



72.1	..Locating specific areas	77.15	.....Plural pilot signals along single transverse path
72.2	...Responsive to recorded address	77.16	.....Having head deflection drive (e.g., piezoelectric bimorph)
72.3	...Responsive to tape transport	77.17	.....Dithering
73.01	..Speed	78.01	..Track changing
73.02	...Control of relative speed between carriers	78.02	...Tape
73.03	...Rotary carrier	78.03	...Plural tapes
73.04	...Linear carrier	78.04	...For rotary carrier (e.g., disc)
73.05	....Plural speed transport	78.05	...Coarse and fine head drive motors
73.06	.....Automatic change between fixed speeds	78.06	...Specified velocity pattern during access
73.07	.....Automatic selection of carrier or track speed	78.07	.....Controlled by memory device
73.08	.....Variable speed	78.08	....Specified spatial pattern during access
73.09	....Constant speed	78.09	....Including model of servo system or element
73.11	.....By reproduced control signal and transport derived signal	78.11	....Including nonmagnetic position sensing
73.12	.....By reproduced control signal	78.12	....Including particular head actuator
73.13	.....From separate track	78.13	.....Stepping motor
73.14	.....By signal derived from transport	78.14	....By recorded servo reference or address signal
74.1	..Stopping or reversing	78.15	....Drum
74.2	...Responsive to reel rotation	79	<b>RECORDER CONTROL OF AN EXTERNAL DEVICE</b>
74.3	...Responsive to tape tension	80	.Slide or movie projectors
74.4	...Responsive to magnetic recorded signals	81	<b>RECORD TRANSPORT WITH HEAD MOVING DURING TRANSDUCING</b>
74.5	...Responsive to physical property of record	82	.Belt record
74.6	....Photoelectric	83	.Tape record
74.7	....Conductive	84	..Rotating head
75	.Controlling the head	85	...Tape in container
76	..Azimuth or skew	86	.Disk record
77.01	..Track centering	87	.Drum record
77.02	...Rotary carrier	88	<b>RECORD TRANSPORT WITH HEAD STATIONARY DURING TRANSDUCING</b>
77.03	....By nonmagnetic sensing (e.g., optical, capacitive)	89	.Wire record
77.04	....By memory storage of repeatable error or correction	90	.Tape record
77.05	....By servo signal component from carrier surface separate from information signal bearing surface	91	..Plural tapes
77.06	....Reproduced data signal used for tracking	92.1	...Tape in container
77.07	....By tracking signal recorded on or immediately beneath surface	93	..Tape in container
77.08	.....Distinct servo sector	94	...Transport accommodates different types
77.11	.....Continuous servo signal	95	...With tape extraction
77.12	...Elongated web carrier (i.e., tape)	96.1	...Plural reels
77.13	....Transverse scan path	96.2	....With dual capstan drive
77.14	.....By pilot signal	96.3	....Reel drive details
		96.4	.....With common capstan drive
		96.51	....Container mounting details

96.61	.....With pivotal holder	235.5	....Negative pressure type
97.01	.Disk record	235.6	.....Leading end detail
97.02	..Environmental control (e.g., air filter, temperature control)	235.7	.....Trailing end detail
97.03	...Plural disks	235.8	.....Rail surface detail
97.04	...Flexible disk	235.9	.....Rail side edge detail
98.01	..Plural disks	236	.....Cross rail detail
98.02	...Axially fixed flexible disks	236.1	.....Varying width rail
98.03	...With pneumatic partitioning of disks	236.2	.....Asymmetrical rail arrangement
98.04	...Changer	236.3	.....Three or more rails/pads
98.05	....Control detail	236.4	....Leading end detail
98.06	....Mechanical detail	236.5	....Trailing end detail
98.07	...Rotational drive detail	236.6	....Rail surface detail
98.08	...Seating of disks	236.7	....Rail side edge detail
99.01	..Flexible disk	236.8	....Varying width rail
99.02	...Loading or ejecting mechanism	236.9	....Asymmetrical rail arrangement
99.03	....Motorized	237	....Three or more rails/pads
99.04	...Rotational drive detail	237.1	....Partial contact
99.05	...Disk seating	240	<b>HEAD MOUNTING</b>
99.06	...Loading or ejecting mechanism	250	.For moving head into/out of transducing position
99.07	...Motorized	251	..Tape record having arcuate head retraction movement
99.08	..Rotational drive detail	251.1	..Tape record having linear head retraction movement
99.09	...Movable drive	251.2	...Driven by tape driver
99.11	...Stationary drive	251.3	...Cam type
99.12	..Disk seating	251.4	...Solenoid type
100.1	.Drum record	251.5	...Rotary head type
101	<b>HEAD TRANSPORT WITH RECORD STATIONARY DURING TRANSDUCING</b>	254	..Disk record
220	<b>FLUID BEARING RECORD SUPPORT</b>	254.1	...Flexible disk
221	.Tape record	254.2	...Arcuate track change type
221.1	..Liquid bearing	254.3	....Moving lifter
224	.Disk record	254.4	.....Lifter surface detail
230	<b>FLUID BEARING HEAD SUPPORT</b>	254.5	.....Adjustment detail
231	.Tape record	254.6	.....Actuator side detail
234	.Disk record	254.7	....Fixed lifter
234.1	..Liquid bearing	254.8	.....Lifter surface detail
234.2	..Flexible disk	254.9	.....Adjustment detail
234.3	..Air bearing slider detail	255	.....Actuator side detail
234.4	...IC/circuit component on slider	255.1	...Linear track change type
234.5	...Electrical attachment of slider/head	255.2	....Moving lifter
234.6	...Mechanical attachment of slider to its support	255.3	.....Lifter surface detail
234.7	...Head attachment to slider	255.4	.....Adjustment detail
234.8	....On/in side of slider	255.5	.....Actuator side detail
234.9	....In slot of rail	255.6	....Fixed lifter
235	....Signal winding mount/access detail	255.7	....Lifter surface detail
235.1	...Slider material	255.8	....Adjustment detail
235.2	....Rail material	255.9	....Actuator side detail
235.3	....Body material	256	...Latch
235.4	...Air bearing surface detail	256.1	....Air vane
		256.2	....Magnetic
		256.3	....Electrically driven
		256.4	....Inertial

256.5	....Plural latches	270	.For moving head during transducing
256.6	....Adjustment detail	271	..Tape record having rotary head
260	.For shifting head between tracks	271.1	...Rotating drum
261	..Tape record having rotary head movement	271.2	....Axle bearing
261.1	..Tape record having linear head movement	271.3	.....Hydrodynamic
261.2	...Cam	271.4	....Axle seal
261.3	...Screw	271.5	....Head mount to drum
264	..Disk record	271.6	....Drum mounting
264.1	...Arcuate head movement	271.7	....Drum motor
264.2	....Electrical connection detail onto actuator arm	271.8	...Stationary drum
264.3	....Driver detail	271.9	...Electrical connection detail
264.4	.....Independent head movement	272	...Power supply
264.5	.....Plural drivers for each head	281	...Signal transfer to/from head
264.6	.....Band	281.1	....Transformer mounting detail
264.7	.....Voice coil	281.2	....Transformer axis parallel to axis of head rotation
264.8	.....Core detail	281.3	....Transformer axis perpendicular to axis of head rotation
264.9	.....Magnet detail	281.4	....Coil/winding detail
265	.....Winding detail	281.5	....Core detail
265.1	....Limiter/stop	281.6	....Electrical or magnetic shielding
265.2	....Bearing	281.7	....Electrical connection between head and rotary part of transformer
265.3	....Seal	281.8	....Plural transformers
265.4	....Radial	281.9	....Photoelectric
265.5	....Thrust	282	....Contact type transformer
265.6	....Mounting detail	274	..Disk record
265.7	....E block detail	290	.For adjusting head position
265.8	....Detail of coil support	291	..Tape record
265.9	....Detail of actuator arm supporting head suspension	291.1	...Cam adjuster
266	.....Arm shape	291.2	...Screw adjuster
266.1	.....Arm mounting	291.3	....Plural screws
266.2	...Linear head movement	291.4	...Rotary head
266.3	....Electrical connection detail onto actuator arm	291.5	....Adjustment of drum axis
266.4	....Voice coil	291.6	....Adjustable head mount
266.5	....Carriage detail	291.7	.....Adjuster core detail
266.6	.....Guide detail	291.8	.....Adjuster coil detail
266.7	.....Core detail	291.9	.....Piezoelectric adjuster
266.8	.....Magnet detail	292	.....Plural piezoelectric adjusters
266.9	.....Winding detail	294	..Disk record
267	....Band	294.1	...Adjustment parallel to disk plane
267.1	....Cam	294.2	....Linear adjustment
267.2	....Rack	294.3	....Driver detail
267.3	....Screw	294.4	.....Piezoelectric adjuster
267.4	.....Screw/follower detail	294.5	.....Voice coil adjuster
267.5	.....Carriage detail	294.6	....Pivot structure detail
267.6	.....Guide detail	294.7	...Adjustment along rotational axis of disk
267.7	.....Screw mount detail		
267.8	.....Adjustable		
267.9	...Including shifting head to different disks		

- 241 .Tape record
- 241.1 ..Plural head mounting on only one tape side
- 241.2 ..Plural head mounting on opposite tape sides
- 241.3 ..Head urging detail
- 244 .Disk record
- 244.1 ..IC/circuit component on suspension element
- 244.2 ..Load beam detail
- 244.3 ...Laminated beam
- 244.4 ...Nonmetallic beam
- 244.5 ...Actuator mount region detail
- 244.6 ....Ball staking
- 244.7 ....Adhesive
- 244.8 ...Spring region detail
- 244.9 ..Rigid intermediate section detail
- 245 ...Gimbal mounting region detail
- 245.1 ....Pivot/load button detail
- 245.2 ...Assembly feature
- 245.3 ..Gimbal detail
- 245.4 ...Attachment detail
- 245.5 ...Integral with load beam
- 245.6 ...Plural axis components
- 245.7 ...Motion limiter detail
- 245.8 ..Electrical connection detail
- 245.9 ...Flexible printed circuit type
- 246 ...Noise reduction
- 246.1 ..Full contact suspension
- 246.2 ...Slider detail
- 246.3 ...Pivot detail
- 246.4 ...Gimbal detail
- 246.5 ...Single head
- 246.6 ..Plural heads for each disk side
- 246.7 ...Plural actuators
- 246.8 ..Offset heads on opposite sides of disk
- 110 **HEAD**
- 111 .Flux gate
- 112 .Hall effect
- 313 .Magnetoresistive (MR) reproducing head
- 314 ..Having multiple interconnected multiple film MR sensors (e.g., dual spin valve magnetoresistive sensor)
- 315 ..Having multiple interconnected single film MR sensors (e.g., dual magnetoresistive sensor)
- 316 ..Having multiple independent MR sensors
- 317 ..Combined with inductive write head in piggyback/merged configuration
- 318 ..Combined with inductive write head and having MR inside of inductive head
- 318.1 ...In horizontal head configuration
- 319 ..Detail of magnetic shielding
- 320 ..Detail of head insulation
- 321 ..Having flux guide detail
- 322 ..Detail of sense conductor
- 323 ..Electrostatic Discharge (ESD) protection
- 324 ..Having Giant Magnetoresistive (GMR) or Colossal Magnetoresistive (CMR) sensor formed of multiple thin films
- 324.1 ...Having one film pinned (e.g., spin valve)
- 324.11 ....Detail of pinned film or additional film for affecting or biasing the pinned film
- 324.12 ....Detail of free layer or additional film for affecting or biasing the free layer
- 324.2 ...Having tunnel junction effect
- 325 ..Having Anisotropic Magnetoresistive (AMR) sensor formed of multiple thin films
- 326 ..Having Giant Magnetoresistive (GMR) or Colossal Magnetoresistive (CMR) sensor formed of a single thin film
- 327 ..Having Anisotropic Magnetoresistive (AMR) sensor formed of a single thin film
- 327.1 ...Detail of transverse and longitudinal biasing
- 327.11 ....In barber-pole configuration
- 327.2 ...Detail of transverse biasing
- 327.21 ....Using a shunt
- 327.22 ....Using a soft adjacent layer
- 327.23 ....Using a permanent magnet
- 327.24 ....Using conductor
- 327.3 ...Detail of longitudinal biasing
- 327.31 ....Using a permanent magnet
- 327.32 ....Using exchange couple biasing
- 327.33 ....Using conductor
- 328 .Magnetostrictive head
- 114.01 .Read only detector using light for reading magnetically recorded information on tape
- 114.02 ..Light beam generator detail
- 114.03 ...Focus detail

114.04	..Beam splitter detail	123.23	.....Coil spacing from plane of gap
114.05	..Readout detector detail	123.24	....Seed layer
114.06	...Focus detail	123.25	....Insulation detail
114.07	...Circuit detail	123.26	.....Zero throat height detail
114.08	...Detector material detail	123.27	.....Apex angle
114.09	...Mounting detail	123.28	.....Plural layers
114.1	..Rotary head	123.29	.....Diverse materials
115	..Flux scanning	123.3	.....Planarizing layer
116	..Cathode ray	123.31	.....Below coil
117	..Hand-held	123.32	.....Above coil
118	..Erase	123.33	.....Between traces
121	..Plural gaps	123.34	.....Between coil and medium
119.01	..Gap spacer	123.35	...Plural diverse layers
119.02	..For perpendicular recording head	123.36	...Electrical connection detail
119.03	...Laminated spacer	123.37	...Shielding/protection
119.04	...Configuration detail	123.38	...Plural plane coil
119.05	..For longitudinal thin film recording head	123.39	...Intercoil layer electrical connection detail
119.06	...Pancake type	123.4	...Configuration detail
119.07	...Laminated spacer	123.41	.....Trace cross section shape
119.08	....With thermally conductive material	123.42	.....Trace spacing
119.09	....With diffusion barrier	123.43	.....Coil spacing from storage medium
119.1	....Three or more layers	123.44	.....Coil spacing from plane of gap
119.11	...Configuration detail	123.45	....Seed layer
119.12	....Nonuniform width transducing face	123.46	....Insulation detail
119.13	....Nonuniform width vertically	123.47	.....Zero throat height detail
122	..Head surface structure	123.48	.....Apex angle
123.01	..Coil	123.49	.....Plural layers
123.02	..For perpendicular recording head	123.5	.....Diverse materials
123.03	...Location	123.51	.....Planarizing layer
123.04	....On return pole	123.52	.....Below coil
123.05	....On main/recording pole	123.53	.....Above coil
123.06	...Configuration detail	123.54	.....Between traces
123.07	...Nonuniform trace spacing	123.55	.....Between coil and medium
123.08	...Trace cross section shape	123.56	...Plural diverse layers
123.09	...Insulation detail	123.57	...Electrical connection detail
123.1	...Electrical connection detail	123.58	...Shielding/protection
123.11	...Plural separate coils	123.59	...Location
123.12	...Shielding/protection	123.6	...Coil around pole adjacent substrate
123.13	..For longitudinal recording head	123.61	...Coil around pole remote from substrate
123.14	...Pancake type	125.01	..Core
123.15	....Plural coil layers	125.02	..Perpendicular recording head
123.16	....Insulation detail	125.03	...Main/recording pole
123.17	...Plural separate coils	125.04	....Plural poles
123.18	...Single plane coil	125.05	....Offset from track centerline
123.19	....Configuration detail	125.06	....Separate pole tip
123.2	.....Trace cross section shape	125.07	.....Junction detail
123.21	.....Trace spacing	125.08	.....Laminated
123.22	.....Coil spacing from storage medium		

125.09	.....Nonuniform width transducing face	125.51	....Nonuniform width transducing face
125.1	.....Nonuniform width vertically	125.52	....Nonuniform width vertically
125.11	.....Nonuniform thickness vertically	125.53	....Nonuniform thickness vertically
125.12	....Laminated	125.54	...Pole remote from substrate
125.13	....Nonuniform width transducing face	125.55	....Zero throath height detail
125.14	....Nonuniform width vertically	125.56	....Separate pole tip
125.15	....Nonuniform thickness vertically	125.57	.....Junction detail
125.16	...Return pole	125.58	.....Laminated
125.17	....Plural poles	125.59	.....Nonuniform width transducing face
125.18	....Offset from track centerline	125.6	....Nonuniform width vertically
125.19	....Nonuniform width transducing face	125.61	....Nonuniform thickness vertically
125.2	....Nonuniform width vertically	125.62	.....Projecting
125.21	....Nonuniform thickness vertically	125.63	....Laminated
125.22	....Separate pole tip	125.64	....Nonuniform width transducing face
125.23	.....Junction detail	125.65	....Nonuniform width vertically
125.24	.....Laminated	125.66	....Nonuniform thicknes vertically
125.25	.....Configuration detail	125.67	...Coupling section
125.26	....Laminated	125.68	....Junction detail
125.27	...Coupling section	125.69	....Laminated
125.28	....Laminated	125.7	....Nonuniform cross section
125.29	....Junction detail	125.71	...Accessory feature
125.3	...Accessory feature	125.72	....Protective structure
125.31	....Heat generating structure	125.73	.....Laminated
125.32	....Heat transfer structure	125.74	....Heat generating structure
125.33	..Thin film longitudinal recording head	125.75	....Heat transfer structure
125.34	...Pancake type	128	.Head accessory
125.35	....Core section adjacent medium	129	..Housing
125.36	....Back core section remote from medium	130.1	..Record separator
125.37	....Coupling section	130.2	..Record guide
125.38	...Substrate	130.21	...Tape record
125.39	....Laminated	130.22	....Rotating head
125.4	....Nonuniform thickness vertically	130.23	.....Helical scan
125.41	...Pole adjacent substrate	130.24	.....Head drum details
125.42	....Zero throat height detail	130.3	..Pressure element
125.43	....Separate pole tip	130.31	...Tape record
125.44	.....Junction detail	130.32	....Element mounting details
125.45	.....Laminated	130.33	....Element in tape container
125.46	.....Nonuniform width transducing face	130.34	...Disc record
125.47	.....Nonuniform width vertically	131	<b>RECORD MEDIUM</b>
125.48	.....Nonuniform thickness vertically	132	.In container
125.49	.....Projecting	133	..For disk
125.5	....Laminated	134	.Tape
		135	.Disk
		136	.Drum
		137	<b>MISCELLANEOUS</b>

**CROSS-REFERENCE ART COLLECTIONS**900 **DISK DRIVE PACKAGING**

901 .Access time  
 902 .Storage density (e.g., bpi, tpi)  
 903 .Physical parameter (e.g., form factor)  
 904 ..Weight

FOR 218 .Gap structure details (360/119)  
 FOR 219 ..Spacer material (360/120)  
 FOR 220 .Head winding (360/123)  
 FOR 221 ..For cross-talk prevention (360/124)  
 FOR 222 .Head core (360/125)  
 FOR 223 ..Laminated (360/126)  
 FOR 224 ..Nonmetallic (360/127)  
 FOR 214 .Magneto optic (360/114)

**FOREIGN ART COLLECTIONS**FOR 000 **CLASS-RELATED FOREIGN DOCUMENTS**

Any foreign patents or non-patent literature from subclasses that have been reclassified have been transferred directly to FOR Collections listed below. These Collections contain ONLY foreign patents or non-patent literature. The parenthetical references in the Collection titles refer to the abolished subclasses from which these Collections were derived.

FOR 202 **FLUID BEARING HEAD (360/102)**

FOR 203 .Flying head (360/103)

FOR 204 **HEAD MOUNTING (360/104)**

FOR 205 .For moving head into and out of transducing position (360/105)

FOR 206 .For shifting head between tracks (360/106)

FOR 207 .For moving head during transducing (360/107)

FOR 208 ..Signal transfer to and from head (360/108)

FOR 209 .For adjusting head position (360/109)

FOR 213 **MAGNETORESISTIVE OR  
 MAGNETOSTRICTIVE HEAD (360/  
 113)**

**HEAD (340/110)**

.Tape record  
 ..Plural tapes

FOR 215 ...Tape in container (360/92)

..Tape in container  
 ...Plural reels

FOR 216 ....Tape in container (360/96.5)

FOR 217 .....With pivotal holder (360/  
 96.6)

**HEAD**