

CPC**COOPERATIVE PATENT CLASSIFICATION****G11B****INFORMATION STORAGE BASED ON RELATIVE MOVEMENT BETWEEN RECORD CARRIER AND TRANSDUCER** ({ producing carriers of

sound records for needle playback [B29C 39/00](#)}; recording measured values in a way that does not require playback through a transducer G01D; photosensitive materials or processes for photographic purposes G03C; electrography, electrophotography, magnetography G03G; recording or playback apparatus using mechanically marked tape, e.g. punched paper tape, or using unit records, e.g. punched or magnetically marked cards, G06K; transferring data from one type of record carrier to another [G06K 1/18](#); printing of data from record carriers [G06K 3/00](#); arrangements for producing a permanent visual presentation of the output data [G06K 15/00](#); arrangements or circuits for control of indicating devices using static means to present variable information G09G; coding, decoding or code conversion, in general H03M; circuits for coupling output of reproducer to radio receiver [H04B 1/20](#); circuits { or arrangements } specially adapted for { pictorial or } television signal recording { [H04N 1/21](#) }, [H04N 5/76](#), [H04N 9/79](#); loudspeakers, microphones, gramophone pick-ups or like acoustic electromechanical transducers or circuits therefor H04R)

NOTE

This subclass covers :

- recording or playback of information by relative movement between a record track and a transducer, the transducer directly producing, or being directly actuated by, modulation in the track being recorded or played-back, and the extent of modulation corresponding to the signal being recorded or played-back;
- apparatus and machines for recording or playback, and parts thereof such as heads;
- record carriers for use with such apparatus and machines;
- associated working of other apparatus with such apparatus and machines;
- { relative positioning or movement of transducers and record carriers before, during or after transducing operation, e.g. for accessing record carriers or parts thereof, or for track change, selection or acquisition or for track following or for accessing parts of tracks; }
- { driving or moving of heads or record carriers or both heads and record carriers for increasing, maintaining or decreasing the relative speed before, during or after transducing operation }

In this subclass, the following terms or expressions are used with the meanings indicated :

- "head" includes any means for converting sinusoidal or non-sinusoidal electric wave-forms into variations of the physical condition of at least the adjacent surface of the record carrier, or vice versa;
- "record carrier" means a body, such as a cylinder, disc, card, tape, or wire, capable

of permanently holding information, which can be read-off by a sensing element movable relatively to the record carrier.

Documents concerning relative positioning or movement of transducers and record carriers are classified in groups [G11B 3/00](#) to [G11B 7/00](#) and [G11B 21/00](#) when only the transducer is controlled and in groups [G11B 15/00](#), [G11B 17/00](#) and [G11B 19/00](#) when only the record carrier is controlled. When both record carrier and head are controlled, the documents are classified in [G11B 15/18B](#), [G11B 15/1816](#), [G11B 19/00](#) and [G11B 27/00A](#).

When a plurality of record carriers are controlled, the documents are classified in [G11B 15/68](#), [G11B 17/08](#), [G11B 17/22](#) and [G11B 27/00A](#).

By "access" is meant an operation including a relative movement for positioning between record carrier and head before, during or after transducing; this operation including "seek", "select", "change", "acquire" and "follow" functions for at least a part of a track on at least one record carrier. By "programmed access" is meant a sequence of access operations the result of the sequence being to acquire a wanted sequence of parts of tracks or a wanted sequence of tracks. Relative movement between head and record carrier also covers the movement of a coupling beam such as a light beam between the head and a stationary record carrier.

"Movement of the head" also covers any virtual movement or any physical movement such as obtained by switching between successive transducing parts of the head or by moving the transducing zone of the head, i.e. by "scanning". If different transducing parts of the head are switchable, the number of transducing parts should be much smaller than the number of individual storage areas of the record carrier.

Attention is drawn to the notes of subclass G11C.

WARNING

[C2012.05]

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

[G11B 5/65](#) covered by [G11B 5/64](#) to **G11B 5/64D3**
[G11B 5/667](#) covered by [G11B 5/66](#)
[G11B 5/673](#) covered by [G11B 5/66](#)
G11B 7/16 covered by [G11B 7/135](#)
G11B 7/18 covered by [G11B 7/135](#)
[G11B 7/30](#) covered by [G11B 7/00](#)
[G11B 9/12](#)-[G11B 9/14](#) covered by [G11B 9/00](#)
[G11B 11/24](#)-[G11B 11/26](#) covered by [G11B 11/00](#)
[G11B 13/08](#) covered by [G11B](#)

G11B 3/00

Recording by mechanical cutting, deforming or pressing, e.g. of grooves or pits; Reproducing by mechanical sensing; Record carriers therefor ([G11B 11/00](#), {[G11B 13/00](#)} take precedence; { recording by cutting or deforming using laser beam [G11B 7/00](#), using electron beam [G11B 9/10](#)})

- G11B 3/001 . {with vibrating mechanical coupling means between pick-up element and sound producing element}
- G11B 3/002 .. {element with stationary record carriers}
- G11B 3/003 . {Devices for transmitting, directing, amplifying sound (in general [G10K 11/18](#))}
- G11B 3/005 .. {through hollow arms}
- G11B 3/006 .. {using horns}
- G11B 3/007 . {Devices for controlling sound e.g. using acoustical impedances, using valves}
- G11B 3/008 . {for digital information}
- G11B 3/02 . Arrangements of heads ([styli G11B 3/44](#))
- G11B 3/04 .. Multiple, convertible, or alternative transducing arrangements {contains no documents see [G11B 3/42](#)}
- G11B 3/06 .. Determining or indicating positions of head
- G11B 3/08 .. Raising, lowering, traversing otherwise than for transducing, arresting, or holding-up heads against record carriers {for transducing [G11B 3/12](#), [G11B 3/34](#)}
- G11B 3/085 ... [N: using automatic means ([G11B 3/095](#) takes precedence; {if particularly adapted for record-changers see [G11B 17/16](#) and subgroups})
- G11B 3/08503 {Control of drive of the head}
- G11B 3/08506 {for pivoting pick-up arms}
- G11B 3/08509 {using mechanical detecting means}
- G11B 3/08512 {using optical detecting means}
- G11B 3/08516 {using magnetic detecting means}
- G11B 3/08519 {for pick-up arms moving parallel to itself}
- G11B 3/08522 {using mechanical detecting means}
- G11B 3/08525 {using optical detecting means}
- G11B 3/08529 {using magnetic or electric detecting means}
- G11B 3/08532 {for fixed arms carrying a movable head}
- G11B 3/08535 {Driving the head}
- G11B 3/08538 {the head being driven by the same means as the record can}
- G11B 3/08541 {for pivoting pick-up arms}
- G11B 3/08545 {driven by cams}
- G11B 3/08548 {using friction coupling}
- G11B 3/08551 {for the horizontal movement only}
- G11B 3/08554 {for pick-up arms moving parallel to itself}
- G11B 3/08558 {driven by belt or analogous element}
- G11B 3/08561 {driven by non-skip driving means, e.g. lead screw}
- G11B 3/08564 {the head being driven by means independent of the record carrier driving means}
- G11B 3/08567 {for pivoting pick-up arms}
- G11B 3/0857 {driven by means which support the pick-up arm}
- G11B 3/08574 {the supporting element being different from the rotation-axes}

G11B 3/08577	.....	{for the vertical movement only}
G11B 3/0858	.....	{using mechanical means}
G11B 3/08583	.....	{using electrical/magnetic means}
G11B 3/08587	.....	{for pick-up arm moving parallel to itself}
G11B 3/0859	.....	{driven by belt or analogous element}
G11B 3/08593	.....	{driven by non-skip driving means, e.g. lead screw}
G11B 3/08596	.....	{for fixed arms carrying a movable head}
G11B 3/09	...	using manual means only (G11B 3/095 takes precedence)
G11B 3/091	....	{using magnetic means (G11B 3/093 takes precedence)}
G11B 3/092	....	{using mechanical means (G11B 3/093 takes precedence)}
G11B 3/093	....	{Means coupled to the cover}
G11B 3/095	...	for repeating a part of the record; for beginning or stopping at a desired point of the record
G11B 3/0952	....	{using automatic means}
G11B 3/0955	.....	{using mechanical means for detecting the end of the recording}
G11B 3/0957	.....	{using optical means for detecting the end of the recording or the desired point thereof}
G11B 3/10	..	Arranging, supporting, or driving of heads or of transducers relatively to record carriers {guiding record carriers G11B 17/00 , driving record carriers G11B 19/00 }
G11B 3/12	...	Supporting in balanced, counterbalanced or loaded operative position {during transducing}, e.g. loading in direction of traverse]
G11B 3/121	....	{By using mechanical means not provided for in G11B 3/14 , G11B 3/20 , e.g. using cams}
G11B 3/122	.....	{Providing horizontal force; e.g. anti-skating (G11B 3/124 takes precedence)}
G11B 3/124	.....	{Damping means therefor}
G11B 3/125	....	{by using electric or magnetic means}
G11B 3/127	.....	{Providing horizontal force, e.g. anti-skating force (G11B 3/128 takes precedence)}
G11B 3/128	.....	{Damping means therefor}
G11B 3/14	....	by using effects of gravity or inertia, e.g. counterweight (G11B 3/28 takes precedence)
G11B 3/145	.....	{Providing horizontal force; e.g. anti-skating force (G11B 3/18 takes precedence)}
G11B 3/16	.....	adjustable
G11B 3/18	.....	Damping by using viscosity effect
G11B 3/20	....	by elastic means, e.g. spring (G11B 3/28 takes precedence)
G11B 3/22	....	adjustable
G11B 3/24	.....	acting to decrease pressure on record
G11B 3/26	.....	acting to increase pressure on record
G11B 3/28	.....	providing transverse bias parallel to record

NOTE

[G11B 3/14](#), [G11B 3/20](#))

- G11B 3/30 . . . Supporting in an inoperative position
- G11B 3/31 Construction of arms {for transmitting, directing or amplifying sound [G11B 3/003](#)}
- G11B 3/32 Construction or arrangement of support pillars
- G11B 3/34 . . . Driving or guiding during transducing operation
- G11B 3/36 Automatic-feed mechanisms producing progressive transducing traverse across record carriers otherwise than by grooves, e.g. by lead-screw
- G11B 3/38 Guiding, e.g. constructions or arrangements providing linear or other special tracking characteristics
- G11B 3/40 Driving of heads relatively to stationary record carriers for transducing
- G11B 3/42 . . . with provision for adaptation or interchange of heads

- G11B 3/44 . Styli, e.g. sapphire, diamond
- G11B 3/445 . . {Styli particularly adapted for sensing video discs}
- G11B 3/46 . . Constructions or forms {Disposition or mounting}, e.g. attachment of point to shank {attachment of stylus directly to transducer [H04R 1/16](#)}
- G11B 3/48 . . . Needles {contains no documents}
- G11B 3/50 . . Anvils or other supports opposing stylus forces
- G11B 3/52 . . Arrangements permitting styli to yield under excessive pressure
- G11B 3/54 . . Storing; manipulating, e.g. feeding styli to and from heads ([needle boxes, receptacles for needles B65D 85/24](#))
- G11B 3/56 . . Sharpening ([grinding B24B 3/00, B24B 19/00](#))

- G11B 3/58 . Cleaning record carriers or styli, e.g. removing shavings or dust { or electrostatic charges}([brushes A46B; cleaning in general B08B; { carrying-off electrostatic charges in general H05F 3/00}](#))
- G11B 3/5809 . . {during transducing operation}
- G11B 3/5818 . . . {for record carriers}
- G11B 3/5827 {using means contacting the record carrier}
- G11B 3/5836 {means connected to the pick-up arm or head}
- G11B 3/5845 {means connected to a separate arm}
- G11B 3/5854 {using means not contacting the record carrier}
- G11B 3/5863 {connected to the pick-up arm or head}
- G11B 3/5872 {connected to a separate arm}
- G11B 3/5881 . . . {for styli or needles only}
- G11B 3/589 . . {before or after transducing operation}

- G11B 3/60 . Turntables for record carriers ([forming rotor of dynamo-electric motor H02K](#))

NOTE[G11B 19/2009](#)

- G11B 3/61 . . Damping of vibrations of record carriers on turntables

NOTE[G11B 3/60](#), [G11B 3/589](#) and [G11B 17/02](#); contains no documents, see

G11B 19/2018

- G11B 3/64 . Re-recording, i.e. transcribing information from one grooved record carrier on to one or more similar or dissimilar record carriers **{(by varying the order of the information [G11B 27/029](#), [G11B 27/036](#))}**
- G11B 3/66 . Erasing information, e.g. for reuse of record carrier
- G11B 3/68 . Record carriers
- G11B 3/682 .. {comprising protective coatings e.g. anti static, anti-friction}
- G11B 3/685 .. {Intermediate mediums}
- G11B 3/687 .. {Testing thereof **(investigating chemical or physical properties of materials [G01N](#))}**}
- G11B 3/70 .. characterised by the selection of material or structure; Processes or apparatus specially adapted for manufacturing record carriers **(processes involving a single technical art and for which provision exists elsewhere, see the relevant places, e.g. [B29D 17/00](#))**
- G11B 3/702 ... {for video discs with grooves **([G11B 3/705](#) takes precedence)}**}
- G11B 3/705 ... {characterised by the selection of the material only}
- G11B 3/707 {for video discs with grooves}
- G11B 3/72 .. Groove formations, e.g. run-in groove, run-out groove
- G11B 3/74 ... Multiple output tracks, e.g. binaural stereophonic
- G11B 3/76 ... forming part of cinematograph films
- G11B 3/78 .. Multiple-track arrangements
- G11B 3/80 .. incorporating subsidiary guide means for heads, other than modulated grooves; Part-formed unmodulated grooves for conversion into transducing grooves
- G11B 3/90 .. with means indicating prior or unauthorised use

G11B 5/00 **Recording by magnetisation or demagnetisation of a record carrier; Reproducing by magnetic means; Record carriers therefor** ([G11B 11/00](#){ and [G11B 13/00](#)} take precedence)

NOTE

Subgroups [G11B 5/02](#) to [G11B 5/86](#) take precedence over subgroups [G11B 5/004](#) to [G11B 5/016](#)

- G11B 5/004 . Recording on, or reproducing or erasing from, magnetic drums ([G11B 19/00](#) takes precedence)
- G11B 5/008 . Recording on, or reproducing or erasing from, magnetic tapes, { sheets, e.g. cards,} or wires **([G11B 15/00](#){[G11B 19/00](#)} take precedence; { bulk transferring of information magnetisation for re-recording [G11B 5/865](#); marking record carriers in digital fashion [G06K](#)})**
- G11B 5/00804 .. {magnetic sheets **(rotating sheets [G11B 5/012](#))}**}
- G11B 5/00808 ... {magnetic cards}
- G11B 5/00813 .. {magnetic tapes}

- G11B 5/00817 . . . {on longitudinal tracks only, e.g. for serpentine format recording}
- G11B 5/00821 {using stationary heads}
- G11B 5/00826 {comprising a plurality of single poles or gaps or groups thereof operative at the same time}
- G11B 5/0083 {for parallel information processing, e.g. PCM recording}
- G11B 5/00834 {using virtual scanning heads}
- G11B 5/00839 {using cyclically driven heads providing segmented tracks}
- G11B 5/00847 . . . {on transverse tracks ([G11B 5/00878](#) takes precedence)}
- G11B 5/00852 {using stationary heads}
- G11B 5/00856 {comprising a plurality of single poles or gaps or groups thereof operative in time sequence}
- G11B 5/0086 {using cyclically driven heads providing segmented tracks}
- G11B 5/00865 {for transducing on more than one segment simultaneously}
- G11B 5/00869 {the segments being disposed in different lateral zones of the tape}
- G11B 5/00873 {the segments being disposed in different longitudinal zones of the tape}
- G11B 5/00878 . . . {transducing different track configurations or formats on the same tape}
- G11B 5/00882 {configurations only, e.g. longitudinal and transverse}
- G11B 5/00886 {simultaneously}
- G11B 5/00891 {formats only, e.g. analog and digital}
- G11B 5/00895 {simultaneously}

- G11B 5/012 . . . Recording on, or reproducing or erasing from, magnetic discs ([G11B 17/00](#), [G11B 19/00](#) take precedence)
- G11B 5/016 . . . using magnetic foils

- G11B 5/02 . . . Recording, reproducing, or erasing methods; Read, write or erase circuits therefor (timing or synchronising arrangements [G11B 27/10](#))
- G11B 5/022 . . . {H-Bridge head driver circuit, the "H" configuration allowing to inverse the current direction in the head}
- G11B 5/024 . . . Erasing
- G11B 5/0245 {Bulk erasing}
- G11B 5/027 . . . Analogue recording
- G11B 5/0275 {Boundary displacement recording}
- G11B 5/03 Biasing
- G11B 5/035 Equalising
- G11B 5/09 . . . Digital recording

- G11B 5/10 . . . Structure or manufacture of housings or shields for heads
- G11B 5/102 {Manufacture of housing}
- G11B 5/105 . . . Mounting of head within housing {or assembling of head and housing ([G11B 5/3103](#) takes precedence)}
- G11B 5/11 . . . Shielding of head against electric or magnetic fields
- G11B 5/112 {Manufacture of shielding device}
- G11B 5/115 . . . Shielding devices arranged between heads or windings ({[G11B 5/265](#)},

G11B 5/29 take precedence

- G11B 5/127 . Structure or manufacture of heads, e.g. inductive
- G11B 5/1272 .. {Assembling or shaping of elements ([G11B 5/1278](#) takes precedence)}
- G11B 5/1274 .. {with "composite" cores, i.e. cores composed in some parts of magnetic particles and in some other parts of magnetic metal layers}
- G11B 5/1276 ... {including at least one magnetic thin film}
- G11B 5/1278 .. {specially adapted for magnetisations perpendicular to the surface of the record carrier}
- G11B 5/133 .. with cores composed of particles, e.g. with dust core, with ferrite core {with cores composed of isolated magnetic particles ([in thin films G11B 5/31](#))}
- G11B 5/1335 ... {Assembling or shaping of elements}
- G11B 5/147 .. with cores being composed of metal sheets, i.e. laminated cores {with cores composed of isolated magnetic layers, e.g. sheets ([in thin films G11B 5/31](#))}
- G11B 5/1475 ... {Assembling or shaping of elements ([G11B 5/153](#) takes precedence)}
- G11B 5/153 ... with tape-wound cores
- G11B 5/17 .. Construction or disposition of windings
- G11B 5/187 .. Structure or manufacture of the surface of the head in physical contact with, or immediately adjacent to the recording medium; Pole pieces; Gap features ([G11B 5/265](#), [G11B 5/29](#), [G11B 5/31](#) take precedence)
- G11B 5/1871 ... {Shaping or contouring of the transducing or guiding surface}
- G11B 5/1872 {for improving the form of the electrical signal transduced, e.g. compensation of "contour effect"}
- G11B 5/1874 {specially adapted for composite pole pieces, e.g. for avoiding "pseudo-gap"}
- G11B 5/1875 ... {"Composite" pole pieces, i.e. poles composed in some parts of magnetic particles and in some other parts of magnetic metal layers}
- G11B 5/1877 {including at least one magnetic thin film}
- G11B 5/1878 {disposed immediately adjacent to the transducing gap, e.g. "Metal-In-Gap" structure}
- G11B 5/193 ... the pole pieces being ferrite {or other magnetic particles ([G11B 5/1871](#) takes precedence; [in thin film G11B 5/31](#))}
- G11B 5/21 ... the pole pieces being of ferrous sheet metal {or other magnetic layers ([G11B 5/1871](#) takes precedence; [in thin film G11B 5/31](#))}
- G11B 5/23 ... Gap features {([G11B 5/1871](#), [G11B 5/1875](#), [G11B 5/265](#), [G11B 5/29](#), [G11B 5/488](#) and subgroups, [G11B 5/4907](#) and subgroups, [G11B 5/4969](#) and subgroups take precedence)}
- G11B 5/232 {Manufacture of gap}
- G11B 5/235 Selection of material for gap filler ([G11B 5/232](#) takes precedence)
- G11B 5/245 ... comprising means for controlling the reluctance of the magnetic circuit {in a head with single gap, for co-operation with one track; ([G11B 5/255](#) takes precedence; for plural gaps or plural tracks [G11B 5/127](#), [G11B 5/265](#), [G11B 5/29](#), [G11B 5/49](#) and subgroups)}
- G11B 5/2452 {where the dimensions of the effective gap are controlled}
- G11B 5/2455 {the magnetic circuit including at least one magnetic thin film of controllable properties ([for scanning G11B 5/4938](#))}
- G11B 5/2457 {disposed immediately adjacent to the gap ("composite" pole pieces [G11B 5/1877](#))}

- G11B 5/255 ... comprising means for protection against wear {in thin film structures [G11B 5/3106](#)}
- G11B 5/265 .. Structure or manufacture of a head with more than one gap for erasing, recording or reproducing on the same track ([G11B 5/33](#) takes precedence {in thin film structures [G11B 5/31](#)})
- G11B 5/2651 ... {Manufacture}
- G11B 5/2652 ... {with more than one gap simultaneously operative (with controlled single gap [G11B 5/245](#))}
- G11B 5/2654 {for recording or erasing}
- G11B 5/2655 {with all the gaps disposed within the track or "guard band" between tracks, e.g. with erase gaps operative on track edges, with wide erase gap followed by narrow write gap}
- G11B 5/2657 {all the gaps having the same dimension in the direction transverse to the track direction}
- G11B 5/2658 {for recording with premagnetization or biasing of record carrier or head}
- G11B 5/29 .. Structure or manufacture of unitary devices formed of plural heads for more than one track {[G11B 5/33](#), [G11B 5/49](#) and subgroups take precedence; in thin film structure [G11B 5/31](#)}
- G11B 5/295 ... {Manufacture}
- G11B 5/31 .. using thin films {([G11B 5/1274](#), [G11B 5/1278](#), [G11B 5/1874](#), [G11B 5/1875](#), [G11B 5/33](#), [G11B 5/49](#) take precedence; magnetic thin film structures [H01F 10/00](#))}
- G11B 5/3103 ... {Structure or manufacture of integrated heads or heads mechanically assembled and electrically connected to a support or housing}
- G11B 5/3106 {where the integrated or assembled structure comprises means for conditioning against physical detrimental influence, e.g. wear, contamination ([G11B 5/3133](#) takes precedence)}
- G11B 5/3109 ... {Details ([G11B 5/3103](#) takes precedence)}
- G11B 5/3113 {for improving the magnetic domain structure or avoiding the formation or displacement of undesirable magnetic domains}
- G11B 5/3116 {Shaping of layers, poles or gaps for improving the form of the electrical signal transduced, e.g. for shielding, contour effect, equalizing, side flux fringing, cross talk reduction between heads or between heads and information tracks ([G11B 5/3113](#), [G11B 5/245](#) take precedence)}
- G11B 5/312 {for reducing flux leakage between the electrical coil layers and the magnetic cores or poles or between the magnetic cores or poles}
- G11B 5/3123 {by using special coil configurations or conductors}
- G11B 5/3126 {using superconductors}
- G11B 5/313 ... {Disposition of layers}
- G11B 5/3133 {including layers not usually being a part of the electromagnetic transducer structure and providing additional features, e.g. for improving heat radiation, reduction of power dissipation, adaptations for measurement or indication of gap depth or other properties of the structure ([G11B 5/3106](#) takes precedence)}
- G11B 5/3136 { for reducing the pole-tip-protrusion at the head transducing surface, e.g. caused by thermal expansion of dissimilar materials}
- G11B 5/314 {where the layers are extra layers normally not provided in the transducing structure, e.g. optical layers ([G11B 5/3196](#) takes precedence)}

G11B 5/3143	.....	{including additional layers for improving the electromagnetic transducing properties of the basic structure, e.g. for flux coupling, guiding or shielding (G11B 5/3116 , G11B 5/312 take precedence)}
G11B 5/3146	.....	{magnetic layers}
G11B 5/315	.....	{ Shield layers on both sides of the main pole, e.g. in perpendicular magnetic heads}
G11B 5/3153	.....	{including at least one magnetic thin film coupled by interfacing to the basic magnetic thin film structure}
G11B 5/3156	.....	{providing interaction by induced or exchange coupling}
G11B 5/3159	.....	{supraconductive layers}
G11B 5/3163	...	{Fabrication methods or processes specially adapted for a particular head structure, e.g. using base layers for electroplating, using functional layers for masking, using energy or particle beams for shaping the structure or modifying the properties of the basic layers}
G11B 5/3166	....	{Testing or indicating in relation thereto, e.g. before the fabrication is completed}
G11B 5/3169	....	{ Working or finishing the interfacing surface of heads, e.g. lapping of heads}
G11B 5/3173	....	{ Batch fabrication, i.e. producing a plurality of head structures in one batch}
G11B 5/3176	...	{Structure of heads comprising at least in the transducing gap regions two magnetic thin films disposed respectively at both sides of the gaps (G11B 5/2455 , G11B 5/265 take precedence; composite magnetic head structures, e.g. "Metal-In-Gap" heads are classified in G11B 5/127 or G11B 5/187 and subgroups)}
G11B 5/3179	....	{the films being mainly disposed in parallel planes}
G11B 5/3183	.....	{intersecting the gap plane, e.g. "horizontal head structure"}
G11B 5/3186	.....	{parallel to the gap plane, e.g. "vertical head structure"}
G11B 5/3189	...	{Testing}
G11B 5/3193	....	{of films or layers, e.g. continuity test}
G11B 5/3196	.....	{of thin magnetic films, e.g. functional testing of the transducing properties (G11B 5/455 takes precedence)}
G11B 5/325	..	Erasing heads using permanent magnets (general details therefor G11B 5/133 to G11B 5/255)
G11B 5/33	..	Structure or manufacture of flux-sensitive heads, {i.e. for reproduction only; Combination of such heads with means for recording or erasing only}{Single head using magnetic domains for scanning G11B 5/4946 ; multiple head for scanning G11B 5/4907 and subgroups}; general details therefor G11B 5/133 to G11B 5/255)
G11B 5/332	...	{ using thin films (G11B 5/372 , G11B 5/3903 take precedence)}
G11B 5/335	...	with saturated jig, e.g. for detecting second harmonic; balanced flux head
G11B 5/35	...	having vibrating elements
G11B 5/37	...	using galvano-magnetic devices, e.g. Hall-effect devices (G11B 5/39 takes precedence){using Hall or Hall-related effect, e.g. planar-Hall effect or pseudo-Hall effect}
G11B 5/372	....	{in magnetic thin films}
G11B 5/374	.....	{Integrated structures}
G11B 5/376	....	{in semi-conductors (G11B 5/372 takes precedence)}
G11B 5/378	.....	{Integrated structures}
G11B 5/39	...	using magneto-resistive devices {or effects}
G11B 5/3903	....	{ using magnetic thin film layers or their effects, the films being part of

		integrated structures}
G11B 5/3906	.....	{ Details related to the use of magnetic thin film layers or to their effects}
G11B 5/3909	.....	{ Arrangements using a magnetic tunnel junction}
G11B 5/3912	.....	{ Arrangements in which the active read-out elements are transducing in association with active magnetic shields, e.g. magnetically coupled shields (G11B 5/3916 takes precedence)}
G11B 5/3916	.....	{ Arrangements in which the active read-out elements are coupled to the magnetic flux of the track by at least one magnetic thin film flux guide}
G11B 5/3919	.....	{ the guide being interposed in the flux path}
G11B 5/3922	.....	{ the read-out elements being disposed in magnetic shunt relative to at least two parts of the flux guide structure}
G11B 5/3925	.....	{ the two parts being thin films}
G11B 5/3929	.....	{ Disposition of magnetic thin films not used for directly coupling magnetic flux from the track to the MR film or for shielding}
G11B 5/3932	.....	{ Magnetic biasing films}
G11B 5/3935	.....	{ Flux closure films not being part of the track flux guides}
G11B 5/3938	.....	{ the flux closure films being used for absorbing or reducing demagnetising or saturating fields}
G11B 5/3941	.....	{ the flux closure films being used for providing a closed magnetic circuit to the MR film}
G11B 5/3945	.....	{ Heads comprising more than one sensitive element}
G11B 5/3948	.....	{ the sensitive elements being active read-out elements}
G11B 5/3951	.....	{ the active elements being arranged on several parallel planes}
G11B 5/3954	.....	{ the active elements transducing on a single track}
G11B 5/3958	.....	{ the active elements being arranged in a single plane, e.g. "matrix" disposition}
G11B 5/3961	.....	{ disposed at an angle to the direction of the track or relative movement}
G11B 5/3964	.....	{ for transducing on a single track}
G11B 5/3967	.....	{ Composite structural arrangements of transducers, e.g. inductive write and magnetoresistive read (G11B 5/3906 takes precedence)}
G11B 5/397	.....	{ with a plurality of independent magnetoresistive active read-out elements for respectively transducing from selected components}
G11B 5/3974	.....	{ from the same information track, e.g. frequency bands}
G11B 5/3977	.....	{ from different information tracks}
G11B 5/398	.....	{ Specially shaped layers}
G11B 5/3983	.....	{ with current confined paths in the spacer layer}
G11B 5/3987	.....	{ with provision for closing the magnetic flux during operation}
G11B 5/399	.....	{ with intrinsic biasing, e.g. provided by equipotential strips}
G11B 5/3993	.....	{ in semi-conductors}
G11B 5/40	.	Protective measures on heads, e.g. against excessive temperature (G11B 5/31 takes precedence; protection against wear G11B 5/255){protective structure of the head: see under structures, e.g. G11B 5/3106 }
G11B 5/41	.	Cleaning of heads {of record carriers G11B 23/50 }

- G11B 5/455 . Arrangements for functional testing of heads [{\(testing of the manufacturing process G11B 5/127\)}](#); Measuring arrangements for heads [\(measuring electric or magnetic properties G01R; {measuring properties for shaping or assembling elements G11B 5/127}\)](#)
- G11B 5/4555 .. { by using a spin-stand, i.e. a spinning disc or simulator}
- G11B 5/465 . Arrangements for demagnetisation of heads [\(demagnetisation in general H01F 13/00\)](#)
- G11B 5/48 . Disposition or mounting of heads [{or head supports}](#) relative to record carriers [{mounting of head within housing G11B 5/105; arrangements of heads, e.g. for scanning the record carrier to increase the relative speed \(driving of both record carriers and head G11B 15/18; guiding record carriers G11B 15/60; head selecting circuits G11B 15/12\)}](#)
- G11B 5/4806 .. [{specially adapted for disk drive assemblies, e.g. assembly prior to operation, hard or flexible disk drives \(G11B 5/488 to G11B 5/54 take precedence\)}](#)
- G11B 5/4813 ... [{Mounting or aligning of arm assemblies, e.g. actuator arm supported by bearings, multiple arm assemblies, arm stacks or multiple heads on single arm \(G11B 5/484 takes precedence\)}](#)
- G11B 5/482 { Piezo-electric devices between head and arm e.g. for fine adjustment}
- G11B 5/4826 ... [{Mounting, aligning or attachment of the transducer head relative to the arm assembly, e.g. slider holding members, gimbals, adhesive \(G11B 5/484 takes precedence; details of head housings or structures G11B 5/10, G11B 5/127; adjustment relative to the record carrier G11B 5/56\)}](#)
- G11B 5/4833 ... [{Structure of the arm assembly, e.g. load beams, flexures, parts of the arm adapted for controlling vertical force on the head \(G11B 5/484 takes precedence\)}](#)
- G11B 5/484 ... [{Integrated arm assemblies, e.g. formed by material deposition or by etching from single piece of metal or by lamination of materials forming a single arm/suspension/head unit}](#)
- G11B 5/4846 ... { Constructional details of the electrical connection between arm and support}
- G11B 5/4853 ... { Constructional details of the electrical connection between head and arm}
- G11B 5/486 ... { with provision for mounting or arranging electrical conducting means or circuits on or along the arm assembly}
- G11B 5/4866 ... { the arm comprising an optical waveguide e.g. for thermally-assisted recording}
- G11B 5/4873 ... { the arm comprising piezoelectric or other actuators for adjustment of the arm}
- G11B 5/488 .. [{Disposition of heads \(G11B 5/49, G11B 5/52 take precedence\)}](#)
- G11B 5/4886 ... {relative to rotating disc}
- G11B 5/4893 ... {relative to moving tape}
- G11B 5/49 .. Fixed mounting [{or arrangements, e.g. one head per track}](#)
- G11B 5/4907 ... [{Details for scanning \(G11B 5/4969 takes precedence\)}](#)
- G11B 5/4915 { Structure of specially adapted heads [\(G11B 5/3906 takes precedence\)}](#)
- G11B 5/4923 {in which zones of the transducing part are being physically controllable}
- G11B 5/493 {Control of magnetic properties, e.g. saturation, anisotropy}
- G11B 5/4938 {of thin magnetic films}
- G11B 5/4946 {for formation or displacement of magnetic domains, e.g. walls, bubbles}
- G11B 5/4953 {part of the structure being mechanically or magnetically coupled to or decoupled from, the transducing part}

G11B 5/4961	....	{Circuits}
G11B 5/4969	...	{Details for track selection or addressing}
G11B 5/4976	....	{Disposition of heads, e.g. matrix arrangement}
G11B 5/4984	....	{ Structure of specially adapted switching heads (G11B 5/3958 takes precedence)}
G11B 5/4992	....	{Circuits}
G11B 5/50	..	Interchangeable mountings, e.g. for replacement of head without readjustment
G11B 5/52	..	with simultaneous movement of head and record carrier, e.g. rotation of head (G11B 5/588 takes precedence)
G11B 5/53	...	Disposition or mounting of heads on rotating support
G11B 5/531	....	{Disposition of more than one recording or reproducing head on support rotating cyclically around an axis}
G11B 5/532	.....	{Parallel to the direction of movement of the tape, e.g. for transversal scanning}
G11B 5/534	.....	{inclined relative to the direction of movement of the tape, e.g. for helicoidal scanning}
G11B 5/535	.....	{perpendicular to the direction of movement of the tape, e.g. for longitudinal scanning}
G11B 5/537	.....	{with all the heads disposed in a plane substantially parallel to the plane of the tape, e.g. for circular scanning}
G11B 5/538	....	{Disposition or mounting of pole pieces on rotating support (magnetic switching of fixed head arrangements G11B 5/49)}
G11B 5/54	..	with provision for moving the head into or out of its operative position or across tracks (G11B 5/58 takes precedence)
G11B 5/55	...	Track change, selection or acquisition by displacement of the head
G11B 5/5504	....	{across tape tracks}
G11B 5/5508	.....	{Control circuits therefor (G11B 5/5513 takes precedence)}
G11B 5/5513	....	{Specially adapted for transducing in both travelling directions of tape}
G11B 5/5517	.....	{Controlled by automatic tape drive reversing arrangement (reversing tape drive arrangements G11B 15/444)}
G11B 5/5521	....	{across disc tracks (spiral track following G11B 5/596)}

NOTE

For groups [G11B 5/5526](#) to [G11B 5/5582](#), see provisionally [G11B 5/5521](#) and [G11B 5/596](#)

G11B 5/5526	.....	{Control therefor; circuits, track configurations or relative disposition of servo-information transducers and servo-information tracks for control thereof (G11B 5/556 takes precedence)}
G11B 5/553	.....	{Details}
G11B 5/5534	.....	{Initialisation, calibration, e.g. cylinder "set-up"}
G11B 5/5539	.....	{ Skew adjustment, e.g. adjustment of the position of the first sector in each track with respect to the other tracks, for improving e.g. access performance}
G11B 5/5543	.....	{servo-format therefor}
G11B 5/5547	.....	{"Seek" control and circuits therefor (G11B 5/5556 takes precedence)}

G11B 5/5552	.....	{using fine positioning means for track acquisition separate from the coarse (e.g. track changing) positioning means}
G11B 5/5556	.....	{with track following after a "seek"}
G11B 5/556	.....	{control circuits therefor}
G11B 5/5565	.....	{system adaptation for compensation of variations of physical parameters, e.g. temperature}
G11B 5/5569	.....	{details of specially adapted mobile parts, e.g. electromechanical control devices (motors in general H02K)}
G11B 5/5573	.....	{ Details of the magnetic circuit e.g. of actuators}
G11B 5/5578	.....	{ Multiple actuators addressing the same disk e.g. to improve data rate or access rate}
G11B 5/5582	.....	{system adaptation for working during or after external perturbation, e.g. in the presence of a mechanical oscillation caused by a shock}
G11B 5/5586	.....	{ Minimising seek noise e.g. actuator noise}
G11B 5/5591	....	{across drum tracks}
G11B 5/5595	.....	{Control circuits therefor}
G11B 5/56	..	with provision for moving the head {support} for the purpose of adjusting the position of the head relative to the record carrier, e.g. manual adjustment for azimuth correction or track centering (G11B 5/52 , G11B 5/54 , G11B 5/58 take precedence)
G11B 5/58	..	with provision for moving the head for the purpose of maintaining alignment of the head relative to the record carrier during transducing operation, e.g. to compensate for surface irregularities of the latter or for track following {spacing means incorporated in the head structure G11B 5/187 , G11B 5/255 , G11B 5/3106 }
G11B 5/581	...	{maintaining desired contact or spacing by direct interaction of forces generated between heads or supports thereof and record carriers or supports thereof, e.g. attraction-repulsion interactions}
G11B 5/582	....	{interactions in a magnetic field}
G11B 5/583	.....	{using repulsion generated by superconductors in a magnetic field, e.g. by "Meissner effect"}
G11B 5/584	...	for track following on tapes
G11B 5/588	....	by controlling the position of the rotating heads (by controlling the speed of the record carrier G11B 15/467 ; by controlling speed of the heads G11B 15/473 ; {by moving the transducing part of the head relative to the headwheel, in the direction of the scanning movement G11B 15/1841 })
G11B 5/592	.....	using bimorph elements supporting the heads {see provisional also G11B 5/588 }
G11B 5/5921	.....	{using auxiliary signals, e.g. pilot signals}
G11B 5/5922	.....	{superimposed on the main signal}
G11B 5/5923	.....	{recorded in horizontal suppression interval of video frame}
G11B 5/5925	.....	{recorded in vertical suppression interval of video frame}
G11B 5/5926	.....	{recorded in separate tracks, e.g. servo tracks}
G11B 5/5927	.....	{Helicoidal tracks}
G11B 5/5928	.....	{Longitudinal tracks}
G11B 5/596	...	for track following on disks ({ G11B 5/5526 , G11B 5/5552 , G11B 5/5565 , G11B 5/5582 take precedence})

NOTE

For groups [G11B 5/59605](#) to [G11B 5/59633](#), see provisionally [G11B 5/5521](#) and [G11B 5/596](#)

G11B 5/59605	....	{Circuits (G11B 5/59627 to G11B 5/59688 take precedence)}
G11B 5/59611	.....	{Detection or processing of peak/envelop signals}
G11B 5/59616	.....	{Synchronisation; Clocking (G11B 5/59622 takes precedence)}
G11B 5/59622	.....	{Gain control; Filters}
G11B 5/59627	....	{Aligning for runout, eccentricity or offset compensation (G11B 5/5534 , G11B 5/59677 , G11B 5/59688 take precedence)}
G11B 5/59633	....	{Servo formatting (G11B 5/59627 , G11B 5/59677 , G11B 5/59683 , G11B 5/59688 take precedence)}
G11B 5/59638	.....	{ Servo formatting apparatuses, e.g. servo-writers}
G11B 5/59644	.....	{Acquisition or selection of servo format from a system reference (after track seek G11B 5/5556)}
G11B 5/5965	.....	{Embedded servo format (G11B 5/59655 takes precedence)}
G11B 5/59655	.....	{Sector, sample or burst servo format}
G11B 5/59661	.....	{ Spiral servo format}
G11B 5/59666	.....	{ Self servo writing}
G11B 5/59672	.....	{ Servo re-writing, e.g. for the correction of offsets or 'fading' of servo marks}
G11B 5/59677	....	{with optical servo tracking}
G11B 5/59683	....	{for magnetoresistive heads}
G11B 5/59688	....	{Servo signal format patterns or signal processing thereof, e.g. dual, tri, quad, burst signal patterns}
G11B 5/59694	....	{ System adaptation for working during or after external perturbation, e.g. in the presence of a mechanical oscillation caused by a shock}
G11B 5/60	...	Fluid-dynamic spacing of heads form record-carriers
G11B 5/6005	....	{ Specially adapted for spacing from a rotating disc using a fluid cushion}
G11B 5/6011	.....	{ Control of flying height}
G11B 5/6017	.....	{ using capacitive measurement}
G11B 5/6023	.....	{ using inductive measurement}
G11B 5/6029	.....	{ Measurement using values derived from the data signal read from the disk}
G11B 5/6035	.....	{ using electrostatic forces}
G11B 5/6041	.....	{ using magnetic forces}
G11B 5/6047	.....	{ using magnetostrictive means}
G11B 5/6052	.....	{ using optical means}
G11B 5/6058	.....	{ using piezoelectric means}
G11B 5/6064	.....	{ using air pressure}
G11B 5/607	.....	{ using thermal means}
G11B 5/6076	.....	{ Detecting head-disk contact}
G11B 5/6082	.....	{ Design of the air bearing surface}
G11B 5/6088	.....	{ Optical waveguide in or on flying head}

- G11B 5/6094 { Preventing or discharging electrostatic charge build-up on the flying head}
- G11B 5/62 . Record carriers characterised by the selection of the material ([selection of magnetic materials in general H01F 1/00](#); thin magnetic films [H01F 10/00](#))

NOTE

This group does not cover compositions, materials or processes, per se, which are covered by the relevant subclasses of section B or C.

- G11B 5/627 . . of leaders for magnetic tapes e.g. non-magnetic strips on the tapes or for connection ([constructional features G11B 23/26](#))
- G11B 5/633 . . of cinematographic films or slides with integral magnetic track
- G11B 5/64 . . Comprising only the magnetic material without bonding agent
- G11B 5/642 . . . { self supporting magnetic material, e.g. magnetisable wires}
- G11B 5/645 . . . {characterised by the film material}
- G11B 5/647 {containing Fe or Ni (**G11B 5/64D3 takes precedence**)}
- G11B 5/65 . . . Characterized by its composition ([G11B 5/66 takes precedence](#))
- G11B 5/653 { containing Fe or Ni ([G11B 5/656 takes precedence](#))}
- G11B 5/656 { containing Co}
- G11B 5/66 . . . consisting of several layers
- G11B 5/667 including a soft magnetic layer
- G11B 5/68 . . comprising one or more layers of magnetisable material homogeneously mixed with a bonding agent
- G11B 5/70 . . . on a base layer
- G11B 5/7006 {comprising a magnetic layer on both sides covered with non-magnetic material}
- G11B 5/7013 {characterised by the dispersing agent}
- G11B 5/702 characterised by the bonding agent
- G11B 5/7021 {containing a polyurethane or a polyisocyanate}
- G11B 5/7022 {containing mixtures of polyurethanes or polyisocyanates with other polymers}
- G11B 5/7023 {containing polyesters, polyethers, silicones, polyvinyl resins, polyacrylresins or epoxy resins ([G11B 5/7022 takes precedence](#))}
- G11B 5/7025 {containing cellulosic derivates ([G11B 5/7022 takes precedence](#))}
- G11B 5/7026 {Radiation curable polymers}
- G11B 5/7027 {Graft polymers}
- G11B 5/7028 {Additives, e.g. crosslinking agents}
- G11B 5/706 characterised by the composition of the magnetic material
- G11B 5/70605 {metals or alloys}
- G11B 5/7061 {with a non-magnetic core}
- G11B 5/70615 {containing Fe metal or alloys ([G11B 5/70621 takes precedence](#))}
- G11B 5/70621 {containing Co metal or alloys}
- G11B 5/70626 {containing non-metallic substances}
- G11B 5/70631 {with a non-magnetic core}

G11B 5/70636	.....	{CrO ₂ }
G11B 5/70642	.....	{iron oxides}
G11B 5/70647	.....	{with a skin (G11B 5/70657 takes precedence)}
G11B 5/70652	.....	{gamma - Fe ₂ O ₃ }
G11B 5/70657	.....	{with a skin}
G11B 5/70663	.....	{Preparation processes specially adapted therefor, e.g. using stabilising agents (G11B 5/70668 and G11B 5/70673 take precedence)}
G11B 5/70668	.....	{containing a dopant}
G11B 5/70673	.....	{containing Co}
G11B 5/70678	.....	{Ferrites}
G11B 5/70684	.....	{Ferro-ferrioxides}
G11B 5/70689	.....	{Magnetite}
G11B 5/70694	.....	{Non-stoichiometric ferro-ferrioxides, e.g. berthollide}
G11B 5/708	....	characterised by addition of non-magnetic particles to the layer
G11B 5/7085	.....	{non-magnetic abrasive particles}
G11B 5/71	....	characterised by the lubricant
G11B 5/712	....	characterised by the surface treatment or coating of magnetic particles
G11B 5/714	....	characterised by the dimension of the magnetic particles
G11B 5/716	....	characterised by two or more magnetic layers
G11B 5/718	.....	at least one on each side of the base layer
G11B 5/72	..	Protective coatings, e.g. antistatic, antifriction
G11B 5/722	...	{containing an anticorrosive material}
G11B 5/725	...	containing a lubricant
G11B 5/73	..	Base layers, { i.e. all layers lying under the first magnetic recording layer}
G11B 5/7305	...	{with bonding agent in the material}
G11B 5/731	...	{without bonding agent in the material}
G11B 5/7315	....	{ substrates}
G11B 5/732	....	{ seed layers}
G11B 5/7325	....	{ layers between substrate and first magnetic recording layer other than soft magnetic layers and seed layers}
G11B 5/733	...	characterised by the addition of non-magnetic particles
G11B 5/735	...	characterised by the back layer
G11B 5/738	...	characterised by the intermediate layer
G11B 5/74	.	Record carriers characterised by the form, e.g. sheet shaped to wrap around a drum
G11B 5/743	..	{ Patterned record carriers, wherein the magnetic recording layer is patterned into magnetic isolated data islands, e.g. discrete tracks}
G11B 5/746	...	{ Bit Patterned record carriers, wherein each magnetic isolated data island corresponds to a bit}
G11B 5/76	..	Drum carriers
G11B 5/78	..	Tape carriers
G11B 5/80	..	Card carriers
G11B 5/82	..	Disc carriers

- G11B 5/825 . . . {flexible discs}
- G11B 5/84 . . Processes or apparatus specially adapted for manufacturing record carriers (processes involving a single technical art, in general, and for which provision exists elsewhere, see the relevant places, e.g. [B29](#), [C23](#), [C25D](#); apparatus or processes for applying homogeneous magnetic films to substrates in general [H01F 41/14](#))
- G11B 5/8404 . . {manufacturing base layers}
- G11B 5/8408 . . {protecting the magnetic layer}
- G11B 5/8412 . . {treatment by ultrasonics}
- G11B 5/8416 . . {coating a support with a magnetic layer by precipitation}
- G11B 5/842 . . Coating a support with a liquid magnetic dispersion
- G11B 5/845 . . . in a magnetic field
- G11B 5/848 . . Coating a support with a magnetic layer by extrusion
- G11B 5/85 . . Coating a support with a magnetic layer by vapour deposition
- G11B 5/851 . . Coating a support with a magnetic layer by sputtering
- G11B 5/852 . . Orientation in a magnetic field ([G11B 5/845](#) takes precedence)
- G11B 5/855 . . Coating only part of a support with a magnetic layer
- G11B 5/858 . . Producing a magnetic layer by electro-plating or electroless plating
- G11B 5/86 . . Re-recording, i.e. transcribing information from one magnetisable record carrier on to one or more similar or dissimilar record carriers {(by varying the order of the information [G11B 27/029](#), [G11B 27/036](#))}
- G11B 5/865 . . {by contact "printing"}
- G11B 7/00** **Recording or reproducing by optical means, e.g. recording using a thermal beam of optical radiation {by modifying optical properties or the physical structure}, reproducing using an optical beam at lower power {by sensing optical properties}; Record carriers therefor; ([G11B 11/00](#), [G11B 13/00](#) take precedence)**
- G11B 7/002 . . Recording, reproducing or erasing systems characterised by the shape { or form} of the carrier
- G11B 7/0025 . . with cylinders or cylinder-like carriers {or cylindrical sections or flat carriers loaded onto a cylindrical surface}, e.g. truncated cones
- G11B 7/003 . . with webs {, filaments or wires}, e.g. belts, spooled tapes or films of quasi-infinite extent
- G11B 7/0031 . . . {using a rotating head, e.g. helicoidal recording}
- G11B 7/0032 . . . {for moving-picture soundtracks, i.e. cinema (cameras or projectors with sound recording or reproducing means [G03B 31/02](#))}
- G11B 7/0033 . . with cards {or other card-like flat carriers, e.g. flat sheets of optical film}
- G11B 7/0037 . . with discs
- G11B 7/00375 . . . {arrangements for detection of physical defects, e.g. of recording layer}
- G11B 7/004 . . Recording, reproducing or erasing methods; Read, write or erase circuits therefor {(magneto-optical systems [G11B 11/105](#))}
- G11B 7/0045 . . Recording ([G11B 7/006](#). [G11B 7/0065](#) take precedence)
- G11B 7/00451 . . . {involving ablation of the recording layer}
- G11B 7/00452 . . . {involving bubble or bump forming}

- G11B 7/00453 ... {involving spectral or photochemical hole burning}
- G11B 7/00454 ... {involving phase-change effects}
- G11B 7/00455 ... {involving reflectivity, absorption or colour changes}
- G11B 7/00456 ... { Recording strategies, e.g. pulse sequences ([G11B 7/0062](#) takes precedence)}
- G11B 7/00458 ... { Verification, i.e. checking data during or after recording}

WARNING

[G11B 7/0045](#) and [G11B 7/005](#)

- G11B 7/005 .. Reproducing ([G11B 7/0065](#) takes precedence)
- G11B 7/0051 ... {involving phase depth effects}
- G11B 7/0052 ... {involving reflectivity, absorption or colour changes}
- G11B 7/0053 ... { Reproducing non-user data, e.g. wobbled address, prepits, BCA}

WARNING

[G11B 7/005](#)

- G11B 7/0055 .. Erasing ([G11B 7/006](#), [G11B 7/0065](#) take precedence)
- G11B 7/00552 ... {involving colour change media}
- G11B 7/00555 ... {involving liquid crystal media}
- G11B 7/00557 ... {involving phase-change media}
- G11B 7/006 .. Overwriting ([G11B 7/0065](#) takes precedence)
- G11B 7/0062 ... { Overwriting strategies, e.g. recording pulse sequences with erasing level used for phase-change media}
- G11B 7/0065 .. Recording, reproducing or erasing by using optical interference patterns, e.g. holograms
- G11B 7/007 . Arrangement of the information on the record carrier, e.g. form of tracks, { actual track shape, e.g. wobbled, or cross-section, e.g. v-shaped; Sequential information structures, e.g. sectoring or header formats within a track}
- G11B 7/00718 .. {Groove and land recording, i.e. user data recorded both in the grooves and on the lands}
- G11B 7/00736 .. { Auxiliary data, e.g. lead-in, lead-out, Power Calibration Area (PCA), Burst Cutting Area (BCA), control information (sector headers or addresses in prepits [G11B 7/007S](#); address data in track wobble [G11B 7/007T](#))}

WARNING

[G11B 7/007](#) and [G11B 7/007S](#)

- G11B 7/00745 .. {Sectoring or header formats within a track (formats in general [G11B 20/12](#))}
- G11B 7/00772 .. { on record carriers storing information in the form of optical interference patterns, e.g. holograms}
- G11B 7/00781 ... { Auxiliary information, e.g. index marks, address marks, pre-pits, gray codes}
- G11B 7/0079 .. { Zoned data area, e.g. having different data structures or formats for the user data within data layer, Zone Constant Linear Velocity (ZCLV), Zone Constant Angular Velocity (ZCAV), carriers with RAM and ROM areas}

WARNINGG11B 7/007

- G11B 7/013 .. for discrete information, i.e. where each information unit is stored at a distinct discrete location {e.g. digital information formats within a data block or sector}
- G11B 7/08 . Disposition or mounting of heads or light sources relatively to record carriers
- G11B 7/081 .. {for time base error correction by moving the light beam}
- G11B 7/082 .. { Aligning the head or the light source relative to the record carrier otherwise than during transducing, e.g. adjusting tilt set screw during assembly of head}

WARNINGG11B 7/22

- G11B 7/083 .. { relative to record carriers storing information in the form of optical interference patterns, e.g. holograms}
- G11B 7/085 .. with provision for moving the light beam into, or out of, its operative position {or across tracks, otherwise than during the transducing operation, e.g. for adjustment or preliminary positioning or track change or selection}{modulating by information signals [G11B 7/12](#); controlling the position or direction of light beams, i.e. deflection, [G02F 1/29](#)}
- G11B 7/08505 ... {Methods for track change, selection or preliminary positioning by moving the head}
- G11B 7/08511 {with focus pull-in only}
- G11B 7/08517 {with tracking pull-in only}
- G11B 7/08523 {with both tracking and focusing pull-in}
- G11B 7/08529 {Methods and circuits to control the velocity of the head as it traverses the tracks}
- G11B 7/08535 {to maintain constant velocity during the traverse}
- G11B 7/08541 {involving track counting to determine position}
- G11B 7/08547 ... {Arrangements for positioning the light beam only without moving the head, e.g. using static electro-optical elements}
- G11B 7/08552 {using electro-optical elements}
- G11B 7/08558 {using acousto-optical elements}
- G11B 7/08564 {using galvanomirrors}
- G11B 7/0857 ... {Arrangements for mechanically moving the whole head}
- G11B 7/08576 {Swinging-arm positioners}
- G11B 7/08582 {Sled-type positioners}
- G11B 7/08588 {with position sensing by means of an auxiliary system using an external scale}
- G11B 7/08594 {to access both sides of the disc with the same head assembly}
- G11B 7/09 .. with provision for moving the light beam or focus plane for the purpose of maintaining alignment of the light beam relative to the record carrier during transducing operation, e.g. to compensate for surface irregularities of the latter or for track following

- G11B 7/0901 ... { for track following only ([G11B 7/0925](#), [G11B 7/094](#), [G11B 7/0941](#), [G11B 7/0943](#), [G11B 7/0945](#), [G11B 7/0946](#), [G11B 7/0948](#) take precedence)}
- G11B 7/0903 {Multi-beam tracking systems}
- G11B 7/0904 {Dithered tracking systems}
- G11B 7/0906 {Differential phase difference systems}
- G11B 7/0908 ... {for focusing only ([G11B 7/0925](#), [G11B 7/094](#), [G11B 7/0941](#), [G11B 7/0943](#), [G11B 7/0945](#), [G11B 7/0946](#), [G11B 7/0948](#) take precedence)}
- G11B 7/0909 {by astigmatic methods}
- G11B 7/0911 {by far-field method}
- G11B 7/0912 {by push-pull method}
- G11B 7/0914 {by non-optical methods, e.g. capacitive}
- G11B 7/0916 {Foucault or knife-edge methods}
- G11B 7/0917 {Focus-error methods other than those covered by [G11B 7/0909](#) to [G11B 7/0916](#)}
- G11B 7/0925 ... {Electromechanical actuators for lens positioning ([G11B 7/0857](#) takes precedence)}
- G11B 7/0927 {for focusing only ([G11B 7/0937](#) takes precedence)}
- G11B 7/0929 {for tracking only ([G11B 7/0937](#) takes precedence)}
- G11B 7/093 ... {for focusing and tracking ([G11B 7/0932](#) to [G11B 7/0937](#) take precedence)}
- G11B 7/0932 {Details of sprung supports}
- G11B 7/0933 {Details of stationary parts}
- G11B 7/0935 {Details of the moving parts}
- G11B 7/0937 {Piezo-electric actuators}
- G11B 7/0938 ... {servo format, e.g. guide tracks, pilot signals}
- G11B 7/094 ... {Methods and circuits for servo offset compensation}
- G11B 7/0941 ... {Methods and circuits for servo gain or phase compensation during operation (for initialising servos [G11B 7/0945](#))}
- G11B 7/0943 ... {Methods and circuits for performing mathematical operations on individual detector segment outputs}
- G11B 7/0945 ... {Methods for initialising servos, start-up sequences}
- G11B 7/0946 ... {specially adapted for operation during external perturbations not related to the carrier or servo beam, e.g. vibration}
- G11B 7/0948 ... {specially adapted for detection and avoidance or compensation of imperfections on the carrier, e.g. dust, scratches, dropouts ([G11B 7/095](#) takes precedence)}
- G11B 7/095 ... specially adapted for discs, e.g. for compensation of eccentricity or wobble
- G11B 7/0953 {to compensate for eccentricity of the disc or disc tracks}
- G11B 7/0956 {to compensate for tilt, skew, warp or inclination of the disc, i.e. maintain the optical axis at right angles to the disc}
- G11B 7/10 .. Interchangeable mountings, e.g. for replacement of head without readjustment {including interchangeable electrical adjuster boards}
- G11B 7/12 . Heads, e.g. forming of the optical beam spot or modulation of the optical beam (disposition or mounting of head elements within housing or with provision for moving of light source, optical beam or detector, irrelevant to the transducing method [G11B 7/08](#); { modulating lasers [H01S 3/10](#); controlling the intensity, colour, phase, polarisation or direction of light beams arriving from an independent light source, e.g.

- switching gating or modulating [G02F 1/00](#))
- G11B 7/1201 .. {Protecting the head, e.g. against dust or impact with the record carrier}
 - G11B 7/1203 .. {Flying-type heads, e.g. analogous to Winchester type in magnetic recording}
 - G11B 7/1205 .. {Integrated head arrangements, e.g. source and detectors mounted on the same substrate}
 - G11B 7/1206 ... {where the integrated structure includes a waveguide}
 - G11B 7/1208 {where the waveguide includes means for electro- or acousto-optical deflection (electro- or acousto-optical deflection in general [G02F 1/29](#), [G02F 1/33](#))}
 - G11B 7/121 .. Protecting the head, e.g. against dust or impact with the record carrier
 - G11B 7/122 .. Flying-type heads, e.g. analogous to Winchester type in magnetic recording
 - G11B 7/123 .. Integrated head arrangements, e.g. with source and detectors mounted on the same substrate
 - G11B 7/124 ... the integrated head arrangements including waveguides
 - G11B 7/1245 the waveguides including means for electro-optical or acousto-optical deflection {(electro- or acousto-optical deflection in general [G02F 1/29](#), [G02F 1/33](#))}
 - G11B 7/125 .. Optical beam sources therefor, e.g. laser control circuitry specially adapted for optical storage devices; Modulators, e.g. means for controlling the size or intensity of optical spots or optical traces {(electro-, magneto-, or acousto-optical modulators [G02F 1/00](#); optical diaphragms [G03B 9/02](#))}

WARNING

For all subgroups of [G11B 7/125](#), see also provisional [G11B 7/125](#)

- G11B 7/126 ... Circuits, methods or arrangements for laser control or stabilisation
- G11B 7/1263 Power control during transducing, e.g. by monitoring
- G11B 7/1267 Power calibration
- G11B 7/127 ... Lasers; Multiple laser arrays {(lasers per se H01S)}
- G11B 7/1275 Two or more lasers having different wavelengths
- G11B 7/128 ... Modulators ([G11B 7/1245](#) takes precedence)
- G11B 7/13 .. Optical detectors therefor {(optical detectors per se G01J; demodulating light, transferring the modulation of modulated light, frequency changing of light [G02F 2/00](#))}

WARNING

For all subgroups of [G11B 7/13](#), see provisional also [G11B 7/13](#)

- G11B 7/131 ... Arrangement of detectors in a multiple array
- G11B 7/133 ... Shape of individual detector elements
- G11B 7/135 .. Means for guiding the beam from the source to the record carrier or from the record carrier to the detector

WARNING

For all subgroups of [G11B 7/135](#), see provisional also [G11B 7/135](#)

- G11B 7/1353 . . . Diffractive elements, e.g. holograms or gratings {(diffraction gratings per se [G02B 5/18](#); holograms per se [G02B 5/32](#); grating systems [G02B 27/44](#)}
- G11B 7/1356 . . . Double or multiple prisms, i.e. having two or more prisms in cooperation
- G11B 7/1359 . . . Single prisms
- G11B 7/1362 . . . Mirrors
- G11B 7/1365 . . . Separate or integrated refractive elements, e.g. wave plates

WARNING

- G11B 7/1367 Stepped phase plates
- G11B 7/1369 Active plates, e.g. liquid crystal panels or electrostrictive elements
- G11B 7/1372 . . . Lenses
- G11B 7/1374 Objective lenses {(optical objectives per se [G02B 9/00](#)}
- G11B 7/1376 Collimator lenses {(collimators per se [G02B 27/30](#)}
- G11B 7/1378 Separate aberration correction lenses; Cylindrical lenses to generate astigmatism; Beam expanders
- G11B 7/1381 . . . Non-lens elements for altering the properties of the beam, e.g. knife edges, slits, filters or stops ([G11B 7/1353-G11B 7/1369](#) take precedence)
- G11B 7/1384 . . . Fibre optics
- G11B 7/1387 . . . using the near-field effect
- G11B 7/139 . . . Numerical aperture control means
- G11B 7/1392 . . . Means for controlling the beam wavefront, e.g. for correction of aberration {(optical systems for aberration correction per se [G02B 27/00](#))}
- G11B 7/13922 { passive}
- G11B 7/13925 { active, e.g. controlled by electrical or mechanical means}
- G11B 7/13927 { during transducing, e.g. to correct for variation of the spherical aberration due to disc tilt or irregularities in the cover layer thickness}
- G11B 7/1395 . . . Beam splitters or combiners ([G11B 7/1353](#), [G11B 7/1356](#) take precedence){(beam splitting or combining per se [G02B 27/10](#))}

WARNING[G11B 7/1359-G11B 7/1381](#)

- G11B 7/1398 . . . Means for shaping the cross-section of the beam, e.g. into circular or elliptical cross-section
- G11B 7/14 . . specially adapted to record on, or to reproduce from, more than one track simultaneously
- G11B 7/22 . . Apparatus or processes for the manufacture of optical heads, e.g. assembly
- G11B 7/24 . Record carriers characterised by shape, structure or physical properties, or by the selection of the material (characterised by the arrangement of information on the carrier [G11B 7/007](#))
- G11B 7/24003 . . Shapes of record carriers other than disk shape
- G11B 7/24006 . . . Cylindrical or shaft-shaped
- G11B 7/24009 . . . Tapes, long films or long sheets
- G11B 7/24012 . . . Optical cards

- G11B 7/24015 .. Air-sandwiched disks
- NOTE**
- When classifying in this group, classification is also made in group [G11B 7/2403](#) if the subject matter disclosed in the context of an air-sandwiched disk is of more general application
- G11B 7/24018 .. Laminated disks ([G11B 7/24015](#) takes precedence)
- NOTE**
- When classifying in this group, classification is also made in group [G11B 7/2403](#) if the subject matter disclosed in the context of a laminated disk is of more general application
- G11B 7/24021 ... provided with a special shape or structure for centering or eccentricity prevention, e.g. alignment
- G11B 7/24024 ... Adhesion or bonding, e.g. specific adhesive layers
- G11B 7/24027 ... Layers; Shape, structure or physical properties thereof ([G11B 7/24021](#), [G11B 7/24024](#) take precedence)
- G11B 7/2403 .. Layers; Shape, structure or physical properties thereof
- G11B 7/24033 ... Electrode layers
- G11B 7/24035 ... Recording layers ([substrates also used as recording layers G11B 7/24047](#))
- G11B 7/24038 Multiple laminated recording layers
- G11B 7/24041 with different recording characteristics
- G11B 7/24044 for storing optical interference patterns, e.g. holograms; for storing data in three dimensions, e.g. volume storage ([G11B 7/24038](#) takes precedence)
- G11B 7/24047 ... Substrates
- G11B 7/2405 being also used as track layers of pre-formatted layers ([tracks or pits G11B 7/2407](#))
- G11B 7/24053 ... Protective topcoat layers lying opposite to the light entrance side, e.g. layers for preventing electrostatic charging
- G11B 7/24056 ... Light transmission layers lying on the light entrance side and being thinner than the substrate, e.g. specially adapted for Blu-ray(R) disks
- G11B 7/24059 specially adapted for near-field recording or reproduction
- G11B 7/24062 ... Reflective layers
- G11B 7/24065 ... Layers assisting in recording or reproduction below the optical diffraction limit, e.g. non-linear optical layers or structures ([cover layers for near-field media G11B 7/24059](#))
- G11B 7/24067 ... Combinations of two or more layers with specific interrelation
- G11B 7/2407 .. Tracks or pits; Shape, structure or physical properties thereof ([layout of tracks or pits used as the identification information G11B 7/007](#))
- G11B 7/24073 ... Tracks
- G11B 7/24076 Cross sectional shape in the radial direction of a disk, e.g. asymmetrical cross sectional shape
- G11B 7/24079 Width or depth ([G11B 7/24076](#) takes precedence)
- G11B 7/24082 Meandering
- G11B 7/24085 ... Pits

- G11B 7/24088 for storing more than two values, i.e. multi-valued recording for data or prepits
- G11B 7/24091 Combinations of pits and tracks with specific interrelation
- G11B 7/24094 Indication parts or information parts for identification
- G11B 7/24097 Structures for detection, control, recording operation or replay operation; Special shapes or structures for centering or eccentricity prevention ([within laminated disks G11B 7/24021](#)); Arrangements for testing, inspecting or evaluating; Containers, cartridges or cassettes

NOTE

When classifying in this group, classification is also made in group [G11B 23/00](#) if the subject matter disclosed in the context of an optical record carrier is of more general application

- G11B 7/241 characterised by the selection of the material
- G11B 7/242 of recording layers
- G11B 7/243 comprising inorganic materials only, e.g. ablative layers
- G11B 7/2433 Metals or elements of groups IIIA, IVA, VA or VIA of the Periodic System, e.g. B, Si, Ge, As, Sb, Bi, Se or Te
- G11B 7/2437 Non-metallic elements
- G11B 7/244 comprising organic materials only
- G11B 7/245 containing a polymeric component
- G11B 7/246 containing dyes
- G11B 7/2463 azulene
- G11B 7/2467 azo-dyes
- G11B 7/247 methine or polymethine dyes
- G11B 7/2472 cyanine
- G11B 7/2475 merocyanine
- G11B 7/2478 oxonol
- G11B 7/248 porphines; azaporphines, e.g. phthalocyanines
- G11B 7/249 containing organometallic compounds ([G11B 7/246 takes precedence](#))
- G11B 7/2492 neutral compounds
- G11B 7/2495 as anions
- G11B 7/2498 as cations
- G11B 7/25 containing liquid crystals
- G11B 7/251 comprising inorganic materials dispersed in an organic matrix
- G11B 7/252 of layers other than recording layers

NOTE

In group [G11B 7/252](#), multi-aspect classification is applied, so that if subject matter is characterised by aspects covered by more than one of its subgroups, the subject matter should be classified in each of those subgroups.

- G11B 7/253 of substrates
- G11B 7/2531 comprising glass

- G11B 7/2532 comprising metals
- G11B 7/2533 comprising resins
- G11B 7/2534 polycarbonates [PC]
- G11B 7/2535 polyesters, e.g. PET, PETG or PEN
- G11B 7/2536 polystyrene [PS]
- G11B 7/2537 epoxy resins
- G11B 7/2538 polycycloolefins [PCO]
- G11B 7/2539 biodegradable polymers, e.g. cellulose
- G11B 7/254 of protective topcoat layers
- G11B 7/2542 consisting essentially of organic resins
- G11B 7/2545 containing inorganic fillers, e.g. particles or fibres
- G11B 7/2548 consisting essentially of inorganic materials
- G11B 7/256 of layers improving adhesion between layers
- G11B 7/257 of layers having properties involved in recording or reproduction, e.g. optical interference layers or sensitising layers or dielectric layers, which are protecting the recording layers
- G11B 7/2572 consisting essentially of organic materials
- G11B 7/2575 resins
- G11B 7/2578 consisting essentially of inorganic materials
- G11B 7/258 of reflective layers
- G11B 7/2585 based on aluminium
- G11B 7/259 based on silver
- G11B 7/2595 based on gold
- G11B 7/26 .. Apparatus or processes specially adapted for the manufacture of record carriers (processes involving a single technical art and for which provision exists elsewhere, see the relevant class, e.g. [B29, G03](#)){manufacture of intermediate mediums, e.g. matrixes for processing [G11B 23/0057](#)}
- G11B 7/261 ... {Preparing a master, e.g. exposing photoresist, electroforming}
- G11B 7/263 ... {Preparing and using a stamper, e.g. pressing or injection molding substrates (production of optical record carriers, e.g. optical discs [B29D 17/005](#))}
- G11B 7/265 ... { Apparatus for the mass production of optical record carriers, e.g. complete production stations, transport systems}
- WARNING**
- [G11B 7/26](#)
- G11B 7/266 ... { Sputtering or spin-coating layers (sputtering in general [C23C 14/24](#); spin-coating in general [B05D 1/005](#))}
- WARNING**
- [G11B 7/26](#)
- G11B 7/268 ... { Post-production operations, e.g. initialising phase-change recording layers, checking for defects (investigating the presence of flaws or contamination in optical discs [G01N 21/95B](#))}

WARNINGG11B 7/26

- G11B 7/28 . Re-recording, i.e. transcribing information from one optical record carrier on to one or more similar or dissimilar record carriers
- G11B 9/00** **Recording or reproducing using a method not covered by one of the main groups G11B 3/00 to G11B 7/00; Record carriers therefor (G11B 11/00 takes precedence){ driving or moving of heads G11B 21/02}**
- G11B 9/02 . using ferroelectric record carriers; Record carriers therefor
- G11B 9/04 . using record carriers having variable electric resistance; Record carriers therefor
- G11B 9/06 . using record carriers having variable electrical capacitance; Record carriers therefor (G11B 9/02 takes precedence)
- G11B 9/061 .. {Record carriers characterised by their structure or form or by the selection of the material; Apparatus or processes specially adapted for the manufacture of record carriers (processes involving a single technical art and for which provision exists elsewhere, see the relevant class, e.g. B05D, F16N, C08L)}
- G11B 9/062 ... {characterised by the form, e.g. comprising mechanical protection elements}
- G11B 9/063 ... {characterised by the selection of the material}
- G11B 9/065 {Additional layers for lubrication, wear protection or elimination of electrostatic charges of the interface between record carrier and head (G11B 9/066, G11B 9/067 and G11BR4R take precedence)}
- G11B 9/066 {Electrically conductive layers (G11B 9/068 takes precedence)}
- G11B 9/067 {Dielectric layers; Processes for providing electrical conductivity to them (G11B 9/068 takes precedence)}
- G11B 9/068 {Moulding resin compositions}
- G11B 9/07 .. Heads for reproducing capacitive information
- G11B 9/075 ... {using mechanical contact with record carrier, e.g. by stylus}
- G11B 9/08 . using electrostatic charge injection; Record carriers therefor
- G11B 9/10 . using electron beam; Record carriers therefor (G11B 9/08 takes precedence){see provisional also G11B 11/03}
- G11B 9/12 . using near-field interactions; Record carriers therefor
- G11B 9/14 .. using microscopic probe means { , i.e. recording or reproducing by means directly associated with the tip of a microscopic electrical probe as used in Scanning Tunneling Microscopy [STM] or Atomic Force Microscopy [AFM] for inducing physical or electrical perturbations in a recording medium; Record carriers or media specially adapted for such transducing of information (marking using electrical current B41M 5/20; measuring roughness or irregularity of surfaces G01B 7/34; details of scanning-probe microscopes G01Q)}
- G11B 9/1409 ... { Heads}
- G11B 9/1418 ... { Disposition or mounting of heads or record carriers (G11B 17/00 and G11B 19/00 take precedence)}

- G11B 9/1427 { with provision for moving the heads or record carriers relatively to each other or for access to indexed parts without effectively imparting a relative movement}
- G11B 9/1436 { with provision for moving the heads or record carriers relatively to each other}
- G11B 9/1445 { switching at least one head in operating function; Controlling the relative spacing to keep the head operative, e.g. for allowing a tunnel current flow}
- G11B 9/1454 { Positioning the head or record carrier into or out of operative position or across information tracks; Alignment of the head relative to the surface of the record carrier ([G11B 9/1445](#) takes precedence)}
- G11B 9/1463 . . . { Record carriers for recording or reproduction involving the use of microscopic probe means}
- G11B 9/1472 { characterised by the form}
- G11B 9/1481 { Auxiliary features, e.g. reference or indexing surfaces}
- G11B 9/149 { characterised by the memorising material or structure}

G11B 11/00 **Recording on or reproducing from the same record carrier wherein for these two operations the methods are covered by different main groups of groups [G11B 3/00](#) to [G11B 7/00](#) or by different subgroups of group [G11B 9/00](#); Record carriers therefor { driving or moving of heads [G11B 3/02](#), [G11B 5/48](#), [G11B 7/08](#), [G11B 21/02](#)}**

NOTE

Groups [G11B 11/00](#) to [G11B 11/14](#) mainly cover:

- combined systems or apparatus comprising both recording and reproducing using different methods;
- record carriers therefor.

Reading only or recording only using mechanical, magnetic, optical or other methods is covered by groups [G11B 3/00](#) to [G11B 9/08](#)

- G11B 11/002 . { using recording by perturbation of the physical or electrical structure}
- G11B 11/005 . . { with reproducing by using non-optical beam of radiation or particles, e.g. electrons, directly interacting with the memorised information ([G11B 11/007](#) takes precedence)}
- G11B 11/007 . . { with reproducing by means directly associated with the tip of a microscopic electrical probe as defined in [G11B 9/14](#)(details of heads [G11B 9/1409](#); disposition or mounting of heads [G11B 9/1418](#))}
- G11B 11/03 . using recording by deforming with non-mechanical means, e.g. laser, beam of particles {([G11B 11/002](#) takes precedence; see provisional also [G11B 3/68](#) to [G11B 3/72](#))}
- G11B 11/05 . . with reproducing by capacitive means ([G11B 9/07](#) takes precedence)
- G11B 11/06 . . with reproducing by mechanical sensing
- G11B 11/08 . using recording by electric charge or by variation of electric resistance or capacitance {([G11B 11/002](#), [G11B 11/10](#) take precedence)}
- G11B 11/10 . using recording by magnetic means {or other means for magnetisation or

		demagnetisation of a record carrier, e.g. light induced spin magnetisation; Demagnetisation by thermal or stress means in the presence or not of an orienting magnetic field}
G11B 11/105	..	using a beam of light or a magnetic field for recording { by change of magnetisation} and a beam of light for reproducing, { i.e. magneto-optical,} e.g. light-induced thermo-magnetic recording, { spin magnetisation recording,} Kerr { or Faraday} effect reproducing
G11B 11/10502	...	{characterised by the transducing operation to be executed}
G11B 11/10504	....	{Recording (for shaping of magnetic domains G11B 11/10528 , for compensation of shift G11B 11/1053)}
G11B 11/10506	.....	{by modulating only the light beam of the transducer}
G11B 11/10508	.....	{by modulating only the magnetic field at the transducer}
G11B 11/1051	.....	{by modulating both the magnetic field and the light beam at the transducers}
G11B 11/10513	.....	{one of the light beam or the magnetic field being modulated by data and the other by a clock or frequency generator}
G11B 11/10515	....	{Reproducing (compensating pit shift G11B 11/1053)}
G11B 11/10517	....	{Overwriting or erasing (G11B 11/10526 takes precedence)}
G11B 11/10519	.....	{Direct overwriting, i.e. performing erasing and recording using the same transducing means}
G11B 11/10521	.....	{using a single light spot}
G11B 11/10523	....	{Initialising}
G11B 11/10526	....	{Bulk initialisation or erasing, e.g. at least one whole information track with a single action}
G11B 11/10528	....	{Shaping of magnetic domains, e.g. form, dimensions}
G11B 11/1053	....	{ to compensate for the magnetic domain drift or time shift}
G11B 11/10532	...	{Heads}
G11B 11/10534	....	{for recording by magnetising, demagnetising or transfer of magnetisation, by radiation, e.g. for thermomagnetic recording}
G11B 11/10536	.....	{using thermic beams, e.g. lasers}
G11B 11/10539	.....	{using electromagnetic beams, e.g. polarised light}
G11B 11/10541	....	{for reproducing}
G11B 11/10543	.....	{using optical beam of radiation}
G11B 11/10545	.....	{interacting directly with the magnetisation on the record carrier}
G11B 11/10547	.....	{interacting with the magnetisation of an intermediate transfer element, e.g. magnetic film, included in the head}
G11B 11/1055	...	{Disposition or mounting of transducers relative to record carriers}
G11B 11/10552	....	{Arrangements of transducers relative to each other, e.g. coupled heads, optical and magnetic head on the same base (for relative movement of transducers G11B 11/10573)}
G11B 11/10554	.....	{the transducers being disposed on the same side of the carrier (flying heads G11B 11/1058)}
G11B 11/10556	....	{with provision for moving or switching or masking the transducers in or out of their operative position}
G11B 11/10558	.....	{in view of the loading or unloading of the carrier}
G11B 11/1056	.....	{Switching or mechanically reversing the magnetic field generator}

- G11B 11/10563 {Access of indexed parts}
- G11B 11/10565 {Marks for track change, e.g. prepits, gray codes}
- G11B 11/10567 {Mechanically moving the transducers}
- G11B 11/10569 {Swing arm positioners}
- G11B 11/10571 {Sled type positioners}
- G11B 11/10573 {Control of relative positioning of the magnetic and optical transducers, e.g. to move simultaneously}
- G11B 11/10576 {with provision for moving the transducers for maintaining alignment or spacing relative to the carrier}
- G11B 11/10578 {Servo format, e.g. prepits, guide tracks, pilot signals}
- G11B 11/1058 {Flying heads}
- G11B 11/10582 ... {Record carriers characterised by the selection of the material or by the structure or form}
- G11B 11/10584 {characterised by the form, e.g. comprising mechanical protection elements}
- G11B 11/10586 {characterised by the selection of the material}
- G11B 11/10589 {Details}
- G11B 11/10591 {for improving write-in properties, e.g. Curie-point temperature}
- G11B 11/10593 {for improving read-out properties, e.g. polarisation of light}
- G11B 11/10595 ... {Control of operating function}
- G11B 11/10597 {Adaptations for transducing various formats on the same or different carriers}
- G11B 11/11 .. using a beam, {e.g. of electrons or X-rays} other than a beam of light {or a magnetic field} for recording
- G11B 11/115 .. [N: using a beam, {e.g. of electrons or X-rays} other than a beam of light for reproducing
- G11B 11/12 . using recording by optical means ([G11B 11/03](#) takes precedence){[G11B 11/10](#) takes precedence}
- G11B 11/14 .. with reproducing by magnetic means
- G11B 11/16 . using recording by mechanical cutting, deforming or pressing {([G11B 11/002](#) takes precedence)}
- G11B 11/18 .. with reproducing by optical means
- G11B 11/20 .. with reproducing by magnetic means
- G11B 11/22 .. with reproducing by capacitive means

NOTE

[G11B 9/06](#), [G11B 9/07](#); [G11B 11/05](#)

- G11B 11/24 . using recording by near-field interactions
- G11B 11/26 .. using microscopic probe means { , i.e. recording by means directly associated with the tip of a microscopic electrical probe as used in scanning tunneling microscopy [STM] or atomic force microscopy [AFM] for inducing physical or electrical perturbations in a recording medium (marking using electrical current [B41M 5/20](#); measuring roughness or irregularity of surfaces [G01B 7/34](#); details of scanning-probe microscopes [G01Q](#))}

G11B 13/00 **Recording simultaneously or selectively by methods covered by different main groups { among [G11B 3/00](#), [G11B 5/00](#), [G11B 7/00](#) and [G11B 9/00](#)}; Record carriers therefor { not otherwise provided for}; Reproducing therefrom { not otherwise provided for ([G11B 9/00A](#), [G11B 11/002](#) take precedence; driving or moving of heads [G11B 3/02](#), [G11B 5/48](#), [G11B 7/08](#), [G11B 21/02](#))}**

NOTE

This group is limited to the combination of recording and reproducing on the same record carrier by more than one of the different method covered by groups [G11B 3/00](#), [G11B 5/00](#), [G11B 7/00](#) and [G11B 9/00](#)

- G11B 13/02 . magnetically and by styli
- G11B 13/04 . magnetically {or by magnetisation} and optically {or by radiation, for changing or sensing optical properties}
- G11B 13/045 .. {combined recording by magnetic and optic means}
- G11B 13/06 . optically and by styli
- G11B 13/08 . using near-field interactions or transducing means and at least one other method or means for recording or reproducing

G11B 15/00 **Driving, starting or stopping record carriers of filamentary or web form; Driving both such record carriers and heads; Guiding such record carriers or containers therefor; Control thereof; Control of operating function (driving or guiding heads [G11B 3/00](#) to [G11B 7/00](#), [G11B 21/00](#))**

- G11B 15/005 . {Programmed access in sequence to indexed parts of tracks of operating tapes, by driving or guiding the tape (access by driving of both record carrier and head [G11B 15/1816](#); see prov. also [G11B 15/602](#))}
- G11B 15/02 . Control of operating function, e.g. switching from recording to reproducing
- G11B 15/023 .. {remotely controlled}
- G11B 15/026 .. {by using processor, e.g. microcomputer}

NOTE

[G11B 15/005](#)

- G11B 15/03 .. by using counters

NOTE

[G11B 15/00](#), [G11B 27/00](#)

- G11B 15/04 .. Preventing, inhibiting, or warning against accidental erasing or double recording ([G11B 15/05](#) takes precedence)
- G11B 15/05 .. by sensing features present on or derived from record carrier or container ([G11B 15/16](#) takes precedence)

NOTE[G11B 15/02](#)

- G11B 15/06 ... by sensing auxiliary features on record carriers or containers, e.g. to stop machine near the end of a tape
- G11B 15/07 ... on containers

NOTE[G11B 15/06](#)

- G11B 15/08 ... by photoelectric sensing ([G11B 15/07](#) takes precedence)
- G11B 15/087 ... by sensing recorded signals

NOTE[G11B 15/06](#), [G11B 15/02](#), [G11B 27/00](#)

- G11B 15/093 ... by sensing driving condition of record carrier, e.g. travel, tape tension

NOTE[G11B 15/16](#), [G11B 15/22](#), [G11B 15/46](#)

- G11B 15/10 .. Manually-operated control; Solenoid-operated control {[G11B 15/44](#) takes precedence}
- G11B 15/103 ... {electrically operated}
- G11B 15/106 ... {mechanically operated}
- G11B 15/12 .. Masking of heads; {circuits for} Selecting or switching of heads between operative and inoperative functions {or between different operative functions or for selection between operative heads}; Masking of beams, e.g. of light beams {track selection by moving the magnetic head [G11B 5/54](#)}
- G11B 15/125 ... {conditioned by the operating function of the apparatus}
- G11B 15/14 ... Masking or switching periodically, e.g. of rotating heads
- G11B 15/16 .. by sensing presence, absence or position of record carrier or container
- G11B 15/17 ... of container

NOTE[G11B 15/16](#)

- G11B 15/18 . Driving; Starting; Stopping; Arrangements for control or regulation thereof {[G11B 15/56](#) takes precedence; handling tapes or filamentary material in general [B65H 23/00](#)}
- G11B 15/1808 .. {Driving of both record carrier and head ([G11B 15/467](#) takes precedence; mounting of head [G11B 5/52](#))}
- G11B 15/1816 ... {Programmed access in sequence to indexed parts of operating tapes cooperating with rotating heads (see provisional also [G11B 15/005](#))}
- G11B 15/1825 ... {driving or moving the head in a direction which cuts across the direction of

- travel of the tape, e.g. for helicoïdal scanning}
- G11B 15/1833 {with head driven in a plane, cyclically around an axis, e.g. on headwheel (construction of headwheel [G11B 5/53](#), [G11B 21/16](#); disposition of heads on headwheel [G11B 5/531](#), [G11B 21/02](#))}
- G11B 15/1841 {with provision for information tracking by moving the transducing part of the head relative to the headwheel, in the direction of the scanning movement, e.g. for skew or time base correction (in the direction which cuts across tracks, i.e. for track following [G11B 3/38](#), [G11B 5/588](#), [G11B 7/085](#), [G11B 21/08](#), [G11B 21/10](#); by controlling headwheel rotation [G11B 15/4733](#), by guiding the tape [G11B 15/602](#))}
- G11B 15/185 {using signals recorded in tracks disposed in parallel with the scanning direction}
- G11B 15/1858 {using auxiliary signals, i.e. pilot signals}
- G11B 15/1866 {superimposed on the main signal track}
- G11B 15/1875 ... {adaptations for special effects or editing (signal processing or indexing therefor [G11B 27/00](#))}
- G11B 15/1883 .. {for record carriers inside containers}
- G11B 15/1891 ... {the record carrier being endless}
- G11B 15/20 .. Moving record carrier backwards or forwards by finite amounts, i.e. backspacing, forward spacing
- G11B 15/22 .. Stopping means (slowing-down preparatory to stopping or speed-changing [G11B 15/48](#); speed-controlling by mechanical linkage [G11B 15/50](#); brake constructions in general [F16D](#)){[G11B 15/06](#) takes precedence; inside container [G11B 23/04](#)}
- G11B 15/24 .. Drive disengaging means
- G11B 15/26 .. Driving record carriers by members acting directly or indirectly thereon {[G11B 15/44](#) takes precedence; Driving features inside container, see [G11B 23/04](#) and subgroups}
- G11B 15/28 ... through rollers driving by frictional contact with the record carrier, e.g. capstan; Multiple arrangements of capstans or drums coupled to means for controlling the speed of the drive; Multiple capstan systems alternately engageable with record carrier to provide reversal
- G11B 15/285 {through pneumatic means}
- G11B 15/29 through pinch-rollers (or tape rolls){[G11B 15/295](#) takes precedence}
- G11B 15/295 with single capstan or drum simultaneously driving the record carrier at two separate points of an isolated part thereof, e.g. the capstan acting directly on the tape rollers
- G11B 15/30 ... through the means for supporting the record carrier, e.g. mandrel, turntable
- G11B 15/32 ... through the reels or cores on to which the record carrier is wound
- G11B 15/34 ... through non-skip drive means, e.g. sprocket
- G11B 15/38 .. Driving record carriers by pneumatic means {pneumatic control for capstans driving the record carrier by frictional contact [G11B 15/285](#)}
- G11B 15/385 ... {directly, e.g. by rotating drum (guiding record carrier on rotating drum [G11B 15/61](#))}
- G11B 15/40 .. Driving record carriers otherwise than by electric motor
- G11B 15/42 ... manually
- G11B 15/43 .. Control or regulation of mechanical tension of record carrier, e.g. tape tension (controlling tension in filamentary material in general [B65H 59/00](#)){by speed regulation [G11B 15/46](#); by using reserve loops [G11B 15/56](#)}

- G11B 15/44 .. Speed-changing arrangements; Reversing arrangements; Drive transfer means therefor
- G11B 15/442 ... {Control thereof}
- G11B 15/444 ... {reversing arrangements ([G11B 15/442](#) takes precedence)}
- G11B 15/446 {by driving the reels only}
- G11B 15/448 {automatic reverse drive transfer therefor}
- G11B 15/46 .. Controlling, regulating, or indicating speed {dependent on position of tape in reserve, loop [G11B 15/56](#), [G11B 15/58](#)}
- G11B 15/463 ... {by using pilot tracking tones embedded in binary coded signals, e.g. using DSV/CDS values of coded signals}
- G11B 15/467 ... in arrangements for recording or reproducing wherein both record carriers and heads are driven {see provisional also [G11B 15/1808](#)}
- G11B 15/4671 {by controlling simultaneously the speed of the tape and the speed of the rotating head}
- G11B 15/4672 {with provision for information tracking}
- G11B 15/4673 {by controlling the speed of the tape while the head is rotating}
- G11B 15/4675 {with provision for information tracking}
- G11B 15/4676 {using signals recorded in tracks disposed in parallel with the scanning direction}
- G11B 15/4677 {using auxiliary signals, i.e. pilot signals}
- G11B 15/4678 {superimposed on the main signal track}
- G11B 15/473 by controlling the speed of the heads

NOTE[G11B 5/588](#)

- G11B 15/4731 {control of headwheel rotation ([disposition or construction of headwheel motor G11B 5/53](#), [G11B 21/02](#))}
- G11B 15/4733 {with provision for information tracking, e.g. for time base correction}
- G11B 15/4735 {using signals recorded in tracks disposed parallel with the scanning direction}
- G11B 15/4736 {using auxiliary signals, i.e. pilot signals}
- G11B 15/4738 {superimposed on the main signal track}
- G11B 15/48 .. Starting; Accelerating; Decelerating; Arrangements preventing malfunction during drive change
- G11B 15/50 ... by mechanical linkage, e.g. clutch
- G11B 15/52 ... by using signals recorded on, or derived from, record carrier
- G11B 15/54 ... by stroboscope; by tachometer ([speedometers or tachometers G01P](#))
- G11B 15/56 . the record carrier having reserve loop, e.g. to minimise inertia during acceleration {[measuring or control in connection therewith](#)}
- G11B 15/58 .. with vacuum column
- G11B 15/60 . Guiding record carrier ([guiding devices structurally associated with magazines or cassettes G11B 23/04](#))
- G11B 15/602 .. {for track selection, acquisition or following}

- G11B 15/605 .. {without displacing the guiding means}
- G11B 15/607 ... {Pneumatic guiding}
- G11B 15/61 .. on drum, e.g. drum containing rotating heads {[G11B 15/66](#) takes precedence}
- G11B 15/615 ... {inside container}
- G11B 15/62 .. Maintaining desired spacing between record carrier and head
- G11B 15/64 ... by fluid-dynamic spacing
- G11B 15/66 .. Threading; Loading; Automatic self-loading
- G11B 15/662 ... {Positioning or locking of spool or reel}
- G11B 15/665 ... by extracting loop of record carrier from container
- G11B 15/6651 {to pull the record carrier against non rotating heads}
- G11B 15/6653 {to pull the record carrier against drum}
- G11B 15/6655 {using one loading ring, i.e. "C-type" ([G11B 15/6658](#) takes precedence)}
- G11B 15/6656 {using two-sided extraction, i.e. "M-type"}
- G11B 15/6658 {with two loading rings rotating in opposite directions}
- G11B 15/67 .. by extracting end of record carrier from container or spool
- G11B 15/671 {using pneumatic means}
- G11B 15/672 {Extracting end of record carrier from container or single reel ([G11B 15/671](#) takes precedence)}
- G11B 15/673 {Threading end of record carrier externally to single reel ([G11B 15/671](#) takes precedence)}
- G11B 15/674 {Threading or attaching end of record carrier on or to single reel ([G11B 15/671](#) takes precedence)}

- G11B 15/675 . Guiding containers {e.g. loading, ejecting cassettes}
- G11B 15/67502 .. {Details}
- G11B 15/67505 ... {Servo control}
- G11B 15/67507 ... {Ejection damping means}
- G11B 15/6751 .. {with movement of the cassette parallel to its main side, i.e. front loading ([G11B 15/67544](#) takes precedence)}
- G11B 15/67513 ... {and movement of driving elements perpendicular thereto}
- G11B 15/67515 {with servo control}
- G11B 15/67518 {with ejection damping means}
- G11B 15/67521 ... {of cassette with internal belt drive}
- G11B 15/67523 {with servo control}
- G11B 15/67526 {with ejection damping means}
- G11B 15/67528 ... {of endless tape cassette}
- G11B 15/67531 {with servo control}
- G11B 15/67534 {with ejection damping means}
- G11B 15/67536 ... {of cassette inside drawer}
- G11B 15/67539 {with servo control}
- G11B 15/67542 {with ejection damping means}
- G11B 15/67544 .. {with movement of the cassette parallel to its main side and subsequent movement perpendicular thereto, i.e. front loading}
- G11B 15/67547 ... {the two movements being made by the cassette holder}

G11B 15/67549	....	{with servo control}
G11B 15/67552	....	{with ejection damping means}
G11B 15/67555	...	{the second movement only being made by the cassette holder}
G11B 15/67557	....	{with servo control}
G11B 15/6756	....	{with ejection damping means}
G11B 15/67563	..	{with movement of the cassette perpendicular to its main side, i.e. top loading}
G11B 15/67565	...	{of the cassette with holder}
G11B 15/67568	....	{with servo control}
G11B 15/67571	....	{with ejection damping means}
G11B 15/67573	...	{of the cassette without holder}
G11B 15/67576	....	{with servo control}
G11B 15/67578	....	{with ejection damping means}
G11B 15/67581	..	{with pivoting movement of the cassette holder}
G11B 15/67584	...	{outside the apparatus}
G11B 15/67586	....	{with servo control}
G11B 15/67589	....	{with ejection damping means}
G11B 15/67592	...	{inside the apparatus}
G11B 15/67594	....	{with servo control}
G11B 15/67597	....	{with ejection damping means}
G11B 15/68	..	Automatic cassette changing arrangements; {automatic tape changing arrangements}
G11B 15/6805	...	{with linearly moving rectangular box shaped magazines}
G11B 15/681	....	{in vertical direction}
G11B 15/6815	....	{in horizontal direction}
G11B 15/682	...	{with fixed magazines having fixed cassette storage cells, e.g. in racks}
G11B 15/6825	....	{Details of magazines, e.g. removable, adapted for cassettes of different sizes}
G11B 15/683	....	{wherein the recorder or player is moved according to the location of a selected cassette (G11B 15/684 takes precedence)}
G11B 15/6835	....	{the cassettes being transferred to a fixed recorder or player using a moving carriage}
G11B 15/684	....	{the cassettes having a storage position inside the magazine and a slightly shifted active position, e.g. by solenoid}
G11B 15/6845	...	{with rotatable magazine}
G11B 15/685	....	{the cassettes being arranged in a single level}
G11B 15/6855	.....	{wherein the recorder or player is moved towards a selected cassette in the magazine}
G11B 15/686	.....	{with a fixed recorder or player in the centre or at the periphery of the magazine}
G11B 15/6865	.....	{with a fixed recorder or player under the magazine}
G11B 15/687	....	{the cassettes being arranged in multiple levels}
G11B 15/6875	.....	{wherein the recorder or player is moved towards a selected cassette in the magazine}
G11B 15/688	.....	{the cassettes being transferred to a fixed recorder or player using a

- moving carriage}
- G11B 15/6885 . . . {the cassettes being conveyed within a cassette storage location, e.g. within a storage bin or conveying by belt}
- G11B 15/689 . . . {Control of the cassette changing arrangement}
- G11B 15/6895 . . . {Automatic tape changing arrangements}
- G11B 15/70 . The record carrier being an endless loop record carrier {inside container [G11B 15/1891](#)}
- G11B 17/00** **Guiding record carriers not specifically of filamentary or web form, or of supports therefor** ([guiding cards or sheets G06K 13/00](#))
- G11B 17/005 . {Programmed access to indexed parts of tracks of operating discs, by guiding the disc}
- G11B 17/02 . Details
- G11B 17/021 . . {Selecting or spacing of record carriers for introducing the heads}
- G11B 17/022 . . Positioning or locking of single discs
- G11B 17/025 . . . of discs which are stationary during transducing operation
- G11B 17/0255 {flexible discs}
- G11B 17/028 . . . of discs rotating during transducing operation
- G11B 17/0281 { by an adapter enabling the centre-pin to receive carriers with large centre hole}
- G11B 17/0282 { by means provided on the turntable}
- G11B 17/0283 { Two or more turntables}
- G11B 17/0284 { by clampers}
- G11B 17/0285 { mounted on a bridge}
- G11B 17/0286 { mounted on a pivotal lever}
- G11B 17/0287 { by permanent connections, e.g. screws, rivets}
- G11B 17/0288 { by means for moving the turntable or the clamper towards the disk}
- G11B 17/03 in containers or trays {([G11B 17/032](#), [G11B 17/035](#) take precedence)}
- G11B 17/032 Positioning by moving the door or the cover {([G11B 17/035](#) takes precedence)}
- G11B 17/035 Positioning by moving the loading station
- G11B 17/038 . . Centering or locking of a plurality of discs in a single cartridge
- G11B 17/04 . . Feeding or guiding single record carrier to or from transducer unit {(guiding during transducing operation [G11B 17/34](#))}
- G11B 17/0401 . . . {Details}
- G11B 17/0402 {Servo control}
- G11B 17/0404 {with parallel drive rollers}
- G11B 17/0405 {Closing mechanism, e.g. door}
- G11B 17/0407 {controlling the loading of the record carrier}
- G11B 17/0408 . . . {of non-disc record carrier, e.g. card}
- G11B 17/041 . . . specially adapted for discs contained within cartridges
- G11B 17/043 Direct insertion, i.e. without external loading means

G11B 17/0432	.....	{ adapted for discs of different sizes}
G11B 17/0434	.....	{ with mechanism for subsequent vertical movement of the disc (G11B 17/0438 takes precedence)}
G11B 17/0436	.....	{ with opening mechanism of the cartridge shutter (G11B 17/0438 takes precedence)}
G11B 17/0438	.....	{ with mechanism for subsequent vertical movement of the disc and opening mechanism of the cartridge shutter}
G11B 17/044	....	Indirect insertion, i.e. with external loading means
G11B 17/046	.....	with pivoting loading means
G11B 17/0463	.....	{ adapted for discs of different sizes}
G11B 17/0466	.....	{ with opening mechanism of the cartridge shutter}
G11B 17/047	.....	with sliding loading means
G11B 17/0473	.....	{ adapted for discs of different sizes}
G11B 17/0476	.....	{ with opening mechanism of the cartridge shutter}
G11B 17/049	....	Insertion of discs having to be extracted from the cartridge prior to recording or reproducing
G11B 17/05	...	specialy adapted for discs not contained within cartridges
G11B 17/051	....	Direct insertion, i.e. without external loading means
G11B 17/0515	.....	{ adapted for discs of different sizes}
G11B 17/053	....	Indirect insertion, i.e. with external loading means
G11B 17/054	.....	with pivoting loading means
G11B 17/0545	.....	{ adapted for discs of different sizes}
G11B 17/056	.....	with sliding loading means
G11B 17/0565	.....	{ adapted for discs of different sizes}
G11B 17/057	...	specialy adapted for handling both discs contained within cartridges and discs not contained within cartridges
G11B 17/08	.	from consecutive-access magazine of disc records
G11B 17/10	..	with horizontal transfer to the turntable from a stack arranged with a vertical axis
G11B 17/12	..	with axial transfer to the turntable from a stack with a vertical axis
G11B 17/14	...	by mechanism in rotating centre post, e.g. permitting the playing of both sides of a record
G11B 17/16	...	by mechanism in stationary centre post, e.g. with stepped post, using fingers on post
G11B 17/162	.....	{with means for detecting the diameter of the record}
G11B 17/165	.....	{with mechanical detecting means}
G11B 17/167	.....	{with optical detecting means}
G11B 17/18	...	by mechanism operating on the edge of the disc record
G11B 17/20	..	with transfer away from stack on turntable after playing
G11B 17/22	.	from random access magazine of disc records
G11B 17/221	..	{with movable magazine (G11B 17/24 to G11B 17/28 take precedence)}
G11B 17/223	...	{in a vertical direction}
G11B 17/225	..	{wherein the disks are transferred from a fixed magazine to a fixed playing unit using a moving carriage}

- G11B 17/226 .. {the magazine consisting of a single rotatable tray carrying the disks}
- G11B 17/228 .. { Control systems for magazines ([G11B 17/225](#) takes precedence)}
- G11B 17/24 .. the magazine having a toroidal or part-toroidal shape

NOTE

[G11B 17/30](#) takes precedence over groups [G11B 17/24](#) to [G11B 17/28](#).

- G11B 17/26 .. the magazine having a cylindrical shape with vertical axis
- G11B 17/28 .. the magazine having a cylindrical shape with horizontal axis
- G11B 17/30 .. wherein the playing unit is moved according to the location of the selected record
- G11B 17/32 . Maintaining desired spacing between record carrier and head, e.g. by fluid-dynamic spacing {damping of vibrations of record carriers on turntables by fluid-dynamic means [G11B 19/2018](#)}
- G11B 17/34 . Guiding record carriers during transducing operation, e.g. for track following ([G11B 17/32](#) takes precedence)

G11B 19/00 **Driving, starting, stopping record carriers not specifically of filamentary or web form, or of supports therefor; Control thereof; Control of operating function** (guiding such record carriers [G11B 17/00](#)); { Driving both disc and head}

- G11B 19/02 . Control of operating function, e.g. switching from recording to reproducing
- G11B 19/022 .. {Control panels}
- G11B 19/025 ... {'Virtual' control panels, e.g. Graphical User Interface (GUI)}
- G11B 19/027 .. {Remotely controlled (remote control systems in general [G08C](#))}
- G11B 19/04 .. Arrangements for preventing, inhibiting, or warning against double recording on the same blank or against other recording or reproducing malfunctions
 - G11B 19/041 ... { Detection or prevention of read or write errors}
 - G11B 19/042 { due to external shock or vibration}
 - G11B 19/043 { by detecting a free-fall condition}
 - G11B 19/044 { by using a data buffer}
 - G11B 19/045 { by detecting mistracking}
 - G11B 19/046 ... { Detection or prevention or problems due to temperature}
 - G11B 19/047 ... { Recovery from power failure}
 - G11B 19/048 ... { Testing of disk drives, e.g. to detect defects or prevent sudden failure}
- G11B 19/06 .. by counting or timing of machine operations
- G11B 19/08 .. by using devices external to the driving mechanisms, e.g. coin-freed switch (coin actuated mechanisms [G07F 5/00](#))
- G11B 19/10 .. by sensing presence or absence of record in accessible stored position or on turntable
- G11B 19/12 .. by sensing distinguishing features of {or on} records, e.g. diameter {end mark}
- G11B 19/122 ... {involving the detection of an identification or authentication mark (record carriers indicating unauthorised or prior use [G11B 23/28](#))}
- G11B 19/124 ... {involving the detection of diameter of disks (feeding or guiding of a single record carrier [G11B 17/04](#) and subgroups)}

- G11B 19/125 ... {involving the detection of carrier data format}
- G11B 19/127 ... {involving detection of the number of sides, e.g. single or double, or layers, e.g. for multiple recording or reproducing layers}
- G11B 19/128 ... {involving the detection of track pitch or recording density}
- G11B 19/14 .. by sensing movement or position of head, e.g. means moving in correspondence with head movements
- G11B 19/16 .. Manual control
- G11B 19/165 ... {by closing the cover}
- G11B 19/18 ... Manual action on one element producing control effect indirectly by consequent action of driving mechanism

- G11B 19/20 . Driving; Starting; Stopping; Control thereof
- G11B 19/2009 .. { Turntables, hubs and motors for disk drives; Mounting of motors in the drive (means for clamping of disk to turntable [G11B 17/022](#) and subgroups)}
- G11B 19/2018 ... { Incorporating means for passive damping of vibration, either in the turntable, motor or mounting}
- G11B 19/2027 ... { Turntables or rotors incorporating balancing means; Means for detecting imbalance}
- G11B 19/2036 ... { Motors characterized by fluid-dynamic bearings}
- G11B 19/2045 ... { Hubs}
- G11B 19/2054 .. { Spindle motor power-up sequences}
- G11B 19/2063 .. { Spindle motor power-down sequences}
- G11B 19/2072 ... { for the reduction of power consumption during idle time}
- G11B 19/2081 ... { emergency power-down}
- G11B 19/209 .. { in multiple disk arrays, e.g. spindle synchronisation in RAID systems}
- G11B 19/22 .. Brakes other than speed-regulating brakes ([brake constructions in general F16D](#))
- G11B 19/24 .. Arrangements for providing constant relative speed between record carrier and head
- G11B 19/247 ... using electrical means
- G11B 19/253 ... using mechanical means
- G11B 19/26 .. Speed-changing arrangements; Reversing arrangements; Drive-transfer means therefor
- G11B 19/265 ... Friction wheel drive
- G11B 19/27 ... Belt drive
- G11B 19/275 ... Gear wheel drive
- G11B 19/28 .. Speed controlling, regulating, or indicating ([G11B 19/24](#) takes precedence; [speedometers or tachometers G01P](#))

- G11B 20/00** **Signal processing not specific to the method of recording or reproducing; Circuits therefor**

- G11B 20/00007 . { Time or data compression or expansion (audio compression based on psychoacoustics [G10L 19/00](#); data processing for reproducing audio data at different playback speeds [G10L 21/04](#); video compression [H04N 7/26](#); data compression per se [H03M 7/30](#))}
- G11B 20/00086 . { Circuits for prevention of unauthorised reproduction or copying, e.g. piracy (indicating

unauthorised use of record carriers in general [G11B 23/28](#); scrambling for television signal recording [H04N 5/913](#); network architectures or network protocols for network security [H04L 63/00](#); cryptographic mechanisms or cryptographic arrangements for secret or secure communication [H04L 9/00](#)}}

- G11B 20/00094 .. { involving measures which result in a restriction to authorised record carriers}
- G11B 20/00101 ... { the original record carrier having a larger recording capacity than the potential target medium}
- G11B 20/00108 ... { wherein original, non-rewritable record carriers are recognised by trying to erase recorded data}
- G11B 20/00115 ... { wherein the record carrier stores a unique medium identifier}
- G11B 20/00123 ... { the record carrier being identified by recognising some of its unique characteristics, e.g. a unique defect pattern serving as a physical signature of the record carrier}
- G11B 20/0013 ... { wherein the measure concerns not the entire record carrier, but a specific physical or logical area of one or more record carriers}
- G11B 20/00137 .. { involving measures which result in a restriction to contents recorded on or reproduced from a record carrier to authorised users}
- G11B 20/00144 ... { involving a user identifier, e.g. a unique customer ID}
- G11B 20/00152 ... { involving a password}
- G11B 20/00159 ... { Parental control systems}
- G11B 20/00166 .. { involving measures which result in a restriction to authorised contents recorded on or reproduced from a record carrier, e.g. music or software}
- G11B 20/00173 ... { wherein the origin of the content is checked, e.g. determining whether the content has originally been retrieved from a legal disc copy or another trusted source}
- G11B 20/00181 ... { using a content identifier, e.g. an international standard recording code [ISRC] or a digital object identifier [DOI]}
- G11B 20/00188 .. { involving measures which result in a restriction to authorised devices recording or reproducing contents to/from a record carrier}
- G11B 20/00195 ... { using a device identifier associated with the player or recorder, e.g. serial numbers of playback apparatuses or MAC addresses}
- G11B 20/00202 ... { wherein the copy protection scheme builds on multi-session recording, e.g. defective table of contents [TOC] in the 2nd session}
- G11B 20/0021 .. { involving encryption or decryption of contents recorded on or reproduced from a record carrier}
- G11B 20/00217 ... { the cryptographic key used for encryption and/or decryption of contents recorded on or reproduced from the record carrier being read from a specific source (key distribution or management [H04L 9/08](#))}
- G11B 20/00224 { wherein the key is obtained from a remote server}
- G11B 20/00231 { wherein the key is obtained from a local external medium, e.g. a card}
- G11B 20/00239 { wherein the key is provided by a software application accessing the medium}
- G11B 20/00246 { wherein the key is obtained from a local device, e.g. device key initially stored by the player or by the recorder}
- G11B 20/00253 { wherein the key is stored on the record carrier}
- G11B 20/0026 { the key being stored as a barcode}
- G11B 20/00268 { said barcode being recorded in a burst cutting area [BCA] }
- G11B 20/00275 { the key being stored on a chip attached to the record carrier}

G11B 20/00282	.....	{ the key being stored in the content area, e.g. program area, data area or user area (key stored in a management area G11B 20/00297)}
G11B 20/00289	.....	{ wherein the key is stored as a watermark}
G11B 20/00297	.....	{ the key being stored in a management area, e.g. the video manager [VMG] of a DVD}
G11B 20/00304	.....	{ the key being stored in the lead-in area [LIA] }
G11B 20/00311	.....	{ the key being stored in the lead-out area [LOA] }
G11B 20/00318	.....	{ the key being stored in the TOC}
G11B 20/00326	.....	{ the key being embossed on the record carrier}
G11B 20/00333	.....	{ the key being stored in header data, e.g. in sector headers}
G11B 20/0034	.....	{ the key being stored as a hologram}
G11B 20/00347	.....	{ wherein the medium identifier is used as a key}
G11B 20/00355	.....	{ the record carrier having a label that provides the key}
G11B 20/00362	.....	{ the key being obtained from a media key block [MKB] }
G11B 20/00369	.....	{ wherein a first key, which is usually stored on a hidden channel, e.g. in the lead-in of a BD-R, unlocks a key locker containing a second}
G11B 20/00376	.....	{ the key being stored by varying the pit format, e.g. depth, width, length or edge positions}
G11B 20/00384	.....	{ the key being derived from a physical signature of the record carrier, e.g. unique feature set}
G11B 20/00391	.....	{ the key being stored in subcodes, e.g. in the Q subcode of a CD}
G11B 20/00398	.....	{ the key being stored in sync patterns}
G11B 20/00405	.....	{ the key being stored by varying characteristics of the recording track, e.g. by altering the track pitch or by modulating the wobble track}
G11B 20/00413	....	{ wherein the key is input by a user}
G11B 20/0042	...	{ the copy protection scheme being related to a specific access protection standard}
G11B 20/00427	....	{ advanced access content system [AACS] }
G11B 20/00434	....	{ content protection for pre-recorded media [CPPM] }
G11B 20/00442	....	{content protection for recordable media [CPRM] }
G11B 20/00449	....	{ content scrambling system [CSS] }
G11B 20/00456	....	{ digital transmission content protection [DTCP] }
G11B 20/00463	....	{ high-bandwidth digital content protection [HDCP] }
G11B 20/00471	....	{ video content protection system [VCPS] }
G11B 20/00478	...	{ wherein contents are decrypted and re-encrypted with a different key when being copied from/to a record carrier}
G11B 20/00485	...	{ characterised by a specific kind of data which is encrypted and recorded on and/or reproduced from the record carrier}
G11B 20/00492	....	{ wherein content or user data is encrypted}
G11B 20/005	.....	{ wherein only some specific parts of the content are encrypted, e.g. encryption limited to I-frames}
G11B 20/00507	.....	{ wherein consecutive physical data units of the record carrier are encrypted with separate encryption keys, e.g. the key changes on a cluster or sector basis}
G11B 20/00514	.....	{ wherein the entire content is encrypted with the same key, e.g. disc key or master key}

G11B 20/00521	.....	{ wherein each session of a multisession recording medium is encrypted with a separate encryption key}
G11B 20/00528	.....	{ wherein each title is encrypted with a separate encryption key for each title, e.g. title key for movie, song or data file}
G11B 20/00536	.....	{ wherein encrypted content data is subjected to a further, iterated encryption, e.g. interwoven encryption}
G11B 20/00543	....	{ wherein external data is encrypted, e.g. for secure communication with an external device or for encrypting content on a separate record carrier}
G11B 20/0055	....	{ wherein license data is encrypted}
G11B 20/00557	....	{ wherein further management data is encrypted, e.g. sector headers, TOC or the lead-in or lead-out areas}
G11B 20/00565	....	{ wherein parity data is encrypted}
G11B 20/00572	..	{ involving measures which change the format of the recording medium}
G11B 20/00579	...	{ said format change concerning the data encoding, e.g., modulation schemes violating run-length constraints, causing excessive DC content, or involving uncommon codewords or sync patterns}
G11B 20/00586	...	{ said format change concerning the physical format of the recording medium}
G11B 20/00594	....	{ wherein the shape of recording marks is altered, e.g. the depth, width, or length of pits}
G11B 20/00601	....	{ wherein properties of tracks are altered, e.g., by changing the wobble pattern or the track pitch, or by adding interruptions or eccentricity}
G11B 20/00608	....	{ wherein the material that the record carrier is made of is altered, e.g. adding reactive dyes that alter the optical properties of a disc after prolonged exposure to light or air}
G11B 20/00615	...	{ said format change concerning the logical format of the recording medium, e.g. the structure of sectors, blocks, or frames}
G11B 20/00623	....	{ wherein the modification to the logical format directly concerns user data}
G11B 20/0063	....	{ wherein the modification to the logical format mainly concerns management data, e.g., by changing the format of the TOC or the subcode}
G11B 20/00637	.....	{ said management data being address data}
G11B 20/00644	.....	{ the address data format being such that there are overlapping address ranges}
G11B 20/00652	.....	{ the address data being scrambled so that ascending address values do not reflect the physical order of data blocks}
G11B 20/00659	..	{ involving a control step which is implemented as an executable file stored on the record carrier}
G11B 20/00666	..	{ involving a step of erasing or nullifying data, e.g. data being overwritten with a random string}
G11B 20/00673	...	{ wherein the erased or nullified data include a cryptographic key}
G11B 20/00681	..	{ involving measures which prevent a specific kind of data access}
G11B 20/00688	...	{ said measures preventing that a usable copy of recorded data can be made on another medium}
G11B 20/00695	...	{ said measures preventing that data are read from the recording medium}
G11B 20/00702	...	{ said measures preventing that data are recorded on the recording medium}
G11B 20/0071	..	{ involving a purchase action}
G11B 20/00717	...	{ wherein accounting and payment are postponed, e.g. until the player can establish a network connection to the service provider}
G11B 20/00724	...	{ wherein a prepaid credit balance is registered on the recording medium}

G11B 20/00731	..	{ involving a digital rights management system for enforcing a usage restriction}
G11B 20/00739	...	{ wherein the usage restriction is associated with a specific geographical region}
G11B 20/00746	...	{ wherein the usage restriction can be expressed as a specific number}
G11B 20/00753	....	{ wherein the usage restriction limits the number of copies that can be made, e.g. CGMS, SCMS, or CCI flags}
G11B 20/0076	.....	{ wherein the copy frequency, i.e. the number of copies in a given time period, is limited}
G11B 20/00768	.....	{ wherein copy control information is used, e.g. for indicating whether a content may be copied freely, no more, once, or never, by setting CGMS, SCMS, or CCI flags}
G11B 20/00775	.....	{ wherein said copy control information is encoded in an encryption mode indicator [EMI]}
G11B 20/00782	....	{ wherein the usage restriction limits the number of times a program can be installed}
G11B 20/00789	....	{ wherein the usage restriction limits the number of functional copies, which can be accessed at a time, e.g. electronic bookshelf concept, virtual library, video rentals or check-in/check out}
G11B 20/00797	....	{ wherein the usage restriction limits the number of times a content can be reproduced, e.g. using playback counters}
G11B 20/00804	....	{ wherein the usage restriction limits the number of users or devices that are allowed to access a given content}
G11B 20/00811	....	{ wherein said number is encoded as a cryptographic token or ticket}
G11B 20/00818	...	{ wherein the usage restriction limits the signal quality, e.g. by low-pass filtering of audio signals or by reducing the resolution of video signals}
G11B 20/00826	....	{ wherein a spoiler signal is added to degrade the signal quality}
G11B 20/00833	...	{ wherein the usage restriction limits the data access speed, e.g. by defining a maximum bit rate of the I/O interface}
G11B 20/0084	...	{ wherein the usage restriction can be expressed as a specific time or date}
G11B 20/00847	...	{ wherein the usage restriction is defined by a licence file}
G11B 20/00855	..	{ involving a step of exchanging information with a remote server}
G11B 20/00862	...	{ wherein the remote server can grant the permission to use a content}
G11B 20/00869	...	{ wherein the remote server can deliver the content to a receiving device}
G11B 20/00876	..	{ wherein physical copy protection means are attached to the medium, e.g. holograms, sensors, or additional semiconductor circuitry}
G11B 20/00884	..	{ involving a watermark, i.e. a barely perceptible transformation of the original data which can nevertheless be recognised by an algorithm}
G11B 20/00891	...	{ embedded in audio data}
G11B 20/00898	...	{ based on a hash function}
G11B 20/00905	...	{ multiple watermarks used in combination}
G11B 20/00913	...	{ based on a spread spectrum technique}
G11B 20/0092	..	{ involving measures which are linked to media defects or read/write errors}
G11B 20/00927	...	{ wherein said defects or errors are generated on purpose, e.g. intended scratches}
G11B 20/00934	....	{ said intentional errors occurring because of corrupted address information}
G11B 20/00942	....	{ said intentional errors occurring due to an invalid playback path or program chain}
G11B 20/00949	....	{ said intentional errors occurring due to bad sectors, which are either

- physically destroyed or which are declared defective in the defect management information}
- G11B 20/00956 { said intentional errors occurring due to an invalid TOC}
- G11B 20/00963 . . . { wherein said defects or errors are not generated on purpose, e.g. random defect patterns occurring during the normal manufacture}
- G11B 20/00971 . . { involving measures for monitoring the industrial media production and distribution channels, e.g. for controlling content providers or the official manufacturers or replicators of recording media}
- G11B 20/00978 . . { wherein the record carrier stores a trial version of a content}
- G11B 20/00985 . . . { the trial version being of lower quality than the original version}
- G11B 20/00992 . {Circuits for stereophonic or quadraphonic recording or reproducing}
- G11B 20/02 . Analogue recording or reproducing
- G11B 20/025 . . {Error detection or correction}
- G11B 20/04 . . Direct recording or reproducing
- G11B 20/06 . . Angle-modulation recording ([angle modulation H03C](#); demodulation of angle modulated oscillations [H03D](#))
- G11B 20/08 . . Pulse-modulation recording or reproducing ([pulse-code-modulation recording G11B 20/10](#); [pulse modulation or pulse demodulation H03K](#))
- G11B 20/10 . Digital recording or reproducing ([digital computers in which at least part of the computation is effected electrically, arrangements for handling digital data G06F](#); [transmission of digital information H04L](#))
- G11B 20/10009 . . {Improvement or modification of read or write signals}
- G11B 20/10018 . . . { analog processing for digital recording or reproduction ([G11B 20/10037](#) to [G11B 20/10481](#) **take precedence**)}
- G11B 20/10027 { adjusting the signal strength during recording or reproduction, e.g. variable gain amplifiers (**optimum power control for optical discs [G11B 7/125](#)**)}
- G11B 20/10037 . . . { A/D conversion, D/A conversion, sampling, slicing and digital quantisation or adjusting parameters thereof}
- G11B 20/10046 . . . { filtering or equalising, e.g. setting the tap weights of an FIR filter}
- G11B 20/10055 { using partial response filtering when writing the signal to the medium or reading it therefrom}
- G11B 20/10064 { EEPR4 or E2PR4, i.e. extended partial response class 4, polynomial $(1-D)*(1+D)^3$ }
- G11B 20/10074 { EPR4, i.e. extended partial response class 4, polynomial $(1-D) *(1+D)^2$ }
- G11B 20/10083 { PR1 or PR(1,1,), i.e. partial response class 1, polynomial $1+D$ }
- G11B 20/10092 { partial response PR(1,1,1,1)}
- G11B 20/10101 { PR2 or PR(1,2,1), i.e. partial response class 2, polynomial $(1+D)^2=1+2D+D^2$ }
- G11B 20/10111 { partial response PR(1,2,2,1)}
- G11B 20/1012 { partial response PR(1,2,2,2,1)}
- G11B 20/10129 { partial response PR(1,2,3,3,2,1)}
- G11B 20/10138 { partial response PR (2,3,3,2)}
- G11B 20/10148 { partial response PR(1,3,3,1)}
- G11B 20/10157 { PR3 or PR(2,1,-1), i.e. partial response class 3, polynomial

		$(1+D)(2-D)=2+D-D^2$
G11B 20/10166	.....	{ partial response PR(3,4,4,3)}
G11B 20/10175	.....	{ PR4, PR(1,0,-1), i.e. partial response class 4, polynomial $(1+D)(1-D)=(1-D^2)$ }
G11B 20/10185	.....	{ PR5 or PR(-1,0,2,0,-1), i.e. partial response class 5, polynomial $-((1+D)^2)*((1-D)^2)=-1+2D^2-D^4$ }
G11B 20/10194	....	{ using predistortion during writing (G11B 20/10055 takes precedence)}
G11B 20/10203	....	{ baseline correction (DC correction by choosing codewords of the modulation code G11B 20/1426)}
G11B 20/10212	....	{ compensation for data shift (e.g. pulse crowding effects)}
G11B 20/10222	...	{ clock-related aspects, e.g. phase or frequency adjustment or bit synchronisation (dedicated sync patterns in the modulation code G11B 20/1403)}
G11B 20/10231	....	{ wherein an asynchronous, free-running clock is used; Interpolation of sampled signals}
G11B 20/1024	....	{ wherein a phase-locked loop [PLL] is used}
G11B 20/1025	.....	{ the PLL being discrete time or digital PLL}
G11B 20/10259	....	{ simultaneous timing recovery for multiple parallel tracks}
G11B 20/10268	...	{ bit detection or demodulation methods}
G11B 20/10277	....	{ the demodulation process being specifically adapted to partial response channels, e.g. PRML decoding}
G11B 20/10287	....	{ using probabilistic methods, e.g. maximum likelihood detectors (G11B 20/10277 takes precedence)}
G11B 20/10296	.....	{ using the Viterbi algorithm}
G11B 20/10305	...	{ signal quality assessment}
G11B 20/10314	....	{ amplitude of the recorded or reproduced signal}
G11B 20/10324	....	{ asymmetry of the recorded or reproduced waveform}
G11B 20/10333	.....	{ wherein the asymmetry is linked to domain bloom}
G11B 20/10342	....	{ sub-information or auxiliary signals different from the normal recording marks, e.g. signals reproduced from wobble tracks}
G11B 20/10351	....	{ baseline shift, DC content, bias}
G11B 20/10361	....	{ digital demodulation process}
G11B 20/1037	.....	{ based on hard decisions, e.g. by evaluating bit error rates before or after ECC decoding}
G11B 20/10379	.....	{ based on soft decisions, e.g. confidence values, probability estimates, likelihoods values or path metrics of a statistical decoding algorithm}
G11B 20/10388	....	{ control of the read or write heads, e.g. tracking errors, defocus or tilt compensation}
G11B 20/10398	....	{ jitter, timing deviations or phase and frequency errors}
G11B 20/10407	.....	{ by verifying the timing of signal transitions, e.g. rising or falling edges, or by analysing signal slopes}
G11B 20/10416	.....	{ by verifying the timing of peak values}
G11B 20/10425	.....	{ by counting out-of-lock events of a PLL}
G11B 20/10435	.....	{ by verifying the timing of predetermined signal patterns, e.g. sync patterns}
G11B 20/10444	.....	{ by verifying the timing of zero crossings}

G11B 20/10453	....	{ physical shape of recording marks, e.g. their length, width, depth or contour}
G11B 20/10462	....	{ consistency with a reference waveform in a given time period, e.g. by calculating correlations or mean square errors}
G11B 20/10472	....	{ derived from statistics of other quality measures, e.g. their mean, variance or skew}
G11B 20/10481	...	{ optimisation methods}
G11B 20/1049	....	{ using closed-form solutions}
G11B 20/105	....	{ selecting parameter values from a plurality of predetermined settings}
G11B 20/10509	....	{ iterative methods, e.g. trial-and-error, interval search, gradient descent or feedback loops (G11B 20/10518 takes precedence)}
G11B 20/10518	....	{ using neural networks}
G11B 20/10527	..	{ Audio or video recording; Data buffering arrangements (G11B 20/12 to G11B 20/18 take precedence)}
G11B 20/12	..	Formatting, e.g. arrangement of data block or words on the record carriers {(within interface between computers and data recorders G06F 3/06)}
G11B 20/1201	...	{on tapes}
G11B 20/1202	....	{with longitudinal tracks only}
G11B 20/1204	.....	{for continuous data, e.g. digitised analog information signals, pulse code modulated (PCM) data}
G11B 20/1205	.....	{for discontinuous data, e.g. digital information signals, computer programme data}
G11B 20/1207	....	{with transverse tracks only}
G11B 20/1208	.....	{for continuous data, e.g. digitised analog information signals, pulse code modulated (PCM) data}
G11B 20/1209	.....	{for discontinuous data, e.g. digital information signals, computer programme data}
G11B 20/1211	....	{with different data track configurations (longitudinal control tracks with transverse user data tracks G11B 20/1207)}
G11B 20/1212	.....	{for continuous data, e.g. digitised analog information signals, pulse code modulated (PCM) data}
G11B 20/1214	.....	{for discontinuous data, e.g. digital information signals, computer programme data}
G11B 20/1215	...	{on cards (optical aspect of optical cards G11B 7/0033)}
G11B 20/1217	...	{on discs}
G11B 20/1251	....	{for continuous data, e.g. digitised analog information signals, pulse code modulated (PCM) data}
G11B 20/1252	....	{for discontinuous data, e.g. digital information signals, computer programme data}
G11B 20/1254	....	{for mixed data, i.e. continuous and discontinuous data}
G11B 20/1258	....	{where blocks are arranged within multiple radial zones, e.g. Zone Bit Recording or Constant Density Recording discs, MCAV discs, MCLV discs}
G11B 20/1261	...	{on films, e.g. for optical moving-picture soundtracks (optical aspect G11B 7/0032)}
G11B 20/1262	...	{with more than one format/standard, e.g. conversion from CD-audio format to R-DAT format}
G11B 20/14	..	using self-clocking codes

- G11B 20/1403 . . . {characterised by the use of two levels}
- G11B 20/1407 {code representation depending on a single bit, i.e. where a one is always represented by a first code symbol while a zero is always represented by a second code symbol}
- G11B 20/1411 {conversion to or from pulse width coding}
- G11B 20/1415 {conversion to or from pulse frequency coding}
- G11B 20/1419 {to or from biphasic level coding, i.e. to or from codes where a one is coded as a transition from a high to a low level during the middle of a bit cell and a zero is encoded as a transition from a low to a high level during the middle of a bit cell or vice versa, e.g. split phase code, Manchester code conversion to or from biphasic space or mark coding, i.e. to or from codes where there is a transition at the beginning of every bit cell and a one has no second transition and a zero has a second transition one half of a bit period later or vice versa, e.g. double frequency code, FM code}
- G11B 20/1423 {Code representation depending on subsequent bits, e.g. delay modulation, double density code, Miller code}
- G11B 20/1426 {conversion to or from block codes or representations thereof}
- G11B 20/1488 . . . {characterised by the use of three levels}
- G11B 20/1492 {two levels are symmetric, in respect of the sign to the third level which is "zero"}
- G11B 20/1496 . . . {characterised by the use of more than three levels}
- G11B 20/16 . . using non self-clocking codes, i.e. the clock signals are either recorded in a separate clocking track or in a combination of several information tracks
- G11B 20/18 . . Error detection or correction; Testing, {e.g. of drop-outs}
- G11B 20/1803 . . . {by redundancy in data representation}
- G11B 20/1806 . . . {Pulse code modulation systems for audio signals ([G11B 20/1803](#) takes precedence)}
- G11B 20/1809 {by interleaving}
- G11B 20/1813 {by adding special bits or symbols to the coded information ([G11B 20/1809](#) takes precedence)}
- G11B 20/1816 . . . {Testing}
- G11B 20/182 {using test patterns}
- G11B 20/1833 . . . {by adding special lists or symbols to the coded information ([G11B 20/1806](#), [G11B 20/1866](#) take precedence)}
- G11B 20/1866 . . . {by interleaving ([G11B 20/1809](#) takes precedence)}
- G11B 20/1876 . . . {Interpolating methods}
- G11B 20/1879 . . . {Direct read-after-write methods}
- G11B 20/1883 . . . {Methods for assignment of alternate areas for defective areas}
- G11B 20/1886 {with tapes}
- G11B 20/1889 {with discs}
- G11B 20/20 . . for correction of skew for multitrack recording
- G11B 20/22 . . for reducing distortions
- G11B 20/225 . . {for reducing wow or flutter (by controlling the speed of the record carrier [G11B 15/46](#), [G11B 19/28](#))}
- G11B 20/24 . . for reducing noise {(control of amplification in general, e.g. dependent upon noise level

H03G}}

- G11B 21/00** **Head arrangements not specific to the method of recording or reproducing**
- G11B 21/003 . {Disposition of fixed heads, e.g. for scanning, selecting or following of tracks}
 - G11B 21/006 .. {for track following}
 - G11B 21/02 . Driving or moving of heads
 - G11B 21/022 .. {Programmed access in sequence to indexed parts of operating record carriers}
 - G11B 21/025 ... {of rotating discs}
 - G11B 21/027 ... {of tapes}
 - G11B 21/03 .. for correcting time base error {during transducing operation, by driving or moving the head in a direction more or less parallel to the direction of travel of the recording medium, e.g. tangential direction on a rotating disc (by driving or moving the head in a direction which cuts across the direction of travel of the recording medium [G11B 15/1808](#), [G11B 15/467](#), [G11B 19/20B2](#))}
 - G11B 21/04 .. Automatic feed mechanism producing a {progressive} transducing traverse of the head in a direction which cuts across the direction of travel of the recording medium, e.g. helical scan, {e.g. by lead-screw ([G11B 19/20B](#), [G11B 21/08](#) and [G11B 21/10](#) take precedence)}
 - G11B 21/043 ... {for stationary discs}
 - G11B 21/046 ... {details of the feed mechanism}
 - G11B 21/06 ... the record carrier having {mechanical} means to ensure traverse movement of the head, {e.g. grooves}
 - G11B 21/08 .. Track changing or selecting ([G11B 21/12](#) takes precedence){during transducing operation}
 - G11B 21/081 ... {Access to indexed tracks or parts of continuous track}
 - G11B 21/083 {on discs}
 - G11B 21/085 {with track following of accessed part}
 - G11B 21/086 {on tapes}
 - G11B 21/088 {with track following of accessed part}
 - G11B 21/10 .. Track finding or aligning by moving the head {Provisions for maintaining alignment of the head relative to the track during transducing operation, i.e. track following (characterised by the track access method [G11B 21/08](#))}
 - G11B 21/103 ... {on tapes}
 - G11B 21/106 ... {on disks}
 - G11B 21/12 .. Raising and lowering; Back-spacing or forward-spacing along track; Returning to starting position {otherwise than during transducing operation}
 - G11B 21/14 ... manually
 - G11B 21/16 . Supporting the heads; Supporting the sockets for plug-in heads
 - G11B 21/18 .. while the head is moving
 - G11B 21/20 .. while the head is in operative position but stationary or permitting minor movements to follow irregularities in surface of record carrier
 - G11B 21/21 ... with provision for maintaining desired spacing of head from record carrier, e.g. fluid-dynamic spacing, slider

- G11B 21/22 .. while the head is out of operative position
- G11B 21/24 .. Head support adjustments
- G11B 21/26 .. Means for interchange or replacement of head or head element

G11B 23/00 **Record carriers not specific to the method of recording or reproducing; Accessories, e.g. containers, specially adapted for co-operation with the recording or reproducing apparatus** {Intermediate mediums; Apparatus or processes specially adapted for their manufacture (processes involving a single technical art and for which provision exists elsewhere, see the relevant class, e.g. [B29](#), [B41M](#), [B05D](#), [C08L](#), [F16N](#))}

NOTE

In group [G11B 23/00](#), recording or reproducing apparatus does not include the record carriers.

- G11B 23/0007 . {Circuits or methods for reducing noise, for correction of distortion, or for changing density of recorded information, volume compression or expansion circuits per se [H03G 7/00](#)}

NOTE

This group is closed down and will in due course be transferred to [G11B 20/22](#) and [G11B 20/24](#) and subgroups

- G11B 23/0014 . {record carriers not specifically of filamentary or web form ([G11B 23/0057](#) takes precedence)}
- G11B 23/0021 .. {discs}
- G11B 23/0028 ... {Details}
- G11B 23/0035 {means incorporated in the disc, e.g. hub, to enable its guiding, loading or driving (means for driving the head [G11B 21/06](#); guiding the disc for centering or locking [G11B 17/022](#); turntables or spindles for driving [G11B 19/2009](#))}
- G11B 23/0042 {with provision for auxiliary features (sensing such features [G11B 17/00](#), [G11B 19/02](#))}
- G11B 23/005 ... {flexible discs ([G11B 23/0035](#) takes precedence)}
- G11B 23/0057 . {Intermediate mediums, i.e. mediums provided with an information structure not specific to the method of reproducing or duplication such as matrixes for mechanical pressing of an information structure (for record carriers with directly readable mechanical information [G11B 3/685](#)); record carriers having a relief information structure provided with or included in layers not specific for a single reproducing method; apparatus or processes specially adapted for their manufacture}
- G11B 23/0064 .. {mediums or carriers characterised by the selection of the material}
- G11B 23/0071 ... {additional layers for lubrication or wear protection (lubricating means not integrated in the record carrier structure [G11B 23/50](#))}
- G11B 23/0078 ... {information structure layers using metallic or dielectric coatings}
- G11B 23/0085 ... {intermediate mediums using a photosensitive material, e.g. photo-resist}
- G11B 23/0092 ... {molding resin compositions}
- G11B 23/02 . Containers; Storing means {both adapted to cooperate with the recording or

- reproducing means}(cabinets, cases, stands, modified to store record carriers [G11B 33/04](#); storing webs, tapes, or filamentary material in general [B65H 75/00](#))
- G11B 23/021 .. {comprising means for reducing influence of physical parameters, e.g. temperature change, moisture (combined with means for reconditioning or cleaning [G11B 23/507](#))}
- G11B 23/023 .. Containers for magazines or cassettes
- G11B 23/0233 ... {Containers for a single cassette}
- G11B 23/0236 ... {Containers for several cassettes}
- G11B 23/027 .. Containers for single reels or spools
- G11B 23/03 .. Containers for flat record carriers
- G11B 23/0301 ... {Details}
- G11B 23/0302 {Auxiliary features}
- G11B 23/0303 {Write protect features with a sliding part}
- G11B 23/0305 {Semiconductor memories}
- G11B 23/0306 [N: Means for locking the record carriers
- G11B 23/0307 {Positioning or centering features}
- G11B 23/0308 {Shutters ([G11B 23/0317](#) takes precedence)}
- G11B 23/031 {Indicating means, e.g. sticker, bar code}
- G11B 23/0311 {Wrong insertion preventing means}
- G11B 23/0312 {Driving features}
- G11B 23/0313 {Container cases}
- G11B 23/0315 {Materials}
- G11B 23/0316 {Constructional details, e.g. shape}
- G11B 23/0317 {Containers with interchangeable record carriers}
- G11B 23/0318 {Containers with incorporated transducing heads}
- G11B 23/032 ... {for rigid discs}
- G11B 23/0321 {rigid cartridges for single discs}
- G11B 23/0322 {comprising latching or movable handling devices ([G11B 17/032](#) takes precedence)}
- G11B 23/0323 {for disc-packs}
- G11B 23/0325 {comprising latching or movable handling devices ([G11B 17/038](#) takes precedence)}
- G11B 23/0326 ... {Assembling of containers}
- G11B 23/0327 ... {for special applications not otherwise provided for}
- G11B 23/0328 ... {the disc having to be extracted from the cartridge for recording reproducing, e.g. cooperating with an extractable tray}
- G11B 23/033 ... for flexible discs
- G11B 23/0332 {for single discs, e.g. envelopes}
- G11B 23/0335 {for disc packs}
- G11B 23/0337 { comprising latching or movable handling devices ([G11B 23/0325](#) and [G11B 17/038](#) take precedence)}
- G11B 23/037 .. Single reels or spools
- G11B 23/04 .. Magazines; Cassettes {for webs or filaments}([G11B 23/12](#) takes precedence; {cassettes with sealing or locking means [G11B 23/28](#); dummy cassettes for locking

- in the drive [G11B 33/005](#))
- G11B 23/041 . . . {Details}
- G11B 23/042 {Auxiliary features (sensing such features [G11B 15/06](#))}
- G11B 23/043 {Brakes for tapes or tape reels}
- G11B 23/044 {Reels or cores; positioning of the reels in the cassette}
- G11B 23/045 {Covers}
- G11B 23/046 {Indicating means, e.g. quantity of tape}
- G11B 23/047 {Guiding means}
- G11B 23/048 {Driving features}
- G11B 23/049 . . . {Cassettes for special applications not otherwise provided for}
- G11B 23/06 . . . for housing endless webs or filaments
- G11B 23/07 using a single reel or core
- G11B 23/08 . . . for housing webs or filaments having two distinct ends
- G11B 23/087 using two different reels or cores
- G11B 23/08707 {Details}
- G11B 23/08714 {Auxiliary features (sensing such features [G11B 15/06](#))}
- G11B 23/08721 {Brakes for tapes or tape reels ([G11B 23/08707](#) takes precedence)}
- G11B 23/08728 {Reels or cores; positioning of the reels in the cassette}
- G11B 23/08735 {Covers}
- G11B 23/08742 {in combination with brake means}
- G11B 23/0875 {Indicating means, e.g. quantity of tape}
- G11B 23/08757 {Guiding means}
- G11B 23/08764 {Liner sheets}
- G11B 23/08771 {Pressure pads}
- G11B 23/08778 {Driving features, e.g. belt}
- G11B 23/08785 {Envelopes}
- G11B 23/08792 {Shielding devices}
- G11B 23/093 the reels or cores being coaxial
- G11B 23/107 using one reel or core, one end of the record carrier coming out of the magazine or cassette
- G11B 23/113 . . . Apparatus or processes specially adapted for the manufacture of magazines or cassettes { e.g. initial loading into container (processes involving a single technical art and for which provision exists elsewhere, see the relevant class, e.g. B21, B29, B65)}
- G11B 23/12 . . . Bins for random storage of webs or filaments
- G11B 23/14 . . . providing ability to repeat location, e.g. using sprocket holes
- G11B 23/16 . . . Record carriers with single-track for recording at spaced intervals along the track thereof, e.g. for speech or language training {contains no documents}
- G11B 23/18 . . . Record carriers with multiple tracks, e.g. with complementary and partial tracks such as paired "stereo" tracks {contains no documents}
- G11B 23/20 . . . with provision for splicing to provide permanent or temporary connections

- G11B 23/22 .. of endless belts; of tapes forming Moebius loops
- G11B 23/24 .. of tapes having multiple tracks parallel to edge of record carrier by offset splicing to form endless loop with one or more helical tracks
- G11B 23/26 .. of leaders for loading or threading, e.g. to form a temporary connection
- G11B 23/28 . Indicating {or preventing} prior or unauthorized use, {e.g. cassettes with sealing or locking means, write-protect devices for discs (write-protect devices for tapes [G11B 23/042](#), [G11B 23/08714](#); dummy cassettes for locking in the drive [G11B 33/005](#))}
- G11B 23/281 .. { by changing the physical properties of the record carrier}
- G11B 23/282 ... { Limited play}
- G11B 23/283 .. { Security features, e.g. digital codes}
- G11B 23/284 ... { on the record carrier}
- G11B 23/285 ... { on the container or cartridge}
- G11B 23/286 .. { Antitheft arrangements, e.g. Electronic Article Surveillance (EAS) tags}
- G11B 23/287 .. { by mechanical lock}
- G11B 23/288 .. { Protecting disks from being written or overwritten}
- G11B 23/30 . with provision for auxiliary signals ([sensing such signals G11B 15/06](#))
- G11B 23/32 .. Electrical or mechanical contacting means; Tape stop foils
- G11B 23/34 .. Signal means additional to the main recording track, e.g. photo-electric sensing of sprocket holes for timing
- G11B 23/36 .. Signals on record carriers or on containers and recorded by the same method as the main recording
- G11B 23/38 . Visual features other than those contained in record tracks or represented by sprocket holes {the visual signals being auxiliary signals}
- G11B 23/40 .. Identifying or analogous means applied to or incorporated in the record carrier and not intended for visual display simultaneously with the playing-back of the record carrier, e.g. label, leader, photograph
- G11B 23/42 .. Marks for indexing, speed-controlling, synchronising, or timing
- G11B 23/44 .. Information for display simultaneously with playback of the record, e.g. photographic matter ([associated working of cameras or projectors with sound recording or reproducing means G03B 31/00](#))
- G11B 23/50 . Reconditioning of record carriers; Cleaning of record carriers; { Carrying-off electrostatic charges}{[G11B 3/58](#) takes precedence; { carrying off electrostatic charges in general [H05F 3/00](#)}
- G11B 23/502 .. {of tape carriers}
- G11B 23/505 .. {of disc carriers}
- G11B 23/507 ... {combined with means for reducing influence of physical parameters, e.g. temperature change, moisture}
- G11B 25/00** . **Apparatus characterised by the shape of record carrier employed but not specific to the method of recording or reproducing** ([individual parts of apparatus G11B 3/00 to G11B 23/00](#), [G11B 33/00](#)), {e.g. dictating apparatus; Combinations of such apparatus}
- G11B 25/02 . using cylindrical record carriers

- G11B 25/04 . using flat record carriers, e.g. disc, card
- G11B 25/043 .. {using rotating discs}
- G11B 25/046 .. {using stationary discs, or cards provided with a circular recording area (automatic feed mechanism producing a transducing t traverse of the head across stationary disc tracks [G11B 21/043](#); driving heads relatively to stationary record carriers for mechanical transducing [G11B 3/40](#))}
- G11B 25/06 . using web-form record carriers, e.g. tape
- G11B 25/063 .. {using tape inside container}
- G11B 25/066 .. {adapted for use with containers of different sizes or configurations; adaptor devices therefor}
- G11B 25/08 . using filamentary record carriers, e.g. wire
- G11B 25/10 . Apparatus capable of using record carriers defined in more than one of the sub-groups [G11B 25/02](#) to [G11B 25/08](#); {Adaptor devices therefor}

G11B 27/00 Editing; Indexing; Addressing; Timing or synchronising; Monitoring; Measuring tape travel

- G11B 27/002 . {Programmed access in sequence to a plurality of record carriers or indexed parts, e.g. tracks, thereof; e.g. for editing; (transfer of record carriers from magazine [G11B 15/68](#), [G11B 17/10](#); [G11B 17/22](#))}
- G11B 27/005 . {Reproducing at a different information rate from the information rate of recording (for television signals [H04N 5/783](#))}
- G11B 27/007 .. {reproducing continuously a part of the information, i.e. repeating}
- G11B 27/02 . Editing, e.g. varying the order of information signals recorded on, or reproduced from, record carriers (arrangements for sorting or merging computer data on continuous record carriers [G06F 7/22](#); mixing of video signals [H04N 5/265](#))

WARNING

For groups [G11B 27/022](#) to [G11B 27/038](#), see provisionally also [G11B 27/02](#), [G11B 27/029](#) and [G11B 27/036](#)

- G11B 27/022 .. Electronic editing of analogue information signals, e.g. audio or video signals
- G11B 27/024 ... on tapes ([G11B 27/028](#), [G11B 27/029](#) take precedence)
- G11B 27/026 ... on discs ([G11B 27/028](#), [G11B 27/029](#) take precedence)
- G11B 27/028 ... with computer assistance
- G11B 27/029 ... Insert-editing
- G11B 27/031 .. Electronic editing of digitised analogue information signals, e.g. audio or video signals
- G11B 27/032 ... on tapes ([G11B 27/036](#), [G11B 27/038](#) take precedence)
- G11B 27/034 ... on discs ([G11B 27/036](#), [G11B 27/038](#) take precedence)
- G11B 27/036 ... Insert-editing
- G11B 27/038 ... Cross-faders therefor
- G11B 27/04 .. using differential drive of record carrier and head {transferred to [G11B 15/1875](#)}

- G11B 27/06 .. Cutting and rejoining; Notching, or perforating record carriers otherwise than by recording styli ([record carriers with provision for splicing G11B 23/20](#))
- G11B 27/10 . Indexing; Addressing; Timing or synchronising; Measuring tape travel
- G11B 27/102 .. { Programmed access in sequence to addressed parts of tracks of operating record carriers ([access by moving the head G11B 3/08](#), [G11B 5/54](#), [G11B 7/085](#), [G11B 21/022](#); [by moving the record carrier G11B 15/005](#), [G11B 17/005](#), [by driving of both record carrier and head G11B 15/1816](#))}
- G11B 27/105 ... {of operating discs}
- G11B 27/107 ... {of operating tapes}
- G11B 27/11 .. by using information not detectable on the record carrier
- G11B 27/13 ... the information being derived from movement of the record carrier, e.g. using tachometer
- G11B 27/15 using mechanical sensing means {see provisionally also [G11B 27/13](#)}
- G11B 27/17 using electrical sensing means {see provisionally also [G11B 27/13](#)}
- G11B 27/19 .. by using information detectable on the record carrier
- G11B 27/22 ... Means responsive to presence or absence of recorded information signals
- G11B 27/24 ... by sensing features on the record carrier other than the transducing track ([for controlling purposes G11B 15/00](#), [G11B 17/00](#)); {sensing signals or marks recorded by another method than the main recording}
- G11B 27/26 by photoelectric detection, e.g. of sprocket holes
- G11B 27/28 ... by using information signals recorded by the same method as the main recording {[G11B 27/22](#) takes precedence}
- G11B 27/30 on the same track as the main recording
- G11B 27/3009 {used signal is a pilot signal inside the frequency band of the recorded main information signal}
- G11B 27/3018 {used signal is a pilot signal outside the frequency band of the recorded main information signal}
- G11B 27/3027 {used signal is digitally coded}
- G11B 27/3036 {Time code signal}
- G11B 27/3045 {superimposed on the recorded main signal, e.g. burn-in-time code}
- G11B 27/3054 {Vertical Interval Time code (VITC)}
- G11B 27/3063 {Subcodes}
- G11B 27/3072 {Coded signal uses a correlation function for detection}
- G11B 27/3081 {used signal is a video-frame or a video-field (P.I.P)}
- G11B 27/309 {Table of contents}
- G11B 27/32 .. on separate auxiliary tracks of the same or an auxiliary record carrier
- G11B 27/321 {used signal consists of two 180-degr. phase shifted signals of the same frequency}
- G11B 27/322 {used signal is digitally coded}
- G11B 27/323 {Time code signal, e.g. on a cue track as SMPTE- or EBU-time code}
- G11B 27/324 {Duty cycle modulation of control pulses, e.g. VHS-CTL-coding systems, RAPID-time code, VASS- or VISS-cue signals}
- G11B 27/325 {Subcodes}
- G11B 27/326 {used signal is a video-frame or a video-field (P.I.P.)}

- G11B 27/327 {Table of contents}
- G11B 27/328 {on a tape (TTOC)}
- G11B 27/329 {on a disc (VTOC)}
- G11B 27/34 .. Indicating arrangements (indicating measured values in general [G01D](#)){indicating means incorporated in magazine or cassette [G11B 23/046](#) and [G11B 23/0875](#)}
- G11B 27/36 . Monitoring, i.e. supervising the progress of recording or reproducing {for digital recording [G11B 20/00](#) and s.gr.; for monitoring, testing or measuring of TV recorders of the type covered by [H04N 5/76](#) and subgroups, see [H04N 17/06](#)}
- G11B 31/00** **Arrangements for the associated working of recording or reproducing apparatus with related apparatus** (with cameras or projectors [G03B 31/00](#); {recording/reproducing of music for electrophonic musical instruments [G10H 1/0033](#); automatic arrangements for answering calls or for recording messages for absent subscribers [H04M 1/64](#); telephonic communication systems adapted for combination with dictation recording and playback systems [H04M 11/10](#); connection of TV recorder with other related apparatus, e.g. TV camera or receiver, in which the TV signal is significantly involved [H04N](#), e.g. [H04N 5/225](#), [H04N 5/765](#); combination of radio or TV with other apparatus, e.g. with vehicles [H05K 11/00](#)})
- G11B 31/003 . {with radio receiver}
- G11B 31/006 . {with video camera or receiver}
- G11B 31/02 . with automatic musical instruments
- G11B 33/00** **Constructional parts, details or accessories not provided for in the preceding groups** (containers, packaging elements or packages specially adapted for record carriers [B65D 85/00](#))
- G11B 33/005 . {Means for locking the disc or cassette receiving slot, e.g. dummy cassettes locked in the slot}
- G11B 33/02 . Cabinets; Cases; Stands; Disposition of apparatus therein or thereon (furniture aspects [A47B](#), e.g. [A47B 81/06](#); {showing stands, hangers or shelves adapted for particular articles [A47F 7/00](#); albums for record carriers, e.g. discs [B42F 5/005](#); suspended filing appliances for record carriers, e.g. discs [B42F 15/0005](#); fastening devices for wings, e.g. covers [E05C](#); for holding wings in one or more opened positions [E05C 17/00](#); hinges [E05D](#); closers or openers of wings, e.g. with braking or counter-balancing devices [E05F](#)})
- G11B 33/022 .. {Cases}
- G11B 33/025 ... {Portable cases}
- G11B 33/027 .. {Covers ([G11B 33/022](#) takes precedence; with means for guiding the record carrier [G11B 17/34](#))}
- G11B 33/04 .. modified to store record carriers {(containers, storing means adapted for cooperation with the recording or reproducing apparatus [G11B 23/02](#))}
- G11B 33/0405 ... {for storing discs (anti-theft cases with locking means [E05B 73/0023](#))}
- G11B 33/0411 {Single disc boxes ([G11B 33/0461](#) takes precedence)}
- G11B 33/0416 {for disc cartridges}
- G11B 33/0422 {for discs without cartridge}

- G11B 33/0427 {comprising centre hole locking means}
- G11B 33/0433 {Multiple disc containers ([G11B 33/0461](#) takes precedence)}
- G11B 33/0438 {for disc cartridges}
- G11B 33/0444 {for discs without cartridge}
- G11B 33/045 {comprising centre hole locking means}
- G11B 33/0455 {for single disc boxes}
- G11B 33/0461 {Disc storage racks}
- G11B 33/0466 {for disc cartridges}
- G11B 33/0472 {for discs without cartridge}
- G11B 33/0477 {comprising centre hole locking means}
- G11B 33/0483 {for single disc boxes}
- G11B 33/0488 {in boxes or containers comprising additional sound reproducing or activating means}
- G11B 33/0494 { packages made by folding}
- G11B 33/06 .. combined with other apparatus having a different main function
- G11B 33/08 .. Insulation or absorption of undesired vibrations or sounds

- G11B 33/10 . Indicating arrangements; Warning arrangements {([G11B 15/04](#), [G11B 19/04](#), [G11B 27/34](#), [G11B 27/36](#) take precedence)}

- G11B 33/12 . Disposition of constructional parts in the apparatus, e.g. of power supply, of modules
- G11B 33/121 .. { the apparatus comprising a single recording/reproducing device}
- G11B 33/122 ... { Arrangements for providing electrical connections, e.g. connectors, cables, switches}
- G11B 33/123 ... { Mounting arrangements of constructional parts onto a chassis}
- G11B 33/124 { of the single recording/reproducing device, e.g. disk drive, onto a chassis}
- G11B 33/125 .. { the apparatus comprising a plurality of recording/reproducing devices, e.g. modular arrangements, arrays of disc drives}
- G11B 33/126 ... { Arrangements for providing electrical connections, e.g. connectors, cables, switches}
- G11B 33/127 ... { Mounting arrangements of constructional parts onto a chassis}
- G11B 33/128 { of the plurality of recording/reproducing devices, e.g. disk drives, onto a chassis}

- G11B 33/14 . Reducing influence of physical parameters, e.g. temperature change, moisture, dust
- G11B 33/1406 .. {Reducing the influence of the temperature}
- G11B 33/1413 ... {by fluid cooling}
- G11B 33/142 {by air cooling}
- G11B 33/1426 ... {by cooling plates, e.g. fins}
- G11B 33/1433 ... {by reducing the effects of the thermal expansion}
- G11B 33/144 ... {by detection, control, regulation of the temperature}
- G11B 33/1446 .. {Reducing contamination, e.g. by dust, debris}
- G11B 33/1453 ... {by moisture}
- G11B 33/146 ... {constructional details of filters}
- G11B 33/1466 ... {sealing gaskets, (gasket in general [F16J](#))}

- G11B 33/1473 . . . {of/from bearings}
- G11B 33/148 .. {Reducing friction, adhesion, drag}
- G11B 33/1486 .. {Control/regulation of the pressure, e.g. the pressure inside the housing of a drive}
- G11B 33/1493 .. {Electro-Magnetic Interference (EMI) or Radio Frequency Interference (RFI) shielding; grounding of static charges}

G11B 2005/00 **Recording by magnetisation or demagnetisation of a record carrier; Reproducing by magnetic means; Record carriers therefor** ([G11B 11/00](#){ and [G11B 13/00](#)} take precedence)

NOTE

Subgroups [G11B 5/02](#) to [G11B 5/86](#) take precedence over subgroups [G11B 5/004](#) to [G11B 5/016](#)

- G11B 2005/0002 . Special dispositions or recording techniques
- G11B 2005/0005 .. Arrangements, methods or circuits
- G11B 2005/0008 ... Magnetic conditioning of heads, e.g. biasing
- G11B 2005/001 ... Controlling recording characteristics of record carriers or transducing characteristics of transducers by means not being part of their structure
 - G11B 2005/0013 of transducers, e.g. linearisation, equalisation
 - G11B 2005/0016 of magnetoresistive transducers
 - G11B 2005/0018 by current biasing control or regulation
- G11B 2005/0021 ... Thermally assisted recording using an auxiliary energy source for heating the recording layer locally to assist the magnetization reversal
- G11B 2005/0024 ... Microwave assisted recording
- G11B 2005/0026 .. Pulse recording
 - G11B 2005/0029 ... using magnetisation components of the recording layer disposed mainly perpendicularly to the record carrier surface
- G11B 2005/0032 .. Transducing means or record carriers including or interacting with each other through interposition of, a physically controllable magnetic flux masking or focusing element
 - G11B 2005/0034 ... switchable at least locally between two different physical states, e.g. magnetic and non-magnetic
 - G11B 2005/0037 using superconductive elements
- G11B 2005/008 . Recording on, or reproducing or erasing from, magnetic tapes, { sheets, e.g. cards,} or wires ([G11B 15/00](#){and [G11B 19/00](#)} take precedence; { bulk transferring of information magnetisation for re-recording [G11B 5/865](#); marking record carriers in digital fashion G06K})
 - G11B 2005/00813 .. {magnetic tapes}
 - G11B 2005/00817 ... {on longitudinal tracks only, e.g. for serpentine format recording}
 - G11B 2005/00843 allowing digital compact cassette (DCC) format recording
- G11B 2005/127 . Structure or manufacture of heads, e.g. inductive
- G11B 2005/33 .. Structure or manufacture of flux-sensitive heads, {i.e. for reproduction only;

Combination of such heads with means for recording or erasing only}{Single head using magnetic domains for scanning [G11B 5/4946](#); multiple head for scanning [G11B 5/4907](#) and subgroups}; general details therefor [G11B 5/133](#) to [G11B 5/255](#))

- G11B 2005/39 . . . using magneto-resistive devices {or effects}
- [G11B 2005/3996](#) large or giant magnetoresistive effects (GMR), e.g. as generated in spin-valve (SV) devices

- G11B 2007/00** **Recording or reproducing by optical means, e.g. recording using a thermal beam of optical radiation {by modifying optical properties or the physical structure}, reproducing using an optical beam at lower power {by sensing optical properties}; Record carriers therefor; ([G11B 11/00](#), [G11B 13/00](#) take precedence)**

- [G11B 2007/0003](#) . . Recording, reproducing or erasing systems characterised by the structure or type of the carrier
- [G11B 2007/0006](#) . . . adapted for scanning different types of carrier, e.g. CD & DVD
- [G11B 2007/0009](#) . . . for carriers having data stored in three dimensions, e.g. volume storage
- [G11B 2007/0013](#) for carriers having multiple discrete layers
- [G11B 2007/0016](#) . . . for carriers adapted to have label information written on the non-data side by the optical head used for data recording, e.g. lightscribe, labelflash

- G11B 2007/004 . . Recording, reproducing or erasing methods; Read, write or erase circuits therefor {(magneto-optical systems [G11B 11/105](#))}
- G11B 2007/0045 . . . Recording ([G11B 7/006](#). [G11B 7/0065](#) take precedence)
- [G11B 2007/00457](#) Two photon recording
- G11B 2007/0065 . . . Recording, reproducing or erasing by using optical interference patterns, e.g. holograms
- [G11B 2007/00653](#) Collinear holography
- [G11B 2007/00656](#) Counterpropagating holography

- G11B 2007/007 . . Arrangement of the information on the record carrier, e.g. form of tracks, { actual track shape, e.g. wobbled, or cross-section, e.g. v-shaped; Sequential information structures, e.g. sectoring or header formats within a track}
- [G11B 2007/00709](#) . . . Dimensions of grooves or tracks, e.g. groove depth, track pitch
- [G11B 2007/00727](#) . . . where the information is modified to form a visible pattern, e.g. forming a label by modifying the width of pits or grooves
- [G11B 2007/00754](#) . . . Track shape, e.g. address or synchronisation information in wobbled track or sidewall
- [G11B 2007/00763](#) . . . Track cross-section, e.g. V-shaped, trapezoidal
- G11B 2007/013 . . . for discrete information, i.e. where each information unit is stored at a distinct discrete location {e.g. digital information formats within a data block or sector}
- [G11B 2007/0133](#) Details of discrete information structures, e.g. shape or dimensions of pits, prepits
- [G11B 2007/0136](#) where each location can have more than two values ('multivalued'), for data or prepits

- G11B 2007/08 . . Disposition or mounting of heads or light sources relatively to record carriers
- G11B 2007/09 . . . with provision for moving the light beam or focus plane for the purpose of maintaining alignment of the light beam relative to the record carrier during transducing operation, e.g. to compensate for surface irregularities of the latter or

- for track following
- G11B 2007/0908 . . . [{for focusing only \(G11B 7/0925, G11B 7/094, G11B 7/0941, G11B 7/0943, G11B 7/0945, G11B 7/0946, G11B 7/0948 take precedence\)}](#)
 - G11B 2007/0917 [{Focus-error methods other than those covered by G11B 7/0909 to G11B 7/0916}](#)
 - G11B 2007/0919 Critical angle methods
 - G11B 2007/092 Dither methods
 - G11B 2007/0922 Far-field methods
 - G11B 2007/0924 Skewed beams methods (using an angled beam, i.e. a beam which is reflected from the disc at an angle different from 90°)

 - G11B 2007/12 . . Heads, e.g. forming of the optical beam spot or modulation of the optical beam (disposition or mounting of head elements within housing or with provision for moving of light source, optical beam or detector, irrelevant to the transducing method [G11B 7/08](#); { modulating lasers [H01S 3/10](#); controlling the intensity, colour, phase, polarisation or direction of light beams arriving from an independent light source, e.g. switching gating or modulating [G02F 1/00](#)})
 - G11B 2007/135 . . Means for guiding the beam from the source to the record carrier or from the record carrier to the detector

WARNING

For all subgroups of [G11B 7/135](#), see provisional also [G11B 7/135](#)

- G11B 2007/1372 . . . Lenses
- G11B 2007/13722 Fresnel lenses
- G11B 2007/13725 Catadioptric lenses, i.e. having at least one internal reflective surface
- G11B 2007/13727 Compound lenses, i.e. two or more lenses co-operating to perform a function, e.g. compound objective lens including a solid immersion lens, positive and negative lenses either bonded together or with adjustable spacing

- G11B 2007/24 . . Record carriers characterised by shape, structure or physical properties, or by the selection of the material (characterised by the arrangement of information on the carrier [G11B 7/007](#))
- G11B 2007/240004 . . characterised by the form of the carrier
- G11B 2007/240008 . . . Cards
- G11B 2007/240012 intended for rotation
- G11B 2007/240017 . . . Tapes
- G11B 2007/240021 . . . Cylinders
- G11B 2007/240025 . . for storing optical interference patterns, e.g. holograms
- G11B 2007/241 . . characterised by the selection of the material
- G11B 2007/242 . . . of recording layers
- G11B 2007/243 comprising inorganic materials only, e.g. ablative layers
- G11B 2007/24302 Metals or metalloids
- G11B 2007/24304 group 2 or 12 elements (e.g. Be, Ca, Mg, Zn, Cd)
- G11B 2007/24306 transition metal elements of groups 3-10
- G11B 2007/24308 transition metal elements of group 11 (Cu, Ag, Au)

G11B 2007/2431	.....	group 13 elements (B, Al, Ga, In)
G11B 2007/24312	.....	group 14 elements (e.g. Si, Ge, Sn)
G11B 2007/24314	.....	group 15 elements (e.g. Sb, Bi)
G11B 2007/24316	.....	group 16 elements (i.e. chalcogenides, Se, Te)
G11B 2007/24318	.....	Non-metallic elements
G11B 2007/2432	.....	Oxygen
G11B 2007/24322	.....	Nitrogen
G11B 2007/24324	.....	Sulfur
G11B 2007/24326	.....	Halides (F, Cl, Br...)
G11B 2007/24328	.....	Carbon
G11B 2007/244	....	comprising organic materials only
G11B 2007/2445	.....	containing an azulene compound
G11B 2007/246	.....	containing dyes
G11B 2007/24606	.....	Azo- dyes
G11B 2007/24612	.....	two or more dyes in one layer
G11B 2007/24618	.....	two or more dyes in two or more different layers, e.g. one dye absorbing at 405 nm in layer one and a different dye absorbing at 650 nm in layer two
G11B 2007/24624	.....	fluorescent dyes
G11B 2007/247	.....	methine or polymethine dyes
G11B 2007/24705	.....	Cyanine
G11B 2007/2471	.....	Merocyanine
G11B 2007/24715	.....	Oxonol
G11B 2007/249	.....	containing organometallic compounds (G11B 7/246 takes precedence)
G11B 2007/24905	.....	neutral
G11B 2007/2491	.....	as anion
G11B 2007/24915	.....	as cation
G11B 2007/252	...	of layers other than recording layers

NOTE

In group [G11B 7/252](#), multi-aspect classification is applied, so that if subject matter is characterised by aspects covered by more than one of its subgroups, the subject matter should be classified in each of those subgroups.

G11B 2007/253	....	of substrates
G11B 2007/25301	.....	comprising glass
G11B 2007/25302	.....	comprising metals
G11B 2007/25303	.....	comprising resins
G11B 2007/25304	.....	Polycarbonate (PC)
G11B 2007/25305	.....	Polyester, e.g. PET, PETG, PEN
G11B 2007/25306	.....	Polystyrene (PS)
G11B 2007/25307	.....	Polycycloolefines (COCs)
G11B 2007/25308	.....	Biodegradable polymers, cellulose included

G11B 2007/254	....	of protective topcoat layers
G11B 2007/25402	.....	consisting essentially of organic resins
G11B 2007/25405	.....	comprising inorganic filler, e.g. particles, fibres
G11B 2007/25408	.....	consisting essentially of inorganic materials
G11B 2007/25411	.....	containing transition metal elements (Zn, Fe, Co, Ni, Pt)
G11B 2007/25414	.....	containing Group 13 elements (B, Al, Ga)
G11B 2007/25417	.....	containing Group 14 elements (C, Si, Ge, Sn)
G11B 2007/257	....	of layers having properties involved in recording or reproduction, e.g. optical interference layers or sensitising layers or dielectric layers, which are protecting the recording layers
G11B 2007/25701	.....	consisting essentially of organic materials
G11B 2007/25703	.....	Resins
G11B 2007/25705	.....	consisting essentially of inorganic materials
G11B 2007/25706	.....	containing transition metal elements (Zn, Fe, Co, Ni, Pt)
G11B 2007/25708	.....	containing group 13 elements (B, Al, Ga)
G11B 2007/2571	.....	containing group 14 elements except carbon (Si, Ge, Sn, Pb)
G11B 2007/25711	.....	containing carbon
G11B 2007/25713	.....	containing nitrogen
G11B 2007/25715	.....	containing oxygen
G11B 2007/25716	.....	containing sulfur
G11B 2007/25718	.....	containing halides (F, Cl, Br, I)
G11B 2007/258	....	of reflective layers
G11B 2007/2581	.....	based on aluminium
G11B 2007/2582	.....	based on silver
G11B 2007/2583	.....	based on gold
G11B 2019/00		Driving, starting, stopping record carriers not specifically of filamentary or web form, or of supports therefor; Control thereof; Control of operating function (guiding such record carriers G11B 17/00); { Driving both disc and head}
G11B 2019/02	.	Control of operating function, e.g. switching from recording to reproducing
G11B 2019/12	..	by sensing distinguishing features of {or on} records, e.g. diameter {end mark}
G11B 2019/121	...	by photo-electric sensing
G11B 2020/00		Signal processing not specific to the method of recording or reproducing; Circuits therefor
G11B 2020/00007	.	{ Time or data compression or expansion (audio compression based on psychoacoustics G10L 19/00 ; data processing for reproducing audio data at different playback speeds G10L 21/04 ; video compression H04N 7/26 ; data compression per se H03M 7/30)}
G11B 2020/00014	..	the compressed signal being an audio signal
G11B 2020/00021	...	lossless audio compression
G11B 2020/00028	...	Advanced audio coding [AAC]

G11B 2020/00036	...	AC-3, i.e. ATSC digital audio compression standard
G11B 2020/00043	...	Adaptive transform acoustic coding [ATRAC]
G11B 2020/0005	...	DTS audio codecs
G11B 2020/00057	...	MPEG-1 or MPEG-2 audio layer III [MP3]
G11B 2020/00065	...	Sigma-delta audio encoding
G11B 2020/00072	..	the compressed signal including a video signal
G11B 2020/00079	..	the compression ratio or quality level being adapted to circumstances, e.g. to the available recording space
G11B 2020/10	.	Digital recording or reproducing (digital computers in which at least part of the computation is effected electrically , arrangements for handling digital data G06F ; transmission of digital information H04L)
G11B 2020/10527	..	{ Audio or video recording ; Data buffering arrangements (G11B 20/12 to G11B 20/18 take precedence) }
G11B 2020/10537	...	Audio or video recording
G11B 2020/10546	....	specifically adapted for audio data
G11B 2020/10555	.....	wherein the frequency, the amplitude, or other characteristics of the audio signal is taken into account
G11B 2020/10564	.....	frequency
G11B 2020/10574	.....	volume or amplitude
G11B 2020/10583	.....	parameters controlling audio interpolation processes
G11B 2020/10592	....	specifically adapted for recording or reproducing multichannel signals
G11B 2020/10601	.....	surround sound signal
G11B 2020/10611	.....	3D video data
G11B 2020/1062	...	Data buffering arrangements, e.g. recording or playback buffers
G11B 2020/10629	....	the buffer having a specific structure
G11B 2020/10638	.....	First-in-first-out memories [FIFO] buffers
G11B 2020/10648	.....	First-in-last-out memories [LIFO] buffers
G11B 2020/10657	.....	Cache memories for random data access, e.g. buffers wherein the data output is controlled by a priority parameter other than retention time
G11B 2020/10666	.....	Ring buffers, e.g. buffers wherein an iteratively progressing read or write pointer moves back to the beginning of the buffer when reaching the last storage cell
G11B 2020/10675	....	aspects of buffer control
G11B 2020/10685	.....	input interface, i.e. the way data enter the buffer, e.g. by informing the sender that the buffer is busy
G11B 2020/10694	.....	output interface, i.e. the way data leave the buffer, e.g. by adjusting the clock rate
G11B 2020/10703	.....	processing rate of the buffer, e.g. by accelerating the data output
G11B 2020/10712	.....	buffer capacity, e.g. when the buffer capacity is exhausted, buffered data are overwritten with more recent data, accepting that the old data are lost
G11B 2020/10722	.....	wherein the size of the buffer is variable, e.g. by adding additional memory cells for coping with input streams that have high bit rates
G11B 2020/10731	.....	wherein the buffer I/O can be temporarily suspended, e.g. by refusing to accept further data to be buffered
G11B 2020/1074	.....	involving a specific threshold value

G11B 2020/1075	....	the usage of the buffer being restricted to a specific kind of data
G11B 2020/10759	.....	content data
G11B 2020/10768	.....	by pre-caching the initial portion of songs or other recorded or downloaded data for starting playback instantly
G11B 2020/10777	.....	instructions or commands
G11B 2020/10787	.....	parameters, e.g. for decoding or encoding
G11B 2020/10796	.....	address data
G11B 2020/10805	....	involving specific measures to prevent a buffer overflow
G11B 2020/10814	....	involving specific measures to prevent a buffer underrun
G11B 2020/10824	....	the buffer being used to prevent vibrations or shocks from causing delays
G11B 2020/10833	..	Copying or moving data from one record carrier to another
G11B 2020/10842	...	wherein not all recorded data are copied or moved
G11B 2020/10851	..	Erasing data on the record carrier
G11B 2020/10861	..	Finalising a record carrier after a recording operation, e.g. to ensure compatibility with a ROM medium
G11B 2020/1087	..	wherein a selection is made among at least two alternative ways of processing
G11B 2020/10879	...	the kind of record carrier being the selection criterion
G11B 2020/10888	...	the kind of data being the selection criterion
G11B 2020/10898	..	Overwriting or replacing recorded data
G11B 2020/10907	...	using pseudo-overwriting, i.e. virtually or logically overwriting data on WORM media by remapping recorded blocks to alternate areas
G11B 2020/10916	..	Seeking data on the record carrier for preparing an access to a specific address
G11B 2020/10925	...	involving an inter-layer jump, i.e. changing from one recording layer to another
G11B 2020/10935	..	wherein a time constraint must be met
G11B 2020/10944	...	Real-time recording or reproducing, e.g. for ensuring seamless playback of AV data
G11B 2020/10953	...	Concurrent recording or playback of different streams or files
G11B 2020/10962	.....	wherein both recording and playback take place simultaneously
G11B 2020/10972	...	Management of interruptions, e.g. due to editing
G11B 2020/10981	...	Recording or reproducing data when the data rate or the relative speed between record carrier and transducer is variable
G11B 2020/1099	.....	wherein a disc is spun at a variable speed
G11B 2020/12	..	Formatting, e.g. arrangement of data block or words on the record carriers {(within interface between computers and data recorders G06F 3/06)}
G11B 2020/1217	...	{on discs}
G11B 2020/1218	....	wherein the formatting concerns a specific area of the disc
G11B 2020/122	.....	Burst cutting area [BCA]
G11B 2020/1221	.....	cluster, i.e. a data structure which consists of a fixed number of sectors or ECC blocks
G11B 2020/1222	.....	ECC block, i.e. a block of error correction encoded symbols which includes all parity data needed for decoding (pure error correction aspects G11B 20/18)
G11B 2020/1224	.....	extent, i.e. a set of sectors which numbers form a continuous ascending sequence
G11B 2020/1225	.....	frame, i.e. a subunit of a sector containing user data, e.g. a sync frame

G11B 2020/1227	.....	one layer of multilayer disc
G11B 2020/1228	.....	middle zone or outer guard area of a multilayer disc
G11B 2020/1229	.....	lead-in area
G11B 2020/1231	.....	lead-out area
G11B 2020/1232	.....	sector, i.e. the minimal addressable physical data unit
G11B 2020/1234	.....	wherein the sector is a headerless sector, i.e. it does not comprise an ID field
G11B 2020/1235	.....	session, i.e. a contiguous area having its own lead-in area, program area and lead-out area
G11B 2020/1237	.....	recording side of a single layer medium
G11B 2020/1238	.....	track, i.e. the entire a spirally or concentrically arranged path on which the recording marks are located
G11B 2020/1239	.....	the track being a pregroove, e.g. the wobbled track of a recordable optical disc
G11B 2020/1241	.....	user area, i.e. the area of a disc where user data are to be recorded
G11B 2020/1242	.....	the area forming one or more zones, wherein each zone is shaped like an annulus or a circular sector
G11B 2020/1244	.....	CAV zone, in which a constant angular velocity is used
G11B 2020/1245	.....	CLV zone, in which a constant linear velocity is used
G11B 2020/1247	.....	rewritable zone, e.g. a RAM zone of a hybrid disc having ROM and RAM areas
G11B 2020/1248	.....	ROM zone, i.e. an unrewritable zone
G11B 2020/1249	.....	wherein the bits are arranged on a two-dimensional hexagonal lattice
G11B 2020/1255	.....	Fixed Block Architecture (FBA) format
G11B 2020/1257	.....	Count Key Data (CKD) format
G11B 2020/1259	.....	with ROM/RAM areas
G11B 2020/1264	.....	wherein the formatting concerns a specific kind of data
G11B 2020/1265	.....	Control data, system data or management information, i.e. data used to access or process user data
G11B 2020/1267	.....	Address data
G11B 2020/1268	.....	Address in pregroove [ADIP] information
G11B 2020/1269	.....	Absolute time in pregroove [ATIP] information
G11B 2020/1271	.....	the address data being stored in a subcode, e.g. in the Q channel of a CD
G11B 2020/1272	.....	Burst indicator subcode [BIS]
G11B 2020/1274	.....	stored in pre-pits, i.e. in embossed pits, ROM marks or prepits
G11B 2020/1275	.....	Calibration data, e.g. specific training patterns for adjusting equalizer settings or other recording or playback parameters
G11B 2020/1277	.....	for managing gaps between two recordings, e.g. control data in linking areas, run-in or run-out fields, guard or buffer zones
G11B 2020/1278	.....	Physical format specifications of the record carrier, e.g. compliance with a specific standard, recording density, number of layers, start of data zone or lead-out
G11B 2020/1279	.....	Permanent information and control data stored in the PIC zone of a Blu-Ray disc
G11B 2020/1281	.....	Servo information

G11B 2020/1282	.....	in embedded servo fields
G11B 2020/1284	.....	in servo fields which split data fields
G11B 2020/1285	.....	Status of the record carrier, e.g space bit maps, flags indicating a formatting status or a write permission
G11B 2020/1287	.....	Synchronisation pattern, e.g. VCO fields (specific bit sequences of sync patterns G11B 20/1403 ; A/V synchronisation G11B27)
G11B 2020/1288	....	Formatting by padding empty spaces with dummy data, e.g. writing zeroes or random data when de-icing optical discs
G11B 2020/1289	....	Formatting of user data
G11B 2020/1291	...	wherein the formatting serves a specific purpose
G11B 2020/1292	....	Enhancement of the total storage capacity
G11B 2020/1294	....	Increase of the access speed
G11B 2020/1295	.....	wherein the focus is on the read access speed
G11B 2020/1297	.....	wherein the focus is on the write access speed
G11B 2020/1298	....	Enhancement of the signal quality
G11B 2020/14	..	using self-clocking codes
G11B 2020/1403	...	{characterised by the use of two levels}
G11B 2020/1423	.....	{Code representation depending on subsequent bits, e.g. delay modulation, double density code, Miller code}
G11B 2020/1426	.....	{conversion to or from block codes or representations thereof}
G11B 2020/143	.....	4 to 6 modulation
G11B 2020/1434	.....	8 to 9 modulation
G11B 2020/1438	.....	8 to 10 modulation
G11B 2020/1442	.....	8 to 12 modulation
G11B 2020/1446	.....	16 to 17 modulation
G11B 2020/1449	.....	24 to 25 modulation
G11B 2020/1453	.....	17PP modulation, i.e. the parity preserving RLL(1,7) code with rate 2/3 used on Blu-Ray discs
G11B 2020/1457	.....	wherein DC control is performed by calculating a digital sum value [DSV]
G11B 2020/1461	.....	8 to 14 modulation, e.g. the EFM code used on CDs or mini-discs
G11B 2020/1465	.....	8 to 16 modulation, e.g. the EFM+ code used on DVDs
G11B 2020/1469	.....	modulation code with one or more merging bits between consecutive codewords
G11B 2020/1473	.....	modulation code without any merging bits
G11B 2020/1476	....	Synchronisation patterns; Coping with defects thereof
G11B 2020/148	.....	using error detecting or error correcting codes
G11B 2020/1484	....	Codewords used in servo patterns
G11B 2020/18	..	Error detection or correction; Testing, {e.g. of drop-outs}
G11B 2020/1816	...	{Testing}
G11B 2020/1823	....	wherein a flag is set when errors are detected or qualified
G11B 2020/1826	....	wherein a defect list or error map is generated
G11B 2020/183	....	wherein at least one additional attempt is made to read or write the data when a first attempt is unsuccessful

- G11B 2020/1833 . . . {by adding special lists or symbols to the coded information ([G11B 20/1806](#), [G11B 20/1866](#) take precedence)}
- G11B 2020/1836 using a Reed Solomon [RS] code
- G11B 2020/184 using a cross-interleaved Reed Solomon [CIRC]
- G11B 2020/1843 using a cyclic redundancy check [CRC]
- G11B 2020/1846 using a picket code, i.e. a code in which a long distance code [LDC] is arranged as an array and columns containing burst indicator subcode [BIS] are multiplexed for erasure decoding
- G11B 2020/185 using an low density parity check [LDPC] code
- G11B 2020/1853 using a product code which has inner and outer parity symbols
- G11B 2020/1856 using a turbo code
- G11B 2020/1859 wherein a trellis is used for decoding the error correcting code
- G11B 2020/1863 wherein the Viterbi algorithm is used for decoding the error correcting code
- G11B 2020/1869 . . . Preventing ageing phenomena from causing data loss, e.g. by monitoring the age of record carriers or by recognising wear, and by copying information elsewhere when a record carrier becomes unreliable
- G11B 2020/1873 . . . Temporary defect structures for write-once discs, e.g. TDDS, TDMA or TDFL
- G11B 2020/1883 . . . {Methods for assignment of alternate areas for defective areas}
- G11B 2020/1893 using linear replacement to relocate data from a defective block to a non-contiguous spare area, e.g. with a secondary defect list [SDL]
- G11B 2020/1896 using skip or slip replacement to relocate data from a defective block to the next usable block, e.g. with a primary defect list [PDL]

G11B 2209/00 Recording or reproducing using a method not covered elsewhere in this subclass

- G11B 2209/02 . . . transducing on or investigating record carriers or information recording transducers or systems by using near-field interactions

G11B 2220/00 Record carriers by type

- G11B 2220/17 . . . Card-like record carriers
- G11B 2220/20 . . . Disc-shaped record carriers
- G11B 2220/21 . . . characterised in that the disc is of read-only, rewritable, or recordable type
- G11B 2220/211 . . . Discs having both read-only and rewritable or recordable areas containing application data; Partial ROM [PROM] media
- G11B 2220/213 . . . Read-only discs
- G11B 2220/215 . . . Recordable discs
- G11B 2220/216 Rewritable discs
- G11B 2220/218 Write-once discs
- G11B 2220/23 . . . characterised in that the disc has a specific layer structure
- G11B 2220/232 . . . Double-sided discs, i.e. two recording layers accessed from opposite sides

- G11B 2220/235 . . . Multilayer discs, i.e. multiple recording layers accessed from the same side
- G11B 2220/237 having exactly two recording layers
- G11B 2220/25 . . characterised in that the disc is based on a specific recording technology
- G11B 2220/2504 . . . Holographic discs; Holographic digital data storage [HDDS]
- G11B 2220/2508 . . . Magnetic discs
- G11B 2220/2512 Floppy disks
- G11B 2220/2516 Hard disks
- G11B 2220/252 Patterned or quantised magnetic media, i.e. bits are stored in predefined single domain elements
- G11B 2220/2525 . . . Magneto-optical [MO] discs
- G11B 2220/2529 Mini-discs
- G11B 2220/2533 MO disc using magnetic super resolution, i.e., the magnetic mark is smaller than the laser spot size
- G11B 2220/2537 . . . Optical discs
- G11B 2220/2541 Blu-ray discs; Blue laser DVR discs
- G11B 2220/2545 CDs
- G11B 2220/255 CD-I, i.e. CD-interactive
- G11B 2220/2554 CD-V [CD-Video], CDV, or CD+V, as defined in IEC 61104
- G11B 2220/2558 CD-XA format, i.e. eXtended architecture extension of the CD-ROM standard
- G11B 2220/2562 DVDs [digital versatile discs]; Digital video discs; MMCDs; HDCDs
- G11B 2220/2566 DVDs belonging to the minus family, i.e. -R, -RW, -VR
- G11B 2220/257 DVDs belonging to the plus family, i.e. +R, +RW, +VR
- G11B 2220/2575 DVD-RAMs
- G11B 2220/2579 HD-DVDs [high definition DVDs]; AODs [advanced optical discs]
- G11B 2220/2583 wherein two standards are used on a single disc, e.g. one DVD section and one CD section
- G11B 2220/2587 Laser Discs; Optical disc using analog recording
- G11B 2220/2591 SFFO discs, i.e. small form factor optical discs; Portable blue
- G11B 2220/2595 Super-resolution optical discs, i.e. optical discs wherein the size of marks is below the optical diffraction limit
- G11B 2220/40 . . Combinations of multiple record carriers
- G11B 2220/41 . . Flat as opposed to hierarchical combination, e.g. library of tapes or discs, CD changer, or groups of record carriers that together store one title
- G11B 2220/412 . . . Distributed storage methods, i.e. the system may autonomously determine for a storage device that provides enough storage capacity for recording
- G11B 2220/415 . . . Redundant array of inexpensive disks [RAID] systems
- G11B 2220/417 . . . Redundant array of inexpensive tapes [RAIT] systems
- G11B 2220/45 . . Hierarchical combination of record carriers, e.g. HDD for fast access, optical discs for long term storage or tapes for backup
- G11B 2220/455 . . . said record carriers being in one device and being used as primary and secondary/backup media, e.g. HDD-DVD combo device, or as source and target media, e.g. PC and portable player
- G11B 2220/60 . . Solid state media ([details of solid state memory devices G11C](#))

- G11B 2220/61 . . wherein solid state memory is used for storing A/V content ([storing computer data in solid state memories G06F](#))
- G11B 2220/63 . . wherein solid state memory is used as a supplementary storage medium to store auxiliary data for detecting or correcting errors on a main storage medium
- G11B 2220/65 . . wherein solid state memory is used for storing indexing information or metadata
- G11B 2220/652 said memory being attached to the recording medium
- G11B 2220/655 Memory in cassette [MIC]
- G11B 2220/657 Memory in disc [MID]

- G11B 2220/80 . Indexing information stored in optical or magnetic or other strip attached to cassette or disc, e.g. barcodes attached to a recording medium

- G11B 2220/90 . Tape-like record carriers
- G11B 2220/91 . . Helical scan format, wherein tracks are slightly tilted with respect to tape direction, e.g. VHS, DAT, DVC, AIT or exabyte
- G11B 2220/913 Digital audio tape [DAT] format
- G11B 2220/916 Digital data storage [DDS] format
- G11B 2220/93 . . Longitudinal format, wherein tracks are in the direction of the tape, read with a static head, e.g. DCC
- G11B 2220/95 . . Serpentine format, wherein a single track or group of tracks traverses the tape plural times from one end to the other
- G11B 2220/953 Digital linear tape [DLT] format
- G11B 2220/956 Linear tape open [LTO] format