

# CPC COOPERATIVE PATENT CLASSIFICATION

## G PHYSICS (NOTES omitted)

### INSTRUMENTS

#### G01 MEASURING; TESTING (NOTES omitted)

#### G01M TESTING STATIC OR DYNAMIC BALANCE OF MACHINES OR STRUCTURES; TESTING OF STRUCTURES OR APPARATUS, NOT OTHERWISE PROVIDED FOR NOTE

Attention is drawn to the Note following the title of Class [G01](#).

#### WARNINGS

- The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:  
[G01M 1/38](#) covered by [G01M 1/14](#) and [G01M 1/30](#) and subgroups
- 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.

<b>1/00</b>	<b>Testing static or dynamic balance of machines or structures</b>	1/326	. . . {the body being a vehicle wheel}
1/02	. Details of balancing machines or devices	1/34	. . by removing material from the body to be tested, e.g. from the tread of tyres
1/04	. . Adaptation of bearing support assemblies for receiving the body to be tested	1/36	. . by adjusting position of masses built-in the body to be tested
1/045	. . . {the body being a vehicle wheel}	1/365	. . . {using balancing liquid}
1/06	. . Adaptation of drive assemblies for receiving the body to be tested	<b>3/00</b>	<b>Investigating fluid-tightness of structures</b>
1/08	. . Instruments for indicating directly the magnitude and phase of the imbalance	3/002	. {by using thermal means}
1/10	. Determining the moment of inertia	3/005	. {using pigs or moles ( <a href="#">G01M 3/246</a> , <a href="#">G01M 3/2823</a> take precedence)}
1/12	. Static balancing; Determining position of centre of gravity (by determining imbalance <a href="#">G01M 1/14</a> )	3/007	. {Leak detector calibration, standard leaks ( <a href="#">G01M 3/207</a> takes precedence)}
1/122	. . {Determining position of centre of gravity}	3/02	. by using fluid or vacuum
1/125	. . . {of aircraft}	3/022	. . {Test plugs for closing off the end of a pipe}
1/127	. . . . {during the flight}	3/025	. . {Details with respect to the testing of engines or engine parts}
1/14	. Determining imbalance ( <a href="#">G01M 1/30</a> takes precedence)	3/027	. . {Details with respect to the testing of elastic elements, e.g. gloves, condoms}
1/16	. . by oscillating or rotating the body to be tested	3/04	. . by detecting the presence of fluid at the leakage point
1/18	. . . and running the body down from a speed greater than normal	3/042	. . . {by using materials which expand, contract, disintegrate, or decompose in contact with a fluid ( <a href="#">G01M 3/12</a> takes precedence)}
1/20	. . . and applying external forces compensating forces due to imbalance	3/045	. . . . {with electrical detection means}
1/22	. . . and converting vibrations due to imbalance into electric variables	3/047	. . . . . {with photo-electrical detection means, e.g. using optical fibres}
1/225	. . . . {for vehicle wheels (in situ <a href="#">G01M 1/28</a> )}	3/06	. . . by observing bubbles in a liquid pool
1/24	. . . Performing balancing on elastic shafts, e.g. for crankshafts	3/08	. . . . for pipes, cables or tubes; for pipe joints or seals; for valves; {for welds}
1/26	. . . with special adaptations for marking, e.g. by drilling	3/081	. . . . . {for cables}
1/28	. . . with special adaptations for determining imbalance of the body <i>in situ</i> , e.g. of vehicle wheels	3/083	. . . . . {for tubes}
1/30	. Compensating imbalance	3/085	. . . . . {for pipe joints or seals ( <a href="#">G01M 3/088</a> takes precedence)}
1/32	. . by adding material to the body to be tested, e.g. by correcting-weights	3/086	. . . . . {for valves}
1/323	. . . {using balancing liquid}	3/088	. . . . . {for welds}
		3/10	. . . . for containers, e.g. radiators

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- 3/103 . . . . . {for flexible or elastic containers}
- 3/106 . . . . . {for radiators}
- 3/12 . . . by observing elastic covers or coatings, e.g. soapy water
- 3/14 . . . . . for pipes, cables or tubes; for pipe joints or seals; for valves; {for welds; for containers, e.g. radiators}
- 3/141 . . . . . {for cables}
- 3/142 . . . . . {for tubes}
- 3/143 . . . . . {for pipe joints or seals}
- 3/144 . . . . . {for valves}
- 3/145 . . . . . {for welds}
- 3/146 . . . . . {for containers, e.g. radiators}
- 3/147 . . . . . {for flexible or elastic containers}
- 3/148 . . . . . {for radiators}
- 3/16 . . . using electric detection means ([G01M 3/045](#), [G01M 3/06](#), [G01M 3/12](#), [G01M 3/20](#), [G01M 3/24](#), [G01M 3/26](#) take precedence)
- 3/165 . . . . . {by means of cables or similar elongated devices, e.g. tapes}
- 3/18 . . . . . for pipes, cables or tubes; for pipe joints or seals; for valves; {for welds; for containers, e.g. radiators}
- 3/181 . . . . . {for cables}
- 3/182 . . . . . {for tubes}
- 3/183 . . . . . {for pipe joints or seals}
- 3/184 . . . . . {for valves}
- 3/185 . . . . . {for welds}
- 3/186 . . . . . {for containers, e.g. radiators}
- 3/187 . . . . . {for flexible or elastic containers}
- 3/188 . . . . . {for radiators}
- 3/20 . . . using special tracer materials, e.g. dye, fluorescent material, radioactive material
- 3/202 . . . . . {using mass spectrometer detection systems}
- 3/205 . . . . . {Accessories or associated equipment; Pump constructions}
- 3/207 . . . . . {calibration arrangements}
- 3/22 . . . . . for pipes, cables or tubes; for pipe joints or seals; for valves; {for welds; for containers, e.g. radiators}
- 3/221 . . . . . {for cables}
- 3/222 . . . . . {for tubes}
- 3/223 . . . . . {for pipe joints or seals}
- 3/224 . . . . . {for valves}
- 3/225 . . . . . {for welds}
- 3/226 . . . . . {for containers, e.g. radiators}
- 3/227 . . . . . {for flexible or elastic containers}
- 3/228 . . . . . {for radiators}
- 3/229 . . . . . {removably mounted in a test cell}
- 3/24 . . . using infrasonic, sonic or ultrasonic vibrations
- 3/243 . . . . . {for pipes}
- 3/246 . . . . . {using pigs or probes travelling in the pipe}
- 3/26 . . . by measuring rate of loss or gain of fluid, e.g. by pressure-responsive devices, by flow detectors
- 3/28 . . . for pipes, cables or tubes; for pipe joints or seals; for valves {; for welds}
- 3/2807 . . . . . {for pipes ([G01M 3/2892](#), [G01M 3/30](#) take precedence)}
- 3/2815 . . . . . {using pressure measurements}
- 3/2823 . . . . . {using pigs or moles traveling in the pipe}
- 3/283 . . . . . {for double-walled pipes}
- 3/2838 . . . . . {for cables ([G01M 3/30](#) takes precedence)}
- 3/2846 . . . . . {for tubes ([G01M 3/30](#) takes precedence)}
- 3/2853 . . . . . {for pipe joints or seals ([G01M 3/30](#) takes precedence)}
- 3/2861 . . . . . {for pipe sections by testing its exterior surface}
- 3/2869 . . . . . {for seals not incorporated in a pipe joint}
- 3/2876 . . . . . {for valves ([G01M 3/30](#) takes precedence)}
- 3/2884 . . . . . {for welds ([G01M 3/30](#) takes precedence)}
- 3/2892 . . . . . {for underground fuel dispensing systems ([G01M 3/30](#) takes precedence)}
- 3/30 . . . . . using progressive displacement of one fluid by another
- 3/32 . . . for containers, e.g. radiators
- 3/3209 . . . . . {Details, e.g. container closure devices}
- 3/3218 . . . . . {for flexible or elastic containers}
- 3/3227 . . . . . {for radiators}
- 3/3236 . . . . . {by monitoring the interior space of the containers}
- 3/3245 . . . . . {using a level monitoring device ([G01M 3/3272](#) takes precedence)}
- 3/3254 . . . . . {using a flow detector ([G01M 3/3245](#), [G01M 3/3272](#) take precedence)}
- 3/3263 . . . . . {using a differential pressure detector ([G01M 3/3245](#), [G01M 3/3272](#) take precedence)}
- 3/3272 . . . . . {for verifying the internal pressure of closed containers}
- 3/3281 . . . . . {removably mounted in a test cell}
- 3/329 . . . . . {for verifying the internal pressure of closed containers}
- 3/34 . . . . . by testing the possibility of maintaining the vacuum in containers, e.g. in can-testing machines
- 3/36 . . . by detecting change in dimensions of the structure being tested
- 3/363 . . . {the structure being removably mounted in a test cell}
- 3/366 . . . {by isolating only a part of the structure being tested}
- 3/38 . . . by using light ([G01M 3/02](#) takes precedence)
- 3/40 . . . by using electric means, e.g. by observing electric discharges
- 5/00** **Investigating the elasticity of structures, e.g. deflection of bridges or air-craft wings ([G01M 9/00](#) takes precedence)**
- 5/0008 . . . {of bridges}
- 5/0016 . . . {of aircraft wings or blades}
- 5/0025 . . . {of elongated objects, e.g. pipes, masts, towers or railways ([G01M 5/0058](#) takes precedence)}
- 5/0033 . . . {by determining damage, crack or wear}
- 5/0041 . . . {by determining deflection or stress}
- 5/005 . . . {by means of external apparatus, e.g. test benches or portable test systems}
- 5/0058 . . . {of elongated objects, e.g. pipes, masts, towers or railways}
- 5/0066 . . . {by exciting or detecting vibration or acceleration ([vibration testing of structures G01M 7/00](#))}
- 5/0075 . . . {by means of external apparatus, e.g. test benches or portable test systems ([G01M 5/005](#) takes precedence)}
- 5/0083 . . . {by measuring variation of impedance, e.g. resistance, capacitance, induction}

- 5/0091 . {by using electromagnetic excitation or detection}
- 7/00** **Vibration-testing of structures; Shock-testing of structures** ([G01M 9/00](#) takes precedence)
  - 7/02 . Vibration-testing {by means of a shake table}
  - 7/022 . . {Vibration control arrangements, e.g. for generating random vibrations}
  - 7/025 . . {Measuring arrangements}
  - 7/027 . . {Specimen mounting arrangements, e.g. table head adapters}
  - 7/04 . . Monodirectional test stands
  - 7/045 . . . {in a circular direction}
  - 7/06 . . Multidirectional test stands
  - 7/08 . Shock-testing
- 9/00** **Aerodynamic testing; Arrangements in or on wind tunnels**
  - 9/02 . Wind tunnels
  - 9/04 . . Details
  - 9/06 . Measuring arrangements specially adapted for aerodynamic testing
    - 9/062 . . {Wind tunnel balances; Holding devices combined with measuring arrangements}
    - 9/065 . . {dealing with flow}
    - 9/067 . . . {visualisation}
    - 9/08 . Aerodynamic models
- 10/00** **Hydrodynamic testing; Arrangements in or on ship-testing tanks or water tunnels**
- 11/00** **Testing of optical apparatus; Testing structures by optical methods not otherwise provided for**
  - 11/005 . {Testing of reflective surfaces, e.g. mirrors}
  - 11/02 . Testing optical properties
    - 11/0207 . . {Details of measuring devices}
    - 11/0214 . . . {Details of devices holding the object to be tested}
    - 11/0221 . . {by determining the optical axis or position of lenses}
    - 11/0228 . . {by measuring refractive power}
    - 11/0235 . . . {by measuring multiple properties of lenses, automatic lens meters}
    - 11/0242 . . {by measuring geometrical properties or aberrations}
    - 11/025 . . . {by determining the shape of the object to be tested ([measuring contours or curvatures by optical means G01B 11/24](#))}
    - 11/0257 . . . {by analyzing the image formed by the object to be tested}
      - 11/0264 . . . . {by using targets or reference patterns}
      - 11/0271 . . . . {by using interferometric methods}
      - 11/0278 . . . . {Detecting defects of the object to be tested, e.g. scratches or dust ([investigating the presence of flaws or contamination on materials by optical means G01N 21/88](#))}
      - 11/0285 . . {by measuring material or chromatic transmission properties ([G01M 11/0292](#) takes precedence)}
      - 11/0292 . . {of objectives by measuring the optical modulation transfer function ([photometry G01J](#))}
      - 11/04 . . Optical benches therefor
      - 11/06 . . Testing the alignment of vehicle headlight devices
        - 11/061 . . . {Details of the mechanical construction of the light measuring system ([G01M 11/064](#) takes precedence)}
  - 11/062 . . . {using an indicator mounted on the head-light}
  - 11/064 . . . {by using camera or other imaging system for the light analysis}
    - 11/065 . . . . {details about the image analysis}
    - 11/067 . . . {Details of the vehicle positioning system, e.g. by using a laser}
    - 11/068 . . . {with part of the measurements done from inside the vehicle}
  - 11/08 . Testing mechanical properties ([G01M 11/005](#) takes precedence)
    - 11/081 . . {by using a contact-less detection method, i.e. with a camera}
    - 11/083 . . {by using an optical fiber in contact with the device under test [DUT]}
      - 11/085 . . . {the optical fiber being on or near the surface of the DUT}
      - 11/086 . . . {Details about the embedment of the optical fiber within the DUT}
      - 11/088 . . {of optical fibres; Mechanical features associated with the optical testing of optical fibres}
      - 11/30 . {Testing of optical devices, constituted by fibre optics or optical waveguides}
        - 11/31 . . {with a light emitter and a light receiver being disposed at the same side of a fibre or waveguide end-face, e.g. reflectometers}
          - 11/3109 . . . . {Reflectometers detecting the back-scattered light in the time-domain, e.g. OTDR}
            - 11/3118 . . . . . {using coded light-pulse sequences}
            - 11/3127 . . . . . {using multiple or wavelength variable input source}
              - 11/3136 . . . . . {for testing of multiple fibers}
              - 11/3145 . . . . . {Details of the optoelectronics or data analysis}
              - 11/3154 . . . . . {Details of the opto-mechanical connection, e.g. connector or repeater}
                - 11/3163 . . . . . {by measuring dispersion}
                - 11/3172 . . . . . {Reflectometers detecting the back-scattered light in the frequency-domain, e.g. OFDR, FMCW, heterodyne detection}
              - 11/3181 . . . . {Reflectometers dealing with polarisation}
              - 11/319 . . . . {Reflectometers using stimulated back-scatter, e.g. Raman or fibre amplifiers}
            - 11/33 . . {with a light emitter being disposed at one fibre or waveguide end-face, and a light receiver at the other end-face}
              - 11/331 . . . . {by using interferometer}
              - 11/332 . . . . {using discrete input signals ([G01M 11/333](#) takes precedence)}
              - 11/333 . . . . {using modulated input signals}
                - 11/334 . . . . . {with light chopping means}
                - 11/335 . . . . . {using two or more input wavelengths}
              - 11/336 . . . . {by measuring polarization mode dispersion [PMD]}
              - 11/337 . . . . {by measuring polarization dependent loss [PDL]}
              - 11/338 . . . . {by measuring dispersion other than PMD, e.g. chromatic dispersion}
            - 11/35 . . {in which light is transversely coupled into or out of the fibre or waveguide, e.g. using integrating spheres ([G01M 11/31](#) takes precedence)}
            - 11/37 . . {in which light is projected perpendicularly to the axis of the fibre or waveguide for monitoring a section thereof}

- 11/39 . . {in which light is projected from both sides of the fiber or waveguide end-face}
- 13/00 Testing of machine parts**
- 13/003 . Machine valves (testing valves for fluid tightness [G01M 3/00](#))
- 13/005 . Sealing rings
- 13/02 . Gearings; Transmission mechanisms
- 13/021 . . Gearings
- 13/022 . . Power-transmitting couplings or clutches
- 13/023 . . Power-transmitting endless elements, e.g. belts or chains
- 13/025 . . Test-benches with rotational drive means and loading means; Load or drive simulation
- 13/026 . . . Test-benches of the mechanical closed-loop type, i.e. having a gear system constituting a closed-loop in combination with the object under test
- 13/027 . . Test-benches with force-applying means, e.g. loading of drive shafts along several directions
- 13/028 . . Acoustic or vibration analysis
- 13/04 . Bearings
- 13/045 . . Acoustic or vibration analysis
- 15/00 Testing of engines**
- 15/02 . Details or accessories of testing apparatus
- 15/04 . Testing internal-combustion engines
- NOTE**
- Group [G01M 15/05](#) takes precedence over groups {[G01M 15/042](#) and [G01M 15/06](#) - [G01M 15/12](#).
- 15/042 . . {by monitoring a single specific parameter not covered by groups [G01M 15/06](#) - [G01M 15/12](#)}
- 15/044 . . . {by monitoring power, e.g. by operating the engine with one of the ignitions interrupted; by using acceleration tests}
- 15/046 . . . {by monitoring revolutions (for detecting misfire [G01M 15/11](#))}
- 15/048 . . . {by monitoring temperature}
- 15/05 . . by combined monitoring of two or more different engine parameters
- 15/06 . . by monitoring positions of pistons or cranks
- 15/08 . . by monitoring pressure in cylinders
- 15/09 . . by monitoring pressure in fluid ducts, e.g. in lubrication or cooling parts
- 15/10 . . by monitoring exhaust gases {or combustion flame}
- 15/102 . . . {by monitoring exhaust gases}
- 15/104 . . . . {using oxygen or lambda-sensors (testing catalytic converters [F01N 3/18](#), [F01N 11/007](#))}
- 15/106 . . . . {using pressure sensors}
- 15/108 . . . . {using optical methods}
- 15/11 . . by detecting misfire
- 15/12 . . by monitoring vibrations
- 15/14 . Testing gas-turbine engines or jet-propulsion engines
- 17/00 Testing of vehicles (testing fluid tightness [G01M 3/00](#); testing elastic properties of bodies or chassis, e.g. torsion-testing, [G01M 5/00](#); testing alignment of vehicle headlight devices [G01M 11/06](#); testing of engines [G01M 15/00](#))**
- 17/007 . Wheeled or endless-tracked vehicles ([G01M 17/08](#) takes precedence)
- 17/0072 . . {the wheels of the vehicle co-operating with rotatable rolls ([G01M 17/022](#), [G01M 17/045](#), [G01M 17/065](#) take precedence)}
- 17/0074 . . . {Details, e.g. roller construction, vehicle restraining devices}
- 17/0076 . . . {Two-wheeled vehicles}
- 17/0078 . . {Shock-testing of vehicles}
- 17/013 . . Wheels
- 17/02 . . Tyres
- 17/021 . . . {Tyre supporting devices, e.g. chucks (for balancing [G01M 1/04](#))}
- 17/022 . . . {the tyre co-operating with rotatable rolls}
- 17/024 . . . . {combined with tyre surface correcting or marking means}
- 17/025 . . . {using infrasonic, sonic or ultrasonic vibrations}
- 17/027 . . . {using light, e.g. infrared, ultraviolet or holographic techniques}
- 17/028 . . . {using X-rays}
- 17/03 . . Endless-tracks
- 17/04 . . Suspension or damping
- 17/045 . . . {the vehicle wheels co-operating with rotatable rollers}
- 17/06 . . Steering behaviour; Rolling behaviour
- 17/065 . . . {the vehicle wheels co-operating with rotatable rolls}
- 17/08 . Railway vehicles
- 17/10 . . Suspensions, axles or wheels
- 99/00 Subject matter not provided for in other groups of this subclass**
- 99/001 . {Testing of furniture, e.g. seats or mattresses}
- 99/002 . {Thermal testing (flaw detection [G01N 25/72](#))}
- 99/004 . {Testing the effects of speed or acceleration}
- 99/005 . {Testing of complete machines, e.g. washing-machines or mobile phones (testing of machine parts [G01M 13/00](#); testing of electric apparatus or components [G01R 31/50](#))}
- NOTE**
- {This group covers mechanical testing of complete machines.}
- 99/007 . {by applying a load, e.g. for resistance or wear testing ([G01M 99/001](#) takes precedence; testing the elasticity of structures [G01M 5/00](#))}
- 99/008 . {by doing functionality tests}