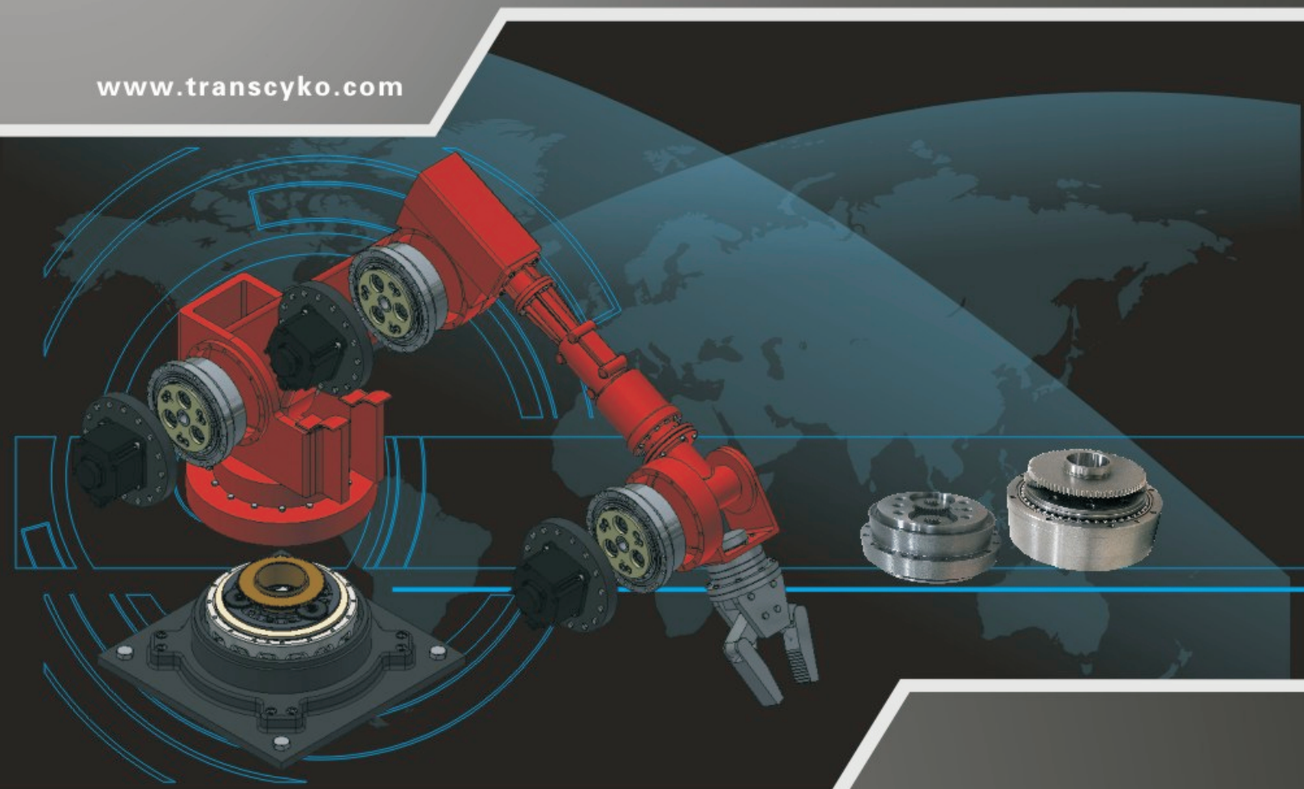
TRANSCYKO®

低背隙精密擺線減速器TLB

We take pride
in what we do each day
to better serve our clients
and lead the way to change

www.transcyko.com



TRANSCYKO®

苏州厂

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TRANSTEC HEAVY INDUSTRY CO., LTD. (SUZHOU)

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TRANSCYKO®

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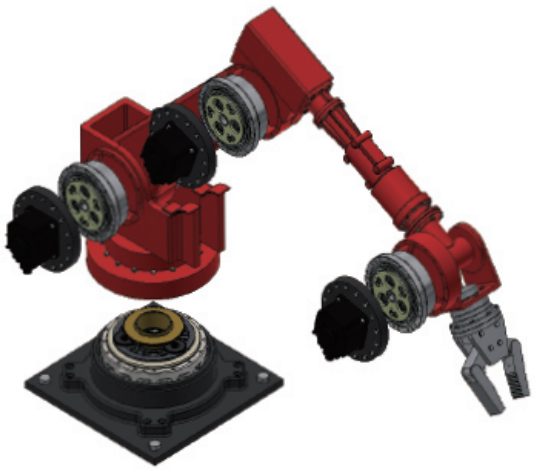
TRANSTEC HEAVY INDUSTRY (SUZHOU) CO., LTD



公司简介 Company profile

传仕精密 1982 年创立于台湾的台南市，2002 年投资传仕重工于中国苏州工业园区，2013 年于台湾台南创立南科二厂（专注于机器人减速器的研发与制造），传仕制造生产精密摆线已有 33 余年的经验，目前约有百万台在全世界作商业运转。

Transmission Machinery Co., Ltd was founded in Tainan, Taiwan in 1982 and has more than 33 years experience with cycloidal and gear speed reducer manufacturing. Until now, there are over 1,000,000 units rolling at various types of industries around the world. In order to comply the high demand from China, Transtec Heavy Industry Co., Ltd. was founded in Suzhou, China in 2002, which is located at SuZhou Industry Park. In 2013, Transmission set up the second factory near Tainan Science Park , Taiwan for engaging on robot research and design.

行星及摆线组合而成的 TLB 精密减速机，其结构拥有耐冲击、滚动摩擦、高效率、适合正逆转，体积小，扭矩大、低背隙等优点，尤其可靠度极佳被众多企业所推崇，现更广泛应用于机器人及工程车辆的领域。

The TLB precision speed reducer combines the structure of cycloidal and planetary gear system. It has the advantage of being able to withstand high shock loading due to rolling friction. It is high in efficiency and compact in size. The features of minimal backlash, large torque and excellent reliability are perfectly matched for high precision required industry which is widely found in Robotics and engineering vehicle field.

Helical Gear Motor
斜齿轮减速马达

Helical-Bevel Gear Units And Gear Motor
斜齿轮伞齿轮减速马达

Gear Box
齿轮箱

Cycloidal-Bevel Gear Motor
中空轴齿轮& 摆线减速马达

Cycloidal-Helical Gear Motor
中空轴齿轮& 摆线减速马达

Helical-Worm Gear Unit And Gear Motor
蜗轮– 斜齿轮减速马达

Planetary Reducer
游星减速机

Low backlash reducer
低背隙减速机

Centrifugal Reducer
离心机专用减速机

Cycloid Speed Reducer
摆线针轮减速马达

Variable Speed Drive
無段變速馬達

型号表示方法 Model representation

TLB–E 系列 TLB–E Series

TLB 160 E 145 A B

- TLB — 型号 Model
- 160 — 机座号 Frame No.
- E — 机型 E 主轴内藏型 E:Main bearing built in type
- 145 — 转速比值（减速比 = $\frac{1}{R}$）Speed ratio(reduction ratio=1/R)
- A — 输入齿轮或输入花键的类型 Type of input gear or input spline
  - A 标准型 A（细轴型）
  - A: standard type A (Narrow type)
  - B 标准型 B（粗轴型）
  - B: standard type B (Big Diameter type)
  - Z 特殊（无）
  - Z : special (none)
- B —
  - B 螺栓紧固输出轴
  - B:Bolt-clamping output shaft
  - P 销、螺栓紧固输出轴
  - P:Bolt/pin clamping output shaft

机座号 Frame No.	输出转速为 15r/min 额定输出转矩 Nm Rated Output Torque(Nm)when OutputSpeed is 15 r/min
6	72
20	167
40	412
80	784
110	1078
160	1568
320	3136
450	4410

<Ex.TLB-160E>

R	轴旋转 shaft rotation	81,101,129,145,171

注：1. 其它型号参照额定值表。
2. 详细说明轴的转速比值。
3. 其他型號的比數，請參照額定表
4. 請提供軸轉速以利安裝

Annotation:
1. Specify the shaft rotating speed ratio of application to ensure proper installation.
2. Refer to rating table for speed ratios of other frame numbers
3. Specify the shaft rotating speed ratio to ensure proper application

型号表示方法 Model representation

TLB–C 系列 TLB–C Series

TLB 200 C 34.86 A B

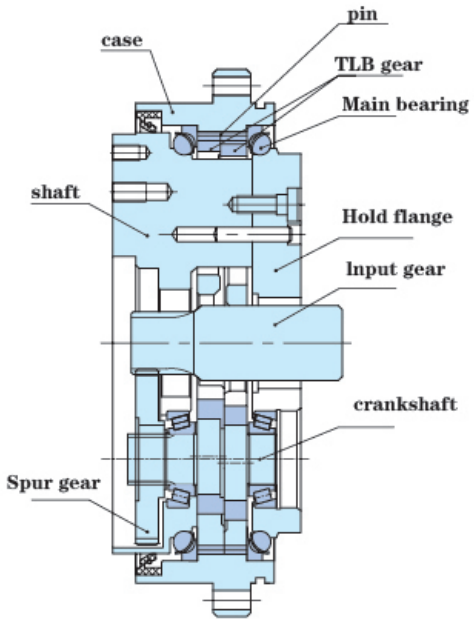
- TLB → 型号 Model
- 200 → 机座号 Frame No.
- C → 机型 C 中空轴型 C Hollow shaft type
- 34.86 → 转速比值（减速比 = $\frac{1}{R}$）Speed ratio(reduction ratio=1/R)
- A → 中心齿轮外型 profile of center gear
  - A 标准型 A standard type
  - Z 无 Z None
- B → B 螺栓紧固输出轴 B Bolt-clamping output shaft
  - T 贯穿螺栓紧固输出轴 T Through-bolt clamping output shaft

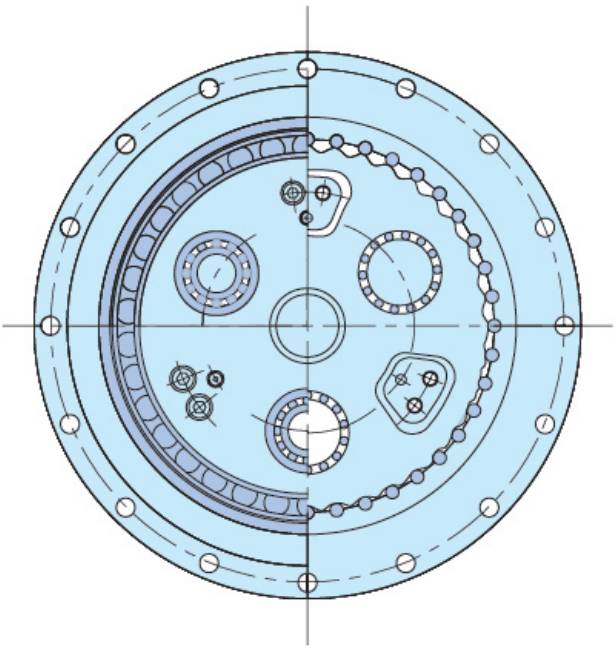
机座号 Frame No.	输出转速为 15r/min 额定输出转矩 Nm Rated Output Torque(Nm)when Output Speed is 15 r/min
10	98
27	265
50	490
100	980
200	1,961
320	3,136
500	4,900

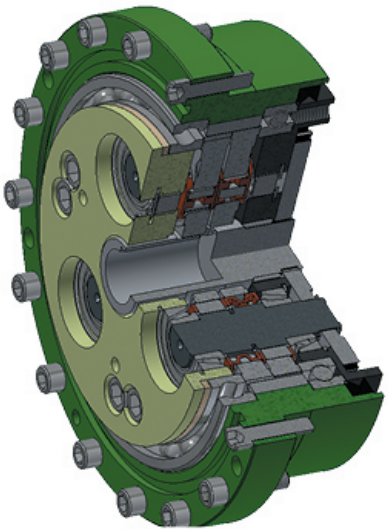
注：1. 此处，34.86 适用于 TLB-200C。
2. 其它机座号的转速比值见额定值表。
2. 详细说明轴的转速比值。

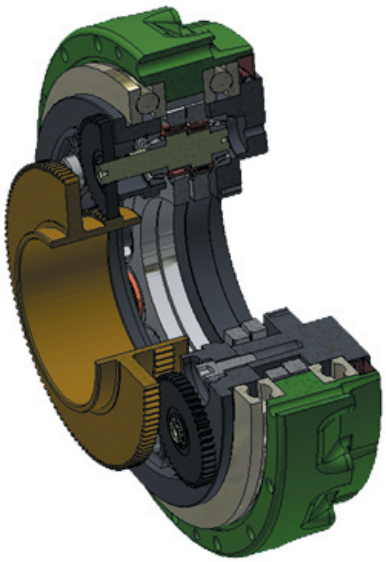
Annotation:
1. 34.86 applies to TLB-200C
2. Refer to rating table for speed ratios of other fame numbers
3. Specify the shaft rotating speed ratio to ensure proper application

结构 TLB-E Series









减速原理 Operation Principle

TLB-E 系列是二级减速器

第一级...正齿轮减速

●输入齿轮与正齿轮啮合并使之旋转，正齿轮与曲轴相连接。在此处按齿数差减速该部分为第 1 级减速。

第二级...行星齿轮减速

●正齿轮驱动曲轴，引起两个行星齿轮（称作 TLB 齿轮）的偏心运动。
TLB 齿轮相互偏 转 180 度以提供平衡负载 。

● TLB 齿轮的偏心运动引起摆线针轮与位于外壳内缘的圆柱形针齿的啮合。

●如果曲轴旋转 1 圈，TLB 齿轮沿着与曲轴的旋转方向相反的方向上旋转 1 个齿数的距离。TLB 齿轮的偏心运动使得轮齿与针齿保持紧密接触，许多轮齿同承担负载。

●输出可以是轴或者是外壳。如果外壳固定，那么轴为输出。如果轴固定，那么外壳为输出。

Transcyko RV speed reducer E series has 2-stage speed reduction in its design.

Stage I: Planetary spur gear reduction

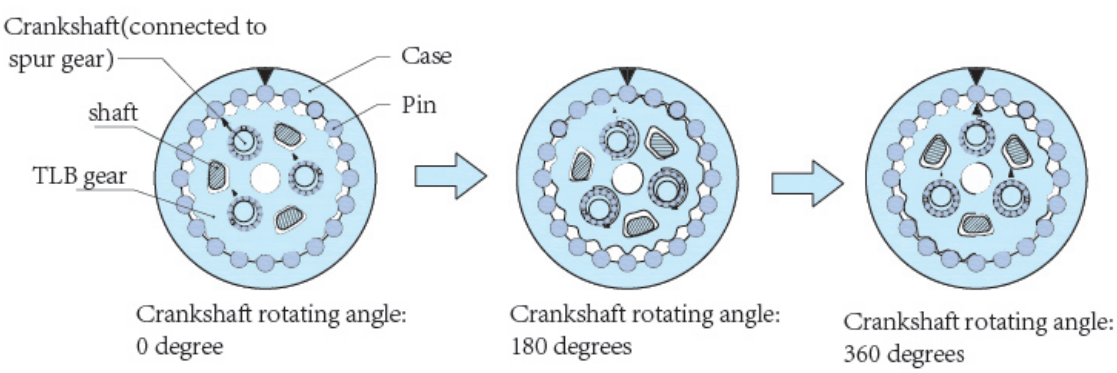
● -The rotation of the input shaft of the gear reducer is transmitted from the input gear to the spur gear. The spur gear is coupled with crankshafts. Overall gear ratios can be calculated by various first stage ratio combinations.

Stage II: Epicyclic gear reduction

● -Crankshafts which was driven by planetary spur gears produce an eccentric motion of two epicyclic gears (TLB gears) that are offset to another in 180 degrees for a balanced load.

● -The eccentric motion of TLB gears are engaged in cycloidal shaped gear teeth with pins located inside the edge of the case. TLB gears move the distance of one pin in which rotating cranks move in the opposite direction. Due to the teeth of TLB gears supporting sustained close contact with the pins and many teeth share the load simultaneously, this creates the motion of speed reduction from RV gears.

● - Per customer needs, output power can be connected with either the shaft or the case. When the case is fixed, the shaft is movable and vice versa.

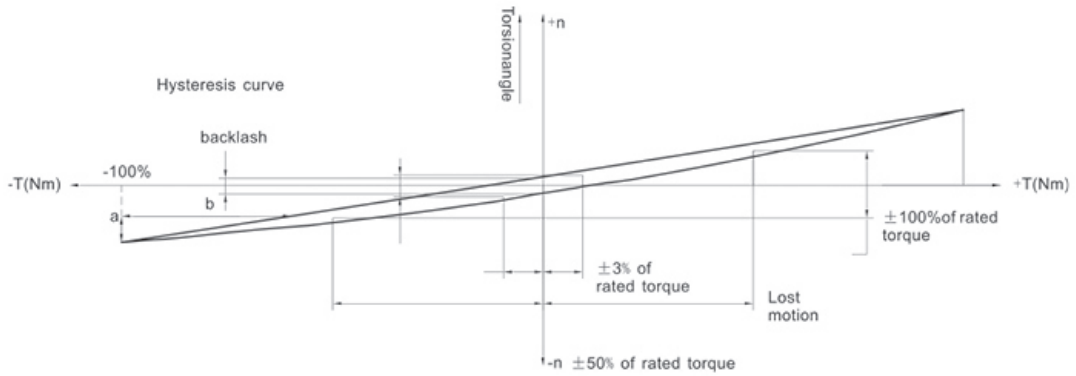


刚性（扭转刚度、空程）与齿隙

Rigidity and Backlash (including Torsional rigidity and lost motion)

固定输入轴(输入齿轮)，然后向输出轴(轴)施加转矩，则会产生与转矩响应的扭曲，并画出迟滞曲线。

A torque is transmitted to the output shaft when the input shaft is fixed, torsion canbe generated with the application of torque value and hysteresis curve results. Referto the figure shown as below.



从该曲线获取的扭转刚度、空程表示减速机的刚性。TLB 减速机的这种刚性很优异。

- 扭转刚度 = $\frac{b}{a}$
- 空程

  指在额定转矩的 ±3% 处的迟滞曲线宽度的中间点的扭转角。
- 齿隙

  指迟滞曲线的转矩 “零” 处的扭转角。

Based on the rigidity of reduction by torsional rigidity and the lost motion in the curve, we can conclude that RV precision speed reducers are exceptional in the characteristic of stiffness.

- Torsional rigidity=b/a
- Lost motion

The torsion angle at the mid point of the hysteresis curve width at ±3 % of rated torque.

- Backlash

The torsion angles when the torque indicated by the hysteresis curve is zero.

扭转角的计算示例
Demonstration of Torsion calculation

以 TLB-320E 为例，求取单方向上施加转矩时的扭转角。

1）负载转矩为 50Nm 的情况……扭转角（ST_1）

● 负载转矩在空程范围内的情况

$$ST_1=\frac{50}{94}\times\frac{1(\text{arc.min.})}{2}=0.26\text{arc.min. 以下}$$

2）负载转矩为 3000Nm 的情况……扭转角（ST_2）

● 负载转矩在空程范围内的情况

$$ST_2=\frac{1}{2}\times\frac{3000-94}{980}=1.48\text{arc.min.}$$

注 1. 上述扭转角是减速机单体的值。

2. 关于空程的特殊规格请咨询本公司。

Use TLB-320E as an example. Let' s find the torsion when a torque is applied in onedirection.

● If a torque 50 Nm is applied, the resulting torsion ST1 is found as shown below (note: the torque is in the lost motion range)

ST1=50/94 x 1(arc.min)/2=0.26 arc.min or less

2)If a torque is 3000 Nm applied, the resulting torsion ST2 is found as shown below (note: the torque is in the lost motion range)

$$ST_2=\frac{1}{2}\times\frac{3000-94}{980}=1.48\text{arc.min.or lessAnnotation:}$$

i. The above torsion value is of which the reduction gear assembly

ii. For special specifications of backlash and lost motion, please contact Transmission Machinery Co., Ltd. or Transtec Heavy Industry Co., Ltd.

型号 Model	扭转刚度 Torsional rigidity (Nm/arc.min)	空程 Lost motion		齿隙 Backlash (arc. min)
		空程 Lost motion (arc.min)	测定转矩 Measured Torque (Nm)	
TLB–6E	20	MAX1.5	±1.76	MAX1.5
TLB–20E	49	MAX1	±5.00	MAX1
TLB–40E	108		±12.3	
TLB–80E	196		±23.5	
TLB–110E	294		±32.3	
TLB–160E	392		±47.0	
TLB–320E	980		±94.0	
TLB–450E	1,176		±132.0	

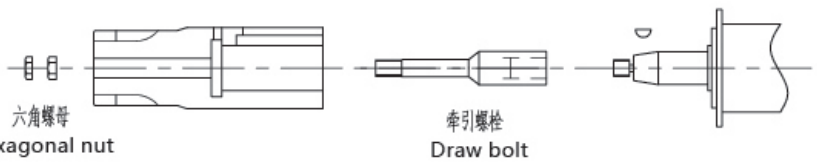
入力齿轮安装方式 Installation of input gear

●标准尺寸的输入齿轮出厂时没有钻电机轴孔。
●以下是输入齿轮安装的参考图，客户必须准备固定螺丝，客户必须提供定位螺栓，内六角螺栓，或六角螺母和牵引螺栓。
一些低速比输入齿轮不适合贯穿 TLB 齿轮的中心。

● -No holes drilled for motor shafts of standard size input gears which come from factory
● -The followings are reference of drawings for input shaft installation. Customers must provide set screw, hexagonal socket bolt, hexagonal nut, and draw bolt.

锥形轴 Taper shaft

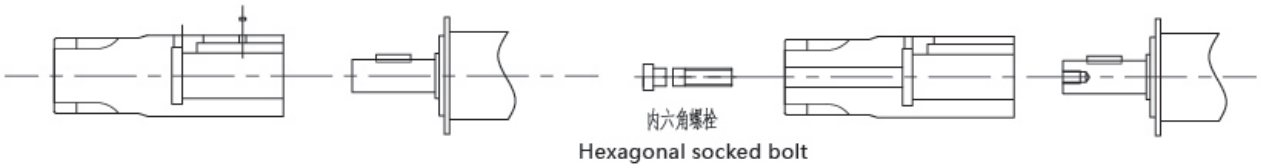
（伺服电机上有外螺纹） With male threaded on servomotor



直轴 Straight shaft

伺服电机上无内螺纹
No female threaded on servomotor

伺服电机上有内螺纹
With female threaded on servomtor



润滑 Lubrication

为使 TLB-E/C 减速机发挥最佳性能，建议使用本公司制造的 Molywhite RE00。

In order to reach max performance of TLB E and C series, TMC RE00 is suggested.
Annotation: do not mix TMC RE00 with other grease or oil.

脂润滑 Standard lubrication for TLB E and C seres is grease lubrication

TLB–E/C 的标准润滑为脂润滑。 Lubrication

润滑脂 Grease rubracitiom	
TMC Corporation	Molywhite RE00

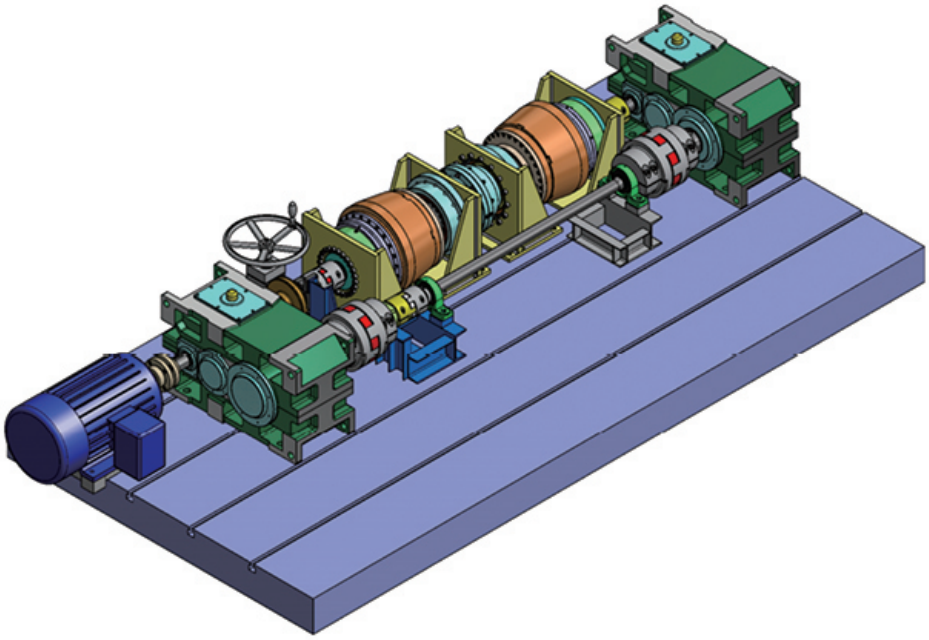
注：请勿把推荐的润滑脂或齿轮油与任何其它润滑油混合。

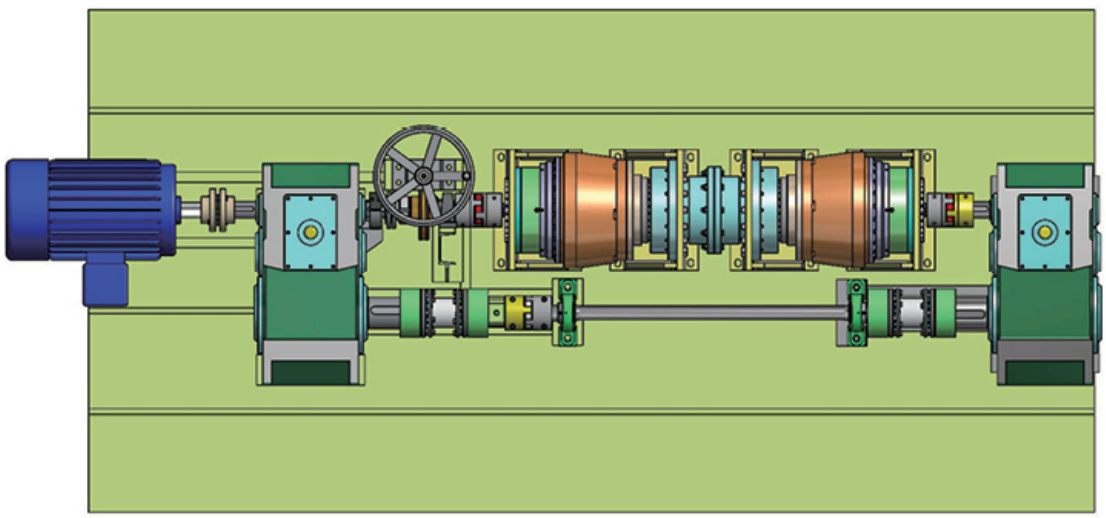
工作温度范围（环境温度） Working temperature range	–10℃ ~ 40℃

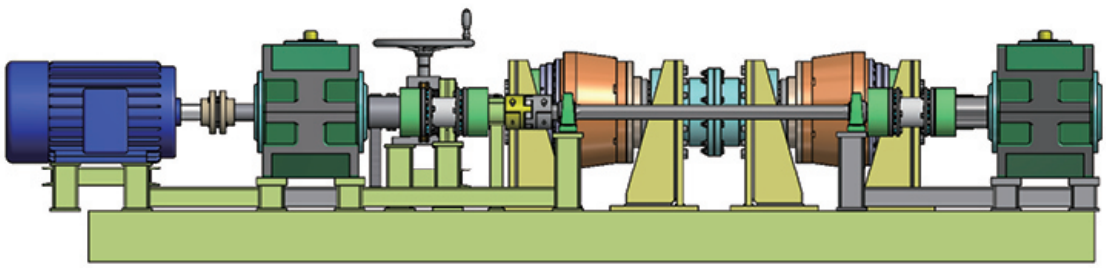
注：如果在规定温度范围以外使用润滑脂或齿轮油，请与本公司联系。

Annotation: do not mix TMC RE00 with other grease or oil.
Annotation: Please consult Transmission Machiner y Co., Ltd. or Transtec Heavy Industry Co., Ltd. if oil or grease to be used outside the specified temperature range.

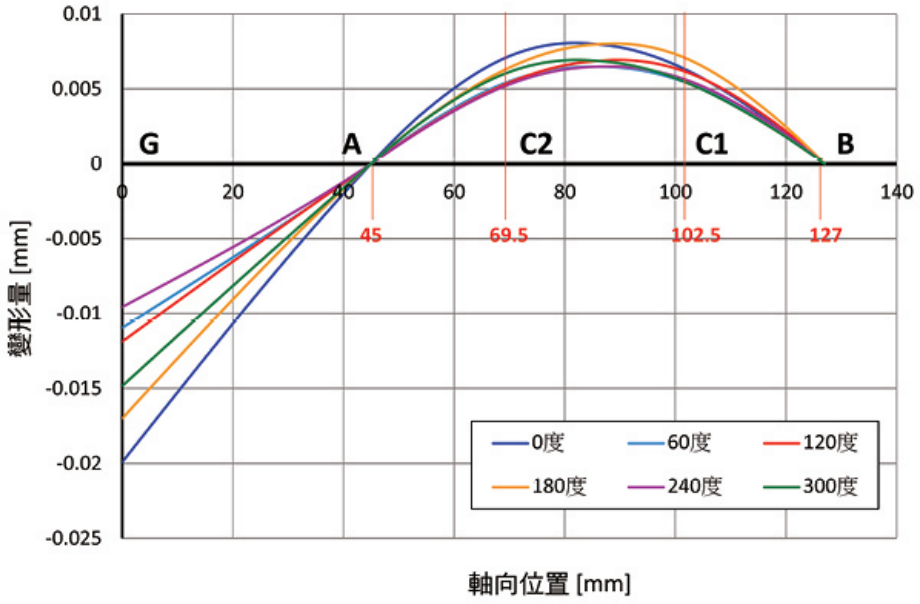
TLB–320E 矩力測試機





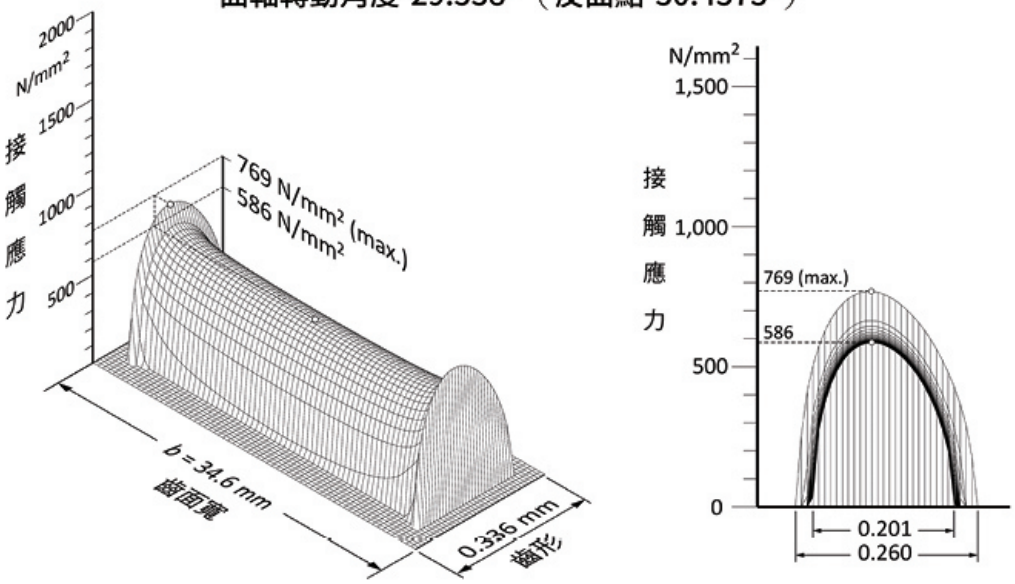


曲柄軸彎曲變形變化（軸向變化）

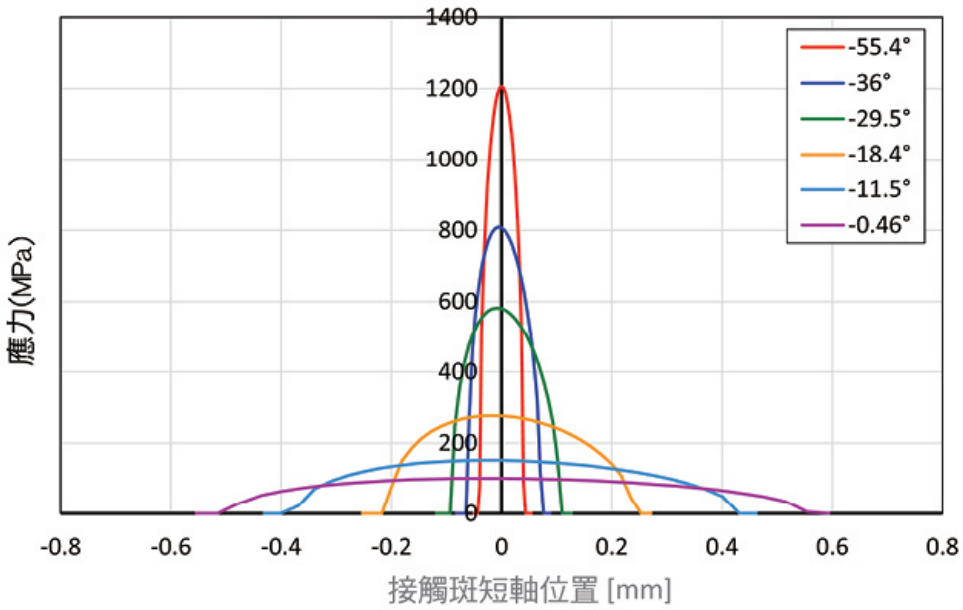


接觸應力分布（反曲點）

曲軸轉動角度-29.538°（反曲點-30.4373°）



■横向接解應力變化型態

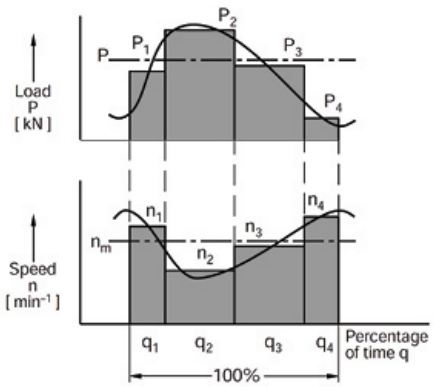


■擺線盤支撐軸承壽命計算基礎

等效動負載

$$P_{eff} = \sqrt[3]{\sum (P_i^3 \cdot \frac{n_i}{n_m} \cdot \frac{q_i}{100})}$$

$$n_m = \sum (n_i \cdot \frac{q_i}{100})$$



等速、等間隔分析

$$P_{eff} = \sqrt[3]{\frac{\sum P_i^3}{n}}$$

額定動態負載

$$C = b_m \cdot f_c \cdot (i_c \cdot l_{we} \cdot \cos\alpha)^{7/9} \cdot z^{3/4} \cdot d_{we}^{29/27}$$

■曲柄轴变形与支撑

●曲柄轴受力关系

支撑轴承负载可由曲轴承受力关系图推得。在 r-z 平面，藉由静力平衡力矩平衡方程式可得两轴承处所负载为

$$F_{rA}=\frac{F_{rC1}\cdot l_B-F_{rC2}\cdot(l_{Brg}-l_A)-F_{rG}\cdot(l_{Brg}+l_G)}{l_{Brg}}$$
$$F_{rB}=\frac{F_{rC1}\cdot(l_{Brg}-l_B)-F_{rC2}\cdot l_A+F_{rG}\cdot l_G}{l_{Brg}} \quad (1)$$

而 y-z 平面，同样藉由静力平衡与力矩平衡方程式得到两轴承负载

$$F_{tA}=\frac{F_{tC1}\cdot l_B-F_{tC2}\cdot(l_{Brg}-l_A)-F_{tG}\cdot(l_{Brg}+l_G)}{l_{Brg}}$$
$$F_{tB}=\frac{F_{tC1}\cdot(l_{Brg}-l_B)-F_{tC2}\cdot l_A+F_{tG}\cdot l_G}{l_{Brg}} \quad (2)$$

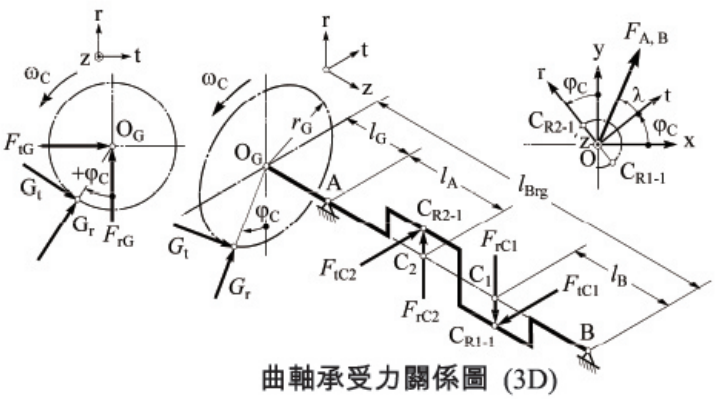
轴承负载合力 $F_{A,B}$ 即得到轴承径向负载

$$F_{A,B}=\sqrt{F_{rA,B}^2(\varphi_C)+F_{tA,B}^2(\varphi_C)} \quad (3)$$

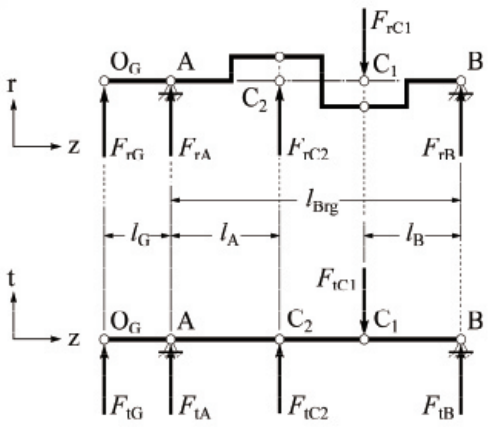
而轴承径向负载与固定于曲轴之坐标系 t 方向夹角为

$$\lambda_{A,B}(\varphi_C)=\arctan\left[\frac{F_{rA,B}(\varphi_C)}{F_{tA,B}(\varphi_C)}\right] \quad (4)$$

轴承径向负载在减速机固定坐标系中与 X 方向之夹角即为 $\lambda+\varphi_C$ 。



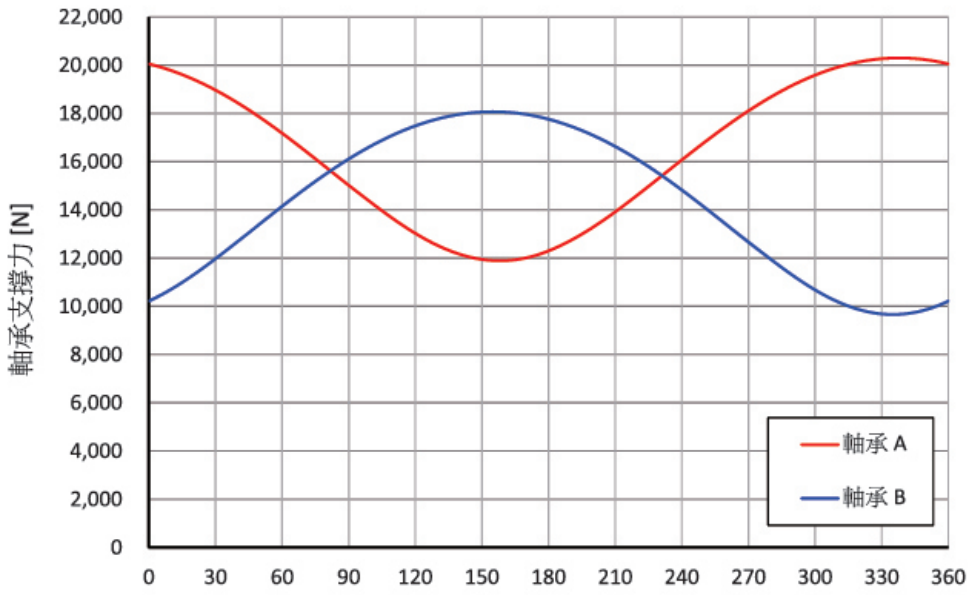
曲軸承受力關係圖 (3D)



曲軸承受力關係圖 (2D)

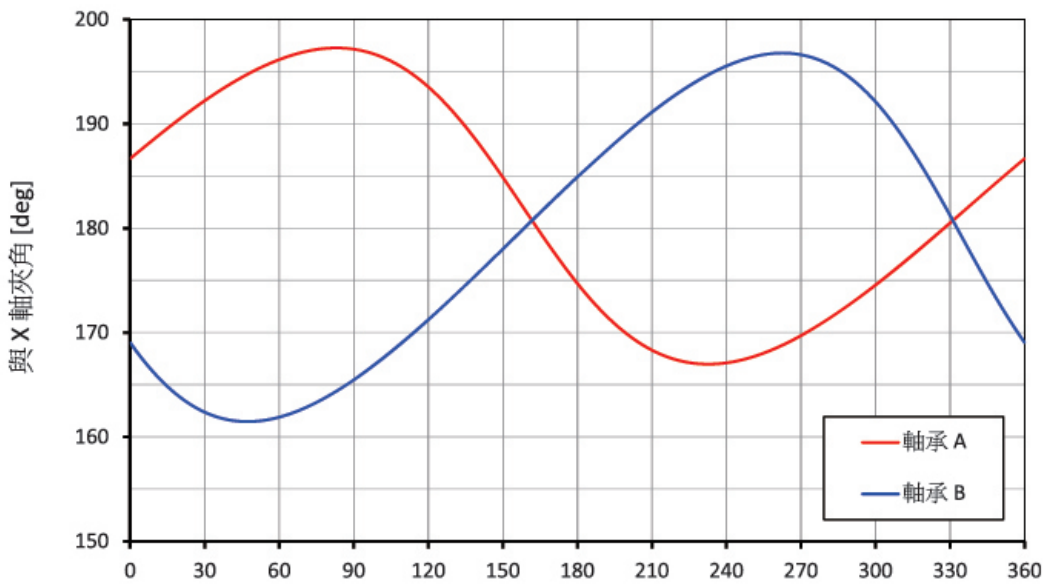
●负载变化

两支撑曲轴之轴承所受之负载可依式（1）与（2）计算，其负载随曲轴转动角度呈现如图 A 之近似正弦曲线形式变化，同时负载方向亦会在一定角度范围内变化，图 B。



图A 曲軸旋轉角度 [deg]

曲軸支撐軸承負載 – 角度變化關系



图B 曲軸旋轉角度 [deg]

曲軸支撐軸承負載方向 – 角度變化關系

TLB-E 额定值表 TLB-E rating table

输出转速 Output speed（r/min）			5		10		15		20		25		30		40	
型号 Frame No	速比值 Velocity ratio		输出转矩 Output Torque	输入功率 Input capacity	输出转矩 Output Torque	输入功率 Input capacity	输出转矩 Output Torque	输入功率 Input capacity	输出转矩 Output Torque	输入功率 Input capacity	输出转矩 Output Torque	输入功率 Input capacity	输出转矩 Output Torque	输入功率 Input capacity	输出转矩 Output Torque	输入功率 Input capacity
	轴旋转 Axis rotation（R）	外壳旋转 Shell rotate	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW
TLB-6E	31	30	101	0.07	81	0.11	72	0.15	66	0.19	62	0.22	58	0.25	54	0.30
	43	42														
	53.5	52.5														
	59	58														
	78	78														
	103	102														
TLB-20E	57	56	231	0.16	188	0.26	167	0.35	153	0.43	143	0.50	135	0.57	124	0.70
	81	80														
	105	104														
	121	120														
	141	140														
	161	160														
TLB-40E	57	56	572	0.40	465	0.65	412	0.86	377	1.05	353	1.23	334	1.40	307	1.71
	81	80														
	105	104														
	121	120														
	153	152														
TLB-80E	57	56	1,088	0.76	885	1.24	784	1.64	719	2.01	672	2.35	637	2.67	584	3.67
	81	80														
	101	100														
	121	120														
	※1(153)	※1(152)														
TLB-110E	81	80	1,499	1.05	1,215	1.70	1,078	2.26	999	2.76	925	3.23	875	3.67	804	4.49
	111	110														
	161	160														
	※2175.28	174.28														
TLB-160E	81	80	2,176	1.52	1,774	2.48	1,568	3.28	1,441	4.02	1,343	4.69	1,274	5.34		
	101	100														
	129	128														
	145	144														
	171	170														
TLB-320E	81	h	4,361	3.04	3,538	4.94	3,136	6.57	2,881	8.05	2,695	9.41	2,548	10.7		
	101	100														
	118.5	117.5														
	129	128														
	141	140														
	171	170														
	185	184														
TLB-450E	81	80	6,135	4.28	4,978	6.95	4,410	9.24	4,047	11.0	3,783	13.2				
	101	100														
	118.5	117.5														
	129	128														
	※2154.8	153.8														
	171	170														
	※2192.4	191.4														

注）1. 请将输入轴最高转速设定为小于容许最高输出转速 × 总速比值。
2. 输入功率（kW），考虑了减速机的效率。
3. 输出转矩（Nm）是在各输出转速中将寿命时间设为固定得出的值。（N.T= 固定）
4. 额定转矩是指输出转速 15r/min 时的输出转矩，是计算寿命的基础数值。但是，TLB-6E 输出转速 30r/min 时的输出转矩为额定转矩。
5. 惯性力矩值是减速机本体的值，不包括输入齿轮的惯性力矩。

Annotation:
1. Set max input shaft revolution to a value equal to or lower than the value of max allowable output revolutions multiplied by the above speed ratio for each type.
2. The input capacity (kW) in the above table is determined by the efficiency of these reduction gears.
3. The output torque (Nm) is determined that the service life may be maintained constant for any output revolutions
4. The rated torque is a torque at an output speed of 15 r/min. However, TLB-6E has its rated torque determined when the output torque at an output speed of 30 r/min.

TLB-E 额定值表 TLB-E rating table

50		60		力矩刚性代表值 Torsional rigidity Nm/arc.min.	容许力矩 Allowable torque Nm	瞬时最大容许力矩 Momentary max allowable torque Nm	容许最高输出转速 Allowable max output speed r/min	启动、停止时的容许转矩 Allowable acceleration deceleration torque	瞬时最大容许转矩 Momentary max allowable torque Nm	空程 Lost motion MAX. arc.min.	扭转刚度代表值 Torsional rigidity Nm/arc.min.	惯性力矩 1 Input inertia 1 (1=GD²/4) 输入轴换算值 Input axis conversion value kg–m²	重量 weight kg
输出转矩 Output Torque Nm	输入功率 Input capacity kW	输出转矩 Output Torque Nm	输入功率 Input capacity kW										
50	0.35	47	0.40	117	198	392	100	117	294	1.5'	20	2.63×10^{-6} 2.00×10^{-6} 1.53×10^{-6} 1.39×10^{-6} 1.09×10^{-6} 0.74×10^{-6}	2.5
115	0.81	110	0.92	372	882	1,764	75	412	833	1'	49	9.66×10^{-6} 6.07×10^{-6} 4.32×10^{-6} 3.56×10^{-6} 2.88×10^{-6} 2.39×10^{-6}	4.7
287	2.00	271	2.27	931	1,666	3,332	70	1,029	2,058	1'	105	3.25×10^{-5} 2.20×10^{-5} 1.63×10^{-5} 1.37×10^{-5} 1.01×10^{-5}	9.3
546	3.81	517	4.33	1,761	螺栓紧固 Bolt fastening 2,156 销并用 Combination of pins and pins 1,735	螺栓紧固 Bolt fastening 4,312 销并用 Combination of pins and pins 2,156	70	1,960	螺栓紧固 Bolt astening 3,920 销并用 Combination of pins and pins 3,185	1'	196	8.16×10^{-5} 6.00×10^{-5} 4.82×10^{-5} 3.96×10^{-5} 2.98×10^{-5}	螺栓紧固 Bolt astening 13.1 销并用 Combination of pins and pins 12.7
				1,470	2,940	5,880	50	2,695	5,390	1'	294	9.88×10^{-5} 6.96×10^{-5} 4.36×10^{-5} 3.89×10^{-5}	17.4
				2,940	3,920	螺栓紧固 Combination of pins and pins 7,840 销并用 6,762	45	3,920	螺栓紧固 Combination of pins and pins 7,840 销并用 6,615	1'	392	1.77×10^{-4} 1.40×10^{-4} 1.06×10^{-4} 0.87×10^{-4} 0.74×10^{-4}	26.4
				4,900	螺栓紧固 Combination of pins and pins 7,056 销并用 Combination of pins and pins 6,174	螺栓紧固 Combination of pins and pins 14,112 销并用 Combination of pins and pins 10,976	35	7,840	螺栓紧固 Combination of pins and pins 15,680 销并用 Combination of pins and pins 12,250	1'	980	4.83×10^{-4} 3.79×10^{-4} 3.15×10^{-4} 2.84×10^{-4} 2.54×10^{-4} 1.97×10^{-4} 1.77×10^{-4}	44.3
				7,448	8,920	螺栓紧固 Combination of pins and pins 17,640 销并用 Combination of pins and pins 13,524	25	11,025	螺栓紧固 Combination of pins and pins 22,050 销并用 Combination of pins and pins 18,620	1'	1.178	8.75×10^{-4} 6.91×10^{-4} 5.75×10^{-4} 5.20×10^{-4} 4.12×10^{-4} 3.61×10^{-4} 3.07×10^{-4}	66.4

6. 在大于上述容许最高输出转速的情况下使用时，请向本公司咨询。
7. 需要上述速比以外的速比时，请向本公司咨询。
8.※1 TLB-80E 的 R=153 仅限于输出轴螺栓紧固型。

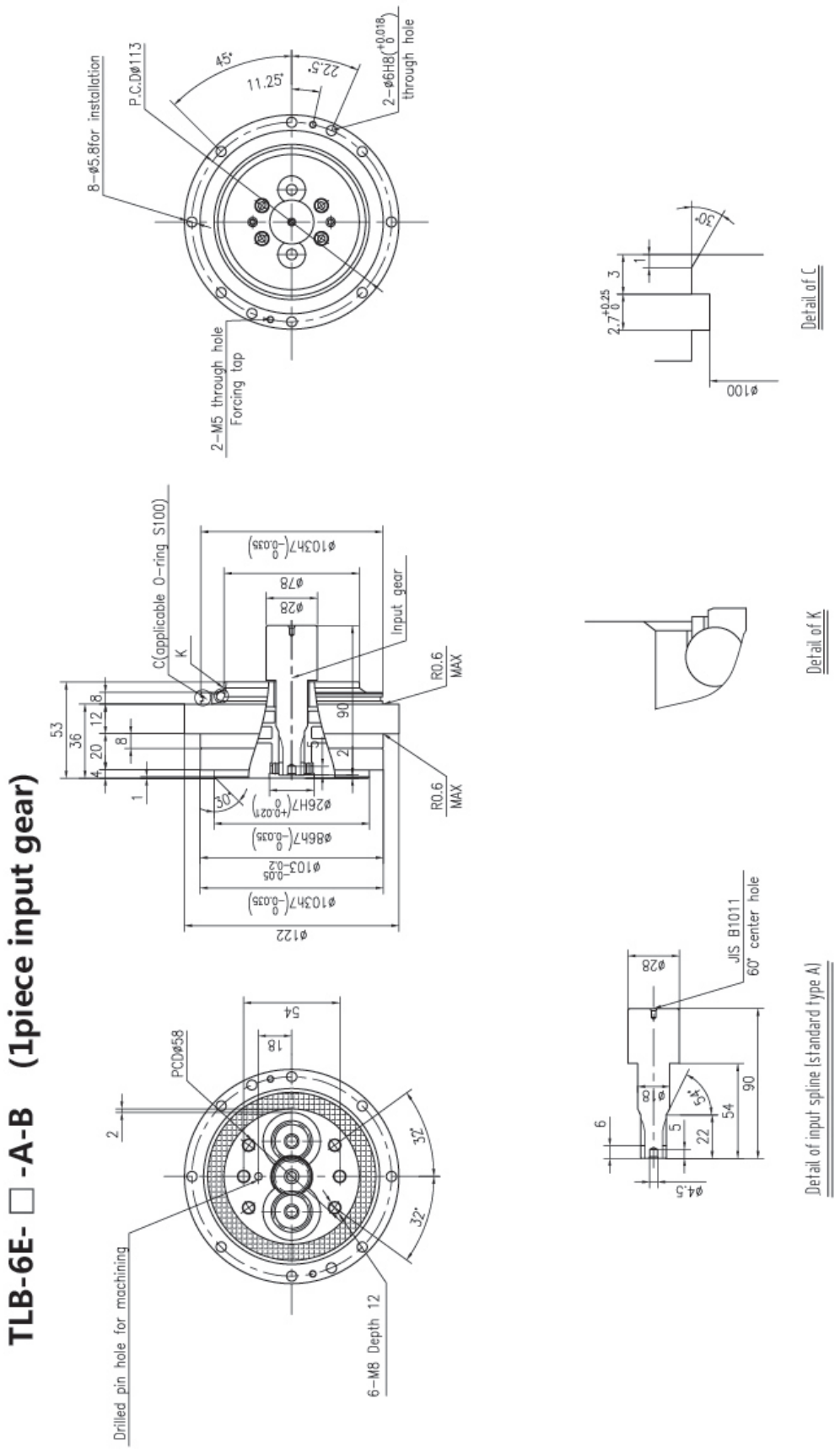
※2 该减速比不能整除。$154.8=\frac{2,013}{13}$ $175.28=\frac{1,227}{7}$ $192.4=\frac{1,347}{7}$

9. 输出转速为正反切换时的转速，不适用于单方向连续旋转，单方向连续旋转长时间使用时请联系本公司。

5. The inertia moment value is for the reduction gear. It does not include the inertia moment for the input gear.
6. If a higher speed then the above allowable max output speed is required. Contact Transmission Machinery Co., Ltd. or Transtec Heavy Industry Co., Ltd. for further information.
7. i. TLB-80E, R=153 is used only for output shaft bolt-on type ii. These reduction gear ratios are indivisible figures. Actually 175.2=1227/7, 154.8=2013/13 and 192.4=1347/7.
8. The output revolution is for forward –reverse changeover applications and not applicable for continuous rotation in a single direction. Contact us when using the reduction gear for continuous single-direction rotation.

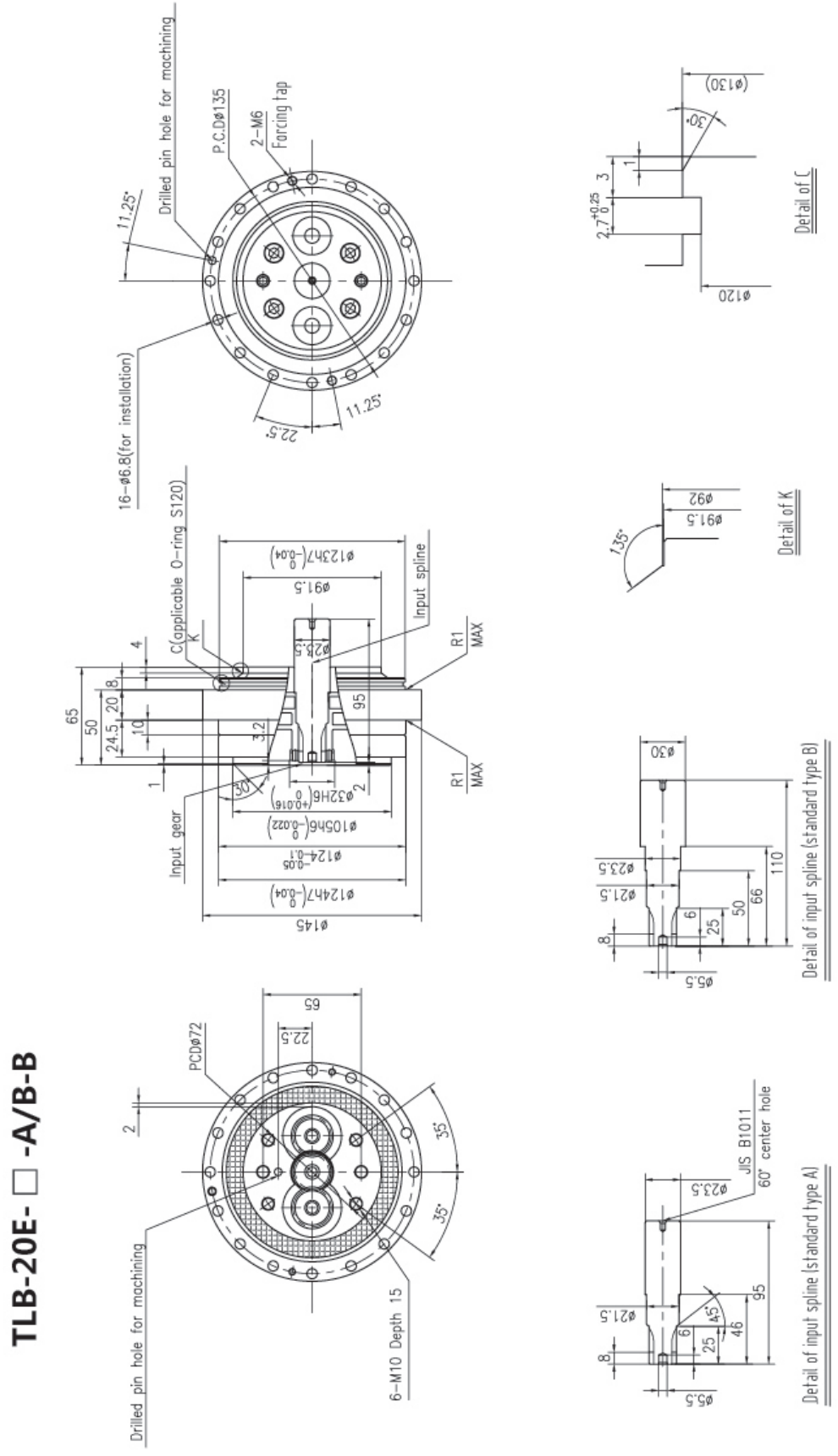
TLB-6E 外形尺寸　TLB-6E outline size

TLB-6E- □ -A-B　(1piece input gear)

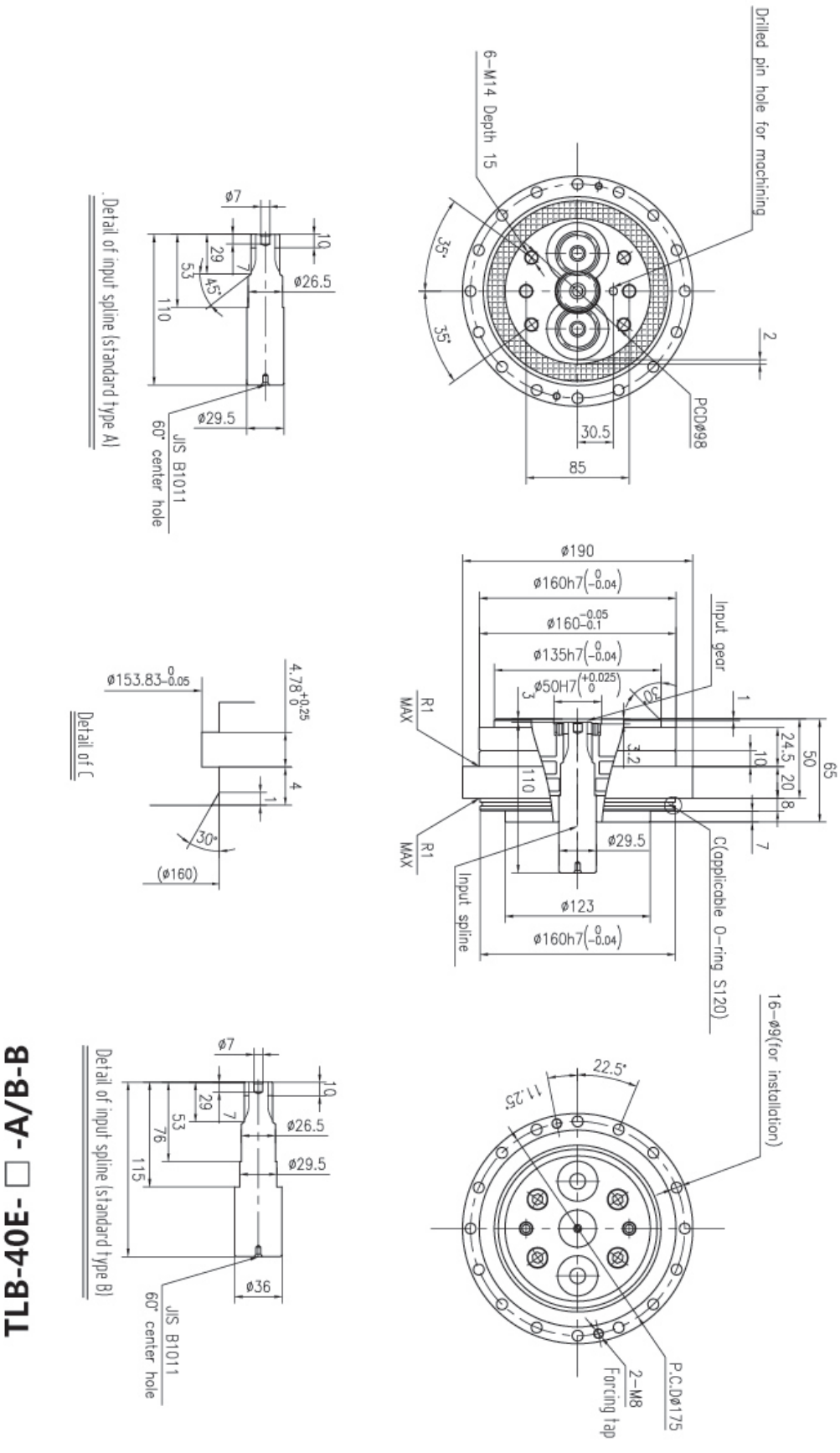


TLB-20E 外形尺寸 TLB-20E outline size

TLB-20E- □ -A/B-B



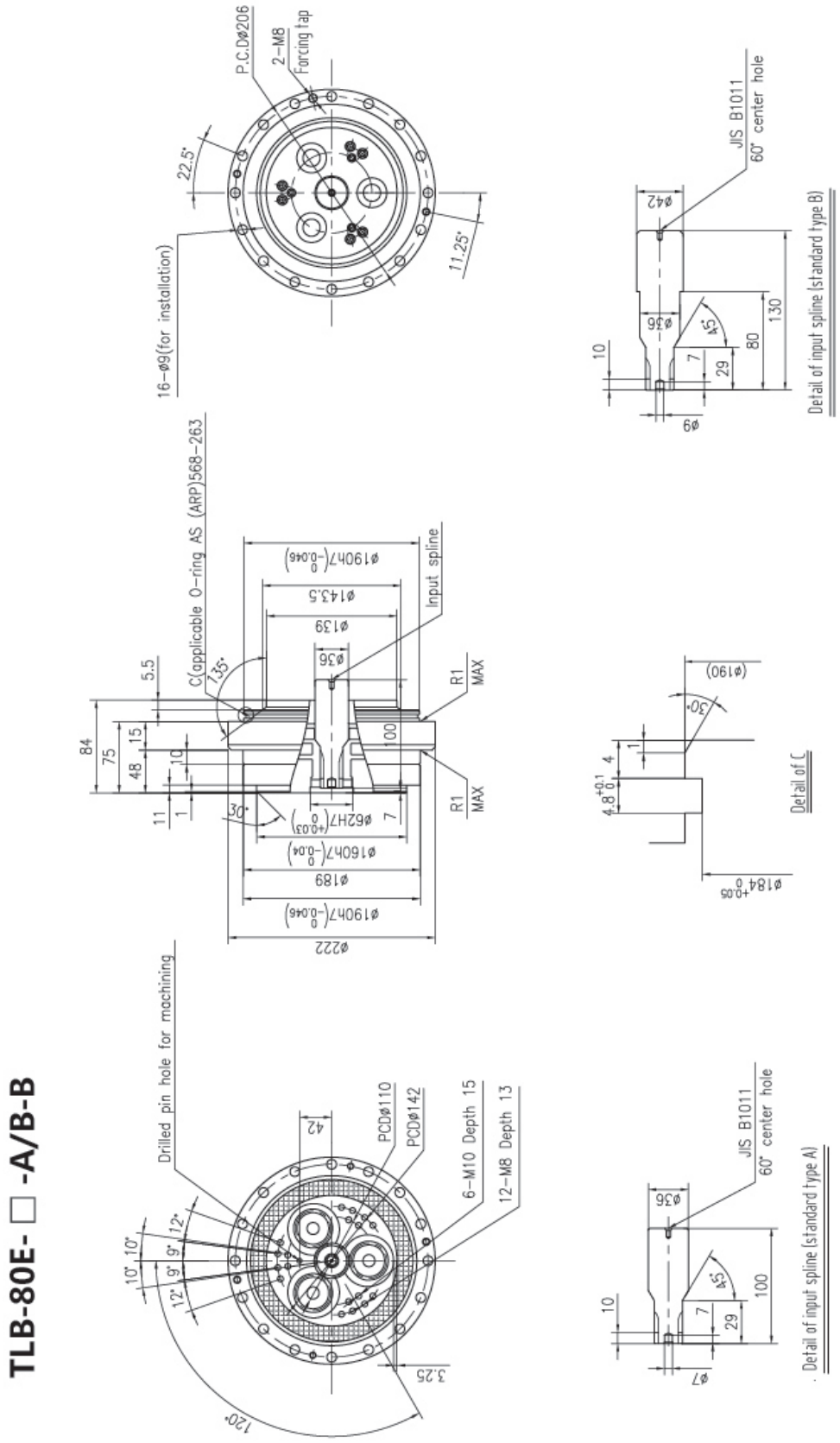
TLB-40E 外形尺寸 TLB-40E outline size



TLB-40E- □ -A/B-B

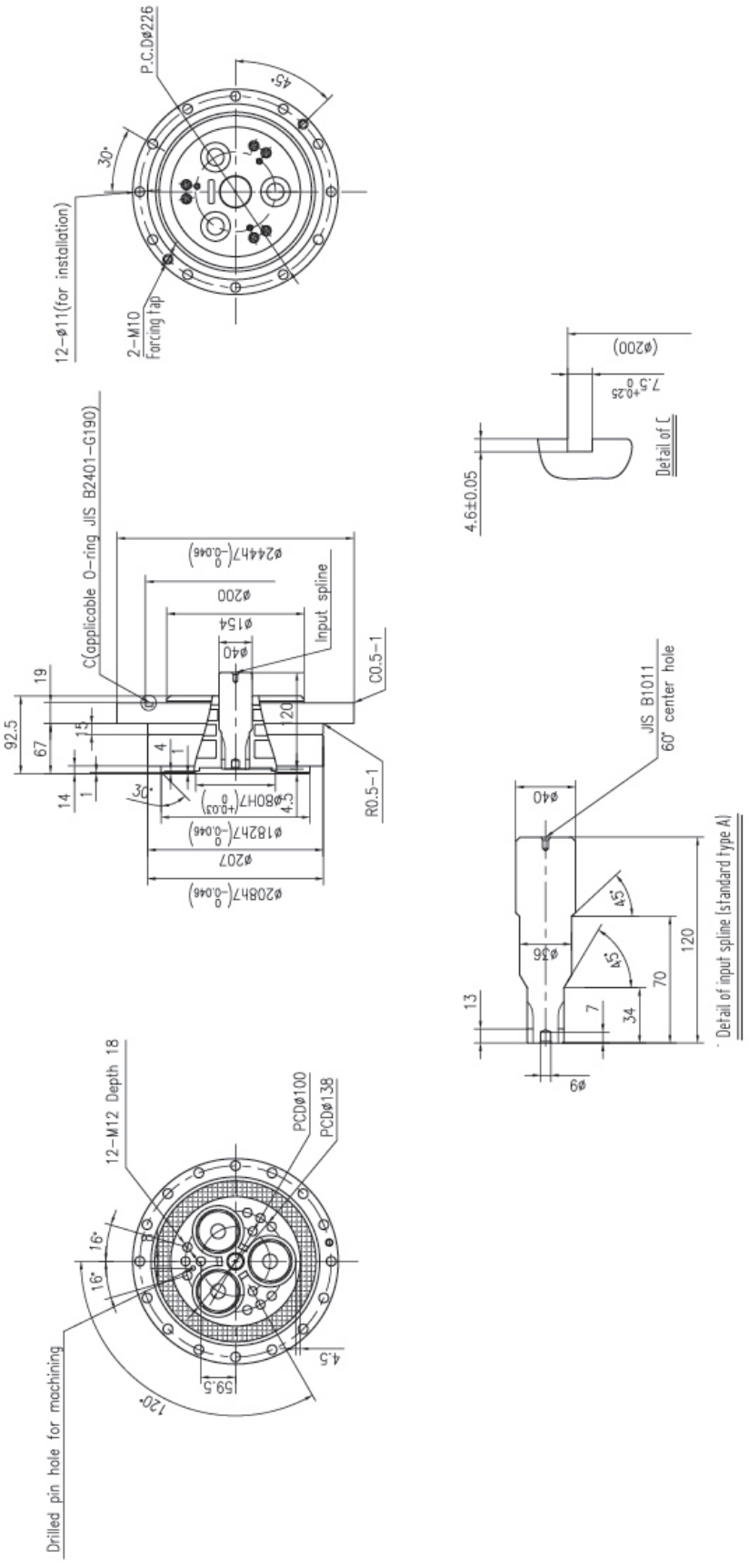
TLB-80E 外形尺寸 TLB-80E outline size

TLB-80E- □ -A/B-B



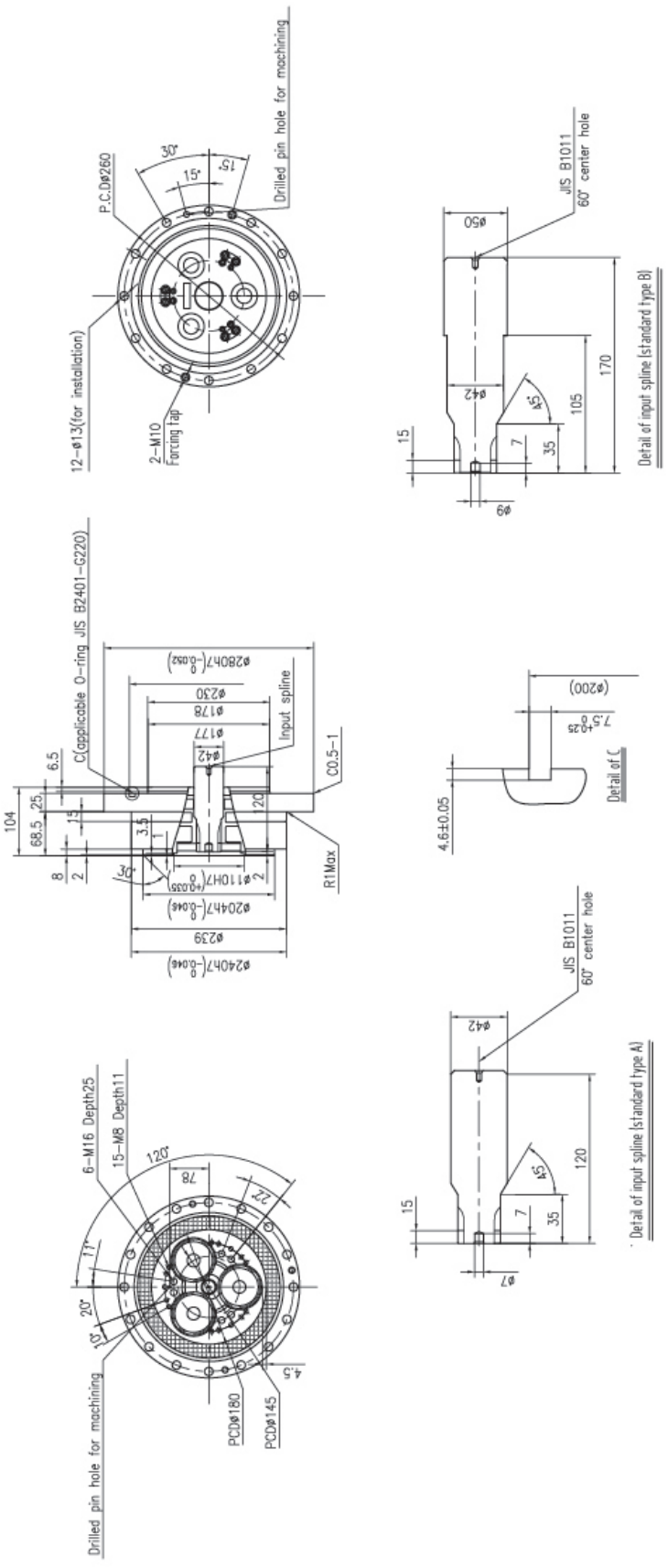
TLB-110E 外形尺寸　TLB-110E outline size

TLB-110E- □ -A/B-B



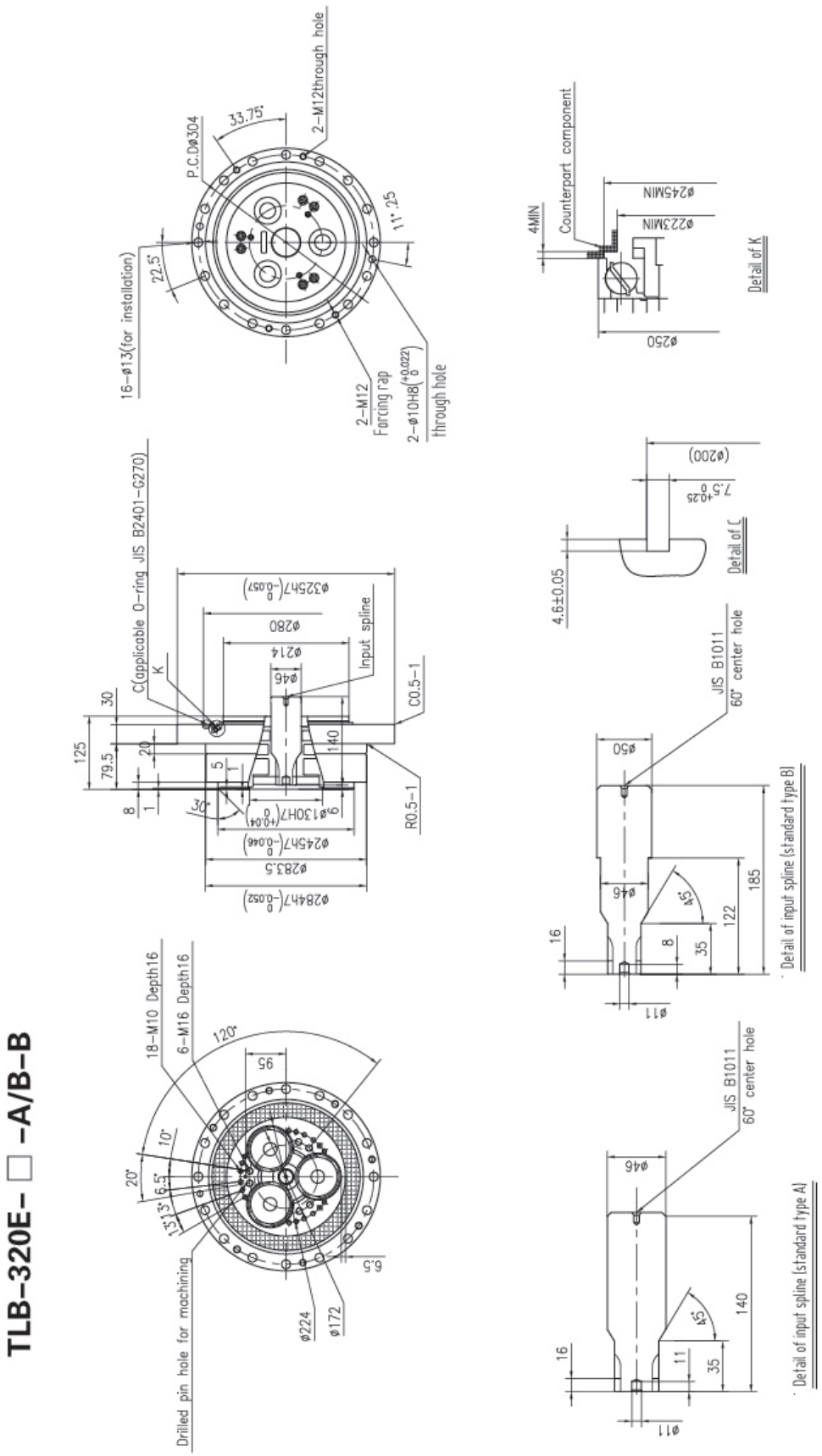
TLB-160E 外形尺寸 TLB-160E outline size

TLB-160E- □ -A/B-B



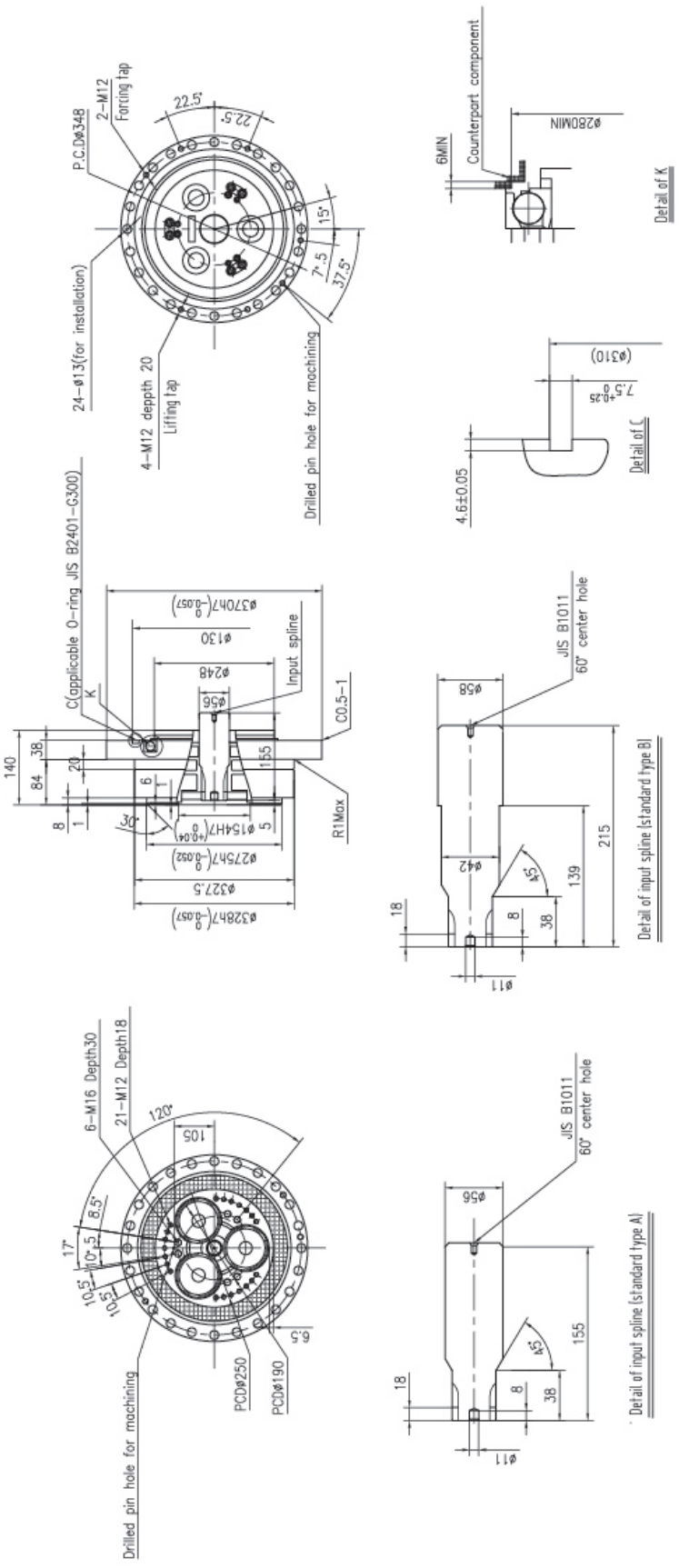
TLB-320E 外形尺寸 TLB-320E outline size

TLB-320E-□-A/B-B



TLB-450E 外形尺寸 TLB-450E outline size

TLB-450E-□-A/B-B



TLB-C 额定值表 TLB-C Rating table

输出转速 Output speed (rmin)		5		10		15		20		25		30		40		50	
型号 Model	减速机单体的速比值 Ratio R1	输出转矩 Output Torque	输入功率 Input capacity	输出转矩 Output Torque	输入功率 Input capacity	输出转矩 Output Torque	输入功率 Input capacity	输出转矩 Output Torque	输入功率 Input capacity	输出转矩 Output Torque	输入功率 Input capacity	输出转矩 Output Torque	输入功率 Input capacity	输出转矩 Output Torque	输入功率 Input capacity	输出转矩 Output Torque	输入功率 Input capacity
		Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW
TLB-10C	27	136	0.09	111	0.16	98	0.21	90	0.25	84	0.29	80	0.34	73	0.41	68	0.47
TLB-27C	36.57	368	0.26	299	0.42	265	0.55	243	0.68	227	0.79	215	0.90	197	1.10	184	1.28
TLB-50C	32.54	681	0.48	554	0.77	490	1.03	450	1.26	420	1.47	398	1.67	366	2.04	341	2.38
TLB-100C	36.75	1,362	0.95	1,107	1.55	980	2.05	899	2.51	841	2.94	796	3.33	730	4.08		
TLB-200C	34.86	2,742	1.90	2,215	3.09	1,961	4.11	1,803	5.04	1,686	5.88	1,597	6.69				
TLB-320C	35.61	4,361	3.04	3,538	4.94	3,136	6.57	2,881	8.05	2,690	9.41						
TLB-500C	37.34	6,811	4.75	5,537	7.73	4,900	10.26	4,498	12.56								

注）1. 请将输入轴最高转速设定为小于容许最高输出转速 × 总速比值。

2. 输入功率（kW），考虑了减速机的效率。

3. 输出转矩（Nm）是在各输出转速中将寿命时间设为固定得出的值。（N.T= 固定）

Annotation:

1. Set max input shaft speed to a value equal or lower than the value of max allowable output speed multiplied by the overall speed ratio for each type.
2. The input capacity(kW) in the above table is determined by the efficiency of these reduction gears.
3. The output torque(Nm) is determined that the service life may be maintained constant for anyoutput revolutions.

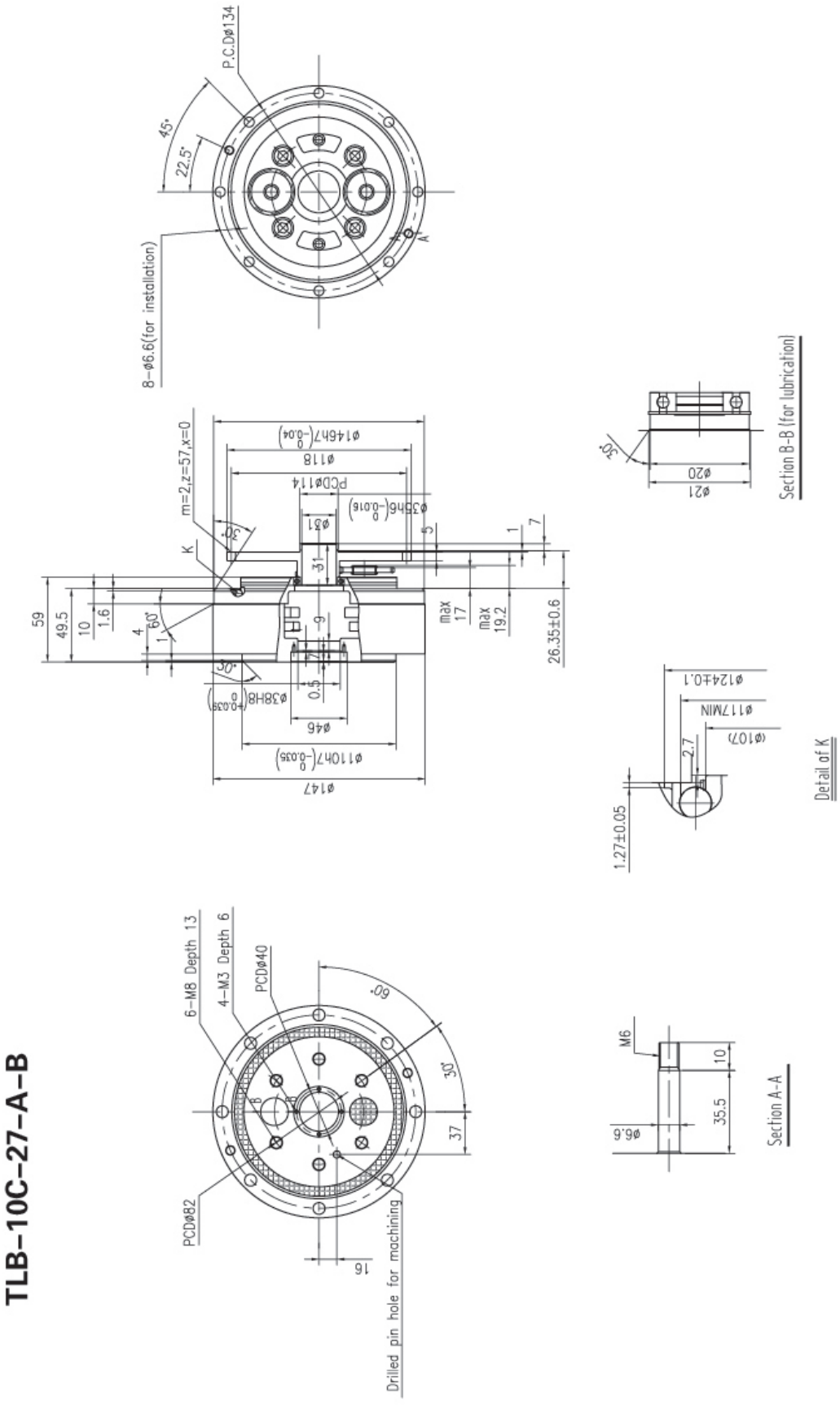
TLB-C 额定值表 TLB-c Rating table

60		力矩刚性代表值 Torsional rigidity Nm/arc.min.	容许力矩 Allowable torque Nm	瞬时最大容许力矩 Momentary max allowable torque Nm	容许最高输出转速 Allowable max output speed r/min	启动、停止时的容许转矩 Allowable acceleration deceleration torque	瞬时最大容许转矩 Momentary max allowable torque Nm	空程 Lost motion MAX. arc.min.	扭转刚度代表值 Torsional rigidity Nm/arc.min.	惯性力矩 1 Input inertia 1 (1=GD²/4) 减速机单体 Reducer monomer kg-m²	惯性力矩 1 Input inertia 1 (1=GD²/4) 标准中心齿轮 Standard center gear kg-m²	重量 weight kg
输出转矩 Output Torque	输入功率 Input capacity											
Nm	kW											
65	0.54	421	686	1,372	80	245	490	1	47	1.38×10^{-5}	0.678×10^{-5}	4.6
174	1.46	1,068	980	1,960	60	662	1,323	1	147	0.550×10^{-4}	0.563×10^{-3}	8.5
		1,960	1,764	3,528	50	1,225	螺栓紧固 Bolt fastening 2,450 螺栓紧固 Through hole bolt tight 1,960	1	255	1.82×10^{-4}	0.363×10^{-2}	14.6
		2,813	2,450	4,900	40	2,450	通孔螺栓紧固 Bolt fasten ing4,900 螺栓紧固 Through hole bolt tight 3,430	1	510	0.475×10^{-3}	0.953×10^{-2}	19.5
		9,800	8,820	17,640	30	4,900	9,800 通孔螺栓紧固 Through hole bolt tight 7,350	1	980	1.39×10^{-3}	1.94×10^{-2}	55.6
		12,740	20,580	39,200	25	7,840	15,680	1	1,960	0.518×10^{-2}	0.405×10^{-1}	79.5
		24,500	34,300	78,400	20	12,250	24,500	1	3,430	0.996×10^{-2}	1.014×10^{-1}	154

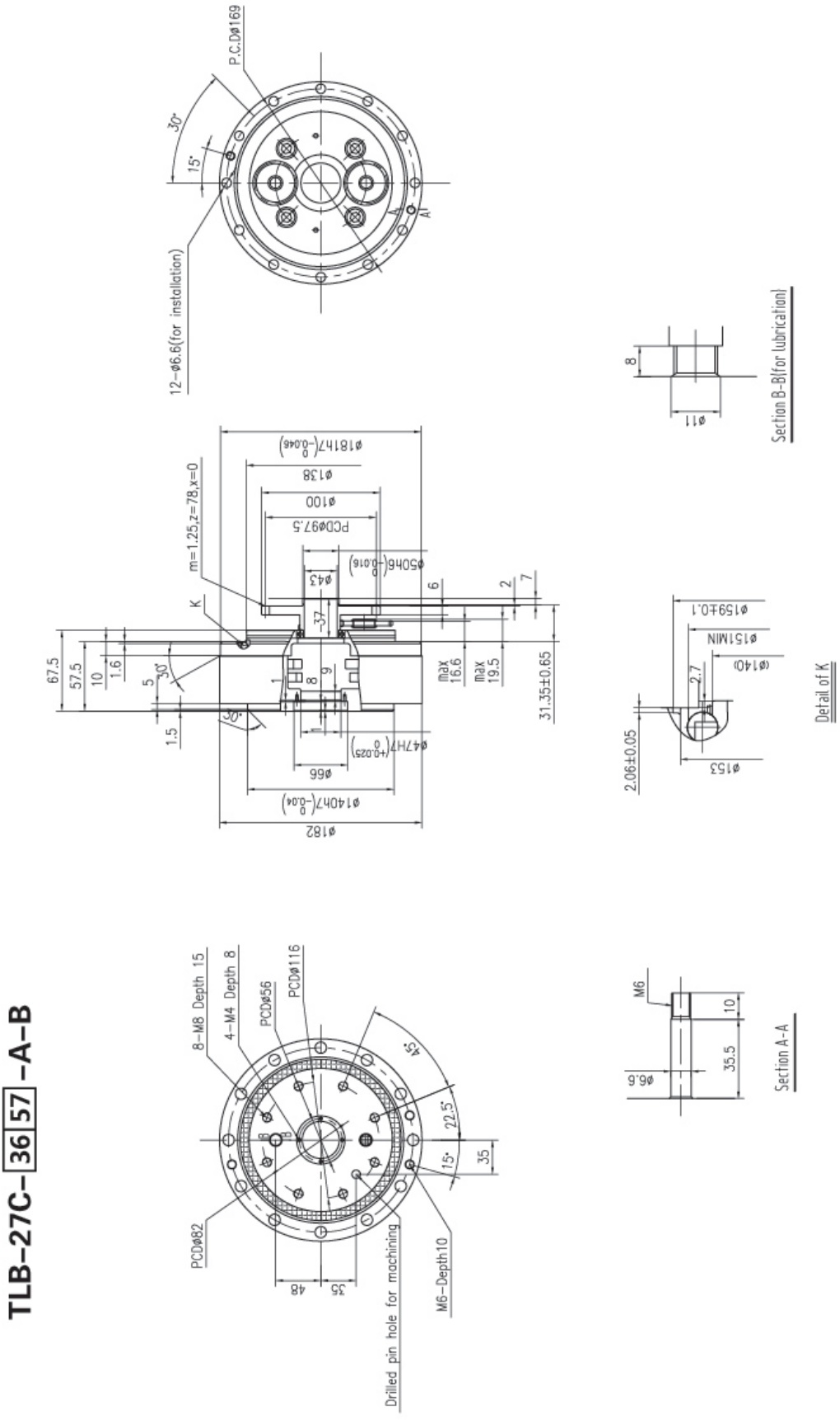
4. 额定转矩是指输出转速 15r/min 时的输出转矩，是计算寿命的基础数值。
5. 惯性力矩值是减速机本体的值，不考虑中心齿轮、输入齿轮的惯性力矩，因此电动机轴换算的惯性力矩请参照以下公式。
6. 在大于上述容许最高输出转速的情况下使用时，请向本公司咨询。
7. 输出转速为正反切换时的转速，不适用于单方向连续旋转，单方向连续旋转长时间使用时请联系本公司。
8.※ 上述速比值是在将电动机（电动机的固定部件）安装在减速机外壳侧的情况下的速比值。
请注意将电动机（电动机的固定部件）
安装在减速机的轴侧的情况下，速比值会减小 1。

4. The rated torque is a torque at an output speed of 15 r/min.
5. If a higher speed than the above allowable max output speed is required, contact TransmissionMachinery Co., Ltd. or Transtec Heavy Industry Co., Ltd. for more information.
6. The output revolution is for forward –reverse changeover applications and not applicable for continuous rotation in a single direction. Contact us when using the reduction gear for continuous single-direction rotation.
7. R1 shown above indicate when the motor (motor fixing component) is installed on the case side of the reduction gear. Note that the values are smaller by 1 when motor (motor fixing component)is installed on the shaft side of the reduction gear.

TLB-10C 外形尺寸　TLB-10C outline size



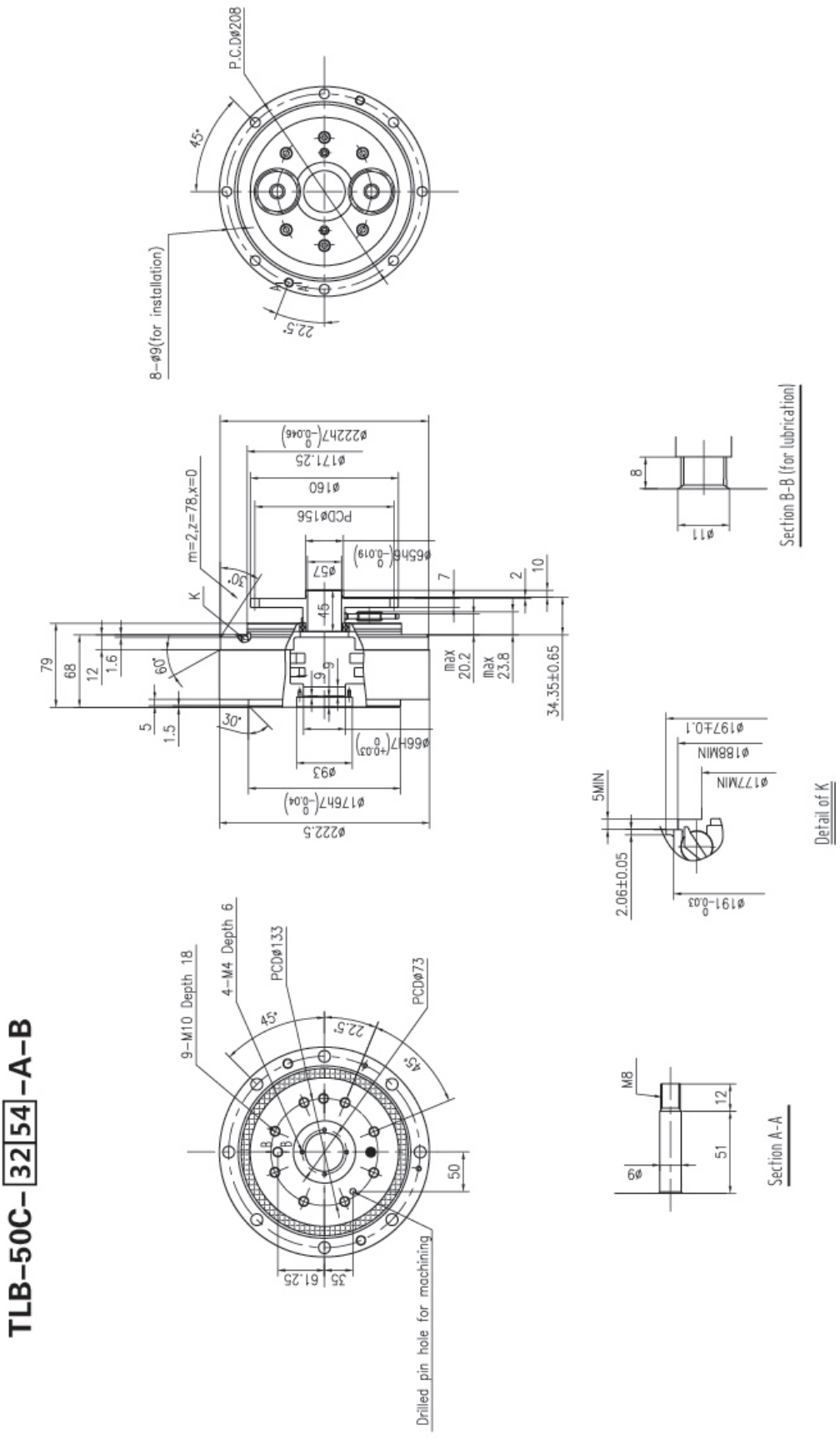
TLB-27C 外形尺寸　TLB-27C outline size



TLB-27C-36|57-A-B

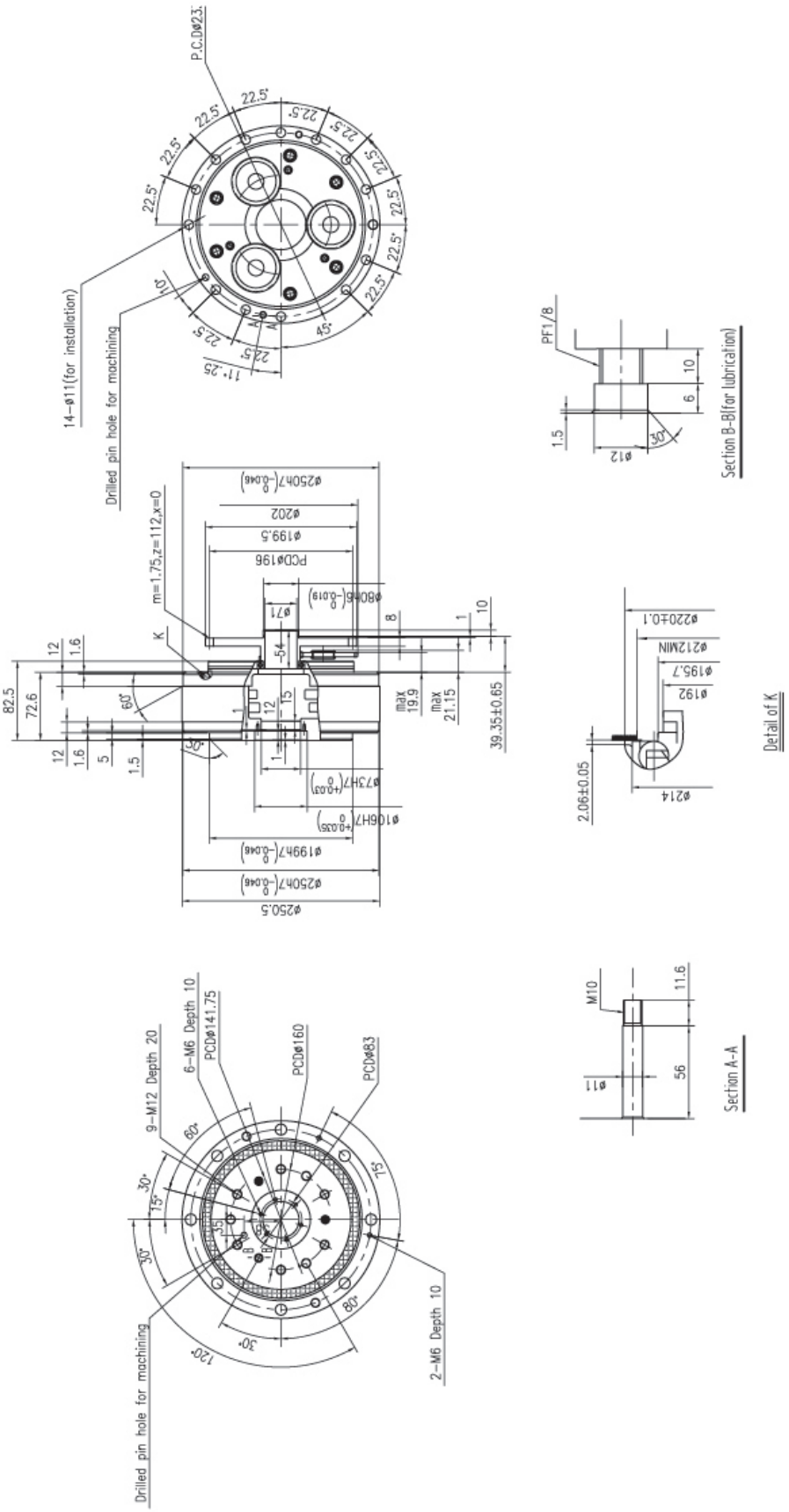
TLB-50C 外形尺寸　TLB-50C outline size

TLB-50C-[32][54]-A-B

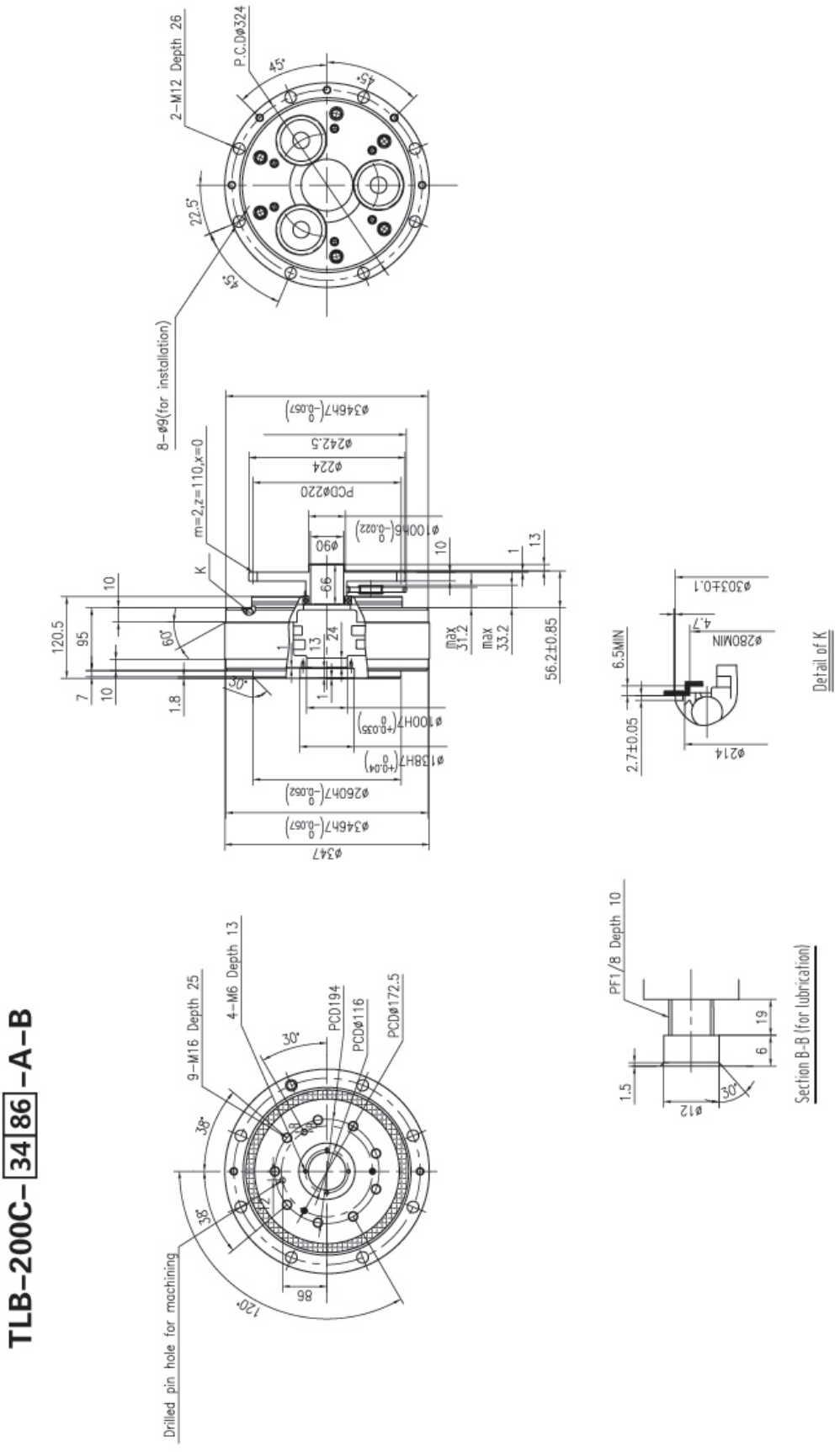


TLB-100C 外形尺寸　TLB-100C outline size

TLB-100C-[36][57]-A-B

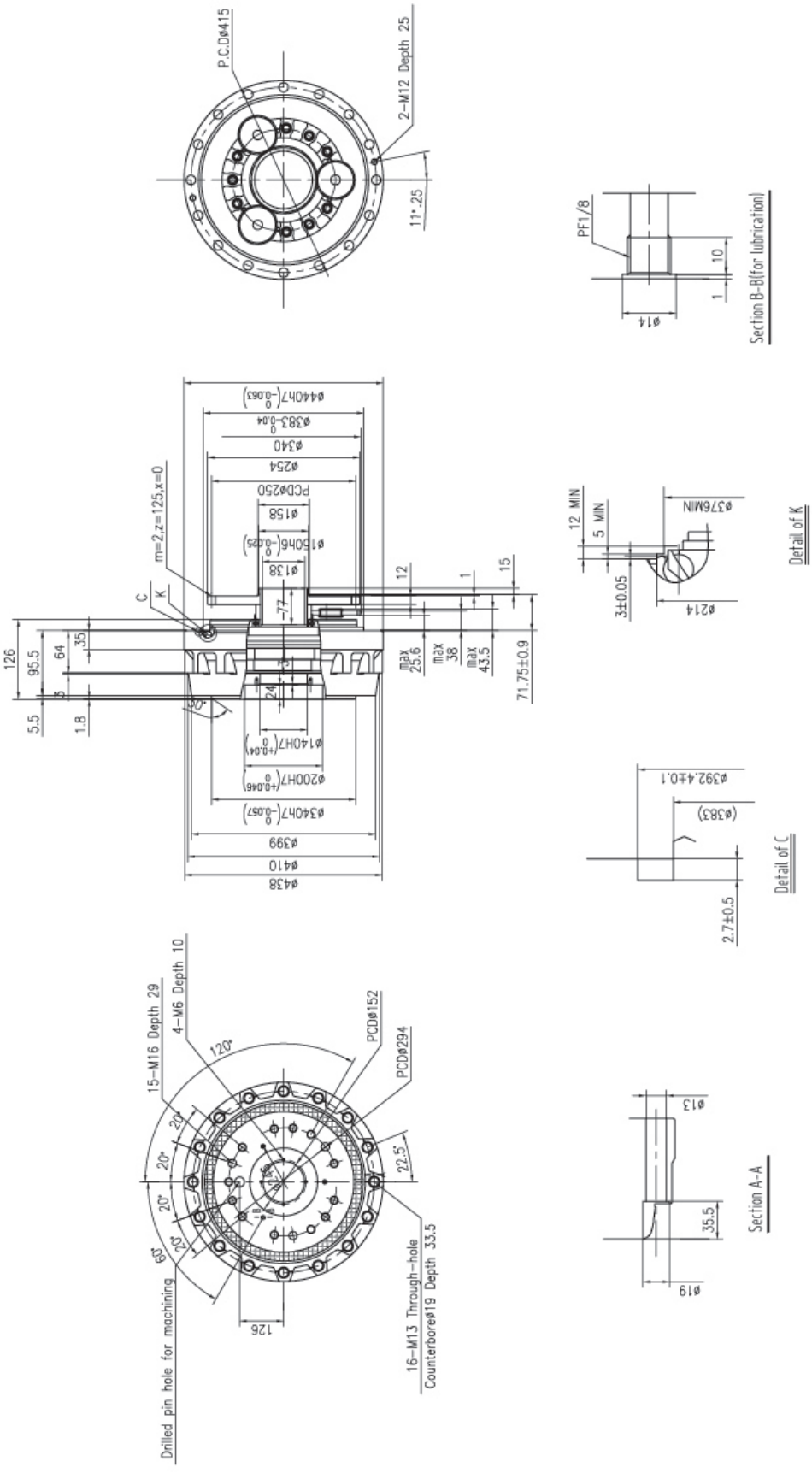


TLB-200C 外形尺寸　TLB-200C outline size



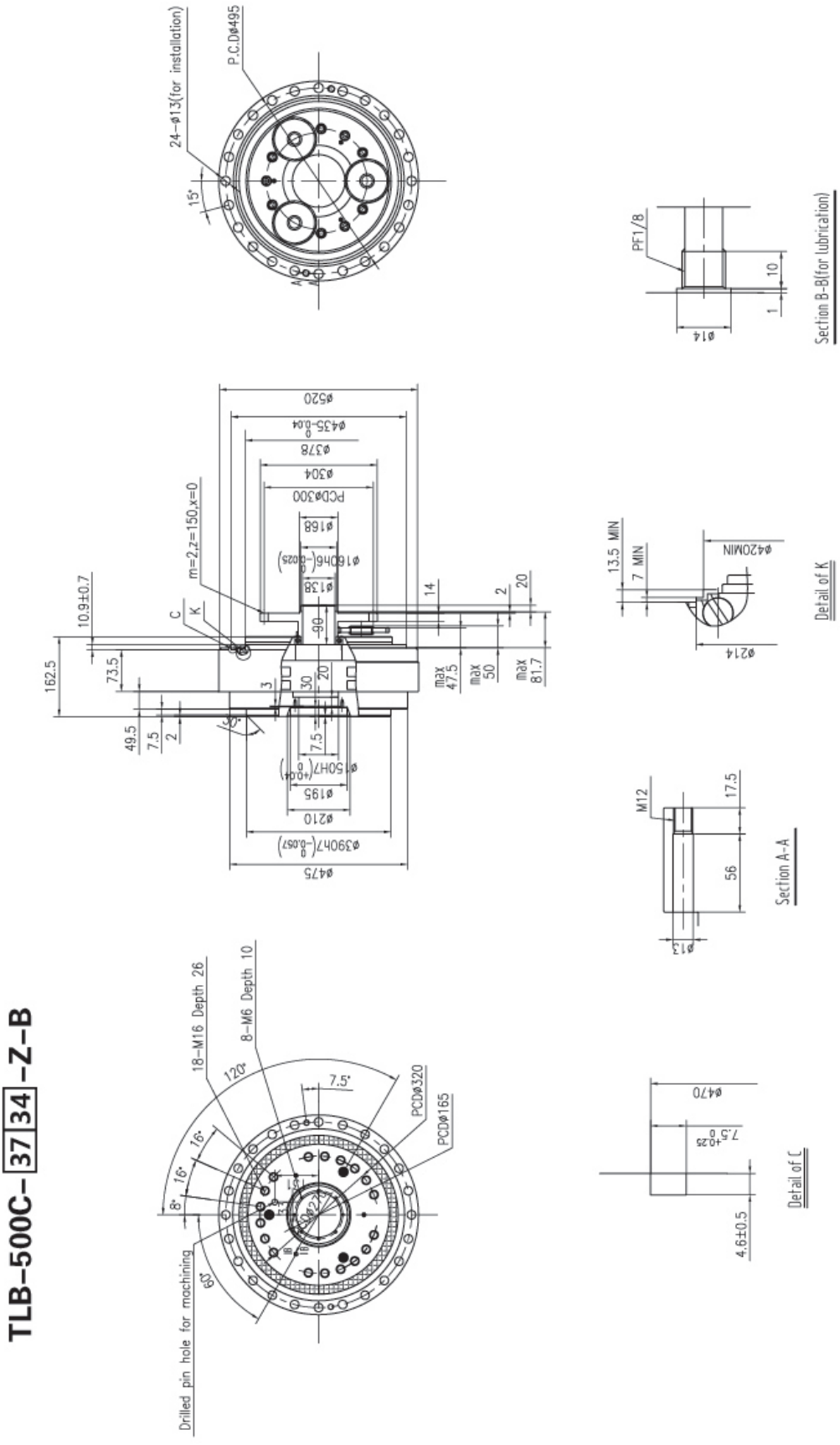
TLB-320C 外形尺寸 TLB-320C outline size

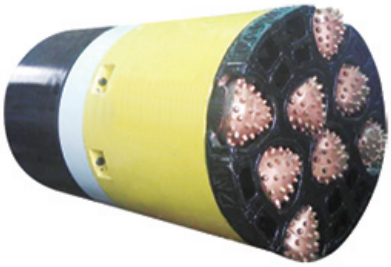
TLB-320C-[35][61]-A-B



TLB-500C 外形尺寸　TLB-500C outline size

TLB-500C-[37][34]-Z-B





Warranty

當 Transcyko 的 TLB 減速機在正常的使用情況下，經由 Transcyko 的專業技術人員鑑定後，發現減速機的故障問題是跟公司的設計或生產相關，即故障品的檢修，零件替換所有相關費用皆由本司負擔。保固期限為一年或是 2000 小時的運轉。

在以下的情況中，不納入保固期的範疇

1. 減速機的使用情況非原本建議的生產線或機械設計，即客戶端擅自更改減速機的應用而導致減速機故障
2. 減速機暴露於外來有害物質或是不利減速機運轉的環境而故障
3. 減速機使用非 Transcyko 建議的油品或油脂而故障
4. 減速機在經由非 Transcyko 專業技術人員的拆解，再組裝或維修而造成故障
5. 減速機遭受不可預知的意外而故障

In the case where Transcyko confirms that a defect of the product was caused due to Transcyko’ s design or manufacture within the warranty period of the product, Transcyko shall repair or replace such defective product at its cost. The warranty period is 1 year or 2000 hours running of the product installed into customer’ s equipment which ever comes first.

The warranty obligation shall not apply if the defect was caused due to
(a) use of the product deviated from working conditions
(b) the product was exposed to foreign substances or contamination
(c) lubricant or other parts not suggested by Transcyko
(d) the product used in an unusual environment
(e) the product was disassembled, re-assembled, repaired or modified by anyone other than Transcyko
(f) accident