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

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:
   G01M 1/38 covered by G01M 1/14 and G01M 1/30 and subgroups
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 Testing static or dynamic balance of machines or structures
1/02 . Details of balancing machines or devices
1/04 . . Adaptation of bearing support assemblies for receiving the body to be tested
1/045 . . . {the body being a vehicle wheel}
1/06 . . Adaptation of drive assemblies for receiving the body to be tested
1/08 . . Instruments for indicating directly the magnitude and phase of the imbalance
1/10 . Determining the moment of inertia
1/12 . Static balancing; Determining position of centre of gravity (by determining imbalance G01M 1/14)
1/122 . . {Determining position of centre of gravity}
1/125 . . . {of aircraft}
1/127 . . . . {during the flight}
1/14 . Determining imbalance (G01M 1/30 takes precedence)
1/16 . . by oscillating or rotating the body to be tested
1/18 . . . and running the body down from a speed greater than normal
1/20 . . . and applying external forces compensating forces due to imbalance
1/22 . . . and converting vibrations due to imbalance into electric variables
1/225 . . . . {for vehicle wheels (in situ G01M 1/28)}
1/24 . . . Performing balancing on elastic shafts, e.g. for crankshafts
1/26 . . . with special adaptations for marking, e.g. by drilling
1/28 . . . with special adaptations for determining imbalance of the body in situ, e.g. of vehicle wheels
1/30 . Compensating imbalance
1/32 . . by adding material to the body to be tested, e.g. by correcting-weights
1/323 . . . {using balancing liquid}
1/326 . . . {the body being a vehicle wheel}
1/34 . . by removing material from the body to be tested, e.g. from the tread of tyres
1/36 . . by adjusting position of masses built-in the body to be tested
1/365 . . . {using balancing liquid}

3/00 Investigating fluid-tightness of structures
3/002 . {by using thermal means}
3/005 . {using pigs or moles (G01M 3/246, G01M 3/2823 take precedence)}
3/007 . {Leak detector calibration, standard leaks (G01M 3/207 takes precedence)}
3/02 . by using fluid or vacuum
3/022 . . {Test plugs for closing off the end of a pipe}
3/025 . . {Details with respect to the testing of engines or engine parts}
3/027 . . {Details with respect to the testing of elastic elements, e.g. gloves, condoms}
3/04 . . by detecting the presence of fluid at the leakage point
3/042 . . . {by using materials which expand, contract, disintegrate, or decompose in contact with a fluid (G01M 3/12 takes precedence)}
3/045 . . . . {with electrical detection means}
3/047 . . . . . {with photo-electrical detection means, e.g. using optical fibres}
3/06 . . . by observing bubbles in a liquid pool
3/08 . . . . for pipes, cables or tubes; for pipe joints or seals; for valves; {for welds}
3/081 . . . . . {for cables}
3/083 . . . . . {for tubes}
3/085 . . . . . {for pipe joints or seals (G01M 3/088 takes precedence)}
3/086 . . . . . {for valves}
3/088 . . . . . {for welds}
3/10 . . . . for containers, e.g. radiators

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}