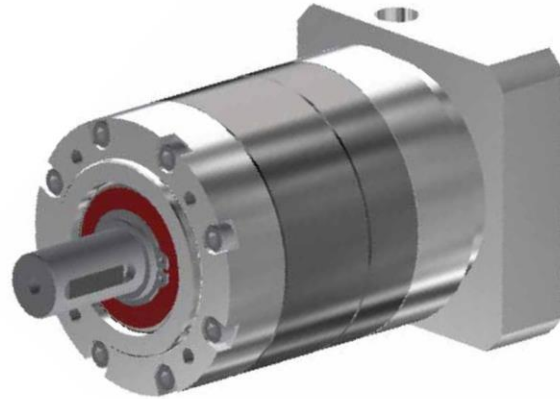


ABLE Reducer

VRE/F Series



VRE/F Series



1. Quiet Operation

Helical gears contribute to reduce vibration and noise.

2. High Torque

Uses full-type roller bearing for high torque.

3. Economical Type

Grease change is unnecessary.

4. Adapter-bushing connection

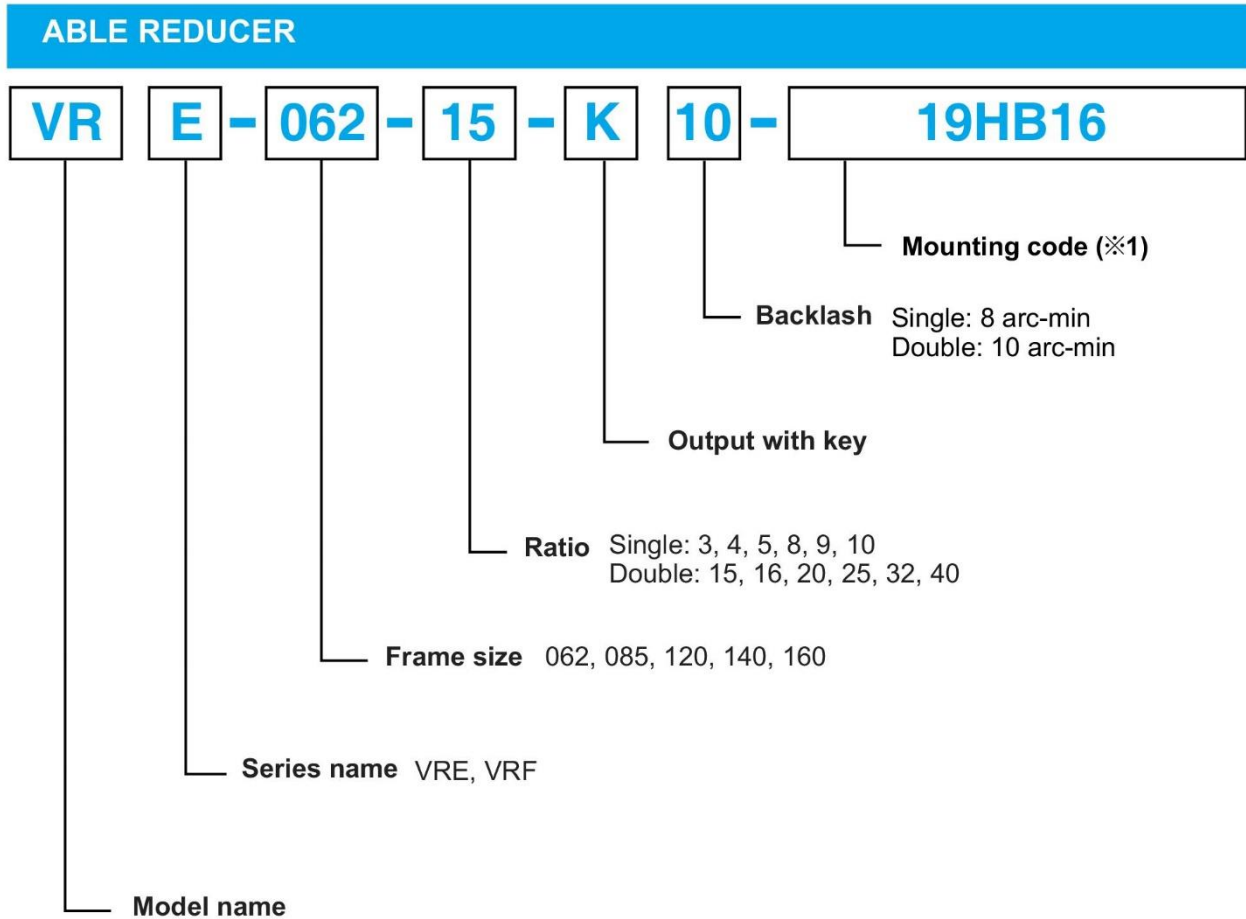
Can be mounted to any motor worldwide.

5. No grease leakage

Perfect solution using high viscosity anti-separation grease.

6. Maintenance-free

No need to replace the grease during the lifetime of the unit.
Can be mounted in any position.



(※1) Mounting Code

The mounting code varies depending on the motor.

(Mounting style to the motor)

- The motor output shaft is the smooth shaft without keyway.
- If the motor output shaft is with keyway, remove the key from the shaft.
- If the motor output shaft has a D-shape cut, please contact us.

Performance Table

VRE/F-062-□

Frame Size	Ratio	※ 1	※ 2	※ 3	※ 4	※ 5	※ 6、8	※ 7、8
		Nominal output torque [Nm]	Maximum output torque [Nm]	Emergency stop torque [Nm]	Nominal input speed [rpm]	Maximum input speed [rpm]	Permissible radial load [N]	Permissible axial load [N]
062	3	21	46	100	3000	6000	420	520
	4	30	66	100	3000	6000	420	520
	5	33	66	100	3000	6000	420	520
	8	30	66	120	3000	6000	420	520
	9	30	46	70	3000	6000	420	520
	10	30	46	90	3000	6000	420	520
	15	30	46	100	3000	6000	420	520
	16	36	66	100	3000	6000	420	520
	20	36	66	100	3000	6000	420	520
	25	50	66	100	3000	6000	420	520
	32	50	66	120	3000	6000	420	520
40	50	66	100	3000	6000	420	520	

Frame size	Ratio	Weight [kg]			Moment of inertia [kgcm ²]		
		Input bore			Input bore		
		(≤ φ 8)	(≤ φ 14)	(≤ φ 19)	(≤ φ 8)	(≤ φ 14)	(≤ φ 19)
062	3	-	1.0	1.2	-	0.19	0.40
	4				-	0.16	0.37
	5				-	0.15	0.36
	8				-	0.14	0.35
	9				-	0.14	0.35
	10				-	0.14	0.35
	15				1.4	1.4	—
	16	0.07	0.14	-			
	20	0.06	0.14	-			
	25	0.06	0.14	-			
	32	0.07	0.14	-			
40	0.06	0.13	-				

VRE/F-082-□

Frame Size	Ratio	※ 1	※ 2	※ 3	※ 4	※ 5	※ 6、8	※ 7、8
		Nominal output torque [Nm]	Maximum output torque [Nm]	Emergency stop torque [Nm]	Nominal input speed [rpm]	Maximum input speed [rpm]	Permissible radial load [N]	Permissible axial load [N]
082	3	58	108	260	3000	6000	760	1050
	4	80	165	255	3000	6000	760	1050
	5	91	165	255	3000	6000	760	1050
	8	91	165	300	3000	6000	760	1050
	9	91	112	210	3000	6000	760	1050
	10	91	112	235	3000	6000	760	1050
	15	80	112	255	3000	6000	760	1050
	16	100	165	255	3000	6000	760	1050
	20	100	165	255	3000	6000	760	1050
	25	130	165	255	3000	6000	760	1050
	32	150	165	300	3000	6000	760	1050
40	150	165	255	3000	6000	760	1050	

Frame size	Ratio	Weight [kg]			Moment of inertia [kgcm ²]		
		Input bore			Input bore		
		(≤ φ 14)	(≤ φ 19)	(≤ φ 28)	(≤ φ 14)	(≤ φ 19)	(≤ φ 28)
082	3	2.2	2.4	2.8	0.57	1.04	3.13
	4				0.41	0.87	2.96
	5				0.35	0.82	2.91
	8				0.31	0.77	2.86
	9				0.30	0.77	2.86
	10				0.30	0.76	2.85
	15				2.9	3.0	3.4
	16	0.33	0.78	2.85			
	20	0.32	0.77	2.84			
	25	0.32	0.77	2.83			
	32	0.32	0.78	2.84			
40	0.28	0.73	2.79				

- ※ 1 Average torque permitted during permissible average input rotational speed.
- ※ 2 In the event that a day's operation is 1 hour, the value that can permit 1,000 cycles per hour from start to stop. In the event that a day's operation exceeds 1 hour or amounts to over 1,000 cycles per hour follow the calculation method for maximum output torque (P14).
- ※ 3 Maximum value permitted in the event of impact, etc. (frequency of up to 1,000 times).
- ※ 4 Permitted maximum value of average input rotational speed during operation.
- ※ 5 Permitted maximum input rotational speed under non-consecutive operation.
- ※ 6 Permitted value when the axial load measured at the center of the output shaft is 0.
- ※ 7 Permitted value when the radial load measured at the axis is 0.
- ※ 8 Permitted value in the event the output shaft speed is 100 rpm.
- ※ 9 Values will vary according to specifications such as adapter type and bushings.

Performance Table

VRE/F-120-□

Frame size	Ratio	※ 1	※ 2	※ 3	※ 4	※ 5	※ 6, 8	※ 7, 8
		Nominal output torque [Nm]	Maximum output torque [Nm]	Emergency stop torque [Nm]	Nominal input speed [rpm]	Maximum input speed [rpm]	Permissible radial load [N]	Permissible axial load [N]
120	3	135	270	600	3000	6000	1900	2700
	4	150	390	580	3000	6000	1900	2700
	5	195	390	580	3000	6000	1900	2700
	8	170	390	660	3000	6000	1900	2700
	9	170	292	470	3000	6000	1900	2700
	10	170	292	530	3000	6000	1900	2700
	15	190	270	620	3000	6000	1900	2700
	16	230	390	580	3000	6000	1900	2700
	20	245	390	580	3000	6000	1900	2700
	25	300	390	580	3000	6000	1900	2700
	32	300	390	670	3000	6000	1900	2700
40	300	390	570	3000	6000	1900	2700	

Frame size	Ratio	Weight [kg]			Moment of inertia [kgcm ²]		
		Input bore			Input bore		
		(≤ φ 19)	(≤ φ 28)	(≤ φ 38)	(≤ φ 19)	(≤ φ 28)	(≤ φ 38)
120	3	5.8	6.1	7.0	2.38	4.41	12.27
	4				1.45	3.48	11.34
	5				1.17	3.13	11.05
	8				0.88	2.89	10.72
	9				0.85	2.86	10.69
	10	0.83	2.84	10.67			
	15	7.5	7.9	—	1.08	2.97	-
	16				1.07	3.06	-
	20				0.93	2.93	-
	25				0.92	2.91	-
	32				1.03	3.03	-
40	0.76	2.75	-				

VRE/F-140-□

Frame size	Ratio	※ 1	※ 2	※ 3	※ 4	※ 5	※ 6, 8	※ 7, 8
		Nominal output torque [Nm]	Maximum output torque [Nm]	Emergency stop torque [Nm]	Nominal input speed [rpm]	Maximum input speed [rpm]	Permissible radial load [N]	Permissible axial load [N]
140	3	215	360	680	3000	6000	2100	3000
	4	240	430	640	3000	6000	2100	3000
	5	240	430	640	3000	6000	2100	3000
	8	215	430	710	3000	6000	2100	3000
	9	215	300	520	3000	6000	2100	3000
	10	215	300	570	3000	6000	2100	3000
	15	315	360	680	3000	6000	2100	3000
	16	360	560	640	3000	6000	2100	3000
	20	380	560	640	3000	6000	2100	3000
	25	500	550	620	3000	6000	2100	3000
	32	400	430	710	3000	6000	2100	3000
40	470	560	640	3000	6000	2100	3000	

Frame size	Ratio	Weight [kg]		Moment of inertia [kgcm ²]	
		Input bore		Input bore	
		(≤ φ 28)	(≤ φ 38)	(≤ φ 28)	(≤ φ 38)
140	3	12.8	13.8	4.7	12.6
	4			3.6	11.5
	5			3.3	11.1
	8			3.0	10.7
	9			2.9	10.7
	10	2.9	10.7		
	15	16.2	17.1	3.5	10.9
	16			3.2	11.0
	20			3.0	10.8
	25			3.0	10.8
	32			3.1	10.9
40	2.8	10.6			

- ※ 1 Average torque permitted during permissible average input rotational speed.
- ※ 2 In the event that a day's operation is 1 hour, the value that can permit 1,000 cycles per hour from start to stop. In the event that a day's operation exceeds 1 hour or amounts to over 1,000 cycles per hour follow the calculation method for maximum output torque (P14).
- ※ 3 Maximum value permitted in the event of impact, etc. (frequency of up to 1,000 times).
- ※ 4 Permitted maximum value of average input rotational speed during operation.
- ※ 5 Permitted maximum input rotational speed under non-consecutive operation.
- ※ 6 Permitted value when the axial load measured at the center of the output shaft is 0.
- ※ 7 Permitted value when the radial load measured at the axis is 0.
- ※ 8 Permitted value in the event the output shaft speed is 100 rpm.
- ※ 9 Values will vary according to specifications such as adapter type and bushings.

Performance Table

VRE/F-160-□

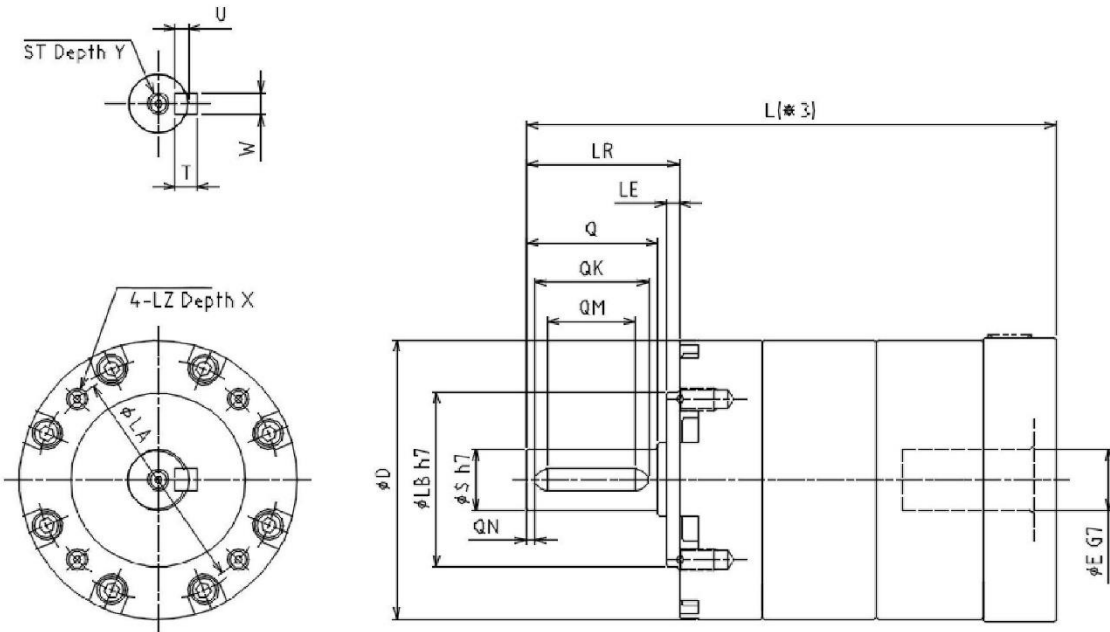
Frame size	Ratio	※ 1	※ 2	※ 3	※ 4	※ 5	※ 6, 8	※ 7, 8
		Nominal output torque [Nm]	Maximum output torque [Nm]	Emergency stop torque [Nm]	Nominal input speed [rpm]	Maximum input speed [rpm]	Permissible radial load [N]	Permissible axial load [N]
160	3	270	560	1410	2000	6000	4500	6200
	4	350	840	1250	2000	6000	4500	6200
	5	460	840	1260	2000	6000	4500	6200
	8	400	840	1450	2000	6000	4500	6200
	9	400	610	1040	2000	6000	4500	6200
	10	400	610	1160	2000	6000	4500	6200
	15	400	560	1410	2000	6000	4500	6200
	16	500	840	1250	2000	6000	4500	6200
	20	530	840	1250	2000	6000	4500	6200
	25	590	840	1260	2000	6000	4500	6200
	32	750	840	1450	2000	6000	4500	6200
	40	610	840	1250	2000	6000	4500	6200

Frame size	Ratio	Weight [kg]		Moment of inertia [kgcm ²]	
		Input bore		Input bore	
		(≤ φ 28)	(≤ φ 38)	(≤ φ 38)	(≤ φ 14)
160	3	15.2	16.5	7.2	17.0
	4			3.7	13.5
	5			2.6	12.5
	8			1.6	11.4
	9			1.5	11.3
	10			1.4	11.2
	15	18.9	20.3	2.5	12.1
	16			2.6	12.5
	20			1.9	11.9
	25			1.9	11.9
	32			2.4	12.4
	40			1.2	11.2

- ※ 1 Average torque permitted during permissible average input rotational speed.
- ※ 2 In the event that a day's operation is 1 hour, the value that can permit 1,000 cycles per hour from start to stop. In the event that a day's operation exceeds 1 hour or amounts to over 1,000 cycles per hour follow the calculation method for maximum output torque (P14).
- ※ 3 Maximum value permitted in the event of impact, etc. (frequency of up to 1,000 times).
- ※ 4 Permitted maximum value of average input rotational speed during operation.
- ※ 5 Permitted maximum input rotational speed under non-consecutive operation.
- ※ 6 Permitted value when the axial load measured at the center of the output shaft is 0.
- ※ 7 Permitted value when the radial load measured at the axis is 0.
- ※ 8 Permitted value in the event the output shaft speed is 100 rpm.
- ※ 9 Values will vary according to specifications such as adapter type and bushings.

Dimensions (Main Body)

VRE Series (Adapter type)



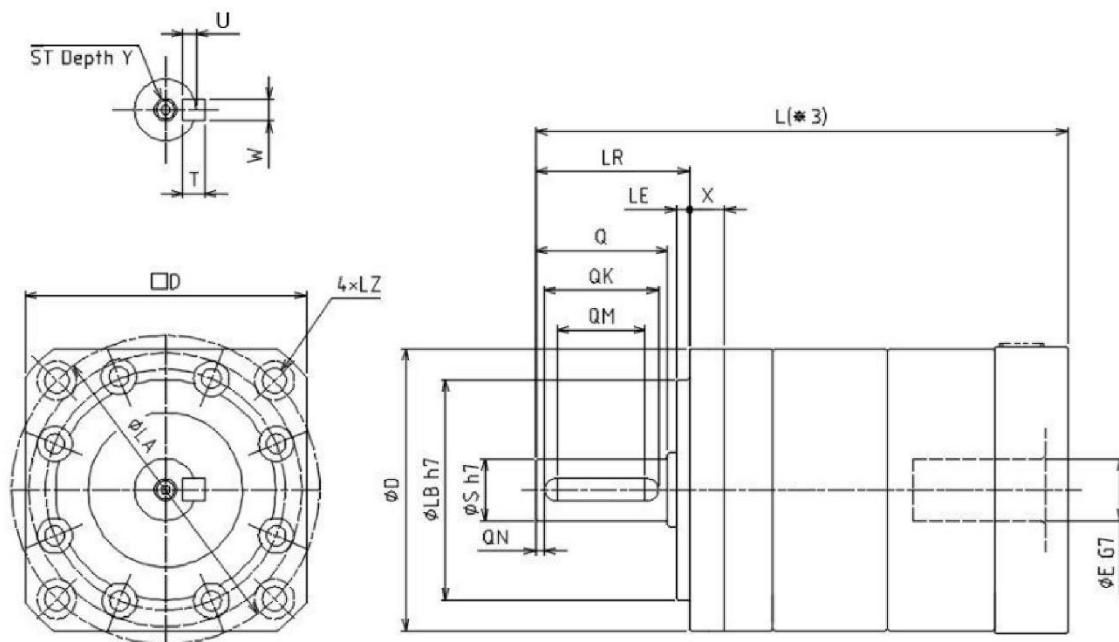
Frame size	Stage ※ 1	Input shaft bore E	Dimensions																
			L ※3	LR	S	ST	Y	Q	QK	QN	QM	W×U	T	D	LB	LE	LA	LZ	X
062	Single	≤ Ø14	Refer to page 8	35	14	M5	12	30	25	3	18	5×3	5	62	40	3	52	M5	8
		≤ Ø19																	
	Double	≤ Ø8	Refer to page 9	40	20	M6	16	36	30	3	22	6×3.5	6	82	60	3	70	M6	12
		≤ Ø14																	
	Single	≤ Ø14	Refer to page 10	55	25	M10	22	50	44	3	35	8×4	7	120	80	4	100	M10	16
		≤ Ø19																	
	Double	≤ Ø19	Refer to page 11	75	32	M12	25	70	62	3	50	10×5	8	140	100	4	120	M10	16
		≤ Ø28																	
	Single	≤ Ø28	Refer to page 12	87	40	M12	25	80	72	3	58	12×5	8	160	130	5	145	M12	20
		≤ Ø38																	
	Double	≤ Ø28	Refer to page 12	87	40	M12	25	80	72	3	58	12×5	8	160	130	5	145	M12	20
		≤ Ø38																	

※1 Single reduction: 1/3 ~ 1/10, Double reduction 1/15~1/40

※2 Bushing will be inserted to adapt to the motor shaft.

※3 These values may vary with the motor/ adapter flange selected.
For details, refer to the adapter flange dimensions list on pages 9-13.

Dimensions (Main Body)



Frame size	Stage ※ 1	Input shaft bore	Dimensions																
			L ※ 3	LR	S	ST	Y	Q	QK	QN	QM	W×U	T	D	LB	LE	LA	LZ	X
062	Single	≤ Ø14	Refer to page 8	35	14	M5	12	30	25	3	18	5×3	5	62	50	3	70	5.5	8
		≤ Ø19																	
	Double	≤ Ø8																	
		≤ Ø14																	
082	Single	≤ Ø14	Refer to page 9	40	20	M6	16	36	30	3	22	6×3.5	6	87	80	3	100	6.5	10
		≤ Ø19																	
	Double	≤ Ø28																	
		≤ Ø14																	
120	Single	≤ Ø19	Refer to page 10	55	25	M10	22	50	44	3	35	8×4	7	120	110	4	130	8.5	15
		≤ Ø28																	
	Double	≤ Ø38																	
		≤ Ø19																	
140	Single	≤ Ø28	Refer to page 11	75	32	M12	25	70	62	3	50	10×5	8	145	120	4	160	11	15
		≤ Ø38																	
	Double	≤ Ø28																	
		≤ Ø38																	
160	Single	≤ Ø28	Refer to page 12	87	40	M12	25	80	72	3	58	12×5	8	175	130	5	185	11	15
		≤ Ø38																	
	Double	≤ Ø28																	
		≤ Ø38																	

※1 Single reduction: 1/3 ~ 1/10, Double reduction: 1/15 ~ 1/40

※2 Bushing will be inserted to adapt to the motor shaft.

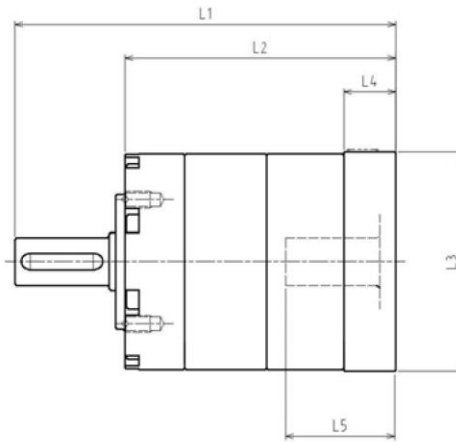
※3 These values may vary with the motor/ adapter flange selected.

For details, refer to the adapter flange dimensions list on pages 9-13.

Dimensions (Adapter)

VRE/F Series (Adapter Type)

VRE/F-062



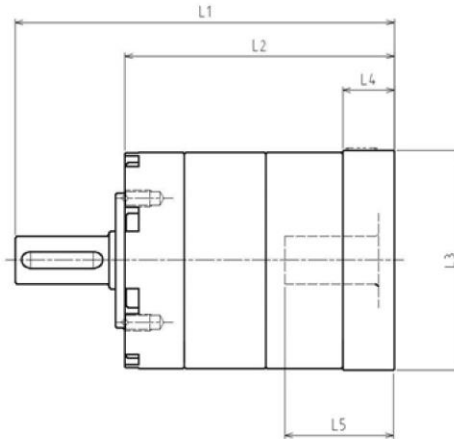
Model number	Adapter code	Single					Double				
		L1	L2	L3	L4	L5	L1	L2	L3	L4	L5
VRE/F-062-□-□-8** ≤ Ø 8 Input shaft bore	AP	/	/	/	/	/	133.5	98.5	□52	13.5	30
	AA·AC·AD·AF·AG·AL·AM·AN·AQ	/	/	/	/	/	135.5	100.5	□52	15.5	32
	AB·AE·AH·AJ·AK	/	/	/	/	/	140.5	105.5	□52	20.5	37
	BA·BB·BD·BE·BG·BH·BJ	/	/	/	/	/	135.5	100.5	□60	15.5	32
	BC·BF	/	/	/	/	/	140.5	105.5	□60	20.5	37
	CA	/	/	/	/	/	140.5	105.5	□70	20.5	37
VRE/F-062-□-□-14** ≤ Ø 14 Input shaft bore	BA·BB·BD·BE·BF·BG·BJ·BK·BP	120	85	□65	16.5	35	140.5	105.5	□65	16.5	35
	BC·BH·BM·BN	125	90	□65	21.5	40	145.5	110.5	□65	21.5	40
	BL	130	95	□65	26.5	45	150.5	115.5	□65	26.5	45
	CA·CC	120	85	□70	16.5	35	140.5	105.5	□70	16.5	35
	CB	125	90	□70	21.5	40	145.5	110.5	□70	21.5	40
	DA·DB·DC·DD·DF·DH·DJ	120	85	□80	16.5	35	140.5	105.5	□80	16.5	35
	DE·DL	125	90	□80	21.5	40	145.5	110.5	□80	21.5	40
	DG·DK	130	95	□80	26.5	45	150.5	115.5	□80	26.5	45
	EA·EB·EC·EF·EG·EK·EL	120	85	□90	16.5	35	140.5	105.5	□90	16.5	35
	EJ·EM	125	90	□90	21.5	40	145.5	110.5	□90	21.5	40
	ED·EE·EH	130	95	□90	26.5	45	150.5	115.5	□90	26.5	45
	FA	120	85	□100	16.5	35	140.5	105.5	□100	16.5	35
	FB	130	95	□100	26.5	45	150.5	115.5	□100	26.5	45
	GA	120	85	□115	16.5	35	140.5	105.5	□115	16.5	35
GC	125	90	□115	21.5	40	145.5	110.5	□115	21.5	40	
GB	135	100	□115	31.5	50	155.5	120.5	□115	31.5	50	
JA	135	100	□150	31.5	50	155.5	120.5	□150	31.5	50	
VRE/F-062-□-□-19** ≤ Ø 19 Input shaft bore	DA·DB·DC	135	100	□80	25	50	/	/	/	/	/
	DD·DE	145	110	□80	35	60	/	/	/	/	/
	EA	140	105	□90	30	55	/	/	/	/	/
	EB·ED	135	100	□90	25	50	/	/	/	/	/
	EC	145	110	□90	35	60	/	/	/	/	/
	FA	135	100	□100	25	50	/	/	/	/	/
	FB	145	110	□100	35	60	/	/	/	/	/
	GB·GD	135	100	□115	25	50	/	/	/	/	/
	GA·GC·GH	140	105	□115	30	55	/	/	/	/	/
	GE·GF	145	110	□115	35	60	/	/	/	/	/
	HA	135	100	□130	25	50	/	/	/	/	/
	HB	150	115	□130	40	65	/	/	/	/	/
	HC·HD·HE	140	105	□130	30	55	/	/	/	/	/
	JA	145	110	□150	35	60	/	/	/	/	/
JB	150	115	□150	40	65	/	/	/	/	/	

※1 Single reduction: 1/3 ~ 1/10, Double reduction: 1/15 ~ 1/40

※2 Bushing will be inserted to adapt to the motor shaft.

Dimensions (Adapter)

VRE/F-082



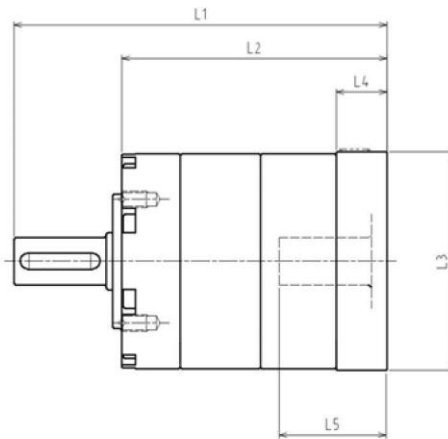
Model number	Adapter code	Single					Double				
		L1	L2	L3	L4	L5	L1	L2	L3	L4	L5
VRE/F-082-□-□-14** ≤ Ø 14 Input shaft bore	BA·BB·BD·BE·BF·BG·BJ·BK·BP	145	105	□65	16.5	35	162	122	□65	16.5	35
	BC·BH·BM·BN	150	110	□65	21.5	40	167	127	□65	21.5	40
	BL	155	115	□65	26.5	45	172	132	□65	26.5	45
	CA·CC	145	105	□70	16.5	35	162	122	□70	16.5	35
	CB	150	110	□70	21.5	40	167	127	□70	21.5	40
	DA·DB·DC·DD·DF·DH·DJ	145	105	□80	16.5	35	162	122	□80	16.5	35
	DE·DL	150	110	□80	21.5	40	167	127	□80	21.5	40
	DG·DK	155	115	□80	26.5	45	172	132	□80	26.5	45
	EA·EB·EC·EF·EG·EK·EL	145	105	□90	16.5	35	162	122	□90	16.5	35
	EJ·EM	150	110	□90	21.5	40	167	127	□90	21.5	40
	ED·EE·EH	155	115	□90	26.5	45	172	132	□90	26.5	45
	FA	145	105	□100	16.5	35	162	122	□100	16.5	35
	FB	155	115	□100	26.5	45	172	132	□100	26.5	45
	GA	145	105	□115	16.5	35	162	122	□115	16.5	35
GC	150	110	□115	21.5	40	167	127	□115	21.5	40	
GB	160	120	□115	31.5	50	177	137	□115	31.5	50	
JA	160	120	□150	31.5	50	177	137	□150	31.5	50	
VRE/F-082-□-□-19** ≤ Ø 19 Input shaft bore	DA·DB·DC	155	115	□80	25	50	172	132	□80	25	50
	DD·DE	165	125	□80	35	60	182	142	□80	35	60
	EA	160	120	□90	30	55	177	137	□90	30	55
	EB·ED	155	115	□90	25	50	172	132	□90	25	50
	EC	165	125	□90	35	60	182	142	□90	35	60
	FA	155	115	□100	25	50	172	132	□100	25	50
	FB	165	125	□100	35	60	182	142	□100	35	60
	GB·GD	155	115	□115	25	50	172	132	□115	25	50
	GA·GC·GH	160	120	□115	30	55	177	137	□115	30	55
	GE·GF	165	125	□115	35	60	182	142	□115	35	60
	HA	155	115	□130	25	50	172	132	□130	25	50
	HB	170	130	□130	40	65	187	147	□130	40	65
HC·HD·HE	160	120	□130	30	55	177	137	□130	30	55	
JA	165	125	□150	35	60	182	142	□150	35	60	
JB	170	130	□150	40	65	187	147	□150	40	65	
VRE/F-082-□-□-28** ≤ Ø 28 Input shaft bore	FD·FE	167	127	□100	30	62	186	146	□100	30	62
	FA·FB·FC	172	132	□100	35	67	191	151	□100	35	67
	GA·GB·GC·GD·GE·GF·GG·GH	172	132	□115	35	67	191	151	□115	35	67
	HF	167	127	□130	30	62	186	146	□130	30	62
	HA·HC·HD	172	132	□130	35	67	191	151	□130	35	67
	HB	182	142	□130	45	77	201	161	□130	45	77
	HE	187	147	□130	50	82	206	166	□130	50	82
	JA·JB·JC·JF	172	132	□150	35	67	191	151	□150	35	67
	JE	182	142	□150	45	77	201	161	□150	45	77
	JD	192	152	□150	55	87	211	171	□150	55	87
	KA·KB·KE	172	132	□180	35	67	191	151	□180	35	67
	KD	182	142	□180	45	77	201	161	□180	45	77
	LA	172	132	□200	35	67	191	151	□200	35	67
	LB	182	142	□200	45	77	201	161	□200	45	77
MA	172	132	□220	35	67	191	151	□220	35	67	
MB	182	142	□220	45	77	201	161	□220	45	77	

※1 Single reduction: 1/3 ~ 1/10, Double reduction: 1/15 ~ 1/40

※2 Bushing will be inserted to adapt to the motor shaft.

Dimensions (Adapter)

VRE/F-120



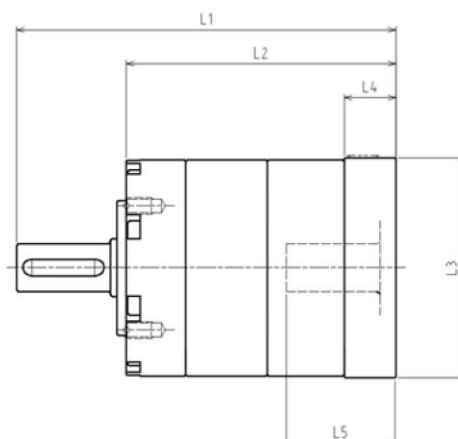
Model number	Adapter code	Single					Double				
		L1	L2	L3	L4	L5	L1	L2	L3	L4	L5
VRE/F-120-□-□-19** ≤ Ø 19 Input shaft bore	DA·DB·DC	193	138	□80	25	50	213.5	158.5	□80	25	50
	DD	203	148	□80	35	60	223.5	168.5	□80	35	60
	DE	198	143	□80	30	55	218.5	163.5	□80	30	55
	EA	198	143	□90	30	55	218.5	163.5	□90	30	55
	EB·ED	193	138	□90	25	50	213.5	158.5	□90	25	50
	EC	203	148	□90	35	60	223.5	168.5	□90	35	60
	FA	193	138	□100	25	50	213.5	158.5	□100	25	50
	FB	203	148	□100	35	60	223.5	168.5	□100	35	60
	GB·GD	193	138	□115	25	50	213.5	158.5	□115	25	50
	GA·GC·GH	198	143	□115	30	55	218.5	163.5	□115	30	55
	GE·GF	203	148	□115	35	60	223.5	168.5	□115	35	60
	HA	193	138	□130	25	50	213.5	158.5	□130	25	50
	HB	208	153	□130	40	65	228.5	173.5	□130	40	65
	HC·HD·HE	198	143	□130	30	55	218.5	163.5	□130	30	55
JA	203	148	□150	35	60	223.5	168.5	□150	35	60	
JB	208	153	□150	40	65	228.5	173.5	□150	40	65	
VRE/F-120-□-□-28** ≤ Ø 28 Input shaft bore	FD·FE	205	150	□100	30	62	225.5	170.5	□100	30	62
	FA·FB·FC	210	155	□100	35	67	230.5	175.5	□100	35	67
	GA·GB·GC·GD·GE·GF·GG·GH	210	155	□115	35	67	230.5	175.5	□115	35	67
	HF	205	150	□130	30	62	225.5	170.5	□130	30	62
	HA·HC·HD	210	155	□130	35	67	230.5	175.5	□130	35	67
	HB	220	165	□130	45	77	240.5	185.5	□130	45	77
	HE	225	170	□130	50	82	245.5	190.5	□130	50	82
	JA·JB·JC·JF	210	155	□150	35	67	230.5	175.5	□150	35	67
	JE	220	165	□150	45	77	240.5	185.5	□150	45	77
	JD	230	175	□150	55	87	250.5	195.5	□150	55	87
	KA·KB·KE	210	155	□180	35	67	230.5	175.5	□180	35	67
	KD	220	165	□180	45	77	240.5	185.5	□180	45	77
	LA	210	155	□200	35	67	230.5	175.5	□200	35	67
	LB	220	165	□200	45	77	240.5	185.5	□200	45	77
MA	210	155	□220	35	67	230.5	175.5	□220	35	67	
MB	220	165	□220	45	77	240.5	185.5	□220	45	77	
VRE/F-120-□-□-38** ≤ Ø 38 Input shaft bore	HB·HE	226	171	□130	40	77					
	HA	231	176	□130	45	82					
	HC·HD	236	181	□130	50	87					
	JA	231	176	□150	45	82					
	KA·KB·KC	231	176	□180	45	82					
	KE	246	191	□180	60	97					
	KD	266	211	□180	80	117					
	LA	231	176	□200	45	82					
	LB	241	186	□200	55	92					
	MA·MB	231	176	□220	45	82					
	MD	241	186	□220	55	92					
MC	246	191	□220	60	97						
NA	231	176	□250	45	82						

※1 Single reduction: 1/3 ~ 1/10, Double reduction: 1/15 ~ 1/40

※2 Bushing will be inserted to adapt to the motor shaft.

Dimensions (Adapter)

VRE/F-140



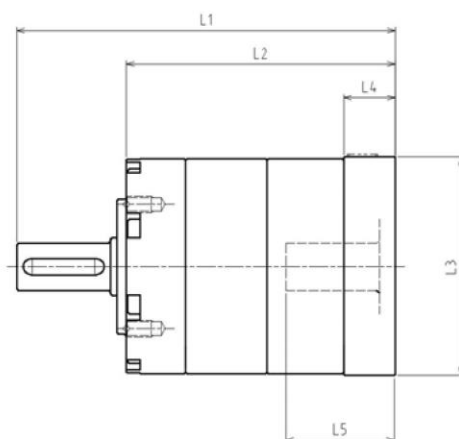
Model number	Adapter code	Single					Double				
		L1	L2	L3	L4	L5	L1	L2	L3	L4	L5
VRE/F-140-□-□-28** ≤ Ø 28 Input shaft bore	FD·FE	231.5	156.5	□100	30	62	257	182	□100	30	62
	FA·FB·FC	236.5	161.5	□100	35	67	262	187	□100	35	67
	GA·GB·GC·GD·GE·GF·GG·GH	236.5	161.5	□115	35	67	262	187	□115	35	67
	HF	231.5	156.5	□130	30	62	257	182	□130	30	62
	HA·HC·HD	236.5	161.5	□130	35	67	262	187	□130	35	67
	HB	246.5	171.5	□130	45	77	272	197	□130	45	77
	HE	251.5	176.5	□130	50	82	277	202	□130	50	82
	JA·JB·JC·JF	236.5	161.5	□150	35	67	262	187	□150	35	67
	JE	246.5	171.5	□150	45	77	272	197	□150	45	77
	JD	256.5	181.5	□150	55	87	282	207	□150	55	87
	KA·KB·KE	236.5	161.5	□180	35	67	262	187	□180	35	67
	KD	246.5	171.5	□180	45	77	272	197	□180	45	77
	LA	236.5	161.5	□200	35	67	262	187	□200	35	67
	LB	246.5	171.5	□200	45	77	272	197	□200	45	77
MA	236.5	161.5	□220	35	67	262	187	□220	35	67	
MB	246.5	171.5	□220	45	77	272	197	□220	45	77	
VRE/F-140-□-□-38** ≤ Ø 38 Input shaft bore	HB·HE	252.5	177.5	□130	40	77	274.5	199.5	□130	40	77
	HA	257.5	182.5	□130	45	82	279.5	204.5	□130	45	82
	HC·HD	262.5	187.5	□130	50	87	284.5	209.5	□130	50	87
	JA	257.5	182.5	□150	45	82	279.5	204.5	□150	45	82
	KA·KB·KC	257.5	182.5	□180	45	82	279.5	204.5	□180	45	82
	KE	272.5	197.5	□180	60	97	294.5	219.5	□180	60	97
	KD	292.5	217.5	□180	80	117	314.5	239.5	□180	80	117
	LA	257.5	182.5	□200	45	82	279.5	204.5	□200	45	82
	LB	267.5	192.5	□200	55	92	289.5	214.5	□200	55	92
	MA·MB	257.5	182.5	□220	45	82	279.5	204.5	□220	45	82
	MD	267.5	192.5	□220	55	92	289.5	214.5	□220	55	92
	MC	272.5	197.5	□220	60	97	294.5	219.5	□220	60	97
NA	257.5	182.5	□250	45	82	279.5	204.5	□250	45	82	

※1 Single reduction: 1/3 ~ 1/10, Double reduction: 1/15 ~ 1/40

※2 Bushing will be inserted to adapt to the motor shaft.

Dimensions (Adapter)

VRE/F-160



Model number	Adapter code	Single					Double				
		L1	L2	L3	L4	L5	L1	L2	L3	L4	L5
VRE/F-160-□-□-28** ≤ Ø 28 Input shaft bore	FD·FE	268	181	□100	30	62	297	210	□100	30	62
	FA·FB·FC	273	186	□100	35	67	302	215	□100	35	67
	GA·GB·GC·GD·GE·GF·GG·GH	273	186	□115	35	67	302	215	□115	35	67
	HF	268	181	□130	30	62	297	210	□130	30	62
	HA·HC·HD	273	186	□130	35	67	302	215	□130	35	67
	HB	283	196	□130	45	77	312	225	□130	45	77
	HE	288	201	□130	50	82	317	230	□130	50	82
	JA·JB·JC·JF	273	186	□150	35	67	302	215	□150	35	67
	JE	283	196	□150	45	77	312	225	□150	45	77
	JD	293	206	□150	55	87	322	235	□150	55	87
	KA·KB·KE	273	186	□180	35	67	302	215	□180	35	67
	KD	283	196	□180	45	77	312	225	□180	45	77
	LA	273	186	□200	35	67	302	215	□200	35	67
	LB	283	196	□200	45	77	312	225	□200	45	77
MA	273	186	□220	35	67	302	215	□220	35	67	
MB	283	196	□220	45	77	312	225	□220	45	77	
VRE/F-160-□-□-38** ≤ Ø 38 Input shaft bore	HB·HE	283	196	□130	40	77	312	225	□130	40	77
	HA	288	201	□130	45	82	317	230	□130	45	82
	HC·HD	293	206	□130	50	87	322	235	□130	50	87
	JA	288	201	□150	45	82	317	230	□150	45	82
	KA·KB·KC	288	201	□180	45	82	317	230	□180	45	82
	KE	303	216	□180	60	97	332	245	□180	60	97
	KD	323	236	□180	80	117	352	265	□180	80	117
	LA	288	201	□200	45	82	317	230	□200	45	82
	LB	298	211	□200	55	92	327	240	□200	55	92
	MA·MB	288	201	□220	45	82	317	230	□220	45	82
	MD	298	211	□220	55	92	327	240	□220	55	92
	MC	303	216	□220	60	97	332	245	□220	60	97
NA	288	201	□250	45	82	317	230	□250	45	82	

※1 Single reduction: 1/3 ~ 1/10, Double reduction: 1/15 ~ 1/40

※2 Bushing will be inserted to adapt to the motor shaft.

Performance table

Follow the selection procedures when selecting a model number.

1 Calculate the load pattern.

Load torque : T_1, T_2, \dots, T_n

Output speed : n_1, n_2, \dots, n_n

The above should be the mean values of changing rotational speeds at the time of acceleration and deceleration.

Time : t_1, t_2, \dots, t_n

2 Calculate the mean load torque given the output shaft and mean output speed from the load pattern.

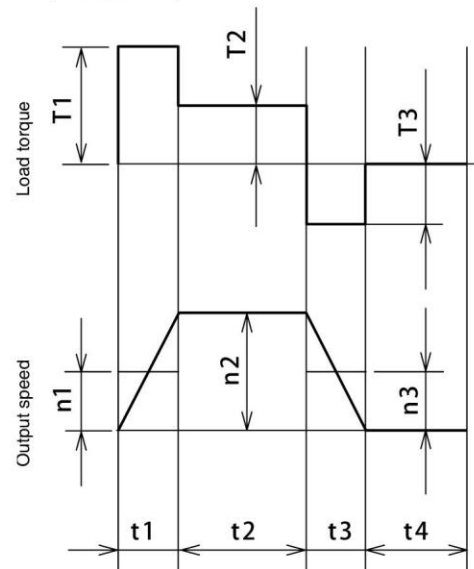
(Mean load torque)

$$T_a = \sqrt[10/3]{\frac{n_1 \cdot t_1 \cdot |T_1|^{10/3} + n_2 \cdot t_2 \cdot |T_2|^{10/3} + \dots + n_n \cdot t_n \cdot |T_n|^{10/3}}{n_1 \cdot t_1 + n_2 \cdot t_2 + \dots + n_n \cdot t_n}}$$

(Mean output speed)

$$n_{a\ out} = \frac{n_1 \cdot t_1 + n_2 \cdot t_2 + \dots + n_n \cdot t_n}{t_1 + t_2 + \dots + t_n}$$

(Load pattern)



3 Select the reduction ratio from the maximum output speed in the load pattern and maximum input speed in the performance table.

$$\frac{\text{Max. allowable input speed}}{\text{Max. load output speed}} = \text{Temporary reduction ratio}$$

Select a lower reduction ratio than the temporary reduction ratio

4 Calculate the mean input speed and maximum input speed from the reduction ratio.

Mean input speed = Mean output speed x reduction ratio

Max. input speed = Max. output speed x reduction ratio

5 Calculate the maximum torque.

Determine the cycle coefficient (f_0) from the operation conditions listed in the table below and calculate according to this formula:

Formula:

Maximum torque = maximum load torque* x f_0

* maximum torque: maximum torque increase during start and stop

* f_0 : cycle coefficient

Cycle coefficient (f_0) coefficient chart

Operation time	up to 1,000 cycles/h	1,000 to 3,000 cycles/h
<1 h/day	1.0	1.2
<8 h/day	1.3	1.5
<16 h/day	1.4	1.6
<24 h/day	1.5	1.9

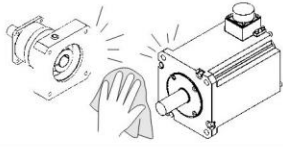
Please contact us for operations exceeding 3000 cycles/h.

6 Finally, select the model number.

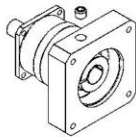
- ① Select the minimum model number where the mean load torque is less than or equal to the allowable output torque in the performance table.
- ② Make sure that the calculated maximum torque is below the permitted maximum torque of the selected model number.
- ③ Make sure that the mean input speed and maximum input speed are less than or equal to the allowable mean input speed and the allowable maximum input speed of the selected model number.

1 Motor mounting procedure

1 Wipe-off any anti-rust agent or oil on the motor shaft.

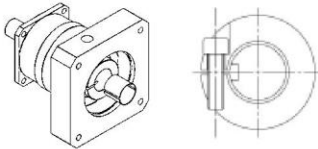


2 Remove the plug.



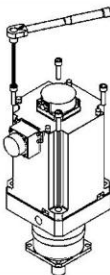
3 Rotate the input shaft to align the head of the tightening bolt with the plug hole. Make sure that the cap screw is loosened.

If the bushing has been attached, please fix it to the reducer as shown in the drawing below.

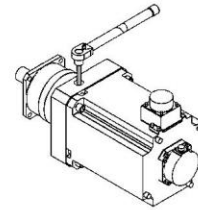


4 Place the reducer vertically on a flat surface so that the motor mounting side faces upwards. Carefully insert the motor shaft into the input shaft (it should be inserted smoothly). Make sure that the motor flange is perfectly fit into the reducer's flange.

Fix the motor bolts with the correct torque. (Refer to Table 1)



5 Tighten the clamping bolt of the input shaft using a torque wrench and with the correct torque (Refer to Table 1)



6 Re-install the plug. The mounting procedure is done.

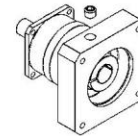


Table 1

Bolt size	Motor installation bolts		Clamping bolt	
	Nm	kgfm	Nm	kgfm
M3	1.1	0.11	1.9	0.18
M4	2.5	0.26	4.3	0.44
M5	5.1	0.52	8.7	0.89
M6	8.7	0.89	15	1.5
M8	21	2.1	36	3.7
M10	42	4.3	71	7.2

Table 2

Bolt size	Tightening torque	
	Nm	kgfm
M5	5.8	0.6
M6	9.8	1.0
M8	19.6	2.0
M10	39.2	4.0

Recommended bolt strength: 12.9

2 Reducer installation

After confirming that the installation surface is flat and clean, tighten the bold using a torque wrench with the correct tightening torque. (Refer to Table 2)

Safety Precautions

Storage precautions

When storing the product temporarily, please observe the following:

- ① Store in a clean and dry place.
- ② When stored outdoors or in a humid place, place the product in a box to avoid direct exposure to rain, and other external environmental factors. Take precautionary measures to prevent rusting by covering with a vinyl sheet.

Precautions for operation

When the reducer is delivered to you...

When the product is delivered, please confirm that you received the exact model that you ordered. Please wipe the input and output shaft of the reducer which is covered with anti-corrosive oil.

- * Please remove the rubber cap on the input shaft before you wipe the shafts.
- * The reducer is already filled with lubricant (grease).

Fixation & Installation

- Avoid use in places where the reducer would be in direct exposure to rain or water drops.
 - * In case of outdoor use or in places with dust or water drops, please consult us in advance.
- Install in a place with an ambient temperature between 0°C to 40°C.
 - * In case of use in a place where the ambient temperature is outside of the above-mentioned range, please contact us.
- Firmly affix with a bolt onto a solid stand without vibration.

Precautions to starting the operation

- During initial operation, check the rotating direction of the output shaft and then gradually apply load.

Precautions during operation

- Do not overload.
- Ensure that the input speed shall not go beyond the specifications.
- In the following cases, stop the operation and check the following points:
 - * If the temperature sharply increases
 - * If abnormal noise is observed
 - * If the number of revolutions becomes sharply unstable

WARRANTY PROVISION

The scope of warranty is for the delivered product only.

THE FOLLOWING EXPENSES AND DAMAGES ARE NOT COVERED BY WARRANTY

- 1.) The transport charges for repairing our product/s.
- 2.) The cost of installation or other incidental construction when the product is installed in another machine.
- 3.) The user's loss of opportunity or any indirect damages resulting from the interruption of services due to product malfunction.
- 4.) All other derivative or incidental damages.

Safety Precautions

These may be caused by the following matters, so please respond immediately or contact us.

- Is it under overload condition?
- Is the lubricant insufficient or deteriorated, or is another type of lubricant used?
- Are there damages to bearings, gears or transmission surfaces?
- Is the assembly with other machines poor?

Disassembly

The ABLE REDUCER is designed not to allow disassembly.

Warranty

The warranty period is one year after the delivery of the product.

Lubricant management

- It is not possible to replace the grease.
- It is important to consider in advance if the ambient temperature is within 0°C to 40°C.

Daily inspection

- Is the temperature of the reducer housing excessively high during operation? (up to +50°C is not significant)
- Is there abnormal noise coming from the bearings, gears, etc?
- Is there abnormal vibration in the reducer?
 - * If such phenomenon is observed, immediately stop the operation and contact us.
 - * If there is grease leakage, please contact us.

Periodic inspection

- Is there overloading or abnormal rotation?
- Are the pulleys, sprockets, and reducer mounting bolts loose?
- Is there any abnormality in the electric system?

Disposal

When disposing of the ABLE REDUCER, the parts must be classified and handled as industrial waste.

- ① Rubber parts: rubber cap, seals used for bearing etc.
- ② Aluminum parts: motor flange, output shaft holder
- ③ Grease: wipe off the grease coating the parts with a dry cloth and dispose as oil
- ④ Iron parts: parts other than those mentioned above

WARRANTY PROVISION

The scope of warranty is for the delivered product only.

THE FOLLOWING EXPENSES AND DAMAGES ARE NOT COVERED BY WARRANTY

- 1.) The transport charges for repairing our product/s.
- 2.) The cost of installation or other incidental construction when the product is installed in another machine.
- 3.) The user's loss of opportunity or any indirect damages resulting from the interruption of services due to product malfunction.
- 4.) All other derivative or incidental damages.

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