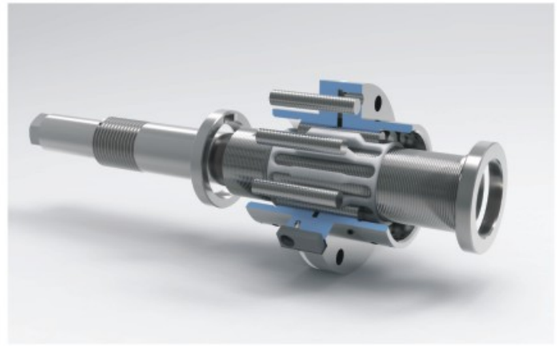
RPL series Planetary Roller Screw







RPL Planetary Roller Screw adopts circular roller design with the rollers provided in the retaining bracket and the movement mode of them is controlled by a set of cams. This design is a combination of extremely high positioning accuracy, recognition rate and stiffness and ensures great load bearing capacity.

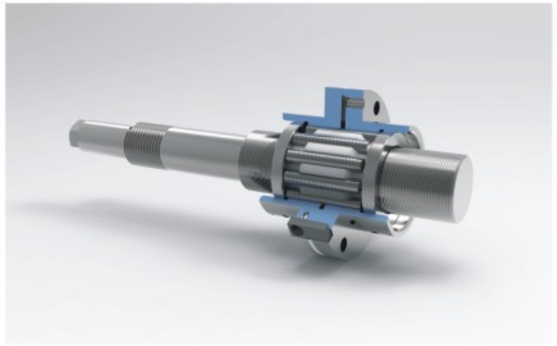
This design applies to high precision, moderate and low speed operation.

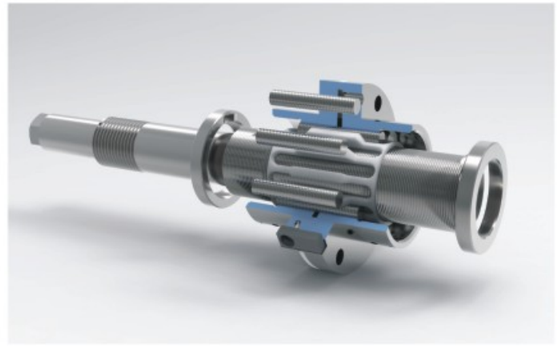
There is no thread on the rollers, but the grooves are perpendicular to the screw axis. The distance between grooves matches the threads of the screw and of the nut. The side of the roller is in convex arc shape, and the adjacent surfaces are in 90°.

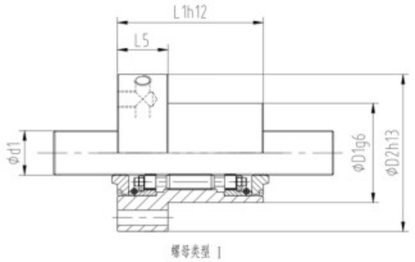
Every time when the main screw and the nut have one turn, the two cams at the ends of the nuts make each of the rollers return back to the original position.

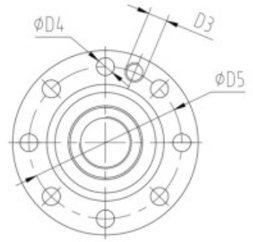
Planetary Roller Screws-RPL Series(Circular form)

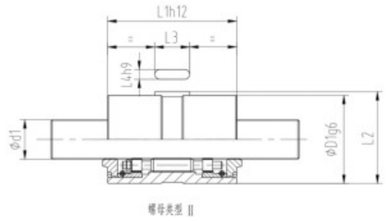
	Model			RPL																	
	Nominal diameter	D	mm	12				16			20			25		32			36		
	Lead	P	mm	0.25	0.5	1	2	0.5	1	2	0.5	1	2	1	2	1	2	4	1	2	
	Number of starts of thread	N		1			2	1		2	1		2	1		1	2		1		
	Lead angle		°	0.38	0.77	1.57	3.13	0.58	1.17	2.33	0.46	0.93	1.86	0.74	1.48	0.58	1.15	2.33	0.51	1.03	
Single nut	Rated dynamic load	Ca	kN	10	11.8	16	16	14.2	19.3	19.3	19.4	27	27	39.6	39.6	60.7	60.7	73.4	73.7	86.4	
	Rated dead load	Coa	kN	21.1	20	21.2	21.2	26.6	28.1	28.1	45.4	49.6	49.6	85.1	85.1	148.8	148.8	144.6	180.4	171.4	
	Stiffness coefficient	Fk	N2/3um	50.9	34.4	23.7	23.7	40.7	28.1	28.1	53.5	37.4	37.4	48.2	48.2	60.9	60.9	42.5	64	44.1	
	Axial clearance	*	mm	0.02	0.02	0.03	0.03	0.02	0.03	0.03	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	
Double nut	Rated dynamic load	Ca	kN	10	11.8	16	16	14.2	19.3	19.3	19.4	27	27	39.6	39.6	60.7	60.7	73.4	73.7	86.4	
	Rated dead load	Coa	kN	21.1	20	21.2	21.2	26.6	28.1	28.1	45.4	49.6	49.6	85.1	85.1	148.8	148.8	144.6	180.4	171.4	
	Stiffness coefficient	Fk	N2/3um	76.4	51.6	35.5	35.5	61.1	42.2	42.2	80.4	56.2	56.2	72.4	72.4	91.5	91.5	63.8	96.1	66.2	
	Pretightening force	Fv	N	890	875	840	720	1000	970	875	1070	1050	975	1275	1208	1678	1615	1473	1795	1755	
	Pretension torsional moment	Mv	Nm	0.1	0.1	0.1	0.1	0.15	0.15	0.15	0.2	0.2	0.2	0.3	0.3	0.5	0.5	0.5	0.6	0.6	
Preload nut	Rated dynamic load	Ca	kN	5.7	6.7	9.2	9.2	8.1	11	11	11.1	15.5	15.5	22.7	22.7	34.8	34.8	42.1	42.3	49.6	
	Rated dead load	Coa	kN	10.5	9.9	10.5	10.5	13.2	14	140.9	22.6	24.7	24.7	42.5	42.5	74.3	74.3	723.9	901.9	856.9	
	Stiffness coefficient	Fk	N2/3um	32	21.6	14.9	14.9	25.6	17.7	17.7	33.7	23.6	23.6	30.3	30.3	38.3	38.3	26.7	40.3	27.8	
	Pretightening force	Fv	N	890	875	840	720	1000	970	875	1070	1050	975	1275	1208	1678	1615	1473	1795	1755	
	Pretension torsional moment	Mv	Nm	0.1	0.1	0.1	0.1	0.15	0.15	0.15	0.2	0.2	0.2	0.3	0.3	0.5	0.5	0.5	0.6	0.6	
	Forward efficiency			0.5	0.64	0.77	0.85	0.57	0.72	0.82	0.52	0.68	0.79	0.63	0.76	0.57	0.72	0.82	0.55	0.7	
	Inversion efficiency			0.02	0.45	0.71	0.83	0.28	0.62	0.79	0.1	0.54	0.75	0.43	0.69	0.28	0.62	0.79	0.19	0.58	











Planetary Roller Screws-RPL Series(Circular form)

	Model			RPL																
	Nominal diameter	D	mm	40			50				63			80			100			125
	Lead	P	mm	1	2	4	1	2	3	4	2	3	4	2	3	4	3	4	5	5
	Number of starts of thread	N		1		2	1		2		1		2	1			1			1
	Lead angle		°	0.46	0.92	1.86	0.37	0.73	1.11	1.48	0.59	0.88	1.17	0.46	0.69	0.93	0.55	0.74	0.93	0.74
Single nut	Rated dynamic load	Ca	kN	79.7	79.7	97.2	134	139.8	159.9	168.1	219.5	241.3	219.5	37.36	41.32	43.96	511.9	5232.9	527.4	985.9
	Rated dead load	Coa	kN	206.8	206.8	198.9	410.3	424.3	428.9	407.5	562.9	534	562.9	1393.3	1361	1326	1576.4	1547.9	1519.5	3972.4
	Stiffness coefficient	Fk	N2/3um	69.4	69.4	47.6	93.5	94.5	76.8	64.6	73.5	58.1	73.5	115.7	93.3	80.4	93.7	80.3	71.2	111.4
	Axial clearance	*	mm	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Double nut	Rated dynamic load	Ca	kN	79.7	79.7	97.2	134	134	159.9	168.1	219.5	241.3	219.5	374.5	414.1	440.5	511.9	523.2	527.4	985.9
	Rated dead load	Coa	kN	206.8	206.8	198.9	410.3	410.3	428.9	407.5	562.9	534	562.9	1393.3	1361	1326	1576.4	1547.9	1519.5	3972.4
	Stiffness coefficient	Fk	N2/3um	104.2	104.2	71.4	140.2	140.2	115.3	97	110.3	87.2	110.3	173.6	139.9	120.6	140.6	120.4	106.8	167.1
	Pretightening force	Fv	N	1888	1837	1720	1949	1910	1868	1822	2048	2023	1970	/	/	/	/	/	/	/
	Pretension torsional moment	Mv	Nm	0.7	0.7	0.7	0.9	0.9	0.9	0.9	1.2	1.2	1.2	/	/	/	/	/	/	/
Preload nut	Rated dynamic load	Ca	kN	45.7	45.7	55.8	76.9	80.2	91.8	96.5	126	138.6	126	215.2	237.9	253	294	300.6	302.9	566.3
	Rated dead load	Coa	kN	1034.9	1034.9	994.9	205.1	212.1	214.4	203.7	281.4	266.9	281.4	696.7	680.5	663.1	788.3	774	759.8	1986.2
	Stiffness coefficient	Fk	N2/3um	43.7	43.7	29.9	58.8	59.5	48.4	40.7	46.2	36.6	46.2	73	58.8	50.7	59.1	50.6	44.9	70.2
	Pretightening force	Fv	N	1888	1837	1720	1949	1910	1868	1822	2048	2023	1970	/	/	/	/	/	/	/
	Pretension torsional moment	Mv	Nm	0.7	0.7	0.7	0.9	0.9	0.9	0.9	1.2	1.2	1.2	/	/	/	/	/	/	/
	Forward efficiency			0.52	0.68	0.79	0.51	0.63	0.71	0.76	0.58	0.67	0.72	0.52	0.62	0.68	0.56	0.63	0.68	0.63
	Inversion efficiency			0.1	0.53	0.75	0.05	0.43	0.61	0.69	0.29	0.52	0.63	0.1	0.39	0.54	0.25	0.43	0.54	0.43

Model	D	P	Roller Screw d1	d0	d2	Nut D1	D2	D3	D4	D5	L1		L2	L3	L4	L5
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
RPL	12	0.25	11.9	12	11.8	24	46	M5	4.5	36	31	41	24.8	12	2	13
		0.5	11.8		11.6											
		1	11.6		11.2											
		2	11.6		11.2											
	16	0.5	15.8	16	15.6	29	51	M6	4.5	41	31	41	30.2	12	3	13
		1	15.6		15.2											
		2	15.6		15.2											
	20	0.5	19.8	20	19.6	34	58	M6	5.5	46	37	47	35.2.	16	3	18
		1	19.6		19.2											
		2	19.6		19.2											
	25	1	24.6	25	24.2	42	68	M6	5.5	56	44	54	43.5	20	4	18
		2	24.6		24.2											
	32	1	31.6	32	31.2	53	83	M6	6.5	70	55	67	55.2	20	4	20
		2	31.6		31.2											
		4	31.3		30.4											
	36	1	35.6	36	35.2	61	90	M6	6.5	75	62	75	63.7	28	6	17
		2	35.3		34.4											
	40	1	39.6	40	39.2	70	104	M6	9	85	66	80	72.7	28	6	26
		2	39.6		39.2											
		4	39.3		38.4											
	50	1	49.6	50	49.2	82	124	M6	11	102	85	101	84.7	32	6	28
		2	49.6		49.2											
		3	49.5		48.8											
		4	49.3		48.4											
	63	2	39.3	63	38.6	102	148	M8X1	13.5	127	110	124	104.7	40	6	32
		3	39.4		38.5											
		4	39.4		38.4											
	80	2	44.4	80	43.5	140	198	M8X1	17.5	170	175	189	141.7	50	10	35
		3	44.7		43.0											
		4	48.4		47.5											
	100	3		100		174	238	M8X1	17.5	210	180	196	173.7	56	12	40
		4	48.7		47.1											
		5	49.0		46.5											
	125	5	51.4	125	50.5	220	310	M10X1	20	270	262	282	223	100	12	55