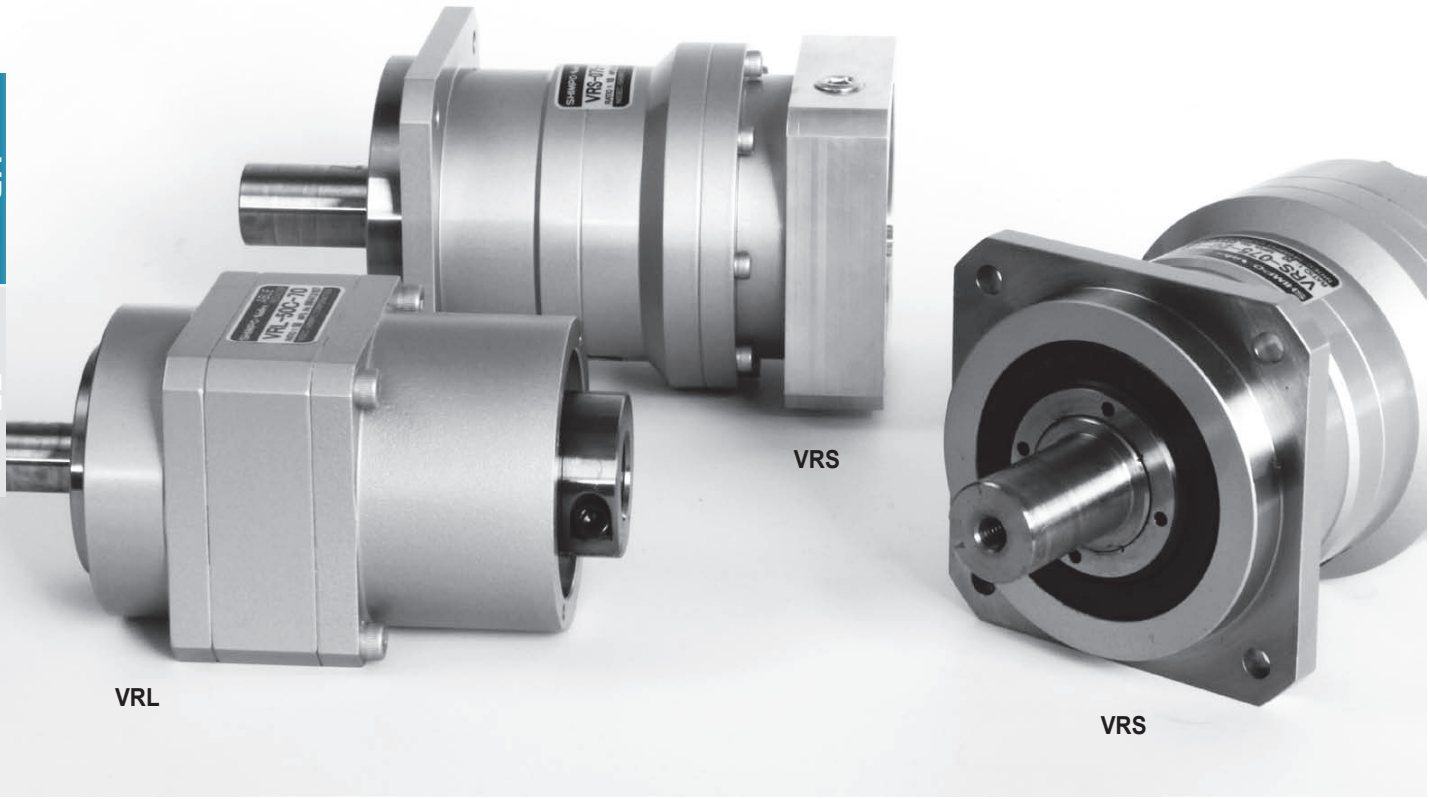


VRL

VRS

VRS

VRL series — "Noiseless" and "Firm Body"

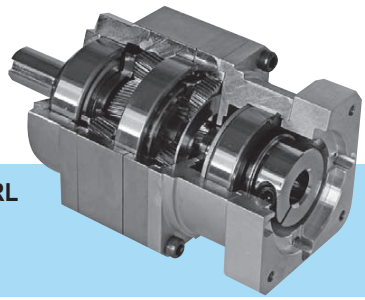
Quiet operation
Helical gear contribute to reduce vibration and noise.

Firm Body
Internal teeth are machined to the steel body directly to produce high output torque.

Long Service Life
The high-class grease in ABLE reducer gives permanent lubrication. No need to replace the grease for the life time (20,000 hours).

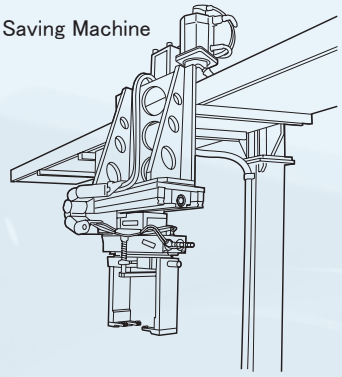
Easy mounting
Motor can be mounted easily with adapter flange and bushing (without key).
Applicable to each brand's servomotors.

Variety of Ratios
We can offer the fourteen ratios and anaible from 1/3 to 1/100.

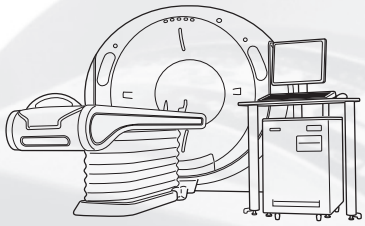


VRL

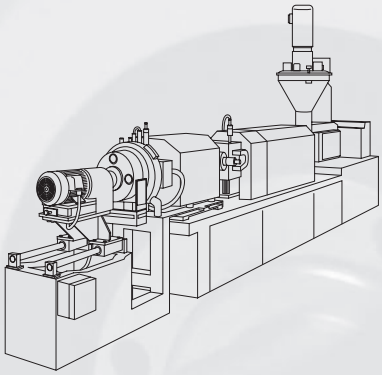
Automatic Labor Saving Machine



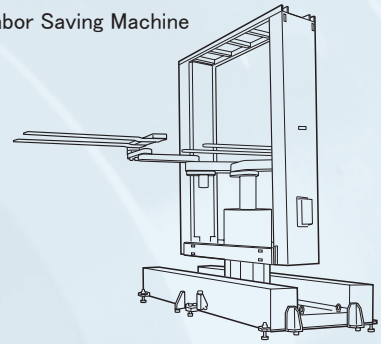
Medical Machinery



Extruders



Automatic Labor Saving Machine



VRS series — "Hight precision" and "Hight rigidity"

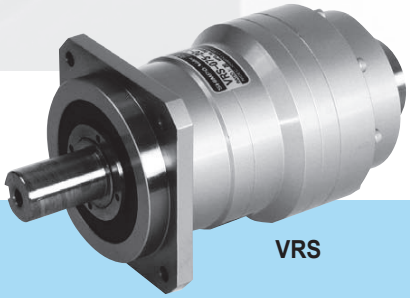
Quiet operation
Helical gear contribute to reduce vibration and noise.

High precision
Standard backlash is 3 arc-min,ideal for precision control.

High rigidity
Employing taper roller bearing for the main output shaft to increase radial and axiol load.

Long Service Life
The high-class grease in ABLE reducer gives permanent lubrication. No need to replace the grease for the life time (20,000 hours).

Easy mounting
Motor can be mounted easily with adapter flange and bushing (without key). Applicable to each brand's servomotors.



VRS

MODEL NUMBER CHART

"Noiseless" and "Firm Body"

■Model Number Chart

ABLE reducer | Servo Motor

VR L — 090 — 7 — K 5 — 19HB16

- VR: Model Name for ABLE reducer
- L: VRLseries
- 090: Frame Size: 050、070、090、120
- 7: Ratio:
  1/3、4、5、7、10(Single Reduction)
  1/15、20、25、30、35、40、50、70、100(Double Reduction)
- K: K: Shaft with keyway
- 5: Best-In-Class Standard Backlash 5 arc-min
- 19HB16: Mount code varies depending on the motor

Adapter: The flange-shaped component for installing the servomotor to the gear reducer.

Bushing: In case the diameters of the output shaft of the servomotor and the input shaft of the gear reducer have different dimensions, this component can be inserted into the input shaft of the gear reducer as for the figure below. This makes the reducer's input shaft diameter to be equal to the output shaft of the servomotor.

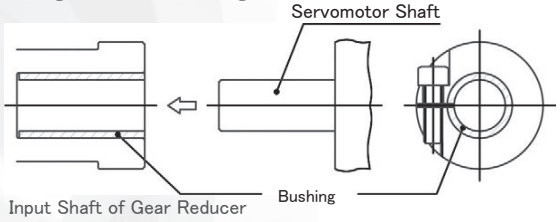
Example: Mount code

19 HB 16

- 19: Bore Dimension of the Input Shaft of the Gear Reducer: 8, 14, 19, 28, 38, 45, & 65
- HB: ※Adapter Code: Refer to the P.8 "Instruction of the Servo Reducer Selection Tool".:
  ※Please consult us for other Adapter Code if necessary.
- 16: Output Shaft Diameter of the Servomotor

Note: The ϕ16 bushing needs to be inserted into the input shaft of the gear reducer for the above case.

■Image of the Bushing

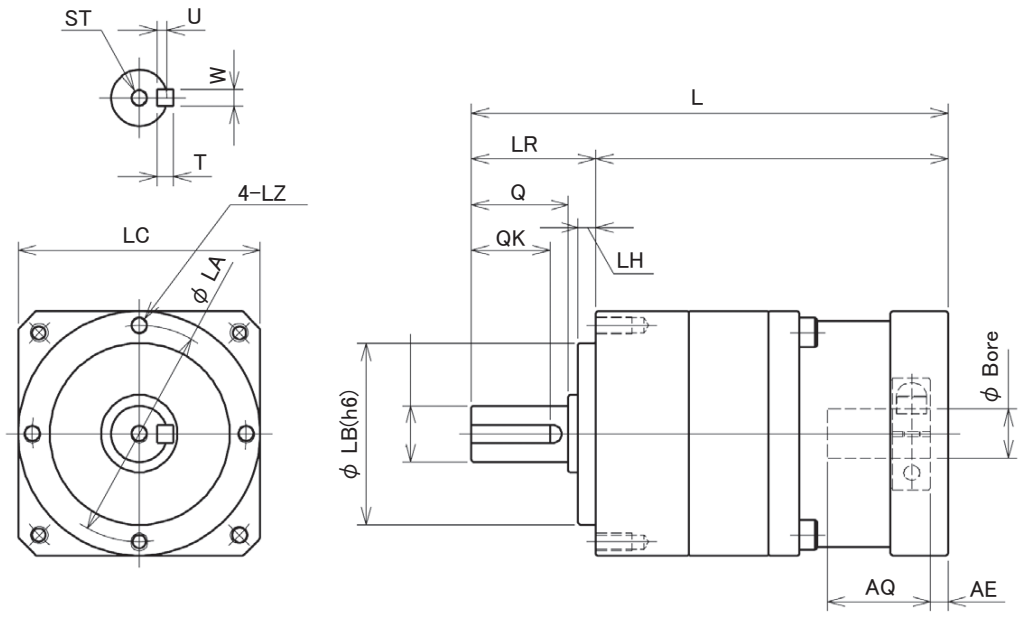


■VRL Series Specifications

Frame Size	Stages	Ratio	※1 Nominal Output Torque [Nm]	※2 Maximum Output Torque [Nm]	※3 Emergency Stop Torque [Nm]	※4 Nominal Input Speed [rpm]	※5 Maximum Input Speed [rpm]	※6 Permitted radial load [N]	※7 Maximum radial load [N]	※8 Permitted axial load [N]	※9 Maximum axial load [N]	※10 Permitted moment [Nm]	※11 Weight [kg]
050	Single	3	7	14	28	4000	8000	410	700	350	700	34	0.9
		4	7.5	15	30	4000	8000	440		390			
		5	7.5	15	30	4000	8000	470		420			
		7	7.5	15	30	4000	8000	520		480			
		10	7	14	28	4000	8000	590		560			
	Double	15	7	14	28	4000	8000	670		680			1.1
		20	7.5	15	30	4000	8000	700		700			
		25	7.5	15	30	4000	8000	700		700			
		30	7	14	28	4000	8000	700		700			
		35	7.5	15	30	4000	8000	700		700			
		40	7.5	15	30	4000	8000	700		700			
		50	7.5	15	30	4000	8000	700		700			
		70	7.5	15	30	4000	8000	700		700			
		100	7	14	28	4000	8000	700		700			
070	Single	3	20	40	80	3700	6000	800	1700	1000	1700	117	2.4
		4	25	50	100	3700	6000	850		1200			
		5	25	50	100	3700	6000	910		1300			
		7	25	50	100	3700	6000	1000		1500			
		10	20	40	80	3700	6000	1100		1700			
	Double	15	20	40	80	3700	6000	1300		1700			3
		20	25	50	100	3700	6000	1400		1700			
		25	25	50	100	3700	6000	1500		1700			
		30	20	40	80	3700	6000	1600		1700			
		35	25	50	100	3700	6000	1600		1700			
		40	25	50	100	3700	6000	1700		1700			
		50	25	50	100	3700	6000	1700		1700			
		70	25	50	100	3700	6000	1700		1700			
		100	20	40	80	3700	6000	1700		1700			
090	Single	3	45	90	200	3400	6000	1000	3400	1200	3400	277	4.7
		4	50	100	200	3400	6000	1100		1300			
		5	50	100	200	3400	6000	1200		1500			
		7	50	100	200	3400	6000	1300		1700			
		10	45	90	200	3400	6000	1500		1900			
	Double	15	45	90	200	3400	6000	1700		2400			5.5
		20	50	100	200	3400	6000	1900		2600			
		25	50	100	200	3400	6000	2000		2900			
		30	45	90	200	3400	6000	2200		3100			
		35	50	100	200	3400	6000	2200		3300			
		40	50	100	200	3400	6000	2300		3400			
		50	50	100	200	3400	6000	2500		3400			
		70	50	100	200	3400	6000	2800		3400			
		100	45	90	200	3400	6000	3100		3400			
120	Single	3	101	202	480	2600	4800	1800	4800	2000	4800	490	8.9
		4	113	226	480	2600	4800	1900		2200			
		5	113	226	480	2600	4800	2000		2400			
		7	113	226	480	2600	4800	2200		2700			
		10	101	202	480	2600	4800	2500		3200			
	Double	15	101	202	480	2600	4800	2900		3800			10
		20	113	226	480	2600	4800	3200		4200			
		25	113	226	480	2600	4800	3400		4600			
		30	101	202	480	2600	4800	3700		4800			
		35	113	226	480	2600	4800	3800		4800			
		40	113	226	480	2600	4800	3900		4800			
		50	113	226	480	2600	4800	4200		4800			
		70	113	226	480	2600	4800	4700		4800			
		100	101	202	480	2600	4800	4800		4800			

※1 With nominal input speed, service life will be 20,000hours.
※2 The maximum torque when starting and stopping.
※3 The maximum torque when it receives shock (up to 1,000times)
※4 The maximum average input speed.
※5 The maximum momentary input speed.
※6 With this load and nominal input speed, service life will be 20,000 hours.
※7 The maximum value the reducer can accept.
※8 With this load and nominal input speed, service life will be 20,000 hours.
※9 The maximum value the reducer can accept.
※10 The maximum value the reducer can accept.
※11 The weight may vary slightly model to model.

■VRL Series Dimensions



Frame Size	Stages ※1	Bore ※2	Dimensions																
			LA	LB	LC	LZ	LH	LR	LM ※3	L ※3	Q	S	ST	W	T	U	QK	AE ※3	AQ ※3
050	Single	≦8	44	35	50	M4 Depth7	4	24.5	78	102.5	18	12	M4 Depth7	4	4	2.5	13	5	27
		≦14							81	105.5								5	30
	Double	≦8							94	118.5								5	27
		≦14							97	121.5								5	30
070	Single	≦14	62	52	70	M5 Depth10	5	36	95.5	131.5	28	16	M5 Depth10	5	5	3	22	5	30
		≦19							107.5	143.5								7	43
	Double	≦8							111	147								5	27
		≦14							114	150								5	30
090	Single	≦19	80	68	90	M6 Depth12	5	46	116.5	162.5	36	22	M8 Depth13	6	6	3.5	28	7	43
		≦28							133.5	179.5								12	55
	Double	≦14							123.5	169.5								5	30
		≦19							133.5	179.5								7	43
120	Single	≦28	108	90	120	M8 Depth16	8	70	145.5	215.5	58	32	M12 Depth22	10	8	5	45	12	55
		≦38							160.5	230.5								15	67
	Double	≦19							148	218								7	43
		≦28							165	235								12	55

[mm]

※1 Single Reduction: Ratio 1/3～1/10, Double reduction: Ratio 1/15～1/100.
※2 Bushing will be inserted to adapt to motor shaft.
※3 Length will vary depending on motor adapter flange.

■Model Number Chart

ABLE reducer | Servo Motor

VR S — 075 — 5 — K 3 — 19HB16

- VR: Model Name for ABLE reducer
- S: VRSseries
- 075: Frame Size: 060、075、100、140、180
- 5: Ratio:
  1/3、4、5、7、10Single Reduction)
  1/16、20、25、28、35、40、50、70、100(Double Reduction)
- K: Shaft with keyway
- 3: Best-In-Class Standard Backlash 3 arc-min
- 19HB16: Mount code varies depending on the motor

Adapter: The flange-shaped component for installing the servomotor to the gear reducer.

Bushing: In case the diameters of the output shaft of the servomotor and the input shaft of the gear reducer have different dimensions, this component can be inserted into the input shaft of the gear reducer as for the figure below. This makes the reducer's input shaft diameter to be equal to the output shaft of the servomotor.

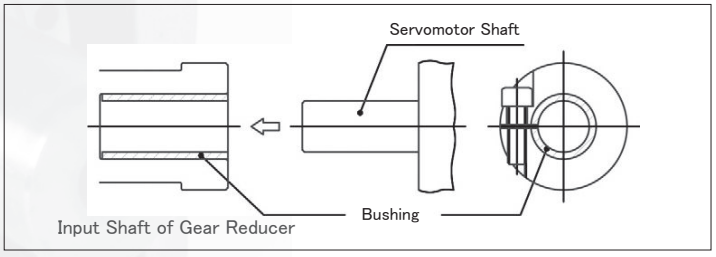
Example: Mount code

19 HB 16

- 19: Bore Dimension of the Input Shaft of the Gear Reducer: 8, 14, 19, 28, 38, 45, & 65
- HB: ※Adapter Code: Refer to the P.8 "Instruction of the Servo Reducer Selection Tool".:
  ※Please consult us for other Adapter Code if necessary.
- 16: Output Shaft Diameter of the Servomotor

Note: The φ16 bushing needs to be inserted into the input shaft of the gear reducer for the above case.

■Image of the Bushing

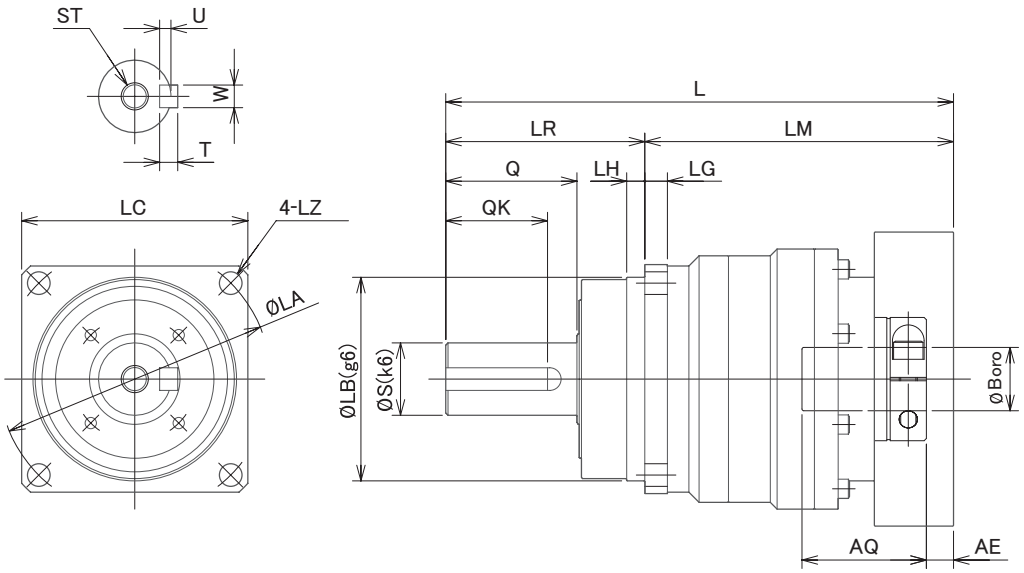


■VRL Series Specifications

Frame Size	Stages	Ratio	※1 Nominal Output Torque [Nm]	※2 Maximum Output Torque [Nm]	※3 Emergency Stop Torque [Nm]	※4 Nominal Input Speed[rpm]	※5 Maximum Input Speed [rpm]	※6 Permitted radial load [N]	※7 Maximum radial load [N]	※8 Permitted axial load [N]	※9 Maximum axial load [N]	※10 Permitted moment [Nm]	※11 Weight [kg]
060	Single	3	17	36	80	3300	6000	1600	2800	2100	2500	152	1.8
		4	26	40	100	3300	6000	1700		2200			
		5	26	40	100	3300	6000	1900		2400			
		7	26	40	100	4000	6000	1900		2500			
		10	26	36	80	4000	6000	2200		2500			
	Double	16	26	40	100	4400	6000	2500		2500			2.0
		20	26	40	100	4400	6000	2600		2500			
		25	26	40	100	4400	6000	2800		2500			
		28	26	40	100	4400	6000	2800		2500			
		35	26	40	100	4400	6000	2800		2500			
		40	26	40	100	4400	6000	2800		2500			
		50	26	40	100	4800	6000	2800		2500			
		70	26	40	100	5500	6000	2800		2500			
		100	26	36	80	5500	6000	2800		2500			
075	Single	3	47	90	200	2900	6000	2200	4200	3200	3400	265	3.4
		4	75	125	250	2900	6000	2400		3400			
		5	75	125	250	2900	6000	2500		3400			
		7	75	125	250	3100	6000	2700		3400			
		10	75	90	200	3100	6000	3000		3400			
	Double	16	75	125	250	3500	6000	3400		3400			4.3
		20	75	125	250	3500	6000	3700		3400			
		25	75	125	250	3500	6000	3900		3400			
		28	75	125	250	3500	6000	4000		3400			
		35	75	125	250	3500	6000	4200		3400			
		40	75	125	250	3500	6000	4200		3400			
		50	75	125	250	3800	6000	4200		3400			
		70	75	125	250	4500	6000	4200		3400			
		100	75	90	200	4500	6000	4200		3400			
100	Single	3	120	240	500	2500	4500	3500	6500	4600	5800	530	7.7
		4	180	320	625	2500	4500	3700		4900			
		5	180	320	625	2500	4500	3900		5000			
		7	180	320	625	2800	4500	4200		5400			
		10	180	240	500	2800	4500	4700		5800			
	Double	16	180	320	625	3100	4500	5300		5800			10
		20	180	320	625	3100	4500	5700		5800			
		25	180	320	625	3100	4500	6100		5800			
		28	180	320	625	3100	4500	6300		5800			
		35	180	320	625	3100	4500	6500		5800			
		40	180	320	625	3100	4500	6500		5800			
		50	180	320	625	3500	4500	6500		5800			
		70	180	320	625	4200	4500	6500		5800			
		100	180	240	500	4200	4500	6500		5800			
140	Single	3	200	500	1000	2100	4000	7500	10000	10000	10000	1100	18
		4	360	650	1250	2100	4000	8100		10000			
		5	360	650	1250	2100	4000	8600		10000			
		7	360	650	1250	2600	4000	8900		10000			
		10	360	500	1000	2600	4000	9900		10000			
	Double	16	360	650	1250	2900	4000	10000		10000			22
		20	360	650	1250	2900	4000	10000		10000			
		25	360	650	1250	2900	4000	10000		10000			
		28	360	650	1250	2900	4000	10000		10000			
		35	360	650	1250	2900	4000	10000		10000			
		40	360	650	1250	2900	4000	10000		10000			
		50	360	650	1250	3200	4000	10000		10000			
		70	360	650	1250	3200	4000	10000		10000			
		100	360	500	1000	3900	4000	10000		10000			
180	Single	3	530	1000	2200	1500	3500	14000	15000	15000	15000	1910	39
		4	750	1400	2750	1500	3500	15000		15000			
		5	750	1400	2750	1500	3500	15000		15000			
		7	750	1400	2750	2300	3500	15000		15000			
		10	750	1000	2200	2300	3500	15000		15000			
	Double	16	750	1400	2750	2700	4000	15000		15000			48
		20	750	1400	2750	2700	4000	15000		15000			
		25	750	1400	2750	2700	4000	15000		15000			
		28	750	1400	2750	2700	4000	15000		15000			
		35	750	1400	2750	2700	4000	15000		15000			
		40	750	1400	2750	2700	4000	15000		15000			
		50	750	1400	2750	2900	4000	15000		15000			
		70	750	1400	2750	3200	4000	15000		15000			
		100	750	1000	2200	3400	4000	15000		15000			

※1 With nominal input speed, service life will be 20,000hours.
※2 The maximum torque when starting and stopping.
※3 The maximum torque when it receives shock (up to 1,000times)
※4 The maximum average input speed.
※5 The maximum momentary input speed.
※6 With this load and nominal input speed, service life will be 20,000 hours.
※7 The maximum value the reducer can accept.
※8 With this load and nominal input speed, service life will be 20,000 hours.
※9 The maximum value the reducer can accept.
※10 The maximum value the reducer can accept.
※11 The weight may vary slightly model to model.

■VRS Series Dimensions



Fram Size	Stages ※1	Bore ※2	Dimensions																	
			LA	LB	LC	LZ	LG	LH	LR	LM	L	Q	S	ST	W	T	U	QK	AE※3	AQ※3
060	Single	≦8	68	60	60	5.5	6	5	48	85.5	133.5	28	16	M5 Depth 12.5	5	5	3	22	5	27
		≦14								89	137								5	30
		≦19								105.5	153.5								7	43
	Double	≦8								110	158								5	27
		≦14								113.5	161.5								5	30
075	Single	≦14	85	70	75	7.5	7	6	56	103	159	36	22	M8 Depth 19	6	6	3.5	28	5	30
		≦19								113	169								7	43
		≦28								130	186								12	55
	Double	≦8								122.5	178.5								5	27
		≦14								131	187								5	30
		≦19								141	197								7	43
100	Single	≦19	120	90	100	10	10	8	88	122	210	58	32	M12 Depth 28	10	8	5	45	7	43
		≦28								136.5	224.5								12	55
		≦38								151.5	239.5								15	67
	Double	≦14								141	229								5	30
		≦19								151	239								7	43
		≦28								168	256								12	55
140	Single	≦28	165	130	140	11	12	10	112	157	269	82	40	M16 Depth 36	12	8	5	65	12	55
		≦38								172	284								15	67
		≦48								188	300								10	88
	Double	≦19								174.5	286.5								7	43
		≦28								189.5	301.5								12	55
		≦38								207	319								15	67
180	Single	≦38	215	160	180	13.5	15	12	112	203	315	82	55	M20 Depth 42	16	10	6	63	15	67
		≦48								219	331								10	88
		≦65								263	375								20	102
	Double	≦28								228	340								12	55
		≦38								244	356								15	67
		≦48								268	380								10	88

※1 Single Reduction: Ratio 1/3～1/10, Double reduction: Ratio 1/15～1/100.
※2 Bushing will be inserted to adapt to motor shaft.
※3 Length will vary depending on motor adapter flange.

[mm]

Servo Motor Assembly Installation

Reducers can be fixed to servo motors quite easily. Everybody can do it for himself.

1 Servo Motor Assembly Installation

※ Wipe out the anticorrosive oil on the Motor shaft.

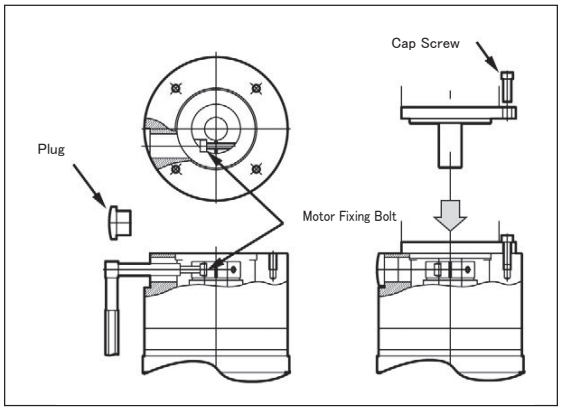
(1)Remove the Rubber Cap and turn the Input Shaft until the Cap Screw is seen.Make sure the set bolt is loosened.

(2)Carefully insert Servo Motor Shaft into the Input Shaft . (It should be inserted smoothly.)
Make sure to insert motor straight. Please confirm the surface of the flanges of the motor and the reducer are fixed with no clearance.

(3)Install the Servo Motor to the reducer and tighten the Motor Fixing Bolts to the proper torque. Refer to the table below.

(4)Tighten the Cap Screw of the Input Shaft with a Torque Wrench to the proper torque.Refer to the table below.

(5)Reinstall the rubber cap.



【Bolt tightening torque】

Bolt Size	Motor Fixing Bolt		Screw Bolt	
	Nm	kgfm	Nm	kgfm
M3	1.0	0.10	1.8	0.18
M4	2.3	0.23	4.3	0.44
M5	4.7	0.48	8.7	0.89
M6	8.0	0.82	15	1.5
M8	19	1.9	36	3.7
M10	38	3.9	72	7.3
M12	67	6.8	125	12.8

2 Installation of Reducer

(1)In case you attach the servo motor by yourself, please be aware of cautions below.

(2)Please make sure to fit the servo motor that was specified when ordering.Other motor model may be unacceptable because the input flange of the ABLE reducer is made for a particular motor.

(3)The output shaft of the servo motor can be covered by anticorrsive oil.

【Bolt tightening torque for reducer】

Bolt Size	Motor Fixing Bolt	
	Nm	kgfm
M5	6.3	0.63
M6	11	1.1
M8	26	2.7
M10	51	5.2
M12	89	9.1