.529	(b)			*Unsymmetrical landing for hull and single float seaplanes.* Unsymmetrical step, bow, and stern landing conditions must be investigated. In addition--	keine		kein Seaplane Design
		(1)		The loading for each condition consists of an upward component and a side component equal, respectively, to 0.75 and 0.25 tan beta times the resultant load in the corresponding symmetrical landing condition; and			
		(2)		The point of application and direction of the upward component of the load is the same as that in the symmetrical condition, and the point of application of the side component is at the same longitudinal station as the upward component but is directed inward perpendicularly to the plane of symmetry at a point midway between the keel and the chine lines.			
	(c)			*Unsymmetrical landing; twin float seaplanes.* The unsymmetrical loading consists of an upward load at the step of each float of 0.75 and a side load of 0.25 tan beta at one float times the step landing load reached under Sec. 23.527. The side load is directed inboard, perpendicularly to the plane of symmetry midway between the keel and chine lines of the float, at the same longitudinal station as the upward load.			
.561				General.			
	(a)			The airplane, although it may be damaged in emergency landing conditions, must be designed as prescribed in this section to protect each occupant under those conditions.	0		
	(b)			The structure must be designed to give each occupant every reasonable chance of escaping serious injury when--	0		
		(1)		Proper use is made of seats, safety belts, and shoulder harnesses provided for in the design;	0		
		(2)		The occupant experiences the static inertia loads corresponding to the following ultimate load factors--			
			(i)	Upward, 3.0g for normal, utility, and commuter category airplanes, or 4.5g for acrobatic category airplanes;	Lastvielfache von 3.0	kritische Fälle	Manöverlastvielfache von 4,5 größer
			(ii)	Forward, 9.0g;			
			(iii)	Sideward, 1.5g; and			
			(iv)	Downward, 6.0g when certification to the emergency exit provisions of Sec. 23.807(d)(4) is requested; and			
		(3)		The items of mass within the cabin, that could injure an occupant, experience the static inertia loads corresponding to the following ultimate load factors--			
			(i)	Upward, 3.0g;			
			(ii)	Forward, 18.0g; and			
			(iii)	Sideward, 4.5g.			
	(c)			Each airplane with retractable landing gear must be designed to protect each occupant in a landing--			
		(1)		With the wheels retracted;			
		(2)		With moderate descent velocity; and		no design for landing gear	
		(3)		Assuming, in the absence of a more rational analysis--			
			(i)	A downward ultimate inertia force of 3g; and			
			(ii)	A coefficient of friction of 0.5 at the ground.			
	(d)			If it is not established that a turnover is unlikely during an emergency landing, the structure must be designed to protect the occupants in a complete turnover as follows:			
		(1)		The likelihood of a turnover may be shown by an analysis assuming the following conditions--		kritische Fälle	Manöver und Böen ist berücksichtigt
			(i)	The most adverse combination of weight and center of gravity position;			
			(ii)	Longitudinal load factor of 9.0g;			
			(iii)	Vertical load factor of 1.0g; and			
			(iv)	For airplanes with tricycle landing gear, the nose wheel strut failed with the nose contacting the ground.			
		(2)		For determining the loads to be applied to the inverted airplane after a turnover, an upward ultimate inertia load factor of 3.0g and a coefficient of friction with the ground of 0.5 must be used.			Manöverlastvielfache ist 4,5g, also ist diese 3,0 nicht kritisch
	(e)			Except as provided in Sec. 23.787(c), the supporting structure must be designed to restrain, under loads up to those specified in paragraph (b)(3) of this section, each item of mass that could injure an occupant if it came loose in a minor crash landing.			
		(1)		For engines mounted inside the fuselage, aft of the cabin, it must be shown by test or analysis that the engine and attached accessories, and the engine mounting structure--			
			(i)	Can withstand a forward acting static ultimate inertia load factor of 18.0 g plus the maximum takeoff engine thrust; or	0,9		
			(ii)	The airplane structure is designed to preclude the engine and its attached accessories from entering or protruding into the cabin should the engine mounts fail.	2,1		
				Emergency landing dynamic conditions.			
	(a)			Each seat/restraint system for use in a normal, utility, or acrobatic category airplane, or in a commuter category jet airplane, must be designed to protect each occupant during an emergency landing when--			
		(1)		Proper use is made of seats, safety belts, and shoulder harnesses provided for in the design; and			
		(2)		The occupant is exposed to the loads resulting from the conditions prescribed in this section.			
	(b)			Except for those seat/restraint systems that are required to meet paragraph (d) of this section, each seat/restraint system for crew or passenger occupancy in a normal, utility, or acrobatic category airplane, or in a commuter category jet airplane, must successfully complete dynamic tests or be demonstrated by rational analysis supported by dynamic tests, in accordance with each of the following conditions. These tests must be conducted with an occupant simulated by an anthropomorphic test dummy (ATD) defined by 49 CFR part 572, subpart B, or an FAA-approved equivalent, with a nominal weight of 170 pounds and seated in the normal upright position.			
		(1)		For the first test, the change in velocity may not be less than 31 feet per second. The seat/restraint system must be oriented in its nominal position with respect to the airplane and with the horizontal plane of the airplane pitched up 60°, with no yaw, relative to the impact vector. For seat/restraint systems to be installed in the first row of the airplane, peak deceleration must occur in not more than 0.05 seconds after impact and must reach a minimum of 19g. For all other seat/restraint systems, peak deceleration must occur in not more than 0.06 seconds after impact and must reach a minimum of 15g.			
		(2)		For the second test, the change in velocity may not be less than 42 feet per second. The seat/restraint system must be oriented in its nominal position with respect to the airplane and with the vertical plane of the airplane yawed 10°, with no pitch, relative to the impact vector in a direction that results in the greatest load on the shoulder harness. For seat/restraint systems to be installed in the first row of the airplane, peak deceleration must occur in not more than 0.05 seconds after impact and must reach a minimum of 26g. For all other seat/restraint systems, peak deceleration must occur in not more than 0.06 seconds after impact and must reach a minimum of 21g.			
		(3)		To account for floor warpage, the floor rails or attachment devices used to attach the seat/restraint system to the airframe structure must be preloaded to misalign with respect to each other by at least 10° vertically (i.e., pitch out of parallel) and one of the rails or attachment devices must be preloaded to misalign by 10° in roll prior to conducting the test defined by paragraph (b)(2) of this section.			
	(c)			Compliance with the following requirements must be shown during the dynamic tests conducted in accordance with paragraph (b) of this section:			
		(1)		The seat/restraint system must restrain the ATD although seat/restraint system components may experience deformation, elongation, displacement, or crushing intended as part of the design.			