Actuator position control device using a fail freeze servo-valve

ABSTRACT

The actuator (50) comprises a slide (52) carrying at least two stages (54, 56) and being capable of sliding in a cylinder and two control chambers (62, 64) connected to respective use holes (U1, U2) of an electrically controlled servo-valve hydraulic distributor (20). The control chambers (62, 64) are each situated on one side of a respective stage and an intermediate chamber connected to high or low pressure is situated between the other sides of the stages. In the event of electrical control failure, the distributor (20) slide is taken to a safety position in which the control chambers (62, 64) of the actuator (50) are at the same low or high pressure opposed to that applying in the intermediate chamber (66) so that each stage of the actuator slide is then subjected to high pressure on one side and to low pressure on the other side. Sealing between each actuator slide stage (54, 56) and the actuator cylinder (60) is carried out by a dynamic seal (70) producing a frictional force between stage and cylinder, depending on the difference between the pressures exerted on the two sides of the stage so that, in the event of electrical control failure, the actuator slide valve is immobilized in its position at the moment of the failure ("fail freeze"). The actuator (50) can be an aeronautical engine fuel metering unit.

(Fig. 1)