

## F01L

### CYCLICALLY OPERATING VALVES FOR MACHINES OR ENGINES (valves in general F16K)

#### Definition statement

*This subclass/group covers:*

Valve-gear or valve arrangements, e.g. lift-valve gear;

Lift-valve, i.e. cut-off apparatus with closure members having at least a component of their opening and closing motion perpendicular to the closing faces;

Slide valve-gear or valve-arrangements;

Valve-gear or valve arrangements actuated non-mechanically;

Valve arrangements in working piston or piston-rod;

Modifications of valve-gear to facilitate reversing, braking, starting, changing compression ratio, or other specific operations;

Valve-gear or valve arrangements, e.g. with reciprocatory slide valves, other than provided for in groups;

Slide valve-gear or valve arrangements with cylindrical, sleeve, or part annularly-shaped valves surrounding working cylinder or piston;

Slide valve-gear or valve arrangements with reciprocatory and other movement of same valve, e.g. longitudinally of working cylinder and in cross direction

Use of working pistons or pistons-rods as fluid-distributing valves or a valve-supporting elements, e.g. in free-piston machines

Valves controlled by impact by piston, e.g. in free-piston machines; Drive, or adjustment during the operation, or distribution or expansion valves by non-mechanical means;

Distribution or expansion valve-gear peculiar to free-piston machines or engines;

Reversing gear Valve drive, valve adjustment during operation;

Rotary or oscillatory slide valve-gear or valve arrangements, specially adapted for machines or engines with variable fluid distribution;

Lift valve-gear or valve arrangements specially adapted for machines or engines with variable fluid distribution

## F01L 1/00

Valve-gear or valve arrangements, e.g. lift-valve gear (lift-valve and valve-seat assemblies per se F01L3/00; slide-valve gear F01L5/00; actuated non-mechanically F01L9/00; valve arrangements in working piston or piston rod F01L11/00; modifications of valve-gear to facilitate reversing, braking, starting, changing compression ratio, or other specific operations F01L13/00 )

### Definition statement

*This subclass/group covers:*

Valve-gear or valve arrangements, e.g. lift-valve gear

### References relevant to classification in this group

*This subclass/group does not cover:*

Valve arrangements in general	<a href="#">F16K</a>
Valve-gear specially for steam engines or specially for other machines or engines with variable fluid distribution	<a href="#">F01L 15/00-F01L 35/00</a>

### Informative references

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

Lift-valve and valve-seat assemblies per se	<a href="#">F01L 3/00</a>
Slide-valve gear	<a href="#">F01L 5/00</a>
Actuated non-mechanically	<a href="#">F01L 9/00</a>
Valve arrangements in working piston or piston rod	<a href="#">F01L 11/00</a>
Modifications of valve-gear to facilitate reversing, braking, starting, changing compression ratio, or other specific operations	<a href="#">F01L 13/00</a>

## F01L 1/02

### Valve drive (transmitting-gear between valve drive and valve F01L1/12 )

#### Informative references

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

Auxiliary apparatus of engines driven by means of chains, belts or like endless members:	<a href="#">F02B 67/04</a> , <a href="#">F02B 67/06</a>
Safety means relating to endless members:	<a href="#">F02B 77/081</a>
Driving belts, driving chains:	<a href="#">F16G 1/00</a> , <a href="#">F16G 13/00</a>
Gearings for conveying rotary motion by endless flexible members:	<a href="#">F16H 7/00</a>
Camshaft drives indexed according to their transmission means -chain, belt, gear wheel:	<a href="#">F01L 1/00</a> , <a href="#">F01L 1/02</a> , <a href="#">F01L 1/04</a> , <a href="#">F01L 1/06</a>
Means for tensioning:	<a href="#">F16H 7/02</a> , <a href="#">F16H 7/08</a>
Transmitting-gear between valve drive and valve	<a href="#">F01L 1/12</a>

## F01L 1/047

### Camshafts

#### Informative references

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

Manufacturing by shaping with fluid pressure	<a href="#">B21D 26/02H</a>
Manufacturing camshafts	<a href="#">B21D 53/845</a> .
Machining camshafts	<a href="#">B23B 41/00</a>
Connecting cams to shaft	<a href="#">B23P 11/00</a>

By expanding and then shrinking	<a href="#">B23P 11/02</a>
Using pressure fluids	<a href="#">B23P 11/022</a>
Using heat or cold	<a href="#">B23P 11/025</a>
Grinding	<a href="#">B24B 19/12</a>
Lubrication of camshaft bearings	<a href="#">F01M 9/102</a>
Rigidly coupling two coaxial shafts involving plastic deformation	<a href="#">F16D 1/072</a>
Camshafts with single track cams	<a href="#">F16H 53/02</a>
Characterised by their construction	<a href="#">F16H 53/025</a>

## **F01L 3/00**

**Lift-valve, i.e. cut-off apparatus with closure members having at least a component of their opening and closing motion perpendicular to the closing faces; Parts or accessories thereof**

### **References relevant to classification in this group**

*This subclass/group does not cover:*

Valve-gear specially for steam engines or specially for other machines or engines with variable fluid distribution	<a href="#">F01L 15/00-F01L 35/00</a>
Valves for specific use as Exhaust Gas Recirculation valves (EGR valves) s	<a href="#">F02M 25/077</a>

### **Informative references**

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

Finishing, reconditioning valves:	<a href="#">B23C 3/05</a>
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Making poppet valves:	<a href="#">B23P 15/002</a> ; <a href="#">B21K 1/22</a> ;
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## **F01L 5/00**

**Slide valve-gear or valve-arrangements (with pure rotary or oscillatory movement F01L7/00 )**

### **References relevant to classification in this group**

*This subclass/group does not cover:*

Valve-arrangements with pure rotary or oscillatory movement	<a href="#">F01L 7/00</a>
Valve-gear specially for steam engines or specially for other machines or engines with variable fluid distribution	<a href="#">F01L 15/00-F01L 35/00</a>

## **F01L 7/00**

**Rotary or oscillatory slide valve-gear or valve arrangements (slide valves with combined rotary and non-rotary movements, combinations of rotary and non-rotary slide valves F01L5/00 )**

### **References relevant to classification in this group**

*This subclass/group does not cover:*

Slide valves with combined rotary and non-rotary movements, combinations of rotary and non-rotary slide valves	<a href="#">F01L 5/00</a>
Valve-gear specially for steam engines or specially for other machines or engines with variable fluid distribution	<a href="#">F01L 15/00-F01L 35/00</a>

### **Informative references**

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

Rotary valve drives:	<a href="#">F01L 2113/00</a>
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## F01L 9/00

**Valve-gear or valve arrangements actuated non-mechanically**

### References relevant to classification in this group

*This subclass/group does not cover:*

Valve-gear specially for steam engines or specially for other machines or engines with variable fluid distribution	<a href="#">F01L 15/00-F01L 35/00</a>
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## F01L 11/00

**Valve arrangements in working piston or piston-rod**

### References relevant to classification in this group

*This subclass/group does not cover:*

Valve-gear specially for steam engines or specially for other machines or engines with variable fluid distribution	<a href="#">F01L 15/00-F01L 35/00</a>
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## F01L 13/00

**Modifications of valve-gear to facilitate reversing, braking, starting, changing compression ratio, or other specific operations**

### References relevant to classification in this group

*This subclass/group does not cover:*

Valve-gear specially for steam engines or specially for other machines or engines with variable fluid distribution	<a href="#">F01L 15/00-F01L 35/00</a>
Methods of controlling engine output power by varying valve lift and timing of inlet resp. exhaust valve(s), for	<a href="#">F02D 13/00</a> , <a href="#">F02D 13/02</a> , <a href="#">F02D 13/04</a> , <a href="#">F02D 13/06</a> , <a href="#">F02D 13/08</a> , <a href="#">F02D 15/00</a>

which the emphasis is not on the structure of the valve gear used	
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### Informative references

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

Controlling engine output power by varying valve lift and timing of inlet resp. exhaust valve(s):	<a href="#">F02D 13/00</a> ;
Internal EGR	<a href="#">F02M 25/0752</a>

## F01L 13/0005

[N: Deactivating valves]

### Definition statement

*This subclass/group covers:*

The structure of the valve gear to permit in use valve deactivation.

### References relevant to classification in this group

*This subclass/group does not cover:*

Methods of controlling engines by rendering engine inoperative or idling or by cutting out individual cylinders, for which the emphasis is not on the structure of the valve gear used	<a href="#">F02D 17/00</a>
Cutting-out	<a href="#">F02D 17/02</a>
Inoperative or idling	<a href="#">F02D 17/04</a>

## F01L 13/06

for braking

### Informative references

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

Engine brake with retarder:	<a href="#">B60W 10/18</a>
Control of engine for using engine as brake:	<a href="#">F02D 13/04</a>
Control of valve gear for switching to compressor action for braking:	<a href="#">F01L 2760/003</a>
Braking being exclusively produced by compression in the cylinders:	<a href="#">F01L 2760/004</a> ;
In cooperation with vehicle transmission or brakes:	<a href="#">F01L 2760/005</a>

### **F01L 15/00**

Valve-gear or valve arrangements, e.g. with reciprocating slide valves, other than provided for in groups F01L17/00 to F01L29/00 (valve drive or external valve-adjustment during operation, see the relevant groups, e.g. F01L31/00; tripping-gear or tripping of valves F01L31/00 )

### **F01L 17/00**

Slide valve-gear or valve arrangements with cylindrical, sleeve, or part annularly-shaped valves surrounding working cylinder or piston

### **F01L 19/00**

Slide valve-gear or valve arrangements with reciprocating and other movement of same valve, other than provided for in F01L17/00, e.g. longitudinally of working cylinder and in cross direction

### **F01L 21/00**

Use of working pistons or pistons-rods as fluid-distributing valves or a valve-supporting elements, e.g. in free-piston machines

### **F01L 23/00**

Valves controlled by impact by piston, e.g. in free-piston

machines; [N: F01L25/063 takes precedence]

## **F01L 25/00**

Drive, or adjustment during the operation, or distribution or expansion valves by non-mechanical means

## **F01L 27/00**

Distribution or expansion valve-gear peculiar to free-piston machines or engines and not provided for in F01L21/00 to F01L25/00

### **Definition statement**

*This subclass/group covers:*

Distribution or expansion valve-gear peculiar to free-piston machines or engines and not provided for in [F01L 21/00](#) to [F01L 25/00](#)

## **F01L 29/00**

Reversing gear (equally usable for control of degree of working-fluid admission and reversing being of secondary-importance F01L31/00)

## **F01L 31/00**

Valve drive, valve adjustment during operation, or other valve control, not provided for in groups F01L15/00 to F01L29/00 (sensing elements measuring the variable or condition to be controlled or regulated F01B)

## **F01L 33/00**

Rotary or oscillatory slide valve-gear or valve arrangements, specially adapted for machines or engines with variable fluid distribution (drive, adjustment during operation, tripping-gear, reversing-gear, use of working pistons or piston-rods as valves or as valve-supporting elements, valve-gear or valve arrangements peculiar to free-piston machines or engines F01L15/00 to F01L31/00)

## **F01L 35/00**

Lift valve-gear or valve arrangements specially adapted for machines or engines with variable fluid distribution (drive, adjustment during operation, tripping-gear, reversing-gear,

**use of working pistons or piston-rods as valves or as valve-supporting elements, valve-gear or valve arrangements peculiar to free-piston machines or engines F01L15/00 to F01L31/00)**