Instruments

G01    Measuring; Testing

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 unbalance
1/10 . Determining the moment of inertia
1/12 . Static balancing; Determining position of centre of gravity (by determining unbalance G01M 1/14)
1/122 . . . {Determining position of centre of gravity}
1/125 . . . {of aircraft}
1/127 . . . . {during the flight}
1/14 . Determining unbalance (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 unbalance
1/22 . . . and converting vibrations due to unbalance 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 unbalance of the body in situ, e.g. of vehicle wheels
1/30 . . Compensating unbalance
1/32 . . . by adding material to the body to be tested, e.g. by correcting-weights
1/323 . . . {using balancing liquid}
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; for containers, e.g. radiators}
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 5/0052 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)]
11/39 . . . [in which light is projected from both sides of the fiber or waveguide end-face]

13/00 Testing of machine parts

**WARNING**

Group G01M 13/00 is impacted by reclassification into group G01M 13/003.
Groups G01M 13/00 and G01M 13/003 should be considered in order to perform a complete search.

13/003 . . . Machine valves (testing valves for fluid tightness G01M 3/00)

**WARNING**

Group G01M 13/003 is incomplete pending reclassification of documents from group G01M 13/00.
Groups G01M 13/00 and G01M 13/003 should be considered in order to perform a complete search.

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. infra-red, ultra-violet 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]