

SECTION G — PHYSICS

G01 MEASURING; TESTING

G01C MEASURING DISTANCES, LEVELS OR BEARINGS; SURVEYING; NAVIGATION; GYROSCOPIC INSTRUMENTS; PHOTOGRAMMETRY OR VIDEOGRAMMETRY (measuring liquid level G01F; radio navigation, determining distance or velocity by use of propagation effects, e.g. Doppler effect, propagation time, of radio waves, analogous arrangements using other waves G01S)

Note(s)

- 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.
- Attention is drawn to the Notes following the title of class G01.

Subclass index

MEASURING INSTRUMENTS

For measuring angles; inclinations.....	1/00, 9/00
For measuring distances; heights or levels.....	3/00, 22/00, 5/00
Compasses; gyroscopes; other navigation instruments.....	17/00, 19/00, 21/00
Other surveying instruments.....	15/00
Combined instruments.....	23/00
Manufacture, calibrating.....	25/00
TRACING PROFILES.....	7/00
PHOTOGRAMMETRY OR VIDEOGRAMMETRY.....	11/00
SURVEYING OPEN WATER.....	13/00

1/00 Measuring angles

- 1/02 • Theodolites
- 1/04 • • combined with cameras
- 1/06 • • Arrangements for reading scales
- 1/08 • Sextants
- 1/10 • • including an artificial horizon (G01C 1/14 takes precedence)
- 1/12 • • • with a stabilised mirror
- 1/14 • • Periscopic sextants

3/00 Measuring distances in line of sight; Optical rangefinders (tapes, chains, or wheels for measuring length G01B 3/00; active triangulation systems, i.e. using the transmission and reflection of electromagnetic waves other than radio waves, G01S 17/48) [1, 2006.01]

- 3/02 • Details
- 3/04 • • Adaptation of rangefinders for combination with telescopes or binoculars
- 3/06 • • Use of electric means to obtain final indication
- 3/08 • • • Use of electric radiation detectors
- 3/10 • using a parallactic triangle with variable angles and a base of fixed length in the observation station, e.g. in the instrument [1, 2006.01]
- 3/12 • • with monocular observation at a single point, e.g. coincidence type (G01C 3/20 takes precedence)
- 3/14 • • with binocular observation at a single point, e.g. stereoscopic type (G01C 3/20 takes precedence)
- 3/16 • • • Measuring marks
- 3/18 • • with one observation point at each end of the base (G01C 3/20 takes precedence)

- 3/20 • • with adaptation to the measurement of the height of an object
- 3/22 • using a parallactic triangle with variable angles and a base of fixed length at, near, or formed by, the object [1, 2006.01]
- 3/24 • using a parallactic triangle with fixed angles and a base of variable length in the observation station, e.g. in the instrument [1, 2006.01]
- 3/26 • using a parallactic triangle with fixed angles and a base of variable length at, near, or formed by, the object [1, 2006.01]
- 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)

- 5/02 • involving automatic stabilisation of the line of sight
- 5/04 • Hydrostatic levelling, i.e. by flexibly interconnected liquid containers at separated points
- 5/06 • by using barometric means

7/00 Tracing profiles (by photogrammetry or videogrammetry G01C 11/00)

- 7/02 • of land surfaces
- 7/04 • • involving a vehicle which moves along the profile to be traced

G01C

- 7/06 • of cavities, e.g. tunnels
- 9/00 Measuring inclination, e.g. by clinometers, by levels**
 - 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
 - 9/08 • • Means for compensating acceleration forces due to movement of instrument
 - 9/10 • by using rolling bodies
 - 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
 - 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 [1, 2006.01]**
 - 11/02 • Picture-taking arrangements specially adapted for photogrammetry or photographic surveying, e.g. controlling overlapping of pictures
 - 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
 - 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
 - 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
- 11/36 • Videogrammetry, i.e. electronic processing of video signals from different sources to give parallax or range information [2006.01]
- 13/00 Surveying specially adapted to open water, e.g. sea, lake, river or canal (liquid level metering G01F)**
- 15/00 Surveying instruments or accessories not provided for in groups G01C 1/00-G01C 13/00**
 - 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
 - 15/12 • Instruments for setting out fixed angles, e.g. right angles
 - 15/14 • Artificial horizons
- 17/00 Compasses; Devices for ascertaining true or magnetic north for navigation or surveying purposes (using gyroscopic effect G01C 19/00)**
 - 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- or 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 with vibrating masses; Turn-sensitive devices without moving masses**
 - 19/02 • Rotary gyroscopes
 - 19/04 • • Details
 - 19/06 • • • Rotors
 - 19/08 • • • • electrically driven (G01C 19/14 takes precedence)
 - 19/10 • • • • • Power supply
 - 19/12 • • • • • fluid driven (G01C 19/14 takes precedence)
 - 19/14 • • • • • Fluid rotors
 - 19/16 • • • Suspensions; Bearings
 - 19/18 • • • • providing movement of rotor with respect to its rotational axes (G01C 19/20, G01C 19/24 take precedence)
 - 19/20 • • • • in fluid

19/22	• • • • torsional	21/00	Navigation; Navigational instruments not provided for in groups G01C 1/00-G01C 19/00 (measuring distance traversed on the ground by a vehicle G01C 22/00; control of position, course, altitude or attitude of vehicles G05D 1/00; traffic control systems for road vehicles involving transmission of navigation instructions to the vehicle G08G 1/0968)
19/24	• • • • using magnetic or electrostatic fields	21/02	• by astronomical means (G01C 21/24, G01C 21/26 take precedence) [1, 7]
19/26	• • • Caging, i.e. immobilising moving parts, e.g. for transport	21/04	• by terrestrial means (G01C 21/24, G01C 21/26 take precedence) [1, 7]
19/28	• • • Pick-offs, i.e. devices for taking off an indication of the displacement of the rotor axis	21/06	• • involving measuring of drift angle; involving correction for drift
19/30	• • • Erection devices, i.e. devices for restoring rotor axis to a desired position (for instrument indicating the vertical G01C 19/46)	21/08	• • involving use of the magnetic field of the earth
19/32	• • • Indicating or recording means specially adapted for rotary gyroscopes	21/10	• by using measurement of speed or acceleration (G01C 21/24, G01C 21/26 take precedence) [1, 7]
19/34	• • for indicating a direction in the horizontal plane, e.g. directional gyroscopes	21/12	• • executed aboard the object being navigated; Dead reckoning
19/36	• • • with north-seeking action by magnetic means, e.g. gyromagnetic compasses	21/14	• • • by recording the course traversed by the object (G01C 21/16 takes precedence)
19/38	• • • with north-seeking action by other than magnetic means, e.g. gyrocompasses using earth's rotation	21/16	• • • by integrating acceleration or speed, i.e. inertial navigation
19/40	• • for control by signals from a master compass, i.e. repeater compasses	21/18	• • • • Stabilised platforms, e.g. by gyroscope
19/42	• • for indicating rate of turn; for integrating rate of turn	21/20	• Instruments for performing navigational calculations (G01C 21/24, G01C 21/26 take precedence) [1, 7]
19/44	• • for indicating the vertical	21/22	• • Plotting boards
19/46	• • • Erection devices for restoring rotor axis to a desired position	21/24	• specially adapted for cosmonautical navigation
19/48	• • • • operating by electrical means (G01C 19/54 takes precedence)	21/26	• specially adapted for navigation in a road network [7]
19/50	• • • • operating by mechanical means (G01C 19/54 takes precedence)	21/28	• • with correlation of data from several navigational instruments [7]
19/52	• • • • operating by fluid means (G01C 19/54 takes precedence)	21/30	• • • Map- or contour-matching [7]
19/54	• • • • with correction for acceleration forces due to movement of instrument	21/32	• • • • Structuring or formatting of map data [7]
19/56	• Turn-sensitive devices with vibrating masses, e.g. tuning fork	21/34	• • Route searching; Route guidance [7]
19/58	• Turn-sensitive devices without moving masses [3]	21/36	• • • Input/output arrangements for on-board computers [7]
19/60	• • Electronic or nuclear magnetic resonance gyrometers [3, 4]	22/00	Measuring distance traversed on the ground by vehicles, persons, animals or other moving solid bodies, e.g. using odometers or using pedometers
19/62	• • • with optical pumping [3]	22/02	• by conversion into electric waveforms and subsequent integration, e.g. using tachometer generator
19/64	• • Gyrometers using the Sagnac effect, i.e. rotation-induced shifts between counter-rotating electromagnetic beams [3]	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
19/66	• • • Ring laser gyrometers [5]	25/00	Manufacturing, calibrating, cleaning, or repairing instruments or devices referred to in the other groups of this subclass (testing, calibrating, or compensating compasses G01C 17/38)
19/68	• • • • Lock-in prevention [5]		
19/70	• • • • • by mechanical means [5]		
19/72	• • • with counter-rotating light beams in a passive ring, e.g. fibre laser gyrometers [5]		