

# **Transma**X



## **TB SERIES VARIATOR**



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## Content

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### TB SERIES VARIATOR

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# TB

## TB series variator

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### Introduction

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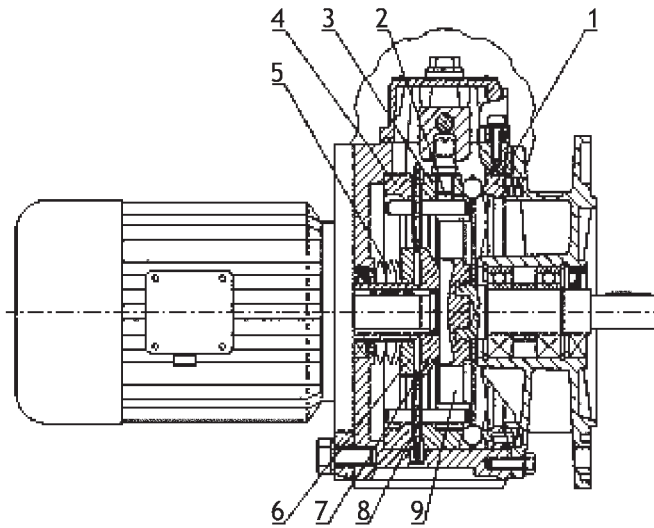
The planetary cone disk friction type of variator (hereinafter referred as variator ) is a kind of advanced variator device for use at home and abroad. TB series variator is one of the earliest variators which was designed at home and developed independently by the company for the task of absorbing national and international advanced technologies. The product conforms to the standard of JB/T695093 (Planet cone disk ste-ple-ss speed variator. It has many features. such as a simple structure. reliable performance, huge variable range (the ratio from the highest output speed to the lowest output speed rs 5 to 1). agile and reliable speed adjustment, small volume. low noise. and easy maintenance etc. It is suitable for heavy duty, the speed can be adjusted under load according to practical needs. it is most applicable to circumstances where technical paremeters require multi variable and continuous variation. It can be used as power transmission in automated industrial lines, a continuo us variable transmission of testing equipment in scientific and research in-stitutions. especially for ceramics. beverage. food stuffs.electronics. leather tanning. chemical. textile. woodworking and other ind-ustries.

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### How it works

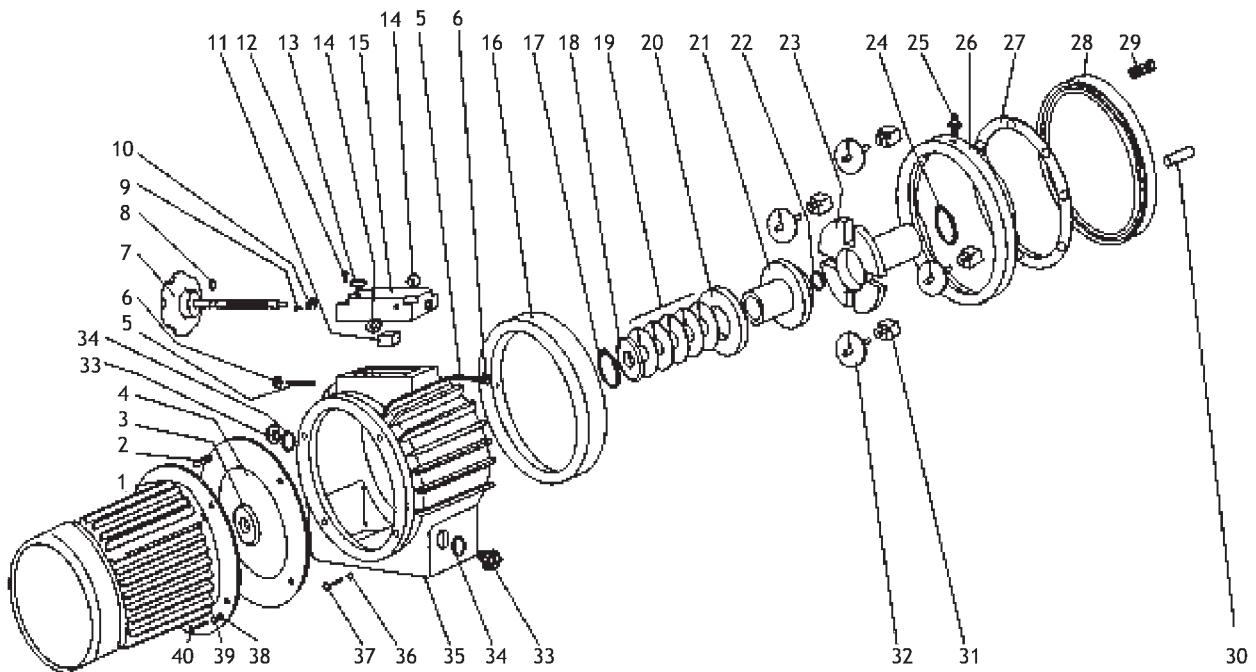
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The outside part of conical shaped plant wheel is pressed between the fixed ring and the speed control cam, the inside part is pressed between the driver and the press ring. The driver and the press ring are pressed by the dish spring. When the motor drives , the planet wheels roll. As the fixed ring and the speed control cam are static. the planet wheel runs around the carrier while rotating and drives the carrier through the shalt of the planet wheel and bushing. Tuning the hand wheel changes the angle of the speed control cam. its shaped surface makes the speed control cam move in an axial direction. So the space changes between the speed control cam and the fixed rlng. the planet wheel cam move in radial direction to change its tough point. when the space gets larger, the planet wheels move outside. the revolution speed becomes slower. When the space gets smaller, the planet wheels move inside. the revolution speed becomes faster. Thus the obiective of variation is reached. In brief. by turning the hand wheel at certain positions, the planet wheels will be wall distributed at corresponding positions. the stable output speed will be realizable on the output shalt.



- 1. Fixed cam
- 2. Bushing
- 3. Speed control cam
- 4. Fixed-Ring
- 5. Dish spring
- 6. Press ring
- 7. Driver
- 8. Planet wheel
- 9. Carrier

## Structure view





## Example

- TB-0.75-40B3: the input power of variator is 0.75kW; minimum output speed is 40r/min; maximum output speed is  $40 \times 5 = 200$ r/min; B3 means foot mounting.
- TB-0.37-190B5: the Input power is 0.37kW; 8 means aluminum variator casting; minimum output speed is 190r/min; maximum output speed is  $190 \times 5 = 950$ r/min; F means flange mounting.
- TB-0.37Z-190B5: 0.37kW motor with 4 poles is allowed; Z means with shaft input; minimum output speed is 190r/min; maximum output speed is  $190 \times 5 = 950$ r/min; K means hole input(without motor); B5 means flange mounting.

## Attention of using

- The variator is suitable for heavy duty. Running observe or reverse is easy to be operated by exchanging any two phase lines of the three-phase motor.
- When choosing the variator, its torque should be accordance with load. Simple formula is as follows:  $T_o = T_{ax} K$   $T_o$  variator output torque ( N · m )  $T_{load}$  needing torque ( N · m )  $K$  revise factor (see following table)

Average working time per day	Steady load, heavy duty, no directional change, weak inertia	Light shock interval movement or directional, change, medium inertia	Heavy shock and interval movement, directional change, strong inertia
< 8 hours	1.0	1.3	1.7
< 8-16 hours	1.1	1.4	1.9
Heavy duty	1.2	1.5	2.0

- Make sure that the parameters are marked on the variator which conform to load.
- The first oil pouring must be after 300 hours of working time, then pour oil per 1000 hours, from oil pouring hole to the middle of oil-watching lens and don't be excessively.
- The shafts and gears of the reducer are lubricated with lithium base grease, they don't need lubricant maintenance.
- Attention: It is after the variator starts that the hand wheel is allowed to work, according to the slow-quick direction marked on it. Turning the hand wheel is strictly prohibited while stopping.
- The shaft-diameter tolerance of the output shaft is f6. When installing the pulley and gear please use spindle nose, and the screw plus washer to bolt them up.
- People must be trained and familiarised with the structure of the variator to demount it. If not, it will affect the transmission precision, Remove planet wheel will hurt the disassembly operator.
- The following cases might damage the variator:
  - ▲ Power is wrongly connected or not according to the nameplate on motor.
  - ▲ One of the three-phase fuse is not or poorly connected.
  - ▲ Running overload.
  - ▲ The motor fans circumference is blocked.
  - ▲ Turning hand wheel when stopping.
- When running, keep the working environment clean, protect variator from dust, fibres, water, acid, alkali and any other debris.

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## Guide for selection & ordering

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- When ordering please choose the suitable type and specify it according to the required speed and torque. For special motors please specify and consult with us. To realize the excellent characteristics of the variator, usual speed value should be at the middle of the variable range. For example, if the usual speed is 100-120r/min, the variator should be chosen, within the varying range 40-120r/min, i.e., TB<sup>TM</sup>40-B3. The output torque of the variator should also be taken into consideration. For example, the output torque of TB 0.75-40B3 is 50-25N.m. This means the permissible output torque is 52N.m in case of 40r/min, the permissible output torque is 25N.m in case of 200r/min. The higher the speed, the lower the output torque. Disregard for correct choice will cause skid faults resulting from lower output torque.
- When ordering, it is recommended to choose the standard products listed in the catalogue. For special requirements please state the details in the contract, such as the positions of the junction box in motor and the hand wheel, the mounting position and the output speed etc.  
We own a professional design and manufacturing team, which is qualified to accept special orders and design particulars for customers.
- The speed-adjust parts of variator is lubricated by oil Ub-3. The products is filled with oil in the factory which can be used when turning on.
- We are responsible for offering maintenance guide.

## Guide for selection & ordering

Base No.		01	02	03	04	05	06						
Input power		0.18	0.25	0.37	0.55	0.75	1.1	1.5	2.2	3	4	5.5	7.5
Poles		( 1400r/min ) 4 poles											
Variator Model	Output Speed	( N.m ) Output torque allowed											
Basic Model		--	3.5-1.8	5.1-2.7	8.4	11-5.4	15-3-8	21-11	30.6-16	42-22	59-29	77-40	105-54
	190-760	2.5-1.6	--	--	--	--	--	--	--	--	--	--	--
Single-stage Gear Reducer		--	6.5-3.4	9.5-5	14.2-7.4	20-10	29.2-15	40-20	58-30	80-40	104-54	143-74	200-101
	80-400	--	8-4.2	12.3-6.2	17.5-9.3	25-12.5	37-18.5	50-25	71-37	100-50.5	130-67	180-93	245-126
		--	11-5.6	15.8-8.3	24.5-13	33.2-16.8	50-21.7	65-34	98-50	134-67.5	173-90	240-124	330-168
	40-200	--	16-8.4	24.5-12.5	35.4-18.5	50-25	73-37	100-50.5	147-74	200-101	256-135	380-190	490-253
Two-Stage Gear Reducer		--	--	--	--	--	--	--	186-100	267-132	356-176	490-242	668-330
	28-140	--	--	--	52-26	70-35.4	105-52	143-71	--	--	--	--	--
	25-125	--	25-13	39-20	--	--	--	--	--	--	--	--	--
	20-100	--	--	--	--	--	--	--	294-145	401-198	535-264	735-363	1002-495
	18-90	--	--	--	81-40	100-55	--	--	--	--	--	--	--
	15-75	--	42-22	65-32.6	--	--	196-97	255-132	--	--	--	--	--
	13-65	--	--	--	113-56	150-76	--	--	--	--	--	--	--
	9-15	--	65-37	105-54	--	230-140	--	--	--	--	--	--	--
	8-40	--	--	--	182-91	250-124	--	--	--	--	--	--	--
6.5-32.5	--	--	--	225-112	300-152	--	--	--	--	--	--	--	
Three-stage Gear Reducer	4.7-23.5	--	138-69	204-102	292-150	426-207	603-303	795-413	--	--	--	--	--
	2-10	--	238-96	258-141	426-356	426	787-420	795-429	--	--	--	--	--

Note : input power unit:kw, output speed unit:r/min

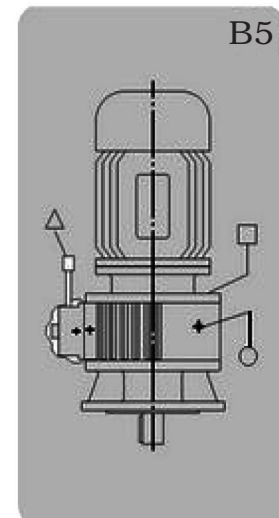
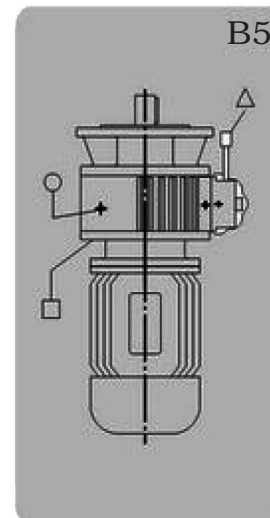
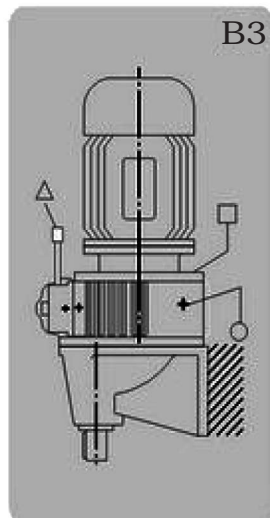
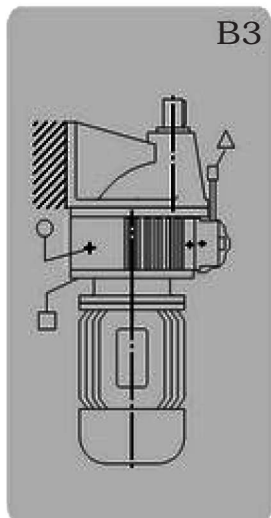
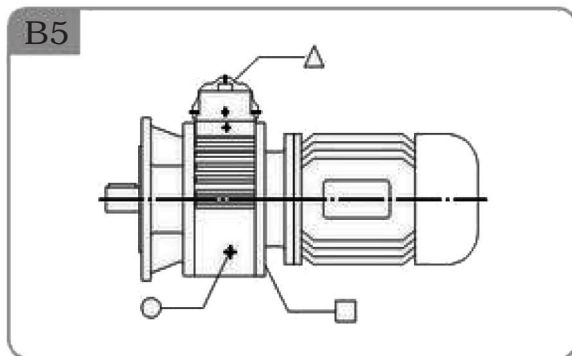
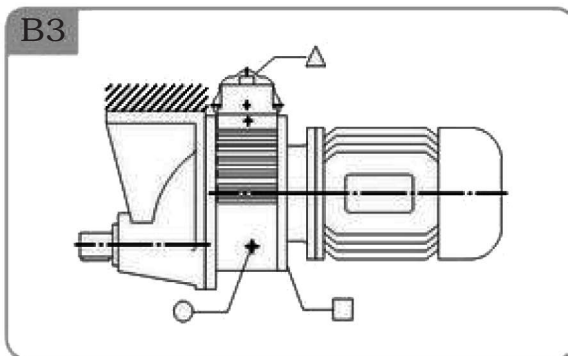
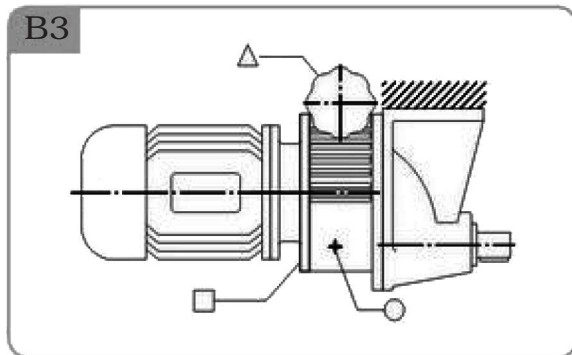
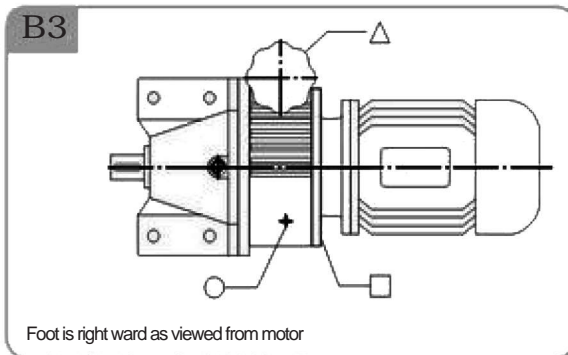
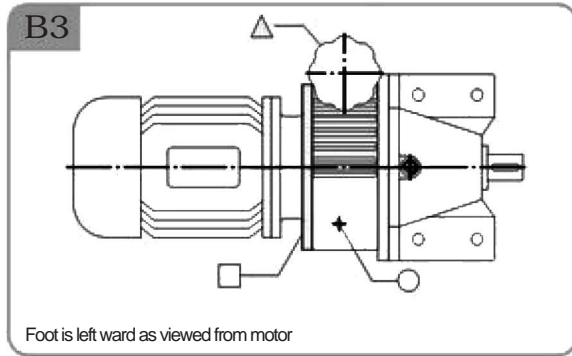
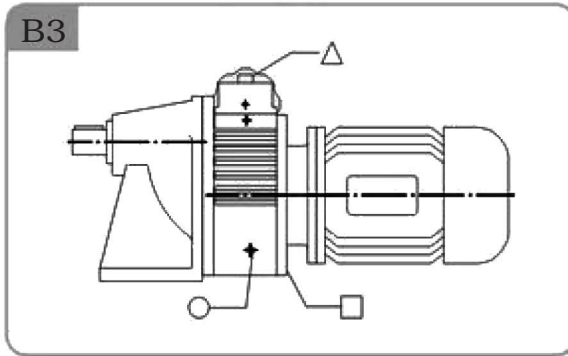


Installation pattern

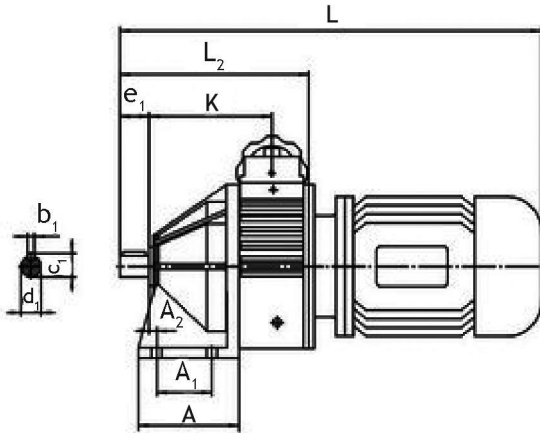
△ Oil breather (vent plug)

○ Oil level plug

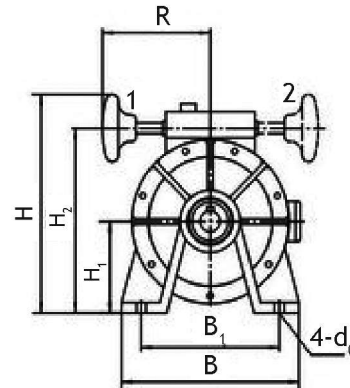
□ Oil plug



### Selection & dimension of basic model



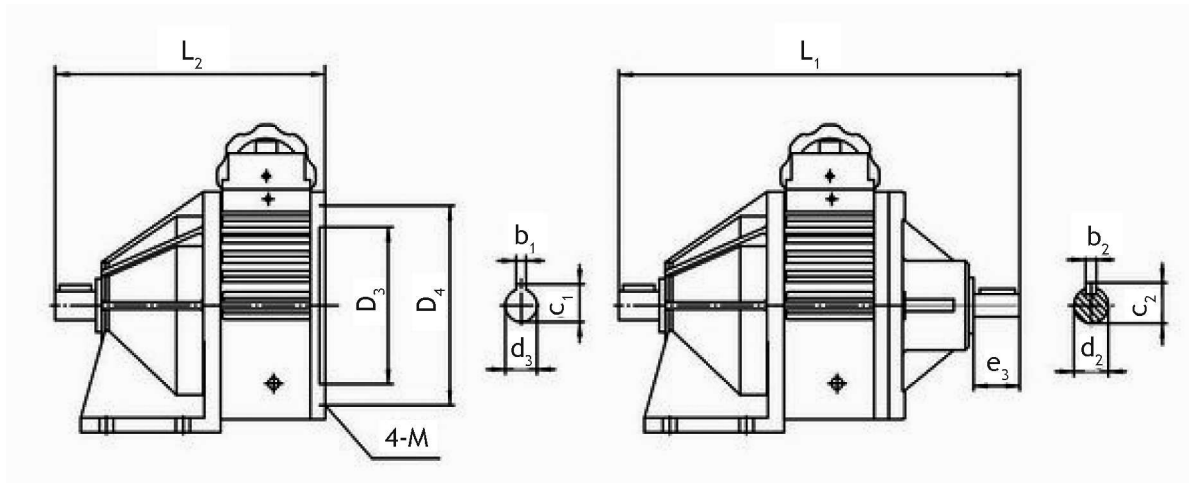
TB\*\*-190B3



TB\*\*B-190B3

Model	Base No.	Mounting dimension				Output shaft dimension			
		A <sub>1</sub>	A <sub>2</sub>	d <sub>0</sub>	B <sub>1</sub>	d <sub>1</sub>	b <sub>1</sub>	c <sub>1</sub>	e <sub>1</sub>
TB**-190B3	01	25	1.2	9	95	11f6	4	12.5	30
	02	55	6	10	150	14f6	5	16	40
	03	66	6	12	165	24f6	8	27	50
	04	75	18	14.5	185	28f6	8	31	60
	05	85	18	18.5	240	38f6	10	41	80
	06	120	17	21	295	42f6	12	45	80
TB**B-190B3	02	55	6	10	150	14f6	5	16	40
	03	66	6	12	165	24f6	8	27	50
	04	75	18	14.5	185	28f6	8	31	60

Model	Base No.	Outline dimensions									N · W (kg)
		H	H <sub>1</sub>	H <sub>2</sub>	L	L <sub>2</sub>	A	B	K	R	
TB**-190B3	01	189	70	145	356	147	55	120	82	125	15
	02	211	80	168	437	202	90	190	121	125	22
	03	254	105	212	512	247	118	212	145	133	38
	04	291	125	252	625	320	141	235	187	142	61
	05	355	150	313	725	375	148	310	205	191	134
	06	439	190	397	864	424	185	380	238	220	198
TB**B-190B3	02	211	80	168	440	205	90	190	121	125	17
	03	260	105	212	517	252	118	212	150	133	26
	04	291	125	252	627	322	141	235	187	142	53

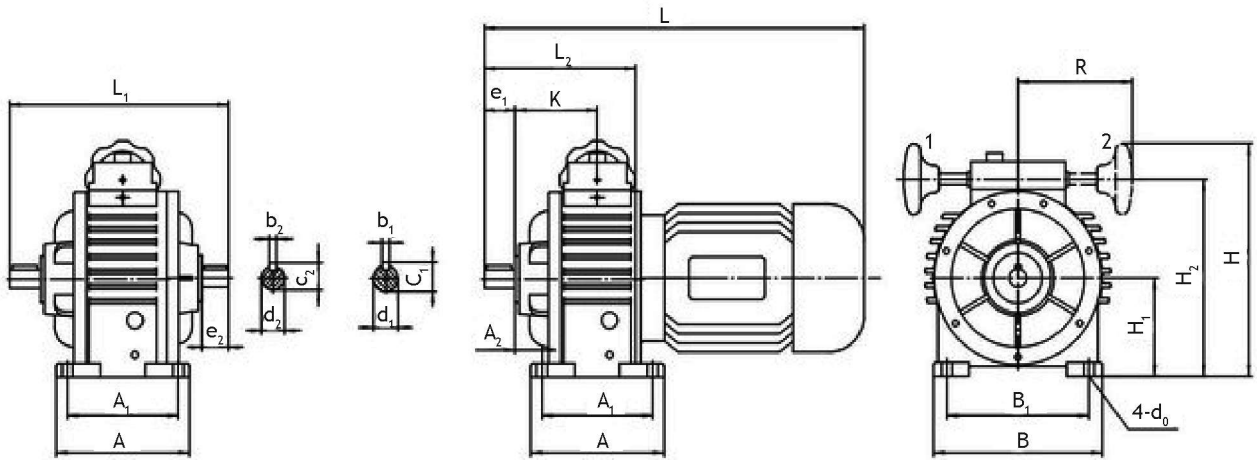


TB\*\*B-190B3(K)

TB\*\*-190B3(Z)

Model	Base No.	Mounting dimension			Output shaft dimension			Outline dimension
		D <sub>3</sub>	D <sub>4</sub>	M	d <sub>3</sub>	b <sub>1</sub>	c <sub>1</sub>	L <sub>2</sub>
TB**B-190B3(K)	02	110	130	M8	14F8	5	16.3	205
	03	130	165	M10	19F8	6	21.8	252
	04	130	165	M10	24F8	8	27.3	627

Model	Base No.	Input shaft dimension				Outline dimension	
		d <sub>2</sub>	b <sub>2</sub>	c <sub>2</sub>	e <sub>2</sub>	L <sub>1</sub>	L <sub>2</sub>
TB**-190B3(Z)	02	14f6	5	16	30	289	202
	03	19f6	6	21.5	40	358	247
	04	24f6	8	28	43	434	320
	05	28f6	8	32	60	528	375
	06	38f6	10	43	70	600	424

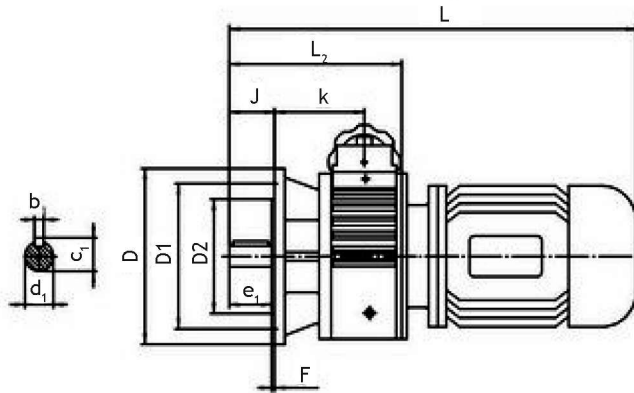


TB\*\*A-190B3(Z)

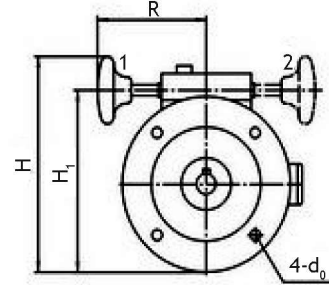
TB\*\*A-190B3

Model	Base No.	Mounting dimension				input shaft dimension				Output shaft dimension			
		A <sub>1</sub>	A <sub>2</sub>	d <sub>0</sub>	B <sub>1</sub>	d <sub>2</sub>	b <sub>2</sub>	c <sub>2</sub>	e <sub>2</sub>	d <sub>1</sub>	b <sub>1</sub>	c <sub>1</sub>	e <sub>1</sub>
TB**A-190B3	02	105	20.5	10	120	--	--	--	--	14f6	5	16	30
	03	125	30	12	160	--	--	--	--	20f6	6	22.5	40
	04	140	50	12	180	--	--	--	--	25f6	8	28	50
TB**A-190B3(Z)	02	105	20.5	10	120	14f6	5	16	30	14f6	5	16	30
	03	125	30	12	160	19f6	6	21.5	30	20f6	6	22.5	40
	04	140	50	12	180	24f6	8	27	40	25f6	8	28	50

Model	Base No.	Outline dimension										N · W (kg)
		H	H <sub>1</sub>	H <sub>2</sub>	L <sub>1</sub>	L <sub>1</sub>	L <sub>2</sub>	A	B	K	R	
TB**A-190B3	02	221	90	179	378	--	140	135	160	71	125	22
	03	256	106	213	445	--	182	150	190	93	110	38
	04	291	125	252	524	--	229	165	230	106	147	60
TB**A-190B3(Z)	02	221	90	179	--	229	--	135	160	71	125	22
	03	256	106	213	--	251	--	150	190	93	110	38
	04	291	125	252	--	317	--	165	230	106	147	60



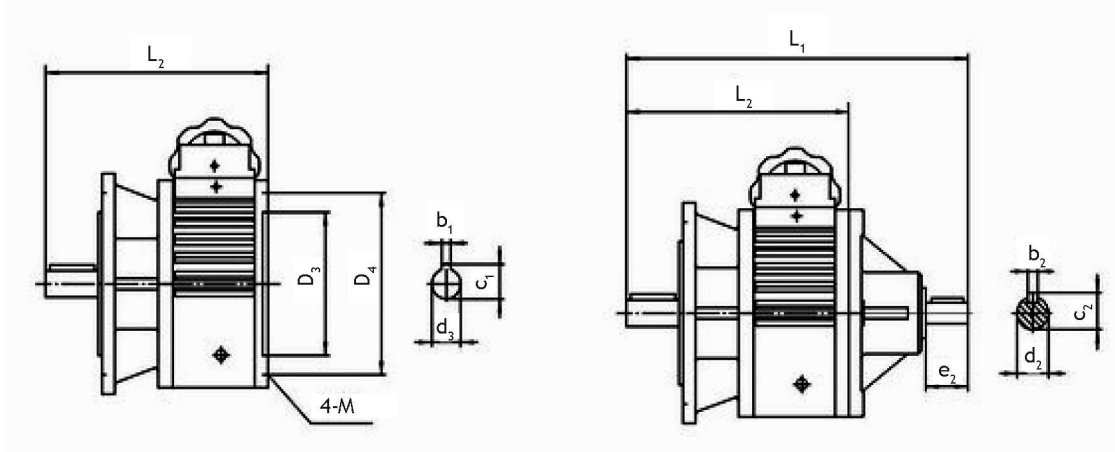
TB\*\*-190B5



TB\*\*B-190B5

Model	Base No.	Mounting dimension					Output shaft dimension			
		D <sub>1</sub>	D <sub>2</sub>	d <sub>0</sub>	J <sub>1</sub>	F	d <sub>1</sub>	b <sub>1</sub>	c <sub>1</sub>	e <sub>1</sub>
TB**-190B5	01	115	95	10	31	3	11f6	4	12.5	30
	02	130	110	10	44	3.5	14f6	5	16	40
	03	165	130	12.5	54.5	3.5	24f6	8	27	50
	04	215	180	14.5	61	4	28f6	8	31	60
	05	265	230	15	86	4	38f6	10	41	76
	06	300	250	20	87	5	42f6	12	45	80
TB**B-190B5	02	130	110	9	30	3.5	14f6	5	16	40
	03	165	130	11	40	3.5	19f6	6	21.5	40
	04	215	180	14.5	61	4	28f6	8	31	60

Model	Base No.	Outline dimensions							N · W (kg)
		H	H <sub>1</sub>	L	L <sub>1</sub>	L <sub>2</sub>	D	R	
TB**-190B5	01	189	146	146	147	140	81	125	15
	02	210	166	166	168	160	86	125	22
	03	250	209	209	212	200	107	133	38
	04	307	252	252	261	250	127	142	61
	05	356	313	313	319	300	151	191	134
	06	430	382	382	424	350	233	220	198
TB**B-190B5	02	210	166	166	154	160	86	125	18.5
	03	250	207	207	182	200	92	133	24
	04	307	252	252	263	250	127	142	53



TB\*\*B-190B5(K)

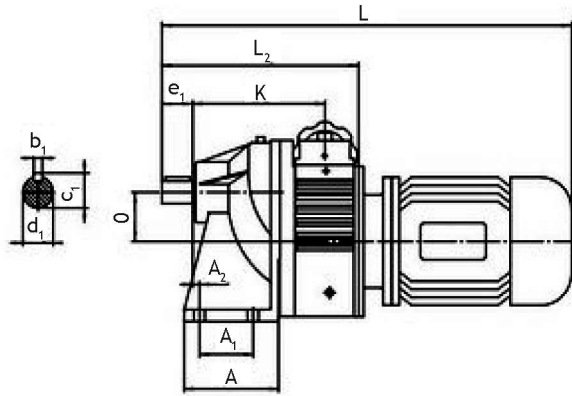
TB\*\*B-190B5(Z)

Model	Base No.	Mounting dimension			Input hole dimension			Outline dimension
		D <sub>3</sub>	D <sub>4</sub>	M	d <sub>3</sub>	b <sub>1</sub>	c <sub>1</sub>	
TB**B-190B5(K)	02	110	130	M8	14F8	5	16.3	154
	03	130	165	M10	19F8	6	21.8	182
	04	130	165	M10	24F8	8	27.3	263

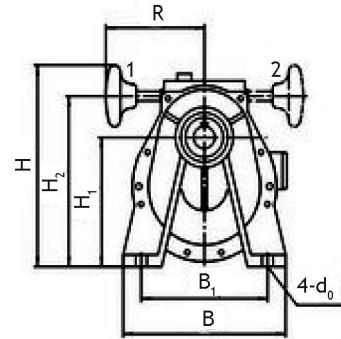
Model	Base No.	Input shaft dimension				Outline dimension	
		d <sub>2</sub>	b <sub>2</sub>	c <sub>2</sub>	e <sub>2</sub>	L <sub>1</sub>	L <sub>2</sub>
TB**-190B5(Z)	02	14f6	5	16	30	255	168
	03	19f6	6	21.5	40	323	212
	04	24f6	8	28	43	375	261
	05	28f6	8	32	60	472	319
	06	38f6	10	43	70	600	424

40-100B3/B5

Selection & dimensions for single stage gear reducer



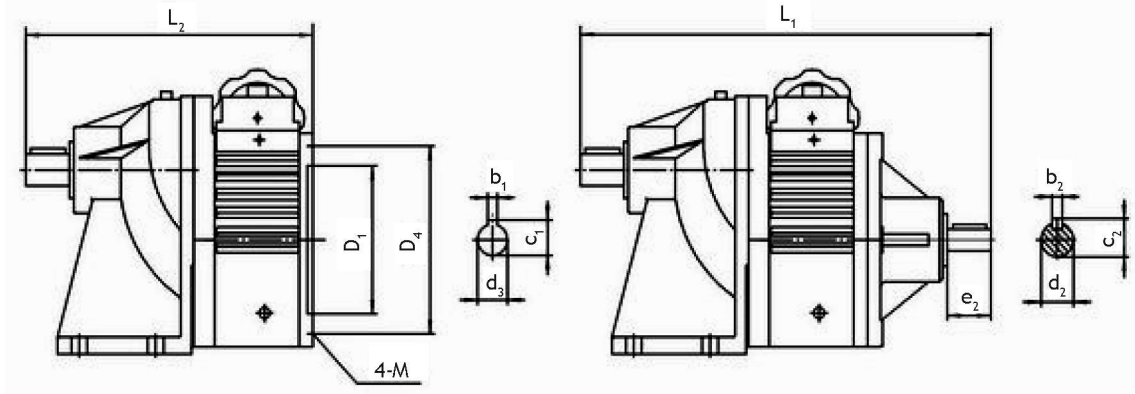
TB\*\*-B3



TB\*\*B-\*\*-B3

Model	Base No.	Mounting dimension				Output shaft dimension				
		A <sub>1</sub>	A <sub>2</sub>	d <sub>0</sub>	B <sub>1</sub>	O	d <sub>1</sub>	b <sub>1</sub>	c <sub>1</sub>	c <sub>1</sub>
TB**-**B3	02	64	4	12	148	51	24f6	8	27	50
	03	70	10	14.5	165	61.5	28f6	8	31	60
	04	85	0	14.5	186	78	38f6	10	41	70
	05	130	14	18	240	103	48f6	14	51.5	100
	06	150	22	21	280	118	55f6	16	59	110
TB**B-**-B3	02	64	4	12	148	51	24f6	8	27	50
	03	70	10	14.5	165	61.5	28f6	8	31	60
	04	80	0	14.5	186	78	38f6	10	41	70

Model	Base No.	Outline dimensions									N · W (kg)
		H	H <sub>1</sub>	H <sub>2</sub>	L	L <sub>2</sub>	A	B	K	R	
TB**-**B3	02	211	131	169	469	244	112	190	155	125	25
	03	251	162	208	542	287	123	212	176	133	43
	04	285	195	244	636	341	155	240	198	142	70
	05	418	252	312	796	456	190	310	269	190	150
	06	480	300	389	950	520	215	350	307	219	250
TB**B-**-B3	02	211	131	169	473	248	112	190	155	125	21.5
	03	251	162	208	548	293	123	212	176	133	29
	04	285	195	244	638	343	155	240	198	142	62



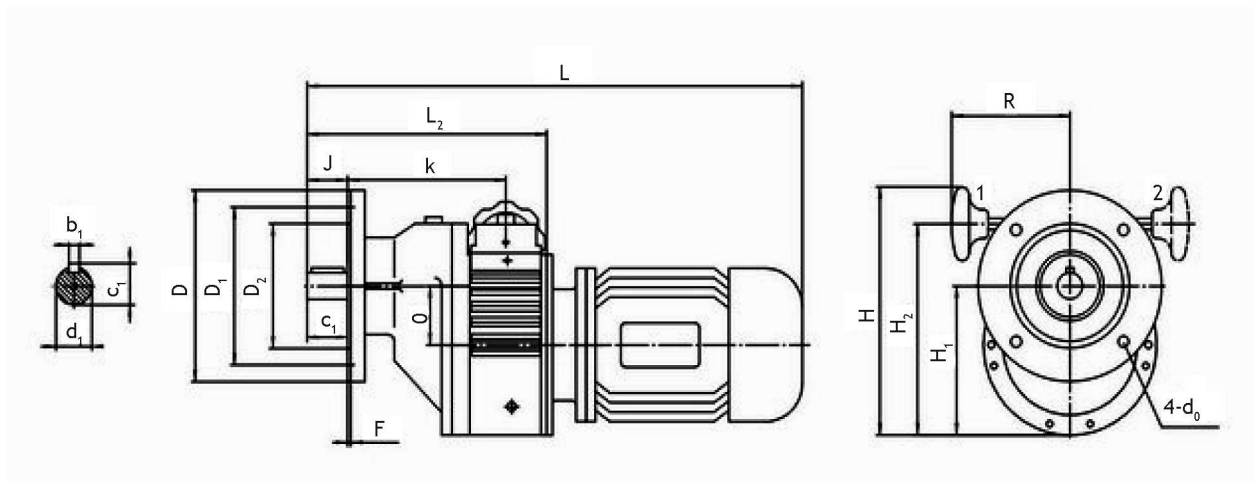
TB\*\*B-\*\*B3(K)

TB\*\*-\*\*B3(Z)

Model	Base No.	Mounting dimension			Input hole dimension			Outline dimension
		D <sub>3</sub>	D <sub>4</sub>	M	d <sub>3</sub>	b <sub>1</sub>	c <sub>1</sub>	L <sub>2</sub>
TB**B-**B3(K)	02	110	130	M8	14F8	5	16.3	248
	03	130	165	M10	19F8	6	21.8	293
	04	130	165	M10	24F8	8	27.3	343

Model	Base No.	Input shaft dimension				Outline dimension
		d <sub>2</sub>	b <sub>2</sub>	c <sub>2</sub>	e <sub>2</sub>	L <sub>1</sub>
TB**-**B3(Z)	02	14f6	5	16	30	331
	03	19f6	6	21.5	40	398
	04	24f6	8	28	43	455
	05	28f6	8	32	60	609
	06	38f6	10	43	70	696



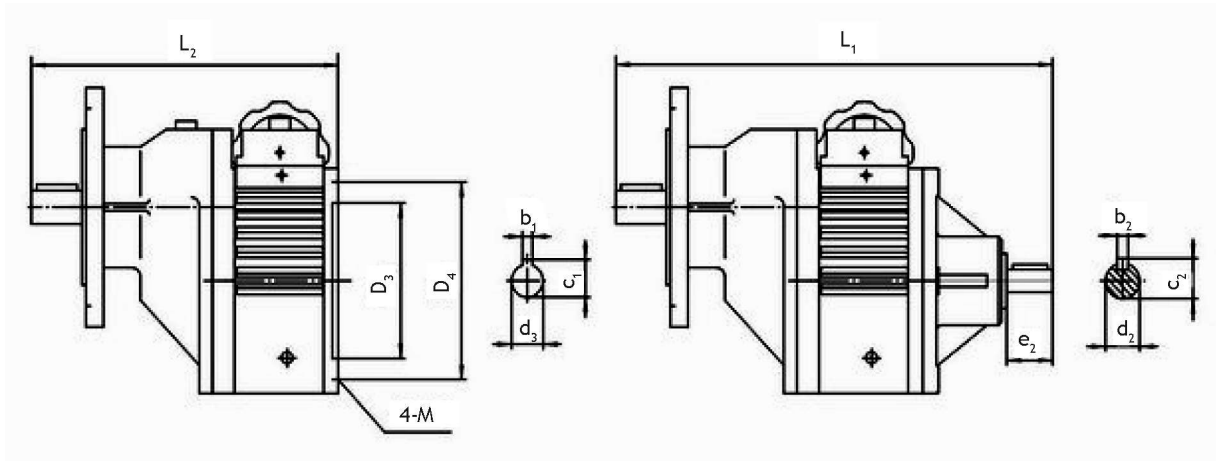


TB\*\*-\*\*B5

TB\*\*B-\*\*B5

Model	Base No.	Mounting dimension					Output shaft dimension				
		D <sub>1</sub>	D <sub>2</sub>	d <sub>0</sub>	J	F	O	d <sub>1</sub>	b <sub>1</sub>	c <sub>1</sub>	e <sub>1</sub>
TB**-**B5	02	130	110	10.5	54	4	51	24f6	8	27	50
	03	165	130	12	65	3.5	61.5	28f6	8	31	60
	04	215	180	14.5	72	4.5	78	38f6	10	41	70
	05	265	230	13.5	100	5	103	48f6	14	51.5	100
	06	300	250	18	110	5	118	55f6	16	59	110
TB**B-**B5	02	130	110	10.5	54	4	51	24f6	8	27	50
	03	165	130	12	65	3.5	61.5	28f6	8	31	60
	04	215	180	14.5	72	4.5	78	38f6	10	41	70

Model	Base No.	Outline dimensions								N · W (kg)
		H	H <sub>1</sub>	H <sub>2</sub>	L	L <sub>2</sub>	D	K	R	
TB**-**B5	02	209	129	166	473	248	150	151	125	25
	03	263	163	209	542	287	200	171	133	43
	04	322	192	241	636	341	250	197	142	70
	05	416	250	310	797	457	300	267	190	150
	06	478	298	387	950	520	350	308	219	250
TB**B-**B5	02	211	131	169	473	248	150	151	125	21.5
	03	262	162	207	548	293	200	171	133	29
	04	322	192	241	639	343	250	197	142	62



TB\*\*B-\*\*B5(K)

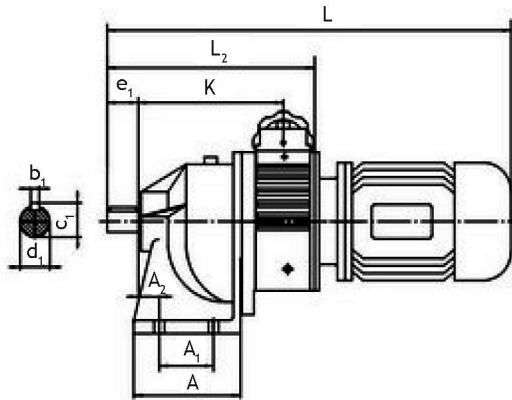
TB\*\*-\*\*B5(Z)

Model	Base No.	Mounting dimension			Input hole dimension			Outline dimension
		D <sub>3</sub>	D <sub>4</sub>	M	d <sub>3</sub>	b <sub>1</sub>	c <sub>1</sub>	L <sub>2</sub>
TB**B-**B5(K)	02	110	130	M8	14F8	5	16.3	248
	03	130	165	M10	19F8	6	21.8	293
	04	130	165	M10	24F8	8	27.3	343

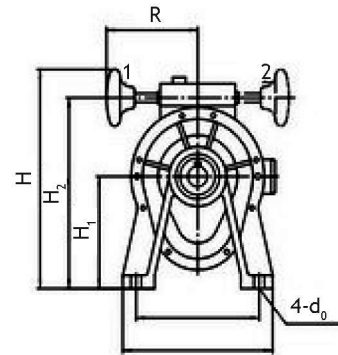
Model	Base No.	Input shaft dimension				Outline dimension	
		d <sub>2</sub>	b <sub>2</sub>	c <sub>2</sub>	e <sub>2</sub>	L <sub>1</sub>	L <sub>2</sub>
TB**-**B5(Z)	02	14f6	5	16	30	333	248
	03	19f6	6	21.5	40	398	287
	04	24f6	8	28	43	455	341
	05	28f6	8	32	60	610	457
	06	38f6	10	43	70	696	520

6.5-30B3/B5

Selection & dimensions for two- stage gear speed reducer



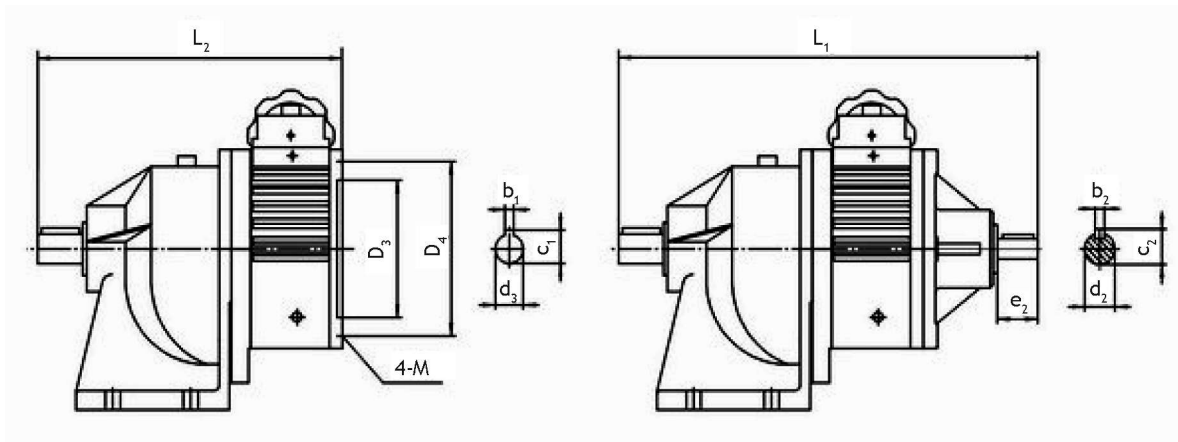
TB\*\*-\*\*B3



TB\*\*B\*\*-\*\*B3

Model	Base No.	Mounting dimension				Output shaft dimension			
		A <sub>1</sub>	A <sub>2</sub>	d <sub>0</sub>	B <sub>1</sub>	d <sub>1</sub>	b <sub>1</sub>	c <sub>1</sub>	e <sub>1</sub>
TB**-**B3	02	85	18	12	150	28f6	8	31	55
	03	106	26	14.5	174	28f6	8	31	60
	04	130	27	14	200	38f6	10	41	70
	05	180	44	18	246	55f6	16	59	110
	06	252	60	21	300	70f6	20	74.5	140
TB55/TB75-6.5B3	03	106	26	14.5	174	28f6/30f6	8	31	60
TB**B**-**B3	02	85	18	12	150	28f6	8	31	55
	03	106	26	14.5	174	28f6	8	31	60
	04	130	27	14	200	38f6	10	41	70
TB55B/TB75B-6.5B3	03	106	26	14.5	174	28f6/30f6	8	31	60
TB25-25B3(S)	02	74.5	13	10	105	20f6	6	22.5	38.5

Model	Base No.	Outline dimension								N · W (kg)	
		H	H <sub>1</sub>	H <sub>2</sub>	L	L <sub>2</sub>	A	B	K		R
TB**-**B3	02	242	110	199	520	295	142	190	201	125	29
	03	302	152	259	600	344	168	212	235	133	49
	04	337	172	299	702	407	185	255	266	142	77
	05	441	235	398	903	563	264	320	366	190	174
	06	530	280	487	1124	694	345	384	452	219	270
TB55/TB75-6.5B3	03	302	152	259	600	344	168	212	235	133	49
TB**B**-**B3	02	242	110	199	524	299	142	190	201	125	22.5
	03	302	152	259	605	350	168	212	235	133	35
	04	337	172	299	704	409	185	255	266	142	69
TB55B/TB75B-6.5B3	03	302	152	259	605	350	168	212	235	133	35
TB25-25B3(S)	02	210	80	168	446	253.2	119	128	158	125	25

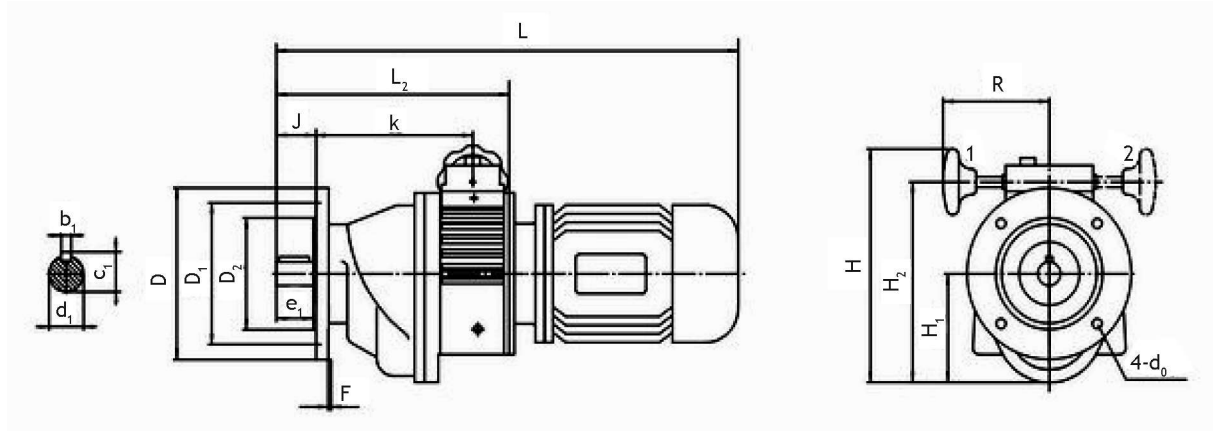


TB\*\*B-\*\*-B3(K)

TB\*\*-\*\*-B3(Z)

Model	Base No.	Mounting dimension			Input hole dimension			Outline dimension
		D <sub>3</sub>	D <sub>4</sub>	M	d <sub>3</sub>	b <sub>1</sub>	c <sub>1</sub>	L <sub>2</sub>
TB**B-**-B3(K)	02	110	130	M8	14F8	5	16.3	299
	03	130	165	M10	19F8	6	21.8	350
	04	130	165	M10	24F8	8	27.3	409

Model	Base No.	Input shaft dimension				Outline dimension
		d <sub>2</sub>	b <sub>2</sub>	c <sub>2</sub>	e <sub>2</sub>	L <sub>1</sub>
TB**-**-B3(Z)	02	14f6	5	16	30	382
	03	19f6	6	21.5	40	345
	04	24f6	8	28	43	521
	05	28f6	8	32	60	716
	06	38f6	10	43	70	870

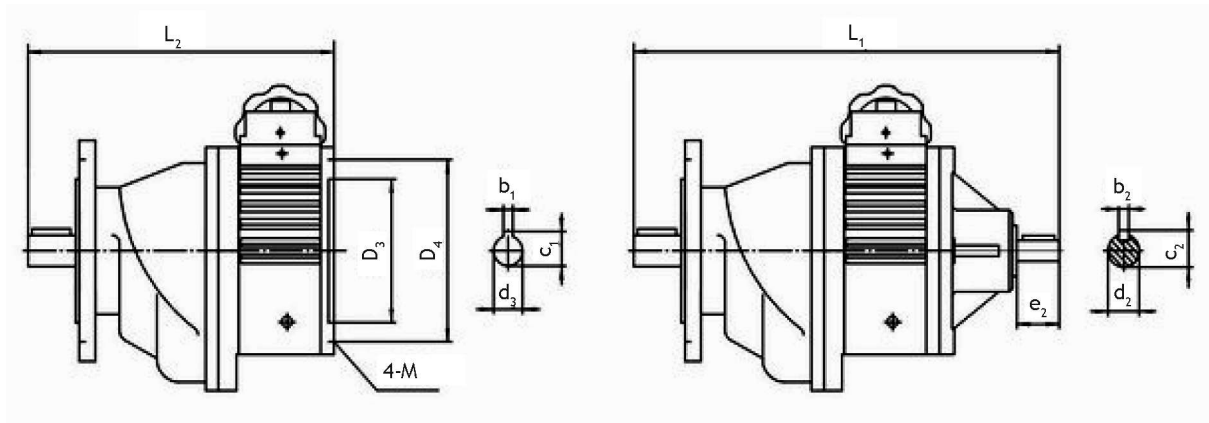


TB\*\*-\*\*B5

TB\*\*B-\*\*B5

Model	Base No.	Mounting dimension					Output shaft dimension			
		D <sub>1</sub>	D <sub>2</sub>	d <sub>0</sub>	J	F	d <sub>1</sub>	b <sub>1</sub>	c <sub>1</sub>	e <sub>1</sub>
TB**-**B5	02	130	110	12	57	4	28f6	8	31	55
	03	130	110	12	63	3.5	28f6	8	31	60
	04	215	180	14.5	72	4	38f6	10	41	70
	05	265	230	13.5	120	5	55f6	16	59	110
	06	300	250	18	145	5	70f6	20	74.5	140
TB55/TB75-6.5B5	03	165	130	12	63	3.5	28f6/30f6	8	33	60
TB**B-**B5	02	130	110	10.5	57	4	28f6	8	31	55
	03	130	110	12	67	4	28f6	8	31	60
	04	215	180	14.5	72	4	38f6	10	41	70
TB55B/TB75B-6.5B5	03	165	130	12	63	3.5	28f6/30f6	8	33	60
TB25-25B5(S)	02	110	86	10	44	4	20f6	6	22.5	38.5
TB1.5/TB1.5B-21B5	04	165	130	12	61.5	3.5	30f6	8	33	60
TB2/TB2.4(2/2.4B)-28/56B5	04	215	180	6-φ 14	70	4.5	38f6	10	41	66
TB2/TB2.4(2/2.4B)-28/56B5(S)	04	165	130	6-φ 14	70	4.5	30f6	8	33	66

Model	Base No.	Outline dimension								N · W (kg)
		H	H <sub>1</sub>	H <sub>2</sub>	L	L <sub>2</sub>	D	K	R	
TB**-**B5	02	238	108	196	520	295	150	199	125	29
	03	277	127	234	599	344	160	231	133	49
	04	334	168	295	702	407	250	263	142	77
	05	435	229	393	903	563	300	355	190	174
	06	514	264	471	1124	69	350	448	219	270
TB55/TB75-6.5B5	03	277	127	234	605	350	200	231	133	49
TB**B-**B5	02	238	108	196	524	299	150	199	125	25.5
	03	277	127	234	601	346	160	231	133	35
	04	334	168	295	704	409	250	263	142	69
TB55B/TB75B-6.5B5	03	277	127	234	605	350	200	231	133	35
TB25-25B5	02	210	80	168	446	253.2	136	158	105	25
TB1.5B/TB1.5B-21B5	04	280	115	241	655/657	360/362	200	225	142	70
TB2/2.4(2/2.4B)-28/56B5	04	334	168	295	688/690	363/365	250	222	142	80
TB2/2.4(2/2.4B)-28/56B5(S)	04	334	168	295	688/690	363/365	200	222	142	80



TB\*\*B-\*\*B5(K)

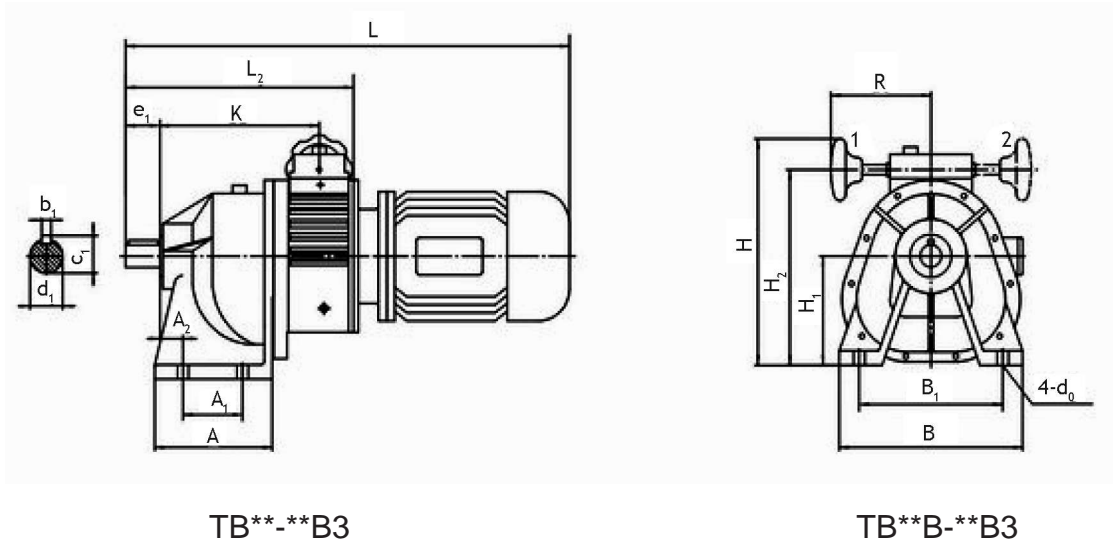
TB\*\*-\*\*B5(Z)

Model	Base No.	Mounting dimension			Input hole dimension			Outline dimension
		D <sub>3</sub>	D <sub>4</sub>	M	d <sub>3</sub>	b <sub>1</sub>	c <sub>1</sub>	L <sub>2</sub>
TB**B-**B5(K)	02	110	130	M8	14F8	5	16.3	299
	03	130	165	M10	19F8	6	21.8	350
	04	130	165	M10	24F8	8	27.3	409

Model	Base No.	Input shaft dimension				Outline dimension
		d <sub>2</sub>	b <sub>2</sub>	c <sub>2</sub>	e <sub>2</sub>	L <sub>1</sub>
TB**-**B5(Z)	02	14f6	5	16	30	382
	03	19f6	6	21.5	40	345
	04	24f6	8	28	43	521
	05	28f6	8	32	60	716
	06	38f6	10	43	70	870

(2-4.7B3/B5)

Technical Characteristics & dimensions for three- stage gear reducer



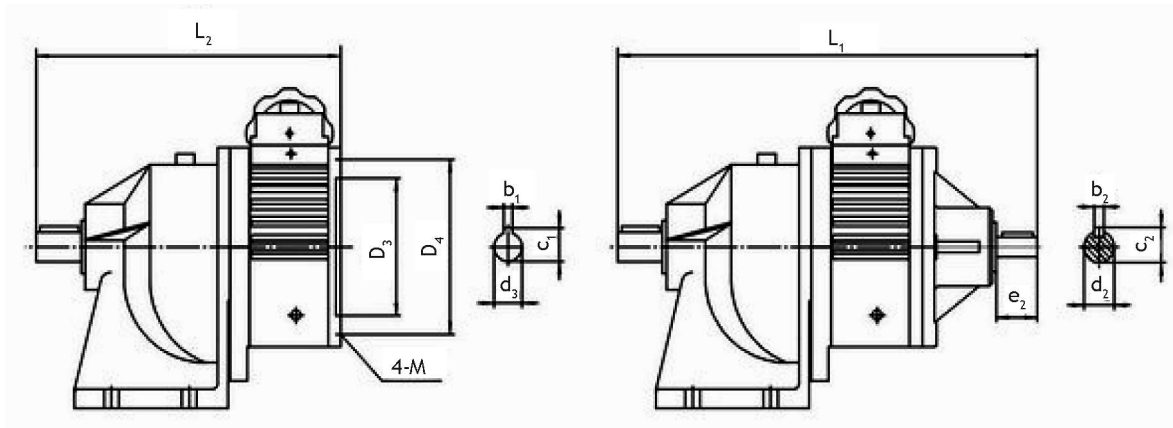
TB\*\*-\*\*B3

TB\*\*B-\*\*B3

Model	Base No.	Mounting dimension				Output shaft dimension			
		A <sub>1</sub>	A <sub>2</sub>	d <sub>0</sub>	B <sub>2</sub>	d <sub>1</sub>	b <sub>1</sub>	c <sub>1</sub>	e <sub>1</sub>
TB**-**B3	02	100	33	12	150	32f6	10	35	60
	03	120	39	14.5	185	38f6	10	41	70
	04	160	25	14.5	210	42f6	12	45	80
TB**B-**B3	02	100	33	12	150	32f6	10	35	60
	03	120	39	14.5	185	38f6	10	41	70
	04	160	25	14.5	210	42f6	12	45	80

Model	Base No.	Outline dimension									N · W ( kg )
		H	H <sub>1</sub>	H <sub>2</sub>	L	L <sub>2</sub>	A	B	K	R	
TB**-**B3	02	241	110	199	557	332	168	190	233	125	33
	03	285	135	242	651	396	193	236	271	133	60
	04	331	165	292	759	464	240	262	313	142	85
TB**B-**B3	02	241	110	199	560	335	168	190	233	125	29.5
	03	285	135	242	651	396	193	236	271	133	46
	04	331	165	292	761	466	240	262	313	142	77



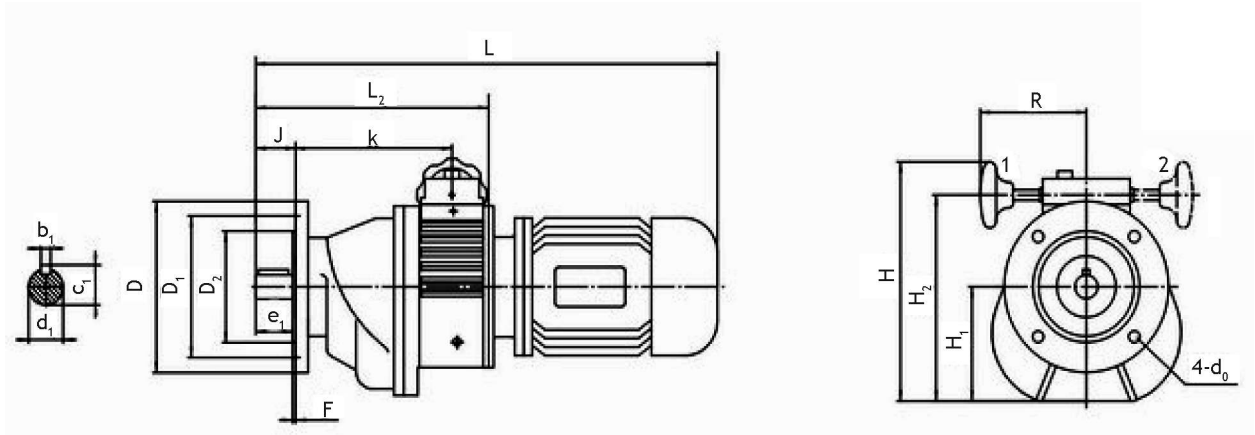


TB\*\*B-\*\*B3(K)

TB\*\*-\*\*B3(Z)

Model	Base No.	Mounting dimension			Input hole dimension			Outline dimension
		D <sub>3</sub>	D <sub>4</sub>	M	d <sub>3</sub>	b <sub>1</sub>	c <sub>1</sub>	L <sub>2</sub>
TB**B-**B3(K)	02	110	130	M8	14F8	5	16.3	335
	03	130	165	M10	19F8	6	21.8	396
	04	130	165	M10	24F8	8	27.3	466

Model	Base No.	Input shaft dimension				Outline dimension
		d <sub>2</sub>	b <sub>2</sub>	c <sub>2</sub>	e <sub>2</sub>	L <sub>1</sub>
TB**-**B3(Z)	02	14f6	5	16	30	419
	03	19f6	6	21.5	40	517
	04	24f6	8	28	43	578

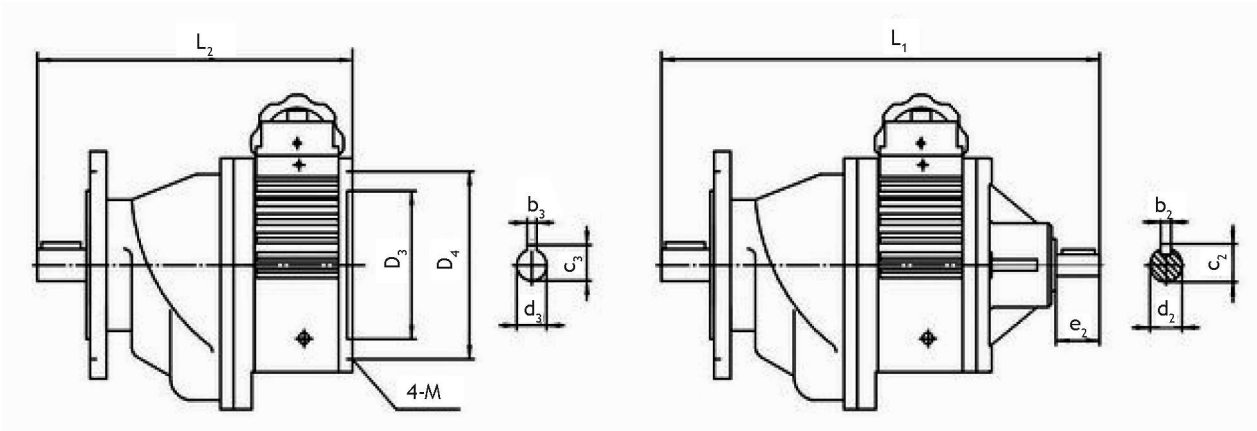


TB\*\*B-\*\*B5

TB\*\*B-\*\*B5

Model	Base No.	Mounting dimension					Output shaft dimension			
		D <sub>1</sub>	D <sub>2</sub>	d <sub>0</sub>	J	F	d <sub>1</sub>	b <sub>1</sub>	c <sub>1</sub>	e <sub>1</sub>
TB**B-**B5	02	130	110	11	61	3.5	32f6	10	35	60
	03	165	130	14	70	3.5	38f6	10	41	70
	04	215	180	14.5	80	4	42f6	12	45	80
TB**B-**B5	02	130	110	11	61	3.5	32f6	10	35	60
	03	165	130	14	70	3.5	38f6	10	41	70
	04	215	180	14.5	80	4	42f6	12	45	80

Model	Base No.	Outline dimension								N · W (kg)
		H	H <sub>1</sub>	H <sub>2</sub>	L	L <sub>2</sub>	D	K	R	
TB**B-**B5	02	248	116	205	556	331	150	232	125	33
	03	278	133	240	615	390	200	271	133	60
	04	329	163	290	759	464	250	311	142	85
TB**B-**B5	02	248	116	205	560	335	150	232	125	29.5
	03	278	133	240	618	396	200	271	133	46
	04	329	163	290	761	466	250	311	142	77



TB\*\*B-\*\*B5(K)

TB\*\*-\*\*B5(Z)

Model	Base No.	Mounting dimension			Input hole dimension			Outline dimension
		D <sub>3</sub>	D <sub>4</sub>	M	d <sub>3</sub>	b <sub>1</sub>	c <sub>1</sub>	
TB**B-**B5(K)	02	110	130	M8	14F8	5	16.3	335
	03	130	165	M10	19F8	6	21.8	396
	04	130	165	M10	24F8	8	27.3	466

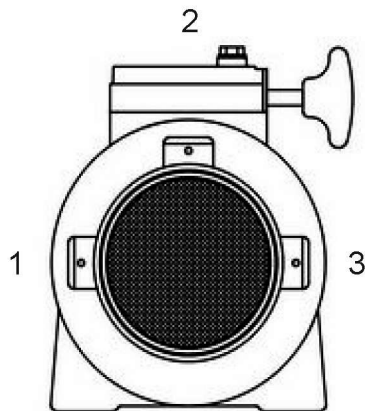
Model	Base No.	Input shaft dimension				Outline dimension
		d <sub>2</sub>	b <sub>2</sub>	c <sub>2</sub>	e <sub>2</sub>	
TB**-**B5(Z)	02	14f6	5	16	30	418
	03	19f6	6	21.5	40	501
	04	24f6	8	28	43	578

## TB series with number marked

Type	Base No.	Other dimension
TB**-190B5 TB**-190B5(Z)	03	According to TB- stepless speed variator
	04	
	05	
	06	
TB**-IB3 TB**-IB3(Z) TB**B-IB3(K)	02(B)	
	03(B)	
	04(B)	
	05	
TB**-IB5 TB**-IB5(Z) TB**B-IB5(K)	03(B)	
	04(B)	
	05	
TB**-IB5 TB**-IB5(Z) TB**B-IB5(K)	02(B)	
	03(B)	
	04(B)	
	05	
TB**-IB5 TB**-IB5(Z) TB**B-IB5(K)	02(B)	
	03(B)	
	04(B)	
	05	
TB**-IIIB3 TB**-IIIB3(Z) TB**B-IIIB3(K)	02(B)	
	03(B)	
	04(B)	
TB**-IIIB5	02(B)	
	03(B)	
	04(B)	

Note : "B" stands for die cast aluminum variator casting

Motor thermal box position (viewed speed control cover box from fan cowl of motor)



(1 Means the standard position)

## TB (0~n) series variator with differential speed

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### Introduction

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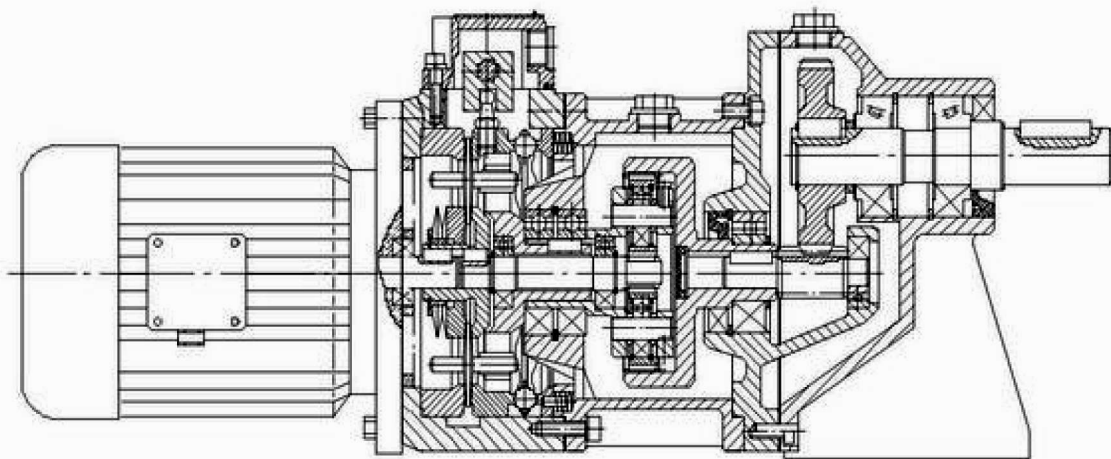
Differential sleptess speed variator; which conforms to the standard on TB/T6950-93 (Planet cone disk stepless speed variator)

It features a simple structure. reliable performance. big variable range (the ratio between the highest output speed and the lowest output speed is 5 to 1), agile and reliable speed adjustment. small volume, low noise, and easy maintenance etc. It can be used as a power transmission in automatic production lines of all kinds of industries. a continuous variable transmission of testing equipments in scientific and research Institutions. Especially for automatic production lines of ceramics, beverage, foodstuff. Electronics, leather tanning. chemical. textile. carpentry and other industries.

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### How it works

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Differential stepless speed variator is e new type of continuous variable transmission on the basis of TB stepless speed variator by adding e differential transmission device, in addition to all the advanced features of the TB slepless speed variator, the adjustive range Is infinite. Usually, It commonly has small torque al low speed. so the speed can't be near zero. It is recomomed to be used within the speed range from 1/10 of the highest speed to the highest speed.



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## Guide for selection & ordering

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- When ordering please choose the suitable model and specify it according to the speed and torque required. For special motors please state details clearly and consult with us. To realize the excellent characters of the variator, usual speed value should be at the middle of the varying range.
- Differential speed variator, speed range is should be range from 1/10 of the highest speed to middle of the highest speed. For example, usual speed range is 3-20 r/min, and the selecting variator speed range should be 0~23.5 r / min, e.g . TB\*\*\* - ( 0~23.S 1 \*. At the same time, pay attention to the output torque list in variator parameters. For example, TB 0.75- ( 0~23.S) D, its torque is 426 N•m, means speed range is 2.35~23.5 r / min, the maximum output torque is 426 N- m within its variator speed range. If excess, it maybe cause skid faults resulting from lower torque.
- When ordering it is recommended to choose the standard products listed in the catalogue. Special require ments please state detail in the contract, such as the positions of motor thermal box and the hand wheel, the mounting position and the output speed etc.
- We have a professional designing and manufacturing team which is qualified to accept special orders and design particulars for customers.
- The speed-adjustment parts of variator is lubricated by oil Ub-3 . The products is filled with oil in the factory which can be used when turning on.
- We are responsible for offering maintenance guide.

## Selection table

Base No.		02		03		04		
Motor power		0.25	0.37	0.55	0.75	1.1	1.5	
Motor pole		(1400r/min) 4poles (1400r/min)						
Variator model	Output speed	Output torque allowed (N.m)						
	0-950	3.5-1.8	5.1-2.7	5.1-2.7	8-4	11-5.4	15.3-8	21-11
With single gear speed reducer	0-500	6.5-3.4	9.5-5	9.5-5	14.2-7.4	20-10	29.2-15	40-20
	0-400	8-4.2	12.3-6.2	12.3-6.2	17.5-9.3	25-12.5	37-18.5	50-25
	0-300	11-5.6	15.8-8.3	15.8-8.3	24.5-13	33.2-16.8	50-21.7	65-34
	0-200	16-8.4	24-12.5	24-12.5	35.4-18.5	50-25	73-37	100-50.5
With two-stage gear speed reducer	0-150	--	--	--	--	--	--	--
	0-140	--	--	--	52-26	70-35.4	105-52	143-71
	0-125	25-13	39-20	39-20	--	--	--	--
	0-100	--	--	--	--	--	--	--
	0-90	--	--	--	81-40	100-55	--	--
	0-75	42-22	65-32.6	65-32.6	--	--	196-97	255-132
	0-65	--	--	--	113-56	150-76	--	--
	0-45	65-37	105-54	105-54	--	--	--	--
0-40	--	--	--	182-91	250-124	--	--	
With three-stage gear speed reducer	0-23.5	138-69	204-102	204-102	292-150	426-207	603-303	795-413
	0-10	238-96	258-141	258-141	426-356	426	787-420	795-429

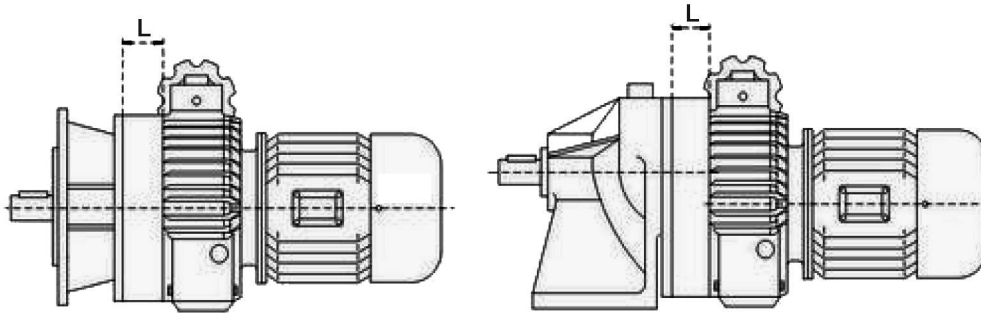
Note: Input power unit : kW Output speed unit : r/min

## Installation pattern

- Refer to installation pattern for TB series variator installation pattern



Dimensions



Base No.	L	Other dimension
02	41	Referring to TB series variator
03	36	
04	34	

Appendix  
Comparison for lubrication replacement

ISO	COMPANY	VG32
TB		Ub-1, Ub-3
RECOMMENDED LUBRICANTS	SHELL	A. T. F. DEXRON
	ESSO	A. T. F. DEXRON TORQUE FLUID N45
	MOBIL	A. T. F. 220, DTE24, Mobilfluid25
	CASTROL	TQ. DEXRON II
	BR	AUTRAN DX, Energol HL-XP32
	IP	A. T. F. DEXRON FLUID
		BLASIA 32

Reason and solution on problem

Problems	Reasons	Solutions
Overheating	Overload Insufficient oil Inferior oil Excessive oil	Adjust load or select larger size Fill in adequate oil Fill in proper oil Reduce Oil
Noise	Poor fit between gear and gear shaft Bearing damaged or clearance too large Insufficient oil Invaded by foreign objects	Optimize the surfaces and gears Replace bearing Fill in adequate lubricant Remove foreign objects and replace oil
Failed to adjust speed	Planet wheel wore out speed control cam or fixed-ring damaged driver or press-ring damaged	Mending or replace planet wheel Mending or replace speed control cam or fixed-ring Mending or replace driver or press-ring
Motor running but output shaft don't run	Carrier damaged key of output shaft damaged Circlip of output shaft damaged key of motor damaged	Replace Carrier Replace key of output shaft Replace Circlip of output shaft Replace key of motor
OIL leakage	Oil seal damaged Gasket damaged Excess oil Oil plug loosen Oil-level plug damaged	Replace Oil seal Replace Gasket Adjust quantity of oil Tighten Oil plug Replace Oil-level plug