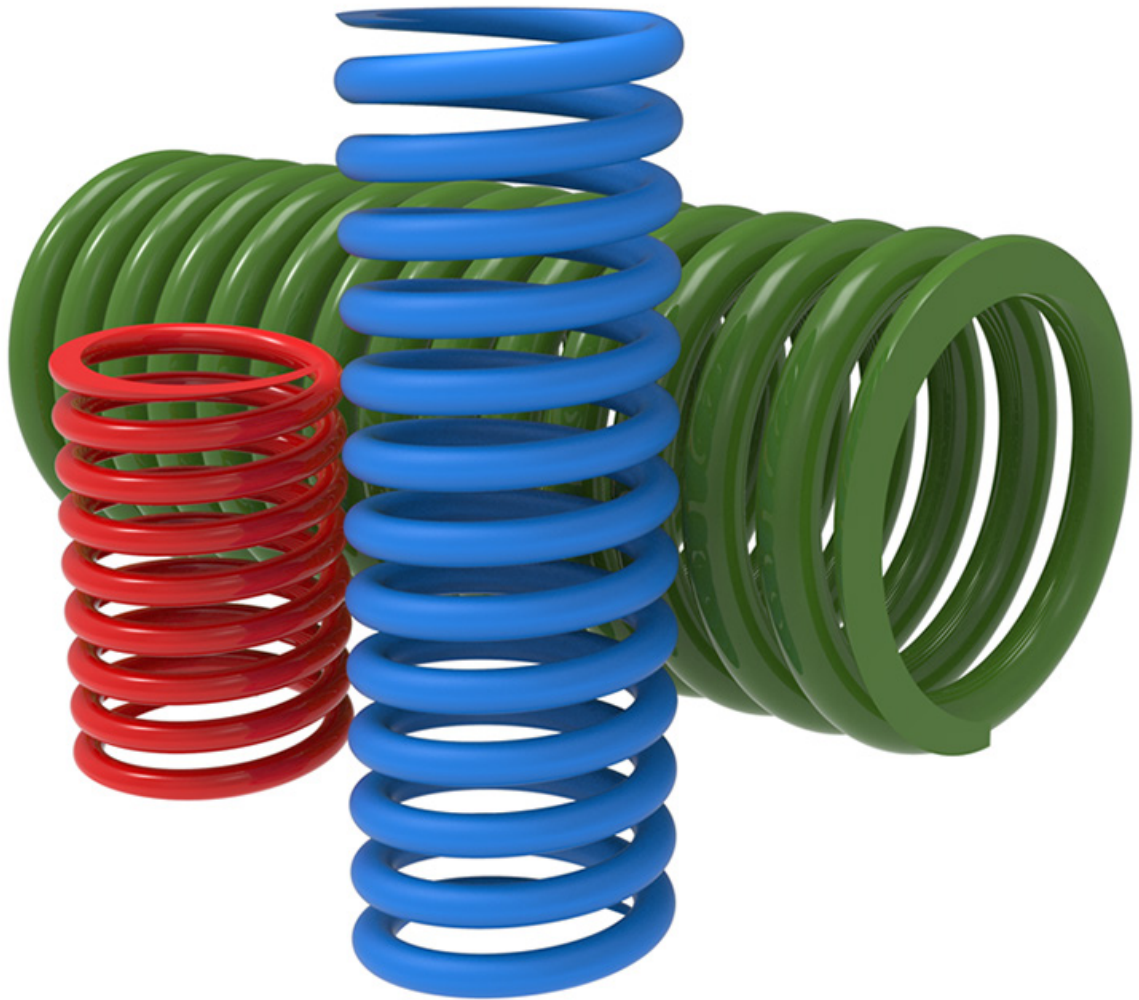




**Coil springs
acc. to JIS - round**

Stepping forward together with our customers

For more than 50 years, **SANKYO OILLESS** has been one of the leading manufacturers of maintenance-free sliding elements. As a leading supplier and pioneer in the production of stamping and press tool components for the automotive industry, **SANKYO OILLESS** supplies an products for many other applications such as mold making, engineering, packaging, heavy industry, aerospace and many more.

The technologies developed by **SANKYO OILLESS** have reduced or eliminated friction, wear and tear. In addition, **SANKYO OILLESS** provides services and quality products to offer you the best possible solutions for your requirements at all times.

The benefits of slide bearings versus roller bearings

In a variety of applications, designers are increasingly replacing roller bearings with slide bearings. In addition to ease of installation and cost effectiveness, slide bearings offer a number of distinct advantages. Slide bearings require less installation space, have a larger load bearing capacity, are maintenance-free or require little maintenance, are easier to assemble and are less susceptible to noise and vibration.

The following list gives an overview of the general advantages of bearings compared to bearings.

Slide bearing

- Higher load bearing capacity and reduced footprint
- Higher resistance to vibration and increased lifetime
- Easier installation
- Lower installation costs
- Increased shaft tolerances possible
- Compensates misalignment and reduces the edge load

Roller bearing

- sensitive to shock, vibration and edge load
- high costs for bearings, housings, counterfaces and - fixing materials
- large space required
- is prone to noise development

Technologies for top performance

SANKYO products are manufactured in our own plants and distributed worldwide.

We offer high quality maintenance-free sliding elements acc. to international standards and standards for use in

- pressing tools
- injection molds
- general engineering

As an experienced specialist, we have the appropriate know-how in tribology to always offer the best solutions for your needs. We supply a large portfolio of lubrication-free sliding elements and also offer custom products acc. to customer drawing.

Quality and performance are our constant commitment!

Coil springs

SANKYO-springs conform to ISO 10243 and JIS G3566. They demonstrate excellent high stress, high speed amplitude and heat-resistance characteristics.

Production

Safety is built into every SANKYO spring. Rigorous fatigue testing (360-500 cycles/minute) and stringent production controls assure excellent reliability.

Variants

The five types of SANKYO springs are:

- lightest load
- light load
- medium load
- heavy load
- super load

Assortment

1. Choose the **spring-Ø** and the value **N** of springs under consideration of your space.
2. Determine the length of the loaded spring **L2** and the travel **Δf**.
3. Identify the unloaded length **L0** from the list based on the loaded spring length **L2** and the travel **Δf**.

Calculate with these values the travel stroke $f1 = L0 - L2 - \Delta f$.

The travel stroke **f1** should be at least 5% of the unloaded length.

Now you can choose your spring in accordance with your load and the corresponding spring rate **R**

4. Estimate your initial force **F1**.
5. Calculate the spring rate $R' = F1 / (N \times f1)$.

If **R** slightly vary from **R'**, you can correct this with the preload.

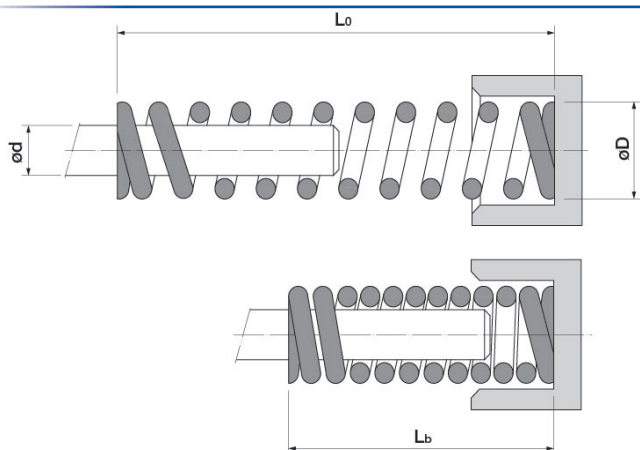
Otherwise you have to choose another spring type if there is a strong variation between **R** and **R'** is bigger.

The spring needs a guidance if the ratio between length and diameter is bigger than 3,5.

Coil springs acc. to JIS - round



Article informationen

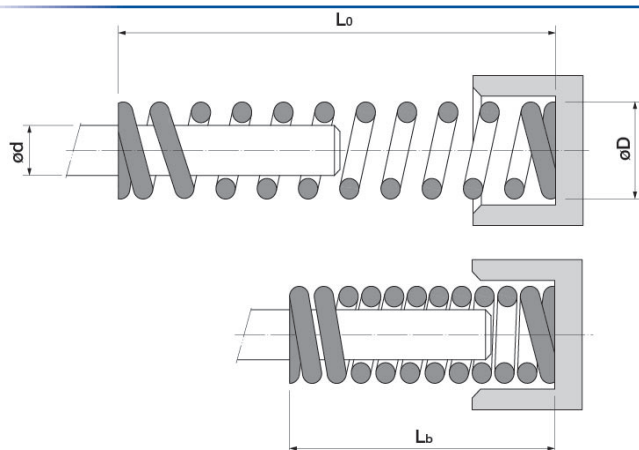


Article no.:	Article name:	Outer Ø D:	Inner Ø d:	Unloaded length L0:	Spring rate R (N/mm):	lb	Fb (N)	lb	Fb (N)	lb	Fb (N)
						for 0.3 Mio. cycles		for 0.5 Mio. cycles		for 1.0 Mio. cycles	
9101022	TR-14,5-20	14,5	9	20	10,8	8	86,4	-	-	10	107,9
9101023	TR-14,5-25			25	8,6	10	86			12,5	
9101024	TR-14,5-30			30	7,2	12	86,4			15	
9101025	TR-14,5-35			35	6,2	14	86,8			17,5	
9101026	TR-14,5-40			40	5,4	16	86,4			20	
9101027	TR-14,5-45			45	4,8	18				22,5	
9101028	TR-14,5-50			50	4,3	20	86			25	
9101029	TR-14,5-55			55	3,9	22	85,8			27,5	
9101030	TR-14,5-60			60	3,6	24	86,4			30	
9101031	TR-14,5-65			65	3,3	26	85,8			32,5	
9101032	TR-14,5-70			70	3	28	84			35	
9101033	TR-14,5-75			75	2,8	30				37,5	
9101034	TR-14,5-80			80	2,7	32	86,4			40	
9101035	TR-14,5-90			90	2,4	36				45	
9101036	TR-14,5-100			100	2,2	40	88			50	
9101037	TR-14,5-125			125	1,8	50	90			62,5	
9101038	TR-17-25	17	11	25	14,9	10	149	-	-	12,5	186
9101039	TR-17-30			30	12,5	12	150			15	
9101040	TR-17-35			35	10,7	14	149,8			17,5	
9101041	TR-17-40			40	9,3	16	148,8			20	
9101042	TR-17-45			45	8,2	18	147,6			22,5	
9101043	TR-17-50			50	7,5	20	150			25	
9101044	TR-17-55			55	6,8	22	149,6			27,5	
9101045	TR-17-60			60	6,2	24	148,8			30	
9101046	TR-17-65			65	5,7	26	148,2			32,5	
9101047	TR-17-70			70	5,3	28	148,4			35	
9101048	TR-17-75			75	5	30	150			37,5	
9101049	TR-17-80			80	4,7	32	150,4			40	
9101050	TR-17-90			90	4,1	36	147,6			45	
9101051	TR-17-100			100	3,7	40	148			50	
9101052	TR-17-125			125	2,9	50	145			62,5	
9101053	TR-17-150			150	2,5	60	150			75	

Article no.:	Article name:	Outer Ø D:	Inner Ø d:	Unloaded length L0:	Spring rate R (N/mm):	Ib	Fb (N)	Ib	Fb (N)	Ib	Fb (N)
						for 0.3 Mio. cycles					
9101054	TR-21-30	21	13	30	13,7	12	164,4	-	-	15	206
9101055	TR-21-35			35	11,8	14	165,2			17,5	
9101056	TR-21-40			40	10,3	16	164,8			20	
9101057	TR-21-45			45	9,1	18	163,8			22,5	
9101058	TR-21-50			50	8,2	20	164			25	
9101059	TR-21-55			55	7,5	22	165			27,5	
9101060	TR-21-60			60	6,9	24	165,6			30	
9101061	TR-21-65			65	6,4	26	166,4			32,5	
9101062	TR-21-70			70	5,9	28	165,2			35	
9101063	TR-21-75			75	5,5	30	165			37,5	
9101064	TR-21-80			80	5,2	32	166,4			40	
9101065	TR-21-90			90	4,6	36	165,6			45	
9101066	TR-21-100			100	4,1	40	164			50	
9101067	TR-21-125			125	3,3	50	165			62,5	
9101068	TR-21-150			150	2,7	60	162			75	
9101069	TR-26-30	26	16,5	30	26,8	12	321,6	-	-	15	402
9101070	TR-26-35			35	22,9	14	320,6			17,5	
9101071	TR-26-40			40	20,1	16	321,6			20	
9101072	TR-26-45			45	17,8	18	320,4			22,5	
9101073	TR-26-50			50	16,1	20	322			25	
9101074	TR-26-55			55	14,6	22	321,2			27,5	
9101075	TR-26-60			60	13,4	24	321,6			30	
9101076	TR-26-65			65	12,4	26	322,4			32,5	
9101077	TR-26-70			70	11,5	28	322			35	
9101078	TR-26-75			75	10,7	30	321			37,5	
9101079	TR-26-80			80	10,1	32	323,2			40	
9101080	TR-26-90			90	8,9	36	320,4			45	
9101081	TR-26-100			100	8	40	320			50	
9101082	TR-26-110			110	7,4	44	325,6			55	
9101083	TR-26-125			125	6,5	50	325			62,5	
9101084	TR-26-150			150	5,4	60	324			75	
9101085	TR-26-175	175	4,6	70	322	87,5					
9101086	TR-26-200	200	4	80	320	100					
9101087	TR-32-40	32	21	40	25	16	400	-	-	20	500
9101088	TR-32-45			45	22,3	18	401,4			22,5	
9101089	TR-32-50			50	20	20	400			25	
9101090	TR-32-60			60	16,7	24	400,8			30	
9101091	TR-32-70			70	14,3	28	400,4			35	
9101092	TR-32-80			80	12,6	32	403,2			40	
9101093	TR-32-90			90	11,1	36	399,6			45	
9101094	TR-32-100			100	10	40	400			50	
9101095	TR-32-110			110	9,1	44	400,4			55	
9101096	TR-32-125			125	8	50	400			62,5	
9101097	TR-32-150			150	6,7	60	402			75	
9101098	TR-32-175			175	5,7	70	399			87,5	
9101099	TR-32-200			200	5	80	400			100	
9101100	TR-32-250			250	4	100				125	
9101101	TR-32-300					300	3,3			120	

Coil springs acc. to JIS - round

Article informationen

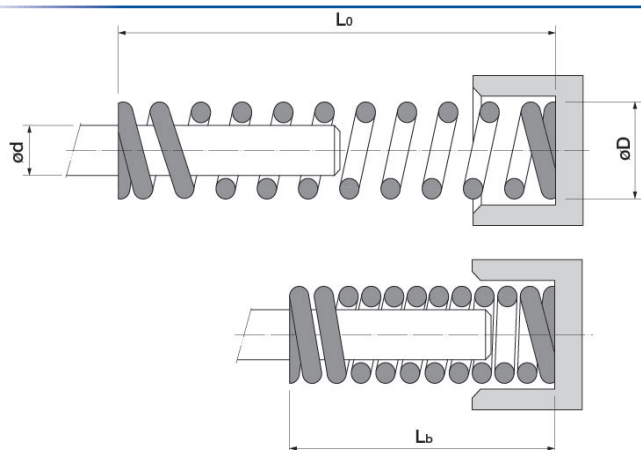


Article no.:	Article name:	Outer Ø D:	Inner Ø d:	Unloaded length L0:	Spring rate R (N/mm):	lb	Fb (N)	lb	Fb (N)	lb	Fb (N)
						for 0.3 Mio. cycles		for 0.5 Mio. cycles		for 1.0 Mio. cycles	
9101102	TR-39-40	39	26	40	27	16	432	-	-	20	539
9101103	TR-39-45			45	23,9	18	430,2			22,5	
9101104	TR-39-50			50	21,6	20	432			25	
9101105	TR-39-60			60	17,9	24	429,6			30	
9101106	TR-39-70			70	15,4	28	431,2			35	
9101107	TR-39-80			80	13,5	32	432			40	
9101108	TR-39-90			90	12	36				45	
9101109	TR-39-100			100	10,8	40	431,2			50	
9101110	TR-39-110			110	9,8	44				55	
9101111	TR-39-125			125	8,6	50	430			62,5	
9101112	TR-39-150			150	7,2	60	432			75	
9101113	TR-39-175			175	6,2	70	434			87,5	
9101114	TR-39-200			200	5,4	80	432			100	
9101115	TR-39-250			250	4,3	100	430			125	
9101116	TR-39-300			300	3,6	120	432			150	
9101117	TR-46-50	46	32	50	24,3	20	486	-	-	25	608
9101118	TR-46-60			60	20,3	24	487,2			30	
9101119	TR-46-70			70	17,4	28	487,2			35	
9101120	TR-46-80			80	15,2	32	486,4			40	
9101121	TR-46-90			90	13,5	36	486			45	
9101122	TR-46-100			100	12,2	40	488			50	
9101123	TR-46-110			110	11,1	44	488,4			55	
9101124	TR-46-125			125	9,7	50	485			62,5	
9101125	TR-46-150			150	8,1	60	486			75	
9101126	TR-46-175			175	7	70	490			87,5	
9101127	TR-46-200			200	6,1	80	488			100	
91011270	TR-46-250			250	4,9	100	490			125	
91011271	TR-46-300	300	4	120	480	150					

Article no.:	Article name:	Outer Ø D:	Inner Ø d:	Unloaded length L0:	Spring rate R (N/mm):	lb	Fb (N)	lb	Fb (N)	lb	Fb (N)
						for 0.3 Mio. cycles		for 0.5 Mio. cycles		for 1.0 Mio. cycles	
9101158	LR-12-45	12	8	45	9,8	7,2	70,6	10,8	30	14,4	35
9101159	LR-12-50			50	8,8	8		12		16	
9101160	LR-12-55			55	7,8	8,8		13,2		17,6	
9101161	LR-12-60			60		9,6		14,4		19,2	
9101162	LR-14-25	14	9,3	25	24,5	4	96,1	6	144,2	8	192,2
9101163	LR-14-30			30	19,6	4,8		7,2		9,6	
9101164	LR-14-35			35	17,7	5,6		8,4		11,2	
9101165	LR-14-40			40	14,7	6,4		9,6		12,8	
9101166	LR-14-45			45	13,7	7,2		10,8		14,4	
9101167	LR-14-50			50	11,8	8		12		16	
9101168	LR-14-55			55	10,8	8,8		13,2		17,6	
9101169	LR-14-60			60	9,8	9,6		14,4		19,2	
9101170	LR-14-65			65	8,8	10,4		15,6		20,8	
9101171	LR-14-70			70		11,2		16,8		22,4	
9101172	LR-16-25	16	10,7	25	31,4	4	125,5	6	188,3	8	251,1
9101173	LR-16-30			30	26,5	4,8		7,2		9,6	
9101174	LR-16-35			35	22,6	5,6		8,4		11,2	
9101175	LR-16-40			40	19,6	6,4		9,6		12,8	
9101176	LR-16-45			45	17,7	7,2		10,8		14,4	
9101177	LR-16-50			50	15,7	8		12		16	
9101178	LR-16-55			55	14,7	8,8		13,2		17,6	
9101179	LR-16-60			60	12,7	9,6		14,4		19,2	
9101180	LR-16-65			65	11,8	10,4		15,6		20,8	
9101181	LR-16-70			70	10,8	11,2		16,8		22,4	
9101182	LR-16-75			75		12		18		24	
9101183	LR-16-80			80	9,8	12,8		19,2		25,6	
9101184	LR-18-25	18	12	25	40,2	4	158,9	6	238,3	8	317,7
9101185	LR-18-30			30	33,3	4,8		7,2		9,6	
9101186	LR-18-35			35	28,4	5,6		8,4		11,2	
9101187	LR-18-40			40	24,5	6,4		9,6		12,8	
9101188	LR-18-45			45	22,6	7,2		10,8		14,4	
9101189	LR-18-50			50	19,6	8		12		16	
9101190	LR-18-55			55	17,7	8,8		13,2		17,6	
9101191	LR-18-60			60	16,7	9,6		14,4		19,2	
9101192	LR-18-65			65	15,7	10,4		15,6		20,8	
9101193	LR-18-70			70	14,7	11,2		16,8		22,4	
9101194	LR-18-75			75	13,7	12		18		24	
9101195	LR-18-80			80	12,7	12,8		19,2		25,6	
9101196	LR-18-90			90	10,8	14,4		21,6		28,8	

Coil springs acc. to JIS - round

Article informationen



Article no.:	Article name:	Outer Ø D:	Inner Ø d:	Unloaded length L0:	Spring rate R (N/mm):	lb	Fb (N)	lb	Fb (N)	lb	Fb (N)
						for 0.3 Mio. cycles		for 0.5 Mio. cycles		for 1.0 Mio. cycles	
9101197	LR-20-25	20	13,5	25	49	4	196,1	6	294,2	8	392,3
9101198	LR-20-30			30	41,2	4,8		7,2		9,6	
9101199	LR-20-35			35	35,3	5,6		8,4		11,2	
9101200	LR-20-40			40	30,4	6,4		9,6		12,8	
9101201	LR-20-45			45	27,5	7,2		10,8		14,4	
9101202	LR-20-50			50	24,5	8		12		16	
9101203	LR-20-55			55	22,6	8,8		13,2		17,6	
9101204	LR-20-60			60	20,6	9,6		14,4		19,2	
9101205	LR-20-65			65	18,6	10,4		15,6		20,8	
9101206	LR-20-70			70	17,7	11,2		16,8		22,4	
9101207	LR-20-75			75	16,7	12		18		24	
9101208	LR-20-80			80	15,7	12,8		19,2		25,6	
9101209	LR-20-90			90	13,7	14,4		21,6		28,8	
9101210	LR-20-100			100	12,7	16		24		32	
9101211	LR-22-25	22	14,7	25	59,8	4	237,3	6	356	8	474,6
9101212	LR-22-30			30	49	4,8		7,2		9,6	
9101213	LR-22-35			35	42,2	5,6		8,4		11,2	
9101214	LR-22-40			40	37,3	6,4		9,6		12,8	
9101215	LR-22-45			45	33,3	7,2		10,8		14,4	
9101216	LR-22-50			50	29,4	8		12		16	
9101217	LR-22-55			55	27,5	8,8		13,2		17,6	
9101218	LR-22-60			60	24,5	9,6		14,4		19,2	
9101219	LR-22-65			65	22,6	10,4		15,6		20,8	
9101220	LR-22-70			70	21,6	11,2		16,8		22,4	
9101221	LR-22-75			75	19,6	12		18		24	
9101222	LR-22-80			80	18,6	12,8		19,2		25,6	
9101223	LR-22-90			90	16,7	14,4		21,6		28,8	
9101224	LR-22-100			100	14,7	16		24		32	

Article no.:	Article name:	Outer Ø D:	Inner Ø d:	Unloaded length L0:	Spring rate R (N/mm):	lb	Fb (N)	lb	Fb (N)	lb	Fb (N)
						for 0.3 Mio. cycles		for 0.5 Mio. cycles		for 1.0 Mio. cycles	
9101225	LR-25-25	25	17	25	76,5	4	307	6	460,9	8	613,9
9101226	LR-25-30			30	63,7	4,8		7,2		9,6	
9101227	LR-25-35			35	54,9	5,6		8,4		11,2	
9101228	LR-25-40			40	48,1	6,4		9,6		12,8	
9101229	LR-25-45			45	42,2	7,2		10,8		14,4	
9101230	LR-25-50			50	38,2	8		12		16	
9101231	LR-25-55			55	35,3	8,8		13,2		17,6	
9101232	LR-25-60			60	32,4	9,6		14,4		19,2	
9101233	LR-25-65			65	29,4	10,4		15,6		20,8	
9101234	LR-25-70			70	27,5	11,2		16,8		22,4	
9101235	LR-25-75			75	25,5	12		18		24	
9101236	LR-25-80			80	23,5	12,8		19,2		25,6	
9101237	LR-25-90			90	21,6	14,4		21,6		28,8	
9101238	LR-25-100			100	19,6	16		24		32	
9101239	MR-6-15	6	3,6	15	14,7	2,4	35,3	3	44,1	3,6	53
9101240	MR-6-20			20	10,8	3,2		4		4,8	
9101241	MR-6-25			25	8,8	4		5		6	
9101242	MR-6-30			30	7,8	4,8		6		7,2	
9101243	MR-6-35			35	5,9	5,6		7		8,4	
9101244	MR-8-15	8	5	15	26,5	2,4	62,8	3	78,5	3,6	94,1
9101245	MR-8-20			20	19,6	3,2		4		4,8	
9101246	MR-8-25			25	15,7	4		5		6	
9101247	MR-8-30			30	12,7	4,8		6		7,2	
9101248	MR-8-35			35	10,8	5,6		7		8,4	
9101249	MR-8-40			40	9,8	6,4		8		9,6	

