure that the magnetic tape 3 is wrapped around the magnetic head 28 in the appropriate manner.

The magnetic head 28 is supported by a head support 37, which can be rotated about the turning axis 31 and is of an electrically conductive material. In the 20 present case, the head support 37 consists of an electrically conductive synthetic material which can be injection-moulded. In the present case this material is a carbon-fibre-reinforced polyamide. Such an electrically conductive head support can be manufactured simply and cheaply in one piece with a high accuracy in an injection-moulding process. The use of carbon-fibre-reinforced polyamide also has the advantage 25 that the head support has low wear and high durability. The head support may also consist of another electrically conductive synthetic material, for example of polyamide filled with conductive carbon black or of carbon-fibre-reinforced ABS copolymer. It is alternatively possible to use an electrically conductive synthetic material which can be compression-moulded.

30 The head support 37 comprises a cylindrical supporting disc 38 having an outer cylindrical surface 39. Two block-shaped projections 41 and 42, which are integral with the supporting disc 38, extend in the direction of the turning axis 31 from one main surface 40 of the disc 38. A steel plate 43 is secured to these two projections

41 and 42 with the aid of two metal screws 44 and 45. The magnetic head 28 is secured to the steel plate 43 by welding the steel plate 43 and the mu-metal housing 29 of the magnetic head 28 to one another. In this way, the magnetic head 28 is mechanically connected to the head support 37, the housing 29 of the magnetic head 28 also being  
5 electrically connected to the head support 37.

On the mounting plate 23 the magnetic-tape apparatus 1 has a bearing device 46 with a bearing recess 47 for rotatably supporting the head support 37. The bearing device 46 partly consists of the mounting plate 23 itself and of an essentially disc-shaped bearing member 48 connected to the mounting plate 23. At the location of  
10 its main surface 49 facing the magnetic head 28 the bearing member 48 has two bearing limbs 50 and 51, which are disposed mirror-symmetrically to each other and which converge towards one another in their areas which are remote from the mounting plate 23. In their areas which extend perpendicularly to the mounting plate 23 the two bearing limbs 50 and 51 each have a straight bearing rib 52 and 53, respectively,  
15 having a rounding which is substantially semicircular in cross-section, whose semicircular bounding walls 54 and 55 each form a bounding wall, extending perpendicularly to both tape-transport directions 26 and 27, of the bearing recess 47, in which the supporting disc 38 is rotatably mounted. Two further bounding walls 56 and 57 of the bearing recess 47 are provided in the converging areas of the bearing limbs 50  
20 and 51. A further bounding wall 58 of the bearing recess 47 is formed by a part of the wall, facing the magnetic head 28, of the mounting plate 23. This bounding wall 58 of the bearing recess 47 extends in the direction of the two tape-transport directions 26 and 27. The head support 37, with its supporting disc 38, is rotatable with clearance in the bearing recess 47 bounded by said bounding walls 54, 55, 56, 57 and 58. In practice,  
25 this clearance is approximately one tenth of a millimetre. As is shown in Fig. 3, the bearing device 46 has clearances 59, 60, 61, 62 and 63 for the head support 37, *i.e.* for its supporting disc 38, in the area of the bearing recess 47, so that seen in a cross-sectional view of the bearing recess the head support 37 with its supporting disc 38 is only in point contact with given bearing locations in the bearing recess 47, which will  
30 be discussed in more detail below. To limit the axial mobility of the head support 37, a ridge 64 projecting from the mounting plate 23 cooperates with the supporting disc 38 of said head support.

On the main surface 65 of the supporting disc 38, which surface is remote from the magnetic head 28, the head support 37 has a first positioning cylinder 66, which is coaxial and integral with this disc. A toothed wheel 67 is coaxial and integral with this first positioning cylinder 66. A second positioning cylinder 68 of smaller diameter is integral and coaxial with the toothed wheel 67. A bore 69 extends through the supporting disc 38, the first positioning cylinder 66, the toothed wheel 67 and the second positioning cylinder 68 and widens conically in the supporting disc 38 towards the magnetic head 28. The bore 69 forms a duct for the passage of electrical conductors to the magnetic head 28, which will be described in detail hereinafter.

As stated, the magnetic head 28 can be turned through  $180^\circ$  between two scanning positions. Accordingly, the head support 37 can also be rotated through  $180^\circ$  between two operating positions. These two operating positions are defined with the aid of two adjustable positioning screws 70 and 71 in the apparatus, against whose free ends, depending on the operating position of the head support 37, a radial positioning projection 72 of the first positioning cylinder 66 engages, as is shown in Figs. 2 and 3 for the operating position of the head support 37 which corresponds to the "normal forward" mode. The positioning screws 70 and 71 are each fitted into a respective plate-shaped projection 73 and 74 of the bearing member 48. The two projections 73 and 74 extend in the direction of the turning axis 31 from the main surface 75 of the bearing member 48, which surface is remote from the magnetic head 28.

For turning the magnetic head 28 and the head support 37 the apparatus 1 comprises an actuating device 76 for the head support 37, which is shown in Fig. 1. The actuating device 76 has a toothed wheel 77, which can be driven by motor, in a manner not shown, in opposite directions of rotation. The toothed wheel 77 meshes with a toothed rack 78, which is guided on the chassis 10 so as to be movable in its longitudinal direction and which is movable back and forth between two diagrammatically shown limiting stops 79 and 80. A leg spring 82, between whose two legs 83 and 84 a pin 85 projecting from the toothed rack 78 extends to position the leg spring 82, is fitted onto a pivot 81 projecting from the toothed rack 78. The two legs 83 and 84 of the leg spring 82 tend to move towards each other. Moreover, a further pin 86 extends between the two legs 83 and 84 of the leg spring 82, which further pin is connected to a toothed rack 87, which is guided on the mounting plate 23 so as to be

movable in its longitudinal direction. The toothed rack 87 is in mesh with the toothed wheel 67 of the head support 37.

As is known, the magnetic head 28 can be reversed only if the magnetic head 28 is moved so far out of the scanning position shown in Fig. 1 in the direction indicated by the arrow 88 that it is withdrawn from the cassette 2. This movement of the magnetic head 28 is obtained by moving the mounting plate 23 in the direction indicated by the arrow 88, as is shown in dash-dot lines in Fig. 1 for a part of the mounting plate 23 and the end of the toothed rack 87 carrying the pin 86. As is evident from this dash-dot representation, the pin 86 is disposed between the two legs 83 and 84 of the leg spring 82 even when the mounting plate 23 is moved, thereby ensuring a transmission of force from the motor-driven toothed wheel 77 and the toothed rack 78 via the leg spring 82 onto the pin 86, and consequently the toothed rack 87, the toothed wheel 67 and the head support 37, when the mounting plate 23 is moved. Therefore, before the magnetic head 28 is reversed, the mounting plate 23 is moved in the direction indicated by the arrow 88 and, once the magnetic head 28 has reversed, the mounting plate 23 is moved back in a direction opposite to that indicated by the arrow 88. How this movement of the mounting plate 23 is effected is not relevant to the present invention and therefore this is not shown.

For additional positioning of the head support 37 in its two operating positions, this support is integrally connected to the first coaxial positioning cylinder 66 and the second coaxial positioning cylinder 68. Two positioning ribs 89 and 90 are provided for cooperation with the first positioning cylinder 66, which ribs extend perpendicularly to the two tape-transport directions 26 and 27 and are approximately semicircular in cross-section. Each of the two positioning ribs 89 and 90 is provided on one of two blocks 91 and 92, which project towards the mounting plate 23 from the plate-shaped projections 73 and 74 of the bearing member 48. The second coaxial positioning cylinder 68 extends through a slot 93 in a positioning plate 94, which projects perpendicularly from the mounting plate 23.

The reversal of the magnetic head 28 is described below. It is assumed that the magnetic head 28 assumes the scanning position which is not shown in Figures 1 to 3 and in which its two head gaps 32 scan the track zone 34, the toothed rack 78 then being in the position indicated by a dash-dot line in Figure 1, in which position it abuts against the limiting stop 80. The mounting plate 23 is first moved in the direction

indicated by the arrow 88, so that the magnetic head 28 is withdrawn from the cassette 2. Subsequently, the toothed wheel 77 is driven clockwise viewed in Fig. 1, as a result of which the toothed rack 78 is moved into its position shown in solid lines in Fig. 1, in which position it abuts against the limiting stop 79. The pin 86 is moved by means of the leg spring 82, *i.e.* by means of its leg 84, the leg spring 82 being tensioned, causing the toothed rack 87 to be moved in the direction indicated by the arrow 95. As a result, the toothed wheel 67 is rotated anti-clockwise, viewed in Fig. 3. Thus, the head support 37 is also turned anti-clockwise until the positioning projection 72 engages against the free end of the positioning screw 71. When this is the case, the head support 37 has reached its operating position, in which the magnetic head 28 then assumes the scanning position in which it can scan the track zone 33 by means of its two head gaps 32. After this, the mounting plate 23 is moved back in a direction opposite to that indicated by the arrow 88, upon which the magnetic head 28 again enters the cassette 2 and comes into scanning contact with the magnetic tape 3. This operating situation is represented in Figures 1 to 3.

In the operating situation represented in Figures 1 to 3, the leg spring 82, which acts upon the toothed rack 78, always exerts a force on the toothed rack 87 with its leg 84 *via* the pin 86, thereby urging the toothed rack 87 in the direction indicated by the arrow 95. The leg spring 82 consequently forms a device which urges the toothed rack 87 constantly in the direction indicated by the arrow 95 when the head support 37 is in the present operating position. As a result of the load thus exerted by the leg spring 82, the toothed rack 87 constantly exerts a force on the toothed wheel 67. This force causes the positioning projection 72 to be pressed against the free end of the positioning screw 71. This force also causes the first positioning cylinder 66 to be pressed against the positioning rib 89 on the block 91. The force in addition causes the second positioning cylinder 68 to be pressed against the bounding wall 96, facing the mounting plate 23, of the slot 93 in the positioning plate 94. The pressure of the positioning projection 72 against the free end of the positioning screw 71, brought about by the toothed rack 87, results in a torque which acts on the head support 37 and which causes the supporting disc 38 of the head support 37 to be pressed with its surface 39 against the bounding wall 58 of the bearing recess 47 formed in the mounting plate 23, the supporting disc 38 of the head support 37 and the bounding wall 58 of the bearing recess 47 of the bearing device 46 engaging with each other at a bearing location 97,

which is point-shaped seen in a cross-section of the bearing recess 47. Since the first positioning cylinder 66 is pressed against the positioning rib 89 on the block 91 by means of the toothed rack 87, a further torque is produced which acts on the head support 37 and which urges the supporting disc 38 of the head support 37 with its bearing surface 39 against the bounding wall 55 of the bearing rib 53, the supporting disc 38 of the head support 37 and the bounding wall 55 of the bearing rib 53 engaging with one another at a bearing location 98, which is also point-shaped seen in a cross-section of the bearing recess 47.

In the manner described above the head support 37 is positioned exactly in its operating position. In this operating position the head support 37 is pressed exclusively against the two predetermined bearing locations 97 and 98 with the bearing surface 39 of its supporting disc 38. Since the head support 37 engages with the two predetermined cross-sectionally point-shaped bearing locations 97 and 98 each time it is rotated into this operating position, this guarantees that the head support 37 is always brought into the same operating position, defined by the two predetermined bearing locations 97 and 98, in an unambiguously reproducible way. As a result, the magnetic head 28 supported by the head support 37 is always brought into the same scanning position in an unambiguously reproducible manner, thereby ensuring that the scanning conditions for the magnetic head 28 are constantly correct.

As is evident from Figures 2 and 3, in the operating position of the head support 37 shown therein, the magnetic tape 3 moves over the magnetic head 28 in the tape-transport direction 26. The magnetic tape 3 then exerts a frictional force on the magnetic head 28. This frictional force acts in the tape-transport direction 26 and, via the magnetic head 28, it results in a torque which acts on the head support 37 and which assists the leg spring 82 in pressing the head support 37 with its supporting disc 38 against the bearing location 98 in the bearing recess 47. This ensures that the magnetic head 28 always remains in its scanning position even when a large frictional force acts upon the magnetic head 28.

In the operating position of the head support 37 which is not shown and which is reversed with respect to the operating position described above and shown in Figures 1 to 3, the leg spring 82 provided as an urging device always exerts on the toothed rack 87 a force in a direction opposite to that indicated by the arrow 95. As a result, the toothed rack 87 always subjects the toothed wheel 67 of the head support 37

to a force which urges the positioning projection 72 against the free end of the other positioning screw 70, the first positioning cylinder 66 against the other positioning rib 90 on the block 92 and the second positioning cylinder 68 against the bounding wall 96 of the slot 93 in the positioning plate 94. Furthermore, the supporting disc 38 of the head support 37 is pressed against the bounding wall 58 of the bearing recess 47 and against the bounding wall 54 of the other bearing rib 52 in the bearing recess 47, the supporting disc 38 of the head support 37 again engaging with the bearing device 46 exclusively at two predetermined, cross-sectionally point-shaped bearing locations, *i.e.* at the bearing location 97 and at a further bearing location 99 on the bounding wall 54 of the bearing rib 52, so that also in this operating position of the head support 37 the magnetic head 28 always occupies the same scanning position, thereby ensuring that the scanning conditions for the magnetic head 28 are constantly correct.

As already stated, the magnetic head 28 has two magnet systems, which by means of their head gaps 32 scan two adjacent tracks in each of the track zones 33 and 34, respectively. Each of these two magnetic systems has a coil 100 and 101, respectively, diagrammatically shown in Fig. 2. One end of the one coil 100 is electrically connected to a soldering pin forming a terminal 102 of the magnetic head 28. One end of the other coil 101 is electrically connected to another soldering pin forming a further terminal 103 of the magnetic head 28. The other ends of the two coils 100 and 101 are electrically connected to each other and to the housing 29 of the magnetic head 28 and to a further soldering pin forming a terminal 104 of the magnetic head 28. The two terminals 102 and 103 of the magnetic head 28 are each connected to a signal conductor 105 and 106, respectively, of a cable 107 and the terminal 104 of the magnetic head 28 is connected to a reference-potential conductor 108 of the cable 107. The cable 107 itself is shielded against interfering electromagnetic radiation by a shield 109. The conductors 105, 106 and 108 of the cable 107 are led away from the magnetic head 28 through the duct 69 in the form of a bore, in a non-shielded manner since the shield 109 of the cable 107 has been removed at the location of the duct 69 in order to ensure that the smooth rotation of the head support 37 is not hindered by the comparatively high rigidity and the comparatively high torsional resistance of the shielded cable 107. Directly after leaving the duct 69 the conductors 105, 106 and 108 are shielded against interfering electromagnetic radiation by the shield 109. The shield 109 may also extend slightly into the duct 69.

As is also shown in Fig. 2, the two signal conductors 105 and 106 are connected to a diagrammatically shown signal-processing circuit 110 for processing signals to be recorded by the magnetic head 28 or for processing signals reproduced by the magnetic head 28. The reference-potential conductor 108 of the cable 107 is  
5 electrically connected to a reference-potential terminal 111 of the apparatus. In the present case, the shield 109 is also electrically connected to the reference-potential conductor 108, and consequently to the reference-potential terminal 111, *via* an electrical connection 112.

The head support 37 of an electrically conductive synthetic material is  
10 electrically connected to the reference-potential conductor 108, and hence to the reference-potential terminal 111 of the apparatus, *via* the two metal screws 44 and 45, the steel plate 43, the mu-metal housing 29 of the magnetic head 28 and the terminal 104, which is electrically connected to the housing 29. In this way, the parts of the conductors 105, 106 and 108, which are in fact unshielded in the duct 69, are also  
15 shielded against interfering electromagnetic radiation by means of the head support 37, which consists of an electrically conductive synthetic material and which is electrically connected to the reference-potential terminal 111. In this way, the reference-potential conductor 108, which in any case leads to the magnetic head 28, is simply also used for electrically connecting the electrically conductive head support 37 to the reference-  
20 potential terminal 111, so that there is no need for a separate electrical connection between the head support 37 and the reference-potential terminal 111.

Claims:

1. A magnetic-tape apparatus (1) with a magnetic head (28), which can be turned essentially through 180° between two scanning positions, with a head support  
5 (37), which carries the magnetic head, which head support is rotatably mounted by means of a bearing device, so as to be rotatable between two operating positions in order to reverse the magnetic head, and has a duct (69) leading to the magnetic head, essentially non-shielded parts of conductors (105, 106, 108) of a cable (107), which  
10 outside the duct is shielded by a shield (109), which conductors are electrically connected to terminals (102, 103, 104) of the magnetic head, being passed to the magnetic head through said duct, which is electrically conductive and is electrically connected to a reference-potential terminal (111) of the apparatus, characterised in that the head support consists of electrically conductive synthetic material.
2. An apparatus as claimed in Claim 1, characterised in that the head support  
15 consists of carbon-fibre-reinforced polyamide.
3. An apparatus as claimed in Claim 1 or 2, characterised in that the head support is electrically connected to a reference-potential conductor (108) of the cable, which conductor is led to the magnetic head through the duct and is electrically connected to a reference-potential terminal of the apparatus.