

ECLA EUROPEAN CLASSIFICATION

G01F **MEASURING VOLUME, VOLUME FLOW, MASS FLOW OR LIQUID LEVEL; METERING BY VOLUME** (milk flow sensing devices in milking machines or devices [A01J5/01](#); measuring or recording blood flow [A61B5/02](#), [A61B8/06](#); metering media to the human body [A61M5/168](#); burettes or pipettes [B01L3/02](#); arrangements of liquid volume meters or volume-flow meters in liquid-delivering apparatus, e.g. for retail sale purposes, [B67D5/16](#); pumps, fluid motors, details common to measuring or metering devices and pumps or fluid motors F01 to F04; [N: sampling [G01N1/00](#)]; locating, determining distance or velocity using reflection or reradiation of radio waves, analogous arrangements using other waves G01S; systems for ratio control [G05D11/00](#); [N: coin-freed apparatus for metering flow of liquid or gas [G07F15/00](#)] [C9607]

Note

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

Guide heading: **Measuring volume flow**

G01F1/00 **Measuring the volume flow or mass flow of fluid or fluent solid material wherein the fluid passes through the meter in a continuous flow** (measuring a proportion of the volume flow [G01F5/00](#); measuring speed of flow [G01P5/00](#); indicating presence or absence of flow [G01P13/00](#); regulating quantity or ratio [N: [G05D7/00](#), [G05D11/02](#)]) [C9607]

Note

[G01F1/72](#), [G01F1/74](#) and [G01F1/76](#) take precedence over [G01F1/05](#) to [G01F1/68](#)

- G01F1/00A . [N: specially adapted to be used in open channels]
- G01F1/00A2 . . [N: using floats]
- G01F1/00C . [N: by measuring the level variations of storage tanks relative to the time]
- G01F1/05 . by using mechanical effects
- G01F1/05A . . [N: using rotating vanes with tangential and axial admission]
- G01F1/05B . . [N: Orbital ball flowmeters]
- G01F1/06 . . using rotating vanes with tangential admission
- G01F1/06A . . . [N: with radiation as transfer means to the indicating device, e.g. light transmission]
- G01F1/07 . . . with mechanical coupling to the indicating device
- G01F1/075 . . . with magnetic or electromagnetic coupling to the indicating device
- G01F1/075A [N: with magnetic coupling only in a mechanical transmission path]
- G01F1/08 . . . Adjusting, correcting or compensating means therefor
- G01F1/10 . . using rotating vanes with axial admission
- G01F1/10A . . . [N: with radiation as transfer means to the indicating device, e.g. light transmission]
- G01F1/10B . . . [N: with electrostatic coupling to the indicating device]
- G01F1/11 . . . with mechanical coupling to the indicating device

G01F1/115	. . .	with magnetic or electromagnetic coupling to the indicating device
G01F1/115A	. . . .	[N: with magnetic coupling only in a mechanical transmission path]
G01F1/12	. . .	Adjusting, correcting, or compensating means therefor
G01F1/12A	. . . .	[N: with electric, electro-mechanical or electronic means]
G01F1/20	. .	by detection of dynamic effects of the fluid flow
G01F1/20B	. . .	[N: Jet stream flowmeters]
G01F1/20C	. . .	[N: Measuring pressure, force or momentum of a fluid flow which is forced to change its direction]
G01F1/22	. . .	by variable-area meters, [N: e.g. rotameters]
G01F1/24	. . . .	with magnetic or electric coupling to the indicating device
G01F1/26	. . . .	of the valve type
G01F1/28	. . .	by drag-force, e.g. vane type or impact flowmeter
G01F1/30	. . . .	for fluent solid material
G01F1/32	. . .	by swirl flowmeter, e.g. using Karmann vortices
G01F1/32A	. . . .	[N: using Karmann vortices]
G01F1/32A1	. . . . .	[N: bluff body design]
G01F1/32B	. . . .	[N: using fluidic oscillators (fluidic oscillators per se F15C1/00)]
G01F1/32C	. . . .	[N: using guide vanes as swirling means]
G01F1/32D	. . . .	[N: detection means for swirl flowmeters (detection means in general G01H)]
G01F1/32D1	. . . . .	[N: for detecting fluid pressure oscillations]
G01F1/32D1B	. . . . .	[N: by sensing mechanical vibrations]
G01F1/32D2	. . . . .	[N: for detecting fluid speed oscillations by thermal sensors]
G01F1/32D3	. . . . .	[N: for detecting variations in infrasonic, sonic or ultrasonic waves, due to modulation by passing through the swirling fluid]
G01F1/32D9	. . . . .	[N: circuits therefore]
G01F1/34	. .	by measuring pressure or differential pressure
G01F1/36	. . .	the pressure or differential pressure being created by the use of flow constriction
G01F1/36A	. . . .	[N: with electrical or electro-mechanical indication (G01F1/37 and G01F1/38 take precedence)]
G01F1/36B	. . . .	[N: with mechanical or fluidic indication (G01F1/37 and G01F1/38 take precedence)]
G01F1/37	. . . .	the pressure or differential pressure being measured by means of communicating tubes or reservoirs with movable fluid levels, e.g. by U-tubes
G01F1/37A	. . . . .	[N: with electrical or electro-mechanical indication]
G01F1/37B	. . . . .	[N: with mechanical or fluidic indication]
G01F1/37C	. . . . .	[N: using a ring-balance as indicating element]
G01F1/38	. . . .	the pressure or differential pressure being measured by means of a movable element, e.g. diaphragm, piston, Bourdon tube or flexible capsule
G01F1/38A	. . . . .	[N: with electrical or electro-mechanical indication]
G01F1/38B	. . . . .	[N: with mechanical or fluidic indication]
G01F1/40	. . . .	Details or construction of the flow constriction devices
G01F1/42	. . . . .	Orifices or nozzles
G01F1/44	. . . . .	Venturi tubes

- G01F1/46 Pitot tubes (specially adapted for measuring speed of fluids [G01P5/165](#))
[C9607]
- G01F1/48 . . . the pressure of differential pressure being created by a capillary element
- G01F1/50 . . . Correcting or compensating means
- G01F1/52 . . . by measuring the height of the fluid level due to the lifting powder of the fluid flow
- G01F1/54 . . . by means of chains, flexible bands or wires introduced into and moved by the flow
- G01F1/56 . . . by using electric or magnetic effects ([G01F1/66](#) takes precedence)
- G01F1/58 . . . by electro-magnetic flowmeters
- G01F1/58A . . . [N: without electrodes]
- G01F1/58B . . . [N: constructions of electrodes, accessories therefor]
- G01F1/58C . . . [N: constructions of coils, magnetic circuits, accessories therefor ([G01F1/58A](#)
takes precedence; magnet; inductances; transformers; selection of materials for
their magnetic properties per se [H01F](#))]
- G01F1/58D . . . [N: combined constructions of electrodes, coils or magnetic circuits, accessories
therefor]
- G01F1/60 . . . Circuits therefor
- G01F1/64 . . . by measuring electrical current passing through the fluid flow; measuring electrical
potential generated by the fluid flow, e.g. by electrochemical, contact or friction
effects ([G01F1/58](#) takes precedence)
- G01F1/66 . . . by measuring frequency, phaseshift, or propagation time of electro-magnetic or other
waves, e.g. ultrasonic flowmeters
- G01F1/66A . . . [N: using light]
- G01F1/66B . . . [N: Constructional details]
- G01F1/66C . . . [N: by measuring Doppler frequency shift]
- G01F1/66D . . . [N: of the drag-type]
- G01F1/66E . . . [N: by detecting noise and sounds generated by the flowing fluid]
- G01F1/66F . . . [N: Schematic arrangements of transducers of ultrasonic flowmeters; Circuits
therefor ([G01F1/66C](#), [G01F1/66D](#), [G01F1/66E](#) take precedence)]
- G01F1/66F2 . . . [N: Compensating or correcting for variations in velocity of sound]
- G01F1/68 . . . by using thermal effects
- G01F1/684 . . . Structural arrangements; Mounting of elements, e.g. in relation to fluid flow [[N9607](#)]
- G01F1/684C . . . [N: with means for influencing the fluid flow] [[N9607](#)]
- G01F1/684M . . . [N: Micro-machined devices] [[N9607](#)]
- G01F1/684N . . . [N: where sensing or heating elements are not disturbing the fluid flow, e.g.
elements mounted outside the flow duct] [[N9607](#)]
- G01F1/688 . . . using a particular type of heating, cooling or sensing element [N: ([1/684N](#) takes
precedence)] [[N9607](#)]
- G01F1/688A . . . [N: making use of temperature dependence of acoustic properties, e.g.
propagation speed of surface acoustic waves] [[N9607](#)]
- G01F1/688E . . . [N: making use of temperature dependence of optical properties] [[N9607](#)]
- G01F1/688P . . . [N: Pyroelectric elements] [[N9607](#)]
- G01F1/688T . . . [N: Thermoelectric elements, e.g. thermocouples, thermopiles] [[N9607](#)]
- G01F1/69 . . . of resistive type [[N9607](#)]
- G01F1/692 . . . Thin-film arrangements [[N9607](#)]

- G01F1/696 . . Circuits therefor, e.g. constant-current flow meters [N9607]
- G01F1/696K . . . [N: comprising means to store calibration data for flow signal calculation or correction] [N9607]
- G01F1/698 . . . Feedback or rebalancing circuits, e.g. self heated constant temperature flowmeters [N9607]
- G01F1/698B [N: adapted for burning-off deposits] [N9607]
- G01F1/698D [N: with pulsed heating, e.g. dynamic methods] [N9607]
- G01F1/699 by control of a separate heating or cooling element [N9607]

- G01F1/704 . using marked regions or existing inhomogeneities within the fluid stream, e.g. statistically occurring variations in a fluid parameter ([G01F1/76](#), [G01F25/00](#) take precedence)
- G01F1/704B . . [N: using radioactive tracers]
- G01F1/704C . . [N: using thermal tracers]
- G01F1/704D . . [N: using electrical loaded particles as tracer, e.g. ions or electrons]
- G01F1/704D1 . . . [N: the concentration of electrical loaded particles giving an indication of the flow]

- G01F1/708 . . Measuring the time taken to traverse a fixed distance
- G01F1/708A . . . [N: using acoustic detecting arrangements] [N9607]
- G01F1/708B . . . [N: using thermal detecting arrangements] [N9607]
- G01F1/708C . . . [N: using optical detecting arrangements] [N9607]
- G01F1/708D . . . [N: using electrical loaded particles as tracers] [N9809]
- G01F1/712 . . . using auto-correlation or cross-correlation detection means ([N: [G01F1/708A](#) to [G01F1/708D](#) take precedence]; measuring speed by using correlation means in general [G01P3/80](#), [G01P5/22](#)) [C9607]
- G01F1/716 . . . using electron paramagnetic resonance (EPR) or nuclear magnetic resonance (NMR)

- G01F1/72 . Devices for measuring pulsing fluid flows

- G01F1/74 . Devices for measuring flow of a fluid or flow of a fluent solid material in suspension in another fluid

- G01F1/76 . Devices for measuring mass flow of a fluid or a fluent solid material ([weighing a continuous stream of material during flow](#) [G01G11/00](#))
- G01F1/78 . . Direct mass flowmeters
- G01F1/78B . . . [N: using fluidic bridge circuits]
- G01F1/80 . . . operating by measuring pressure, force, momentum, or frequency of a fluid flow to which a rotational movement has been imparted
- G01F1/82 using a driven wheel as impeller and one or more other wheels or moving elements which are angularly restrained by a resilient member, e.g. spring member as the measuring device
- G01F1/84 Gyroscopic mass flowmeters
- G01F1/84B [N: details of flowmeter manufacturing methods] [N1102]
- G01F1/84D [N: constructional details] [N1102]
- G01F1/84D2 [N: means for influencing the flowmeter's motional or vibrational behaviour, e.g., conduit support or fixing means, or conduit attachments] [N1102]

G01F1/84D2B	. . . . .	{7 dots} [N: motion or vibration balancing means] [N1102]
G01F1/84D4	. . . . .	[N: exciters] [N1102]
G01F1/84D6	. . . . .	[N: detectors] [N1102]
G01F1/84D8	. . . . .	[N: electronic circuits] [N1102]
G01F1/84D10	. . . . .	[N: signal processing] [N1102]
G01F1/84D12	. . . . .	[N: micro-fluidic or miniaturised flowmeters] [N1102]
G01F1/84D12M	. . . . .	{7 dots} [N: micro-machined flowmeters] [N1102]
G01F1/84F	. . . . .	[N: arrangements of measuring means, e.g., of measuring conduits] [N1102]
G01F1/84F2	. . . . .	[N: rotating or rotatably suspended measuring conduits] [N1102]
G01F1/84F4	. . . . .	[N: vibrating means being located inside the measuring conduits] [N1102]
G01F1/84F6	. . . . .	[N: the measuring conduits' cross-section being deformed during measurement, e.g. by periodically deflecting a portion of the conduits' surface] [N1102]
G01F1/84F8	. . . . .	[N: vibrating measuring conduits] [N1102]
G01F1/84F8C	. . . . .	{7 dots} [N: having curved measuring conduits, i.e. whereby the measuring conduits' curved center line lies within a plane (G01F1/84F8L takes precedence)] [N1102]
G01F1/84F8C2	. . . . .	{8 dots} [N: with multiple measuring conduits] [N1102]
G01F1/84F8L	. . . . .	{7 dots} [N: having loop-shaped measuring conduits, e.g. the measuring conduits form a loop with a crossing point] [N1102]
G01F1/84F8L2	. . . . .	{8 dots} [N: with multiple measuring conduits] [N1102]
G01F1/84F8S	. . . . .	{7 dots} [N: having straight measuring conduits] [N1102]
G01F1/84F8S2	. . . . .	{8 dots} [N: with multiple measuring conduits] [N1102]
G01F1/86	. .	Indirect mass flowmeters, e.g. measuring volume flow and density, temperature or pressure
G01F1/88	. . .	with differential pressure measurement to determine the volume flow
G01F1/90	. . .	with positive displacement meter or turbine meter to determine the volume flow

G01F3/00 **Measuring the volume flow of fluids or fluent solid material wherein the fluid passes through the meter in successive and more or less isolated quantities, the meter being driven by the flow** ([measuring a proportion of the volume flow G01F5/00](#))

G01F3/02	. . . . .	with measuring chambers which expand or contract during measurement
G01F3/04	. . . . .	having rigid movable walls
G01F3/06	. . . . .	comprising members rotating in a fluid-tight or substantially fluid-tight manner in a housing
G01F3/06A	. . . . .	[N: sliding-vane meters]
G01F3/08	. . . . .	Rotary piston or ring piston meters
G01F3/10	. . . . .	Geared or lobed impeller meters
G01F3/12	. . . . .	Meters with nutating members, e.g. discs
G01F3/14	. . . . .	comprising reciprocating pistons, e.g. reciprocating in a rotary body
G01F3/16	. . . . .	in stationary cylinders
G01F3/18	. . . . .	involving two or more cylinders
G01F3/20	. . . . .	having flexible movable walls, e.g. diaphragms, bellows (diaphragms and bellows)

- therefor [G01F15/16](#))
- G01F3/22 . . . for gases
 - G01F3/22B [N: Valves therefor (valves for flowmeters in general [G01F15/00C](#))]
 - G01F3/22D [N: characterised by drive mechanism for valves or membrane index mechanism]
 - G01F3/22D2 [N: with adjustment of stroke or timing; Calibration thereof; Testing]
 - G01F3/22D4 [N: with means for pressure or temperature compensation]
 - G01F3/22F [N: characterised by constructional features of membranes or by means for improving proper functioning of membranes (diaphragms for flowmeters in general [G01F15/16](#))]
 - G01F3/22H [N: characterised by features of meter body or housing]
 - G01F3/22K [N: characterised by the means for transfer of membrane movement information to indicating means]
 - G01F3/22K2 [N: using mechanical transmission means]

 - G01F3/24 . with measuring chambers moved during operation ([wet gasmeters G01F3/30](#))
 - G01F3/26 . . Tilting-trap meters
 - G01F3/28 . . on carriers rotated by the weight of the liquid in the measuring chambers

 - G01F3/30 . Wet gas-meters
 - G01F3/32 . . comprising partitioned drums rotating or nutating in a liquid
 - G01F3/34 . . comprising bells reciprocating in a liquid

 - G01F3/36 . with stationary measuring chambers having constant volume during measurement ([with measuring chambers which expand or contract during measurement G01F3/02](#))
 - G01F3/38 . . having only one measuring chamber

 - G01F5/00** **Measuring a proportion of the volume flow**

 - G01F5/00B . [N: by measuring pressure or differential pressure, created by the use of flow constriction]

 - G01F7/00** **Volume-flow measuring devices with two or more measuring ranges; Compound meters**

 - G01F7/00B . [N: by measuring pressure or differential pressure, created by the use of flow constriction]

 - G01F9/00** **Measuring volume flow relative to another variable, e.g. of liquid fuel for an engine**

 - G01F9/00A . [N: with electric, electro-mechanic or electronic means ([G01F9/00C](#) and [G01F9/02](#) take precedence)]
 - G01F9/00A2 . . [N: by measuring the weight]
 - G01F9/00A4 . . [N: by using calibrated reservoirs]

 - G01F9/00B . [N: with mechanic means ([G01F9/00C](#) and [G01F9/02](#) take precedence)]

 - G01F9/00C . [N: where the other variable is the flight or running time]

- G01F9/02 . wherein the other variable is the speed of a vehicle
- G01F9/02A . . [N: with electric, electro-mechanic or electronic means]
- G01F9/02B . . [N: with mechanic means]

Guide heading: Metering by volume

G01F11/00 **Apparatus requiring external operation and adapted at each repeated and identical operation to measure and separate a predetermined volume of fluid or fluent solid material from a supply or container without regard to weight and to deliver it**

- G01F11/00B . [N: for fluent solid material]
- G01F11/00C . [N: Details or accessories (general details [G01F15/00](#))]
- G01F11/02 . with measuring chambers which expand or contract during measurement
- G01F11/02B . . [N: of the piston type ([G01F11/04](#) takes precedence)]
- G01F11/02B3 . . . [N: of the gun type and actuated by fluid pressure or by a motor (air-operated grease guns [F16N5/02](#); devices to fill holes or cracks [B05C17/00B](#))]
- G01F11/02B4 . . . [N: with provision for varying the stroke of the piston]
- G01F11/02B6 . . . [N: the pistons reciprocating in rotatable cylinders (dough-dividing machines with division boxes in a revolving body with radially-working pistons [A21C5/04](#))]
- G01F11/02B8 . . . [N: with manually operated pistons ([G01F19/00B](#) takes precedence)] [[C9706](#)]
- G01F11/02B8B [N: of the gun type (hand operated grease guns [F16N3/12](#))]
- G01F11/02B8C [N: of the syringe type]
- G01F11/02B8D [N: the dosing device being provided with a dip tube and fitted to a container, e.g. to a bottleneck]
- G01F11/02B10 . . . [N: provided with electric controlling means ([G01F11/02B3](#) and [G01F11/02B6](#) take precedence)]
- G01F11/04 . . of the free-piston type
- G01F11/06 . . . with provision for varying the stroke of the piston
- G01F11/08 . . of the diaphragm or bellows type (diaphragms or bellows therefor [G01F15/16](#))
- G01F11/08B . . . [N: of the squeeze container type (using squeeze bottles or the like for soap [A47K5/122](#))]
- G01F11/08D . . . [N: using a bulb to pressurise the fluid to be dispersed]
- G01F11/08E . . . [N: using an auxiliary pressure to cooperate with the diaphragm or bellows]
- G01F11/08F . . . [N: using a deformable conduit-like element]
- G01F11/10 . with measuring chambers moved during operation
- G01F11/12 . . of the valve type, i.e. the separating being effected by fluid-tight or powder-tight movements (involving the tilting or inverting of the supply vessel [G01F11/26](#))
- G01F11/12A . . . [N: of the peristaltic pump type (peristaltic pumps per se [F04B43/12](#))]
- G01F11/14 . . . wherein the measuring chamber reciprocates
- G01F11/16 for liquid or semi-liquid
- G01F11/18 for fluent solid material

- G01F11/20 . . . wherein the measuring chamber rotates or oscillates
- G01F11/22 for liquid or semi-liquid
- G01F11/24 for fluent solid material
- G01F11/26 . . wherein the measuring chamber is filled and emptied by tilting or inverting the supply vessel, e.g. bottle emptying apparatus
- G01F11/26A . . . [N: for fluent solid material]
- G01F11/26B . . . [N: for liquid or semi-liquid]
- G01F11/26B2 [N: with valves]
- G01F11/26B2A [N: of the ball type]
- G01F11/26B3 [N: using the syphonic effect]
- G01F11/26C . . . [N: with counters for counting the numbers of measures delivered]
- G01F11/26D . . . [N: with provision for varying the volume to be delivered]

- G01F11/28 . with stationary measuring chambers having constant volume during measurement (with measuring chambers which expand or contract during measurement [G01F11/02](#))
- G01F11/28B . . [N: for fluent solid material not provided for in [G01F11/34](#), [G01F11/40](#), [G01F11/46](#)]
- G01F11/28C . . [N: combined with electric level detecting means ([G01F11/28B](#), [G01F11/30](#) to [G01F11/46](#) take precedence)]
- G01F11/28D . . [N: where filling of the measuring chamber is effected by squeezing a supply container that is in fluid connection with the measuring chamber and excess fluid is sucked back from the measuring chamber during relaxation of the supply container]
- G01F11/28E . . [N: squeezing of the supply vessel causing filling of the measuring chamber and backflow from the measuring chamber to the supply vessel being prevented by a check valve ([G01F11/46](#) take precedence)]

- G01F11/30 . . with supply and discharge valves of the lift or plug-lift type
- G01F11/32 . . . for liquid or semi-liquid
- G01F11/34 . . . for fluent solid material
- G01F11/36 . . with supply and discharge valves of the rectilinearly-moved slide type
- G01F11/38 . . . for liquid or semi-liquid
- G01F11/40 . . . for fluent solid material
- G01F11/42 . . with supply and discharge valves of the rotary or oscillatory type
- G01F11/44 . . . for liquid or semi-liquid
- G01F11/46 . . . for fluent solid material

- G01F13/00** **Apparatus for measuring by volume and delivering fluids or fluent solid materials, not provided for in the preceding groups**

- G01F13/00B . [N: for fluent solid material]
- G01F13/00B2 . . [N: comprising a conveyor belt]
- G01F13/00B3 . . [N: comprising a screw conveyor]

- G01F13/00C . [N: measuring volume in function of time]

- G01F13/00D . [N: taps comprising counting- and recording means (counting devices, counting of objects in general [G06M](#))]

G01F15/00	Details of, or accessories for, apparatus of the preceding groups insofar as such details or appliances are not adapted to particular types of such apparatus
G01F15/00B	. [N: Means for regulating or setting the meter for a predetermined quantity]
G01F15/00B2	. . [N: for gases]
G01F15/00B4	. . [N: using electromagnetic, electric or electronic means (G01F15/00B2 , G01F15/02 take precedence)]
G01F15/00C	. [N: Valves (valves in general F16K)]
G01F15/00D	. [N: characterised by the use of a particular material, e.g. anti-corrosive material (G01F15/14 takes precedence)]
G01F15/00K	. [N: comprising means to prevent fraud]
G01F15/00L	. [N: comprising lubricating means]
G01F15/02	. Compensating or correcting for variations in pressure, density or temperature
G01F15/02B	. . [N: using electrical means]
G01F15/02B2	. . . [N: involving digital counting]
G01F15/02C	. . [N: using means to maintain zero differential pressure across the motor (G01F1/08 and G01F1/12 take precedence)]
G01F15/02D	. . [N: for low flow rates]
G01F15/04	. . of gases to be measured
G01F15/04B	. . . [N: using electrical means]
G01F15/04B2	. . . . [N: involving digital counting]
G01F15/06	. Indicating or recording devices, e.g. for remote indication [C9607]
G01F15/06B	. . [N: for remote indication]
G01F15/06B2	. . . [N: using electrical means]
G01F15/06C	. . [N: with transmission devices, e.g. mechanical]
G01F15/06C2	. . . [N: involving magnetic transmission devices]
G01F15/06D	. . [N: with electrical means (G01F15/06B2 takes precedence)]
G01F15/07	. . Integration to give total flow, e.g. using mechanically-operated integration mechanisms [C9607]
G01F15/075	. . . using electrically operated integrating means
G01F15/075B	. . . . [N: involving digital counting]
G01F15/08	. Air or gas separators in combination with liquid meters; Liquid separators in combination with gas meters
G01F15/10	. Preventing damage by freezing or excess pressure or insufficient pressure
G01F15/10B	. . [N: Preventing damage by hydraulic shocks]
G01F15/12	. Cleaning arrangements; Filters (filters in general B01D)
G01F15/12B	. . [N: Filters]

- G01F15/14 . Casings, e.g. of special material
- G01F15/16 . Diaphragms; Bellows; Mountings therefor
- G01F15/18 . Supports or connecting means for meters
- G01F15/18B . . [N: Connecting means, e.g. bypass conduits]

Guide heading: Measuring volume

G01F17/00 **Methods or apparatus for determining the capacity of containers or cavities, or the volume of solid bodies** (measuring linear dimensions to determine volume [G01B](#)) [C9607]

G01F19/00 **Calibrated capacity measures for fluids or fluent solid material, e.g. measuring-cups** [N: (powder measuring spoons A61J; burettes, weighing bottles B01L)] [C9607]

- G01F19/00A . [N: Measuring spoons or scoops]
- G01F19/00B . [N: for semi-liquid, e.g. fat] [N9706]
- G01F19/00C . [N: for non fluent solid material, e.g. filamentary] [N9706]

G01F22/00 **Methods or apparatus for measuring volume of fluids or fluent solid material, not otherwise provided for** [N9607]

- G01F22/02 . involving measurement of pressure [N9607]

Guide heading: Level indicators

G01F23/00 **Indicating or measuring liquid level, or level of fluent solid material, e.g. indicating in terms of volume, indicating by means of an alarm** (in wells [E21B47/04](#); adaptation to, or mounting on, steam boilers [F22B37/78](#); level regulation [G05D](#); alarm devices [G08B](#); [N: for accumulators [H01M10/48](#)]) [C9602]

- G01F23/00A . [N: for discrete indicating and measuring ([G01F23/02](#) to [G01F23/28](#) take precedence)]
- G01F23/00A2 . . [N: with a whistle or other sonorous signal]
- G01F23/00B . [N: with a probe suspended by a wire or thread (with floats [G01F23/40](#))]
- G01F23/00C . [N: with a probe suspended by rotatable arms (with floats [G01F23/32](#))]
- G01F23/00D . [N: using buoyant probes (with floats [G01F23/30](#) to [G01F23/76](#))]
- G01F23/00E . [N: with a stationary probe, where a liquid specimen is separated from the mean mass and measured (by gauge glasses [G01F23/02](#))]
- G01F23/00F . [N: with over-flow pipes]

- G01F23/00G . [N: characterised by the level signal processing means]
- G01F23/00G1 . . [N: particular electronic circuits for digital processing equipment]
- G01F23/00G1A . . . [N: containing circuits handling parameters other than liquid level]
- G01F23/00G2 . . [N: particular electronic circuits for handling non-digital processing equipment]
- G01F23/00G2A . . . [N: containing circuits handling parameters other than liquid level]

- G01F23/02 . by gauge glasses or other apparatus involving a window or transparent tube for directly observing the level to be measured or the level of a liquid column in free communication with the main body of the liquid

- G01F23/04 . by dip members, e.g. dip-sticks
- G01F23/04K . . [N: cleaning means therefor (e.g. dip-stick wipers)]

- G01F23/14 . by measurement of pressure (measuring pressure in general [G01L](#)) [C9607]
- G01F23/16 . . Indicating, recording, or alarm devices being actuated by mechanical or fluid means, e.g. using gas, mercury, or a diaphragm as transmitting element, or by a column of liquid
 - G01F23/16A . . . [N: for discrete levels ([G01F23/16B](#) - [G01F23/16D](#) take precedence)]
 - G01F23/16B . . . [N: by a liquid column]
 - G01F23/16C . . . [N: using a diaphragm, bellow as transmitting element]
 - G01F23/16D . . . [N: of bubbler type]
 - G01F23/16D2 [N: with mechanic or fluid indicating or recording]
 - G01F23/16D4 [N: with electric indicating or recording]
- G01F23/18 . . Indicating, recording or alarm devices actuated electrically
- G01F23/18A . . . [N: for discrete levels]

- G01F23/20 . by measurement of weight, e.g. to determine the level of stored liquified gas (weighing in general [G01G](#))
- G01F23/20A . . [N: for discrete levels]

- G01F23/22 . by measurement of physical variables, other than linear dimensions, pressure or weight, dependent on the level to be measured, e.g. by difference of heat transfer of steam or water (involving use of floats [G01F23/30](#)) [C9607]
- G01F23/22B . . [N: using a melting or dissolving material as a part of alarm-means]
- G01F23/22C . . [N: measuring the braking of a rotatable element]
- G01F23/24 . . by measuring variations of resistance of resistors due to contact with conductor fluid
 - G01F23/24A . . . [N: for discrete levels]
 - G01F23/24A2 [N: Mounting arrangements for electrodes]
 - G01F23/24A4 [N: Schematic arrangements of probes combined with measuring circuits]
 - G01F23/24A4B [N: comprising oscillating circuits]
 - G01F23/24B . . . [N: with a probe moved by an auxiliary power, e.g. meter, to follow automatically the level]
 - G01F23/24C . . . [N: thermal devices]
 - G01F23/24C2 [N: for discrete levels]
 - G01F23/24C2B [N: Constructional details; Mounting of probes]

- G01F23/26 . . . by measuring variations of capacity or inductance of capacitors or inductors arising from the presence of liquid or fluent solid material in the electric or electromagnetic fields
- G01F23/26A . . . [N: for discrete levels]
- G01F23/26B . . . [N: using capacitors]
- G01F23/26B2 [N: for discrete levels]
- G01F23/26B4 [N: measuring circuits therefor]
- G01F23/26B6 [N: mounting arrangements of probes]
- G01F23/28 . . . by measuring the variations of parameters of electric or acoustic waves applied directly to the liquid or fluent solid material
- G01F23/28A . . . [N: for discrete levels ([G01F23/284](#), [G01F23/296](#) take precedence)]
- G01F23/284 Electromagnetic waves
- G01F23/284B [N: for discrete levels ([G01F23/288](#), [G01F23/292](#) take precedence)]
- G01F23/288 X-rays; Gamma rays [N: or other forms of ionising radiation]
- G01F23/288B [N: for discrete levels]
- G01F23/292 Light [N: ,e.g. infra-red or ultra-violet]
- G01F23/292B [N: for discrete levels]
- G01F23/292B2 [N: with light-conducting sensing elements, e.g. prisms]
- G01F23/292B2B {7 dots} [N: for several discrete levels, e.g. with more than one light-conducting sensing element ([G01F23/292B2D2](#) takes precedence)]
- G01F23/292B2D {7 dots} [N: using electrical detecting means]
- G01F23/292B2D2 {8 dots} [N: for several discrete levels, e.g. with more than one light-conducting sensing element]
- G01F23/292B4 [N: using light reflected on the material surface]
- G01F23/296 Acoustic waves
- G01F23/296B [N: for discrete levels ([G01F23/296D](#) to [G01F23/296T](#) take precedence)]
- G01F23/296D [N: Transit time measurement]
- G01F23/296D2 [N: magnetostrictive]
- G01F23/296F [N: measuring wave attenuation]
- G01F23/296H [N: making use of acoustical resonance or standing waves]
- G01F23/296H2 [N: for discrete levels]
- G01F23/296T [N: Transducers specially adapted for acoustic level indicators]
- G01F23/30 . . . by floats ([switches operated by floats H01H35/18](#), [N: with magnets [H01H36/02](#)] [[C9607](#)])
- G01F23/30B . . . [N: characterised by means to prevent fault-level readings due to turbulence of the fluid, e.g. special float housings]
- G01F23/30E . . . [N: using radioactive radiation]
- G01F23/32 . . . using rotatable arms or other pivotable transmission elements
- G01F23/34 using mechanically actuated indicating means [N: ([G01F23/38](#) takes precedence)] [[C9607](#)]
- G01F23/34A [N: using pneumatically or hydraulically actuated indicating means]
- G01F23/36 using electrically actuated indicating means [N: ([G01F23/38](#) takes precedence)] [[C9607](#)]

G01F23/36A	. . . .	[N: using electromechanically actuated indicating means]
G01F23/36B	. . . .	[N: using optoelectrically actuated indicating means]
G01F23/38	. . . .	[N: using magnetically actuated indicating means]
G01F23/40	. .	using bands or wires as transmission elements
G01F23/42	. . . .	using mechanically actuated indicating means
G01F23/42A	. . . .	[N: using pneumatically or hydraulically actuated indicating means]
G01F23/44	. . . .	using electrically actuated indicating means
G01F23/44A	. . . .	[N: using electromechanically actuated indicating means]
G01F23/44B	. . . .	[N: using opto-electrically actuated indicating means]
G01F23/46	. . . .	using magnetically actuated indicating means
G01F23/48	. .	using twisted spindles as transmission means
G01F23/50	. . . .	using mechanically actuated indicating means
G01F23/50A	. . . .	[N: using hydraulically or pneumatically actuated indicating means]
G01F23/52	. . . .	using electrically actuated indicating means
G01F23/52A	. . . .	[N: using electromechanically actuated indicating means]
G01F23/52B	. . . .	[N: using opto-electrically actuated indicating means]
G01F23/54	. . . .	using magnetically actuated indicating means
G01F23/54A	. . . .	[N: using magnets only as coupling means in a mechanical transmission path]
G01F23/54B	. . . .	[N: using magnets only for directly actuating of switches]
G01F23/56	. .	using elements rigidly fixed to and rectilinearly moving with the float as transmission elements
G01F23/58	. . . .	using mechanically actuated indicating means
G01F23/58A	. . . .	[N: using pneumatically or hydraulically actuated indicating means]
G01F23/60	. . . .	using electrically actuated indicating means
G01F23/60A	. . . .	[N: using electromechanically actuated indicating means]
G01F23/60B	. . . .	[N: using opto-electrically actuated indicating means]
G01F23/62	. . . .	using magnetically actuated indicating means
G01F23/64	. .	of the free float type [N: without mechanical transmission elements] [C9607]
G01F23/66	. . . .	using mechanically actuated indicating means
G01F23/66A	. . . .	[N: using pneumatically or hydraulically actuated indicating means]
G01F23/68	. . . .	using electrically actuated indicating means
G01F23/68A	. . . .	[N: using electromechanically actuated indicating means]
G01F23/68B	. . . .	[N: using opto-electrically actuated indicating means]
G01F23/70	. . . .	for sensing changes in level only at discrete points
G01F23/70A	. . . . .	[N: using electromechanically actuated indicating means]
G01F23/70B	. . . . .	[N: using opto-electrically actuated indicating means]
G01F23/72	. . . .	using magnetically actuated indicating means
G01F23/74	. . . .	for sensing changes in level only at discrete points
G01F23/76	. .	characterised by the construction of the float
G01F25/00		Testing or calibrating apparatus for measuring volume, volume flow or liquid level, or for metering by volume

- G01F25/00A . [N: for measuring volume flow]
- G01F25/00A2 . . [N: using a seal ball or piston in a test loop]
- G01F25/00A4 . . [N: using tracer]
- G01F25/00A6 . . [N: using a reference counter]
- G01F25/00A8 . . [N: using a calibrated reservoir]
- G01F25/00A10 . . [N: using a weighing apparatus]
- G01F25/00A12 . . [N: specially adapted for gas meters ([G01F25/00A2](#) to [G01F25/00A10](#) take precedence)]

- G01F25/00B . [N: for measuring liquid level]
- G01F25/00B1 . . [N: checking proper indicating of discrete level by floats]
- G01F25/00B2 . . [N: testing proper functioning of electronic circuits]

- G01F25/00C . [N: for measuring volume]

- G01F25/00D . [N: for metering by volume]