

F16F

SPRINGS; SHOCK-ABSORBERS; MEANS FOR DAMPING VIBRATION

Definition statement

This subclass/group covers:

Springs, shock-absorbers or vibration-dampers;

Their arrangement in, or adaptation for, particular apparatus if not provided for in the subclasses covering said apparatus.

References relevant to classification in this subclass

This subclass/group does not cover:

Examples of places where the subject matter of this subclass/group is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:

Spring mattresses	A47C 23/00 - A47C 27/00
Springs or shock-absorbers for prostheses	A61F 2/00
Vibration dampers in skis	A63C 5/075
Vehicle suspensions	B60G
Mounting of bumpers on vehicles	B60R 19/24
Rail vehicle suspensions	B61F
Buffers for railway or tramway vehicles	B61G 11/00
Vehicle chassis frames having impact absorbing means	B62D 21/15
Resiliently mounted saddles on cycles	B62J 1/02
Steering dampers	B62K 21/08
Anti-vibration mounting of marine propulsion plant in ships	B63H 21/30

Arrangement of shock-absorbers or springs in aeroplane alighting gear	B64C 25/58
Containers, packing elements or packages with shock-absorbing means	B65D 81/02
Resilient mountings in washing machines	D06F 37/20
Resilient mountings in domestic spin-dryers	D06F 49/06
Protection of buildings against vibrations or shocks	E04B 1/98
Braking devices with springs structurally combined with hinges	E05D 7/086
Spring motors	F03G 1/00
Pipe or cable supports	F16L 3/20
Resilient mounting of lighting devices	F21V 15/04
Gun cradles to permit recoil	F41A 25/00
Vibration dampers for archery bows	F41B 5/1426
Weighing apparatus, e.g. arrangement of shock-absorbers in weighing apparatus	G01G 21/10
Springs for clocks or watches	G04B
Damping of movements in instruments	G12B 3/08
Disposition of shock-absorbing devices for displaceable control elements in nuclear reactors	G21C 7/20
Arrangements or devices for damping mechanical oscillations of power lines	H02G 7/14

Informative references

Attention is drawn to the following places, which may be of interest for search:

Indicating or recording in connection with measuring	G01D 11/10
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Special rules of classification within this subclass

For the whole [F16F](#) range, consider the indexing range [F16F 2222/00](#) to [F16F 2238/045](#)

Glossary of terms

In this subclass/group, the following terms (or expressions) are used with the meaning indicated:

Steel or metal	Mention of “steel” or “metal” in groups F16F , unless specific mention is made otherwise, should be seen in the light of the title of group F16F 1/00 , i.e. material having low internal friction. This normally includes composite materials such as fibre-reinforced plastics.
Rubber or plastics	Mention of “rubber” or “plastics” in group F16F , unless specific mention is made otherwise, should be seen in the light of the title of group F16F 1/36 , i.e. material having high internal friction. This normally does NOT include composite materials such as fibre-reinforced plastics except in the case of groups F16F 1/366 to F16F 1/3686 and F16F 15/305 .

F16F 1/00

Springs (working with fluid F16F5/00, F16F9/00)

Definition statement

This subclass/group covers:

Springs and spring elements made of elastic material

References relevant to classification in this group

This subclass/group does not cover:

Springs working with fluid	F16F 5/00 , F16F 9/00
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F16F 3/00

Spring units consisting of several springs, e.g. for obtaining a desired spring characteristic ([N: F16F1/32, F16F1/34, F16F7/14 take precedence]; if including fluid springs F16F5/00, F16F13/00)

Definition statement

This subclass/group covers:

This subclass/group covers:

Spring units comprising several springs made of elastic material, e.g. springs which are superposed upon each other

References relevant to classification in this group

This subclass/group does not cover:

Springs working with fluid or including fluid spring	F16F 5/00 , F16F 9/00 , F16F 13/00
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F16F 5/00

Liquid springs in which the liquid works as a spring by compression, e.g. combined with throttling action; Combinations of devices including liquid springs [N: (dampers with solid or semi-solid material F16F9/30)]

Definition statement

This subclass/group covers:

This subclass/group covers :

Spring devices in which the compressibility of the liquid (specifically not a gas) is a key feature

References relevant to classification in this group

This subclass/group does not cover:

Dampers with solid or semi solid material	F16F 9/30
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F16F 6/00

Magnetic springs; [N: (magnetic spring arrangements for the suppression of vibration in systems F16F15/03)]; Fluid magnetic springs, [N: i.e. magnetic spring combined with a fluid]

Definition statement

This subclass/group covers:

This subclass/group covers:

Spring device in which the spring effect is given by magnetic attraction or repulsion; the device may work with permanent magnets or electromagnets

References relevant to classification in this group

This subclass/group does not cover:

Magnetic spring arrangements for the suppression of vibration in systems	F16F 15/03
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F16F 7/00

Vibration-dampers; Shock-absorbers (using fluid F16F5/00, F16F9/00; specific for rotary systems F16F15/10; [N: belt tensioners F16H7/12])

Definition statement

This subclass/group covers:

This subclass/group covers:

- One shot absorbers
- Vibration dampers using friction between particles
- Vibration dampers using friction between surfaces
- Vibration dampers using inertia effect

- Vibration dampers or shock absorbers using plastic deformation
- Vibration dampers of cable support type

References relevant to classification in this group

This subclass/group does not cover:

Vibration dampers using fluid	F16F 5/00 , F16F 9/00
Vibration dampers specific for rotary systems	F16F 15/10

F16F 9/00

Springs, vibration-dampers, shock-absorbers, or similarly-constructed movement-dampers using a fluid or the equivalent as damping medium (F16F5/00 takes precedence; connection of valves to inflatable elastic bodies B60C29/00; [N: braking devices, stops or buffers for wing-operating appliances E05F3/00, E05F5/00])

Definition statement

This subclass/group covers:

This subclass/group covers:

Movement-dampers using a fluid (ie: compressible or incompressible) as damping medium

some examples:

- gas springs,
- hydraulic shock absorbers using liquid only
- hydraulic shock absorbers using liquid and gas in combination

References relevant to classification in this group

This subclass/group does not cover:

Connection of valves to inflatable elastic bodies	B60C 29/00
Braking devices, stops or buffers for wing-operating appliances	E05F 3/00 , E05F 5/00

Using liquid springs	F16F 5/00
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F16F 13/00

Units comprising springs of the non-fluid type as well as vibration-dampers, shock-absorbers, or fluid springs (F16F5/00, [N: F16F6/00, F16F9/003] take precedence)

Definition statement

This subclass/group covers:

This subclass/group covers:

Devices comprising a combination of a plastic springs (e.g. elastomeric springs) and dampers using friction or fluid

References relevant to classification in this group

This subclass/group does not cover:

Using liquid springs	F16F 5/00
Unit comprising a magnetic spring	F16F 6/00
Device comprising a sponge rubber as pressure absorbing means	F16F 9/003

F16F 15/00

Suppression of vibrations in systems ([N: damping of non-rotary systems using inertia effect F16F7/10; prevention or isolation of vibrations in machine tools B23Q11/0032]; vehicle seat suspension devices B60N2/50; [N: methods or devices for protecting against, or damping of, acoustic waves, e.g. sound G10K11/16]); Means or arrangements for avoiding or reducing out-of-balance forces, e.g. due to motion ([N: vibration absorbing or balancing means for aircraft propellers B64C11/008, for rotorcraft rotors B64C27/001]; testing static and dynamic balance of machines or structures G01M1/00)

Definition statement

This subclass/group covers:

- Systems characterised by the control method or their control circuitry
- Systems using electro- or magnetostrictive actuation means
- Suppression of vibrations of non-rotating, e.g. reciprocating systems
- Suppression of vibrations of rotating systems by use of members not moving with the rotating systems
- Suppression of vibrations in rotating systems by making use of members moving with the system
- Suppression of vibrations of rotating systems by favourable grouping or relative arrangements of the moving members of the system or systems
- Compensation of inertia forces
- Additional weights counterbalancing inertia forces induced by the reciprocating movement of masses in the system
- Flywheels

References relevant to classification in this group

This subclass/group does not cover:

Prevention or isolation of vibrations in machine tools	B23Q 11/0032
Vehicle seat suspension devices	B60N 2/50
Absorbing or balancing means for aircraft propellers	B64C 11/008
Absorbing or balancing means for rotorcraft rotors	B64C 27/001
Damping of non-rotary systems using inertia effect	F16F 7/10
Methods or devices for protecting against, or damping of, acoustic waves, e.g. sound	G10K 11/16

Informative references

Attention is drawn to the following places, which may be of interest for search:

Testing static and dynamic balance of machines or structures	G01M 1/00
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