A magnetic tape is spaced from and by an air guide and simultaneously tilted down in a transverse direction thereof by the air guide and is subsequently wound on a reel hub of a tape reel installed in a cartridge shell housing with the downside edge thereof leaned on one of reel flanges of the tape reel which is on the same side as the downside edge of the magnetic reel so as to complete a magnetic tape cartridge. The air guide comprises an air blowing means device for blowing pressurized air against the magnetic tape in a specified pressure distribution pattern in which pressure is lower on the downside edge than on an opposite side edge in the transverse direction so as hereby to tilt down the magnetic tape in the transverse direction.
METHOD AND APPARATUS FOR PRODUCING MAGNETIC TAPE CARTRIDGE

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The present invention relates to a method and apparatus for producing a magnetic tape cartridge, and, more particularly, to a method and apparatus for winding an electromagnetic tape on a tape reel with its side edge leaned on a base flange as desired.

[0003] 2. Description of Related Art

[0004] Magnetic tapes are extensively used in magnetic tape cartridges as data backup recording medium for computers. Such a magnetic tape cartridge is known in two types, one having a single tape reel and the other having a pair of tape reels. In a general way, the magnetic tape cartridge is prepared by guiding and feeding a magnetic tape reel out from a supply reel in a cartridge casing and winding it around a core hub of a tape reel in the cartridge casing with its side edge leaned on a base flange of the reel.

[0005] There has been proposed air guide devices for guiding a magnetic tape in non-contact with it such as described in, for example, Unexamined Japanese Patent Publication Nos. 2002-117598 and 2004-110953. Such an air guide device comprises a cylindrical air guide barrel having a number of air holes through which air is discharged against the magnetic tape. Either air guide means is configured to guide a magnetic tape controlling it in posture and position so as to be in parallel with an axis of the cylindrical air guide barrel in a width direction of tape and to feed the magnetic tape in the a cartridge casing so as to be in parallel with an axis of the core hub of the tape reel.

[0006] However, according to the study findings by the inventors of this application, it has been proved that the prior art air guide makes it hard to wind a magnetic tape around the core hub with its side edge leaned on a base flange of the reel.

SUMMARY OF THE INVENTION

[0007] It is therefore an object of the present invention to provide a method and apparatus for producing a magnetic tape cartridge in which a magnetic tape is always wound with its side edge leaned on a base reel flange.

[0008] The foregoing object of the present invention is accomplished by a method for producing a magnetic tape cartridge by winding a magnetic tape around a tape reel having a reel hub and reel flanges secured to the reel hub which is installed in a cartridge shell housing, which comprises the steps of feeding a magnetic tape toward the tape reel, tilting down the magnetic tape in a transverse direction of the magnetic tape while guiding the magnetic tape in non-contact with the magnetic tape within a specified guide area in a longitudinal direction of the magnetic tape by air guide means, and winding the magnetic tape on the reel hub with a downside edge of the magnetic tape leaned on a specified one of the reel flanges, namely a base flange. The air guide means blows air against the magnetic tape in a specified pressure distribution pattern in which pressure is lower on the downside edge than on an opposite side edge in the transverse direction.

[0009] According to the present invention, a magnetic tape is biased by air so as to be tilted down in a transverse direction while guided in non-contact with the guide means within the specified guide area in the longitudinal direction prior to being wound on the reel hub. In consequence, the magnetic tape is wound with the downside edge thereof leaned on the base flange.

[0010] The pressure distribution pattern is such that pressures decrease gradually in the transverse direction in proportion as getting closer to the downside edge of the magnetic tape. Further, the pressure distribution pattern is desirably such that pressures increase gradually in proportion as getting closer to extreme ends of the specified guide area in the circumferential direction.

[0011] Tilting down of the magnetic tape in the transverse direction is performed by means of an uneven distribution of air pressure which is provided by air guide means. Specifically, the air guide means comprises air blowing means for blowing pressurized air against the magnetic tape in a specified pressure distribution pattern in which pressure is lower on the downside edge than on an opposite side edge in the transverse direction. The air blowing means may comprise an air supply source for supplying pressurized air and a cylindrical tape guide barrel disposed in a path of the magnetic tape with a center axis put in parallel with an axis of rotation of the tape reel for forming an air chamber therein for receiving the pressurized air. The cylindrical tape guide barrel is provided with a number of air discharge orifices formed in the barrel wall through which the pressurized air introduced in the air chamber is blown against the magnetic tape in the specified pressure distribution pattern. With the air blow, the magnetic tape is paced from the cylindrical tape guide barrel and tilted down in a transverse direction of the magnetic tape. The air discharge orifices are distributed in axial and circumferential directions in various forms. For example, the air discharge orifices in the axial direction may be made smaller in diameter on a base side of the cylindrical tape guide barrel which is on the same side as the specified reel flange than at the middle of the specified guide area in the axial direction, or decrease gradually smaller in diameter as getting on toward a base side of the cylindrical tape guide barrel which is on the same side as the specified reel flange. Further, the air discharge orifices may be distributed in a distribution pattern in which a density of distribution is lower on a base side of the cylindrical tape guide barrel which is on the same side as the specified reel flange than at the middle of the specified guide area in the axial direction, or in a distribution pattern in which a density of distribution decrease gradually lower as getting on toward a base side of the cylindrical tape guide barrel which is on the same side as the specified reel flange. The air discharge orifices may further distributed in various pattern in the circumferential direction. Specifically, the air discharge orifices in the circumferential direction may be made larger in diameter on opposite extreme ends of the specified guide area in the circumferential direction than at the middle of the specified guide area in the circumferential direction, or may increase gradually larger in diameter as getting on toward an extreme end of the specified guide area. Further, the air discharge orifices may be distributed so that a density of distribution is higher on opposite extreme ends of the specified guide area in the circumferential direction than at the middle of the specified guide area, or so that a density of distribution...
increases gradually higher as getting on toward an extreme end of the specified guide area in the circumferential direction.

[0012] Although, according to the prior art air guide device in which the air discharge orifices have the same diameters and are evenly distributed in a direction of tape feed, pressures of air blowing against a magnetic tape decrease gradually in proportion as getting closer to opposite extreme ends of the overlap area between the magnetic tape and the tape guide barrel in the direction of tape feed. As a result, according to circumstances, the space between the magnetic tape and the tape guide barrel decreases gradually as getting closer to the opposite extreme ends of the overlap area, so that it is feared in such an event that the magnetic tape possibly comes in contact with the tape guide barrel near the boundaries on the base side. However, according to the present invention, the magnetic tape is kept at an almost equal distance from the tape guide barrel due to the uneven pressure distribution in the direction of tape feed while passing through the overlap area.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] The foregoing and other objects and features of the present invention will be clearly understood from the following detailed description when reading with reference to the accompanying drawings wherein same or similar parts or mechanisms are denoted by the same reference numerals throughout the drawings and in which:

[0014] FIG. 1 is a schematic view of a magnetic tape winding apparatus for implementing a method for preparing a magnetic tape cartridge according to a preferred embodiment of the present invention;

[0015] FIG. 2 is a perspective view of an air tape guide;

[0016] FIG. 3 is a perspective view of a cylindrical tape guide barrel;

[0017] FIG. 4 is a cross-sectional view taken along a line IV-IV of FIG. 3;

[0018] FIG. 5 is a plan view of the cylindrical tape guide barrel;

[0019] FIG. 6 is a cross-sectional view taken along a line VI-VI of FIG. 5;

[0020] FIG. 7 is a schematic sectional view showing a magnetic tape guided by the tape guide; and

[0021] FIG. 8 is a plan view of an alternative cylindrical tape guide barrel.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0022] Referring to the accompanying drawings in detail, and in particular, to FIG. 1 showing a magnetic tape winding apparatus 1 for implementing a method for preparing a magnetic tape cartridge 3 by winding a magnetic tape 2 having a given tape width around a tape reel 4 installed in a cartridge shoe housing 5. The magnetic tape winding apparatus 1 comprises a tape feeding device 10 for continuously reeling out the magnetic tape 2, a tape winding device 20 for driving the tape reel 4 installed in the cartridge shoe housing 5 at a specified speed of rotation so as to wind the magnetic tape 2 around the tape reel 4, a polishing device 30 disposed between the tape feeding device 10 and the tape winding device 20 for polishing a surface of the magnetic tape 2, a cleaning device 40 disposed after the polishing device 30 for cleaning both surfaces of the magnetic tape 2 and a tension controlling device 50 disposed after the cleaning device 40 for controlling tension against the magnetic tape 2. The tape winding device 20 including a cartridge holding and positioning device 21 for holding the magnetic tape cartridge 3 in a specified position with an axis of rotation of the tape reel 4 put in a horizontal position. These devices 20, 30, 40 and 50, which are known in various forms and may take any known forms well known in the art, are in a path of the magnetic tape 2 defined by a number of guide rollers 80. The magnetic tape winding apparatus 1 further comprises an air guide device 90 (which will be described in detail later) disposed immediately before the tape winding device 20 for guiding the magnetic tape 2 in a non-contact manner and a tape traction device 22 for carrying a leading end of the magnetic tape 2 guided by the air guide device 90 into the cartridge shoe housing 5 of the magnetic tape cartridge 3 held in the specified position by the cartridge holding and positioning device 21. The magnetic tape winding apparatus 1 is further provided with a cartridge feed device 60 in which a number of the magnetic tape cartridges 3 are stored in piles therein and which supplies the magnetic tape cartridges 30 to the tape winding device 20 one by one, a cartridge holding and positioning device 21 for holding the magnetic tape cartridge 3 supplied from the cartridge feed device 60 in a specified position for winding of the magnetic tape 2, and a cartridge ejecting device 70 for ejecting a completed magnetic tape cartridge 3 from the tape winding device 20. The devices associated with feeding and winding of the magnetic tape 2 are controlled in operation by switches of an operating board 100.

[0023] The tape feeding device 10 includes tape reels 11a and 11b on which the magnetic tapes 2 are wound and which are interchangeably driven at a specified rotational speed to reel out the magnetic tape 2. While one of the tape reels 11a and 11b is out of service, another magnetic tape is prepared on it for another service. Therefore, magnetic tape 2 is continuously fed toward the tape winding device 20. The magnetic tape 2 reeled out from the tape reel 11a or 11b is subjected to surface polish by the polishing device 30 and to removal of tape dust and foreign particles from both surface of the magnetic tape 2 by the cleaning devices 40, and then sent to the air guide device 90. On the way, the magnetic tape 2 is appropriately tensioned by the tension controlling device 50.

[0024] Referring to FIGS. 3 and 4 showing the air guide device 90 in detail, the air guide device 90 controls the magnetic tape in posture and position in a transverse direction so as to wound it around the tape reel 4 with its side edge leaned on a base reel flange as will be described latter. As shown, the air guide device 90 comprises a cylindrical solid base pillar 110 having a frustum-shaped top end 110a which is removably secured in a horizontal position to a frame plate 105 of the magnetic tape winding apparatus 1, a top retainer disk 112 and a cylindrical tape guide barrel 111 disposed between the base pillar 110 and the top retainer disk 112. The cylindrical tape guide barrel 111 is borne down on the frustum-shaped top 110a of the base pillar 110 by screwing up top retainer disk 112 against the top retainer disk 112 by a tap bolt 113 passing through a center hole 112c of the top retainer disk 112 and fastened in a center screw.
bore 110d of the base pillar 110. More specifically, as clearly shown in FIG. 4, a top end of the frustum-shaped top 110a of the base pillar 110 is surrounded by an annular shoulder 110b. Similarly, the top retainer disk 112 has a reversed frustum-shaped under side wall 112 whose bottom end is surrounded by an annular shoulder 112b. Both shoulders 111b and 112b have the same outer diameters as an inner diameter of the tape guide barrel 111 so as to be snugly fitted by the tape guide barrel 111. The base pillar 110 has an air conduit bore 110c extending from the bottom to the top and opening to the top end of the frustum-shaped top 110a. The air conduit bore 110c is connected to an air pipe 105/through a joint bore 105a formed in the frame plate 105. Pressurized air is supplied by an air pump (not shown) to an air chamber 111c formed by the tape guide barrel 111 between the frustum-shaped top end 110a of the base pillar 110 and the top retainer disk 112. The tape guide barrel 111 has a number of air discharge orifices 111b formed on a grid through which pressurized air introduced into the air chamber 111c is discharged.

[0025] Referring to FIGS. 5 and 6, the air guide device 90 guides the magnetic tape 2 traveling toward the tape reel 4 in the cartridge shell housing 5 in a direction of tape feed indicated by an arrow C. As was described previously, both the air guide device 90 and tape reel 4 are put in the horizontal position with their axes in parallel with each other. The tape reel 4 comprises a core hub 4a and reel flanges 4b and 4c secured to opposite ends of the core hub 4a. Either one of the reel flanges 4b and 4c, namely the reel flanges 4b in this embodiment, is used as a base reel flange on which sides edges of convolutions of the magnetic tape 2 wound around on the core hub 4a lean so as thereby to be flush with one another. The air discharge orifices 111b are all less than 0.2 mm in diameter and formed in a predetermined pattern. In this embodiment, the air discharge orifices 111b are formed at grid points so as to line up in three circumferential rows and in six axial rows. The air discharge orifices 111b in each axial row are different in diameter, specifically, the closer the discharge orifice 111b gets to toward a base side 111d of the tape guide barrel 111 which is on the same side as the base reel flange 4b, the smaller the diameter decreases. That is, the air discharge orifice 111b on the base side 111d of the tape guide barrel 111 is smallest in diameter among the three, and the air discharge orifice 111b on the side opposite to the base side 111d of the tape guide barrel 111 is largest in diameter among the three. Further, the air discharge orifices 111b in each circumferential row are different in diameter, specifically, the closer the discharge orifice 111b gets toward the middle of the circumferential row, the smaller the diameters decrease. That is, the air discharge orifice 111b at the middle of the circumferential row is smallest among the six, and the air discharge orifices 111b at opposite ends of the circumferential row are largest among the six. The circumferential rows of air discharge orifices 111b are formed within a specified extent sufficiently cover an overlap angle 0 over which the magnetic tape 2 overlaps the tape guide barrel 111 in the circumferential direction as clearly shown in FIG. 6.

[0026] Air introduced into the air chamber 111c of the tape guide barrel 111 blasts out through the air discharge orifices 111b to blow against the magnetic tape 2 traveling over the tape guide barrel 111 so as thereby to space the magnetic tape 2 from the tape guide barrel 111 traveling toward the tape winding device 20. In other words, the magnetic tape 2 is guided by the air guide device 90 so as to travel over the same in non-contact with the tape guide barrel 111. At this time, pressures of the air blowing against the magnetic tape 2 gradually increase in proportion as getting away further from the base side 111d of the tape guide barrel 111, so that the magnetic tape 2 is tilted down on the base side 111d of the tape guide barrel 111 as shown in FIG. 7.

[0027] The tape winding device 20 includes the cartridge holding and positioning device 21 for holding the magnetic tape cartridge 3 supplied from the cartridge feed device 60 in a specified position with an axis of rotation of the tape reel 4 put in a horizontal position and the tape traction device 22 for carrying a leading end of the magnetic tape 2 into the cartridge shell housing 5 of the magnetic tape cartridge 3 held in position by the cartridge holding and positioning device 21. The tape traction device 22 is operated by, for example, a pneumatic drive system to move between a standby position outside the cartridge holding and positioning device 21 and a working position in the cartridge holding and positioning device 21. The tape traction device 22 is provided with suction holding means (not shown) for holding a leading end of the magnetic tape 2 in the standby position and presses it against the reel hub 4a of the tape reel 4 in the working position.

[0028] In operation of the magnetic tape winding apparatus 1, when the magnetic tape winding apparatus 1 is activated, either one of the tape reels 11a and 11b is driven to reel out the magnetic tape 2 at a specified rate. The magnetic tape 2 from the tape reel 11a or 11b is guided by the path by the guide rollers 80 toward the tape traction device 22. During traveling to the tape traction device 22, the magnetic tape 2 is polished by the polishing device 30 and cleaned by the cleaning devices 40. The magnetic tape 2 is controlled by the tension controlling device 50 so as to travel under proper tension. Until the magnetic tape 2 reaches the tape traction device 22, the air pump for supplying air to the air guide device 90 is under suspension. Therefore, the magnetic tape 2 travels forward being guided between inclined wall surfaces of the frustum-shaped top end 110a of the cylindrical solid base pillar 110 and the frustum-shaped under side wall 112 of the top retainer disk 112. When the tape traction device 22 in the standby position is reached by the leading end of the magnetic tape 2, while the tape traction device 22 is activated to hold the magnetic tape 2 by suction, the tape winding device 20 is activated to rotate the tape reel 4 of the magnetic tape cartridge 3 held in position by the cartridge holding and positioning device 21 at a specified speed of rotation. The magnetic tape winding apparatus 1 is adapted to control the tape reels 11a, 11b and 4 so that a reel out rate of the tape reel 11a or 11b and a winding rate of the tape reel 4 match well with each other. Once the tape traction device 22 moves to the working position and presses the magnetic tape 2 against the reel hub 4a of the tape reel 4 which is rotating at a specified speed of rotation, the tape traction device 22 is deactivated and return to the standby position. At the same time, the magnetic tape 2 is wound around the reel hub 4a. When the magnetic tape 2 is wound around the reel hub 4a at least one or two turns, the magnetic tape 2 encounters a momentary increase in tension. The magnetic tape winding apparatus 1 detects the momentary increase in tension to activate the air pump of the air guide device 90, more specifically the air pump of the air guide device 90, and controls rotation of the tape reels 4 and 11a or 11b so as to balance the reel out rate.
and the winding rate. Once the magnetic tape 2 coils around the reel hub 2, the air pump of the air guide device 90 is activated to supply pressurized air into the air chamber 111c. In consequence, the air blasts out through the air discharge orifices 111b of the tape guide barrel 111 to blow against the magnetic tape 2 and spaces it from the tape guide barrel 111. That is, the magnetic tape 2 is tilted down in a transverse direction. In this way, while traveling forward to the tape reel 4, the magnetic tape 2 is always biased toward the base side 111d of the tape guide barrel 111 and, in natural consequence, against the base flange 4b of the tape reel 4 as shown in FIG. 7. Thereafter, the magnetic tape 2 is continuously wound around the reel hub 4a of the tape reel 4 with its side edge biased and, in consequence, leaned on the base flange 4b.

[0029] FIG. 8 shows an alternative of the air discharge orifice distribution pattern. In this air discharge orifice distribution pattern, all of air discharge orifices 111b are identical dimensionally and are distributed so as to increase distribution density as getting far away from the base side 111d of the tape guide barrel 111 and as getting on toward opposite extreme ends of the overlap area in the direction of tape feed C. This air discharge orifice distribution pattern shown in FIG. 8 brings about the same effect of pressure distribution as the air discharge orifice distribution pattern shown in FIG. 7.

[0030] In the case where the air discharge orifices 111b have the same diameters and are evenly distributed in the direction of tape feed C, pressures of air blowing against the magnetic tape 2 gradually increase in proportion as getting closer to the opposite extreme ends of the overlap area between the magnetic tape 2 and the tape guide barrel 111 in the direction of tape feed C. As a result, the space between the magnetic tape 2 and the tape guide barrel 111 gradually decreases as getting closer to the opposite extreme ends of the overlap area, so that it is feared that the magnetic tape 2 at the side edge possibly comes in contact with the tape guide barrel 111 near the boundaries on the base side. However, with the air guide device 90, the magnetic tape 2 is kept at an almost equal distance from the tape guide barrel 111 due to the uneven pressure distribution in the direction of tape feed C while passing through the overlap area. Nevertheless, it is not always essential to distribute the air discharge orifice 111b so as to increase pressures higher as getting on toward opposite extreme ends of the overlap area in the direction of tape feed C.

[0031] It is a matter of course that variants of air discharge orifice distribution pattern which brings about the same effect of pressure distribution as those described above may occur to those skilled in the art.

[0032] It is also to be understood that although the present invention has been described with regard to preferred embodiments thereof, various other embodiments and variants may occur to those skilled in the art, which are within the scope and spirit of the invention, and such other embodiments and variants are intended to be covered by the following claims.

What is claimed is:

1. A method for producing a magnetic tape cartridge by winding a magnetic tape around a tape reel having a reel hub and reel flanges secured to the reel hub which is installed in a cartridge shell housing, said magnetic tape cartridge producing method comprising the steps of:

- feeding a magnetic tape toward said tape reel;
- tilting down said magnetic tape in a transverse direction of said magnetic tape while guiding said magnetic tape in non-contact with said magnetic tape within a specified guide area in a longitudinal direction of said magnetic tape; and
- winding said magnetic tape on said reel hub with a downside edge of said magnetic tape leaned on a specified one of said reel flanges.

2. The magnetic tape cartridge producing method as defined in claim 1, wherein said tilting down of said magnetic tape is performed by air.

3. The magnetic tape cartridge producing method as defined in claim 2, wherein said air blows against said magnetic tape in a pressure distribution pattern in which pressure is lower on said downside edge than on an opposite side edge in said transverse direction.

4. The magnetic tape cartridge producing method as defined in claim 2, wherein said air blows against said magnetic tape in a pressure distribution pattern in which pressures gradually decrease in said transverse direction in proportion as getting closer to said downside edge of said magnetic tape.

5. The magnetic tape cartridge producing method as defined in claim 2, wherein said air blows against said magnetic tape in a pressure distribution pattern in which pressure is lower at the middle of said specified guide area in said lengthwise direction than at extreme ends of said specified guide area in said lengthwise direction.

6. The magnetic tape cartridge producing method as defined in claim 2, wherein said air blows against said magnetic tape in a pressure distribution pattern in which pressures gradually increase in said guiding direction as getting closer to extreme ends of said specified guide area in said lengthwise direction.

7. An apparatus for producing a magnetic tape cartridge by winding a magnetic tape around a tape reel having a reel hub and reel flanges secured to the reel hub which is installed in a cartridge shell housing, said magnetic tape cartridge producing apparatus comprising:

- a tape reel for feeding a magnetic tape;
- air guide means for tilting down said magnetic tape in a transverse direction of said magnetic tape while guiding said magnetic tape in non-contact with said magnetic tape within a specified guide area in a longitudinal direction of said magnetic tape; and
- winding means for winding said magnetic tape on said reel hub with a downside edge of said magnetic tape leaned on a specified one of said reel flanges.

8. The magnetic tape cartridge producing method as defined in claim 7, wherein said guiding means comprises air blowing means for blowing pressurized air against said magnetic tape in a specified pressure distribution pattern in which pressure is lower on said downside edge than on an opposite side edge in said transverse direction so as hereby to tilt down said magnetic tape in a transverse direction of said magnetic tape.

9. The magnetic tape cartridge producing method as defined in claim 8, wherein said air blowing means com-
prises an air supply source for supplying pressurized air and a cylindrical tape guide barrel disposed in a path of said magnetic tape with a center axis put in parallel with an axis of rotation of said tape reel for forming an air chamber therein for receiving said pressurized air, said cylindrical tape guide barrel having a number of air discharge orifices formed in the barrel wall so as to blow said pressurized air introduced in said air chamber against said magnetic tape in said specified pressure distribution pattern, thereby spacing said magnetic tape from said cylindrical tape guide barrel and tilting down said magnetic tape in a transverse direction of said magnetic tape.

10. The magnetic tape cartridge producing method as defined in claim 9, wherein said air discharge orifices are distributed in axial and circumferential directions, said air discharge orifices in said axial direction being made smaller in diameter on a base side of said cylindrical tape guide barrel which is on the same side as said specified reel flange than at the middle of said specified guide area in said axial direction.

11. The magnetic tape cartridge producing method as defined in claim 9, wherein said air discharge orifices are distributed in axial and circumferential directions, said air discharge orifices in said axial direction decreasing gradually smaller in diameter as getting on toward a base side of said cylindrical tape guide barrel which is on the same side as said specified reel flange.

12. The magnetic tape cartridge producing method as defined in claim 9, wherein said air discharge orifices are distributed in a distribution pattern in which a density of distribution is lower on a base side of said cylindrical tape guide barrel which is on the same side as said specified reel flange than at the middle of said specified guide area in said axial direction.

13. The magnetic tape cartridge producing method as defined in claim 9, wherein said air discharge orifices are distributed in a distribution pattern in which a density of distribution is gradually made lower as getting on toward a base side of said cylindrical tape guide barrel which is on the same side as said specified reel flange.

14. The magnetic tape cartridge producing method as defined in claim 9, wherein said air discharge orifices are distributed in axial and circumferential directions, said air discharge orifices in said circumferential direction being made larger in diameter on opposite extreme ends of said specified guide area in said circumferential direction than at the middle of said specified guide area in said circumferential direction.

15. The magnetic tape cartridge producing method as defined in claim 9, wherein said air discharge orifices are distributed in axial and circumferential directions, said air discharge orifices in said circumferential direction increasing gradually larger in diameter as getting on toward an extreme end of said specified guide area.

16. The magnetic tape cartridge producing method as defined in claim 9, wherein said air discharge orifices are distributed in a distribution pattern in which a density of distribution is higher on opposite extreme ends of said specified guide area in said circumferential direction than at the middle of said specified guide area in said circumferential direction.

17. The magnetic tape cartridge producing method as defined in claim 9, wherein said air discharge orifices are distributed in a distribution pattern in which a density of distribution is gradually made higher as getting on toward an extreme end of said specified guide area in said circumferential direction.

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