Abstract: The invention relates to an actuator for positioning an object in a first direction of movement, comprising a base, at least three positioning members, wherein each of the at least three positioning members has a contact surface which is configured to bear against the object under prestress, and a control device to drive the at least three positioning members in friction drive mode. In addition, the actuator comprises at least one heating device which is connected to the control device, in which the at least one heating device is configured to heat the at least three positioning members, and prestressing means to provide the prestress with which the contact surfaces of the at least three positioning members bear against the object, in which the at least three positioning members are of elongate design and are connected by one end to the base, and in which the contact surface is situated near the other end of the at least three positioning members, and in which the at least three positioning members are made from a material which expands under the effect of heat.