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Precision Grade

Trapezoidal or Acme Screw Rod is the key part of the precision motion. The main material is carbon steel with heat treatment, to insure the excellent mechanical properties. During the manufacturing process, the coarse and fine is divided. It can ensure the proper distribution of press. The key processes are finished in the plant of constant temperature. All the properties can meet both the Chinese and International standard on manufacturing and testing of the screw rod and the nut.

The precision grade, the acceptance conditions and acceptance tests:
“L” means left hand thread, and right hand lead screw is usually not labeled.
The 5 grade is applied for high precision machines and instruments. 7 grade is usually applied for precision transmission, such as the linear motion of precision lathes, grinding machines; 8 grade for general transmission, such as normal lathes, thread milling machines.

Here are the ways for testing of tolerance on the threaded: "dynamic measurement instrument by laser interferometer control" and "grating dynamic measuring instrument”.

Table A: Helix Error in Specific Length

Precision Grade	Tolerance of the pitch (μm)	Helix Error (μm)						
		≤25	≤100	≤300	≤1000	1000-2000	2000-300	3000-4000
3	0.9	1.2	2.5	4	--	--	--	--
4	1.5	2.0	4.0	6	8	12	--	--
5	2.5	3.5	6.5	10	14	19	--	--
6	4.0	7.0	11.0	16	21	27	33	39

Table B: Cumulative Pitch Tolerance in Specific Length

Precision Grade	Tolerance of the pitch (μm)	Cumulative pitch tolerance (μm)						
		≤60	≤300	≤1000	≤2000	≤3000	≤4000	≤5000
7	6	10	18	28	36	44	52	60
8	12	20	35	55	65	75	85	95
9	25	40	70	110	130	150	170	190

Table C: International Precision Grade

DIN, ISO	/	/	IT1	/	IT3	/	IT5	/	IT7	IT10
JIS	C0	C1	/	C3	C4	C5	C6	C7	/	C10
V_{300P} (μm)	3.5	5	6	8	12	18	23	50	52	210