

机械无级变速器

UD MECHANICAL STEPLESS VARIATORS

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产品型式 / TYPE



UDL(B3)



UDL(B5)

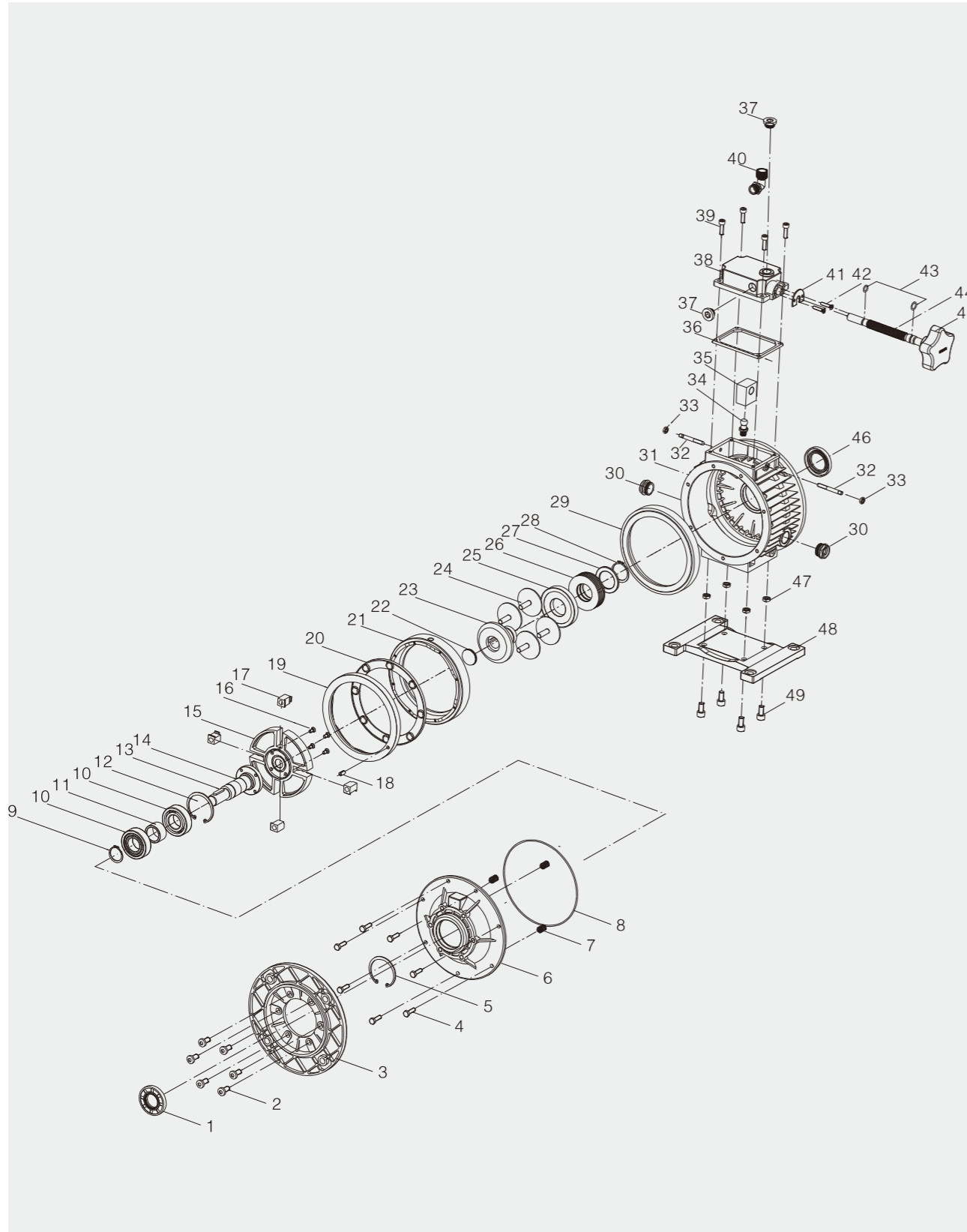


UDT(B3)



UDT(B5)

结构分解图 / STRUCTURE DIAGRAM



结构分解图 / STRUCTURE DIAGRAM

1	油封 / Oil seal	26	蝶形弹簧 / Will spring
2	内六角圆柱头螺栓 / Hexagonal cylindrical head bolts	27	挡圈 / Block circle
3	输出法兰 / Output flanges	28	轴用挡圈 / Shaft block
4	外六角圆柱头螺栓 / Hexagonal cylindrical head bolts	29	定环 / Set ring
5	孔用挡圈 / Hole block circle in	30	视油镜 / Depending on oil mirror
6	输出端盖 / Output cover	31	箱体 / Cabinet
7	弹簧 / Spring	32	螺栓 / Bolt
8	O型橡胶密封圈 / O-ring	33	螺母 / Nut
9	轴用挡圈 / Shaft block	34	球头调速柄 / Ball head speed control handle
10	轴承 / Bearing	35	调速螺母 / Speed nuts
11	轴承隔套 / Bearing every set of	36	橡胶垫片 / Rubber gaskets
12	孔用挡圈 / Hole block circle in	37	油塞 / Oil plug
13	平键 / Parallel key	38	操作盖 / Operating cover
14	输出轴 / Output shaft	39	内六角圆柱头螺栓 / Inside hexagonal cylindrical head bolts
15	转臂 / Turn arm	40	弯管 / Bent pipe
16	螺钉 / Screws	41	挡板 / Baffle
17	滑块 / Slider	42	螺钉 / Screws
18	弹性圆柱销 / Elastic cylindrical pin	43	O型橡胶密封圈 / O-ring
19	固定凸轮 / Fixed CAM	44	丝杆 / Screw
20	滚珠环 / Ball ring	45	调速柄 / Speed control handle
21	调速凸轮 / Speed CAM	46	油封 / Oil seal
22	平面油封 / Plane oil seal	47	螺母 / Nut
23	主动轮 / Active wheel	48	底脚 / Foot bottom
24	行星锥盘 / Planet cone-disk	49	内六角圆柱头螺栓 / Inside hexagonal cylindrical head bolts
25	压盘 / Pressure plate		

产品概述 / SUMMARIZE

结构特点 / STRUCTURE FEATURES

1. 调速精度高，速度重复精度达0.5-1转。
2. 可双向连续运转。
3. 输出传动比在1: 1.4至1: 7之间（UDL002除外）连续可调，变速比达5。
4. 运行效率高，平稳静噪。
5. 密封性好，对使用环境适应性强。
6. 能与各种减速机灵活组合，解决各种传动变速方案。

1. High precision for the speed adjustment, the iterative precision of the speed is between 0.5-1cycle.
2. Can run bi-directional continuously.
3. The output transmission ratio is between 1:1.4and 1:7(except UDL002) and is adjustable.
4. High operating efficiency,stable and no noise.
5. Good sealing, and good adaptability in the operating environment.
6. Good sealing, and good adaptability in the operating environment.
7. Can combine with all kinds of reducers agilely to handle various kinds of transmission projects.

主要材料 / MAIN MATERIALS

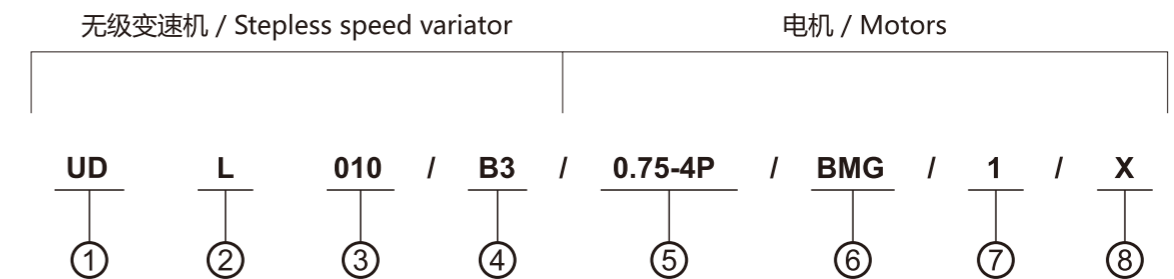
1. 外壳：UDL为铝合金，UDT为铸铁；
2. 内部零件：为热处理淬硬的GCr15钢；
3. 轴：热处理淬硬并经低温回火的20Cr钢。

1. Outside shell:Aluminum alloy for UDL and casting iron for UDT.
2. Inner parts: Gcr15 steel heat hardening.
3. Shaft: 20Cr with heat treatment and tempered with low temperature.

涂漆 / PAINTING

- | | |
|---------|------------|
| RAL7035 | 浅灰色 / grey |
| RAL5010 | 蓝色 / blue |

型号说明 / MODEL ILLUMINATE



NO	说明	Comments
1	无级变速机代号	Code of stepless speed variator
2	L: 铝合金机壳 T: 铸铁机壳	L:Aluminium alloy casing T:cast iron casing
3	无级变速机机座号	Steat NO. of stepless speed variato
4	B3: 底脚安装机型 B5: 法兰安装机型	B3:Foot-mounted model B5:Flange-mounted positon
5	1.无代号表示不带电机 2.0.37-4P: 电机功率、级数 3.80ST-M01330:伺服电机型号	1. No mark means without motor 1.0.37-4P: Model motors(poles of power) 2.80ST-M01330: Servo motor type
6	1.无代号表示不带制动器 2.BMG:制动器	1.No mark means without brake 2.BMG:brake
7	电机接线盒位置，默认位置1可以不写	Position of motor terminal box default position 1 not to write out is ok
8	电机进线位置，默认位置X可以不写	Coil position for motor , default position X not to write out is ok

订单时请说明是否带电机，一般按不带电机供应。

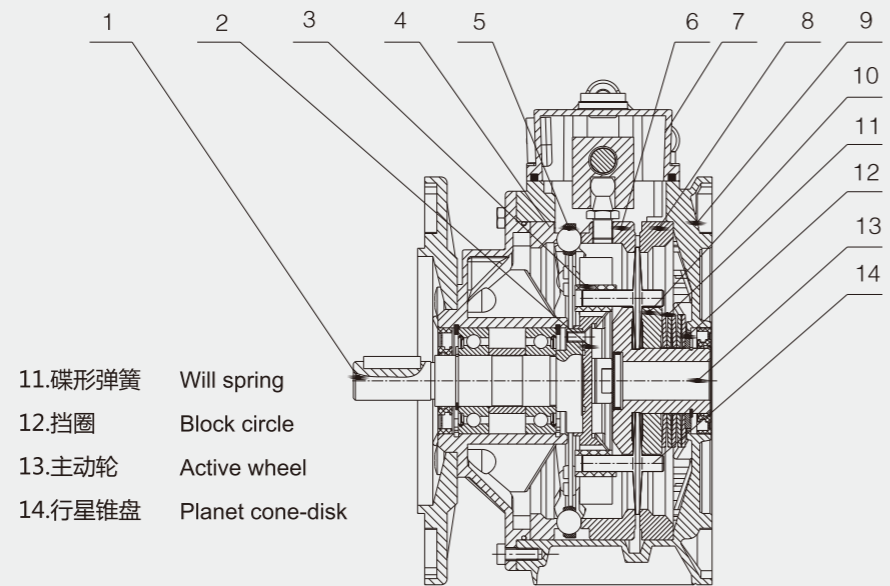
When ordering, you should show whether the reducers are equipped with motors, otherwise reducers aren't supplied with motors.

示例 / Example: **UDL005/B5/0.37-4P**

型号说明 / MODEL ILLUMINATE

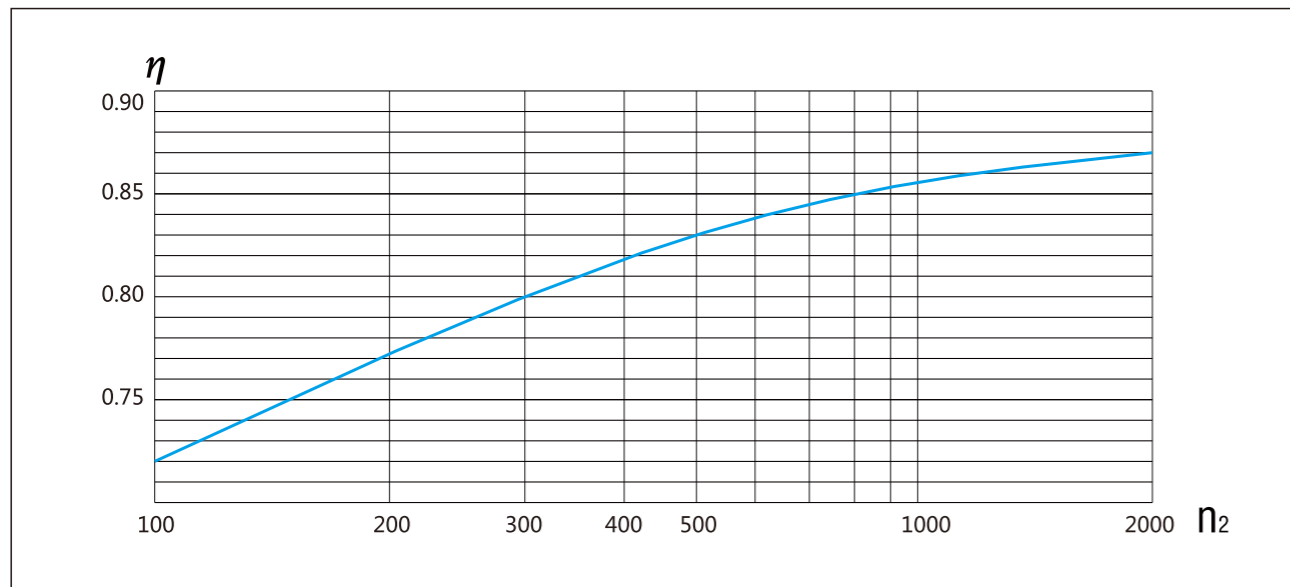
结构 STRUTURE

- 1.输出轴 Output shaft
- 2.转臂 Turn arm
- 3.滑块 Slider
- 4.固定凸轮 Fixed CAM
- 5.滚珠环 Ball ring
- 6.调速凸轮 Speed CAM
- 7.操作盖 Oprating cover
- 8.定环 Sfet ring
- 9.箱体 Cabinet
- 10.压盘 Pressure plate



- 11.碟形弹簧 Will spring
- 12.挡圈 Block circle
- 13.主动轮 Active wheel
- 14.行星锥盘 Planet cone-disk

变速机的效率 / Efficiency

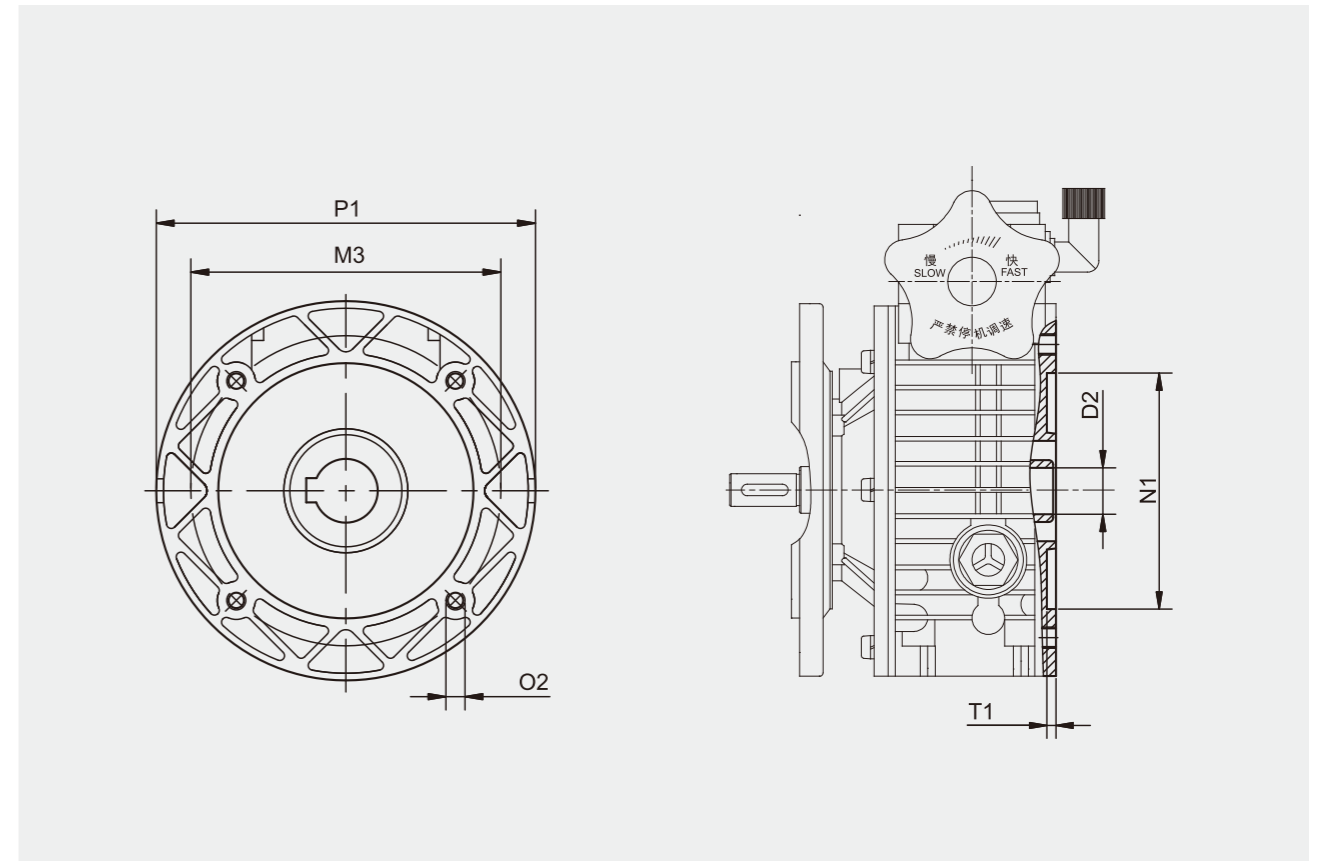


注：每型变速机的效率曲线并不尽相同，但大致趋势规律是相同的。

Note : the efficiency curve for different variator is not the same. But its trend rules are same.

UD外形尺寸图表 / OUTLINE DIMENSION SHEET

变速机的电机配合接口 / Adaptation Interface



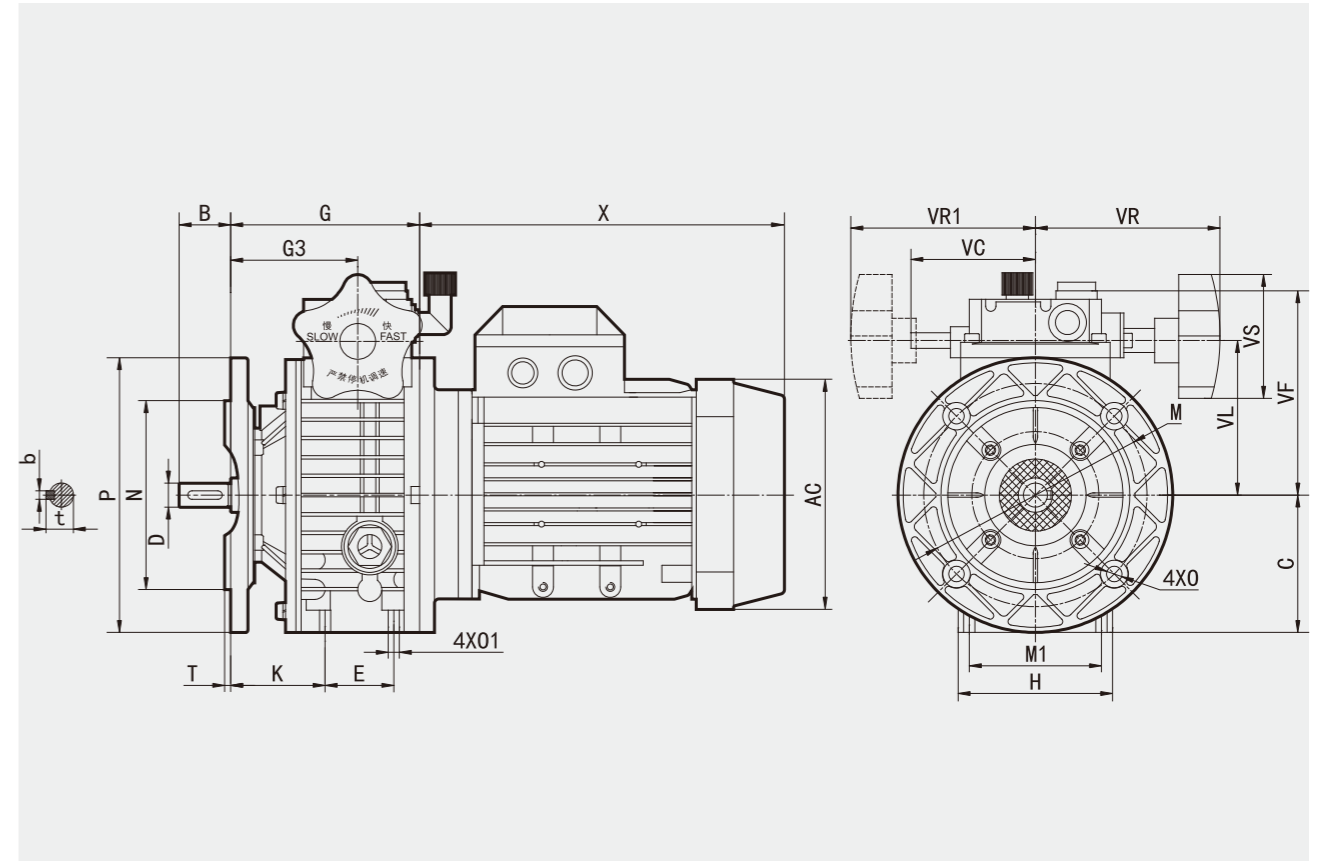
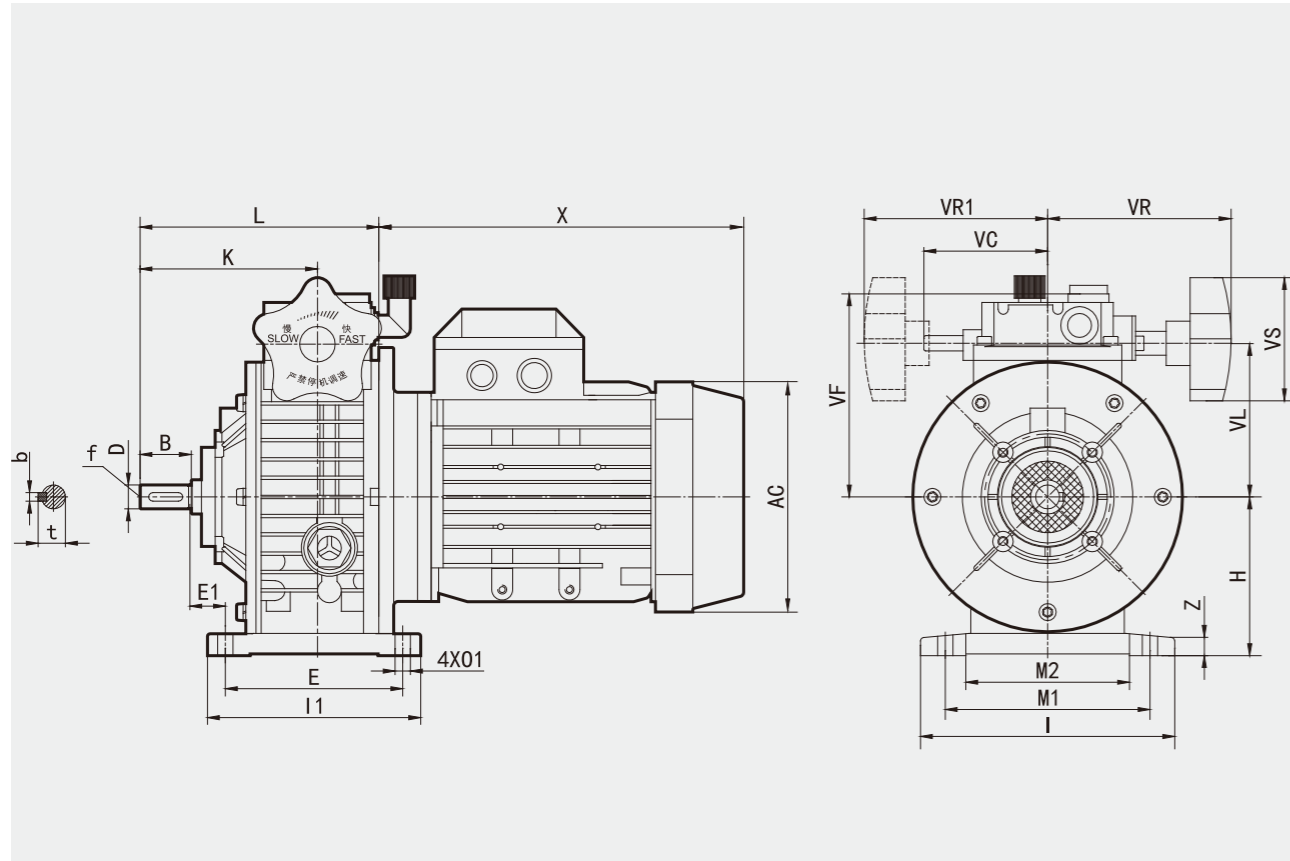
TYPE	PAM-IEC	P1	N1 (H8)	M3	O2	D2 (F7)	T1
UDL002	63B5	140	95	115	M8	11	5
UDL005	71B5	160	110	130	M8	14	5
UDL010	80B5	200	130	165	M10	19	6
	90B5	200	130	165	M10	24	6
UDT020	90B5	200	130	165	M10	24	6
UDT030	100/112B5	250	180	215	M12	28	6
UDT050	132B5	300	230	265	M12	28	6

UD外形尺寸图表 / OUTLINE DIMENSION SHEET

UD外形尺寸图表 / OUTLINE DIMENSION SHEET

B3型外形尺寸 / B3 Size

B5型外形尺寸 / B5 Size



B3型机座安装形式 / B3 type frame installation form

B5型机座安装形式 / B5 TYPE FRAME INSTALLATION FORM

TYPE	B	D(j6)	E	E1	H	I	I1	K	L	M1	M2	O1	VC	VF	VL	VR	VR1	VS	b	t	z
UDL002	23	11	105	17.5	80	145	120	87.5	135.5	110	71	9	71	111	78	110	110	85	4	12.5	10
UDL005	30	14	104	20	93	149	125	104	140	120	96	9	71	123	90	110	110	85	5	16	10
UDL010	40	19	125	26	113	190	150	125.5	179	160	135	11	79	140	107	120	120	110	6	21.5	15
UDT020	50	24	140	49	123	241	150	165	238	180	143	12	-	144	122	150	-	110	8	27	18
UDT030	60	28	230	25	150	300	270	191	268	245	190	14	-	188	150	160	-	110	8	31	25
UDT050	70	38	250	33	200	365	290	201	319	315	245	18	-	-	192	194	-	110	10	41	30

TYPE	B	C	D(j6)	E	G	G3	H	M	M1	N	O	O1	P	T	K	VC	VF	VL	VR	VR1	b	t
UDL002	23	70	11	50	112.5	64.5	72	115	60	95	9	M6	140	3.5	46	71	111	78	110	110	4	12.5
UDL005	30	80	14	40	110	74	90	130	77	110	9	M8	160	3.5	53	71	123	90	110	110	5	16
UDL010	40	100	19	58	139	85.5	98	165	84	130	11	M8	200	3.5	60	79	140	107	120	120	6	21.5
UDT020	50	109	24	-	188	115	241	165	-	130	11	-	200	3.5	-	-	144	122	150	-	8	27
UDT030	60	130	28	-	208	131	270	215	-	180	15	-	250	4	-	-	188	150	160	-	8	31
UDT050	70	200	38	-	244	131	-	265	-	230	19	-	300	4	-	-	-	192	194	-	10	41

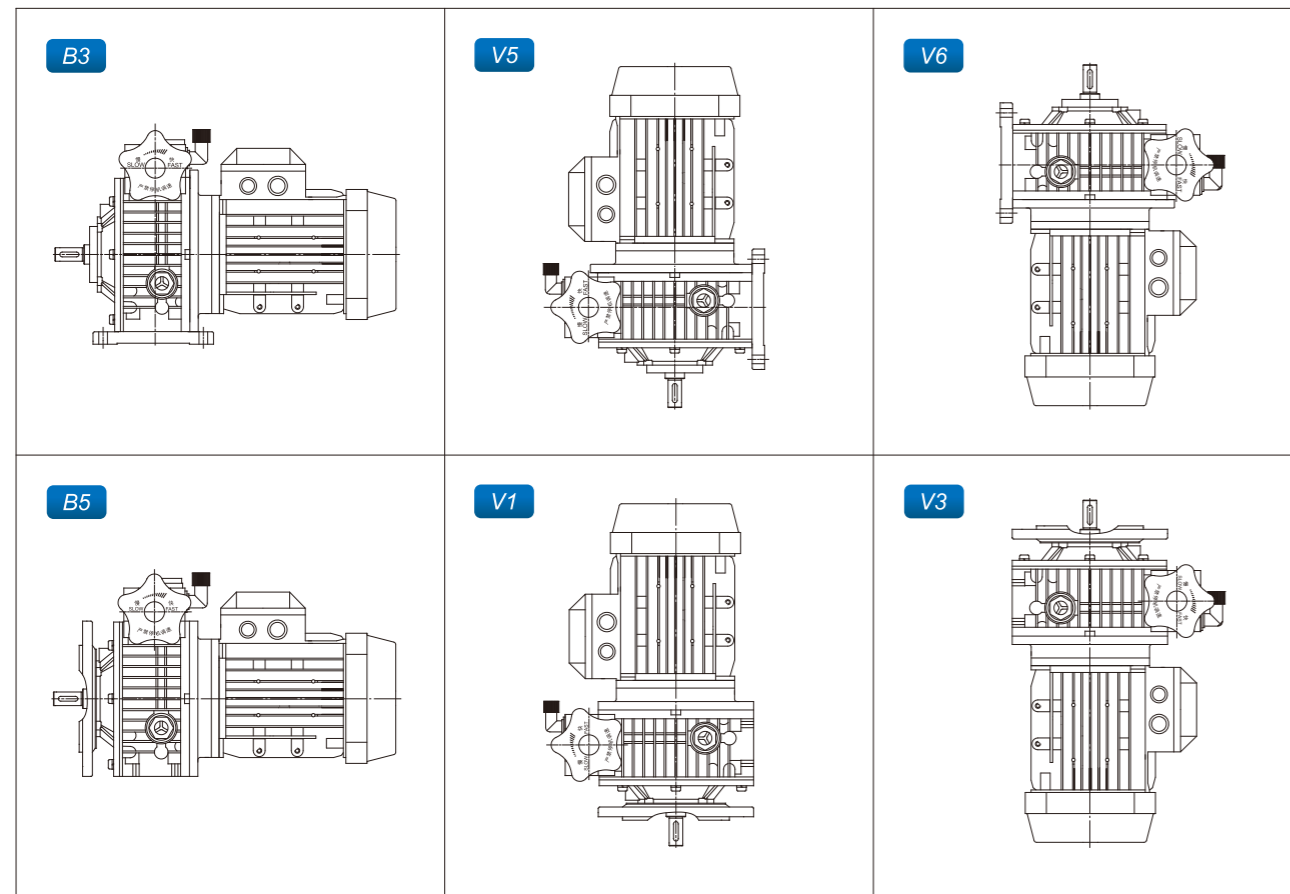
安装方位图 / INSTALLATION POSITIONS DIAGRAM

UD系列无级变速机性能参数

Performance table for UD series speed variator (n1=1400r/min)

电机功率 / MOTOR POWER	型号/model	I	n2 (r/min)	M2 (Nm)
0.18kW	UDL002	1.6-8.2	880-170	1.5-3
0.25kW	UDL005	1.4-7	1000-200	2.2-6
0.37kW	UDL005	1.4-7	1000-200	3-6
0.55kW	UDL010	1.4-7	1000-200	4-8
0.75kW	UDL010	1.4-7	1000-200	6-12
1.1kW	UDT020	1.4-7	1000-200	9-18
1.5kW	UDT020	1.4-7	1000-200	12-24
2.2kW	UDT030	1.4-7	1000-200	18-36
3.0kW	UDT030	1.4-7	1000-200	24-48
4.0kW	UDT030	1.4-7	1000-200	32-64
5.5kW	UDT050	1.4-7	1000-200	45-90
7.5kW	UDT050	1.4-7	1000-200	59-118

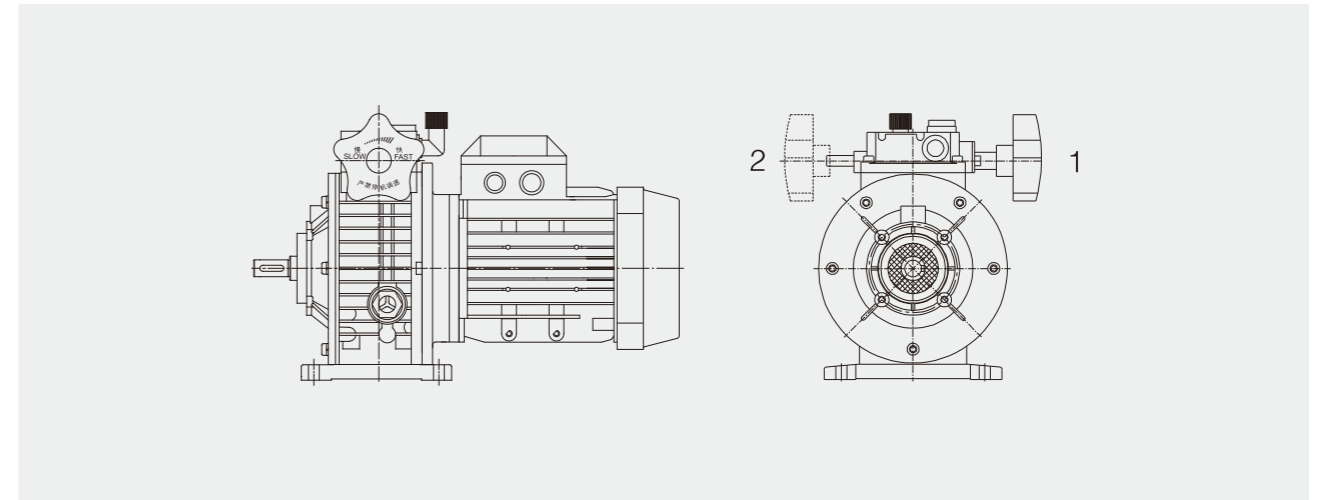
UD与NMRV安装方位 / UD AND NMRV INSTALLATION POSITION



安装方位图 / INSTALLATION POSITIONS DIAGRAM

附件位置 / THE ATTACHMENT POSITION

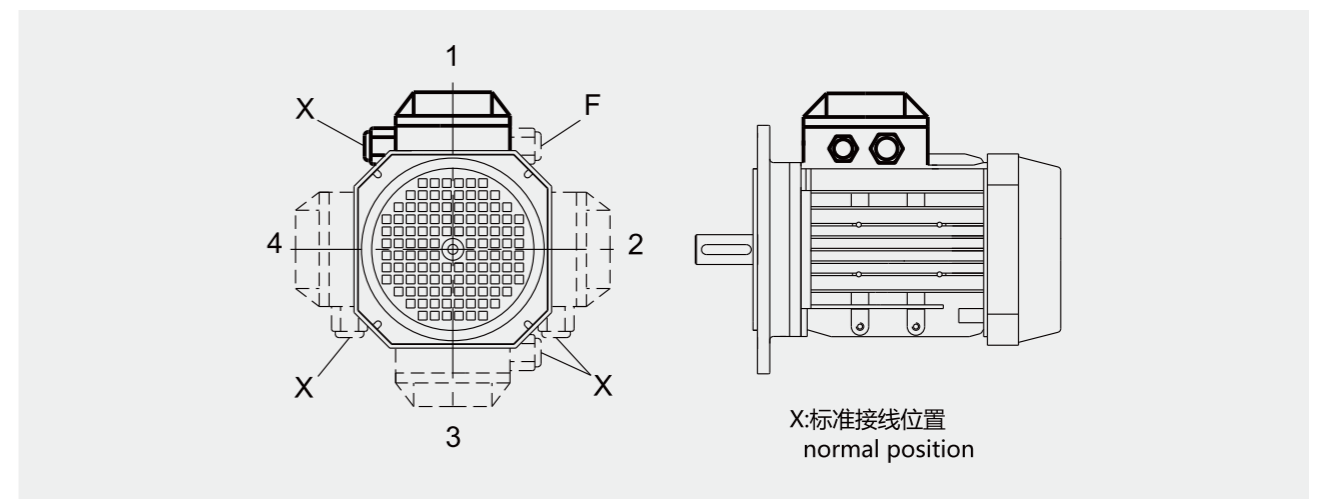
手轮位置 / THE POSITION OF THE HAND WHEEL



注：如没有特别说明，手轮将按照如图1位和B3安装方位的组合方式提供。

Note: if no special note, the handwheel will be in accordance with the figure 1 and B3 installation azimuth combination is provided.

电机接线盒位置 / MOTOR TERMINAL BOX POSITION



型号说明 / MODEL ILLUMINATE

**NMRV-UD蜗轮蜗杆减速机与无级变速机组合
Combination of worm gear units and stepless speed variator**



**蜗轮蜗杆减速机与无级变速机的组合
NMRV+UD COMBINATION OF NMRV WORM
GEAR UNITS & UD STEPLESS VARIATOR**

NMRV / 063 / UD / L / 005 / 50 / E / FA1 / SS1 / B3 / 0.37-4P / BMG / 1 / X



① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭

NO	说明	Comments
1	蜗轮蜗杆减速机系列代号	Code for worm gear units series:
2	蜗轮蜗杆减速机中心距 (规格)	Central distance of worm gear units(spec)
3	无级变速机系列代号	Code of stepless speed variator
4	1.L:铝合金机壳 2.T: 铸铁机壳	1.L:Aluminium alloy housing 2.T:Cast iron casing
5	无级变速机机座号	Continuously variable transmission model
6	减速机速比 (i=5,7.5,10,15,20,25,30,40,50,60,80,100)	Speed ratio of reducer (i=5,7.5,10,15,20,25,30,40,50,60,80,100)
7	1.无代号表示不带蜗杆同向尾出轴 2.E: 带蜗杆同向尾出轴	1.No mark means single extension worm shaft 2.E:Double extension worm shaft
8	1.无代号表示不带输出法兰 2.FA,FB,FC,FD,FE(1/2):输出法兰代号和位置	1.No mark means without output flange 2.FA、FB、FC、FD、FE(1/2):output Flange and position
9	1.无代号表示孔输出 2.SS(1/2):单向输出轴和位置 3.DS: 双向输出轴	1.No mark means hole output 2.SS(1/2):Single output shaft and position 3.DS:Double output shaft
10	安装方位代号	Installation position code
11	1.无代号表示不带电机 2.0.37-4P: 电机功率、级数	1. No mark means without motor 1.0.37-4P: Model motors(poles of power)
12	1.无代号表示不带制动器 2.BMG:制动器	1.No mark means without brake 2.BMG:brake
13	电机接线盒位置, 默认位置1可以不写	Position of motor terminal box default position 1 not to write out is ok
14	电机进线位置, 默认位置X 可以不写	Coil position for motor , default position X not to write out is ok

示例Example : **NMRV063 / UDL005 / 40 / FA2 / SS1 / B3**



NMRV+UD性能参数 / PERFORMANCE PARAMETER

NMRV..UD..(n1=1400r/min) / 性能参数 Performance parameter

P _{1n} (kW)	n ₂ (r/min)	i	i _{NMRV}	M _{2n} (Nm)				
0.18	117~22.5	12~61.5	7.5	9~18	NMRV040-UDL002	6324		
	88~17	16~82	10	12~23				
	58.7~11.3	24~123	15	17~32				
	44~8.5	32~164	20	22~40				
	35.2~6.8	40~205	25	27~47				
	29.3~5.7	48~246	30	30~51				
	22~4.3	64~328	40	37~62				
	17.6~3.4	80~410	50	43~60				
	22~4.3	64~328	40	38~63				
	17.6~3.4	80~410	50	44~73				
0.25	14.7~2.8	96~492	60	50~80	NMRV050-UDL002	6324		
	11~2.1	128~656	80	59~82				
	8.8~1.7	160~820	100	66~79				
	133~26.7	10.5~52.5	7.5	13~30			NMRV040-UDL005	7114
	100~20	14~70	10	16~38				
	66.7~13.3	21~105	15	24~53				
50~10	28~140	20	32~68					
40~8	35~175	25	38~80					
33.3~6.7	42~210	30	43~89					
0.37	25~5	56~280	40	48~96	NMRV050-UDL005	7114		
	20~4	70~350	50	54~112				
	16.7~3.3	84~420	60	59~122				
	12.5~2.5	112~560	80	66~135				
	133~26.7	10.5~52.5	7.5	19~36			NMRV050-UDL005	7124
	100~20	14~70	10	25~47				
	66.7~13.3	21~105	15	36~65				
	50~10	28~140	20	46~82				
	40~8	35~175	25	55~97				
	33.3~6.7	42~210	30	61~107				
25~5	56~280	40	76~124					
20~4	70~350	50	89~120					
25~5	56~280	40	79~134	NMRV063-UDL005	7124			
20~4	70~350	50	92~155					
16.7~3.3	84~420	60	104~173					
12.5~2.5	112~560	80	125~173					
0.55	10~2	140~700	100	139~150	NMRV063-UDL010	8014		
	133~26.7	10.5~52.5	7.5	26~49				
	100~20	14~70	10	34~63				



NMRV+UD性能参数 / PERFORMANCE PARAMETER

NMRV..UD..(n1=1400r/min) / 性能参数 Performance parameter

P _{1n} (kW)	n ₂ (r/min)	i	i _{NMRV}	M _{2n} (Nm)				
0.55	66.7~13.3	21~105	15	48~88	NMRV063-UDL010	8014		
	50~10	28~140	20	62~112				
	40~8	35~175	25	75~133				
	33.3~6.7	42~210	30	81~146				
	25~5	56~280	40	105~179				
	20~4	70~350	50	123~207				
	20~4	70~350	50	129~216			NMRV075-UDL010	8014
	16.7~3.3	84~420	60	146~242				
	12.5~2.5	112~560	80	176~250				
	0.75	12.5~2.5	112~560	80			189~309	NMRV090-UDL010
10~2		140~700	100	218~350				
133~26.7		10.5~52.5	7.5	39~73	NMRV063-UDL010	8024		
100~20		14~70	10	51~94				
66.7~13.3		21~105	15	72~132				
50~10		28~140	20	92~168				
40~8		35~175	25	112~199				
33.3~6.7		42~210	30	126~219				
25~5		56~280	40	156~232				
20~4		70~350	50	185~310				
20~4	70~350	50	192~320	NMRV075-UDL010			8024	
16.7~3.3	84~420	60	219~300					
16.7~3.3	84~420	60	230~389					
1.1	12.5~2.5	112~560	80	265~428	NMRV090-UDL010	8024		
	10~2	140~700	100	303~410				
	12.5~2.5	112~560	80	302~503	NMRV110-UDL010	8024		
	10~2	140~700	100	348~575				
	133~26.7	10.5~52.5	7.5	59~111	NMRV075-UDT020	90S4		
	100~20	14~70	10	77~144				
	66.7~13.3	21~105	15	110~203				
	50~10	28~140	20	142~258				
	40~8	35~175	25	172~308				
	33.3~6.7	42~210	30	195~340				
25~5	56~280	40	245~360					
100~20	14~70	10	78~146	NMRV090-UDT020			90S4	
66.7~13.3	21~105	15	113~208					
50~10	28~140	20	146~266					
40~8	35~175	25	177~320					
33.3~6.7	42~210	30	202~356					
0.55	25~5	56~280	40	256~442				



NMRV+UD性能参数 / PERFORMANCE PARAMETER

NMRV..UD..(n1=1400r/min) / 性能参数 Performance parameter

P_{1n} (kW)	n_2 (r/min)	i	i_{NMRV}	M_{2n} (Nm)				
1.1	20~4	70~350	50	304~517	NMRV090-UDT020	90S4		
	20~4	70~350	50	320~550				
	16.7~3.3	84~420	60	368~625				
	1.1	12.5~2.5	112~560	80	455~754	NMRV110-UDT020	90S4	
		10~2	140~700	100	522~710			
		16.7~3.3	84~420	60	373~623			
		12.5~2.5	112~560	80	460~749			
		1.1	10~2	140~700	100	531~868	NMRV130-UDT020	90S4
			133~26.7	10.5~52.5	7.5	78~148		
			100~20	14~70	10	102~192		
66.7~13.3			21~105	15	147~270			
50~10	28~140		20	190~344				
40~8	35~175		25	229~330				
1.5	33.3~6.7	42~210	30	260~390	NMRV075-UDT020	90L4		
	25~5	56~280	40	327~360				
	133~26.7	10.5~52.5	7.5	77~150				
	100~20	14~70	10	104~195				
	66.7~13.3	21~105	15	150~277				
	50~10	28~140	20	194~355				
	1.5	40~8	35~175	25	236~427	NMRV090-UDT020	90L4	
		33.3~6.7	42~210	30	270~474			
		25~5	56~280	40	341~589			
		20~4	70~350	50	406~560			
20~4		70~350	50	426~733				
16.7~3.3		84~420	60	490~833				
16.7~3.3		84~420	60	498~831				
12.5~2.5		112~560	80	614~999				
2.2	10~2	140~700	100	696~1100	NMRV110-UDT020	90L4		
	133~26.7	10.5~52.5	7.5	120~226				
	100~20	14~70	10	157~294				
	66.7~13.3	21~105	15	228~418				
	50~10	28~140	20	298~549				
	40~8	35~175	25	364~664				
	2.2	33.3~6.7	42~210	30	413~717	NMRV090-UDT020	90L4	
		25~5	56~280	40	533~931			
		25~5	56~280	40	542~932			
		20~4	70~350	50	648~1097			
16.7~3.3		84~420	60	746~1246				
12.5~2.5		112~560	80	921~1499				
10~2		140~700	100	1040~169				
2.2		133~26.7	10.5~52.5	7.5	120~226			NMRV110-UDT030
	100~20	14~70	10	157~294				
	66.7~13.3	21~105	15	228~418				
	50~10	28~140	20	298~549				
	40~8	35~175	25	364~664				
	33.3~6.7	42~210	30	413~717				
	2.2	25~5	56~280	40	533~931	NMRV130-UDT030	100L1-4	
		25~5	56~280	40	542~932			
		20~4	70~350	50	648~1097			
		16.7~3.3	84~420	60	746~1246			

NMRV+UD性能参数 / PERFORMANCE PARAMETER

NMRV..UD..(n1=1400r/min) / 性能参数 Performance parameter

P_{1n} (kW)	n_2 (r/min)	i	i_{NMRV}	M_{2n} (Nm)					
3.0	133~26.7	10.5~52.5	7.5	160~302	NMRV110-UDT030	100L2-4			
	100~20	14~70	10	210~392					
	66.7~13.3	21~105	15	304~558					
	50~10	28~140	20	398~732					
	40~8	35~175	25	485~885					
	33.3~26.7	42~210	30	547~956					
	25~5	56~280	40	711~1030					
	3.0	133~26.7	10.5~52.5	7.5			160~301	NMRV130-UDT030	100L2-4
		100~20	14~70	10			211~395		
		66.7~13.3	21~105	15			307~563		
50~10		28~140	20	402~733					
40~8		35~175	25	490~885					
33.3~6.7		42~210	30	562~973					
25~5		56~280	40	720~1242					
20~4		70~350	50	864~1462					
4.0	133~26.7	10.5~52.5	7.5	213~402	NMRV110-UDT050	112M4			
	100~20	14~70	10	279~523					
	66.7~13.3	21~105	15	405~744					
	50~10	28~140	20	530~975					
	40~8	35~175	25	647~1020					
	133~26.7	10.5~52.5	7.5	214~401			NMRV130-UDT050	112M4	
	100~20	14~70	10	281~527					
	66.7~13.3	21~105	15	410~751					
	50~10	28~140	20	536~978					
	4.0	40~8	35~175	25	653~1180	NMRV130-UDT050	112M4		
33.3~6.7		42~210	30	749~1298					
25~5		56~280	40	960~1650					