

F15 FLUID-PRESSURE ACTUATORS; HYDRAULICS OR PNEUMATICS IN GENERAL

F15B SYSTEMS ACTING BY MEANS OF FLUIDS IN GENERAL; FLUID-PRESSURE ACTUATORS, E.G. SERVOMOTORS; DETAILS OF FLUID-PRESSURE SYSTEMS, NOT OTHERWISE PROVIDED FOR (motors, turbines, compressors, blowers, pumps F01 F04; fluid dynamics F15D; fluid clutches or brakes F16D; fluid springs F16F; fluid gearing F16H; pistons, cylinders, packing F16J; valves, taps, cocks, actuating-floats F16K; safety valves with auxiliary fluid operation of the main valve F16K 17/10; fluid-operating means for valves F16K 31/12; pipes, pipe joints F16L; lubricating F16N)

In this subclass, the following terms are used with the meanings indicated:

- “telemotor” means a system or device in which a substantially constant amount of fluid is trapped between an input member and an output member to act as a fluid link;
- “servomotor” means a fluid-pressure actuator, e.g. a piston and cylinder, directly controlled by a valve or other device which is responsive to operation of an initial controlling member; “Servomotor” does not cover a telemotor. The initial controlling member may be adjacent to the servomotor or at a distance, and may be, for example, a hand lever.

SUPPLYING FLUID UNDER PRESSURE	1/00	Servomotors	9/00, 11/00, 13/00
INTENSIFIERS OR FLUID-PRESSURE CONVERTERS; TRANSDUCERS.....	3/00; 5/00	Devices for displacing a member.....	15/00
FLUID-PRESSURE ACTUATOR SYSTEMS		Combinations of telemotors and servomotors; other systems; details	17/00; 18/00; 21/00
Telemotors or systems related to the output of a pump	7/00	TESTING; SAFETY	19/00; 20/00

1/00 Installations or systems with accumulators; Supply reservoir or sump assemblies

- 1/02 . Installations or systems with accumulators (devices damping pulsations or vibrations in fluids for use in, or in connection with, pipes or pipe systems F16L 55/04)
- 1/027 . . . having accumulator charging devices (control of fluid pressure in general G05D 16/00) [6]
- 1/033 . . . with electrical control means [6]
- 1/04 . . Accumulators (connection of valves to inflatable elastic bodies B60C 29/00)
- 1/08 . . . using a gas cushion; Gas charging devices; Indicators or floats therefor [6]
- 1/10 with flexible separating means [6]
- 1/12 attached at their periphery (F15B 1/16 takes precedence) [6]
- 1/14 by means of a rigid annular supporting member [6]
- 1/16 in the form of a tube [6]
- 1/18 Anti-extrusion means [6]
- 1/20 fixed to the separating means [6]
- 1/22 Liquid port constructions [6]
- 1/24 with rigid separating means, e.g. pistons [6]
- 1/26 . Supply reservoir or sump assemblies [6]

3/00 Intensifiers or fluid-pressure converters, e.g. pressure exchangers; Conveying pressure from one fluid system to another, without contact between the fluids

5/00 Transducers converting variations of physical quantities, e.g. expressed by variations in positions of members, into fluid-pressure variations or vice versa; Varying fluid pressure as a function of variations of a plurality of fluid pressures or variations of other quantities (F15B 9/00 takes precedence; for measuring or controlling G01, G05)

Fluid-pressure actuator systems (systems peculiar to the control of a particular machine or apparatus covered in a single other class, see the class for such machine or apparatus)

- (1) This guidance heading relates to the moving of members into one or more definite positions by means of fluid pressure.
- (2) Pump, motor, and control features so far as not peculiar to this purpose are classified in the relevant classes.

7/00 Systems in which the movement produced is definitely related to the output of a volumetric pump; Telemotors

- 7/02 . Systems with continuously-operating input and output apparatus
- 7/04 . in which the ratio between pump stroke and motor stroke varies with the resistance against the motor (in brake-actuating systems for motor vehicles B60T)
- 7/06 . Details (F15B 15/00 takes precedence)
- 7/08 . . Input units; Master units
- 7/10 . . Compensation of the liquid content in a system (F15B 7/08 takes precedence; pressure-maintaining arrangements for brake master cylinders B60T 11/228) [5]

9/00 Servomotors with follow-up action, i.e. in which the position of the actuated member conforms with that of the controlling member

- 9/02 . with servomotors of the reciprocable or oscillatable type
- 9/03 . . with electrical control means
- 9/04 . . controlled by varying the output of a pump with variable capacity
- 9/06 . . controlled by means using a fluid jet
- 9/07 . . . with electrical control means

- 9/08 . . . controlled by valves affecting the fluid feed or the fluid outlet of the servomotor (F15B 9/06 takes precedence)
- 9/09 . . . with electrical control means
- 9/10 . . . in which the controlling element and the servomotor each controls a separate member, these members influencing different fluid passages or the same passage
- 9/12 . . . in which both the controlling element and the servomotor control the same member influencing a fluid passage and are connected to that member by means of a differential gearing
- 9/14 . with rotary servomotors
- 9/16 . Systems essentially having two or more interacting servomotors
- 9/17 . . with electrical control means
- 11/00 Servomotor systems without provision for follow-up action** (F15B 3/00 takes precedence)
 - 11/02 . Systems essentially incorporating special features for controlling the speed or the actuating force or speed of an output member
 - 11/024 . . by means of differential connection of the servomotor lines, e.g. regenerative circuits [6]
 - 11/028 . . for controlling the actuating force (F15B 11/024 takes precedence) [6]
 - 11/032 . . . by means of fluid-pressure converters (fluid-pressure converters per se F15B 3/00) [6]
 - 11/036 . . . by means of servomotors having a plurality of working chambers (servomotors per se F15B 15/00) [6]
 - 11/04 . . for controlling the speed (F15B 11/024 takes precedence) [6]
 - 11/042 . . . by regulating means in feed line (F15B 11/046, F15B 11/05 take precedence) [6]
 - 11/044 . . . by regulating means in return line (F15B 11/046, F15B 11/05 take precedence) [6]
 - 11/046 . . . depending on the position of the working member [6]
 - 11/048 with deceleration control [6]
 - 11/05 . . . specially adapted to maintain constant speed, e.g. pressure-compensated, load-responsive
 - 11/06 . involving features specific to the use of a compressible medium, e.g. air, steam
 - 11/064 . . with devices for saving the compressible medium [6]
 - 11/068 . . with valves for gradually putting pneumatic systems under pressure [6]
 - 11/072 . . Combined pneumatic-hydraulic systems [6]
 - 11/076 . . . with pneumatic drive or displacement and speed control or stopping by hydraulic braking [6]
 - 11/08 . with only one servomotor
 - 11/10 . . in which the servomotor position is a function of the pressure
 - 11/12 . . providing distinct intermediate positions; with step-by-step action
 - 11/13 . . . using chambers of predetermined volume [6]
 - 11/15 . . with special provision for automatic return
 - 11/16 . with two or more servomotors
 - 11/17 . . using two or more pumps [6]
 - 11/18 . . used in combination for obtaining stepwise operation of a single controlled member
- 11/20 . . . controlling several interacting or sequentially-operating members (fluid distribution or supply devices for the control of two or more servomotors F15B 13/06)
- 11/22 . . Synchronisation of the movement of two or more servomotors
- 13/00 Details of servomotor systems** (F15B 15/00 takes precedence)
 - 13/01 . Locking-valves or other detent devices (associated with the actuator F15B 15/26)
 - 13/02 . Fluid distribution or supply devices characterised by their adaptation to the control of servomotors (multiple-way valves F16K 11/00)
 - 13/04 . . for use with a single servomotor
 - 13/042 . . . operated by fluid pressure
 - 13/043 with electrically-controlled pilot valves
 - 13/044 . . . operated by electrically-controlled means, e.g. solenoids, torque-motors
 - 13/06 . . for use with two or more servomotors
 - 13/07 . . . in distinct sequence
 - 13/08 . . . Assemblies of units, each for the control of a single servomotor only
 - 13/10 . Special arrangements for operating the actuated device without using fluid pressure, e.g. for emergency use
 - 13/12 . Special measures for increasing the sensitivity of the system
 - 13/14 . Special measures for giving the operator by sense of touch the immediate response of the actuated device
 - 13/16 . Special measures for feedback
- 15/00 Fluid-actuated devices for displacing a member from one position to another** (motors for continuous movement F01 F03); **Gearing associated therewith**
 - 15/02 . Mechanical layout characterised by the means for converting the movement of the fluid-actuated element into movement of the finally-operated member
 - 15/04 . . with oscillating cylinder
 - 15/06 . . for mechanically converting rectilinear movement into non-rectilinear movement
 - 15/08 . characterised by the construction of the motor unit (pistons, cylinders, packing F16J)
 - 15/10 . . the motor being of diaphragm type (connection of valves to inflatable elastic bodies B60C 29/00; diaphragms, bellows F16J 3/00)
 - 15/12 . . of the oscillating-vane or curved-cylinder type
 - 15/14 . . of the straight-cylinder type
 - 15/16 . . . of the telescopic type
 - 15/17 . . . of differential-piston type
 - 15/18 . Combined units comprising both motor and pump
 - 15/19 . Pyrotechnical actuators [3]
 - 15/20 . Other details
 - 15/22 . . for accelerating or decelerating the stroke
 - 15/24 . . for restricting the stroke
 - 15/26 . . Locking mechanisms
 - 15/28 . . Means for indicating the position, e.g. end of stroke [4]
- 17/00 Combinations of telemotor and servomotor systems**
 - 17/02 . in which a telemotor operates the control member of a servomotor
- 18/00 Parallel arrangements of independent servomotor systems**

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| <p>19/00 Testing fluid-pressure systems or apparatus, so far as not provided for elsewhere</p> <p>20/00 Safety arrangements; Applications of safety devices
(safety devices in general F16P); Emergency measures</p> <p>21/00 Common features; Fluid-pressure systems, or details thereof, not covered by any other group of this subclass</p> <p>21/02 . Servomotor systems with programme control derived from a store or timing device; Control devices therefor</p> <p>21/04 . Special measures taken in connection with the properties of the fluid, e.g. for venting, compensating for changes of viscosity, cooling, filtering, preventing churning</p> | <p>21/06 . Use of special fluids, e.g. liquid metal; Special adaptations of fluid-pressure systems, or control of elements therefor, to the use of such fluids</p> <p>21/08 . Servomotor systems incorporating electrically-operated control means (F15B 21/02 takes precedence)</p> <p>21/10 . Delay devices or arrangements (associated with fluid motors or actuators F15B 15/22)</p> <p>21/12 . Fluid oscillators or pulse generators (fluid oscillators predominantly used for computing or control purposes F15C 1/22, F15C 3/16)</p> <p>21/14 . Energy-recuperation means (for vehicles B60T 1/10) [6]</p> |
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