

ZDR系列减速机

ZDR SERIES GEAR BOX

■ 系列号、机型标识说明 Type And Model Number

ZDR减速机 ZDR Reducers	伺服电机 Servo Motor
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78 ZDR 20 () (S) - 750 T1

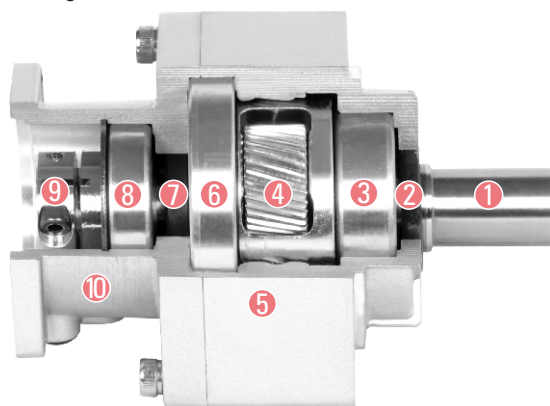
① ② ③ ④ ⑤ ⑥ ⑦ ⑧

① 减速机机座号:ZDR:52,78,98,125	Gear head frame size:ZDR:52,78,98,125				
② 减速机系列代号:ZDR:斜齿精密型	Gear head series code: ZDR:Oblique tooth precision				
③ 减速比:ZDR:单级3,5,7,9,10; 两级15,20,25,35,45,81	Gear Ratio: ZDR: Single Stage 3,5,7,9,10; Two Stages 15,20,25,35,45,81				
④ 精度 Amount of backlash	机型号 Reducer Type No.	级数 Stage	标准型P2(省略) Standard Type	精密型P1 Low-backlash Type	高精型P0 High Precision Type
	52ZDR	1	12分arc-min	10分arc-min	3分arc-min
		2	15分arc-min	12分arc-min	5分arc-min
	78ZDR	1	8分arc-min	5分arc-min	3分arc-min
		2	12分arc-min	8分arc-min	5分arc-min
	98ZDR	1	8分arc-min	5分arc-min	3分arc-min
		2	12分arc-min	8分arc-min	5分arc-min
	125ZDR	1	8分arc-min	5分arc-min	3分arc-min
		2	12分arc-min	8分arc-min	5分arc-min
⑤ 输出轴型式 S:整体锁紧(省略)(无论马达是否有键槽都可使用,但“D”字型不适用) S1:带锁紧环锁紧(无论马达是否有键槽都可使用,但“D”字型不适用) S2:带键槽锁紧(输入轴带键) K:带键槽 A:其他适配器(请与本公司联系)	nput shaft type S:Overall locking(Omission)(regardless whether the motor with keyway can use it. But D Cut can't use) S1:Locking with locking ring(regardless whether the motor with keyway can use it. But D Cut can't use) S2:Locking with keyway (input shaft with key) K:With keyway A:Other type (please contact with us)				
⑥ 适用伺服马达功率(W)	Applicable servo motor power (W)				
⑦ 伺服马达厂家名称(P33)	Manufacturer name of servo motor (P33)				
⑧ 伺服马达型号	Model of servo motor				

ZDR减速比、机型号

ZDR REDUCTION RATIO & TYPE NUMBER

剖视图 Sectional Drawing



- ① 输出轴 Output shaft
- ② 油封 Seal for the output shaft
- ③ 输出轴前轴承 Bearing for the output shaft
- ④ 行星轮 Planetary gear
- ⑤ 前盖 Front cover
- ⑥ 输出轴后轴承 Bearing for the output shaft
- ⑦ 油封 Seal for the input shaft
- ⑧ 输入轴轴承 Bearing for the input shaft
- ⑨ 精密装夹系统 Precision clamping system
- ⑩ 后盖 Rear cover

输入转速为3000rpm时 When Input Speed is 3000rpm

马达功率Motor Power(W)	单级减速 1 Stage Reduction			两级减速 2 Stage Reduction					
	1/3	1/5	1/9	1/15	1/20	1/25	1/35	1/45	1/81
50W	52			52			98		
100W									
200W	78			78			98		
400W									
750W	98			98			125		
1000W									
1500W	125			125			-		
2000W									
2500W	-			-			-		
3000W									
3500W	-			-			-		
4000W									
4500W	-			-			-		
5000W									

注1) 全部为斜齿轮适用范围 Note1) All corresponding to helical gear

输入转速为2000rpm时 When Input Speed is 2000rpm

马达功率Motor Power(W)	单级减速 1 Stage Reduction			两级减速 2 Stage Reduction					
	1/3	1/5	1/9	1/15	1/20	1/25	1/35	1/45	1/81
50W	52			52			98		
100W									
200W	78			78			98		
400W									
750W	98			98			125		
1000W									
1500W	125			125			-		
2000W									
2500W	-			-			-		
3000W									
3500W	-			-			-		

注1) 全部为斜齿轮适用范围
Note1) All corresponding to helical gear

※以下为限扭矩机种:
52: 1/5减速(100W)
78: 1/81减速(50W)
98: 1/3减速(1500W)、1/45减速(200W)
125: 1/3减速(3500W)、1/25减速(750W)

※Torque is limited to the following types:
52: 1/5 reduction(100W)
78: 1/81 reduction(50W)
98: 1/3 reduction(1500W),1/45 reduction(200W)
125: 1/3 reduction(3500W),1/25 reduction(750W)

关于润滑油 About Lubricant

• 润滑: 润滑油	• 更换: 不可	• Lubrication: Grease	• Replacement: Not available
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ZDR性能表（输入转速为3,000rpm时）

ZDR PERFORMANCE TABLE (WHEN INPUT SPEED IS 3000RPM)

性能表 Performance Table

减速比 Reduction Ratio	系列号 Model				输出轴 转速 Outout Shaft Speed	额定输出 扭矩 Standard Output Torque	瞬间最大 输出扭矩 Instantaneous max.Output Torque	容许径向 负荷 Permissible Radial Load	容许轴向 负荷 Permissible Axial Load	输入轴换算 内部惯性力矩 Internal Moment Of Inertia Of Input Shaftconversion	容许输出 扭矩 Permissible Output Torque	瞬间最大容 许输出扭矩 Instantaneous Max. Permissible Output Torque
	机座号 Type No.	系列号 Model	减速比 Reduction Ratio	马达功率 Motor								
					(rpm)	(N.m)	(N.m)	(N)	(N)	(x10 ⁻⁴ kg.m ²)	(N.m)	(N.m)
1/3	52	ZDR	3	-50	1000	0.255	0.784	392	196	0.0575	3.43	10.3
	52	ZDR	3	-100	1000	0.715	2.06	392	196	0.0575	3.43	10.3
	52	ZDR	3	-200	1000	1.47	4.51	392	196	0.135	3.43	10.3
	52	ZDR	3	-400	1000	3.43	10.3	392	196	0.145	3.43	10.3
	78	ZDR	3	-750	1000	6.37	19.3	784	392	0.913	6.86	20.6
	98	ZDR	3	-1000	1000	7.55	22.8	882	441	2.43	18.3	54.9
	98	ZDR	3	-1500	1000	12.3	37.1	882	441	2.43	18.3	54.9
	98	ZDR	3	-2000	1000	17.2	51.5	882	441	2.43	18.3	54.9
	125	ZDR	3	-2500	1000	19.0	57.2	1370	686	5.55	44.1	132
	125	ZDR	3	-3000	1000	23.7	71.2	1370	686	5.50	44.1	132
	125	ZDR	3	-3500	1000	28.3	85.2	1370	686	5.50	44.1	132
	125	ZDR	3	-4000	1000	33.1	99.0	1370	686	5.78	44.1	132
	125	ZDR	3	-4500	1000	37.7	113	1370	686	5.78	44.1	132
	125	ZDR	3	-5000	1000	42.9	128	1370	686	5.78	44.1	132
1/5	52	ZDR	5	-50	600	0.510	1.47	490	245	0.04	1.57	4.70
	52	ZDR	5	-100	600	1.18	3.72	490	245	0.04	1.57	4.70
	52	ZDR	5	-200	600	2.65	8.04	490	245	0.118	2.84	8.53
	78	ZDR	5	-400	600	5.39	16.2	980	490	0.363	6.57	19.7
	78	ZDR	5	-750	600	10.7	32.1	980	490	0.713	11.5	34.3
	98	ZDR	5	-1000	600	13.4	40.5	1080	539	1.85	23.5	70.6
	98	ZDR	5	-1500	600	21.5	64.4	1080	539	1.85	23.5	70.6
	125	ZDR	5	-2000	600	23.8	71.5	1670	833	3.50	56.8	171
	125	ZDR	5	-2500	600	31.8	95.5	1670	833	3.50	56.8	171
	125	ZDR	5	-3000	600	39.6	119	1670	833	3.48	56.8	171
	125	ZDR	5	-3500	600	47.2	141	1670	833	3.48	56.8	171
	125	ZDR	5	-4000	600	55.3	166	1670	833	3.75	56.8	171
1/9	52	ZDR	9	-50	333	0.921	2.74	588	294	0.035	2.35	7.25
	52	ZDR	9	-100	333	2.25	6.86	588	294	0.035	2.35	7.25
	78	ZDR	9	-200	333	3.72	11.3	1180	588	0.275	9.70	29.2
	78	ZDR	9	-400	333	9.51	28.5	1180	588	0.275	9.70	29.2
	98	ZDR	9	-750	333	18.2	54.7	1470	735	0.650	18.2	54.7
	125	ZDR	9	-1000	333	20.0	60.1	1960	980	2.81	73.5	221
	125	ZDR	9	-1500	333	34.3	103	1960	980	2.81	73.5	221
	125	ZDR	9	-2000	333	48.6	146	1960	980	2.81	73.5	221
	125	ZDR	9	-2500	333	60.8	182	1960	980	2.81	73.5	221
	125	ZDR	9	-3000	333	73.0	219	1960	980	2.77	73.5	221

注1) 输入轴换算惯性力矩仅为减速机的数值，不包括马达的惯性力矩。
 注2) 最高输入转速为5000rpm，正常情况下请将转速控制在3000rpm以下。
 注3) 容许径向负荷为输出轴中央部的数值。
 注4) 全部为斜齿轮适用范围。

Note1) The moment of input shaft conversion is only gained from the reducer, so it does not include moment of inertia of the motor.
 Note2) The max. input speed is 5000rpm. Usually set to 3000rpm or less.
 Note3) The permissible radial load is indicated on the center of the output shaft.
 Note4) All values are within the range corresponding to helical gear.

ZDR性能表（输入转速为3,000rpm时）

ZDR PERFORMANCE TABLE (WHEN INPUT SPEED IS 3000RPM)

■性能表 Performance Table

减速比 Reduction Ratio	系列号 Model				输出轴 转速 Outout Shaft Speed	额定输出 扭矩 Standard Output Torque	瞬间最大 输出扭矩 Instantaneous Max. Output Torque	容许径向 负荷 Permissible Radial Load	容许轴向 负荷 Permissible Axial Load	输入轴换算 内部惯性力矩 Internal Moment Of inertia Of Input Shaftconversion	容许输出 扭矩 Permissible Output Torque	瞬间最大容 许输出扭矩 Instantaneous Max. Permissible Output Torque
	机座号 Type No.	系列号 Model	减速比 Reduction Ratio	马达功率 Motor								
					(rpm)	(N.m)	(N.m)	(N)	(N)	($\times 10^{-4} \text{ kg.m}^2$)	(N.m)	(N.m)
1/15	52	ZDR	15	-50	200	1.67	5.00	784	392	0.035	4.02	12.2
	52	ZDR	15	-100	200	3.72	11.4	784	392	0.035	4.02	12.2
	78	ZDR	15	-200	200	6.27	18.8	1470	735	0.300	16.2	48.6
	78	ZDR	15	-400	200	15.8	47.5	1470	735	0.300	16.2	48.6
	98	ZDR	15	-750	200	30.4	91.2	1760	882	0.700	30.4	91.2
	125	ZDR	15	-1000	200	33.3	100	2350	1180	2.80	91.4	274
	125	ZDR	15	-1500	200	57.2	172	2350	1180	2.80	91.4	274
	125	ZDR	15	-2000	200	81.0	243	2350	1180	2.80	91.4	274
1/20	52	ZDR	20	-50	150	2.21	6.63	804	402	0.034	5.00	15.0
	52	ZDR	20	-100	150	5.00	15.0	804	402	0.034	5.00	15.0
	78	ZDR	20	-200	150	8.69	26.1	1570	785	0.294	21.1	63.3
	78	ZDR	20	-400	150	21.1	63.3	1570	785	0.294	21.1	63.3
	98	ZDR	20	-750	150	40.6	122	1910	955	0.690	40.6	122
	125	ZDR	20	-1000	150	44.5	134	2500	1250	2.72	78.4	235
1/25	52	ZDR	25	-50	120	2.74	8.33	882	441	0.0325	4.02	12.2
	52	ZDR	25	-100	120	6.27	19.0	882	441	0.0325	6.27	19.0
	78	ZDR	25	-200	120	11.1	33.3	1670	833	0.288	21.7	64.9
	78	ZDR	25	-400	120	26.4	79.2	1670	833	0.288	26.4	79.2
	98	ZDR	25	-750	120	50.7	152	2060	1030	0.680	50.7	152
	125	ZDR	25	-1000	120	55.7	167	2650	1320	2.710	65.4	196
1/35	52	ZDR	35	-50	85	3.84	11.5	882	441	0.030	3.84	11.5
	78	ZDR	35	-100	85	7.24	21.7	1670	833	0.065	13.9	41.7
	78	ZDR	35	-200	85	15.5	46.6	1670	833	0.262	15.5	46.6
	98	ZDR	35	-400	85	37.0	111	2060	1030	0.269	37.0	111
	125	ZDR	35	-750	85	71.0	213	3430	1715	0.473	71.0	213
1/45	78	ZDR	45	-50	66	3.86	11.6	1670	833	0.0285	9.50	28.6
	78	ZDR	45	-100	66	9.31	28.0	1670	833	0.0285	9.50	28.6
	98	ZDR	45	-200	66	21.1	63.5	2060	1030	0.0256	28.3	85.2
	125	ZDR	45	-400	66	47.5	142.5	3520	1760	0.245	57.0	171
	125	ZDR	45	-750	66	91.3	274	3520	1760	1.770	91.3	274
1/81	78	ZDR	81	-50	37	7.02	20.8	1670	833	0.027	9.70	29.2
	98	ZDR	81	-100	37	14.0	42.0	2060	1030	0.030	17.8	53.5
	125	ZDR	81	-200	37	36.1	108.3	3530	1765	0.240	43.3	129.9

注1) 输入轴换算惯性力矩仅为减速机的数值，不包括马达的惯性力矩。
 注2) 最高输入转速为5000rpm，正常情况下请将转速控制在3000rpm以下。
 注3) 容许径向负荷为输出轴中央部的数值。
 注4) 全部为斜齿轮适用范围。

Note1) The moment of input shaft conversion is only gained from the reducer, so it does not include moment of inertia of the motor.
 Note2) The max. input speed is 5000rpm. Usually set to 3000rpm or less.
 Note3) The permissible radial load is indicated on the center of the output shaft.
 Note4) All values are within the range corresponding to helical gear.

ZDR性能表 (输入转速为2,000rpm时)

ZDR PERFORMANCE TABLE (WHEN INPUT SPEED IS 2000RPM)

性能表 Performance Table

标准型、P1(精密型)、P2(高精密型)均为相同的规格 The same specification applies to all of standard type, P1(low backlash), and P2(high precision type).

减速比 Reduction Ratio	系列号 Model				输出轴 转速 Shaft Speed	额定输出 扭矩 Standard Output Torque	瞬间最大 输出扭矩 Instantaneous Max.Output Torque	容许径向 负荷 Permissible Radial Load	容许轴向 负荷 Permissible Axial Load	输入轴换算 内部惯性力矩 Of Input Shaftconversion Internal Moment Of inertia	容许输出 扭矩 Permissible Output Torque	瞬间最大容 许输出扭矩 Instantaneous Max. Permissible Output Torque
	机座号 Type No.	系列号 Model	减速比 Reduction Ratio	马达功率 Motor								
					(rpm)	(N.m)	(N.m)	(N)	(N)	(x10 ⁻⁴ kg.m ²)	(N.m)	(N.m)
1/3	52	ZDR	3	-50	666	0.477	1.43	450	225	0.0575	3.43	10.3
	52	ZDR	3	-100	666	1.05	3.15	450	225	0.135	3.43	10.3
	52	ZDR	3	-200	666	2.48	7.45	450	225	0.145	3.43	10.3
	78	ZDR	3	-400	666	5.01	15.0	900	450	0.913	6.86	20.6
	98	ZDR	3	-750	666	8.73	26.2	1010	505	2.43	18.3	54.9
	98	ZDR	3	-1000	666	12.3	37.1	1010	505	2.43	18.3	54.9
	98	ZDR	3	-1500	666	18.3	54.9	1010	505	2.43	18.3	54.9
	125	ZDR	3	-2000	666	23.7	71.2	1570	785	5.50	44.1	132
	125	ZDR	3	-2500	666	30.8	92.5	1570	785	5.50	44.1	132
	125	ZDR	3	-3000	666	37.7	113	1570	785	5.50	44.1	132
1/5	52	ZDR	5	-50	400	0.795	2.39	560	280	0.040	1.57	4.70
	52	ZDR	5	-100	400	1.57	4.70	560	280	0.118	1.57	4.70
	78	ZDR	5	-200	400	3.82	11.5	1120	560	0.363	6.57	19.7
	78	ZDR	5	-400	400	8.35	25.1	1120	560	0.713	11.5	34.3
	98	ZDR	5	-750	400	15.5	46.5	1230	615	1.85	23.5	70.6
	98	ZDR	5	-1000	400	21.5	64.4	1230	615	1.85	23.5	70.6
	125	ZDR	5	-1500	400	27.8	83.5	1900	950	3.50	56.8	171
	125	ZDR	5	-2000	400	39.6	119	1900	950	3.48	56.8	171
	125	ZDR	5	-2500	400	51.4	154	1900	950	3.75	56.8	171
1/9	52	ZDR	9	-50	222	1.57	4.72	670	335	0.035	2.35	7.25
	78	ZDR	9	-100	222	2.35	7.04	1340	670	0.275	9.70	29.2
	78	ZDR	9	-200	222	6.64	19.9	1340	670	0.275	9.70	29.2
	98	ZDR	9	-400	222	14.0	41.9	1680	840	0.650	18.2	54.7
	125	ZDR	9	-750	222	23.6	70.9	2240	1120	2.81	73.5	221
	125	ZDR	9	-1000	222	34.3	103	2240	1120	2.81	73.5	221
	125	ZDR	9	-1500	222	53.7	161	2240	1120	2.81	73.5	221
	125	ZDR	9	-2000	222	73.0	219	2240	1120	2.77	73.5	221
1/15	52	ZDR	15	-50	133	2.62	7.87	882	441	0.035	4.02	12.2
	78	ZDR	15	-100	133	3.91	11.7	1670	833	0.300	16.2	48.6
	78	ZDR	15	-200	133	11.1	33.2	1670	833	0.300	16.2	48.6
	98	ZDR	15	-400	133	23.3	69.8	2020	1010	0.700	30.4	91.2
	125	ZDR	15	-750	133	39.4	118	2650	1320	2.80	91.4	274
	125	ZDR	15	-1000	133	57.2	172	2650	1320	2.80	91.4	274
	125	ZDR	15	-1500	133	91.3	274	2650	1320	2.80	91.4	274
1/20	52	ZDR	20	-50	100	3.50	10.5	910	455	0.034	5.00	15.0
	78	ZDR	20	-100	100	5.73	17.2	1790	895	0.294	21.1	63.3
	78	ZDR	20	-200	100	14.8	44.4	1790	895	0.294	21.1	63.3
	98	ZDR	20	-400	100	31.0	93.1	2180	1090	0.294	40.6	122
1/25	52	ZDR	25	-50	80.0	4.37	13.1	882	441	0.0325	6.27	19.0
	78	ZDR	25	-100	80.0	7.16	21.5	1670	833	0.288	21.7	64.9
	78	ZDR	25	-200	80.0	18.5	55.4	1670	833	0.288	21.7	64.9
	98	ZDR	25	-400	80.0	38.8	116	2060	1030	0.680	50.7	152
	125	ZDR	25	-750	80.0	65.4	196	2650	1320	1.88	65.4	196
1/35	78	ZDR	35	-50	57.0	4.43	13.3	1900	950	0.262	15.5	46.6
	78	ZDR	35	-100	57.0	12.7	38.1	1900	950	0.262	15.5	46.6
	98	ZDR	35	-200	57.0	22.0	66.0	2340	1170	0.269	37.0	111
1/45	78	ZDR	45	-50	44.4	5.80	17.4	1670	833	0.0285	9.50	28.6
	98	ZDR	45	-100	44.4	14.0	42.1	2060	1030	0.0285	28.3	85.2
	98	ZDR	45	-200	44.4	28.3	85.2	2060	1030	0.0285	28.3	85.2
1/81	78	ZDR	81	-50	24.6	9.70	29.2	1670	833	0.0270	9.70	29.2
	98	ZDR	81	-100	24.6	17.8	53.5	2060	1030	0.0300	17.8	53.5

注1) 输入轴换算惯性力矩仅为减速机的数值，不包括马达的惯性力矩。

注2) 容许径向负荷为输出轴中央部的数值。

注3) 全部为斜齿轮适用范围。

Note1) The moment of input shaft conversion is only gained from the reducer, so it does not include moment of inertia of the motor.

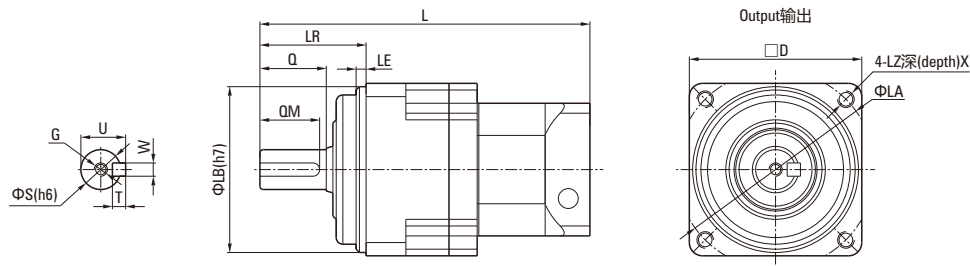
Note2) The permissible radial load is indicated on the center of the output shaft.

Note3) All values are within the range corresponding to helical gear.

ZDR同芯轴型减速机尺寸表

DIMENSIONAL TABLE FOR ZDR CONCENTRIC SHAFT REDUCER

机械参数 Dimensions



尺寸表 Dimensional Table

型号 Type				全长 Total Length L			输出轴 Output Shaft							法兰 Flange								
机座号 Type No.	系列号 Model	减速比 Reduction Ratio	马达功率 Motor	松下电器生产 Panasonic- made MSMA	安川电机生产 Yaskawa-made SGMASH SGMSH	三菱电机生产 Mitsubishi-made HC-KFS HC-RFS	LR	S	Q	QM	G	W×U	T	D	LB	LE	LA	LZ	X			
52	ZDR	3-5-9	50	99.5			32	12	20	18	M4(depth)12	4×13.5	4	52	50	3	60	M5	12			
52	ZDR	15-20-25-35	50	110																		
52	ZDR	3-5-9	100	99.5																		
52	ZDR	15-20-25	100	110																		
52	ZDR	3-5	200	104.5																		
52	ZDR	3	400																			
78	ZDR	45-81	50	142			50	19	30	26	M5(depth)15	6×21.5	6	80	70	3	90	M6	20			
78	ZDR	35	100	150																		
78	ZDR	45	100	142																		
78	ZDR	9	200	139.5																		
78	ZDR	15-20-25-35	200	150																		
78	ZDR	5-9	400	139.5																		
78	ZDR	15-20-25	400	150																		
78	ZDR	3-5	750	143.5																		
98	ZDR	81	100	158			61	24	40	35	M6(depth)20	8×27	7	100	90	5	115	M8	20			
98	ZDR	45	200	165																		
98	ZDR	35	400																			
98	ZDR	9	750	158.5																		
98	ZDR	15-20-25	750	171																		
98	ZDR	3.5	1000	177																		
98	ZDR	3.5	1500																			
98	ZDR	3	2000																			
125	ZDR	81	200	210			75	32	55	52	M10(depth)20	10×35	8	125	110	5	135	M10	20			
125	ZDR	45	400																			
125	ZDR	35	750																			
125	ZDR	45	750																	235		
125	ZDR	9	1000																	215		
125	ZDR	15-25	1000																	235		
125	ZDR	9	1500																	215		
125	ZDR	15	1500																	235		
125	ZDR	5-9	2000	215																		
125	ZDR	15	2000	235																		
125	ZDR	3-5-9	2500	215	-	-																
125	ZDR	3-5-9	3000	215	225	-																
125	ZDR	3.5	3500	215	-	225																
125	ZDR	3.5	4000	225	225	-																
125	ZDR	3	4500	225	-	-																
125	ZDR	3	5000	225																		

注1) 基准系列(马达对应表记载系列)以外的马达，请咨询。(因为根据马达安装的不同法兰尺寸可能不同)

注2) 输出轴旋转方向与马达输入旋转方向相同。

注3) 全部为斜齿轮适用范围。

Note1) Please inquire to us if motor model isn't standard (Matching motor list). (The flange dimension may be different if motor assension is different.)

Note2) Rotation of the output shaft is in the same direction as that of motor input.

Note3) All values are within the range corresponding to helical gear.