



T系列螺旋锥齿轮换向器

动力传动专业制造商

PROFESSIONAL MANUFACTURER OF POWER TRANSMISSION

设计理念: 遵循规律, 总是超越

DESIGN PHILOSOPHY: To follow the law, but always beyond.

经营理念: 为客户需求而设计, 为客户满意而执着

BUSINESS PHILOSOPHY: Design for customer demand, dedication for customer satisfaction

T系列螺旋免锥齿轮转向箱 T SPIRAL BEVEL GEAR UNITS

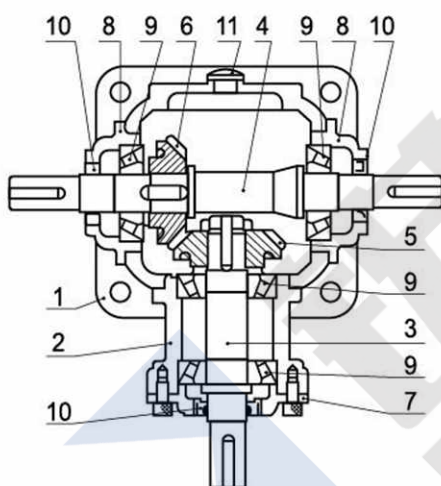
T系列螺旋锥齿轮传动箱概述：

- T系列一级螺旋锥齿轮传动箱，标准化，多品种，速比1:1、1.5:1、2:1、2.5:1、3:1、4:1、5:1全部为实际传动比。平均效率98%。
- 有单轴、双横轴、单纵轴、双纵轴可选。
- 螺旋锥齿轮可以正反运转，低速或高速传动平稳，而且噪声低，振动小，承受力大。
- 当速比不为1:1时，横轴输入、纵轴输出为减速，纵轴输入、横轴输出为增速。

T series spiral bevel gearbox overview:

- T series spiral bevel gearbox with various types are standardized, all ratios of 1 : 1, 1.5 : 1, 2 : 1, 2.5 : 1, 3 : 1, 4 : 1 and 5 : 1 are actual ones. Average efficiency is 98%.
- There are one input shaft, two input shafts, unilateral output shaft and double side output shaft.
- Spiral bevel gear can rotate in both directions and transmit smoothly, low noise, light vibration, high performance.
- If ratio is not 1:1, if input speed on single-extendable shaft, output speed will be reduced; if input speed on double-extendable shaft, output speed will be reduced.

T系列结构图：



T series structure drawing:

- | | |
|---------|--------------------------------------|
| 1、机座 | Housing |
| 2、横轴座 | Single-extendable shaft bearing seat |
| 3、横轴 | Single-extendable shaft |
| 4、纵轴 | Double-extendable shaft |
| 5、横轴锥齿轮 | Spiral bevel gear |
| 6、纵轴锥齿轮 | Spiral bevel gear |
| 7、端盖 | Bearing seat |
| 8、端盖 | Bearing seat |
| 9、轴承 | Bearing |
| 10、油封 | Seal |
| 11、油镜 | Oil gauge |

转向功能：

Function of rotation:

1 横轴 One single-extendable shaft		2 横轴 2 extendable shafts	
2轴 2-extended shaft	3轴 3-extended shaft	3轴 3-extended shaft	4轴 4-extended shaft

说明：当输入轴旋转方向改变，输出轴相应改变。

Specification: Direction of rotation of output shaft varies with that of input shaft.

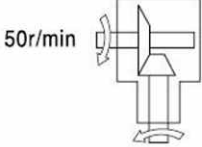
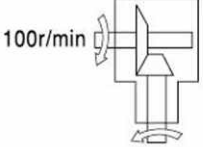
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选定输入轴时应注意转速关系:(1:1传动比时无关系)

Please pay attention to speed relationship when selecting input shaft(there si nothing in case of ratio of 1:1):

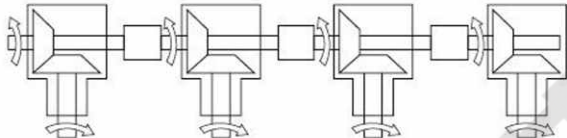

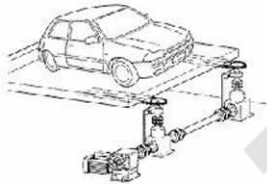

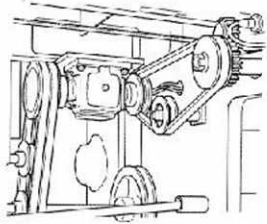
例: 速比为2:1时

Example: when ratio is 2.

[减速 Reducing]	[增速 Increasing]
 <p>当横轴输入100r/min时 纵轴输出50r/min Output speed is 50rpm, when input speed is 100rpm</p>	 <p>当纵轴输入100r/min时 横轴输出200r/min Output speed is 200rpm, when input speed is 100rpm</p>

应用实例:

Application example:

<p>并排转送 Transmission in line</p>  <p>给纵轴连结送力, 使横轴同步运转</p>	<p>升降装置 Elevating system</p>  <p>1台减速机左右输出, 通过转向后, 同时升降。</p>	
<p>立体车库 Tridimensional carban</p>  <p>1台减速机驱动左右链轮同步运转。 One reducer drive rightand left chain wheel and rotate at the same speed.</p>	<p>游戏机 Play machine</p>  <p>纵横输入, 2横轴相反运转</p>	<p>包装机 Packing machine</p> 

型号表示方法:

T series model illustration:

T6	-	1:1	-	I-LR-0	-	B ₃
机座号 Size of gear units		速比 ratio		轴配置 Shaft arrangement		安装方位 Mounting position
T8	-	2:1	-	I-I-LR	-	B ₈
机座号 Size of gear units		速比 ratio		轴配置 Shaft arrangement		安装方位 Mounting position

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T系列重量表:

T series weight table:

Type	T2	T4	T6	T7	T8	T10	T12	T16	T20	T25
m(kg)	2	10	21	32	49	78	124	188	297	488

T系列Fr(N) 表:

T series Fr(N) table:

i _N	n ₁ (r/min)	T2		T4		T6		T7		T8		T10		T12		T16		T20		T25	
		横轴	纵轴	横轴	纵轴	横轴	纵轴	横轴	纵轴	横轴	纵轴	横轴	纵轴	横轴	纵轴	横轴	纵轴	横轴	纵轴	横轴	纵轴
1:1	1450	265	216	833	951	1911	2450	2450	3136	3234	3381	4165	4508	5096	5586	10633	10976				
	1150	323	235	882	1029	2058	2597	2744	3234	3479	3626	4459	4851	5488	6076	11368	11760	15386	15608		
	870	402	255	960	1127	2205	2842	2989	3381	3773	3969	4851	5292	5880	6566	12446	12740	16660	17150	24794	25480
	580	549	314	1078	1323	2499	3185	3381	3822	4263	4459	5488	5880	6713	7301	14014	14504	18816	19404	28028	28910
	400	637	353	1372	1715	3185	3528	4018	4900	4851	5978	6272	7056	7742	8134	15680	16170	21070	21756	31360	32340
	300	696	392	1519	1960	3430	3528	4410	5537	5243	6958	6713	7987	8232	9065	17150	17640	23422	24108	34300	35280
	200	784	441	1911	1960	3430	3528	5096	6272	7889	8820	8575	9604	9261	10290	19600	19894	25970	26754	38612	39788
	100	980	588	1911	1960	3430	3528	5096	6272	8428	8820	9996	11760	11368	12593	22540	22540	28420	32928	39200	49000
	10	980	588	1911	1960	3430	3528	5096	6272	8428	8820	9996	11760	11858	14504	22540	22540	28420	33320	39200	49000
1.5:1	1450			1078	1960	2548	2842	3430	5390	4361	7987	5194	9212	5978	10486	5978	12152	7693	14602		
	1150			1078	1960	3038	3087	4067	5978	5096	8820	6174	10486	7252	12152	6419	13083	8771	17934	12985	24647
	870			1078	1960	3430	3332	4753	6076	6076	8820	7448	11760	8869	14504	6958	14210	9506	19453	13573	29400
2:1	580			1078	1960	3430	3528	5096	6174	7644	8820	9555	11760	11466	14504	7840	16072	10780	22001	15680	33222
	400			1078	1960	3430	3528	5096	6272	8428	8820	9996	11760	11858	14504	8820	17934	12005	24598	17542	37142
2.5:1	300			1078	1960	3430	3528	5096	6272	8428	8820	9996	11760	11858	14504	9604	19600	13132	27342	19159	40474
	200			1078	1960	3430	3528	5096	6272	8428	8820	9996	11760	11858	14504	10829	22148	14798	30282	21658	45766
3:1	100			1078	1960	3430	3528	5096	6272	8428	8820	9996	11760	11858	14504	13328	22540	18228	33320	26656	49000
	10			1078	1960	3430	3528	5096	6272	8428	8820	9996	11760	11858	14504	22540	22540	28420	33320	39200	49000

备注: 各规格更低的输出转速按以上最大的Fr值。 Notes: If there is lower output speed, please choose the maximum Fr in above table.

T系列被驱动设备系数 f₁:

T series service factor f₁:

负荷性质 Load characteristic	每天使用时间 (小时) Operating time/day (hour)		
	≤2	2~10	10~24
均匀负载Uniform	1.00(1.00)	1.00(1.25)	1.25(1.50)
一般冲击Moderate	1.00(1.25)	1.25(1.50)	1.50(1.75)
强烈冲击Heavy	1.25(1.50)	1.50(1.75)	1.75(2.00)

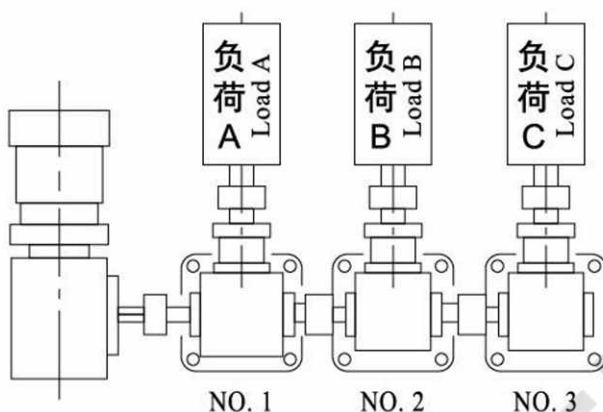
注: 当每小时起动、停止次数在10次以上, 请使用括号内数值。

Note: Please use these data inside the bracket when number of starts and stops / hour is greater than ten times.

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T系列举例：

T series selection sample:



3台负载全部为 $196\text{N}\cdot\text{m}$ ，一般冲击，每天连续工作8小时，即使用系数 $f_1=1.25$ ，斜齿轮输入轴转速以 300r/min ，速比全部为 $1:1$ 。

根据公式：

每台齿轮箱本身所需的负载 $T_{2N} \geq T_2 \times f_1 = 196 \times 1.25 = 245\text{N}\cdot\text{m}$

※1号齿轮箱 因1号齿轮箱本身的负载为 $245\text{N}\cdot\text{m}$ ，而2号、3号齿轮箱需通过1号齿轮箱体传递扭矩。所以1号齿轮箱应承担的负载为：

$245\text{N}\cdot\text{m} + 245\text{N}\cdot\text{m} + 245\text{N}\cdot\text{m} = 735\text{N}\cdot\text{m}$ ，依据传动能力表，应选T12。

※2号齿轮箱 除本身的负载 $245\text{N}\cdot\text{m}$ ，还需传递3号齿轮箱的扭矩。所以总负载应为

$245\text{N}\cdot\text{m} + 245\text{N}\cdot\text{m} = 490\text{N}\cdot\text{m}$ ，依据传动能力表，应选T10。

※3号齿轮箱 由于仅一个负载C进行运转，即所需负载在 $245\text{N}\cdot\text{m}$ 以上即可，依据传动能力表可选T8。

注意事项：

1. 当速比不为 $1:1$ 时，请确定或告知输入轴；选横轴输入为减速，选纵轴输入为增速，安装方位和尺寸确定了以后，就不能更改两轴的位置。
2. 多台联动输出需校对换向箱的承载能力。

Torque loaded on each gearbox is 196Nm , uniform shock, duration of operation is 8 hour per day, service factor $f_1=1.25$, input speed is 300rpm , ratio is $1:1$.

Calculate according to formula:

Required torque of each gearbox $T_{2N} \geq T_2 \times f_1 = 196 \times 1.25 = 245\text{N}\cdot\text{m}$

No.1 gearbox No.1 gearbox carry torque 245Nm , but No.2 and No.3 gearbox need transfer torque through No.1, Consequently No.1 gearbox should carry torque 735Nm ($245\text{Nm} + 245\text{Nm} + 245\text{Nm}$), select T 12 according to transmission capacity table.

No.2 gearbox No.3 gearbox still transfers torque of No.3 gearbox besides torque of 245Nm , so, the total torque is 490Nm ($245\text{Nm} + 245\text{Nm}$), select T10 according to transmission capacity table.

No.3 gearbox Required torque is more than 245Nm because of only load C according to transmission capacity table.

Notes:

1. If ratio is not $1:1$, if input speed on single-extendable shaft, output speed will be reduced; if input speed on double-extendable shaft, output speed will be reduced. When mounting position and dimension are determined, the position of shafts can not be changed.
2. Several T boxes are linked, please verify the load capacity of these boxes.

T系列传动能力表

T SPIRAL TRANSMISSION CAPACITY TABLE

i	n1	T 2		T 4		T 6		T 7		T 8	
	r/min	T _{2N} (N·m)	P _{1N} (kw)	T _{2N} (N·m)	P _{1N} (kw)	T _{2N} (N·m)	P _{1N} (kw)	T _{2N} (N·m)	P _{1N} (kw)	T _{2N} (N·m)	P _{1N} (kw)
1 : 1	1450	11.6	1.79	31.9	4.94	96.0	14.9	142	22.0	294	45.6
	1150	11.7	1.43	34.1	4.19	103	12.7	150	18.4	305	37.5
	870	12.1	1.12	37.2	3.46	113	10.5	164	15.2	312	29.0
	580	12.1	0.747	39.5	2.45	119	7.35	184	11.4	319	19.8
	400	12.3	0.524	40.2	1.72	122	5.20	195	8.34	326	14.0
	300	12.3	0.396	40.5	1.30	123	3.93	198	6.35	331	10.6
	200	12.4	0.226	41.2	0.880	124	2.66	201	4.30	338	7.23
	100	12.7	0.136	41.9	0.448	127	1.36	206	2.20	346	3.70
1.5 : 1	10	13.0	0.014	43.0	0.046	132	0.141	214	0.228	361	0.386
	1450					117	12.1	145	15.0	185	19.1
	1150					122	9.96	147	12.0	188	15.4
	870					123	7.66	150	9.30	191	11.8
	580					126	5.23	153	6.32	197	8.14
	400					128	3.66	155	4.41	200	5.70
	300					129	2.77	157	3.35	203	4.34
	200					131	1.87	160	2.28	204	2.91
2 : 1	100					134	0.957	163	1.16	210	1.49
	10					139	0.099	169	0.12	218	0.155
	1450	12.1	0.94	42.8	3.32	102	7.90	137	10.6	180	14.0
	1150	12	0.74	43.4	2.67	104	6.39	139	8.55	183	11.3
	870	12	0.56	43.8	2.04	105	4.88	141	6.56	187	8.70
	580	11.9	0.37	44.4	1.38	108	3.34	144	4.47	191	5.92
	400	12.2	0.26	45.1	0.96	109	2.33	146	3.12	194	4.15
	300	11.9	0.19	45.5	0.73	110	1.76	148	2.37	196	3.14
2.5 : 1	200	12.2	0.13	46.1	0.49	111	1.18	149	1.59	198	2.12
	100	11.2	0.06	46.6	0.25	114	0.608	152	0.812	202	1.08
	10	28.1	0.015	48.5	0.026	116	0.062	157	0.084	209	0.112
	1450					96.2	5.97	113	6.99	184	11.4
	1150					97.2	4.78	115	5.64	185	9.11
	870					99.0	3.68	116	4.30	188	7.00
	580					100.0	2.48	118	2.92	192	4.76
	400					100.9	1.73	120	2.05	195	3.34
3 : 1	300					102.9	1.32	121	1.55	197	2.53
	200					103.9	0.888	123	1.05	200	1.71
	100					104.9	0.448	123	0.528	203	0.867
	10					107.8	0.046	126	0.054	208	0.089
	1450					93.6	4.84	105	5.42	159	8.20
	1150					94.8	3.88	106	4.34	160	6.55
	870					95.9	2.97	108	3.34	163	5.04
	580					97.6	2.02	109	2.25	166	3.42
4 : 1	400					99.0	1.41	111	1.58	168	2.39
	300					100	1.07	111	1.18	169	1.80
	200					100	0.712	113	0.803	171	1.22
	100					102	0.363	115	0.409	173	0.618
	10					104	0.037	118	0.042	179	0.064
	1450					80.6	3.12	93.4	3.62	124	4.80
	1150					81.5	2.50	94.3	2.90	125	3.83
	870					82.4	1.92	95.9	2.23	127	2.95
5 : 1	580					84.1	1.30	96.9	1.50	129	2.00
	400					85.1	0.91	98.7	1.05	131	1.40
	300					86.1	0.69	98.3	0.79	131	1.05
	200					86.0	0.46	101	0.54	134	0.71
	100					87.7	0.23	101	0.27	135	0.36
	10					89.3	0.02	101	0.03	140	0.04
	1450					52.0	1.61	57.4	1.78	68.7	2.13
	1150					52.5	1.29	58.0	1.43	69.2	1.70
5 : 1	870					53.2	0.99	59.0	1.10	70.4	1.31
	580					54.2	0.67	59.6	0.74	71.7	0.89
	400					54.9	0.47	60.7	0.52	72.6	0.62
	300					55.5	0.36	60.4	0.39	72.9	0.47
	200					55.4	0.24	61.7	0.26	74.1	0.32
	100					56.5	0.12	62.9	0.13	75.1	0.16
	10					57.6	0.01	64.5	0.01	77.8	0.02

1、横轴转速未达到10r/min时，请使用10r/min的数据。

2、以上有灰色标识的规格定货时须咨询，横轴输入转速超过1450r/min时，向本公司咨询。

T 系列传动能力表

T SPIRAL TRANSMISSION CAPACITY TABLE

i	n1 r/min	T 10		T 12		T 16		T 20		T 25	
		T _{2N} (N·m)	P _{1N} (kw)	T _{2N} (N·m)	P _{1N} (kw)	T _{2N} (N·m)	P _{1N} (kw)	T _{2N} (N·m)	P _{1N} (kw)	T _{2N} (N·m)	P _{1N} (kw)
1 : 1	1450	421	65.3	619	96.0	1019	163				
	1150	453	55.7	665	81.1	1098	139	1842	234		
	870	479	44.6	726	67.5	1186	114	2009	193	3489	335
	580	493	30.6	802	49.7	1343	85.9	2274	145	3940	252
	400	504	21.5	821	35.1	1499	66.1	2538	112	4410	195
	300	513	16.4	835	26.8	1637	54.1	2744	90.8	4792	159
	200	521	11.1	852	18.2	1784	39.3	3126	69.0	5390	119
	100	535	5.72	875	9.36	1842	20.3	3205	35.3	5439	60.0
	10	561	0.599	919	0.983	1940	2.14	3205	3.53	5713	6.30
1.5 : 1	1450	374	38.7	564	58.3						
	1150	380	31.2	601	49.2						
	870	389	24.1	656	40.7						
	580	396	16.4	699	28.9						
	400	406	11.6	711	20.3						
	300	411	8.78	724	15.5						
	200	417	5.95	736	10.5						
	100	426	3.04	754	5.37						
	10	443	0.316	785	0.56						
2 : 1	1450	305	23.6	516	40.0	921	73.7	1578	126		
	1150	309	19.0	516	31.7	938	59.5	1607	102	3146	199
	870	315	14.6	516	24.0	958	46.0	1646	79.0	3224	155
	580	322	10.0	524	16.3	980	31.3	1695	54.2	3332	107
	400	328	7.02	538	11.5	1000	22.0	1725	38.0	3420	75.4
	300	332	5.33	543	8.71	1009	16.7	1754	29.0	3479	57.5
	200	338	3.61	551	5.89	1029	11.3	1784	19.7	3557	39.2
	100	344	1.84	563	3.01	1058	5.84	1833	10.1	3646	20.1
	10	357	0.191	586	0.313	1098	0.605	1921	1.06	3822	2.11
2.5 : 1	1450	293	18.2	507	31.4						
	1150	298	14.7	514	25.3						
	870	302	11.2	523	19.5						
	580	310	7.68	535	13.3						
	400	315	5.38	545	9.32						
	300	317	4.06	552	7.08						
	200	321	2.75	560	4.79						
	100	326	1.40	568	2.43						
	10	336	0.144	588	0.251						
3 : 1	1450	270	14.0	458	23.6	904	48.2	1529	82.3	2935	158
	1150	275	11.3	464	19.0	920	38.9	1561	66.6	3045	130
	870	279	8.66	469	14.6	940	30.1	1598	51.6	3135	101
	580	285	5.89	480	9.92	960	20.4	1644	35.4	3246	69.9
	400	288	4.11	490	6.98	978	14.4	1672	24.8	3317	49.3
	300	291	3.11	495	5.29	990	10.9	1701	18.9	3372	37.6
	200	294	2.10	501	3.57	1005	7.38	1733	12.9	3449	25.6
	100	300	1.07	510	1.82	1038	3.82	1777	6.60	3537	13.1
	10	308	0.110	527	0.188	1076	0.40	1865	0.69	3713	1.4
4 : 1	1450	241	9.35	434	16.8	850	34.3	1452	58.7	2798	113
	1150	246	7.54	441	13.5	865	27.7	1483	47.5	2892	92.6
	870	249	5.78	448	10.4	884	21.4	1518	36.8	2978	72.2
	580	254	3.93	456	7.07	902	14.6	1562	25.2	3084	49.8
	400	257	2.74	465	4.97	919	10.2	1588	17.7	3151	35.1
	300	259	2.08	470	3.77	930	7.8	1616	13.5	3204	26.8
	200	262	1.40	476	2.54	944	5.3	1646	9.17	3276	18.2
	100	267	0.71	485	1.30	976	2.7	1688	4.70	3360	9.36
	10	275	0.07	501	0.13	1011	0.3	1772	0.49	3527	0.98
5 : 1	1450	136	4.21	296	9.18	814	26.3	1391	44.9	2631	85.0
	1150	138	3.39	301	7.39	828	21.2	1420	36.4	2771	71.0
	870	140	2.60	305	5.68	847	16.4	1454	28.2	2853	55.3
	580	143	1.77	311	3.86	864	11.2	1496	19.3	2954	38.2
	400	144	1.23	318	2.72	881	7.85	1521	13.6	3018	26.9
	300	146	0.93	321	2.06	891	5.96	1548	10.3	3069	20.5
	200	148	0.63	325	1.39	905	4.03	1577	7.03	3138	14.0
	100	150	0.32	331	0.71	935	2.08	1617	3.60	3218	7.17
	10	155	0.03	342	0.07	969	0.22	1697	0.38	3378	0.75

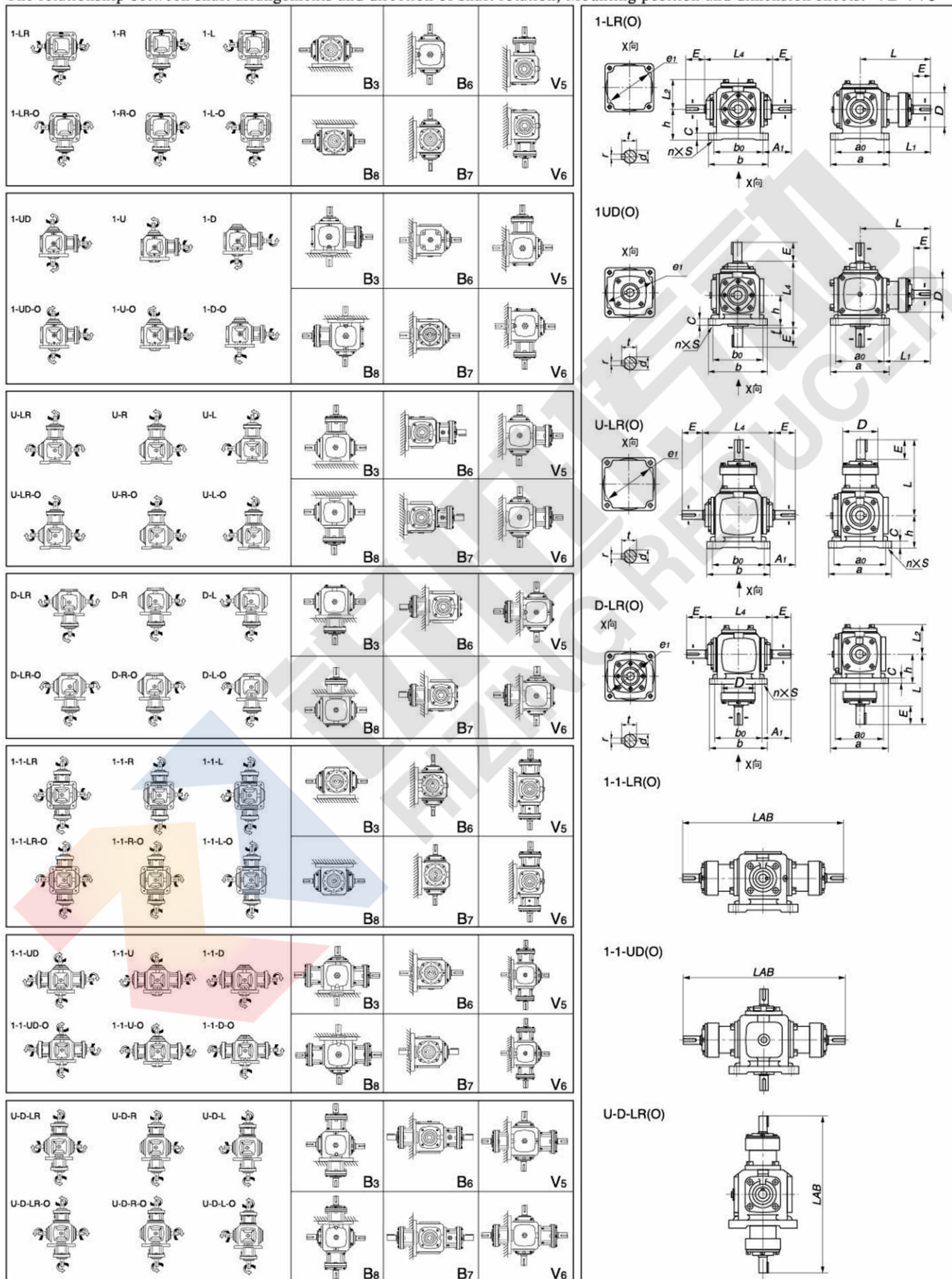
1、If speed is less than 10rpm, please choose 10rpm.

2、Please contact us, when order the model with gray sign or that input speed is more than 1450rpm.

T系列螺旋免锥齿轮转向箱 T SPIRAL BEVEL GEAR UNITS

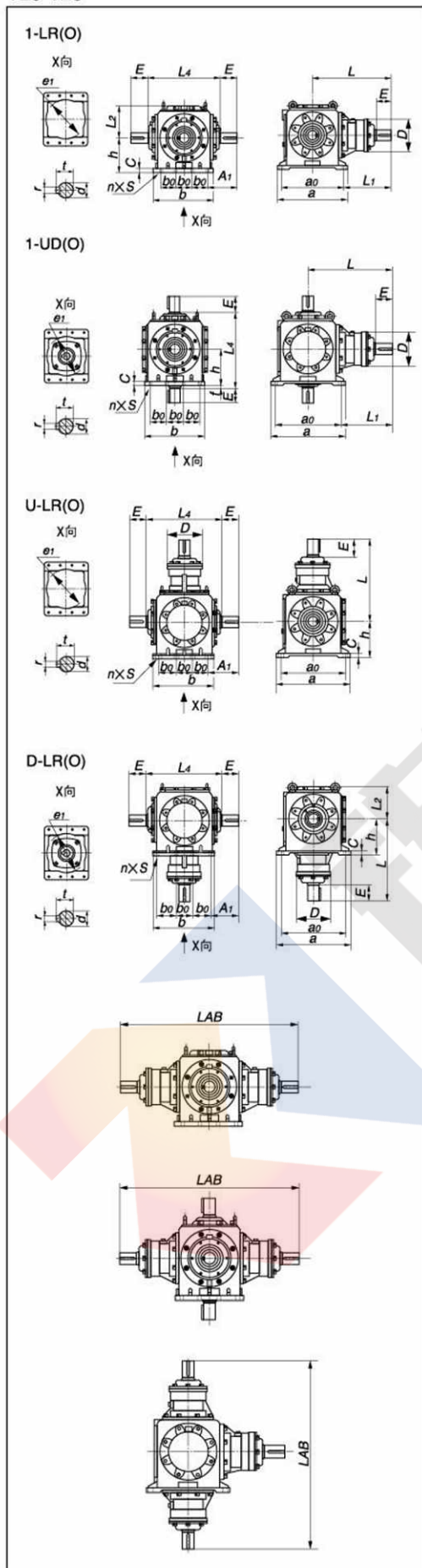
轴配置及轴旋转方向的关系、安装方位及尺寸图表：

The relationship between shaft arrangements and direction of shaft rotation, Mounting position and dimension sheets: T2-T16



T 系列螺旋免锥齿轮转向箱 T SPIRAL BEVEL GEAR UNITS

T20-T25



	T2	T4	T6	T7	T8	T10	T12	T16	T20	T25
A1	48	53.5	81	88	110.5	120	130	150	195	235
a	100	155	190	210	235	285	340	390	490	580
a0	84	125	152	174	195	240	290	330	430	520
b	100	155	190	210	235	285	340	390	410	480
b0	84	125	152	174	195	240	290	330	110	130
C	10	17	17	20	23	25	32	40	32	35
D	58	76	115	125	159	155	168	193	220	270
d(h7)	15	19	25	32	40	45	50	60	72	85
E	33	38	50	62	75	90	100	105	105	130
e1(H8)×深	94×3	155×5	190×5	220×5	250×5	305×5	370×5	420×7	360×10	430×10
f	5	2	17	13	18	10	0	10	10	10
h	52	76	90	100	115	140	175	200	245	290
L	124	180	222	265	308	360	415	455	545	660
L1	82	117.5	146	178	210.5	240	270	290	330	400
L2	52	76	87	97	114.5	133	160	186	217	255
L4	114	156	214	226	266	300	350	420	510	600
LAB	248	360	444	530	616	720	830	910	1090	1324
n	4	4	4	4	4	4	4	4	8	8
r	5	6	8	10	12	14	14	18	20	22
s	9	10.5	14	14	14	16	21	25	21	24
t	17	21.5	28	35	43	48.5	53.5	64	76.5	90

注意:当速比是 4:1 和 5:1 时, 纵轴尺寸不变, 横轴尺寸更改如下:
Note: When ratio is 4:1 and 5:1, dimension of output shaft is changeless, but that of input is changed as follows:

	T6	T7	T8	T10	T12	T16	T20	T25
d (h7)	19	22	28	32	36	50	55	70
E	38	50	62	62	75	100	105	105
L	210	253	295	332	390	450	545	637
L1	134	178	212.5	242	270	300	345	400
LAB	420	566	590	664	780	900	1090	1274
r	6	6	8	10	10	14	16	20
t	21.5	24.5	31	35	39	53.5	59	74.5
d (h7)	19	22	28	32	36	42	50	60
E	38	50	62	62	75	90	100	105
L	210	253	295	332	390	440	540	637
L1	134	178	212.5	242	270	300	340	410
LAB	420	566	590	664	780	880	1080	1262
r	6	6	8	10	10	12	14	18
t	21.5	24.5	31	35	39	45	53.5	64

T系列螺旋免锥齿轮转向箱 T SPIRAL BEVEL GEAR UNITS

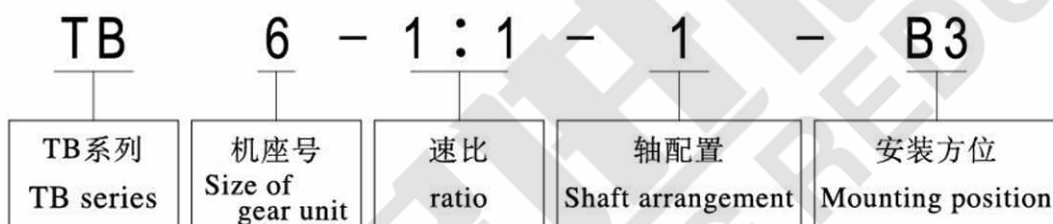
TB系列螺旋锥齿轮转向箱概述：

特点：

TB系列是在T系列的基础上开发、设计的派生新产品。用简单的打断、换向、离合机构，可以实现以下四种功能：

- 1、输入方向不变，输出可以选择正转、反转、静止不转。
- 2、有单轴输出、双轴输出，在双轴输出时，可以左停右转、右停左转、同时停止、同时运转，方向可以相同，可以相反。
- 3、速比为1:1，其它速比另咨询。
- 4、型号从TB6、TB7、TB8、TB10、TB12、TB16，其它型号另咨询。

TB型号表示方法：



TB series spiral bevel gearbox overview:

Specifications:

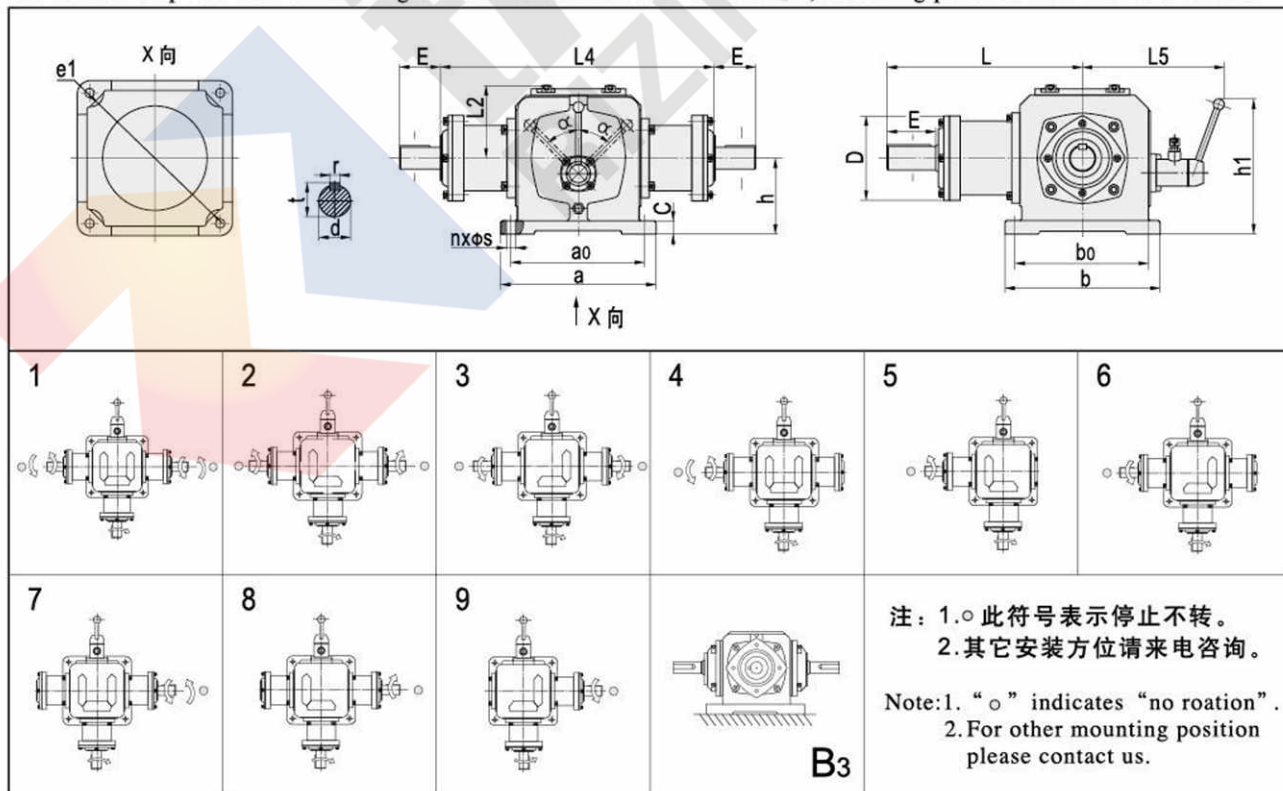
TB series are derivated from T series with interrupting part, transversal part, clutch, to realize the following functions:

- 1、Input rotation direction keep no change, output roation direction can be opposite, same or no rotation.
- 2、Single-shaft-put shaft, double output shafts. In case of double out-put shafts, one shaft rotate, the other can stop; two output shafts can stop rotating or rotate together; and the rotative dination of two output shafts can be the same or opposite.
- 3、Generally, ratio is 1:1,if not, please consult us.
- 4、Beyond type range: TB6、TB7、TB8、TB10、TB12、TB16, please consult us.

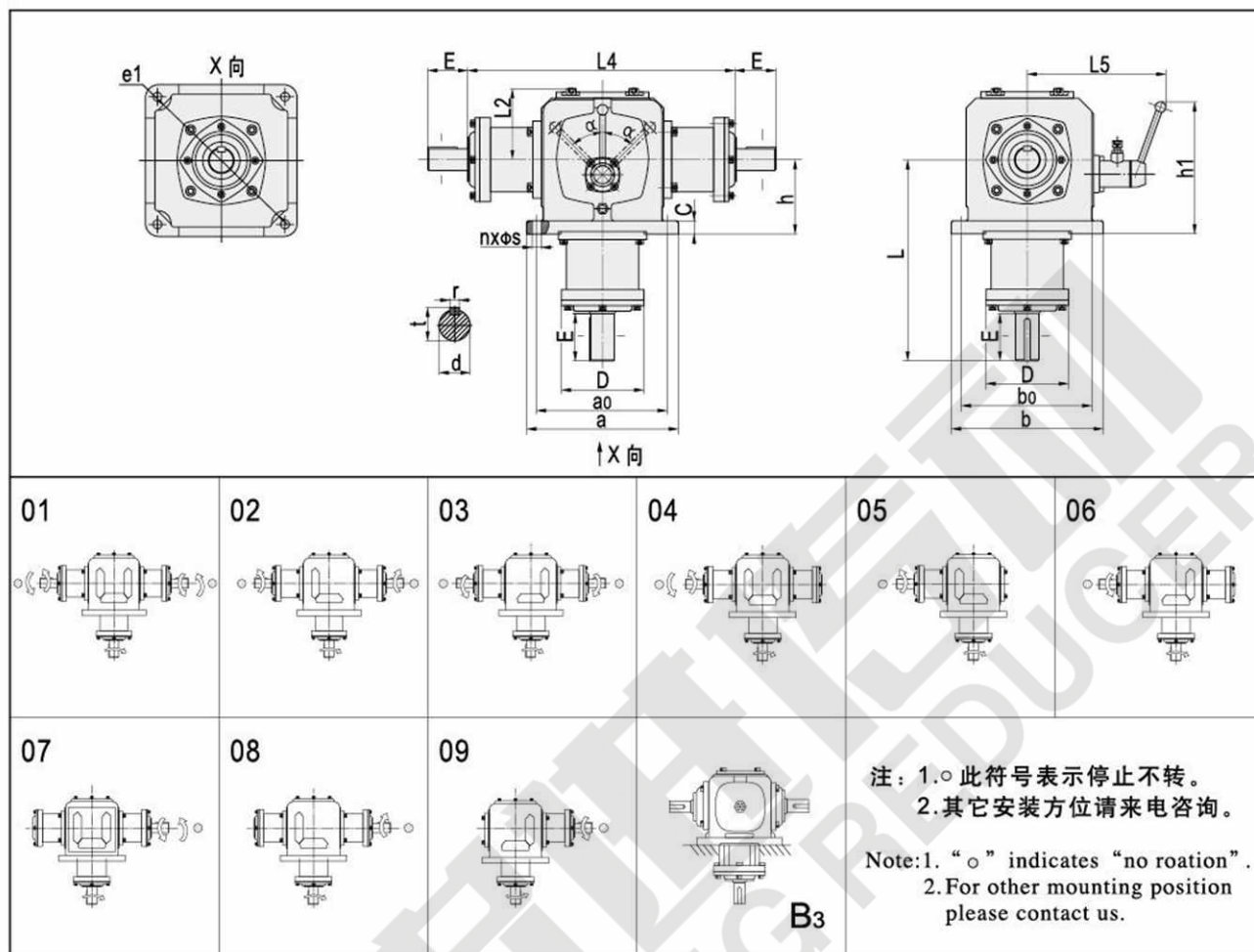
TB series model illustration:

尺寸图表、轴配置及轴旋转方向的关系、安装方位：

The relationship between shaft arrangements and direction of shaft rotation, Mounting position and dimension sheets:



T系列螺旋兜锥齿轮转向箱 T SPIRAL BEVEL GEAR UNITS

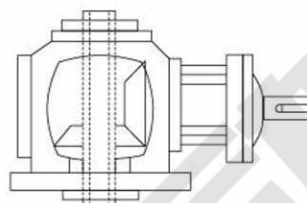
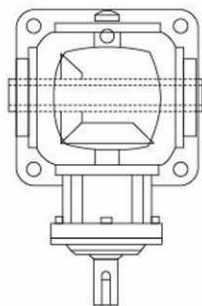


	TB6	TB7	TB8	TB10	TB12	TB16
a	190	210	235	285	340	390
a0	152	174	195	240	290	330
b	190	210	235	285	340	390
b0	152	174	195	240	290	330
c	17	20	23	25	32	40
d(h7)	25	32	40	45	50	60
E	50	62	75	90	100	105
e1(H8)X 深	190X5	220X5	250X5	305X5	370X5	420X7
L2	87	99	114.5	133	160	186
h	90	100	115	140	175	200
L	222	265	308	360	415	455
L4	214	226	266	300	350	420
L5	175	186	239	262	307.5	336
h1	182	192.5	225	248	313.3	324
n	4	4	4	4	4	4
r	8	10	12	14	14	18
S	14	14	14	16	21	25
t	28	35	43	48.5	53.5	64
D	115	125	159	155	168	193
α	45°	45°	40°	40°	42°	42°

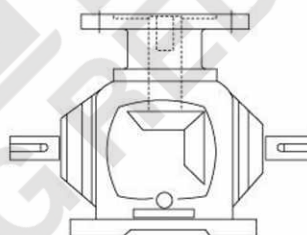
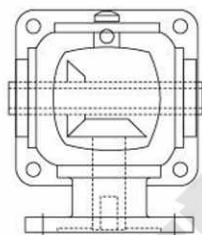
T系列螺旋兜锥齿轮转向箱 T SPIRAL BEVEL GEAR UNITS

螺旋锥齿轮转向箱如带输入法兰、
空心轴、内外花键请来电咨询：

Please refer to us, if selecting shaft with
involute spline or shrink disk:



带空心输入输出轴 With hollow input or output shaft

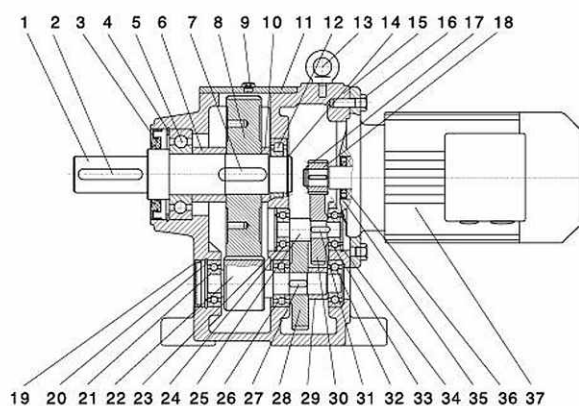


带输入输出法兰 With input or output flange

T

一. R 系列 結構圖

R series structural drawing

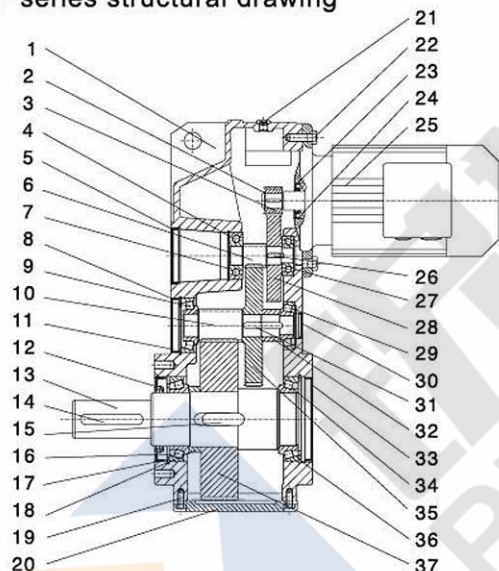


- | | | | |
|-----------|-------------|--------------|-------------|
| 1. 輸出軸 | 10. 軸套 II | 19. 封蓋 | 28. 齒輪 II |
| 2. 平鍵 I | 11. 蓋 | 20. 孔用擋圈 II | 29. 軸套 III |
| 3. 輸出軸油封 | 12. 軸承 II | 21. 軸承 III | 30. 齒輪 I |
| 4. 孔用擋圈 I | 13. 吊環 | 22. 齒輪軸 III | 31. 平鍵 IV |
| 5. 軸承 I | 14. 軸用擋圈 I | 23. 孔用擋圈 III | 32. 軸承 VI |
| 6. 軸套 I | 15. 箱體 | 24. 軸承 IV | 33. 軸承 VII |
| 7. 平鍵 II | 16. 螺栓 | 25. 齒輪軸 II | 34. 孔用擋圈 IV |
| 8. 齒輪 III | 17. 軸用擋圈 II | 26. 軸承 V | 35. 電機油封 |
| 9. 通氣帽 | 18. 輸入齒輪 | 27. 平鍵 III | 36. 電機軸承 |

- | | | |
|----------------------|--------------------|----------------------|
| 1. Output shaft | 13. Hoisting ring | 25. Gear shaft II |
| 2. Parallel key | 14. Circlip II | 26. Bearing V |
| 3. Output shaft seal | 15. Housing | 27. Parallel key III |
| 4. Circlip I | 16. Bolts | 28. Gear II |
| 5. Bearing I | 17. Circlip II | 29. Bush III |
| 6. Bush I | 18. Input gear | 30. Gear I |
| 7. Parallel key II | 19. Cover | 31. Parallel key IV |
| 8. Gear III | 20. Circlip II | 32. Bearing VI |
| 9. Breather valve | 21. Bearing III | 33. Bearing VIII |
| 10. Bush II | 22. Gear shaft III | 34. Circlip IV |
| 11. Cover | 23. Circlip III | 35. Motor seal |
| 12. Bearing II | 24. Bearing IV | 36. Motor bearing |
| | | 37. Motor |

二. F 系列 結構圖

F series structural drawing

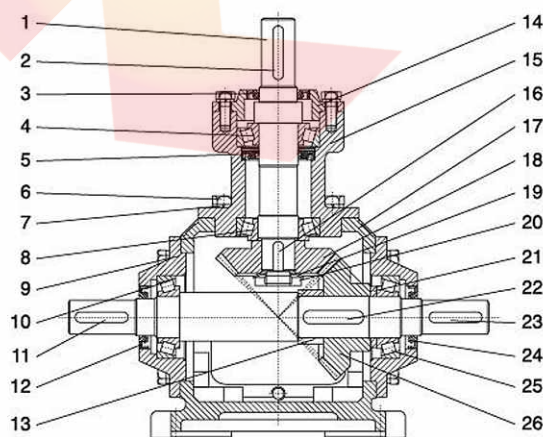


- | | | | |
|-----------|--------------|------------|-------------|
| 1. 箱體 | 10. 齒輪軸 III | 19. 螺栓 | 28. 齒輪 I |
| 2. 軸用擋圈 I | 11. 孔用擋圈 II | 20. 蓋 | 29. 軸承 V |
| 3. 輸入齒輪 | 12. 輸出軸油封 | 21. 通氣帽 | 30. 封蓋 III |
| 4. 孔用擋圈 I | 13. 輸出軸 | 22. 螺栓 | 31. 平鍵 IV |
| 5. 封蓋 I | 14. 平鍵 I | 23. 電機油封 | 32. 軸套 II |
| 6. 齒輪軸 II | 15. 平鍵 II | 24. 電機軸承 | 33. 封蓋 IV |
| 7. 軸承 I | 16. 軸承 III | 25. 電機 | 34. 軸承 VI |
| 8. 封蓋 II | 17. 孔用擋圈 III | 26. 平鍵 III | 35. 齒輪 II |
| 9. 軸承 II | 18. 軸套 III | 27. 軸承 IV | 36. 孔用擋圈 IV |
| | | | 37. 齒輪 III |

- | | | |
|-----------------------|---------------------|----------------------|
| 1. Housing | 13. Output shaft | 25. Motor |
| 2. Circlip I | 14. Parallel key I | 26. Parallel key III |
| 3. Output gear | 15. Parallel key II | 27. Bearing IV |
| 4. Circlip I | 16. Bearing III | 28. Gear I |
| 5. Cover | 17. Circlip III | 29. Bearing V |
| 6. Gear shaft II | 18. Bush III | 30. Cover III |
| 7. Bearing I | 19. Bolts | 31. Parallel key IV |
| 8. Cover II | 20. Cover | 32. Bush II |
| 9. Bearing II | 21. Breather valve | 33. Cover IV |
| 10. Gear shaft III | 22. Bolts | 34. Bearing VI |
| 11. Circlip II | 23. Motor seal | 35. Gear II |
| 12. Output shaft seal | 24. Motor bearing | 36. Circlip IV |
| | | 37. Gear III |

三. T 系列 結構圖

T series structural drawing

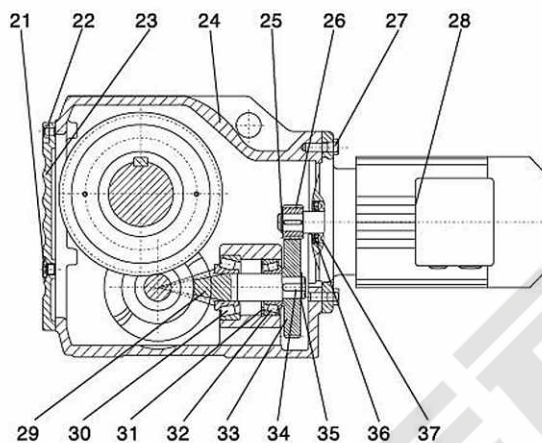
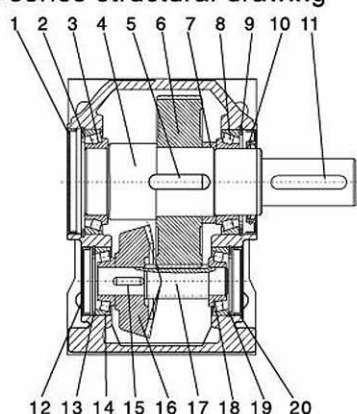


- | | | |
|----------|-------------|--------------|
| 1. 輸入軸 | 10. 軸承 III | 19. 止動墊圈 |
| 2. 平鍵 I | 11. 平鍵 II | 20. 圓螺母 |
| 3. 輸入軸油封 | 12. 輸出軸油封 I | 21. 調整墊 I |
| 4. 軸承 I | 13. 調整墊 II | 22. 平鍵 IV |
| 5. 輸入軸油封 | 14. 輸入法蘭蓋 | 23. 平鍵 V |
| 6. 螺栓 | 15. 輸入法蘭 | 24. 輸出軸油封 II |
| 7. 彈簧墊圈 | 16. 平鍵 III | 25. 軸承 IV |
| 8. 軸承 II | 17. 箱體 | 26. 輸出弧齒錐齒輪 |
| 9. 輸出法蘭 | 18. 輸入弧齒錐齒輪 | |

- | | | |
|---------------------|-------------------------------|--------------------------------|
| 1. Input shaft | 10. Bearing III | 19. Washer |
| 2. Parallel key I | 11. Parallel key II | 20. Round screw nut |
| 3. Input shaft seal | 12. Output shaft seal I | 21. Ring I |
| 4. Bearing I | 13. Ring II | 22. Parallel key IV |
| 5. Input shaft seal | 14. Input flange cover | 23. Parallel key V |
| 6. Bolts | 15. Input flange | 24. Output shaft seal II |
| 7. Washer | 16. Parallel key III | 25. Bearing IV |
| 8. Bearing II | 17. Housing | 26. Output helical -bevel gear |
| 9. Output flange | 18. Input helical -bevel gear | |

四. K 系列結構圖

K series structural drawing



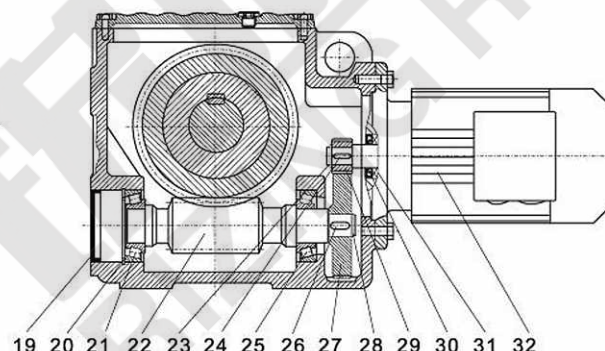
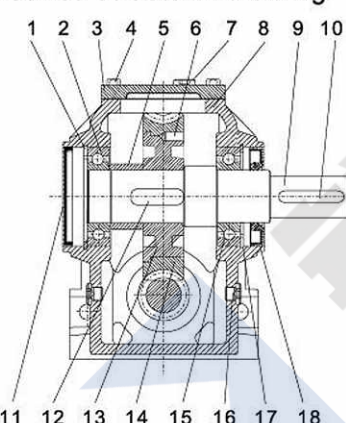
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|-----------|--------------|-------------|
| 1. 封蓋 I | 8. 軸承 II | 15. 平鍵 III |
| 2. 孔用擋圈 I | 9. 孔用擋圈 II | 16. 弧齒錐齒輪 |
| 3. 軸承 I | 10. 輸出軸油封 | 17. 齒輪軸 III |
| 4. 輸出軸 | 11. 平鍵 II | 18. 軸承 IV |
| 5. 平鍵 I | 12. 封蓋 II | 19. 孔用擋圈 IV |
| 6. 齒輪 III | 13. 孔用擋圈 III | 20. 封蓋 III |
| 7. 軸套 III | 14. 軸承 III | 21. 通氣帽 |

- | | |
|------------|-------------|
| 22. 螺栓 I | 29. 弧齒錐齒輪軸 |
| 23. 端蓋 | 30. 軸承 V |
| 24. 箱體 | 31. 孔用擋圈 V |
| 25. 軸用擋圈 I | 32. 軸承 VI |
| 26. 輸入齒輪 | 33. 齒輪 I |
| 27. 螺栓 II | 34. 平鍵 IV |
| 28. 電機 | 35. 軸用擋圈 II |
| | 36. 電機油封 |
| | 37. 電機軸承 |

- | |
|------------------------------|
| 9. Circlip II |
| 10. Output shaft seal |
| 11. Parallel key II |
| 12. Cover II |
| 13. Circlip III |
| 14. Bearing III |
| 15. Parallel key III |
| 16. Helical-bevel gear |
| 17. Gear shaft III |
| 18. Bearing IV |
| 19. Circlip IV |
| 20. Cover III |
| 21. Breather valve |
| 22. Bolts II |
| 23. Cover |
| 24. Housing |
| 25. Circlip I |
| 26. Input gear |
| 27. Bolts II |
| 28. Motor |
| 29. Helical-bevel gear shaft |
| 30. Bearing V |
| 31. Circlip V |
| 32. Bearing VI |
| 33. Gear I |
| 34. Parallel key IV |
| 35. Circlip II |
| 36. Motor seal |
| 37. Motor bearing |

五. S 系列結構圖

S series structural drawing



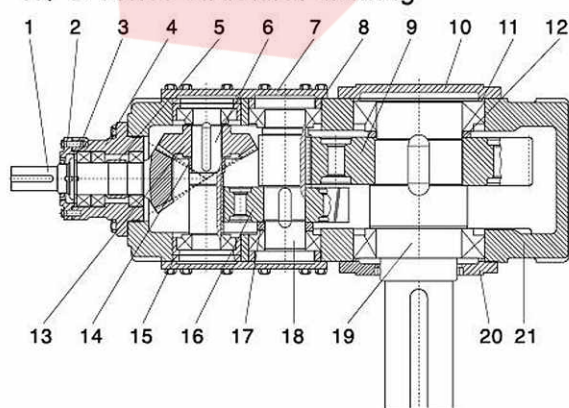
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|-----------|-----------|-------------|
| 1. 孔用擋圈 I | 7. 通氣帽 | 13. 蝸輪芯 |
| 2. 軸承 I | 8. 箱體 | 14. 蝸輪輪緣 |
| 3. 蓋 | 9. 輸出軸 | 15. 軸承 II |
| 4. 螺栓 II | 10. 平鍵 I | 16. 油鏡 |
| 5. 軸套 III | 11. 封蓋 I | 17. 孔用擋圈 II |
| 6. 螺釘 | 12. 平鍵 II | 18. 輸出軸油封 |

- | | | |
|--------------|-------------|-------------------|
| 19. 封蓋 II | 26. 平鍵 IV | 1. Circlip I |
| 20. 孔用擋圈 III | 27. 齒輪 I | 2. Bearing I |
| 21. 軸承 III | 28. 軸用擋圈 II | 3. Cover |
| 22. 蝸杆 | 29. 輸入齒輪 | 4. Bolts II |
| 23. 軸用擋圈 I | 30. 電機油封 | 5. Bush III |
| 24. 平鍵 III | 31. 電機軸承 | 6. Screws |
| 25. 軸承 IV | 32. 電機 | 7. Breather valve |
| | | 8. Housing |

- | |
|-----------------------|
| 9. Output shaft |
| 10. Parallel key I |
| 11. Cover I |
| 12. Parallel key II |
| 13. Worm wheel core |
| 14. Worm wheel edge |
| 15. Bearing II |
| 16. Oil sight glass |
| 17. Circlip II |
| 18. Output shaft seal |
| 19. Cover II |
| 20. Circlip III |
| 21. Bearing III |
| 22. Worm |
| 23. Circlip I |
| 24. Parallel key III |
| 25. Bearing IV |
| 26. Parallel key IV |
| 27. Gear I |
| 28. Circlip II |
| 29. Input gear |
| 30. Motor seal |
| 31. Motor bearing |
| 32. Motor |

六. H、B 系列結構圖

H、B series structural drawing



- | | | |
|-----------|------------|-------------|
| 1. 弧齒錐齒輪軸 | 8. 調整環 III | 15. 調整環 II |
| 2. 通蓋 I | 9. 齒輪 III | 16. 齒輪 II |
| 3. 調整環 I | 10. 止蓋 II | 17. 定距環 III |
| 4. 軸承座 | 11. 調整環 IV | 18. 齒輪軸 II |
| 5. 定距環 I | 12. 定距環 IV | 19. 輸出軸 |
| 6. 齒輪軸 I | 13. 弧齒錐齒輪 | 20. 通蓋 II |
| 7. 止蓋 I | 14. 定距環 II | 21. 機體 |

- | | | |
|-----------------------------|------------------------|-------------------|
| 1. Helical-bevel gear shaft | 8. Ring III | 15. Ring II |
| 2. Cover I | 9. Gear III | 16. Gear II |
| 3. Ring I | 10. Cover II | 17. Ring III |
| 4. Bearing seat | 11. Ring IV | 18. Gear shaft II |
| 5. Ring I | 12. Ring IV | 19. Output shaft |
| 6. Gear shaft I | 13. Helical-bevel gear | 20. Cover II |
| 7. Cover I | 14. Ring II | 21. Housing |

电机

电机按标准供货，若指定或高于此标准必须说明。

Y普通三相异步电动机：

电压380V，频率50Hz（其它电压、频率需注明）

防护等级：IP44或IP54（指定IP54、IP55、IP56、IP65等需注明）

绝缘等级：B或F（指定F等需注明）

制动电机的制动器电压：380V或220V（指定电压或其它电压需注明）

防爆电机防爆等级：d IIBT4（其它等级需注明）

变频电机频率范围：0-50Hz（0-60Hz、0-120Hz或指定的范围需提出）

电机的噪声、电流、效率、功率因素、额定转矩等项目按国家标准。

以下要求及附件需另行说明：

- * 制动电机配手释放装置
- * 电机的热传感器
- * 不带风冷或强制风冷
- * 配旋转编码器
- * 防水、防潮、防尘的要求

电机代号

四极三相异步电动机代号 - Y（六极代号-Y6、八极代号-Y8、二级代号-Y2，下同）

制动电机代号 - YEJ

防爆电机代号 - YB

变频电机代号 - YVP

多速电机代号 - YD

变频制动代号 - YPEJ

其它电机代号另咨询。

MOTOR

Motors comply with National standard, please state if specification of other standards needed.

Y general tri-phase asynchronous motor data:
380V, 50Hz (other voltage & frequency should be stated)

Index of performance:
IP44 or IP54 (specification of IP54, IP55, IP56, IP65 should be stated)

Insulation class:
B & F (using F should be stated)

Braking voltage of braking motor:
380V or 220V (other voltages should be stated)

Explosion-proof class:
d IIBT4 (other classes should be stated)

Frequency range:
0~50Hz (0~60Hz, 0~120Hz or other range will be stated)

Noise, current, efficiency, power factor, nominal torque all comply with national standard.

The following will be specified by customers:

- * Brake motor equipped with manual brake release
- * Thermal sensor
- * No air cooling or forced air cooling
- * Installation of rotation encoder
- * Water proof, damp proof, dust proof

Motor code:

Y — 4-pole tri-phase asynchronous motor
(Y2 — 2-pole, Y6 — 6-pole, Y8 — 8-pole)

YEJ — Brake motor

YB — Explosion-proof motor

YVP — Frequency conversion motor

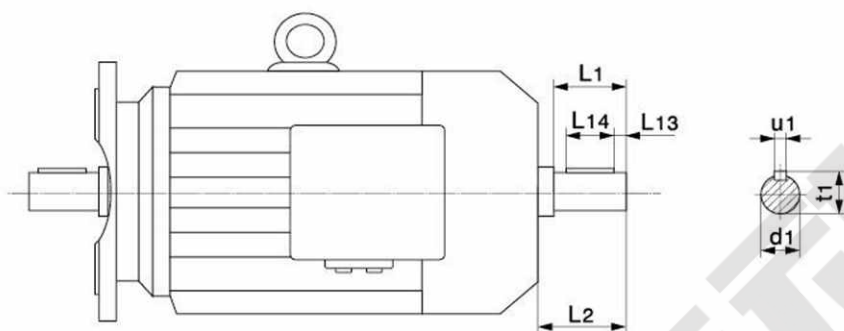
YD — Multi-speed motor

YPEJ — Frequency-conversion brake motor

Other codes are available on request.

电机双出轴：

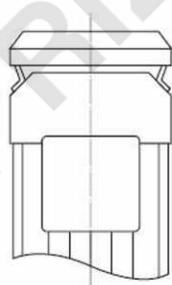
Double extended shaft motor:



	63	71	80	90/100	112	132S	132M	160L	180	200-225
d1	11	11	14	19	24	28	38	42	48	55
L1	23	23	30	40	50	60	80	110	110	110
L2	27	25	31	42	55	65	85	115	115	115
L13	3.5	1	4	4	5	5	5	10	10	10
L14	16	20	22	32	40	50	70	70	80	90
t1	12.5	12.5	16	21.5	27	31	41	45	51.5	59
u1	4	4	5	6	8	8	10	12	14	16

电机配室外防护罩：

Motor equipped with shield:



电机接线盒未注明位置一般以0° 供货。

In general, position of terminal box is at angular 0° without specification.

减速机的选型所需的参数

减速机的选择用户应提供以下尽量详细的技术要求、载荷周期和运行条件，瑞德森公司将可为客户完成最后的选择，保证减速机的质量、经济和可靠性。

为了确保承诺的有效性，主要承包商对传动系统的坚固性负责，通过影响因素进行控制，连接传动部分必须协调。用户需在规定的范围内安装、润滑、使用、运行、维护，不受极限速度、扭矩、振动的影响。

被动设备

- 名称和种类
- 负载性质（使用冲击系数或惯量）
- 运行负载
- 输出功率
- 输出转速 $n_2(\text{rpm})$:
- 输出扭矩 $T_2(\text{N} \cdot \text{m})$:
- 连续使用时间 小时/天 小时/月 小时/年
- 起动力矩和频率
- 制动力矩和频率
- 冲击负载、峰值负载和频率
- 正反转和频率
- 径向、轴向负载

原动机(或电动机是否正反转及其频率，输出轴径向和轴向负载)

- 型号和种类
- 额定功率和转速
- 最大扭矩
- 起动转矩
- 转动惯量直连电动机时，参照电动机的说明
- 代号及附件
- 电机接线盒位置是否指定

减速器（所选减速器必须能经受起动、制动、冲击力矩等影响）

- 要求的型号
- 安装形式
- 安装方位
- 输出形式
- 电源
- 润滑（飞溅润滑、强制润滑）
- 冷却：不附加冷却装置（即风冷）
强制风冷
强制水、油冷却
- 噪声：要求声压值 \leq
- 其它附件

Required parameter for motor selection

Reducer users should offer below detailed technical requirements, REDSUN would accomplish final selection for client and assure reducer's quality, economy, reliability. To ensure validity for promise.

To ensure validity for promise, main contractor should take charge of system ruggedness and transmission factor controlling, connecting pieces must harmonize with transmission components. User must use reducer, operate reducer and maintain reducer properly in the stated tang, and reducer is not influenced by limited speed, torque, vibration.

Passive equipment

- Name and variety
- Load character (use shock factor or inertia)
- Running load
- Output power(kW)
- Output speed(rpm)
- Output torque($\text{N} \cdot \text{m}$)
- Time of working continuously(hour per day)
- Starting moment and frequency
- Brake moment and frequency
- Shock load, peak load and frequency
- Rotate in both directions and frequency
- Radial and axial load

Impelling force(or motor, if rotate in both direction and frequency of that, output shaft radial and axial load)

- Mode and variety
- Power rating and speed
- Maximal torque
- Starting torque
- Connect with motor directly, rotational inertia refer to specification of motor
- Code and appurtenances
- If position of the terminal box is special requirement.

Reducer (Selected reducer can stand up to influence of starting and brake and shock moment)

- Required model
- Mounting mode
- Mounting position
- Output mode
- Electrical source
- Lubrication(splash lubrication or forced lubrication)
- Cooling method: No cooling device(air blast)
- Cooling by fan
- Cooling by water or oil
- Noise(dB): required sound pressure value \leq
- Other appurtenances

联接:

- 被驱动设备和减速器联接:
- 减速机和电动机或其它原动机联接:
- * 当用皮带、链条或开式齿轮联接时, 必须告知装在轴端的皮带、链条或齿轮的直径, 以及中心距和负载方向。
- * 如果使用刚性联轴器, 必须告知作用在轴上的轴向和径向负载。

环境条件:

- 周围温度、空旷场地、狭小场地、通风条件:
- 特殊条件: 高温、低温、灰尘、化学作用、直接日照、冰等

特殊要求:

- 例如: 外伸中间轴 (S、R、K、F、RV、H、B、P 都有可能)
- 制动停机 (例倾斜输送机)
- 特殊密封 (灰尘、严格要求的食品、化学原料等)
- 速度监测、保护、逆止器等

其它要求:

Connection:

Driven equipment is connected with gear unit
Gear unit is connected with motor or other drives.

- * When gear unit is connected with belt, chain or gear, user must tell REDSUN their diameter, centre distance and load direction.
- * If gear unit is connected with rigid coupling, user must tell REDSUN radial and axial load applied on shaft.

Ambient condition:

Ambient temperature, open field, narrow field, ventilation condition:

Special condition: high temperature, low temperature, dust, chemistry, direct sun, ice etc:

Special requirement:

Example: Extend intermediate shaft (it is possible for S、R、K、F、RV、H、B、P)
Braking and stopping (Such as inclined conveyer)
Special seal (dust, food and chemical material with special requirements.
Speed monitor, protection, backstop.

Other requirement:

安装、使用、润滑说明

一般说明

减速机的安装、操作、维护保养和修理人员均需阅读和理解本说明并遵守其中的规定。若因违反本说明的规定而造成任何损伤和停机，本公司概不负责。

注意事项

- 一定不能用高压清理设备清洁减速机。
- 对减速机所进行检修、保养、维护、安装都必须在减速机不工作的情况下进行。
- 在减速机上不得进行焊接工作，也不得用作焊接工作的接地点。焊接会造成精密齿轮和轴承的不可修复的损坏。
- 如果在减速机的运行过程中发现了任何异常现象（例如过热或者不正常的噪声等），应该立即停机检查。
- 凡是旋转的零部件必须配备合适的防护罩以防止人员的意外接触，例如联轴器、液力偶合器，齿轮，驱动皮带轮等。
- 一定要遵守减速机上所附加的说明，例如铭牌、指示方向的箭头等。这些铭牌和标记上面不得有灰尘和油漆。
- 在组装或者解体工作中损坏了的螺栓一定要用同等强度和类型的新螺栓更换。
- 安装升降机时，台架面上的孔，在满足丝杆能方便通过的前提下，应尽可能小。
- 根据减速机的操作条件，减速机的表面、润滑油和零部件可能会达到相当高的温度，小心烫伤！
- 当更换润滑油的时候，要谨慎小心不要被热油烫伤。
- 减速机应该放置在不振动的干燥木制基座上并遮盖好。当储存减速机 and 任何单独的零部件的时候一定要做好防锈措施，以免生锈，储存时不得将减速机叠放在一起。
- 除订货合同中另外有所规定，否则减速机不得储存在或工作在强酸、强碱、低温、高温和重度的空气污染、潮湿，具有化学物品的场所。
- 在搬运减速机时，一定要特别小心，应防止撞击轴端，因为这样将有可能造成减速机的损坏，在吊运减速机时，不得将吊环螺钉挂在轴端处的螺纹上。
- 除订货合同中另外有所规定，减速机和无级变速机工作环境温度不超过40摄氏度，温升低于40摄氏度。
- MB 无级变速机出厂时，调速限位螺钉已经调整在极限位置，不得任意调整，以免损坏零件。
- MB 无级变速机必须在开机情况下方可调速，否则会损坏零件。

Installation, usage, lubrication

General

It must be read and understood by operators, maintenance and repair persons. And they must comply with all regulations in this manual. Any damages and stop of machine caused by wrong operation will be buyer's responsibility.

Notes

- Gear units can not be cleaned by high-pressure cleaning machine.
- Repair, maintenance, installation must be made with gear unit powered off.
- No welding can be made on gear units, and it cannot be a welding ground point. Welding will cause irreparability of precision gears and shafts.
- During running, gear units must be stopped immediately for check once any problem (such as over heated and high noise) occurs.
- Any rotating parts will be equipped with appropriate shields in order to keep it from accidental touch. Such as couplings, hydraulic couplings, gears, driving belt wheels.
- Please note the instructions attached on gear units, such as label, arrow indicating direction. And they will be kept clean without dust and oil.
- The bolts damaged in installation or dismantlement should be replaced with new one of the same tension and type.
- When installing screw jacks, the screw holes in mounting plate should be as small as possible up to bolts' diameter.
- When gear units running, its temperature may get up to a high point, please take care, there is a danger of scald.
- When changing lubrication, please be careful not to be scalded by hot oil.
- Gear units should be put on dry wooden non-vibration base and be covered. When storing gear units and their components, we should take rust-proof measures, and we cannot pile up gear units.
- Unless there are special requirements in contracts, gear units cannot be stored or work in places with acid, alkali, low temperature, high temperature, heavy air pollution, damp, chemical products.
- When removing gear units, please be careful to avoid knocking shaft end and damaging; when swinging them, bolts of swinging rings cannot put in screw holes in the shaft ends.
- Unless there are special requirements in contracts, ambient temperature of gear units and variable speed drives is below 40℃, and temperature rise should lower 40℃.
- Before delivery of MB series, speed-limiting screw has been adjusted to an extreme point to protect spare parts. And speed adjustment must be done after the drives start up, or the drives will damage.

- 减速机、无级变速机应在许用转矩范围内使用，超扭矩使用应在输出轴上装安全装置，以免减速机损坏。
- 各种减速机、无级变速机适用于连续运转，并允许正反两向运转。（配逆止器时除外）
- 若出现安装方位变动，一般情况下调换油镜、油塞、通气帽即可。
- 备件一定要从瑞德森机械有限公司购买。

安装与拆卸

关于安装的综合信息：在户外安装时应该避免阳光的直射，一定要避免热力集中影响减速机的正常性能。

整机安装

- 1) 准备刚性好的基础或牢固的台架来安装传动设备，同时也需充分考虑即使加上最大载荷也不至于改变装配好后各部件的位置。
- 2) 底座式安装应校准中心高，联轴器联接时应校准两轴的同轴度，柔性联轴器时浮动量不超过联轴器的允许范围，刚性连接时保证各安装联接的形位公差；长轴联接还要考虑轴的足够刚度。
- 3) 法兰式安装，凸肩（或凹肩）应配合良好，以免错位。法兰式安装并配空心轴联接时，特别应保证联接处的形位公差。
- 4) 扭力臂安装，空心轴与工作轴应配合良好，工作轴的浮动或设备振动应小于弹性块允许的范围，力臂应固定并锁紧。
- 5) 在减速机上安装驱动零件时（如联轴器、齿轮、链轮等），如果需要预加热，则必须保护好轴上的油封，要用防热屏减少热辐射。
- 6) 输出轴加装联轴器、皮带轮、齿轮、链轮等时，请勿重击，应用输出轴外端螺孔，压入连接件。皮带轮、链轮、搅拌式还需考虑径向力。

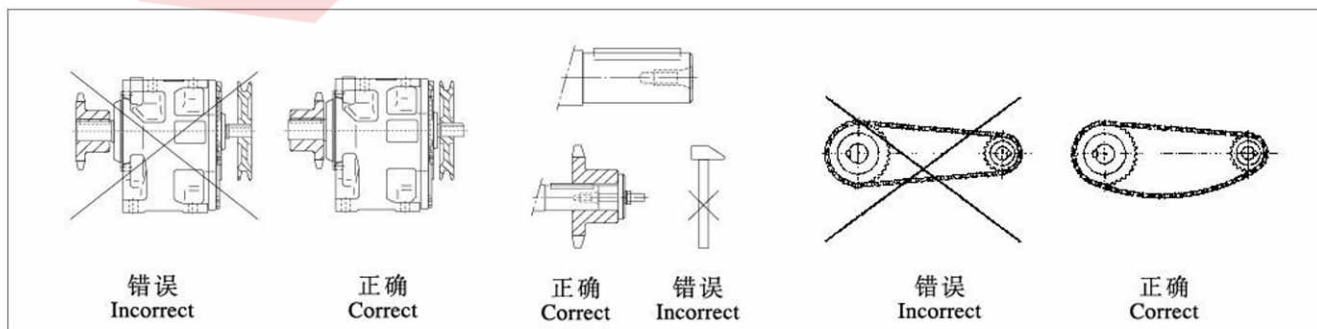
- Gear units and MB should run under permissible torque, safety devices should be equipped to avoid damage if load is larger permissible torque.
- Gear units and MB can run continuously and are permitted to rotate in both directions.
- If mounting position changes, the positions of breather screw, oil level, oil drain plug will be change with each other as usual.
- Spare parts must be purchased from REDSUN.

Installation and dismantlement

Installing gear units should avoid direct sunshine and heat concentration to guarantee smooth running.

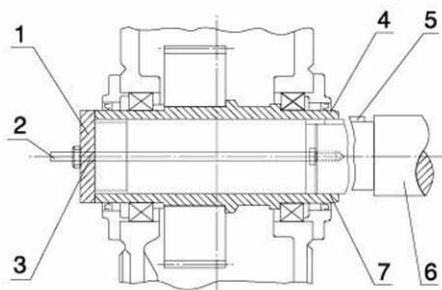
Installation of whole units

- 1) Please choose foundation with good rigidity or stable platform to install transmission devices. In the meantime, also should take full consideration that the positions of all parts will not change even if maximum torque is loaded on units.
- 2) Choosing foot-mount, the height of centre line should be calibrated; Choosing coupling-connect, coaxiality should be calibrated; Choosing flexible coupling, run-out should keep within permissible values; Choosing rigid coupling, contour and position tolerance should be guaranteed; Choosing long coupling, rigidity of shaft should be enough.
- 3) Flange-mount, protruding or concave steps should inosculate with housings; using hollow shaft, contour and position tolerance at connection parts should be guaranteed.
- 4) Torque-arm-mount, hollow shafts should be fit with working shafts; run-out of working shafts and vibration of units should be within range of vibration values, torque arm should be fixed and locked.
- 5) Mounting driving parts such as couplings, gears, gear chains, if pre-heat is necessary, seal should be protected by using heat-proof shelter to diminish heat radiation.
- 6) Installing couplings, belt wheels, gears, chain gears on output shafts, please use screw hole in shaft end to press them in the correct position (see following pictures). And radial force should be considered in case of Belt wheel, chain gears and agitation mode.



7) 空心轴与实心轴连接时，应清理干净并涂防锈油(空心轴一定要精密对中)。除了在图中所示的螺母和螺杆以外，还可以使用其它类型的装置例(如液压提升装置)。

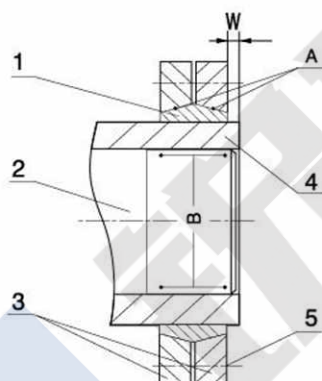
7) When connecting hollow shaft and solid shaft, please clean the surface and put anti-corrosive oil on it. When connecting, besides nuts and threads illustrated in the drawing below, other installing tools such as oil hydraulic devices can be used.



- 1 端板 Pressure plate
- 2 螺母 Nut
- 3 螺杆 Thread
- 4 空心轴 Hollow shaft
- 5 平键 Key
- 6 机器轴 Shaft
- 7 螺母 Nut

8) 当空心轴配置收缩盘时，为了安全起见在收缩盘上应加防护罩；空心轴的孔和工作轴在收缩盘的区域里面一定不能有润滑脂。在安装机器的轴之前不要拧紧紧固螺栓。

8) When hollow shaft equipped with shrink disk, protect shield should be installed on shrink disk for safety. Connecting area (equipped shrink disk) of hollow shaft and solid shaft must not be put lubrication cream. Before installing solid shaft, not tighten binding bolts.



- 1 内环 Inner ring
- 2 机器轴 Solid shaft
- 3 外环 Outer ring
- 4 空心轴 Hollow shaft
- 5 紧固螺栓 Binding bolt
- A 有润滑脂的部位 Lubrication area
- B 绝对不能有润滑脂的部位 Non lubrication area
- W 安装高度 Installation height

9) 安装螺栓一般情况下采用 8.8 级，如果有高温或者振动冲击等情况，请在螺纹连接处作好防松措施。各个紧固螺栓的拧紧扭矩见下表：

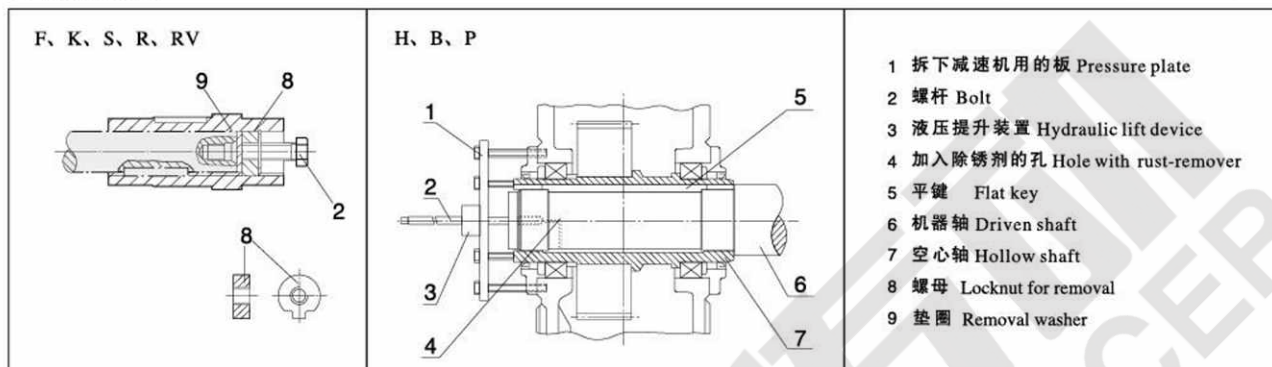
9) Generally fixing bolts adopt GBT8.8. In case of high temperature and vibration, please take anti-loose measures. The tightening torques of binding bolts as follows

螺栓大小 (mm) Diameter of bolt	预紧力矩 (N·m) Pre-binding-torque	螺栓大小 (mm) Length of bolt	预紧力矩 (N·m) Pre-binding torque
M6	15	M30	2000
M8	36	M36	3560
M10	72	M42	5720
M12	123	M48	8640
M16	295	M56	13850
M20	580	M64	14300
M24	1000	M72	20800

拆卸

1) 空心轴的拆卸

根据现场实际可使用的设备，可以用端板上的螺杆（参见下图）、中心螺杆或者液压提升装置将减速机从机器轴上脱下来。空心轴的每个端面都配备了2个螺丝孔可以拧入固定端板的螺栓。



注：端板和辅助板不在供货范围内。（空心轴端螺纹孔的分布和大小请参照本公司技术图纸）。

Dismantlement

1) Dismantle hollow shaft

According to tools available on the spot, Bolts on pressure plate, center bolt, oil hydraulic device are available to dismantle gear units from driven solid shaft. There are two screw holes in the end surface of hollow shaft for tightening bolts fixing pressure plate.

2) 当空心轴配置收缩盘时，在首次受力之前一定不能拆下来。拆卸时严禁按照相邻的顺序松开螺栓。

2) When hollow shaft equipped with shrink disk, it is prohibited to loosen bolts one by one in a round way.

润滑与冷却

润滑

1) 润滑油的选择：

系 列 Series of reducer	环境温度 Ambient temperature				ISO粘度与NLGI相应 Adhesiveness of ISO and NLGI unitive	Esso	Mobil	Shell	GB 牌号 L-CK
	-50	0℃	+50	+100					
R, F, K, T, H, B, P	-25			+80	VG220		Mobil Glygoyle 30	Shell Tivela OilWB	N220
	0	+40			VG220	SPARTAN EP 220	Mobilgear 630	Shell Omala Oil220	N220
	-15	+25			VG150 VG100	SPARTAN EP 150	Mobilgear 629	Shell Omala Oil 100	N150
	-30	+10			VG68-46 VG32	ESSOATF D-21611	Mobil D.T.E. 15M	Shell Tellus Oil T 32	N68
RV, S	-20				VG22 VG15	UNIVIS J 13	Mobil D.T.E. 11M	Shell Tellus Oil T 15	N22
	-45	0		+60	VG680		Mobil Glygoyle HE 680		N680
	0	+40			VG680	SPARTAN EP 680	Mobilgear 636	Shell Omala Oil 680	N680
	-15	+25			VG220	SPARTAN EP 220	Mobilgear 630	Shell Omala Oil 220	N220
JW	-20	+10			VG150 VG100	SPARTAN EP 150	Mobil D.T.E. 18M	Shell Omala Oil 100	N150
	-25	+10			VG220		Mobil Glygoyle 30		N220
	-45	-20			VG22 VG15	UNIVIS J 13	Mobil D.T.E. 11M	Shell Tellus Oil T 15	N22, N15
	升降机的润滑油选择：JW010-JW200，选000#钙基润滑脂；JW300-JW1000，选VG150齿轮润滑油。 Lubrication oil: JW010-JW200, 000# calcium grease; JW300-JW1000, VG150 gear lubrication.								

2) 润滑油的更换

要用和原来的润滑油同一牌号、同一厂家的润滑油。更换润滑油品种时，要用润滑油将减速机箱体里面的沉积物、金属颗粒和残留的润滑油都冲洗干净。

对于升降机在其正常工作前，都必须对丝杆表面涂抹润滑油，将丝杆升到最大行程，然后在丝杆表面涂抹润滑油脂。

3) 润滑方式：

- 油池润滑：一般情况下减速机都采用油池飞溅润滑；
- 浸油润滑：所有的齿轮和轴承都浸没在润滑油里面；
- 强制润滑：是靠辅助设备将润滑油强制压入齿轮箱内对轴承和齿轮进行润滑的。
- 稀油站集中润滑：客户可以根据实际情况自配润滑系统。

2) Change of lubrication oil

Changing lubrication oil, it must be the same type and produced by the same factory. If type is different, must completely remove deposits, metal grains, residues of the old oil in housing with new lubrication oil.

Before screw jacks running, must lubricate screw threads with lubrication cream. Let threads get up to highest point and lubricate threads.

3) Lubrication methods

- Splash lubrication: generally gear units adopt or splash lubrication.
- Oil-bath lubrication: all gears and bearings must immerse in oil.
- Forced lubrication: attached devices press oil into housing to lubricate gears and bearings.
- Oil tank lubrication: Customers can equip lubrication system accordingly.

冷却

根据要求，有些减速机可配备风扇、冷却螺旋管、水冷或者空冷的润滑油冷却系统或者单独的供油系统。在单独的供油系统的情况下，一定要遵守有关这些装置的规定。

1) 风扇：

带有风扇的减速机，在安装联轴器或其它零部件的安全防护罩的时一定要留出足够的空间让空气进入。所留出空间的正确尺寸请参照我公司技术图纸。一定要将风扇罩固定好并防止外界的损坏而且不能和风扇叶接触。

2) 冷却螺旋管：

冷却水要由用户自行提供。自来水、海水还是半咸水都可以进行冷却，在连接冷却水的螺旋管之前要先将堵头从冷却水盘管的连接衬套上取下来并彻底冲洗螺旋管将脏物清理干净。（冷却水的流量请参照我公司技术图纸。）

注：冷却水可以任意方向流过减速机。冷却水的压力不得超过8巴。为了避免过高的压力，冷却水的入口必须要配备一个流量控制装置，例如减压阀或者截止阀。

启动

要遵守“安全说明”中的规定。

添加润滑油：

本公司产品一般都未带润滑油出厂，在设备运行前请先加入润滑油。

核查设备：

- 1) 检查油面高度，润滑油冷却或者供油系统管路的密封性。
- 2) 检查冷却装置，截止阀的开启状态
- 3) 配备了止回装置的减速机，检查电机接线是否正确。
- 4) 检查轴封是否有效。
- 5) 检查旋转的零部件是否与其它零件接触。

配置了电动油泵的减速机应当保证在启动设备前首先开启油泵电机。

故障、原因和措施

维修工作一定要由经过培训的素质合格的人员谨慎地进行。

Cooling

For different requirements, gear units can be equipped with cooling fans, cooling coils, water or air cooling systems, separate oil supply systems. Under condition of separate oil supply system, please comply with its operation regulations.

1) Cooling fan:

When gear units with cooling fans are installed safety shield of couplings or other spare parts, enough space should be left to let air get into. The dimension of the space refers to our technical drawings. The fan shield should be fastened and protected against damage, and cannot touch the leaves of fan.

2) Cooling coil:

Cooling water is supplied by customers. Tap water, seawater, half salt water can applied to cooling. Before installing cooling coils, please get the plug off the coil clean it. (water flux refer to our technical drawings)

Note: Cooling water can flow through gear units in all directions. The pressure of cooling water cannot exceed 8 bar. To avoid higher pressure, a flux controller should be installed at the entrance of cooling coil such as decompression valve or cut-off.

Start up

Please comply with the regulations in safety instructions

Add lubrication oil:

Generally there is no lubrication oil in our products. Please add oil before machines begin running.

Verify machines:

- 1) Check oil level, air-proof of cooling system or oil supply system.
- 2) Check the open-and-close state of cooling devices and cut-off.
- 3) Check the position of input wires when gear units are equipped with anti-counter-rotation devices.
- 4) Check validity of seals.
- 5) Check if the rotating components touch other ones.

Make sure that electric oil pump should start up before the start-up of gear units.

Malfunction, cause and measure

Maintenance should be made by qualified workers.

故障 Malfunction	原因 Causes	措施 Measures
在减速机的紧固件处有大的噪声 High noise at tightening parts	紧固件松动了 Loose of tightening parts	将螺栓/螺母拧紧到规定的扭矩。 更换损坏了的螺栓/螺母。 Tighten nut bolt to correct state Replace damaged nut/bolt
减速机的噪声变化 Changing noise	齿轮的轮齿发生了损坏 Teeth of gears get damaged	和客户服务部联系。 检查所有零件上的齿，更换损坏了的零件。 Consult after-sales department Check teeth of gears and replace damaged one.
	轴承间隙过大 Clearance of bearings too big	和售后服务部联系。 调整轴承的间隙。 Consult after-sales department Adjust the clearance of bearings
	轴承损坏 Bearings get damaged	和客户服务部联系。 更换损坏的轴承。 Consult after-sales department Replace damaged bearings

故障 Malfunction	原因 Causes	措施 Measures
轴承温度升高 Bearing temperature rise	箱体里面的油面过高或过低 Oil level is too high or low	在室温下检查油面的高度并按需加油。 Check oil level at room temperature and add on reduce oil
	油过于陈旧 Oil is used too long	和售后服务部联系。 — 检查上次换油的时间。 Consult after-sales department. Check the date that oil be replaced last time.
	油泵的机械故障 Malfunction of oil pump	和售后服务部联系。 检查油泵的工作是否正常，修理或换新的油泵。 Consult after-sales department. Check if pump works normally, repair or replace it.
	轴承损坏 Bearing damage	和售后服务部联系。 — 查阅操作人员在振动测量中所获得的数据。 — 检查并按需更换轴承。 Consult after-sales department. — Look up the date about vibration. — Check and replace it on request.
工作温度过高 working temperature too high	箱体里面的油面过高 Oil level is too high	检查油面的高度，如果有必要的话，调整。 Check oil level, and adjust if necessary.
	油过于陈旧 Oil is used too long	和售后服务部联系。 检查上一次换油的时间，如果有必要的话就更换。 Consult after-sales department. Check the date that oil was replaced last time, replace it if necessary.
	油受到严重污染 Oil is polluted seriously	和售后服务部联系。 — 换油。 Consult after-sales department. — Replace oil.
	在配备了润滑油冷却系统的减速机上：冷却剂的流量过低或者过高 Flux of cooling material is too high or low	全面调节进口和出口管道的阀门。 检查水冷装置的自由流量。 Adjust entrance and exit valves. Check the flux of water cooling devices.
	通过水冷装置的油流过低， 其原因是：滤油器严重堵塞 Oil flux through water cooling devices is too low	清理滤油器。 Clean oil filter.
	油泵的机械故障 油泵损坏 Malfunction of oil pump oil pump damage	和售后服务部联系。 — 检查油泵的功能是否正常。 — 修理或者换新。 Consult after-sales department. — Check of oil pump works normally. — Repair or replace it.
	在配备了风扇的减速机上： 风扇罩的空气入口和/或箱体严重污染 Entrance of fan shield and housing polluted seriously	清理风扇罩和箱体。 Cleanse fan shield and housing.
	配备了冷却螺旋管的减速机： 冷却螺旋管里面结垢 Residues in cooling coil	和售后服务部联系。 — 清理或者更换螺旋管。 Consult after-sales department. — Clean or replace cooling coil.

故障 Malfunction	原因 Causes	措施 Measures
轴承处的 振幅升高 Swing at bearing higher	轴承损坏 Bearing is damaged	和售后服务部联系。 —检查并按需更换轴承。 Consult after-sales department. —Check and replace bearing.
	齿轮损坏 Gear is damaged	和售后服务部联系。 —检查并按需更换齿轮。 Consult after-sales department. —Check and replaces gears.
止回装置的温度过高 止回功能的失效 Temperature of anti-backstop too high and it becomes malfunction	止回装置损坏 Anti-backstop becomes malfunction	和售后服务部联系。 —检查并按需更换止回装置。 Consult after-sales department. —Replace anti-backstop
减速机漏油 Oil-leak of gear unit	箱体盖或者联接 处的密封不良 Sealing at cover and connection not in good state	检查密封和连接处，如果必要的话， 更换新的。将连接处密封好。 Check air-proof and connection part, replace them if necessary, and seal up connection part.
	径向轴封环失效 Shaft seal is malfunction	和售后服务部联系。 —换新的径向密封环。 Consult after-sales department. —Replace it.
油中有水 Water in oil	油中有杂物 Mixer in oil	用试管检查油的状态是否有水分存在。 实验室分析油。 Classify if there is water in oil by using tube. Analyse oil in laboratory.
	润滑油冷却器或者 冷却螺旋管失效 Cooling coil is of mal-faction	和售后服务部联系。 —找出并修理泄漏之处。 —更换冷却器或者螺旋管。 Consult after-sales department. —Find out and repair leakage place. —replace cooling coil
	减速机受到机器间通风过 来的凉空气而产生凝露 Cool air will cause water drop in gear unit.	用合适的保温材料将减速机保护起来。 关闭空气的出口或者在结构上改变其方向。 Shelter gear units with proper

注：对于客户自己无法排除的故障请和我公司
售后服务部联系。

Note: Please consult after-sales department, if malfunction can not
be removed by consumer s tehmselves.

保养

用户要定期对减速机进行维护和保养，要定期检查润滑油的使用状态，定期清理通气帽、风扇、冷凝管和减速机表面的灰尘和异物，保持减速机清洁，保证减速机的正常运行。

Maintenance

Users must maintain gear units periodically check oil state periodically clean breather screw, fan, cooling coil and surface of gear units periodically. Keep gear units clean and assure that gear units work smoothly.

措施期限备注:

Maintenance periods:

检查油温 Check oil temperature	每日 Everyday
检查减速机的不正常的噪声 Check abnormal noise of gear units	每日 Everyday
检查油面高度 Check oil level	每月 Every month
检查减速机的漏油 Check leakage	每月 Every month
检验油中的水分 Analyse water	400工作小时后, 至少每年一次 Every 400 working hours. At least 1 years.
在起动之后的首次换油 Replace oil first time after start up	在400工作小时后 Every 400 working hours.
其后的换油 Afterward oil replacement	每18个月或者5000工作小时 Every 18 months or 5000 working hours
清理滤油器 Clean oil filter	每3个月 Every 3 months
清理通气帽 Clean breathe screw	每3个月 Every 3 months
清理风扇、风扇罩和减速机箱体 Clean fan, fan shield and housing	和换油同时进行 At the same time as replacing oil
检查冷却螺旋管的沉积物 Check residues in cooling coil.	大约每2 年, 和换油同时进行 Every 2 years and the same time as replacing oil
检查润滑油空气冷却器 Check air-cooling devices	和换油同时进行 At the same time as replacing oil
检查润滑油水冷却器 Check water-cooling devices	和换油同时进行 At the same time as replacing oil
检查紧固螺栓的紧固程度 Check tightening bolt	第一次换油后, 其后每隔一次换油 After first replacing oil, every 2times of replacing oil
对于减速机的全面检查 Make an over all check	大约每2 年和换油同时进行 Every 2 years and coincide with replacing oil

售后服务 After-sale service

各种传动设备，客户发现有质量问题时，不要先拆卸零件，应说明以下情况然后与本公司售后服务部联系，说明现象后确认问题所在，再采用较理想的方法处理。

When customers find some quality problem, please not dismantle the gear units and fill in the following form and contact out after-sales department. We will offer reasonable methods to resolve the problem.

型号规格 Model:

出厂日期 Date:

编号 Number:

已使用时间 Use time:

使用场合或主机名称 Ambience or main machine:

主机生产单位 Company that main machine was made in:

质量问题 Problem:

用户单位 (Name):

地 址 (Add):

电 话 (Tel):


传 真 (Fax):

邮 编 (Post):

联 系 人 (Link man):

QUALITY DERIVE
FROM RIZING
REPUTATION COME ALONG

品质源锐进 口碑自然来



上海锐进减速机有限公司
SHANGHAI RIZING REDUCER CO., LTD

地址：上海市闸北区大统路1038号 电话：086-21-63810005 63816778
传真：086-21-63815568 邮箱：shruijin@163.com
网址：www.rjreducer.com

ADD: NO.1038 DATONG ROAD,SHANGHAI
TEL :086-21-63810005 63816778
FAX:086-21-63815558
E-mail: shruijin@163.com
www.rjreducer.com

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