

SECTION G — PHYSICS

G01 MEASURING; TESTING

G01P MEASURING LINEAR OR ANGULAR SPEED, ACCELERATION, DECELERATION, OR SHOCK; INDICATING PRESENCE, ABSENCE, OR DIRECTION, OF MOVEMENT (measuring or recording blood flow A61B 5/02, A61B 8/06; monitoring speed or deceleration of electrically-propelled vehicles B60L 3/00; vehicle lighting systems adapted to indicate speed B60Q 1/54; determining position or course in navigation, measuring ground distance in geodesy or surveying G01C; combined measuring devices for measuring two or more variables of movement G01C 23/00; measuring velocity of sound G01H; measuring velocity of light G01J 7/00; determining direction or velocity of solid objects by reflection or reradiation of radio or other waves and based on propagation effects, e.g. Doppler effect, propagation time, direction of propagation, G01S; measuring speed of nuclear radiation G01T; measuring acceleration of gravity G01V)

Note(s)

1. This subclass covers measuring direction or velocity of flowing fluids using propagation effects of radiowaves or other waves caused in the fluid itself, e.g. by laser anemometer, by ultrasonic flowmeter with "sing-around-system".
2. Attention is drawn to the Notes following the title of class G01.

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MEASURING LINEAR OR ANGULAR SPEED OF SOLID BODIES	
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1/00	Details of instruments	3/02	• Devices characterised by the use of mechanical means
1/02	• Housings		
1/04	• Special adaptations of driving means	3/04	• • by comparing two speeds
1/07	• Indicating devices, e.g. for remote indication (indicating working conditions of vehicles G07C 5/00) [3]	3/06	• • • using a friction gear
		3/08	• • • using differential gearing
1/08	• • Arrangements of scales, pointers, lamps, or acoustic indicators, e.g. in automobile speedometers	3/10	• • by actuating an indicating element, e.g. pointer, for a fixed time
		3/12	• • by making use of a system excited by impact
1/10	• • • for indicating predetermined speeds	3/14	• • by exciting one or more mechanical resonance systems
1/11	• • • by the detection of the position of the indicator needle [3]	3/16	• • by using centrifugal forces of solid masses (governors G05D 13/00)
1/12	• Recording devices (registering working conditions of vehicles G07C 5/00) [3]	3/18	• • • transferred to the indicator by mechanical means
1/14	• • for permanent recording [3]	3/20	• • • transferred to the indicator by fluid means
1/16	• • for erasable recording, e.g. magnetic recording [3]	3/22	• • • transferred to the indicator by electric or magnetic means
3/00	Measuring linear or angular speed; Measuring differences of linear or angular speeds (G01P 5/00-G01P 11/00 take precedence; counting mechanisms G06M)	3/24	• • by using friction effects (G01P 3/06 takes precedence)
	Note(s)	3/26	• Devices characterised by the use of fluids
	Groups G01P 3/02-G01P 3/64 are distinguished by the method of measurement which is of major importance. Thus the mere application of other methods for giving a final indication does not affect the classification.	3/28	• • by using pumps
		3/30	• • by using centrifugal forces of fluids
		3/32	• • • in a rotary container communicating with a fixed container
		3/34	• • by using friction effects

- 3/36 • Devices characterised by the use of optical means, e.g. using infra-red, visible, or ultra-violet light (G01P 3/68 takes precedence; gyrometers using the Sagnac effect, i.e. rotation-induced shifts between counter-rotating electromagnetic beams, G01C 19/64)
- 3/38 • • using photographic means
- 3/40 • • using stroboscopic means
- 3/42 • Devices characterised by the use of electric or magnetic means (G01P 3/66 takes precedence; measuring electric or magnetic values in general G01R)
- 3/44 • • for measuring angular speed (G01P 3/56 takes precedence)
- 3/46 • • • by measuring amplitude of generated current or voltage
- 3/48 • • • by measuring frequency of generated current or voltage
- 3/481 • • • • of pulse signals [3]
- 3/482 • • • • delivered by nuclear radiation detectors [3]
- 3/483 • • • • delivered by variable capacitance detectors [3]
- 3/484 • • • • delivered by contact-making switches [3]
- 3/486 • • • • delivered by photo-electric detectors [3]
- 3/487 • • • • delivered by rotating magnets [3]
- 3/488 • • • • delivered by variable reluctance detectors [3]
- 3/489 • • • • Digital circuits therefor [3]
- 3/49 • • • using eddy currents
- 3/495 • • • • where the indicating means responds to forces produced by the eddy currents and the generating magnetic field [3]
- 3/50 • • for measuring linear speed (G01P 3/56 takes precedence)
- 3/52 • • • by measuring amplitude of generated current or voltage
- 3/54 • • • by measuring frequency of generated current or voltage
- 3/56 • • for comparing two speeds
- 3/58 • • • by measuring or comparing amplitudes of generated currents or voltages
- 3/60 • • • by measuring or comparing frequency of generated currents or voltages
- 3/62 • Devices characterised by the determination of the variation of atmospheric pressure with height to measure the vertical components of speed (measuring pressure in general G01L)
- 3/64 • Devices characterised by the determination of the time taken to traverse a fixed distance
- 3/66 • • using electric or magnetic means (G01P 3/80 takes precedence; measuring short time intervals G04F) [4]
- 3/68 • • using optical means, i.e. using infra-red, visible, or ultra-violet light (G01P 3/80 takes precedence) [4]
- 3/80 • • using auto-correlation or cross-correlation detection means [4]
- 5/00 Measuring speed of fluids, e.g. of air stream; Measuring speed of bodies relative to fluids, e.g. of ship, of aircraft** (application of speed-measuring devices for measuring volume of fluids G01F)
- 5/01 • by using swirlflowmeter [3]
- 5/02 • by measuring forces exerted by the fluid on solid bodies, e.g. anemometer
- 5/04 • • using deflection of baffle-plates
- 5/06 • • using rotation of vanes (measuring speed of rotating shafts G01P 3/00)
- 5/07 • • • with electrical coupling to the indicating device [3]
- 5/08 • by measuring variation of an electric variable directly affected by the flow, e.g. by using dynamo-electric effect
- 5/10 • by measuring thermal variables
- 5/12 • • using variation of resistance of a heated conductor
- 5/14 • by measuring differences of pressure in the fluid
- 5/16 • • using Pitot tubes
- 5/165 • • • Arrangements or constructions of Pitot tubes [3]
- 5/17 • • • Coupling arrangements to the indicating device [3]
- 5/175 • • • • with the determination of Mach number (analogue computers therefor G06G 7/57) [3]
- 5/18 • by measuring the time taken by the fluid to traverse a fixed distance [1, 7]
- 5/20 • • using particles entrained by a fluid stream (G01P 5/22 takes precedence) [4]
- 5/22 • • using auto-correlation or cross-correlation detection means [4]
- 5/24 • by measuring the direct influence of the streaming fluid on the properties of a detecting acoustical wave [7]
- 5/26 • by measuring the direct influence of the streaming fluid on the properties of a detecting optical wave [7]
- 7/00 Measuring speed by integrating acceleration** (measuring travelled distance by double integration of acceleration G01C 21/16)
- 9/00 Measuring speed by using gyroscopic effect, e.g. using gas, using electron beam** (gyroscopes or turn-sensitive devices *per se* G01C 19/00)
- 9/02 • using rotary gyroscopes
- 9/04 • using turn-sensitive devices with vibrating masses, e.g. tuning-fork
- 11/00 Measuring average value of speed** (by determining time taken to traverse a fixed distance G01P 3/64, G01P 5/18)
- 11/02 • Measuring average speed of a number of bodies, e.g. of vehicles for traffic control
- 13/00 Indicating or recording presence, absence, or direction, of movement** (counting moving objects G06M 7/00; electric switches H01H)
- 13/02 • Indicating direction only, e.g. by weather vane
- 13/04 • • Indicating positive or negative direction of a linear movement or clockwise or anti-clockwise direction of a rotational movement [3]
- 15/00 Measuring acceleration; Measuring deceleration; Measuring shock, i.e. sudden change of acceleration**
- 15/02 • by making use of inertia forces (G01P 15/14, G01P 15/18 take precedence) [1, 7]
- 15/03 • • by using non-electrical means [3]
- 15/04 • • for indicating maximum value
- 15/06 • • • using members subjected to a permanent deformation
- 15/08 • • with conversion into electric or magnetic values
- 15/09 • • • by piezo-electric pick-up [3]
- 15/093 • • • by photoelectric pick-up [7]
- 15/097 • • • by vibratory elements [7]
- 15/10 • • • • by vibratory strings

- 15/105 • • • by magnetically sensitive devices [7]
- 15/11 • • • • by inductive pick-up [3]
- 15/12 • • • by alteration of electrical resistance
- 15/125 • • • by capacitive pick-up [3]
- 15/13 • • • by measuring the force required to restore a proofmass subjected to inertial forces to a null position [3]
- 15/135 • • • by making use of contacts which are actuated by a movable inertial mass [3]
- 15/14 • by making use of gyroscopes (G01P 15/18 takes precedence; gyroscopes per se G01C 19/00) [1, 7]
- 15/16 • by evaluating the time-derivative of a measured speed signal (G01P 15/18 takes precedence) [3, 7]
- 15/18 • in two or more dimensions [7]
- 21/00 Testing or calibrating of apparatus or devices covered by the other groups of this subclass**
- 21/02 • of speedometers