

CPC COOPERATIVE PATENT CLASSIFICATION

G PHYSICS (NOTES omitted)

INSTRUMENTS

G01 MEASURING (counting [G06M](#)); TESTING (NOTES omitted)

G01C MEASURING DISTANCES, LEVELS OR BEARINGS; SURVEYING; NAVIGATION; GYROSCOPIC INSTRUMENTS; PHOTOGRAMMETRY OR VIDEOGRAMMETRY (measuring dimensions or angles of objects [G01B](#); measuring liquid level [G01F](#); measuring intensity or direction of magnetic fields, other than the earth's field, in general [G01R](#); radio navigation, determining distance or velocity by use of propagation effects, e.g. Doppler effects, propagation time, of radio waves, analogous arrangements using other waves [G01S](#); optical systems therefor [G02B](#); maps, globes [G09B](#))

NOTES

1. In this subclass, the following term is used with the meaning indicated:
"navigation" means determining the position and course of land vehicles, ships, aircraft, and space vehicles.
2. Attention is drawn to the Notes following the title of class [G01](#).

WARNINGS

1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:
[G01C 11/36](#) covered by [G01C 11/00-G01C 11/34](#)
2. In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

1/00	Measuring angles (in compasses G01C 17/00)	3/10	• using a parallax triangle with variable angles and a base of fixed length in the observation station, e.g. in the instrument (active triangulation systems, i.e. using the transmission and reflection of electromagnetic waves other than radio waves, G01S 17/48)
1/02	• Theodolites		
1/04	• • combined with cameras		
1/06	• • Arrangements for reading scales (in general G01D)		
1/08	• Sextants		
1/10	• • including an artificial horizon (G01C 1/14 takes precedence; artificial horizons per se G01C 15/14)	3/12	• • with monocular observation at a single point, e.g. coincidence type (G01C 3/20 takes precedence)
1/12	• • • with a stabilised mirror (tilt compensation in general G12B)	3/14	• • with binocular observation at a single point, e.g. stereoscopic type (G01C 3/20 takes precedence)
1/14	• • Periscopic sextants (periscopes in general G02B 23/08)	3/16	• • • Measuring marks
3/00	Measuring distances in line of sight; Optical rangefinders (tapes, chains or wheels for measuring length G01B; coupling rangefinders with operating parts of photographic apparatus G03B)	3/18	• • with one observation point at each end of the base (G01C 3/20 takes precedence)
3/02	• Details	3/20	• • with adaptation to the measurement of the height of an object
3/04	• • Adaptation of rangefinders for combination with telescopes or binoculars (rangefinders coupled with focussing arrangements of cameras G03B 13/20)	3/22	• using a parallax triangle with variable angles and a base of fixed length at, near, or formed by the object (active triangulation systems, i.e. using the transmission and reflection of electromagnetic waves other than radio waves, G01S 17/48)
3/06	• • Use of electric means to obtain final indication	3/24	• using a parallax triangle with fixed angles and a base of variable length in the observation station, e.g. in the instrument (active triangulation systems, i.e. using the transmission and reflection of electromagnetic waves other than radio waves, G01S 17/48)
3/08	• • • Use of electric radiation detectors		
3/085	• • • • {with electronic parallax measurement}		

- 3/26 . . . using a parallactic triangle with fixed angles and a base of variable length, at, near, or formed by the object ([active triangulation systems, i.e. using the transmission and reflection of electromagnetic waves other than radio waves, G01S 17/48](#))
- 3/28 . . . with provision for reduction of the distance into the horizontal plane
- 3/30 . . . with adaptation to the measurement of the height of an object, e.g. tachometers
- 3/32 . . . by focusing the object, e.g. on a ground glass screen
- 5/00 Measuring height; Measuring distances transverse to line of sight; Levelling between separated points; Surveyors' levels** ([G01C 3/20, G01C 3/30 take precedence; tracing profiles G01C 7/00; levels indicating inclination at a single point G01C 9/00](#))
- 5/005 . . . {altimeters for aircraft ([G01C 5/02, G01C 5/06 take precedence](#))}
- 5/02 . . . involving automatic stabilisation of the line of sight; (tilt compensation in general [G12B](#); regulation of direction in general [G05D 3/00](#))
- 5/04 . . . Hydrostatic levelling, i.e. by flexibly interconnected liquid containers at separated points
- 5/06 . . . by using barometric means ([barometers per se G01L](#))
- 7/00 Tracing profiles** (by photogrammetry [G01C 11/00](#))
- 7/02 . . . of land surfaces
- 7/04 . . . involving a vehicle which moves along the profile to be traced
- 7/06 . . . of cavities, e.g. tunnels ([survey of wells E21B 47/00](#))
- 9/00 Measuring inclination, e.g. by clinometers, by levels** {(switches operated by inclination or orientation [H01H 35/02](#))}
- 9/005 . . . {specially adapted for use in aircraft}
- 9/02 . . . Details
- 9/04 . . . Transmission means between sensing element and final indicator for giving an enlarged reading
- 9/06 . . . Electric or photoelectric indication or reading means
- 2009/062 . . . {capacitive}
- 2009/064 . . . {inductive}
- 2009/066 . . . {optical}
- 2009/068 . . . {resistive}
- 9/08 . . . Means for compensating acceleration forces due to movement of instrument
- 9/10 . . . by using rolling bodies {, e.g. spheres, cylinders, mercury droplets ([tilting mercury container switches H01H 29/20](#))}
- 2009/102 . . . {cylinders}
- 2009/105 . . . {mercury droplets}
- 2009/107 . . . {spheres}
- 9/12 . . . by using a single pendulum ([plumb lines G01C 15/10](#))
- 9/14 . . . movable in more than one direction
- 9/16 . . . by using more than one pendulum
- 9/18 . . . by using liquids
- 2009/182 . . . {conductive}
- 2009/185 . . . {dielectric}
- 2009/187 . . . {magnetic, e.g. ferromagnetic}
- 9/20 . . . the indication being based on the inclination of the surface of a liquid relative to its container
- 9/22 . . . with interconnected containers in fixed relation to each other
- 9/24 . . . in closed containers partially filled with liquid so as to leave a gas bubble
- 9/26 . . . Details
- 9/28 Mountings
- 9/30 Means for adjusting dimensions of bubble
- 9/32 Means for facilitating the observation of the position of the bubble, e.g. illuminating means
- 9/34 . . . of the tubular type, i.e. for indicating the level in one direction only
- 9/36 . . . of the spherical type, i.e. for indicating the level in all directions
- 11/00 Photogrammetry or videogrammetry, e.g. stereogrammetry; Photographic surveying** (cameras combined with surveying instruments, e.g. with theodolites, [G01C 1/00, G01C 3/00, G01C 5/00, G01C 9/00; surveying cameras G03B 37/00](#))
- 11/02 . . . Picture taking arrangements specially adapted for photogrammetry or photographic surveying, e.g. controlling overlapping of pictures
- 11/025 . . . {by scanning the object}
- 11/04 . . . Interpretation of pictures
- 11/06 . . . by comparison of two or more pictures of the same area
- 11/08 . . . the pictures not being supported in the same relative position as when they were taken
- 11/10 using computers to control the position of the pictures ([computers per se G06](#))
- 11/12 . . . the pictures being supported in the same relative position as when they were taken
- 11/14 with optical projection ([G01C 11/26 takes precedence](#))
- 11/16 in a common plane
- 11/18 involving scanning means
- 11/20 in separate planes
- 11/22 with mechanical projection ([G01C 11/26 takes precedence](#))
- 11/24 with optical-mechanical projection ([G01C 11/26 takes precedence](#))
- 11/26 using computers to control the position of the pictures ([computers per se G06](#))
- 11/28 . . . Special adaptation for recording picture point data, e.g. for profiles
- 11/30 . . . by triangulation
- 11/32 . . . Radial triangulation
- 11/34 . . . Aerial triangulation
- 2011/36 . . . {Videogrammetry, i.e. electronic processing of video signals from a single source or from different sources to give parallax or range information}
- WARNING**
- This group it is currently not used for classification purpose in ECLA. Subject-matter covered by the IPC group [G01C 11/36](#) is rather classified in the following CPC groups: [G01C 11/00 - G01C 11/34](#)
- 13/00 Surveying specially adapted to open water, e.g. sea, lake, river, canal** (liquid level metering [G01F](#); measuring liquid velocity [G01P](#); determining existence of flow of underground water [G01V](#))
- 13/002 . . . {Measuring the movement of open water}

- 13/004 . . {vertical movement}
- 13/006 . . {horizontal movement}
- 13/008 . {measuring depth of open water}
- 15/00 Surveying instruments or accessories not provided for in groups G01C 1/00 - G01C 13/00**
- 15/002 . {Active optical surveying means (optical plumbing [G01C 15/105](#))}
- 15/004 . . {Reference lines, planes or sectors}
- 15/006 . . . {Detectors therefor}
- 15/008 . . {combined with inclination sensor}
- 15/02 . Means for marking measuring points
- 15/04 . . Permanent marks; Boundary markers
- 15/06 . . Surveyors' staffs; Movable markers
- 15/08 . . . Plumbing or registering staffs or markers over ground marks
- 15/10 . Plumb lines
- 15/105 . . {Optical plumbing}
- 15/12 . Instruments for setting out fixed angles, e.g. right angles
- 15/14 . Artificial horizons (tilt compensation in general [G02B](#))
- 17/00 Compasses; Devices for ascertaining true or magnetic north for navigation or surveying purposes (using gyroscopic effect [G01C 19/00](#); for geophysical or prospecting purposes [G01V 3/00](#))**
- 17/02 . Magnetic compasses
- 17/04 . . with north-seeking magnetic elements, e.g. needles
- 17/06 . . . Suspending magnetic elements
- 17/08 by flotation
- 17/10 . . . Comparing observed direction with north indication
- 17/12 by sighting means, e.g. for surveyors' compasses
- 17/14 by reference marks, e.g. for ships' compasses
- 17/16 by clinometers, e.g. for determining dip or strike of geological strata
- 17/18 . . . Supporting or suspending compasses, e.g. by gimbal, by flotation
- 17/20 . . . Observing the compass card or needle
- 17/22 by projection
- 17/24 Illumination
- 17/26 using electric pick-offs for transmission to final indicator, e.g. photocell
- 17/28 . . Electromagnetic compasses (with north seeking magnetic elements and having electric pick-offs [G01C 17/26](#))
- 17/30 . . . Earth-inductor compasses
- 17/32 . . . Electron compasses
- 17/34 . Sun- and astro-compasses
- 17/36 . Repeaters for remote indication of readings of a master compass
- 17/38 . Testing, calibrating, or compensating of compasses
- 19/00 Gyroscopes; Turn-sensitive devices using vibrating masses; Turn-sensitive devices without moving masses; Measuring angular rate using gyroscopic effects**
- 19/02 . Rotary gyroscopes
- 19/025 . . {Special arrangements for gyros functioning during a short period}
- 19/04 . . Details
- 19/06 . . . Rotors
- 19/065 {Measurement or control of angular velocity, specifically adapted to gyrorotors (measuring angular speed in general [G01P](#); controlling angular speed [G05D 13/00](#); controlling electrical motors [H02P](#))}
- 19/08 electrically driven ([G01C 19/14](#) takes precedence; dynamoelectric machines [H02K](#))
- 19/10 Power supply
- 19/12 fluid driven ([G01C 19/14](#) takes precedence)
- 19/14 Fluid rotors
- 19/16 . . . Suspensions; Bearings (bearings in general [F16C](#); balancing rotors [G01M](#))
- 19/18 providing movement of rotor with respect to its rotational axes ([G01C 19/20](#), [G01C 19/24](#) takes precedence)
- 19/20 in fluid
- 19/22 torsional
- 19/24 using magnetic or electrostatic fields
- 19/26 . . . Caging, i.e. immobilising moving parts, e.g. for transport (applicable to instruments in general [G01D 11/20](#))
- 19/28 . . . Pick-offs, i.e. devices for taking-off an indication of the displacement of the rotor axis
- 19/30 . . . Erection devices, i.e. devices for restoring rotor axis to a desired position (for instrument indicating the vertical [G01C 19/46](#))
- 19/32 . . . Indicating or recording means specially adapted for rotary gyroscopes (in general [G01D](#))
- 19/34 . . for indicating a direction in the horizontal plane, e.g. directional gyroscopes
- 19/36 . . . with north-seeking action by magnetic means, e.g. gyromagnetic compasses
- 19/38 . . . with north-seeking action by other than magnetic means, e.g. gyrocompasses using earth's rotation
- 19/40 . . for control by signals from a master compass, i.e. repeater compasses
- 19/42 . . for indicating rate of turn; for integrating rate of turn
- 19/44 . . for indicating the vertical
- 19/46 . . . Erection devices for restoring rotor axis to a desired position
- 19/48 operating by electrical means ([G01C 19/54](#) takes precedence)
- 19/50 operating by mechanical means ([G01C 19/54](#) takes precedence)
- 19/52 operating by fluid means ([G01C 19/54](#) takes precedence)
- 19/54 with correction for acceleration forces due to movement of instrument
- 19/56 . Turn-sensitive devices using vibrating masses, e.g. vibratory angular rate sensors based on Coriolis forces
- NOTE**
- Attention is drawn to the Notes following the titles of class [B81](#) and subclass [B81B](#) relating to "microstructural devices" and "microstructural systems"
- 19/5607 . . using vibrating tuning forks (double-ended tuning forks using planar vibrating masses suspended at opposite ends [G01C 19/5719](#))
- 19/5614 . . . Signal processing

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- 19/5621 . . . the devices involving a micromechanical structure
- 19/5628 . . . Manufacturing; Trimming; Mounting; Housings
- 19/5635 . . using vibrating wires or strings
- 19/5642 . . using vibrating bars or beams
- 19/5649 . . . Signal processing
- 19/5656 . . . the devices involving a micromechanical structure
- 19/5663 . . . Manufacturing; Trimming; Mounting; Housings
- 19/567 . . using the phase shift of a vibration node or antinode
- 19/5677 . . . of essentially two-dimensional vibrators, e.g. ring-shaped vibrators
- 19/5684 the devices involving a micromechanical structure
- 19/5691 . . . of essentially three-dimensional vibrators, e.g. wine glass-type vibrators
- 19/5698 . . using acoustic waves, e.g. surface acoustic wave gyros
- 19/5705 . . using masses driven in reciprocating rotary motion about an axis
- 19/5712 . . . the devices involving a micromechanical structure
- 19/5719 . . using planar vibrating masses driven in a translation vibration along an axis
- 19/5726 . . . Signal processing
- 19/5733 . . . Structural details or topology
- 19/574 the devices having two sensing masses in anti-phase motion
- 19/5747 each sensing mass being connected to a driving mass, e.g. driving frames
- 19/5755 the devices having a single sensing mass
- 19/5762 the sensing mass being connected to a driving mass, e.g. driving frames
- 19/5769 . . . Manufacturing; Mounting; Housings
- 19/5776 . . Signal processing not specific to any of the devices covered by groups [G01C 19/5607 - G01C 19/5719](#)
- 19/5783 . . Mountings or housings not specific to any of the devices covered by groups [G01C 19/5607 - G01C 19/5719](#)
- 19/58 . Turn-sensitive devices without moving masses
- 19/60 . . Electronic or nuclear magnetic resonance gyrometers ([magnetic resonance arrangements in general G01R 33/20](#))
- 19/62 . . . with optical pumping
- 19/64 . . Gyrometers using the Sagnac effect, i.e. rotation-induced shifts between counter-rotating electromagnetic beams
- 19/66 . . . Ring laser gyrometers ([ring lasers in general H01S 3/083](#))
- 19/661 {details}
- 19/662 {signal readout; dither compensators}
- 19/664 {means for removing the dither signal}
- 19/665 {control of the cavity ([of lasers in general H01S 3/10](#))}
- 19/667 {using a multioscillator ring laser}
- 19/668 {Assemblies for measuring along different axes, e.g. triads}
- 19/68 Lock-in prevention
- 19/70 by mechanical means
- 19/72 . . . with counter-rotating light beams in a passive ring, e.g. fibre laser gyrometers
- 19/721 {Details}
- 19/722 {of the mechanical construction}
- 19/723 {Heterodyning fibre optic gyrometers}
- 19/725 {using nxn optical couplers, e.g. 3x3 couplers}
- 19/726 {Phase nulling gyrometers, i.e. compensating the Sagnac phase shift in a closed loop system}
- 19/727 {using a passive ring resonator}
- 19/728 {Assemblies for measuring along different axes, e.g. triads}
- 21/00 **Navigation; Navigational instruments not provided for in preceding groups** ([measuring distance traversed on the ground by a vehicle G01C 22/00](#); [measuring linear or angular speed or acceleration G01P](#); [control of position, course, altitude or attitude of vehicles G05D 1/00](#); [traffic control systems G08G](#))
- 21/005 . {with correlation of navigation data from several sources, e.g. map or contour matching ([G01C 21/30 takes precedence](#))}
- 21/02 . by astronomical means ([G01C 21/24](#), [G01C 21/26 take precedence](#); [measuring time by using position of the sun, moon, or stars G04B 49/00](#))
- 21/025 . . {with the use of startrackers}
- 21/04 . by terrestrial means ([G01C 21/24](#), [G01C 21/26 take precedence](#); [marking of navigation route for ships B63B 51/00](#))
- 21/06 . . involving measuring of drift angle; involving correction for drift
- 21/08 . . involving use of the magnetic field of the earth
- 21/10 . by using measurements of speed or acceleration ([G01C 21/24](#), [G01C 21/26 take precedence](#))
- 21/12 . . executed aboard the object being navigated; Dead reckoning
- 21/14 . . . by recording the course traversed by the object ([G01C 21/16 takes precedence](#))
- 21/16 . . . by integrating acceleration or speed, i.e. inertial navigation
- 21/165 {combined with non-inertial navigation instruments}
- 21/18 Stabilised platforms, e.g. by gyroscope
- 21/20 . Instruments for performing navigational calculations ([G01C 21/24](#), [G01C 21/26 take precedence](#))
- 21/203 . . {Specially adapted for sailing ships}
- 21/206 . . {specially adapted for indoor navigation}
- 21/22 . . Plotting boards ([in general B43L](#))
- 21/24 . specially adapted for cosmonautical navigation
- 21/26 . specially adapted for navigation in a road network
- 21/265 . . {constructional aspects of navigation devices, e.g. housings, mountings, displays ([G01C 21/3688 takes precedence](#))}
- 21/28 . . with correlation of data from several navigational instruments
- 21/30 . . . Map- or contour-matching
- 21/32 Structuring or formatting of map data
- 21/34 . . Route searching; Route guidance
- 21/3407 . . . {specially adapted for specific applications}

- 21/3415 {Dynamic re-routing, e.g. recalculating the route when the user deviates from calculated route or after detecting real-time traffic data or accidents}
- 21/3423 {Multimodal routing, i.e. combining two or more modes of transportation, where the modes can be any of, e.g. driving, walking, cycling, public transport}
- 21/343 {Calculating itineraries, i.e. routes leading from a starting point to a series of categorical destinations using a global route restraint, round trips, touristic trips ([travelling salesman problem G06Q 10/04](#); [optimisation of routes G06Q 10/047](#))}
- 21/3438 {Rendez-vous, i.e. searching a destination where several users can meet, and the routes to this destination for these users; Ride sharing, i.e. searching a route such that at least two users can share a vehicle for at least part of the route}
- 21/3446 . . . {Details of route searching algorithms, e.g. Dijkstra, A*, arc-flags, using precalculated routes}
- 21/3453 . . . {Special cost functions, i.e. other than distance or default speed limit of road segments}
- 21/3461 {Preferred or disfavoured areas, e.g. dangerous zones, toll or emission zones, intersections, manoeuvre types, segments such as motorways, toll roads, ferries}
- 21/3469 {Fuel consumption; Energy use; Emission aspects}
- 21/3476 {using point of interest [POI] information, e.g. a route passing visible POIs}
- 21/3484 {Personalized, e.g. from learned user behaviour or user-defined profiles}
- 21/3492 {employing speed data or traffic data, e.g. real-time or historical ([traffic control systems for road vehicles involving transmission of navigation instructions to the vehicle G08G 1/0968](#))}
- 21/36 Input/output arrangements of navigation systems; {(input arrangements for transferring data to be processed into a form capable of being handled by the computer, and output arrangements for transferring data from processing unit to output unit, e.g. interface arrangements [G06F 3/00](#); pointing devices displaced or positioned by the user, e.g. mice, trackballs, pens or joysticks, and accessories therefor [G06F 3/033](#); interaction techniques for graphical user interfaces, e.g. interaction with windows, icons or menus [G06F 3/048](#); manipulating 3D models or images for computer graphics [G06T 19/00](#))}
- 21/3602 {Input other than that of destination using image analysis, e.g. detection of road signs, lanes, buildings, real preceding vehicles using a camera ([image data processing per se G06T](#))}
- 21/3605 {Destination input or retrieval}
- 21/3608 {using speech input, e.g. using speech recognition ([speech recognition per se G10L 15/00](#))}
- 21/3611 {using character input or menus, e.g. menus of POIs ([character input methods in general G06F 3/0233](#))}
- 21/3614 {through interaction with a road map, e.g. selecting a POI icon on a road map}
- 21/3617 {using user history, behaviour, conditions or preferences, e.g. predicted or inferred from previous use or current movement}
- 21/362 {received from an external device or application, e.g. PDA, mobile phone or calendar application}
- 21/3623 {using a camera or code reader, e.g. for optical or magnetic codes}
- 21/3626 {Details of the output of route guidance instructions ([traffic control systems for road vehicles involving transmission of navigation instructions to the vehicle G08G 1/0968](#))}
- 21/3629 {Guidance using speech or audio output, e.g. text-to-speech ([text to speech systems per se G10L 13/00](#))}
- 21/3632 {Guidance using simplified or iconic instructions, e.g. using arrows ([G01C 21/365 takes precedence](#))}
- 21/3635 {Guidance using 3D or perspective road maps}
- 21/3638 {including 3D objects and buildings ([three dimensional \[3D\] modelling, e.g. data description of 3D objects G06T 17/00](#); [geographic models G06T 17/05](#))}
- 21/3641 {Personalized guidance, e.g. limited guidance on previously travelled routes}
- 21/3644 {Landmark guidance, e.g. using POIs or conspicuous other objects}
- 21/3647 {Guidance involving output of stored or live camera images or video streams}
- 21/365 {Guidance using head up displays or projectors, e.g. virtual vehicles or arrows projected on the windscreen or on the road itself}
- 21/3652 {Guidance using non-audiovisual output, e.g. tactile, haptic or electric stimuli}
- 21/3655 {Timing of guidance instructions}
- 21/3658 {Lane guidance}
- 21/3661 {Guidance output on an external device, e.g. car radio}
- 21/3664 {Details of the user input interface, e.g. buttons, knobs or sliders, including those provided on a touch screen; remote controllers; input using gestures}
- 21/3667 {Display of a road map ([G01C 21/3614 takes precedence](#); [guidance using 3D or perspective road maps G01C 21/3635](#))}
- 21/367 {Details, e.g. road map scale, orientation, zooming, illumination, level of detail, scrolling of road map or positioning of current position marker}
- 21/3673 {Labelling using text of road map data items, e.g. road names, POI names}
- 21/3676 {Overview of the route on the road map}
- 21/3679 {Retrieval, searching and output of POI information, e.g. hotels, restaurants, shops, filling stations, parking facilities ([G01C 21/3611 takes precedence](#))}

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- 21/3682 {output of POI information on a road map ([G01C 21/3614](#), [G01C 21/3685](#) take precedence)}
- 21/3685 {the POI's being parking facilities}
- 21/3688 {Systems comprising multiple parts or multiple output devices (not client-server), e.g. detachable faceplates, key fobs or multiple output screens}
- 21/3691 {Retrieval, searching and output of information related to real-time traffic, weather, or environmental conditions (arrangements for giving variable traffic instructions [G08G 1/09](#))}
- 21/3694 {Output thereof on a road map}
- 21/3697 {output of additional, non-guidance related information, e.g. low fuel level, fuel efficient driving, gear change, speeding, dangerous curve ahead, slippery road, school zone, speed traps, driving behaviour feedback, advertising, virtual billboards or road signs ([G01C 21/3679](#) takes precedence)}

- 22/00** **Measuring distance traversed on the ground by vehicles, persons, animals, or other moving solid bodies, e.g. using odometers, using pedometers (counting mechanisms per se [G06M](#))**
- 22/002 . {for cycles}
- 22/004 . {for golf carts (wheeled carriers for golf bags [A63B 55/60](#))}
- 22/006 . {Pedometers}
- 22/008 . {for skates}
- 22/02 . by conversion into electric waveforms and subsequent integration, e.g. using tachometer generator {([G01C 22/002](#), [G01C 22/004](#), [G01C 22/006](#) take precedence)}
- 22/025 . . {Differential odometers}

- 23/00** **Combined instruments indicating more than one navigational value, e.g. for aircraft; Combined measuring devices for measuring two or more variables of movement, e.g. distance, speed, acceleration**
- 23/005 . {Flight directors (indicating arrangements specially adapted for rotary gyroscopes [G01C 19/32](#); indicating or recording in connection with measuring, in general [G01D](#); control of course of land or air vehicles by controlling or regulating non-electric variables [G05D 1/00](#); arrangements or adaptations of instruments for aircraft [B64D 43/00](#))}

- 25/00** **Manufacturing, calibrating, cleaning, or repairing instruments and devices referred to in the preceding groups (testing, calibrating and compensating compasses [G01C 17/38](#))**
- 25/005 . {initial alignment, calibration or starting-up of inertial devices}