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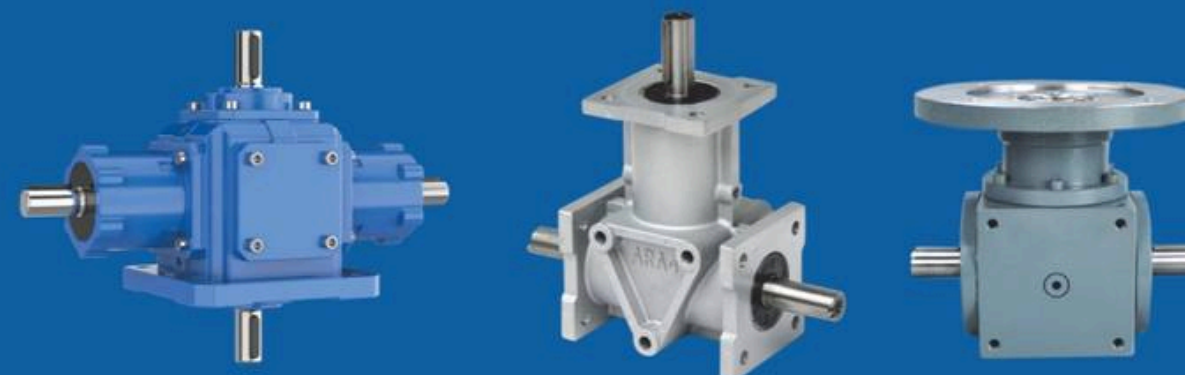
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**YUQIU
MACHINE**

HANGZHOU YUQIU MACHINE CO.,LTD



T SERIES SPIRAL BEVEL GEAR STEERING DEVICE

ARA SERIES SPIRAL BEVEL GEAR STEERING DEVICE

HD SERIES SPIRAL BEVEL GEAR STEERING DEVICE

BRIEF INTRODUCTION

Hangzhou YUQIU Machinery Co., Ltd is located in Qiantang Industrial Park, is a professional engaged in KRV hyperboloid reducer, RV, SWL, four series gear reducer and YE3 three-phase asynchronous motor and other products R & D and production of National high-tech enterprises. The company has a number of domestic and foreign advanced transmission machinery production equipment and precision testing equipment, the establishment of Hangzhou high-tech research and development center. After years of development, we are proud to be the industry as the fastest improving quality, sales growth of the most stable transmission equipment manufacturers. At present, the company has purchased more than 41,000 square meters of land in Jiaxing Haining for the construction of a new factory building, and named it Zhejiang Yuqiu Machinery Co., Ltd., which has expanded the overall scale of the company.

In line with the ideals of professionalism, efficiency, stability and innovation, the company has a strong and skilled management team. The product has been awarded the honorary title of "Hangzhou Famous Trademark" and "Hangzhou Famous Brand". Has continuously increased the visibility of our products in the drive field. Our

products have passed ISO9001 Quality System Certificated, CCC Certificated, CE Certificated and energy certificated. Our company is the first to obtain self-support import & export right at the same trade At present, the products are widely sold throughout the country and developed countries in the world.

"Technology life, people-oriented" company has always used this as the core concept of operating products and service customers, continuously provide high-quality transmission equipment for customers, provide customers with solutions in the field of transmission, and cooperate with customers for win-win results!



PRODUCTION & EQUIPMENT

YUQIU have advanced and perfect inspecting equipment to inspect the spare parts and whole machine precisely.



T Series Spiral Bevel Gear Steering Device

T...I-U

T...D-L

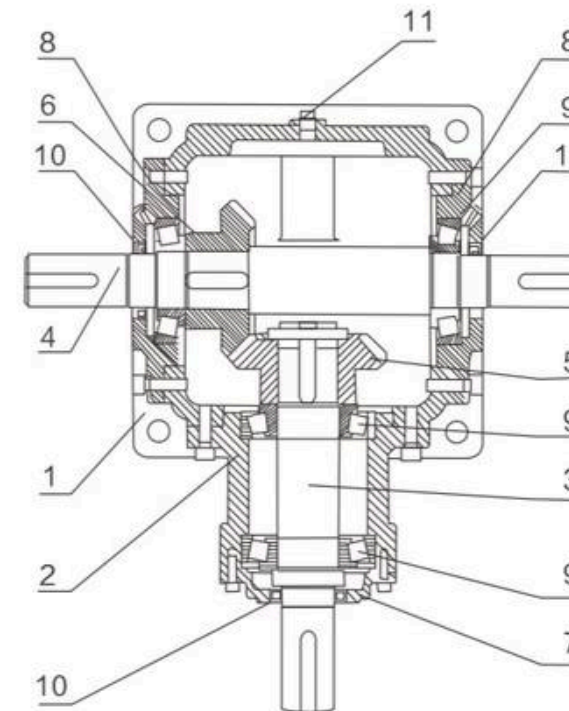
T...I-D

T...I-LR


1. Product Overview

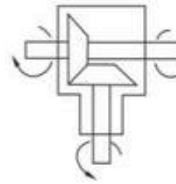
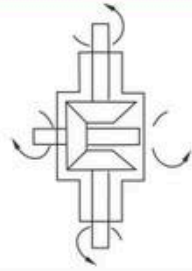
1. T Series spiral bevel redirector with various types are standardized, all ratio of 1:1, 1.5:1, 2:1, 2.5:1, 3:1, 4:1 and 5:1 are actual ones. Average efficiency 98%.
2. There are one input shaft, two input shafts, unilateral output shaft and Double side output shaft.
3. Spiral bevel gear can rotate in both directions and transmit smoothly, low noise, light vibration, high performance.
4. 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.

2. Product Structural View



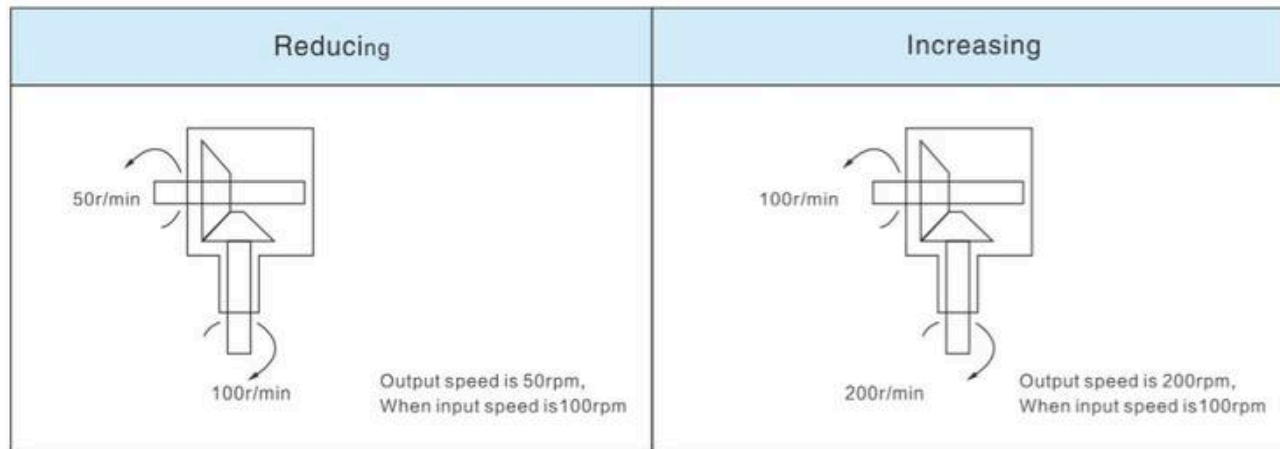
- 1、Housing
- 2、Housing of input shaft
- 3、Input shaft
- 4、Output shaft
- 5、Drive spiral bevel gear
- 6、Drive spiral bevel gear
- 7、Bearing seat of input shaft
- 8、Bearing seat of input shaft
- 9、Bearing
- 10、Oil Seal
- 11、Oil gauge

3. Function of rotation

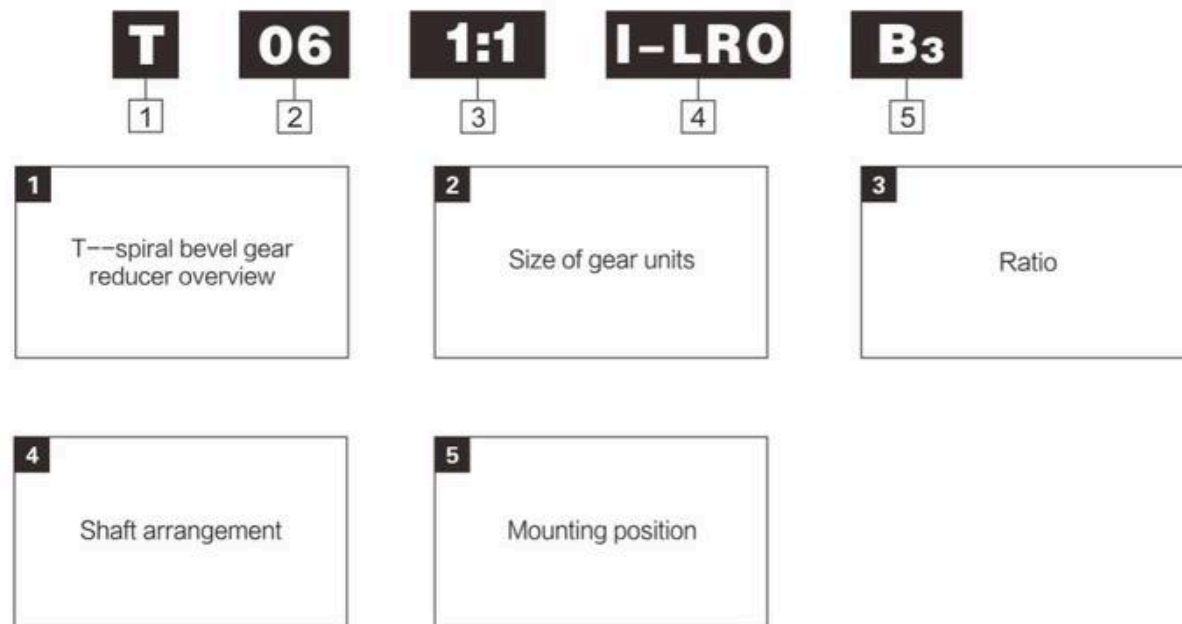
1 Input shaft		2 Input shaft	
2-extended shaft	3-extended shaft	3-extended shaft	4-extended shaft
			

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

4. Pay attention to the ratio when fixing the input side (there is nothing in case of ratio of 1:1)



5. Expressed method of Model



6. Weight Table

Type	T02	T04	T06	T07	T08	T10	T12	T16	T20	T25
m(kg)	2	10	21	32	49	78	124	188	297	488

7. Redirector Fr(N) Table

i_n	n_1 (r/min)	CRTM02		CRTM04		CRTM06		CRTM07		CRTM08		CRTM10		CRTM12		CRTM16		CRTM20		CRTM25	
		Horiz- ontal axis	Longit- udinal axis	Horiz- ontal axis	Longit- udinal axis	Horiz- ontal axis	Longit- udinal axis	Horiz- ontal axis	Longit- udinal axis	Horiz- ontal axis	Longit- udinal axis	Horiz- ontal axis	Longit- udinal axis	Horiz- ontal axis	Longit- udinal axis	Horiz- ontal axis	Longit- udinal axis	Horiz- ontal axis	Longit- udinal axis	Horiz- ontal axis	Longit- udinal axis
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	7630	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
	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
	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
	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
2.5:1	1450			1078	1960	2548	2842	3430	5390	4361	7987	5194	9212	5978	10486	5978	12152	7630	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
	580			1078	1960	3430	3528	5096	6174	7644	8820	9555	11760	11466	14504	7840	16072	10780	22001	15680	33222
3:1	1450			1078	1960	2548	2842	3430	5390	4361	7987	5194	9212	5978	10486	5978	12152	7630	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
	580			1078	1960	3430	3528	5096	6174	7644	8820	9555	11760	11466	14504	7840	16072	10780	22001	15680	33222

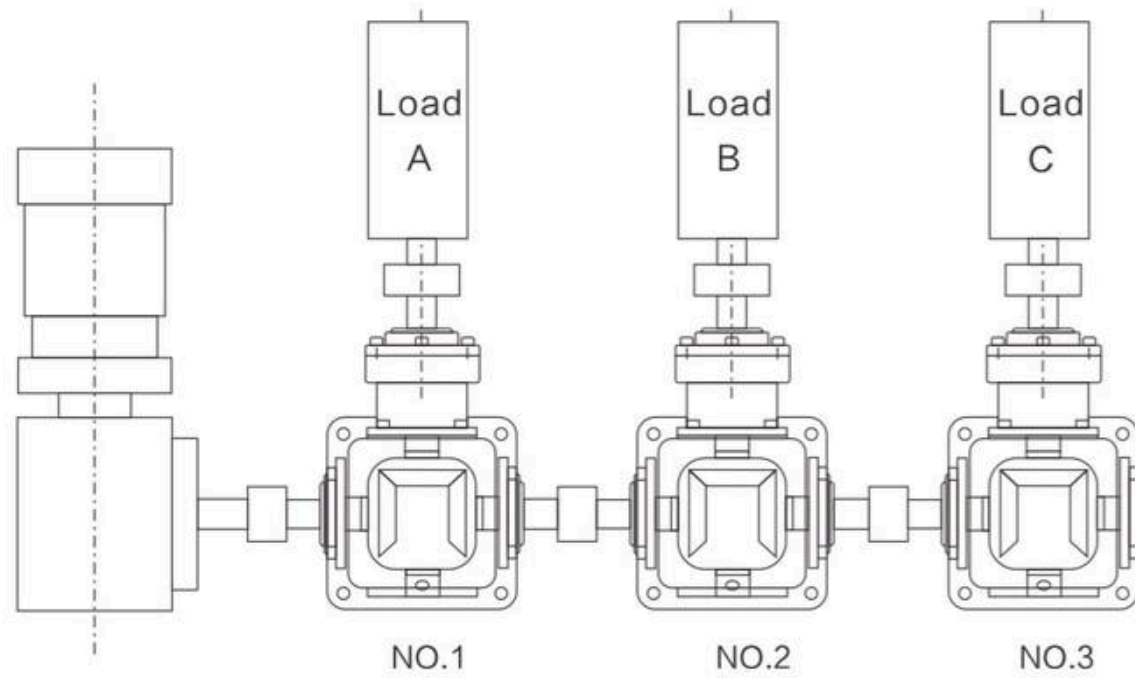
Notes: If there is lower output speed, please choose the maximum Fr in the above table.

8. Service Factor f_1

Load characteristic	Operating time/day (hour)		
	≤ 2	2~10	0~24
Uniform	1.00(1.00)	1.00(1.25)	1.25(1.50)
Moderate	1.00(1.25)	1.25(1.50)	1.50(1.75)
Heavy	1.25(1.50)	1.50(1.75)	1.75(2.00)

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

Selection For Example



Torque values of three gear reducer are 196Nm, uniform impulsire force, operate continuous for 8 hour per day, the at is, useful factor $f_s=1.25$, input speed of 300rpm, ratio of 1:1.

Calculate according to formula:

Required torque of any of gearbox MN2 is equal to 245Nm or larger.

No.1 gear reducer No.1 gear reducer carry torque 245Nm, but No.2 and No.3 gear reducer need transfer torque through No.1, Consequently No.1 gear reducer should carry torque 735Nm ($245\text{Nm} + 245\text{Nm} + 245\text{Nm}$), select T12. according to transmission capacity table.

No.2 gear reducer No.3 gear reducer still transfers torque of No.3 gear reducer 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 gear reducer Required torque is more than 245Nm because of only load C according to transmission capacity Table select T 08.

10. Transmission Capacity Table

i_n	n_1 (r/min)	CRTM02		CRTM04		CRTM06		CRTM07		CRTM08	
		Mn2 (N.m)	P _{N1} (kW)	Mn2 (N.m)	P _{N1} (kW)	Mn2 (N.m)	P _{N1} (kW)	Mn2 (N.m)	P _{N1} (kW)	Mn2 (N.m)	P _{N1} (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
	10	13	0.014	43.0	0.046	132	0.141	214	0.228	361	0.386
1.5:1	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
	100					134	0.957	163	1.16	210	1.49
	10					139	0.099	169	0.12	218	0.155
2:1	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	0.58	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
	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
2.5:1	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
	300					102.9	1.32	121	1.55	197	2.53
	200					103.9	0.88	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
3:1	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
	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	0.619
	10					104	0.037	118	0.042	179	0.064
4:1	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
	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
5:1	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
	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、When the horizontal axis speed does not reach 10r/min, please use the data of 10r/min.

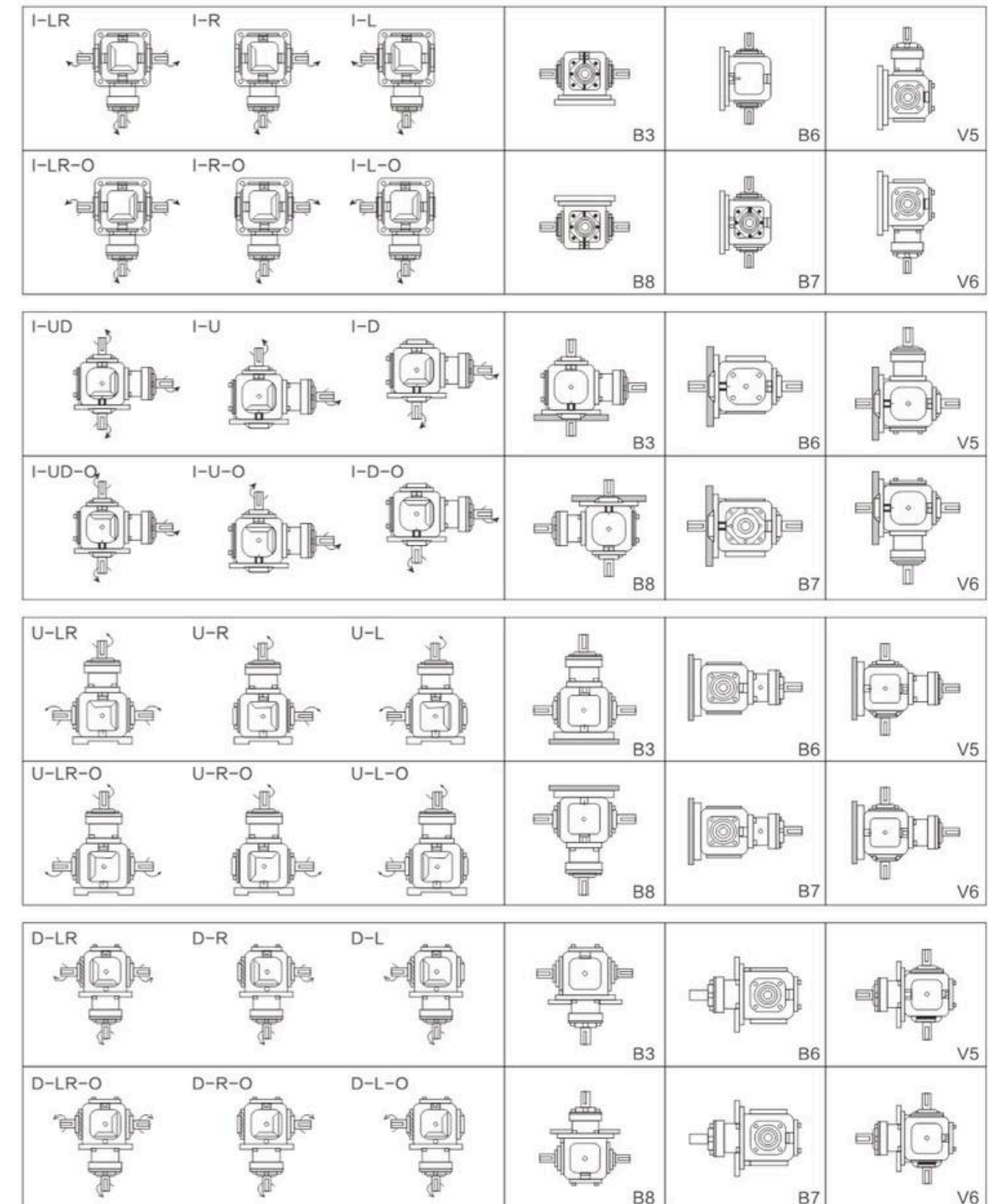
2、When ordering the specifications marked in gray above, please consult with our company. When the input speed of the horizontal axis exceeds 1450r/min, please consult with our company.

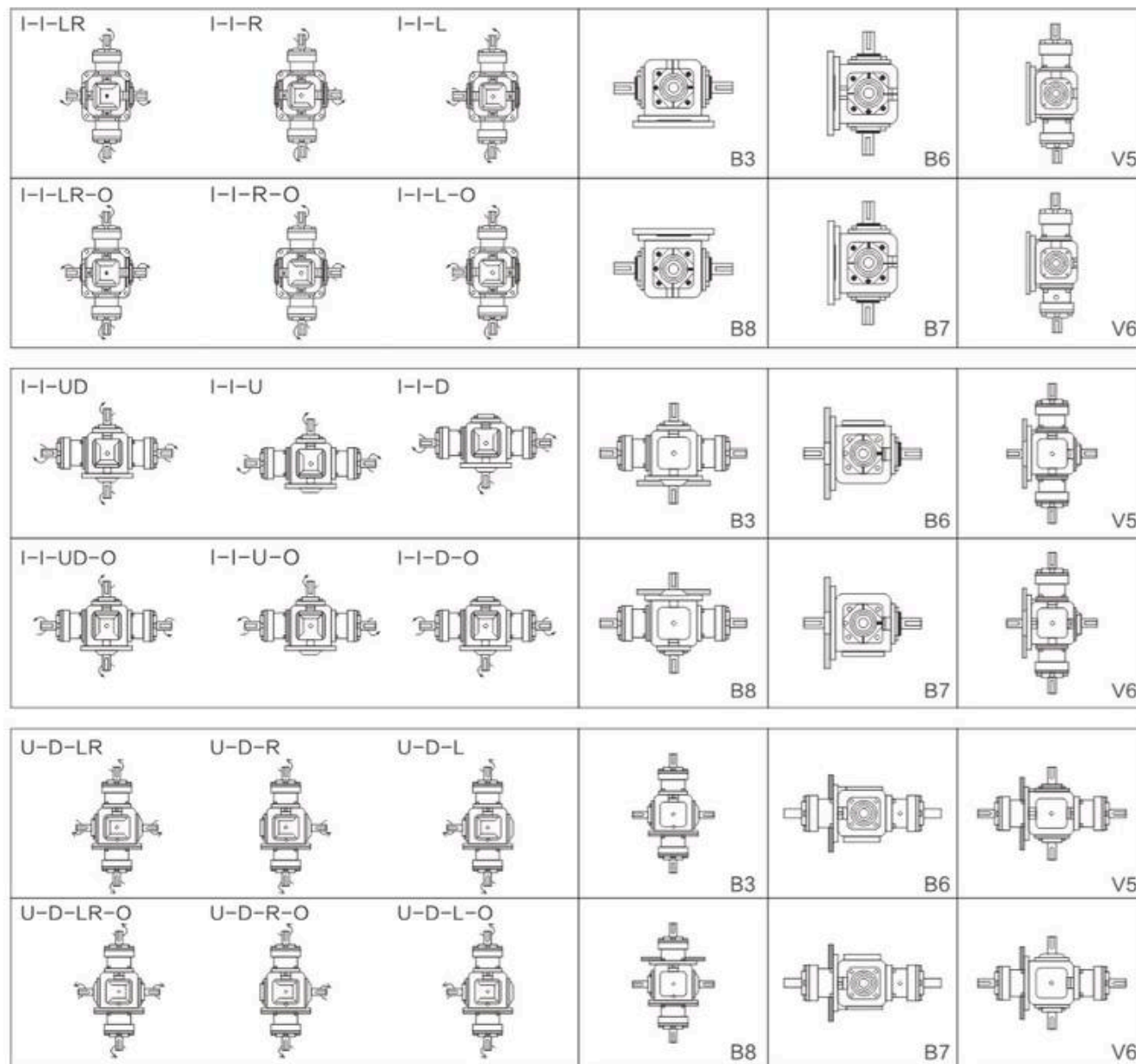
i _N	n ₁ (r/min)	CRTM10		CRTM12		CRTM16		CRTM20		CRTM25	
		Mn2 (N.m)	P _{N1} (kW)	Mn2 (N.m)	P _{N1} (kW)	Mn2 (N.m)	P _{N1} (kW)	Mn2 (N.m)	P _{N1} (kW)	Mn2 (N.m)	P _{N1} (kW)
1:1	1450	421	65.3	619	96.0	1019	163				
	1150	453	55.7	665	81.1	1098	139	1842	234		
	870	479	44.6	726	67.5	1186	114	2009	193	3489	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
1.5:1	10	561	0.599	919	0.983	1940	2.14	3205	3.53	5713	6.30
	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						
2:1	100	426	3.04	754	5.37						
	10	443	0.316	785	0.56						
	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
2.5:1	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
	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						
3:1	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						
	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
4:1	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
	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
5:1	580	254	3.93	456	7.07	902	14.6	1562	25.2	3084	49.8
	400	247	2.74	465	4.97	919	10.2	1588	17.7	3151	35.1
	300	259	2.08	470	3.77	90	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
	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
5:1	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.

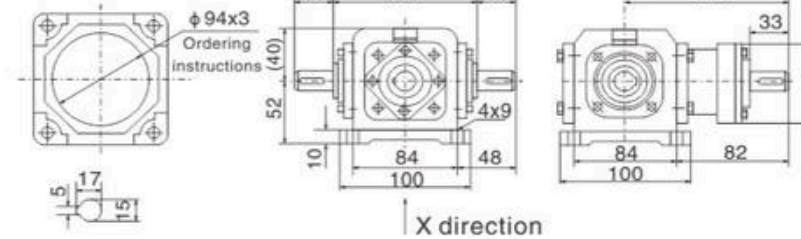
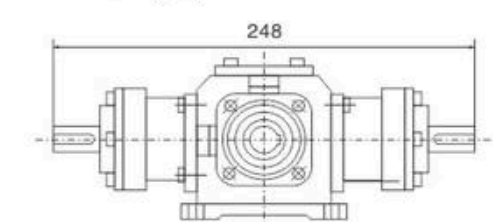
2. Please contact us, when order the model with ash sign or that input speed is more than 1450rpm.

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

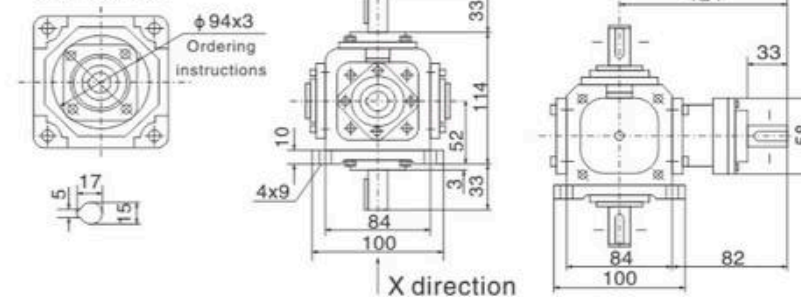
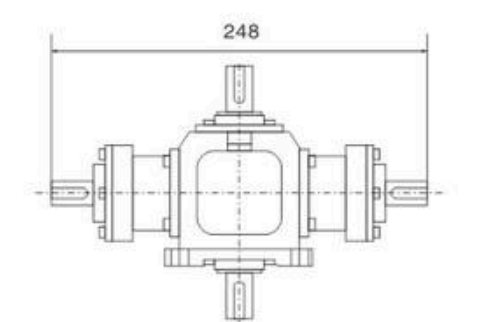



T2
I-LR(O)

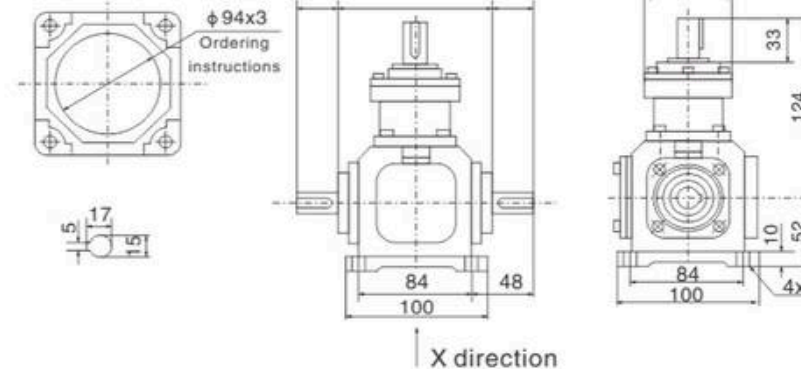
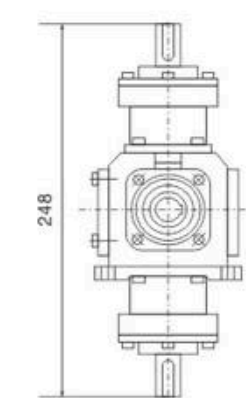
X direction


I-I-LR(O)

I-UD(O)

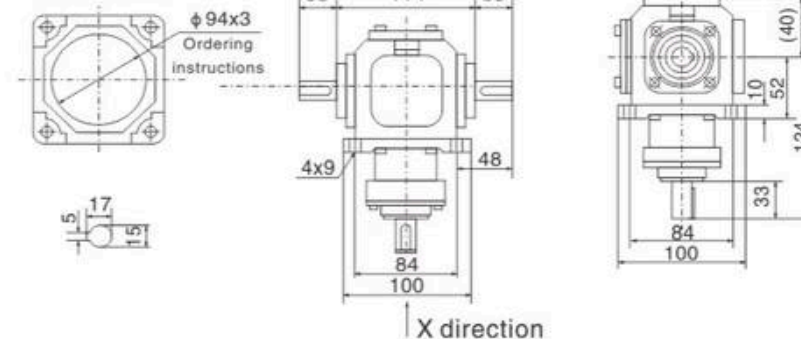
X direction

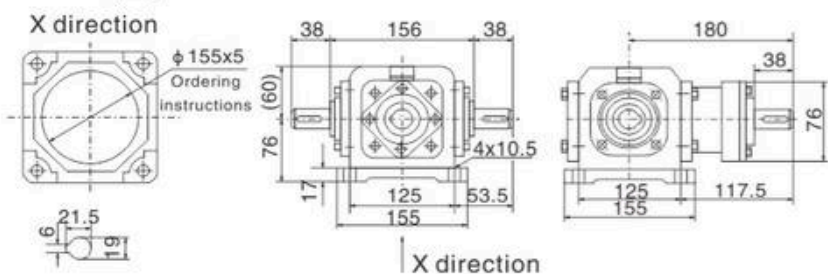
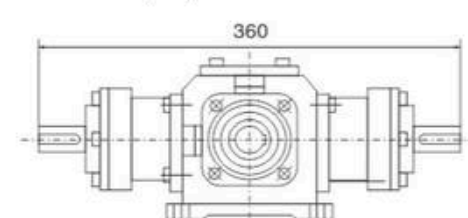
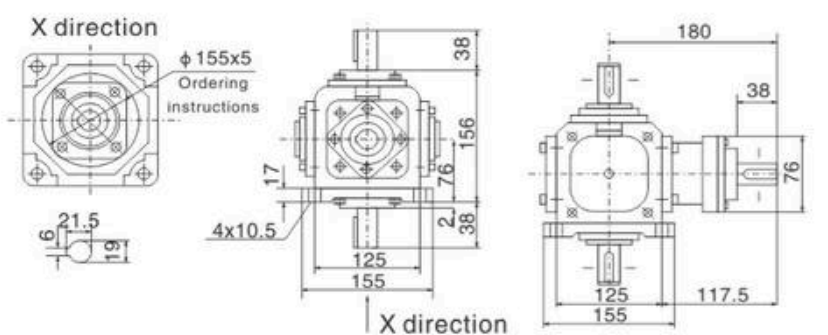
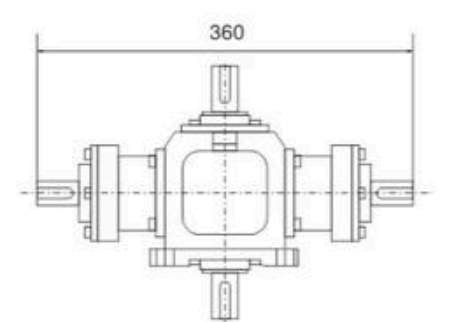
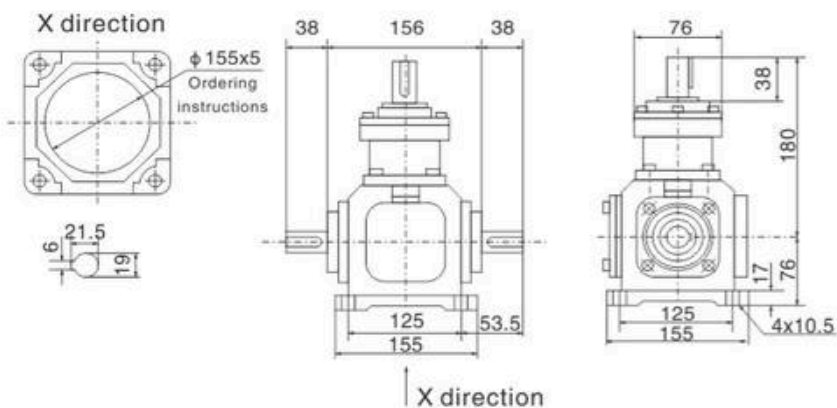
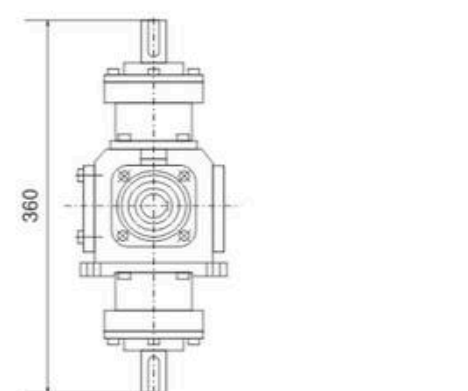
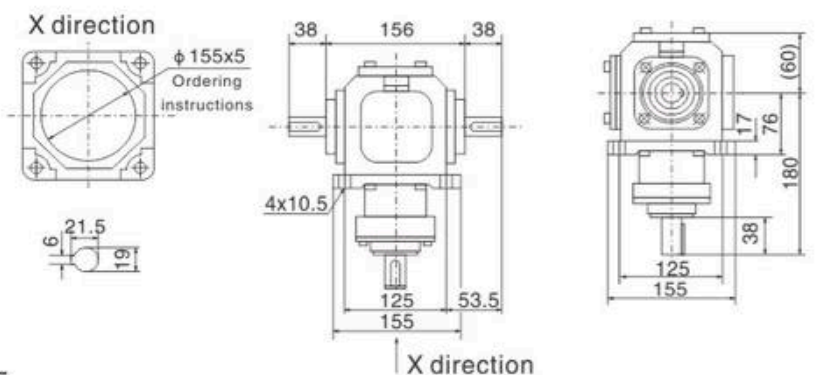
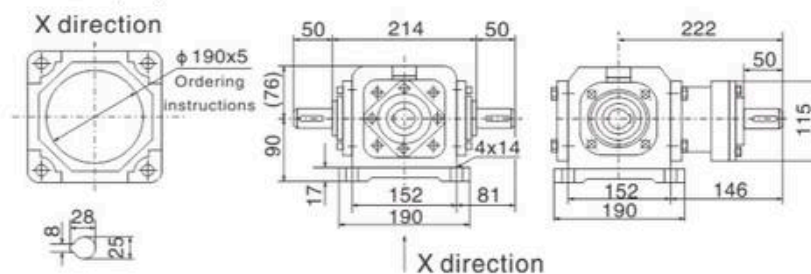
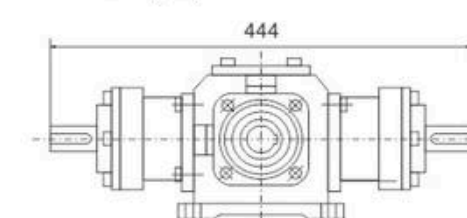
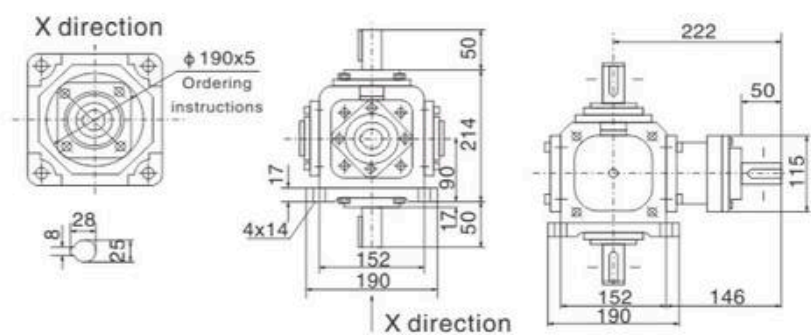
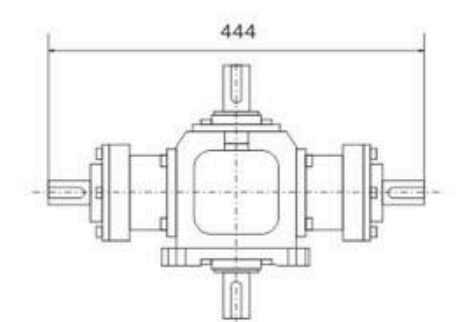
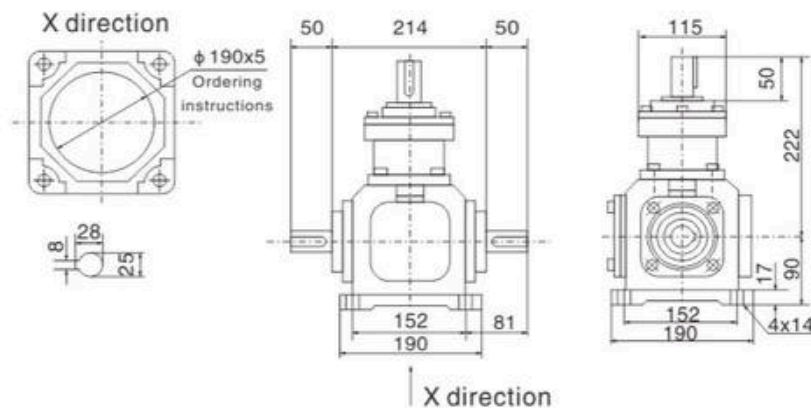
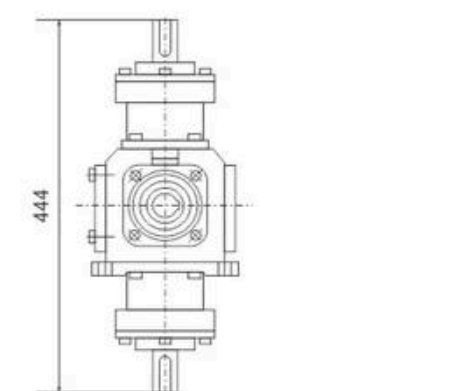
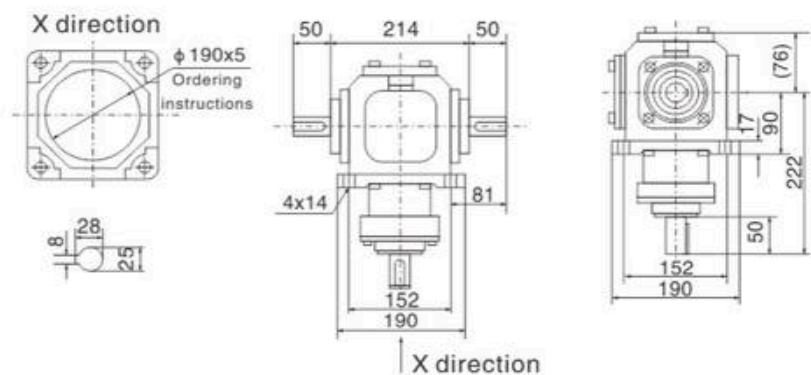

I-I-UD(O)

U-LR(O)

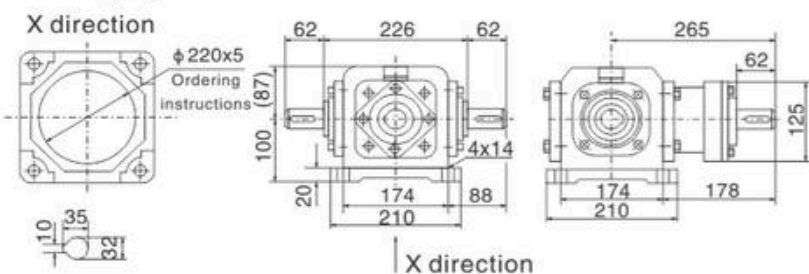
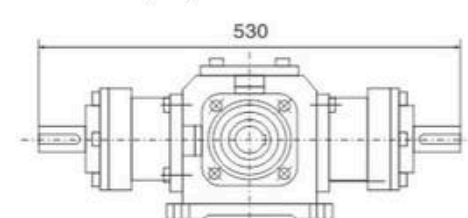
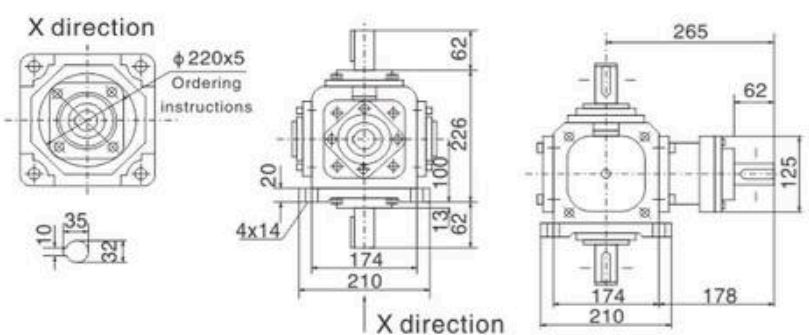
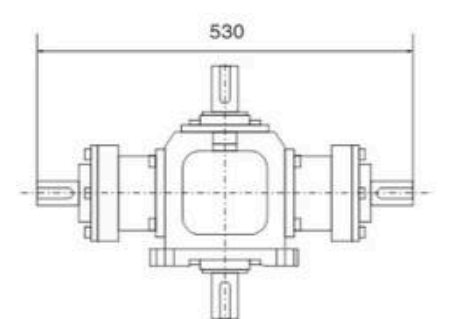
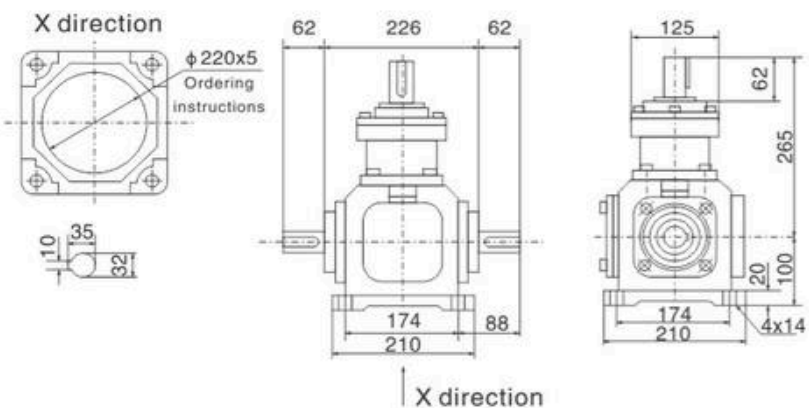
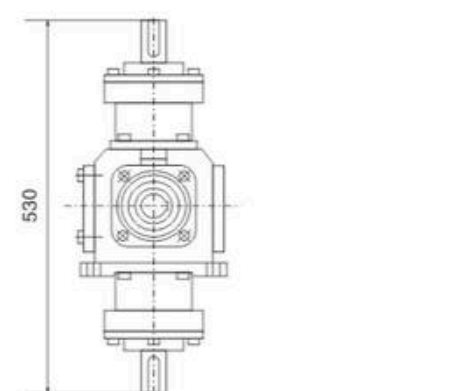
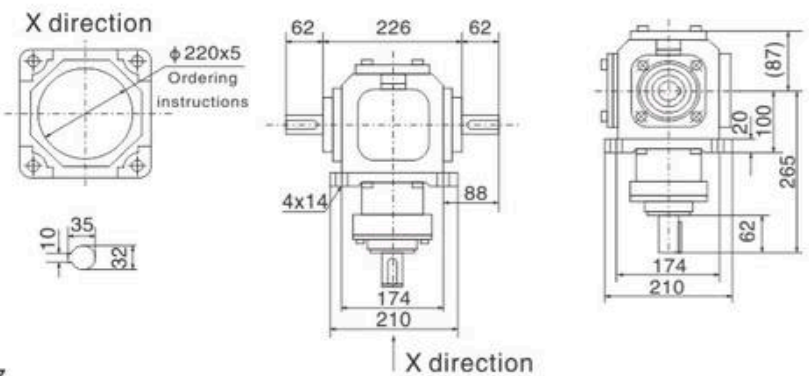
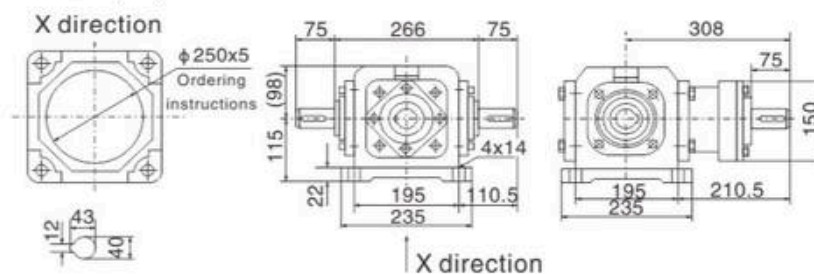
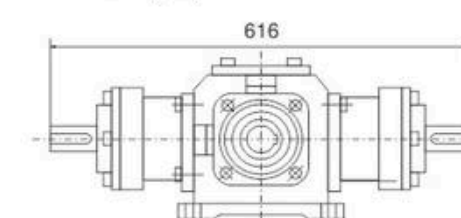
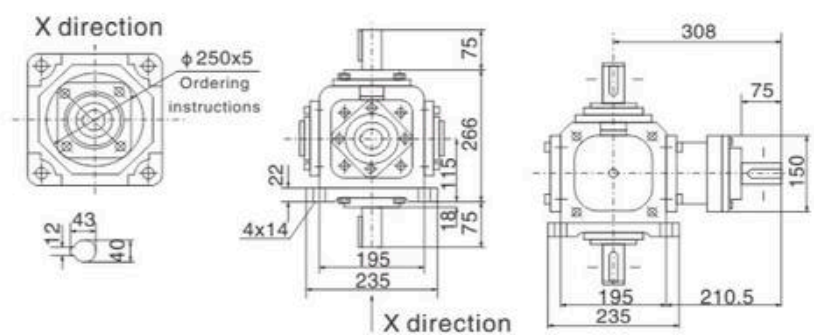
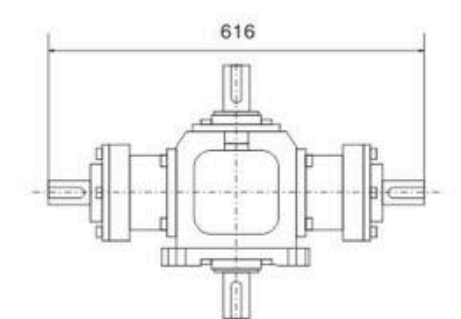
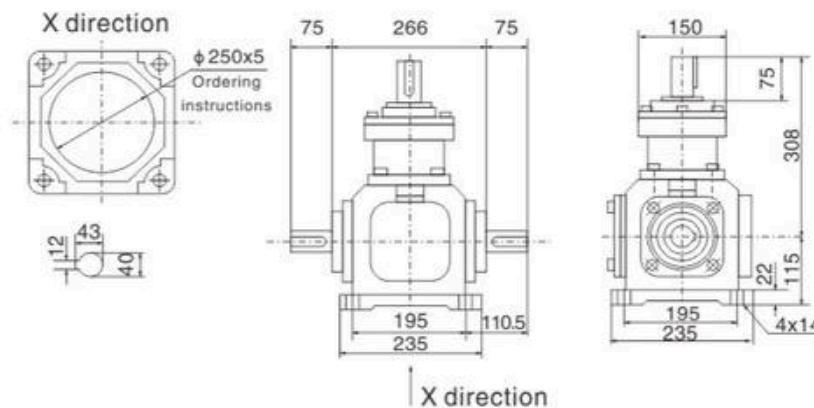
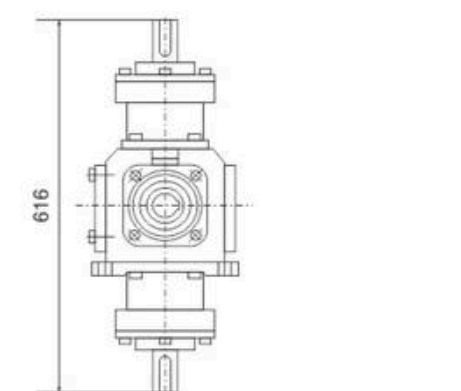
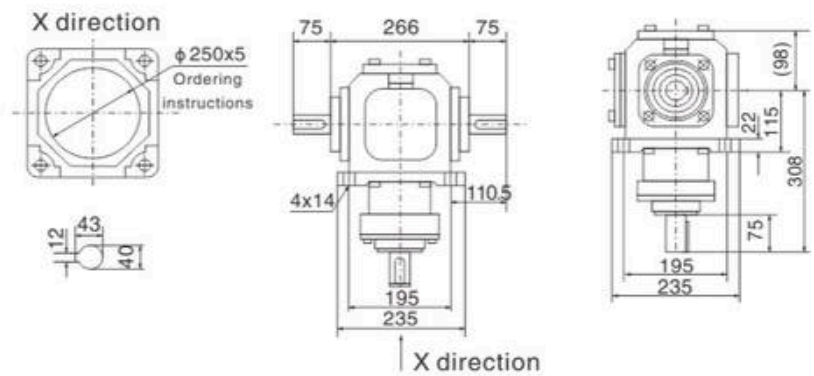
X direction

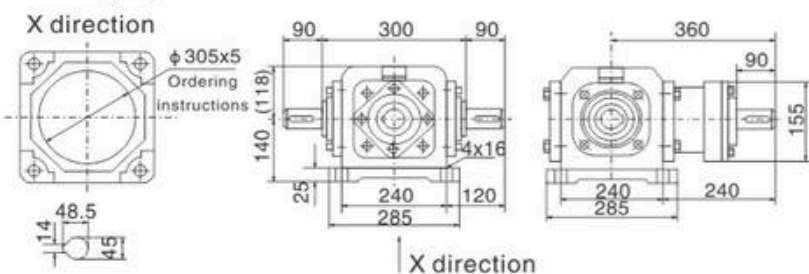
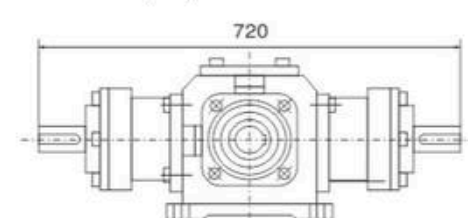
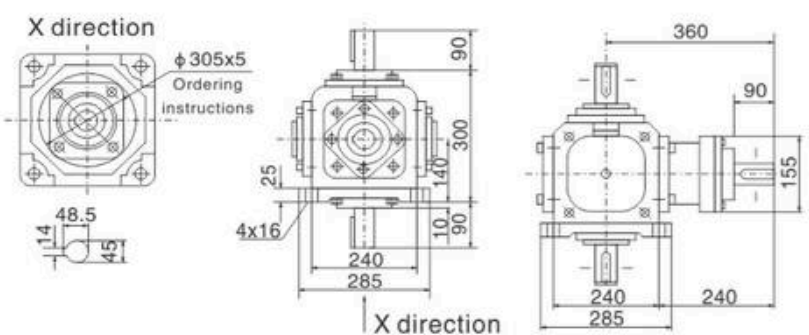
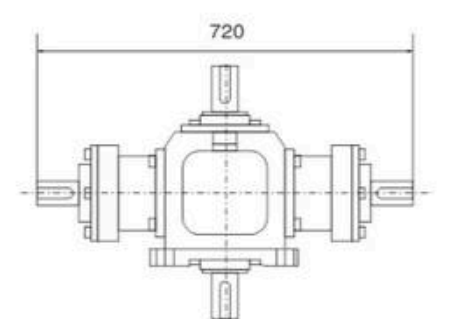
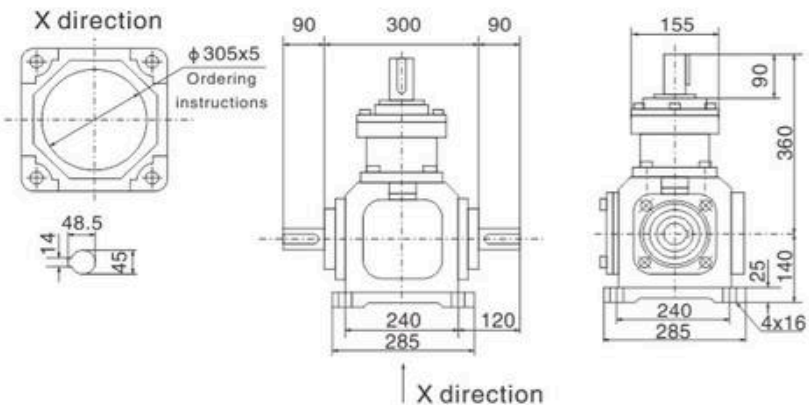
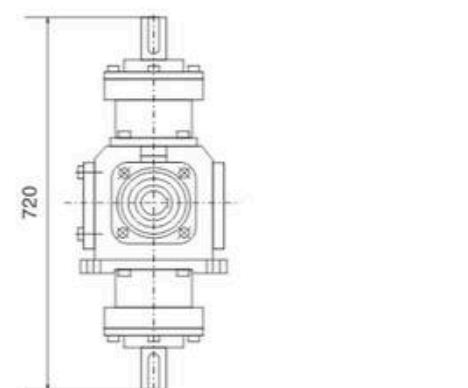
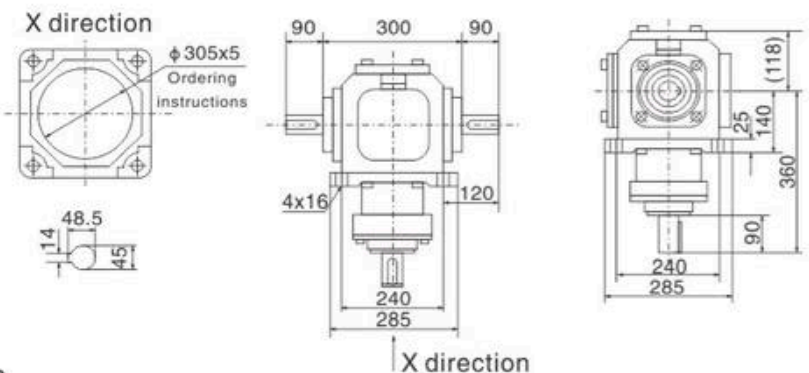
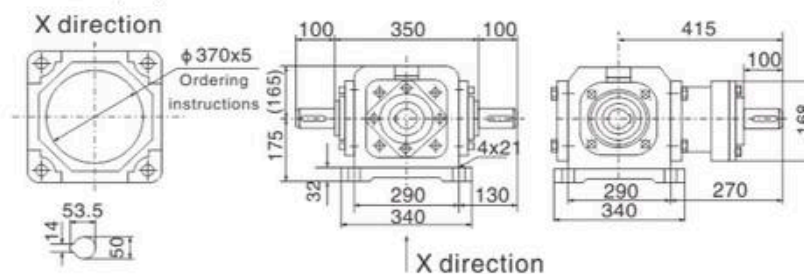
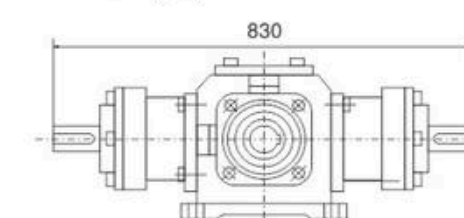
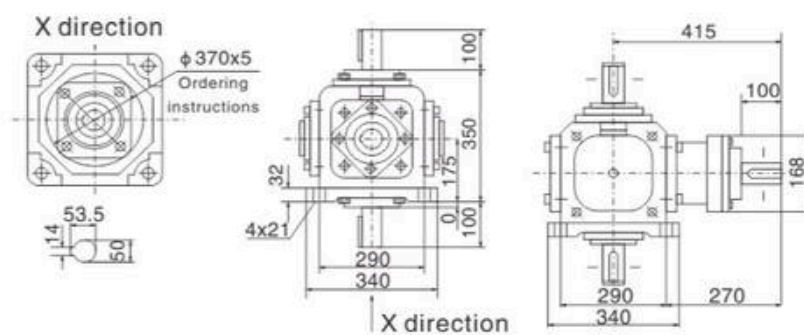
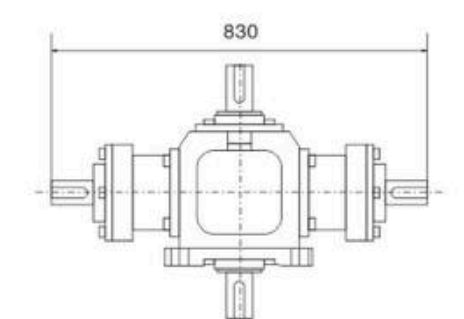
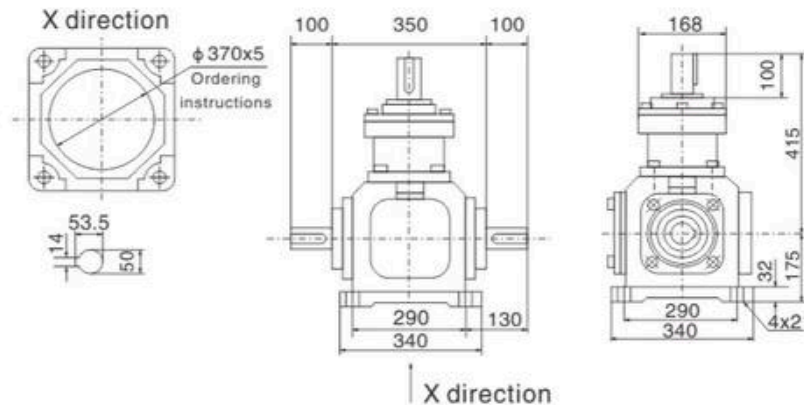
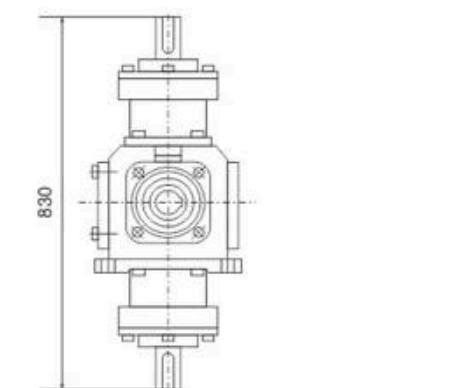
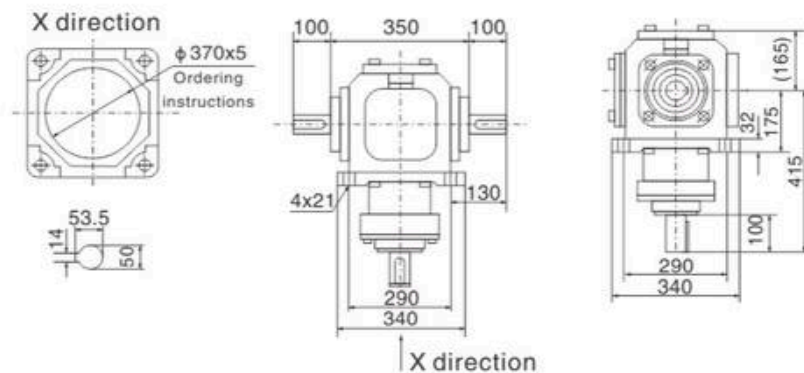

U-D-LR(O)

U-LR(O)

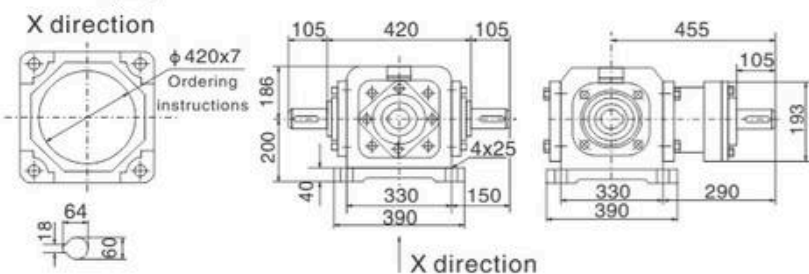
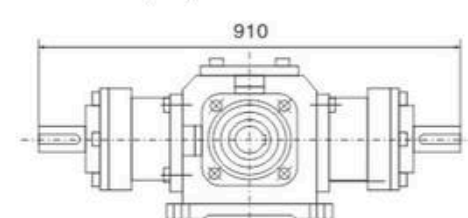
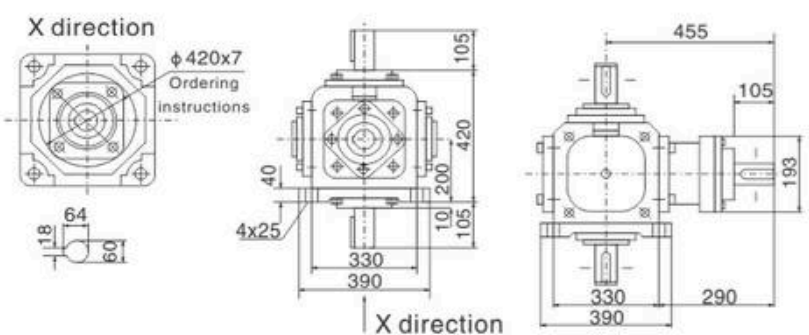
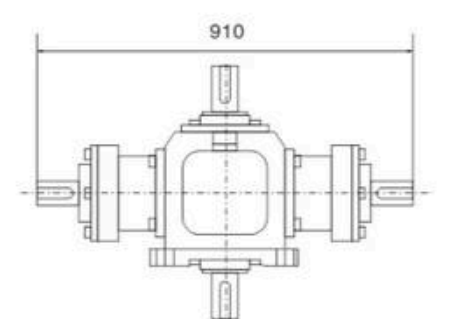
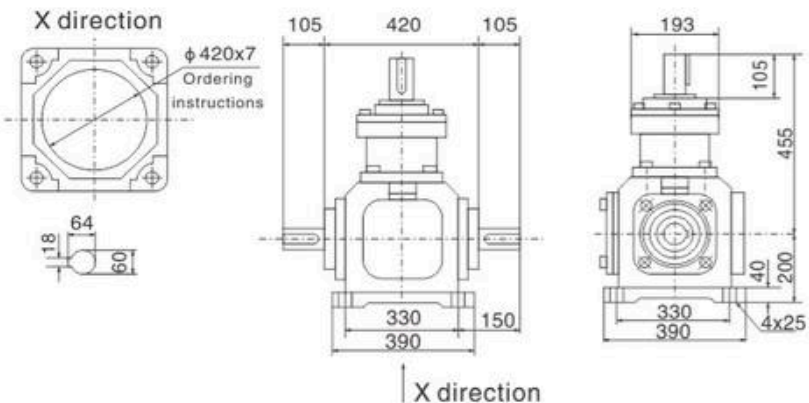
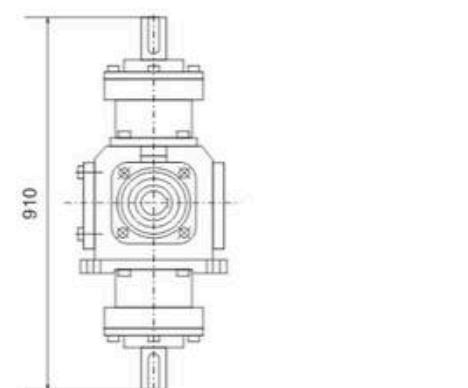
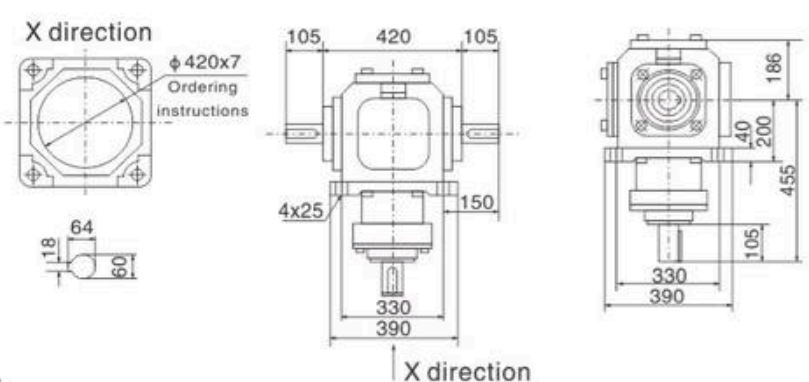
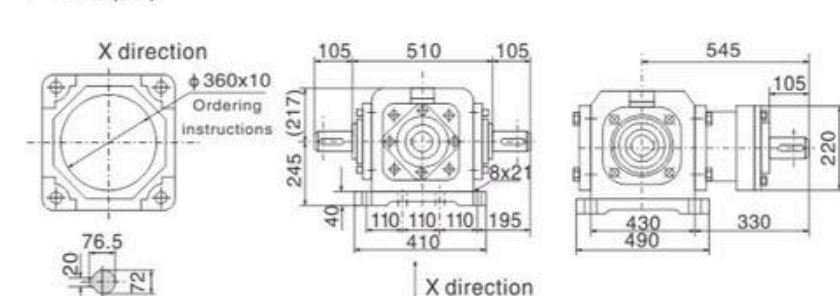
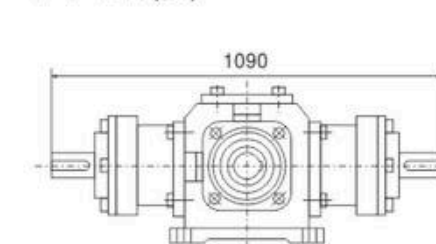
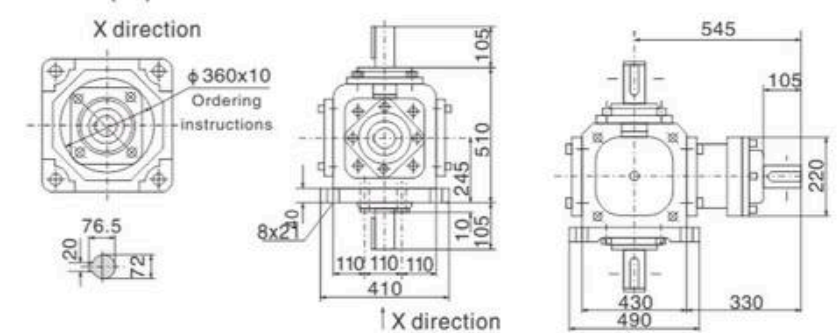
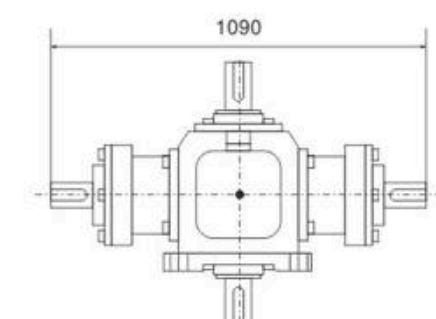
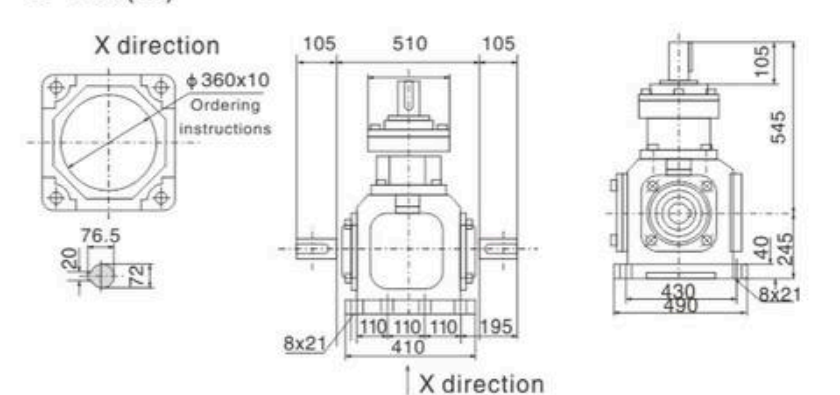
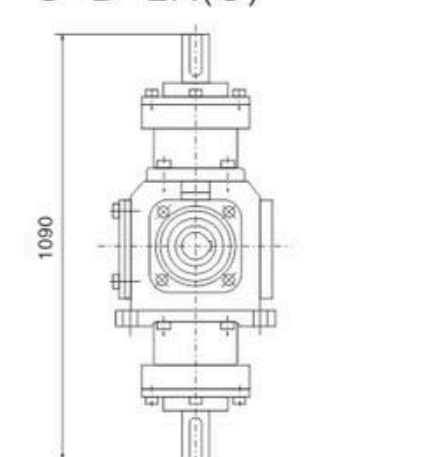
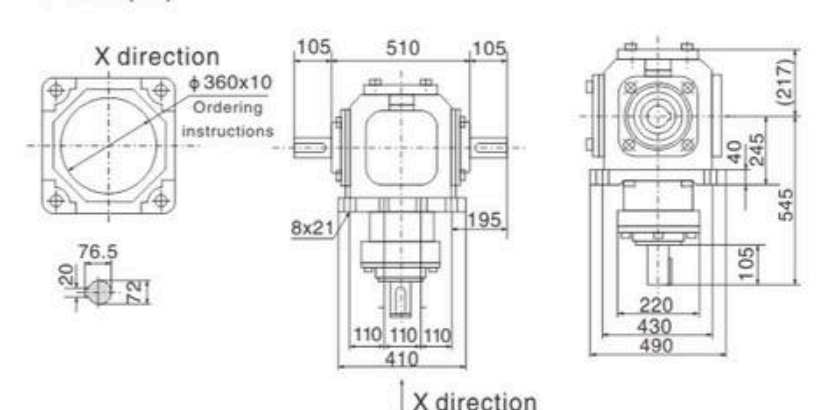
X direction



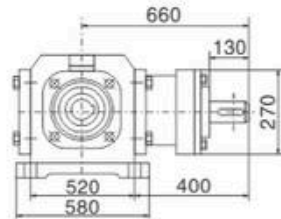
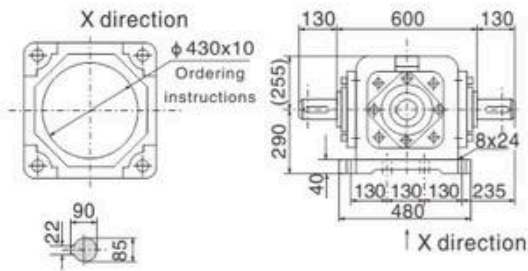
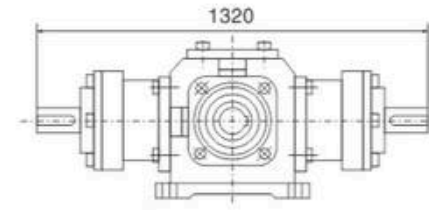
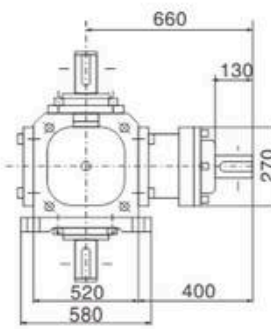
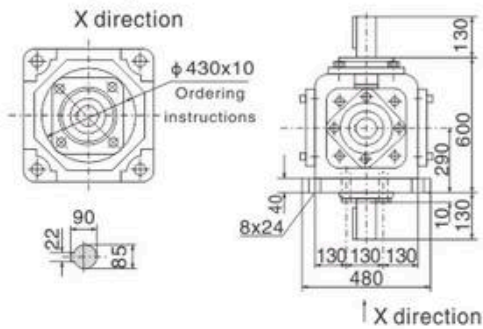
T4
I-LR(O)

I-I-LR(O)

I-UD(O)

I-I-UD(O)

U-LR(O)

U-D-LR(O)

U-LR(O)

T6
I-LR(O)

I-I-LR(O)

I-UD(O)

I-I-UD(O)

U-LR(O)

U-D-LR(O)

U-LR(O)


T7
I-LR(O)

I-I-LR(O)

I-UD(O)

I-I-UD(O)

U-LR(O)

U-D-LR(O)

U-LR(O)

T8
I-LR(O)

I-I-LR(O)

I-UD(O)

I-I-UD(O)

U-LR(O)

U-D-LR(O)

U-LR(O)


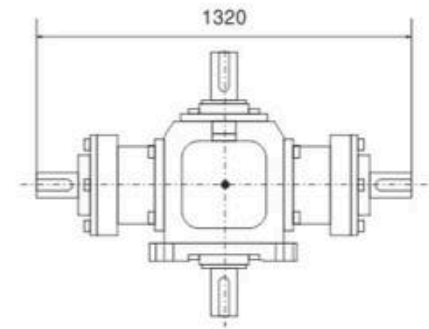
T10
I-LR(O)

I-I-LR(O)

I-UD(O)

I-I-UD(O)

U-LR(O)

U-D-LR(O)

U-LR(O)

T12
I-LR(O)

I-I-LR(O)

I-UD(O)

I-I-UD(O)

U-LR(O)

U-D-LR(O)

U-LR(O)


T16
I-LR(O)

I-I-LR(O)

I-UD(O)

I-I-UD(O)

U-LR(O)

U-D-LR(O)

U-LR(O)

T20
I-LR(O)

I-I-LR(O)

I-UD(O)

I-I-UD(O)

U-LR(O)

U-D-LR(O)

U-LR(O)


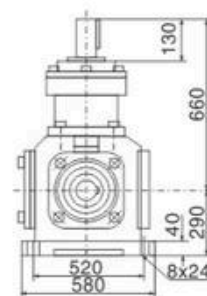
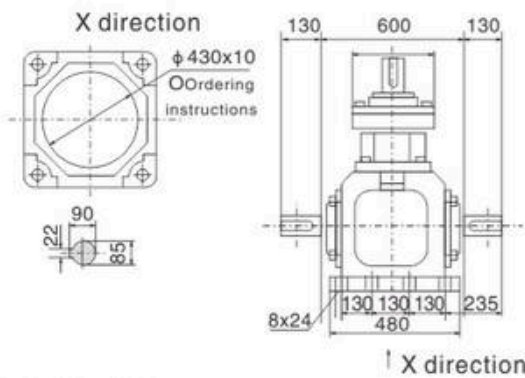
T25

$$I-LR(O)$$

$$I-I-LR(O)$$

$$I-UD(O)$$


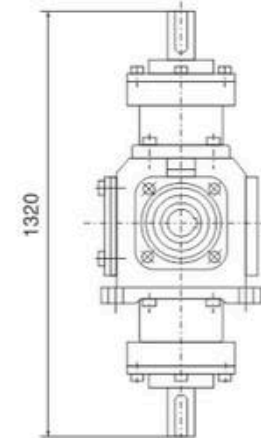
1-1-UD(O)



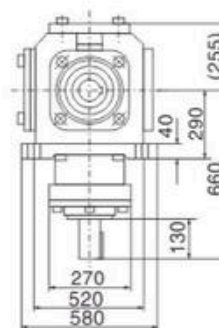
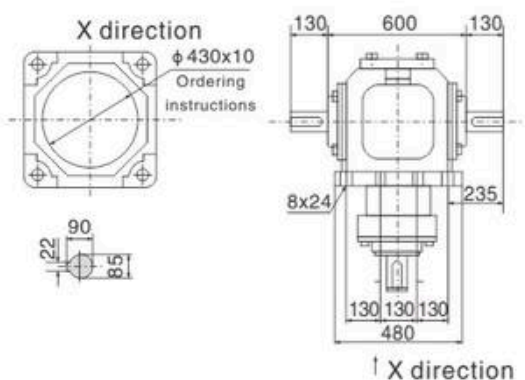
U-LR(0)



U-D-LR(0)



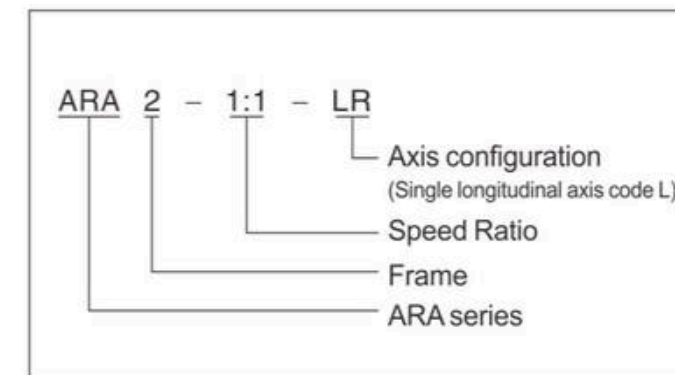
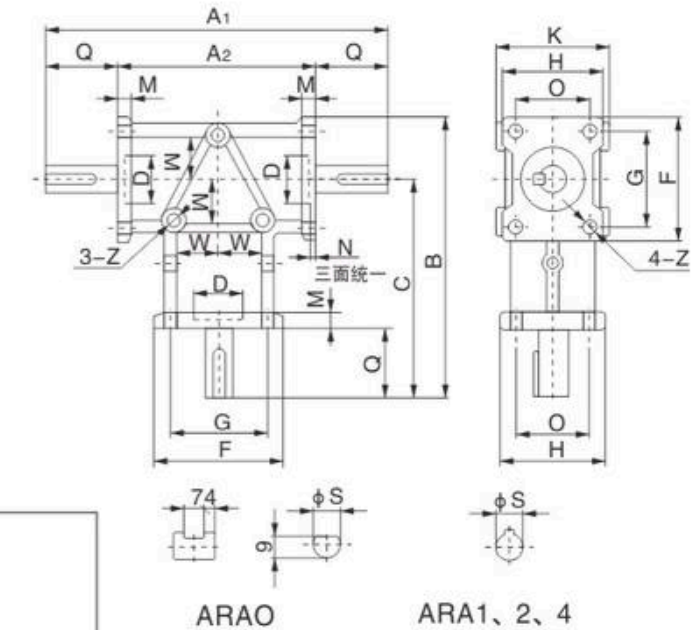
U-LR(0)



ARA Series Spiral Bevel Gear Steering Device

Characteristic:

Small, all-round installation, light weight, alloy aluminum shell, and shaft require corrosion-resistant steel to be specified when ordering. The lubricant was added at the factory.

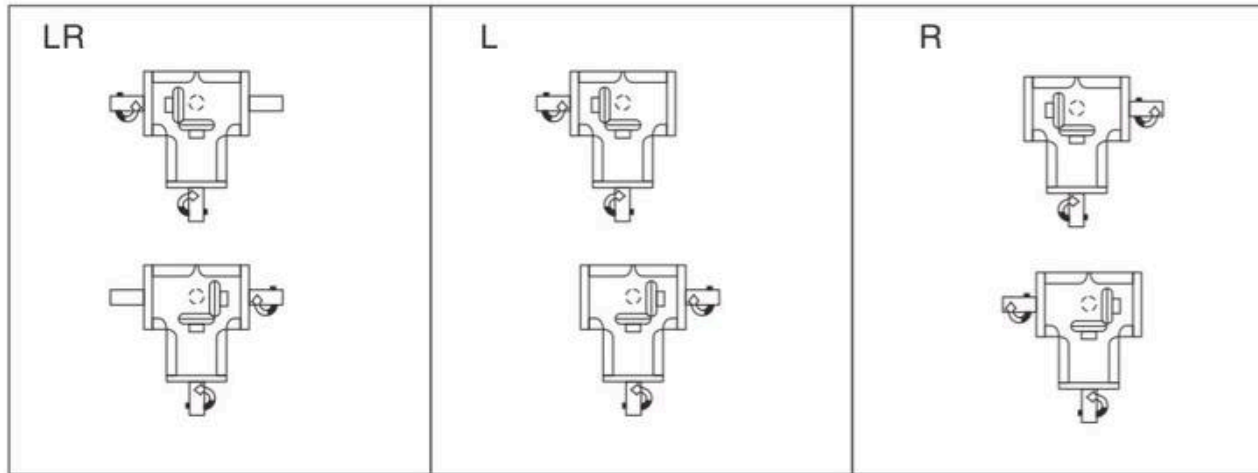


	A1	A2	B	C	D(H7)	F	H	G	K	M	N	O	W	Z	φ Sh7	Q	Flat key
ARA0	100	70	94	70	φ 22	48	38	38	40	5	2	28	17	φ 5.5	φ 10	15	—
ARA1	184	108	155.5	120.5	φ 35	70	54	56	60	8	5	40	24	φ 6.8	φ 15	38	5×5
ARA2	252	152	226	177	φ 42	98	76	72	76	12	5	54	38	φ 8.8	φ 20	50	6×6
ARA4	280	160	265	210	φ 62	110	80	110	110	10.5	5	80	40	φ 10.8	φ 24	60	8×7

ARA series weight chart:

Type	ARA0	ARA1	ARA2	ARA4
m(kg)	0.6	1.5	3.2	5.3

The relationship between shaft arrangement and rotation direction:



ARA series transmission capacity table

i	n1 (r/min)	ARA0		ARA1		ARA2		ARA4	
		MN2 (N-M)	PN1 (kw)	MN2 (N-M)	PN1 (kw)	MN2 (N-M)	PN1 (kw)	MN2 (N-M)	PN1 (kw)
1:1	1450	4.13	0.31	7.15	1.11	12.25	1.92	31.9	4.94
	1150	41.3	0.28	71.5	0.88	14.01	1.73	34.1	4.19
	870	4.13	0.24	7.15	0.66	15.78	1.47	37.2	3.46
	580	41.3	0.18	71.5	0.44	17.74	1.10	39.5	2.45
	400	4.13	0.14	7.15	0.30	17.74	0.76	40.2	1.72
	300	41.3	0.12	71.5	0.23	17.74	0.57	40.5	1.30
	200	4.13	0.08	7.15	0.15	17.74	0.38	41.2	0.88
	150	41.3	0.06	71.5	0.11	17.74	0.28	41.8	0.67
	100	4.13	0.04	7.15	0.08	17.74	0.19	41.9	0.448
	50	41.3	0.02	71.5	0.04	17.74	0.095	43.2	0.231
2:1	1450	3.45	0.14	6.95	0.55	11.96	0.94	42.8	3.32
	1150	3.45	0.11	6.95	0.43	11.96	0.74	43.4	2.67
	870	3.45	0.08	6.95	0.33	11.96	0.56	43.8	2.04
	580	3.45	0.05	6.95	0.22	11.96	0.37	44.4	1.38
	400	3.45	0.04	6.95	0.15	11.96	0.26	45.1	0.964
	300	3.45	0.03	6.95	0.11	11.96	0.19	45.5	0.729
	200	3.45	0.02	6.95	0.075	11.96	0.13	46.1	0.492
	150	3.45	0.014	6.95	0.056	11.96	0.10	46.4	0.372
	100	3.45	0.010	6.95	0.038	11.96	0.064	46.6	0.249
	50	3.45	0.005	6.95	0.018	11.96	0.032	46.8	0.125

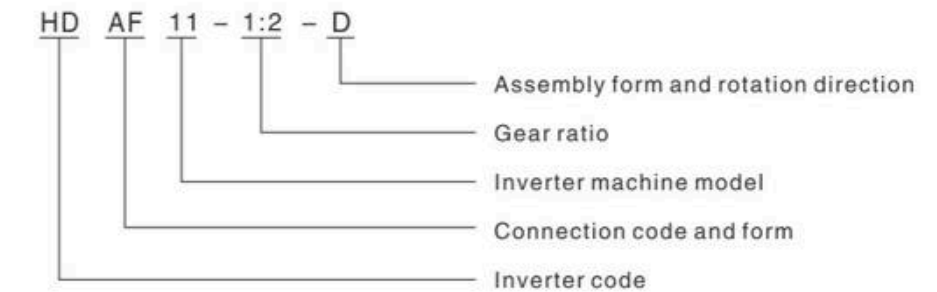
HD Series Spiral Bevel Gear Steering Device

1. HD series spiral bevel gear reversing transmission product introduction

The structural characteristics of spiral bevel gear reversing transmission and reversing reducer are as follows:

1. The shape of the box is a regular hexahedron. Can adapt to installation in different directions.
2. The commutator design has a long service life, high load-bearing capacity, balanced transmission, low noise, and a gear line speed of up to 40 centimeters, with a transmission efficiency of up to 94% to 98%.
3. Spiral bevel gears are made of high-quality low-carbon alloy structural steel. After carburizing and quenching heat treatment, and grinding and running in, high-precision hard tooth surface closed transmission is achieved.
4. The HD series commutator has seven specifications, with a wide range of options and diverse output shaft forms, which can meet the needs of various occasions.
5. It can achieve two transmission modes: deceleration and acceleration.

2. Model representation method



Connection code and form

HD input and output shaft extension connection	HAD input shaft extension and output shaft installation connection
HDF with input flange and output shaft extension connection	HDAF with input flange and output shaft mounted connection



3. Transmission ratio calculation

$$\text{Transmission ratio } i = \frac{\text{Input speed } n_1}{\text{Output speed } n_2}$$

When i is greater than 1, it is deceleration, and when i is less than 1, it is deceleration

4. Model selection

1. Selection calculation formula: (1) $P_{1N} = P_1 X f$ (starting and stopping times per hour shall not exceed 20 times/hour)
- (2) $P_{1N} = P_1 \cdot 2 X P_1 X f$ (starting and stopping times per hour 20~60 times/hour)
- (3) $P_{1N} \leq P_N$

The selected power must be less than or equal to the allowable power;

In the formula: P_{1N} is the selected power, P_1 is the actual required power, f is the utilization factor, and P_N is the allowable power.

2. Usage coefficient f

Prime mover	Daily working hours (Hour)	Bearing type		
		Uniform load	Medium medium impact load	Heavy impact load
Motor Steam turbine Hydraulic motor	3	0.8	1	1.5
	3~10	1	1.25	1.25
	10~24	1.25	1.5	2
Combustion engine	3	1.25	1.5	2
	3~10	1.5	1.75	2.25
	10~24	1.25	2	2.5

5. Thermal power verification

1. Thermal power calculation: $P_{GN}=P_G \times f_1 \times f_2$

$P_{GN} > P_1$ (natural cooling)

$P_{GN} < P_1$ (fan or oil cooling)

In the formula, f_1 is the environmental temperature coefficient, f_2 is the coefficient of continuous operation. P_G is the heat capacity of the commutator, P_1 is the actual power required for operation, and P_{GN} is the calculated heat capacity of the commutator.

2. Environmental temperature coefficient f_1

Environmental temperature $^{\circ}\text{C}$	10	20	30	40	50
Coefficient f_1	1.2	1	0.87	0.75	0.64

3. Continuous working coefficient f_2

Hourly work rate%	100	80	60	40	20
f_2	1	1.2	1.4	1.6	1.8

6. Thermal capacity P_G (natural cooling)

KW

Transmission ratio i	Box model						
	0.9	11	14	17	21	24	28
1~5	4.5	6.5	11	15.5	24	31	44

7. General Technical Specifications

1. The dimensions of the key and keyway comply with the provisions of GB1095-79 and GB1096-79, and the width tolerance of the keyway is N9 for the shaft and JS90 for the wheel hub

2. The center holes of the output and input shafts are all equipped with screw holes, with the following specifications:

D=11~ 13mm	Screw hole M3	D=24~ 30mm	Screw hole M10
> 13~ 16mm	Screw hole M5	> 30~ 38mm	Screw hole M12
> 16~ 21mm	Screw hole M6	> 38~ 50mm	Screw hole M16
> 21~ 24mm	Screw hole M8	> 50~ 85mm	Screw hole M20

3. In the external installation dimension diagram, if the speed and torque allow, the input shaft and output shaft can be used as the input shaft for incremental transmission.

8. Example of Selection

Example: Spiral bevel gear commutator for agitator drive

The actual required power of the mixer is $P_1=28\text{KW}$; motor power $P_2=30\text{KW}$, motor speed $n_1=2000\text{ r/min}$

Transmission ratio $i=2$, commutator assembly form D, every 953-8 hours, continuous working time of 60% per hour, starting and stopping 6 times per hour, ambient temperature of 30°C .

Selection: The agitator is powered by an electric motor, with a medium impact load, and operates for 8 hours per day according to the usage factor $f=1.25$

Selection power: $P_{1N}=P_1 \times f=28 \times 1.25=35\text{kw}$ (starts and stops 6 times per hour)

According to the permitted power: select box type number 21, $P_N=52.4\text{KW} > 35\text{KW}$

Thermal power verification: Box 21, according to the thermal capacity table $P_G=24\text{KW}$

According to the environmental temperature coefficient table: $f_1=0.87$

According to the continuous work coefficient table: $f_2=1.4$

$P_{GN}=24 \times 0.87 \times 1.4=29.2\text{KW} > 28\text{KW}$

Natural cooling is sufficient the selected model is HD21-2D

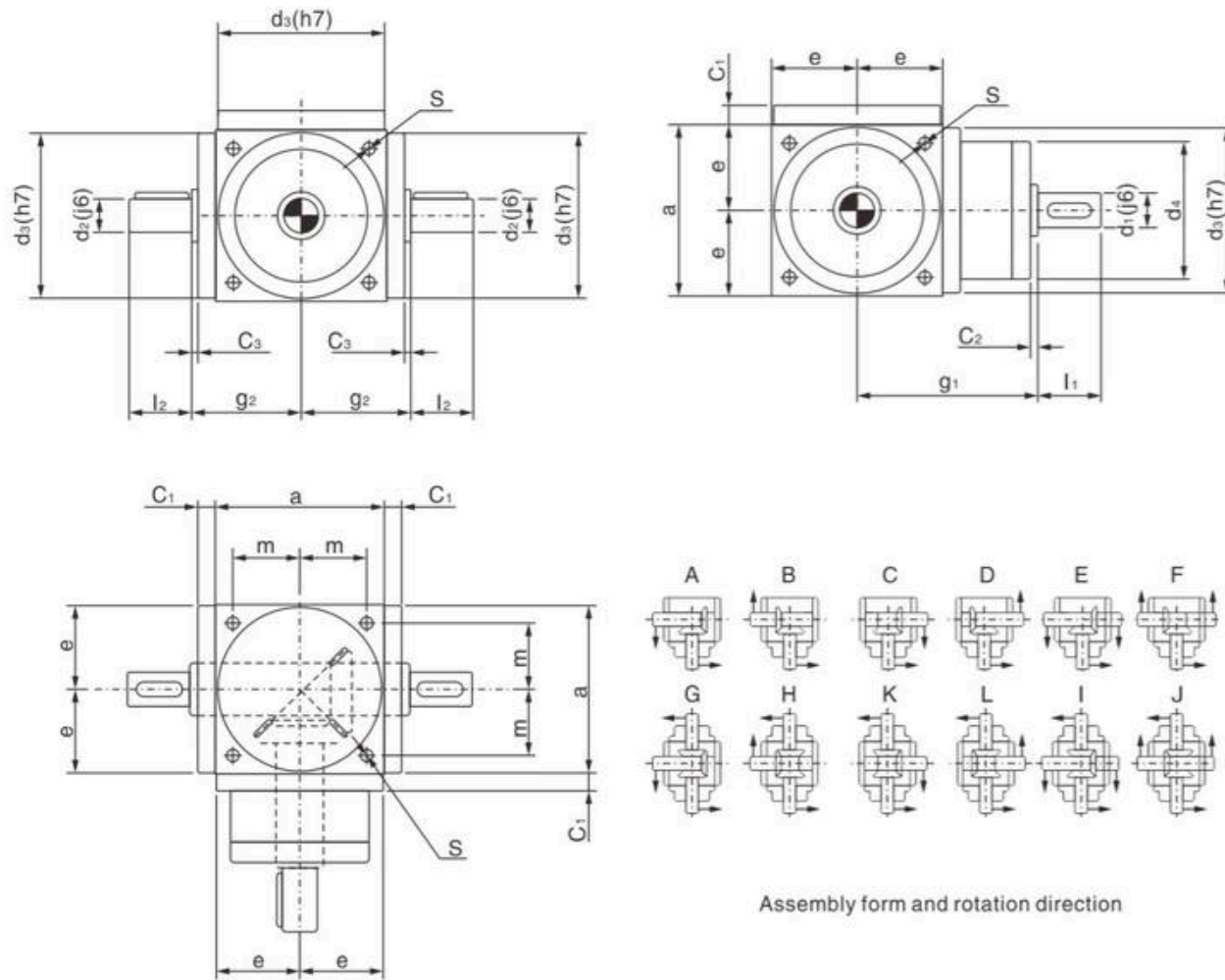
9. Transmission ratio, input/output speed, and allowable input power

Transmission ratio i	Input speed n_1 r/min	input speed n_2 r/min	Box model						
			09	11	14	17	21	24	28
			Permitted input power P_N (KW)						
1	2000	2000	7.55	13.8	29.9	49.2	84	111	188
	1500	1500	6	11	23.9	39.3	67.5	90.5	156
	1000	1000	4.3	7.85	17.2	28.8	50.5	68	115
	750	750	3.4	6.15	13.4	22.8	40.8	54.5	94.2
1.5	2000	1333	5.45	9.7	16.8	33.9	70	92.5	124
	1500	1000	4.3	7.75	13.5	27.2	56.5	75.5	103
	1000	667	3.05	5.45	9.7	19.6	41.2	55.5	75.5
	750	500	2.3	4.25	7.6	15.5	33	44.5	60.5
2	2000	1000	4.2	7.95	14.1	26.2	52.4	71.5	107
	1500	750	3.35	6.3	11.1	20.8	43.2	58.5	88
	1000	500	2.35	4.45	7.85	14.9	31.4	41.9	64.5
	750	375	1.8	3.45	6.2	11.6	25.2	33.8	51
3	2000	667	2.85	5.6	10.1	18.2	34.9	52.4	73
	1500	500	2.2	4.45	7.95	14.4	27.7	41.9	58.5
	1000	333	1.5	3.1	5.6	10.1	20	30.2	42.4
	750	250	1.2	2.4	4.4	7.8	15.7	23.6	33.5
4	2000	500	2.15	3.75	6.8	10.5	23.3	37.7	47.6
	1500	375	1.65	2.9	5.3	8.4	18.5	30.2	38.5
	1000	250	1.15	2	3.75	5.9	13.4	21.7	27.5
	750	188	0.87	1.55	2.95	4.55	10.4	17.1	21.7
5	2000	400	1.4	2.95	5.05	8.05	15.9	28.9	39.4
	1500	300	1.1	2.35	3.95	6.45	12.9	23.4	31.4
	1000	200	0.75	1.6	2.75	4.5	9	16.4	22.4
	750	150	0.58	1.25	2.1	3.45	6.95	13	17.7

Note: 1. The allowable power values in this table are applicable for deceleration. When increasing speed is required, the allowable power values should be multiplied by the transmission ratio.

2. When the input/output axis exceeds the range in the table, please contact us.

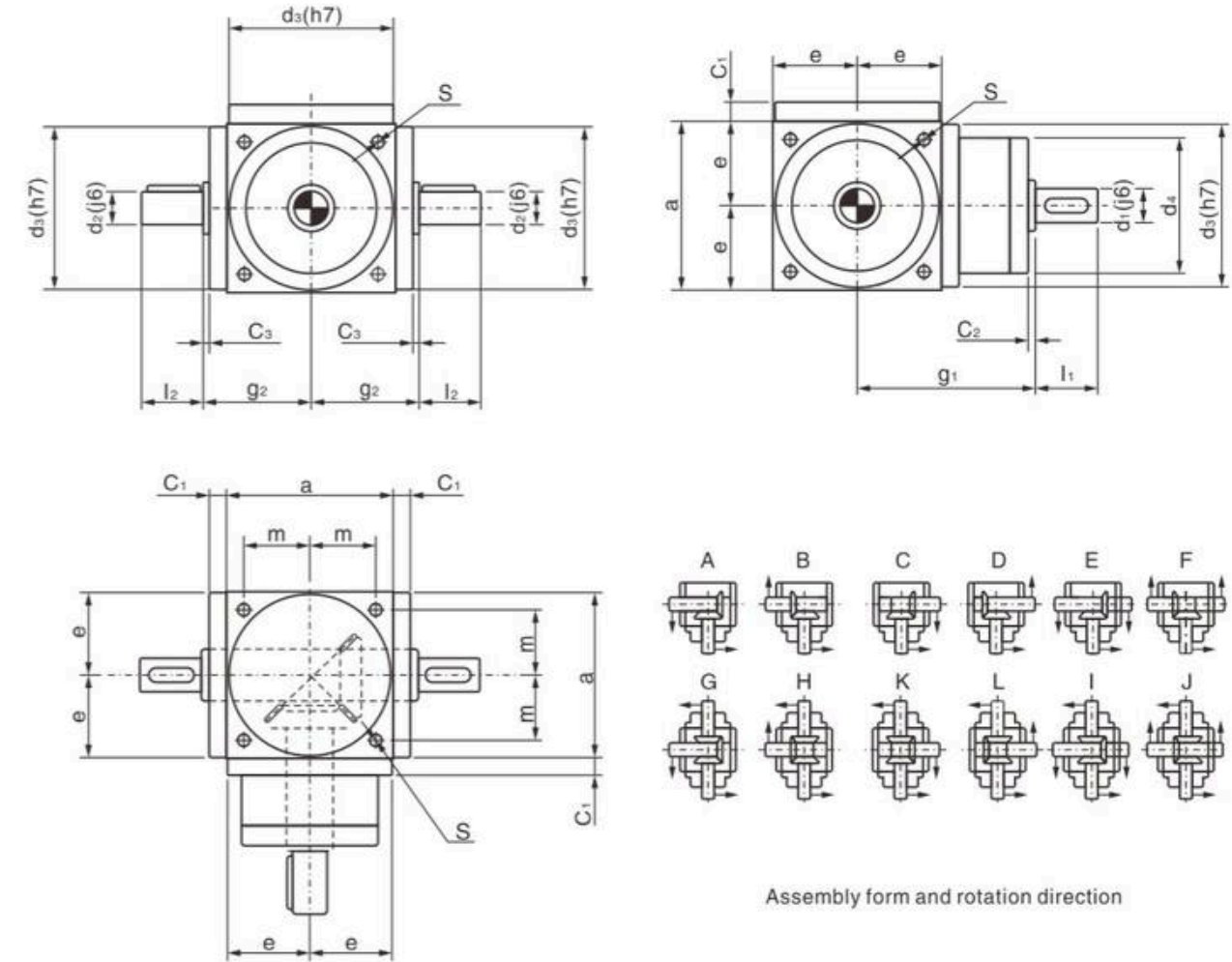
HD09-HD28 (i=1~5) Input/output shaft extension connection
 HD external installation dimensions



Assembly form and rotation direction

Model	a	C ₁	C ₂	C ₃	d ₂	l ₂	d ₃	e	g ₁	g ₂	m	S	i=1~2		i=3		i=4		i=5		i=1~3		i=4~5		Weight	Refueling quantity
													d ₁	l ₁	d ₁	l ₁	d ₁	l ₁	d ₁	l ₁	d ₄	d ₄	d ₄	d ₄		
09	90	12	2	2	18	35	88	45	97	59	36	M6	18	35	16	30	11	23	11	23	72	62	6	0.2		
11	110	12	2	2	22	40	108	55	112	69	44	M8	22	40	20	35	16	30	14	25	81	72	10	0.3		
14	140	15	2	2	32	50	135	70	157	84	55	M10	32	50	26	45	20	35	16	30	98	81	20	0.4		
17	170	15	2	2	40	60	165	85	181	103	67	M12	40	60	32	50	26	45	22	40	118	98	32	1		
21	210	20	2	2	45	70	205	105	230	130	85	M16	45	70	45	70	32	50	30	50	128	110	60	2		
24	240	22	2	2	48	85	235	120	280	145	95	M16	48	85	48	85	38	55	35	55	138	120	75	2.5		
28	280	22	2	2	60	110	275	140	280	160	110	M16	60	110	50	80	45	70	42	70	150	135	115	3		

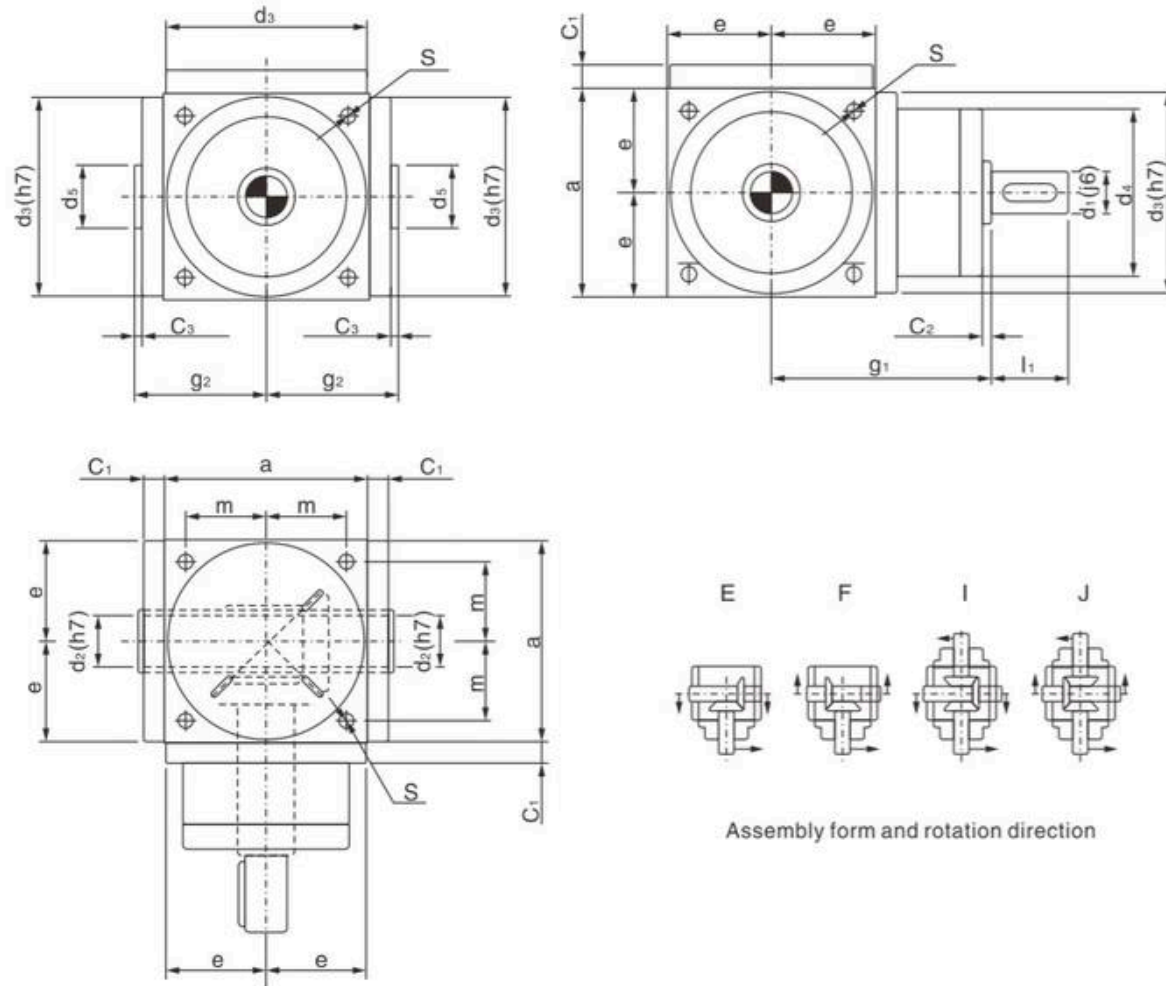
HD09-HD28 (i=1:1.5, i=1:2) input-output shaft extension connection
 HD external installation dimensions



Assembly form and rotation direction

Model	a	C ₁	C ₂	C ₃	d ₁	l ₁	d ₃	e	g ₁	g ₂	m	S	d ₄	i=1:1.5		Weight Kg	Refueling quantity L
														d ₂	l ₂		
09	90	12	2	2	18	35	88	45	97	59	36	M6	72	11	23	6	0.2
11	110	12	2	2	22	40	108	55	112	69	44	M8	81	14	25	10	0.3
14	140	15	2	2	32	50	135	70	157	84	55	M10	98	16	30	20	0.4
17	170	15	2	2	40	60	165	85	181	103	67	M12	118	22	40	32	1
21	210	20	2	2	45	70	205	105	230	130	85	M16	128	45	70	60	2
24	240	22	2	2	48	85	235	120	280	145	95	M16	138	48	85	75	2.5
28	280	22	2	2	60	110	275	140	280	160	110	M16	150	42	70	115	3

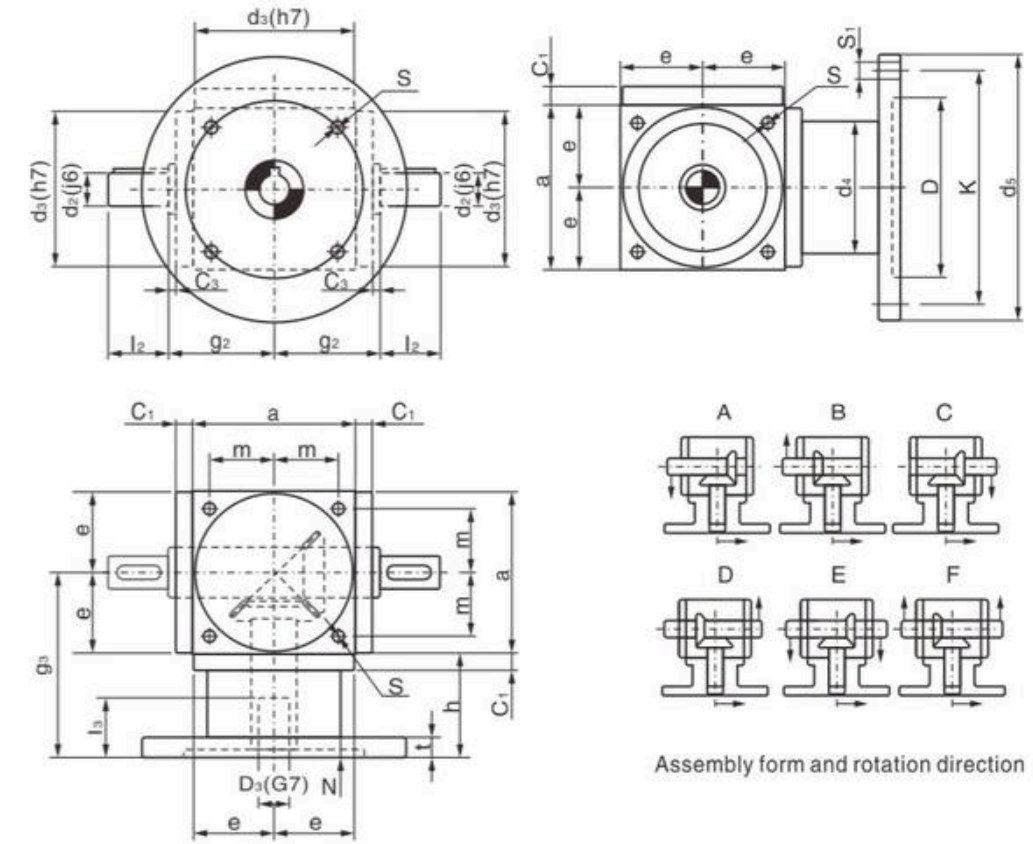
HDA09-HDA28 Input/Output Shaft Extension Connection HD external installation dimensions



Assembly form and rotation direction

Model	a	C ₁	C ₂	C ₃	d ₂	d ₅	d ₃	e	g ₁	g ₂	m	S	i=1~2		i=3		i=4		i=5		i=1~3		i=4~5		Weight	Refueling quantity
													d ₁	l ₁	d ₁	l ₁	d ₁	l ₁	d ₁	l ₁	d ₄	d ₄	d ₄	d ₄	Kg	L
09	90	12	2	2	16	25	88	45	97	59	36	M6	18	35	16	30	11	23	11	23	72	62	6	0.2		
11	110	12	2	2	22	35	108	55	112	69	44	M8	22	40	20	35	16	30	14	25	81	72	10	0.3		
14	140	15	2	2	28	45	135	70	157	84	55	M10	32	50	26	45	20	35	16	30	98	81	20	0.4		
17	170	15	2	2	38	55	165	85	181	103	67	M12	40	60	32	50	26	45	22	40	118	98	32	1		
21	210	20	2	2	45	65	205	105	230	130	85	M16	45	70	45	70	32	50	30	50	128	110	60	2		
24	240	22	2	2	55	75	235	120	280	145	95	M16	48	85	48	85	38	55	35	55	138	120	75	2.5		
28	280	22	2	2	60	85	275	140	280	160	110	M16	60	110	50	80	45	70	42	70	150	135	115	3		

HDF09-HDF28 with input flange, output shaft mounted connection HD external installation dimensions



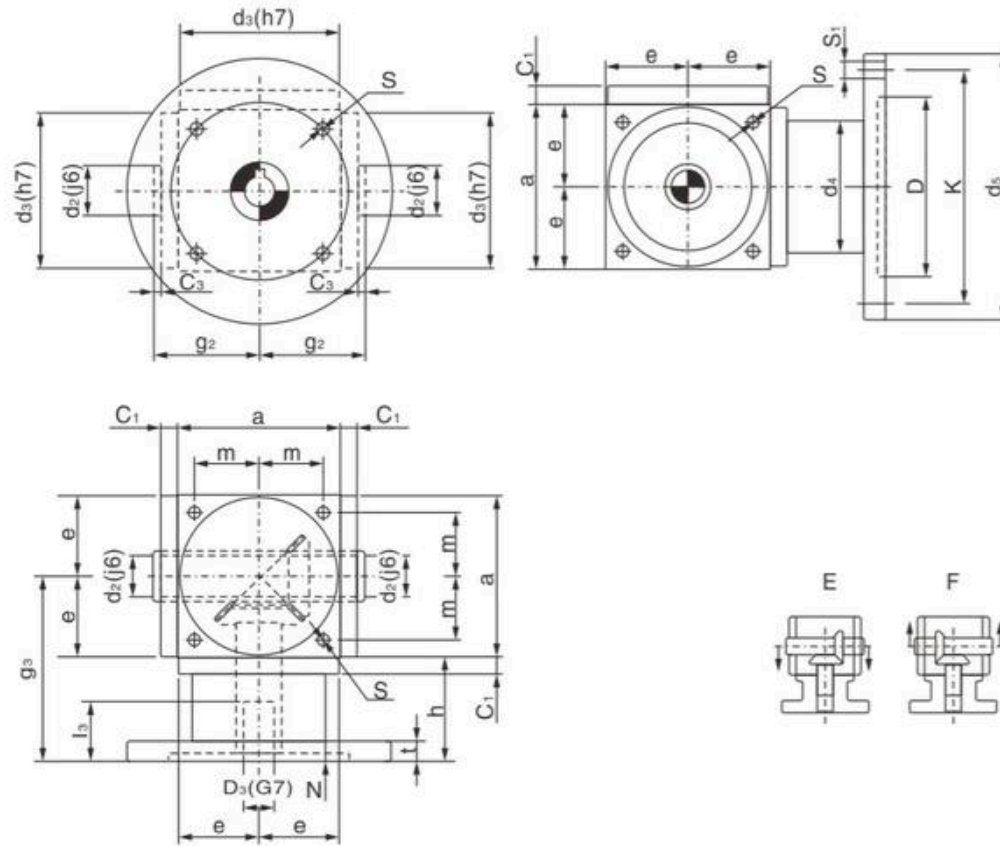
Assembly form and rotation direction

型号	a	C ₁	C ₃	d ₃	d ₄	d ₂	l ₂	i=1~2				i=3~5			
								D3×l ₃				D3×l ₃			
09	90	12	2	88	86	18	35	19×43	14×33	11×26	9×23	19×43	14×33	11×26	9×23
11	110	12	2	108	82	22	40	24×53	19×43	14×33	11×26	24×53	19×43	14×33	11×26
14	140	12	2	135	104	32	50	38×83	28×63	24×53	19×43	38×83	28×63	19×43	14×43
17	170	15	3	165	128	40	60	42×115	38×83	28×63	24×53	38×83	38×83	24×53	19×43
21	210	18	2	205	160	45	70	48×115	42×115	38×83	28×62	42×115	38×83	28×63	24×53
24	240	18	2	235	170	55	85	55×115	48×115	42×115	38×83	48×115	42×115	38×83	28×62
28	280	18	2	275	190	60	110	60×145	55×115	48×115	42×115	55×115	48×115	42×115	38×83

型号	e	g ₂	g ₃	h	m	S	i=1~2				i=3~5			
							d ₅				d ₅			
09	45	59	110	65	36	M6	200	160	140	120	200	160	140	120
11	55	69	130	75	44	M8	200	160	140	120	200	160	140	120
14	70	84	170	100	55	M10	300	250	200	160	300	250	200	160
17	85	103	215	130	67	M12	350	300	250	200	350	300	250	200
21	105	125	245	140	85	M16	350	300	250	—	350	300	250	200
24	120	140	265	145	95	M16	400	350	300	250	400	350	300	250
28	140	160	315	175	110	M16	450	400	350	300	400	350	300	250

d ₆	D	K	S1	t	Z
120	80	100	4×M6	11	3.5
140	95	115	4×M8	11	3.5
160	110	130	4×M8	11	4
200	130	165	4×M10	14	4
250	180	215	4×M12	16	4.5
300	230	265	4×M12	16	4.5
350	250	300	4×M16	20	6
400	300	350	4×M16	20	6
450	350	400	4×M16	25	6

HDAF09-HDAF28 with input flange, output shaft mounted connection
 HD external installation dimensions



Model	a	C_1	C_3	d_3	d_4	D_2	l_2	i=1~2				i=3~5			
								D3×l ₃				D3×l ₃			
09	90	12	2	88	86	16	25	19×43	14×33	11×26	9×23	19×43	14×33	11×26	9×23
11	110	12	2	108	82	22	35	24×53	19×43	14×33	11×26	24×53	19×43	14×33	11×26
14	140	12	2	135	104	28	45	38×83	28×63	24×53	19×43	38×83	28×63	19×43	14×43
17	170	15	3	165	128	38	55	42×115	38×83	28×63	24×53	38×83	38×83	24×53	19×43
21	210	18	2	205	160	45	65	48×115	42×115	38×83	28×62	42×115	38×83	28×63	24×53
24	240	18	2	235	170	55	75	55×115	48×115	42×115	38×83	48×115	42×115	38×83	28×62
28	280	18	2	275	190	60	85	60×145	55×115	48×115	42×115	55×115	48×115	42×115	38×83

Model	e	g_2	g_3	h	m	S	i=1~2				i=3~5			
							d_6				d_6			
09	45	59	110	65	36	M6	200	160	140	120	200	160	140	120
11	55	69	130	75	44	M8	200	160	140	120	200	160	140	120
14	70	84	170	100	55	M10	300	250	200	160	300	250	200	160
17	85	103	215	130	67	M12	350	300	250	200	350	300	250	200
21	105	125	245	140	85	M16	350	300	250	—	350	300	250	200
24	120	140	265	145	95	M16	400	350	300	250	400	350	300	250
28	140	160	315	175	110	M16	450	400	350	300	400	350	300	250

d_6	D	K	S1	t	Z
120	80	100	4×M6	11	3.5
140	95	115	4×M8	11	3.5
160	110	130	4×M8	11	4
200	130	165	4×M10	14	4
250	180	215	4×M12	16	4.5
300	230	265	4×M12	16	4.5
350	250	300	4×M16	20	6
400	300	350	4×M16	20	6
450	350	400	4×M16	25	6

Application example

