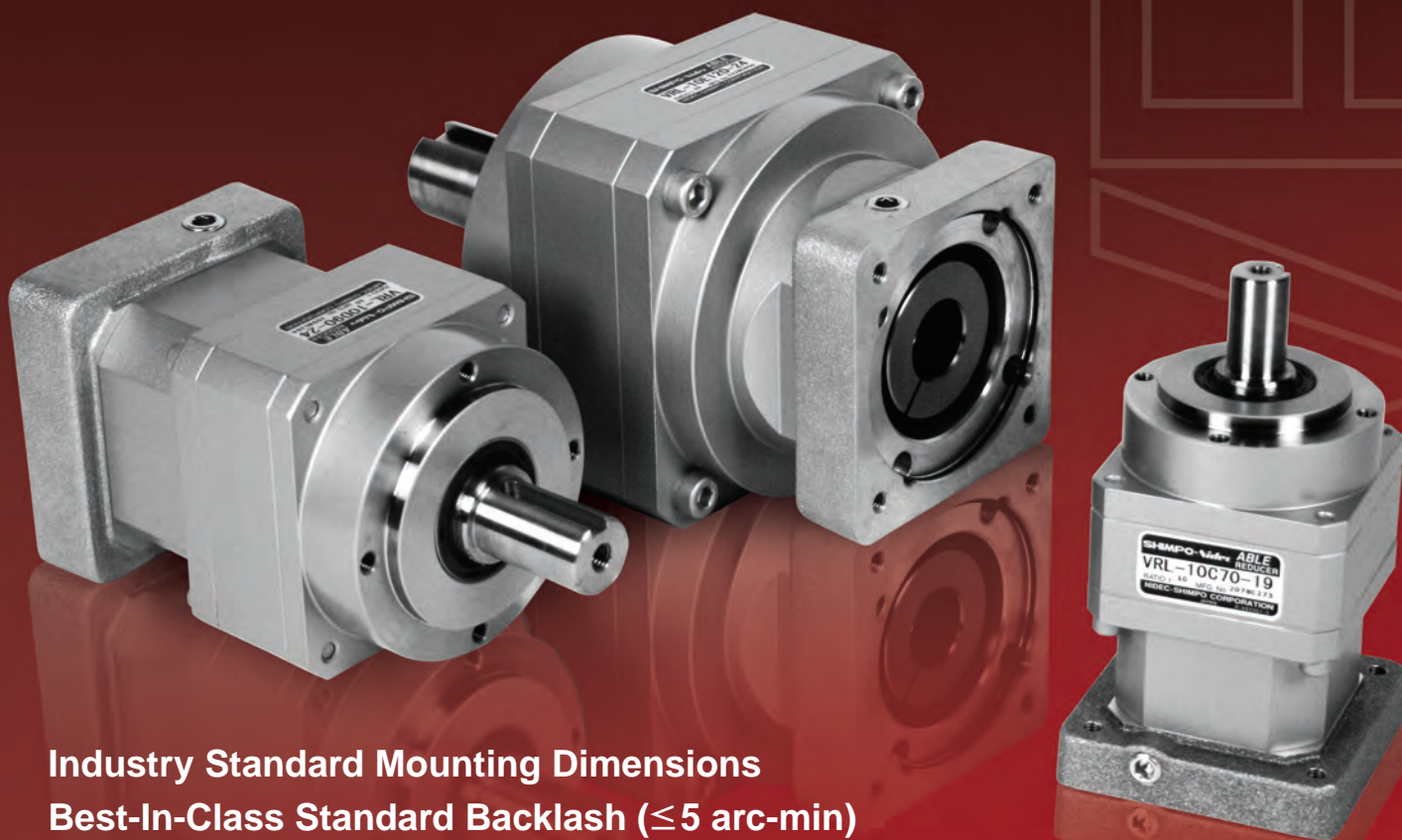


SHIMPO

VRAL-Series

ABLE

Planetary Servo Reducers



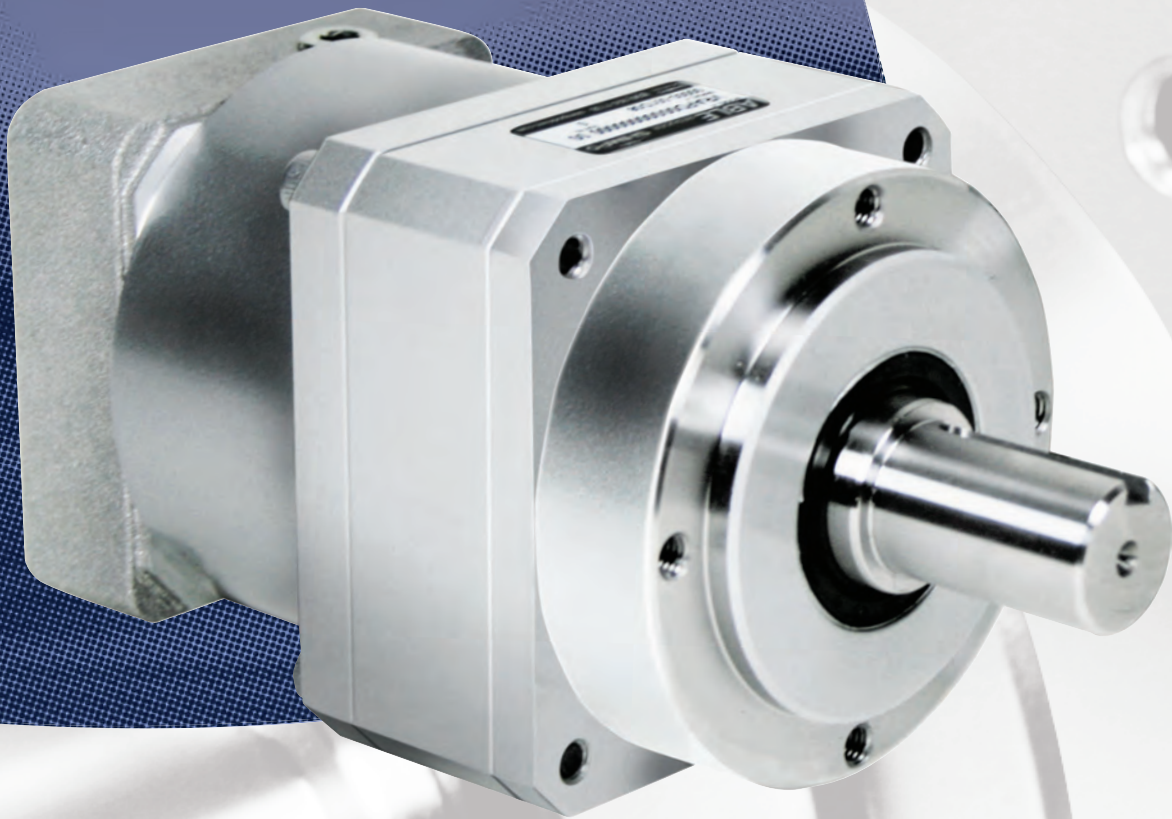
Industry Standard Mounting Dimensions
Best-In-Class Standard Backlash (≤ 5 arc-min)
20,000 Hour Service Life
Available Selection Guides Match Reducers to Motors
In Stock, at Shimpo Prices

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Hear the difference **Helical Gears** make...



Features & Benefits

Steel body with large diameter integral ring gear

- High output torque
- Stiffest design

Modular motor adaptor flange and keyless compressible bushings

- Easily adapts to any servo motor flange
- Allows a wider array of inventory for fastest shipment

Grease lubrication

- Mount in any position with full lubrication
- Maintenance-free operation for life

Input and output shaft seals and sealed input bearing

- IP65 rating
- Prevents contaminants from getting in and grease getting out

ACCULOK keyless locking hub

- Provides tight fit with motor shaft
- Rated at 140% of maximum input torque

Oversized and widely spaced output bearings

- Exceptional overhung load rating
- Long reducer life under adverse load conditions

High precision due to very low backlash rating

- Standard backlash is 5 arc-min or less

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Model Number Chart

VR	A	L		:	L	:	:	:	:	:	:	:
Model	Input	Series	Frame	Ratio	Backlash	Motor Attachment	Bushings			Modifications		
										1	2	3
										(See Notes Below)		

Model

Ordering Code

VR	Concentric
----	------------

Frame Size

Ordering Code

B	B Frame (50mm)
C	C Frame (70mm)
D	D Frame (90 mm)
E	E Frame (120 mm)

Backlash

Ordering Code

L	5 arc-min
---	-----------

Adaptor Flange Re-Threaded Hole

(T Modification Code)

Standard	T
M3	M4
M4	M5
M5	M6
M6	M8
M8	M10
M10	M12

Ratio*

Ordering Code VRAL

Ratio	Ordering Code	Ratio
03	Single Reduction	3:1
04		4:1
05		5:1
07		7:1
10		10:1
15	Double Reduction	15:1
20		20:1
25		25:1
30		30:1
35		35:1
40		40:1
50		50:1
70		70:1
IH		100:1

Motor Attachment (Bolt Circle of Motor in mm)

Ordering Code

Motor Attachment	Ordering Code
044	43.80 (NEMA 17)
045	45
046	46
060	60
063	63
067	66.68 (NEMA 23)
070	70
075	75
090	90
095	95
098	98.43 (NEMA 34)
100	100
115	115
126	125.73 (NEMA 42)
130	130
145	145
149	149.23 (NEMA 56)
165	165
200	200

Input

Ordering Code

A	Adaptor Flange
---	----------------

Bushing

Ordering Code

OD(mm) ID(mm)

Ordering Code	OD(mm)	ID(mm)
0000	No Bushing Required	
00__	Non-catalog dedicated bore in mm- specify	
0801	8	6
0802	8	6.350
0803	8	5
1401	14	6
1402	14	8
1403	14	11
1404	14	6.350
1405	14	9.525
1406	14	12.700
1407	14	12
1408	14	10
1409	14	9
1410	14	5
1901	19	11
1902	19	14
1903	19	16
1904	19	9.525
1905	19	12.700
1906	19	15.875
1907	19	12
1908	19	10
1909	19	9
1910	19	8
2401	24	14
2402	24	16
2403	24	19
2404	24	12.700
2405	24	15.875
2406	24	22
2407	24	19.050

Modifications/Motor Attachment Threaded Hole

Ordering Code

Modification	Description
000	Standard
5	Keyless output shaft
N	w/NEMA output flange
I	IP65 - standard grease
F	Food grade grease - no paint - IP65
G	Food grade grease - Steel-It paint - IP65
S	Steel-It paint - standard grease - IP65
W	White epoxy paint - standard grease - IP65
X	Food grade grease - white epoxy paint - IP65
T	Re-tap motor attachment flange one size larger
H	Through hole on motor attachment flange
L	Larger through hole on motor attachment flange
B	Pilot diameter reduced
R	Deeper motor attachment flange/add spacer plate
A_	Specify

Notes:

B or R is always in position 3 of the modification section.

Use 0's (zeros) in any position not taken by a modification.

*Ratio, 4:1, 20:1, 35:1, 40:1, and 70:1 are non-stock items. Please contact Shimpo Drives Customer Service for the availability of these ratios.

Options & Modifications Available

- ➔ Custom motor attachment dimensions
- ➔ Food grade grease (needed when unit is placed above the food line)
- ➔ Custom ratios
- ➔ Custom outputs
- ➔ Output shaft drilled and tapped
- ➔ Custom input adaptors

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Ratios from 3:1 to 100:1

Backlash 5 arc-min

Input speeds up to 8000 RPM

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VRAL Concentric Shaft Series Selection Table

Based on 3000 RPM Input

Motor Rated Output (W)	Ratio*													
	3:1	4:1	5:1	7:1	10:1	15:1	20:1	25:1	30:1	35:1	40:1	50:1	70:1	100:1
50												C		
100												C	D	E
200												C	D	E
400												C	D	E
500												C	D	E
600												C	D	E
750												C	D	E
1000												C	D	E
1200												C	D	E
1500												C	D	E
2000												C	D	E
2500												C	D	E
3000												C	D	E
3500												C	D	E
4000												C	D	E
4500												C	D	E
5000												C	D	E

*Ratio 4:1, 20:1, 35:1, 40:1 and 70:1 are non-stock items.

*Please contact Shimpo Drives Customer Service for the availability of these ratios.

*3, 5, 7, and 10:1 are single reduction. 15, 20, 25, 30, 35, 40, 50, 70, and 100:1 are double reduction.

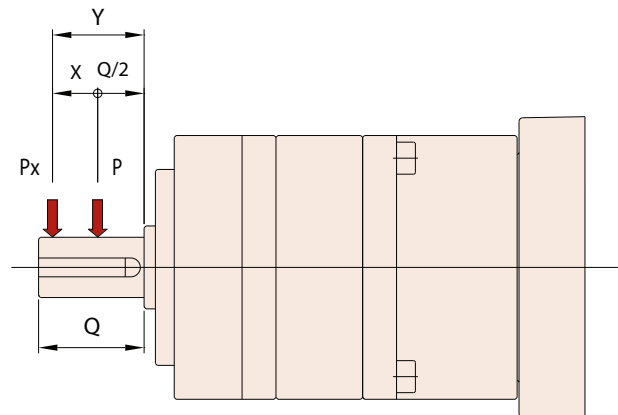
Other sizes and ratios available. Contact Shimpo Drives Customer Service for additional information.

VR Overhung Load

When a radial load is being applied to the shaft in a position other than the center, calculate the overhung load using the following equation:

$$P_x = [K / K + (Y - Q / 2)] \times P$$

- P:** Allowable radial load (N or lbs from specification table)
- K:** Constant (from table below)
- Y:** Position of radial load
- P_x:** Actual overhung load
- Q:** Output shaft length



Frame Size	Constant(K)		Q	
	mm	inch	mm	inch
B	46	1.81	18	0.71
C	70	2.76	28	1.10
D	79.5	3.13	36	1.42
E	105	4.13	58	2.28

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VRAL Concentric Shaft Series Specifications

Frame Size	Ratio	Nominal Output Torque (1)		Maximum Acceleration Output Torque		Emergency Stop Output Torque (2)		Moment of Inertia		Torsional Stiffness		Maximum Input Speed
		Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	kgfcm ²	lb-in-sec ²	Nm/arc-min	in-lbs/arc-min	RPM
B	3:1	7.0	62	14	124	28	248	0.206	0.000182	1.1	9.7	8000
	4:1	7.5	66	15	133	30	265	0.187	0.000165	1.1	9.7	
	5:1	7.5	66	15	133	30	265	0.181	0.000160	1.1	9.7	
	7:1	7.5	66	15	133	30	265	0.176	0.000156	1.1	9.7	
	10:1	7.0	62	14	124	28	248	0.174	0.000154	0.6	5.3	
	15:1	7.0	62	14	124	28	248	0.176	0.000156	1.3	11.5	
	20:1	7.5	66	15	133	30	265	0.175	0.000155	1.3	11.5	
	25:1	7.5	66	15	133	30	265	0.175	0.000155	1.3	11.5	
	30:1	7.0	62	14	124	28	248	0.171	0.000151	1.3	11.5	
	35:1	7.5	66	15	133	30	265	0.175	0.000155	1.3	11.5	
	40:1	7.5	66	15	133	30	265	0.170	0.000150	1.3	11.5	
	50:1	7.5	66	15	133	30	265	0.170	0.000150	1.3	11.5	
70:1	7.5	66	15	133	30	265	0.170	0.000150	1.3	11.5		
100:1	7.0	62	14	124	28	248	0.170	0.000150	0.7	6.2		
C	3:1	19.5	173	39	345	78	690	0.856	0.000758	3.1	27.4	6000
	4:1	25	221	50	442	100	885	0.746	0.000660	3.1	27.4	
	5:1	25	221	50	442	100	885	0.712	0.000630	3.1	27.4	
	7:1	25	221	50	442	100	885	0.684	0.000605	3.1	27.4	
	10:1	19.5	173	39	345	78	690	0.67	0.000593	1.9	16.8	
	15:1	19.5	173	39	345	78	690	0.685	0.000606	3.3	29.2	
	20:1	25	221	50	442	100	885	0.68	0.000602	3.3	29.2	
	25:1	25	221	50	442	100	885	0.679	0.000601	3.3	29.2	
	30:1	19.5	173	39	345	78	690	0.674	0.000596	3.3	29.2	
	35:1	25	221	50	442	100	885	0.678	0.000600	3.3	29.2	
	40:1	25	221	50	442	100	885	0.673	0.000596	3.3	29.2	
	50:1	25	221	50	442	100	885	0.673	0.000596	3.3	29.2	
70:1	25	221	50	442	100	885	0.673	0.000596	3.3	29.2		
100:1	19.5	173	39	345	78	690	0.673	0.000596	2.0	17.7		
D	3:1	45	398	90	796	180	1593	2.47	0.002186	9.2	81.4	6000
	4:1	50	442	100	885	200	1770	2.18	0.001929	9.2	81.4	
	5:1	50	442	100	885	200	1770	2.08	0.001841	9.2	81.4	
	7:1	50	442	100	885	200	1770	3.01	0.002664	9.2	81.4	
	10:1	45	398	90	796	180	1593	1.97	0.001743	5.9	52.2	
	15:1	45	398	90	796	180	1593	2.02	0.001788	8.7	77.0	
	20:1	50	442	100	885	200	1770	2.01	0.001779	8.7	77.0	
	25:1	50	442	100	885	200	1770	2.00	0.001770	8.7	77.0	
	30:1	45	398	90	796	180	1593	1.98	0.001752	8.7	77.0	
	35:1	50	442	100	885	200	1770	2.00	0.001770	8.7	77.0	
	40:1	50	442	100	885	200	1770	1.98	0.001752	8.7	77.0	
	50:1	50	442	100	885	200	1770	1.98	0.001752	8.7	77.0	
70:1	50	442	100	885	200	1770	1.98	0.001752	8.7	77.0		
100:1	45	398	90	796	180	1593	1.98	0.001752	5.6	49.5		
E	3:1	101	894	202	1787	404	3575	3.87	0.003425	33.2	294	4800
	4:1	113	1000	226	2000	452	3999	2.89	0.002557	33.2	294	
	5:1	113	1000	226	2000	452	3999	2.57	0.002274	33.2	294	
	7:1	113	1000	226	2000	452	3999	2.32	0.002053	33.2	294	
	10:1	101	894	202	1787	404	3575	2.19	0.001938	23.3	206	
	15:1	101	894	202	1787	404	3575	2.17	0.001920	27.7	245	
	20:1	113	1000	226	2000	452	3999	2.13	0.001885	27.7	245	
	25:1	113	1000	226	2000	452	3999	2.11	0.001867	27.7	245	
	30:1	101	894	202	1787	404	3575	2.06	0.001823	27.7	245	
	35:1	113	1000	226	2000	452	3999	2.10	0.001858	27.7	245	
	40:1	113	1000	226	2000	452	3999	2.05	0.001814	27.7	245	
	50:1	113	1000	226	2000	452	3999	2.05	0.001814	27.7	245	
70:1	113	1000	226	2000	452	3999	2.04	0.001805	27.7	245		
100:1	101	894	202	1787	404	3575	2.04	0.001805	19.4	172		

Ratio 4:1, 20:1, 35:1, 40:1 and 70:1 are non-stock items.

Please contact Shimpo Drives Customer Service for the availability of these ratios.

VRAL Concentric Shaft Series Specifications

Frame Size	Ratio	Output Shaft Radial Load		Output Shaft Thrust Load		Noise Level (3)	Backlash	Efficiency (4)	Weight	
		N	lbs	N	lbs	dB(A)	Low	%	kg	lbs
							arc-min			
B	3:1	700	157	700	157	≤70	≤5	90	0.9	2.0
	4:1	700	157	700	157	≤68				
	5:1	700	157	700	157					
	7:1	700	157	700	157					
	10:1	700	157	700	157			≤66	85	1.1
	15:1	700	157	700	157					
	20:1	700	157	700	157					
	25:1	700	157	700	157					
	30:1	700	157	700	157	≤64		80		
	35:1	700	157	700	157					
	40:1	700	157	700	157					
	50:1	700	157	700	157					
70:1	700	157	700	157	≤5	90	2.4	5.3		
100:1	700	157	700	157					≤72	
3:1	1700	381	1700	381						
4:1	1700	381	1700	381						
5:1	1700	381	1700	381		≤70				
7:1	1700	381	1700	381						
10:1	1700	381	1700	381						
15:1	1700	381	1700	381						
20:1	1700	381	1700	381		≤68	85	2.7	5.9	
25:1	1700	381	1700	381						
30:1	1700	381	1700	381						
35:1	1700	381	1700	381						
40:1	1700	381	1700	381	≤66	80				
50:1	1700	381	1700	381						
70:1	1700	381	1700	381						
100:1	1700	381	1700	381						
D	3:1	3400	763	3400	763	≤76	≤5	90	4.7	10.3
	4:1	3400	763	3400	763	≤74				
	5:1	3400	763	3400	763					
	7:1	3400	763	3400	763					
	10:1	3400	763	3400	763			≤72	85	5.1
	15:1	3400	763	3400	763					
	20:1	3400	763	3400	763					
	25:1	3400	763	3400	763					
	30:1	3400	763	3400	763	≤70		80		
	35:1	3400	763	3400	763					
	40:1	3400	763	3400	763					
	50:1	3400	763	3400	763					
70:1	3400	763	3400	763	≤5	90	8.9	19.6		
100:1	3400	763	3400	763					≤78	
3:1	4800	1077	4800	1077						
4:1	4800	1077	4800	1077						
5:1	4800	1077	4800	1077		≤76				
7:1	4800	1077	4800	1077						
10:1	4800	1077	4800	1077						
15:1	4800	1077	4800	1077						
20:1	4800	1077	4800	1077		≤74	85	9.6	21.1	
25:1	4800	1077	4800	1077						
30:1	4800	1077	4800	1077						
35:1	4800	1077	4800	1077						
40:1	4800	1077	4800	1077	≤72	80				
50:1	4800	1077	4800	1077						
70:1	4800	1077	4800	1077						
100:1	4800	1077	4800	1077						

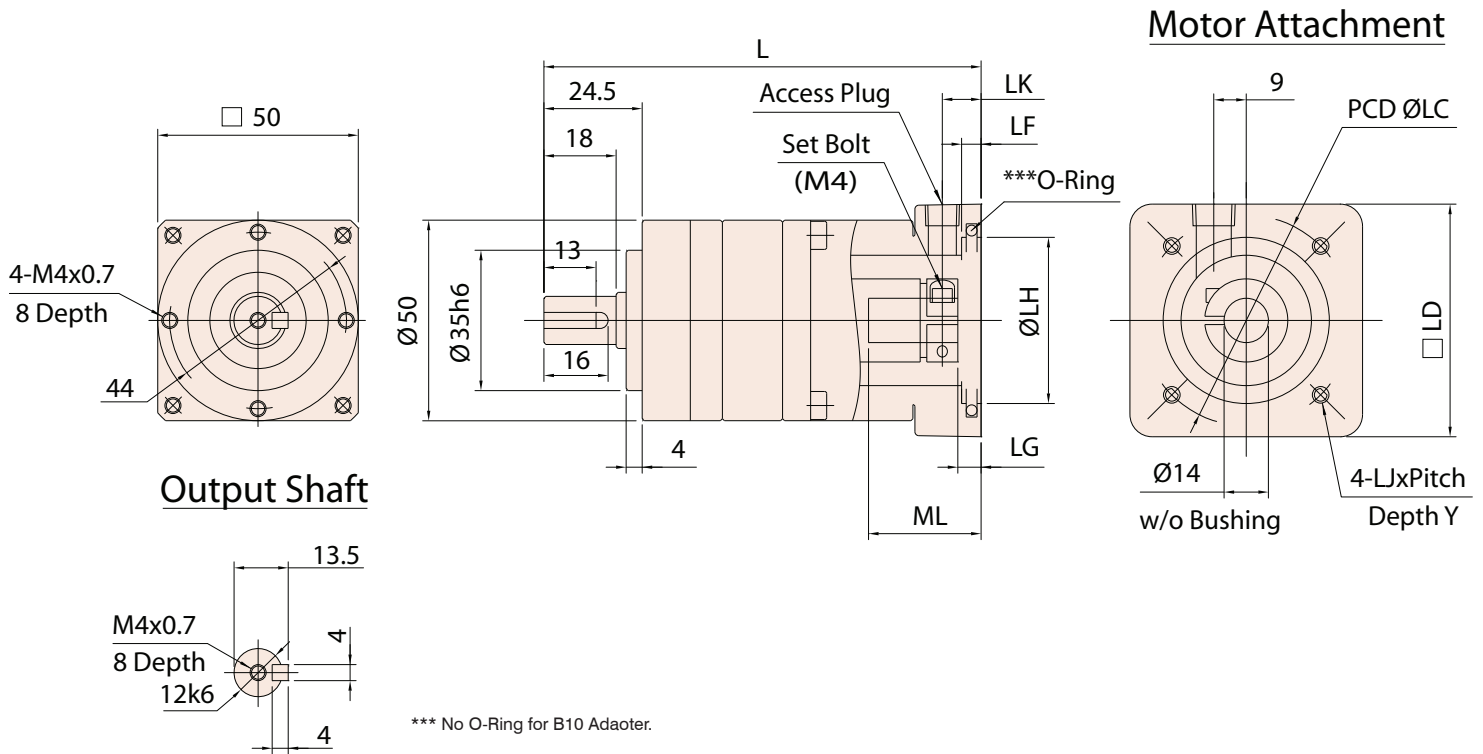
3:1 - 10:1 are single reduction, 15:1 - 100:1 are double reduction.
 (1) Based on B10 bearing life of 10000 hours and 3000 RPM input.
 (2) Based on 1000 cycles.

(3) Measured at a distance of 1 meter at 3000 RPM input at no load.
 (4) Actual efficiency will vary depending on ratio, input speed, and load.

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B Frame VRAL Series Dimensions

Ratios Single: 3, 4, 5, 7, 10:1 - Ratios Double: 15, 20, 25, 30, 35, 40, 50, 70, 100:1



Adapter	CAD Drawing #		Unit	Bolt Circle LC	Pilot LH	Square LD	Threaded Hole LJ	Depth Y	Length L	
	Single	Double							Single	Double
045	LSB01	LDB01	mm	45	30	42	M3x0.5	8	109	121
			in	1.772	1.181	1.65	-	0.31	4.291	4.764
046	LSB02	LDB02	mm	46	30	42	M4X0.7	10	109	121
			in	1.811	1.181	1.65	-	0.39	4.291	4.764
046R	LSB02R	LDB02R	mm	46	30	42	M4X0.7	10	112	124
			in	1.811	1.181	1.65	-	0.39	4.409	4.882
060	LSB03	LDB03	mm	60	50	60	M4X0.7	10	109	121
			in	2.362	1.969	2.36	-	0.39	4.291	4.764
070	LSB04	LDB04	mm	70	50	60	M4X0.7	10	109	121
			in	2.756	1.969	2.36	-	0.39	4.291	4.764

Adapter	CAD Drawing #		Unit	Plug LK	Flange Depth		
	Single	Double			LF	LG	ML
045	LSB01	LDB01	mm	10	6	5	32
			in	0.39	0.24	0.20	1.26
046	LSB02	LDB02	mm	10	6	5	32
			in	0.39	0.24	0.20	1.26
046R	LSB02R	LDB02R	mm	13	6	8	35
			in	0.51	0.24	0.31	1.38
060	LSB03	LDB03	mm	10	4	5	32
			in	0.39	0.16	0.20	1.26
070	LSB04	LDB04	mm	10	4	5	32
			in	0.39	0.16	0.20	1.26

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B Frame VRAL Series Dimensions

Ratios Single: 3, 4, 5, 7, 10:1 - Ratios Double: 15, 20, 25, 30, 35, 40, 50, 70, 100:1

Adapter	CAD Drawing #		Unit	Bolt Circle LC	Pilot LH	Square LD	Threaded Hole LJ	Depth Y	Length L	
	Single	Double							Single	Double
070R	LSB04R	LDB04R	mm	70	50	60	M5X0.8	20	114	126
			in	2.756	1.969	2.36	-	0.79	4.488	4.961
067 (NEMA23)	LSB05	LDB05	mm	66.68	38.100	58	M4X0.7	10	109	121
			in	2.625	1.500	2.28	-	0.39	4.291	4.764
067R (NEMA23)	LSB05R	LDB05R	mm	66.68	38.100	60	M5X0.8	12	117	129
			in	2.625	1.500	2.36	-	0.47	4.606	5.079
090	LSB06	LDB06	mm	90	70	80	M5X0.8	12	109	121
			in	3.543	2.756	3.15	-	0.47	4.291	4.764
044 (NEMA17)	LSB07	LDB07	mm	43.80	22	42	2-3.3 dia.	-	111	123
			in	1.724	0.866	1.65	2-0.13 dia.	-	4.370	4.843
063	LSB10	LDB10	mm	63	40	58	M4X0.7	10	109	121
			in	2.480	1.575	2.28	-	0.39	4.291	4.764
070T	LSB12	LDB12	mm	70	50	60	M5X0.8	12	109	121
			in	2.756	1.969	2.36	-	0.47	4.291	4.764

Adapter	CAD Drawing #		Unit	Plug LK	Flange Depth		
	Single	Double			LF	LG	ML
070R	LSB04R	LDB04R	mm	15	9	10	37
			in	0.59	0.35	0.39	1.46
067 (NEMA23)	LSB05	LDB05	mm	10	4	5	32
			in	0.39	0.16	0.20	1.26
067R (NEMA23)	LSB05R	LDB05R	mm	18	3	13	40
			in	0.71	0.12	0.51	1.57
090	LSB06	LDB06	mm	10	4	5	32
			in	0.39	0.16	0.20	1.26
044 (NEMA17)	LSB07	LDB07	mm	12	4	7	34
			in	0.47	0.16	0.28	1.34
063	LSB10	LDB10	mm	10	4	5	32
			in	0.39	0.16	0.20	1.26
070T	LSB12	LDB12	mm	10	4	5	32
			in	0.39	0.16	0.20	1.26

**Ratio 4:1, 20:1, 35:1, 40:1 and 70:1 are non-stock items. Please contact Shimpo Drives Customer Service for the availability of these ratios.

Bushings

Bushing Ordering Code		1401	1402	1403	1404	1405	1406	1407	1408
Inside Diameter	mm	10	8	11	6.350	9.525	12.700	12	10
	in	0.394	0.315	0.433	0.250	0.375	0.500	0.472	0.394

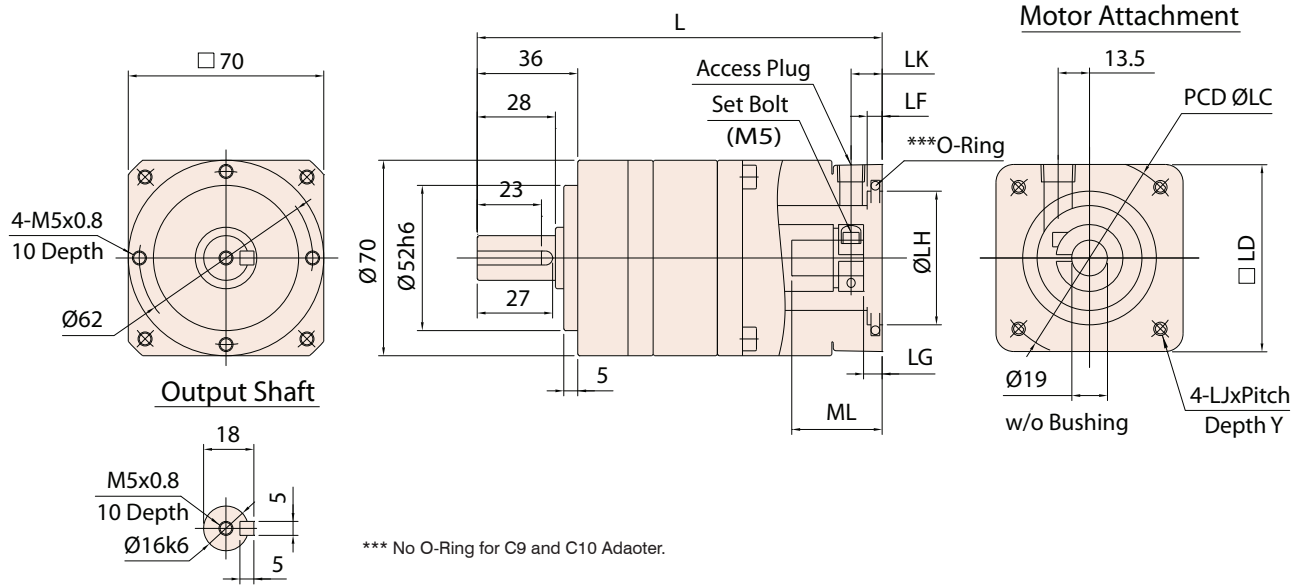
Bushing Ordering Code		1409	1410
Inside Diameter	mm	9	5
	in	0.354	0.197

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C Frame VRAL Series Dimensions

Ratios Single: 3, 4, 5, 7, 10:1 - Ratios Double: 15, 20, 25, 30, 35, 40, 50, 70, 100:1



*** No O-Ring for C9 and C10 Adapter.

Adapter	CAD Download #		Unit	Bolt Circle LC	Pilot LH	Square LD	Threaded Hole LJ	Depth Y	Length L	
	Single	Double							Single	Double
060	LSC00	LDC00	mm	60	50	60	M4x0.7	10	145	155.5
			in	2.362	1.969	2.36	-	0.39	5.709	6.122
070	LSC01	LDC01	mm	70	50	60	M4x0.7	10	145	155.5
			in	2.756	1.969	2.36	-	0.39	5.709	6.122
070R	LSC01R	LDC01R	mm	70	50	60	M5x0.8	12	149	159.5
			in	2.756	1.969	2.36	-	0.47	5.866	6.280
090	LSC02	LDC02	mm	90	70	80	M5X0.8	12	145	155.5
			in	3.543	2.756	3.15	-	0.47	5.709	6.122
090R	LSC02R	LDC02R	mm	90	70	80	M6X1.0	12	150	160.5
			in	3.543	2.756	3.15	-	0.47	5.906	6.319
100	LSC03	LDC03	mm	100	80	86	M6X1.0	16	145	155.5
			in	3.937	3.150	3.39	-	0.63	5.709	6.122
098 (NEMA34)	LSC04	LDC04	mm	98.43	73.025	83	M5X0.8	12	145	155.5
			in	3.875	2.875	3.27	-	0.47	5.709	6.122
098R (NEMA34)	LSC04R	LDC04R	mm	98.43	73.025	83	M5X0.8	12	153	163.5
			in	3.875	2.875	3.27	-	0.47	6.024	6.437

Adapter	CAD Download #		Unit	Plug LK	Flange Depth		
	Single	Double			LF	LG	ML
060	LSC00	LDC00	mm	11	4	5	42
			in	0.43	0.16	0.20	1.65
070	LSC01	LDC01	mm	11	4	6	33
			in	0.43	0.16	0.24	1.30
070R	LSC01R	LDC01R	mm	15	6	9	46
			in	0.59	0.24	0.35	1.81
090	LSC02	LDC02	mm	11	4	5	42
			in	0.43	0.16	0.20	1.65
090R	LSC02R	LDC02R	mm	16	9	10	47
			in	0.63	0.35	0.39	1.85
100	LSC03	LDC03	mm	11	4	5	42
			in	0.43	0.16	0.20	1.65
098 (NEMA34)	LSC04	LDC04	mm	11	4	5	42
			in	0.43	0.16	0.20	1.65
098R (NEMA34)	LSC04R	LDC04R	mm	19	3	13	50
			in	0.75	0.12	0.51	1.97

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C Frame VRAL Series Dimensions

Ratios Single: 3, 4, 5, 7, 10:1 - Ratios Double: 15, 20, 25, 30, 35, 40, 50, 70, 100:1

Adapter	CAD Download #		Unit	Bolt Circle LC	Pilot LH	Square LD	Threaded Hole LJ	Depth Y	Length L	
	Single	Double							Single	Double
075	LSC05	LDC05	mm	75	60	67	M5X0.8	12	145	155.5
			in	2.953	2.362	2.64	-	0.47	5.709	6.122
115	LSC06	LDC06	mm	115	95	100	M6X1.0	16	145	155.5
			in	4.528	3.740	3.94	-	0.63	5.709	6.122
067 (NEMA23)	LSC09	LDC09	mm	66.68	38.100	60	M4X0.7	10	145	155.5
			in	2.625	1.500	2.36	-	0.39	5.709	6.122
067R (NEMA23)	LSC09R	LDC09R	mm	66.68	38.100	60	M4X0.7	10	153	163.5
			in	2.625	1.500	2.36	-	0.39	6.024	6.437
063	LSC10	LDC10	mm	63	40	60	M4x0.7	10	145	155.5
			in	2.480	1.575	2.36	-	0.39	5.709	6.122
095	LSC11	LDC11	mm	95	80	86	M6X1.0	-	145	155.5
			in	3.740	3.150	3.39	-	-	5.709	6.122
046	LSC12	LDC12	mm	46	30	60	M4x0.7	10	145	155.5
			in	1.811	1.181	2.36	-	0.39	5.709	6.122
070T	LSC13	LDC13	mm	70	50	60	M5x0.8	12	145	155.5
			in	2.756	1.969	2.36	-	0.47	5.709	6.122
090T	LSC15	LDC15	mm	90	70	80	M6X1.0	16	145	155.5
			in	3.543	2.756	3.15	-	0.63	5.709	6.122
115T	LSC17	LDC17	mm	115	95	100	M8X1.25	16	145	155.5
			in	4.528	3.740	3.94	-	0.63	5.709	6.122

Adapter	CAD Download #		Unit	Plug LK	Flange Depth		
	Single	Double			LF	LG	ML
075	LSC05	LDC05	mm	11	4	5	42
			in	0.43	0.16	0.20	1.65
115	LSC06	LDC06	mm	11	4	5	42
			in	0.43	0.16	0.20	1.65
067 (NEMA23)	LSC09	LDC09	mm	11	4	5	42
			in	0.43	0.16	0.20	1.65
067R (NEMA23)	LSC09R	LDC09R	mm	19	3	14	41
			in	0.75	0.12	0.55	1.61
063	LSC10	LDC10	mm	11	4	5	42
			in	0.43	0.16	0.20	1.65
095	LSC11	LDC11	mm	11	4	5	42
			in	0.43	0.16	0.20	1.65
046	LSC12	LDC12	mm	11	4	6	33
			in	0.43	0.16	0.24	1.30
070T	LSC13	LDC13	mm	11	4	5	42
			in	0.43	0.16	0.20	1.65
090T	LSC15	LDC15	mm	11	4	5	42
			in	0.43	0.16	0.20	1.65
115T	LSC17	LDC17	mm	11	4	5	42
			in	0.43	0.16	0.20	1.65

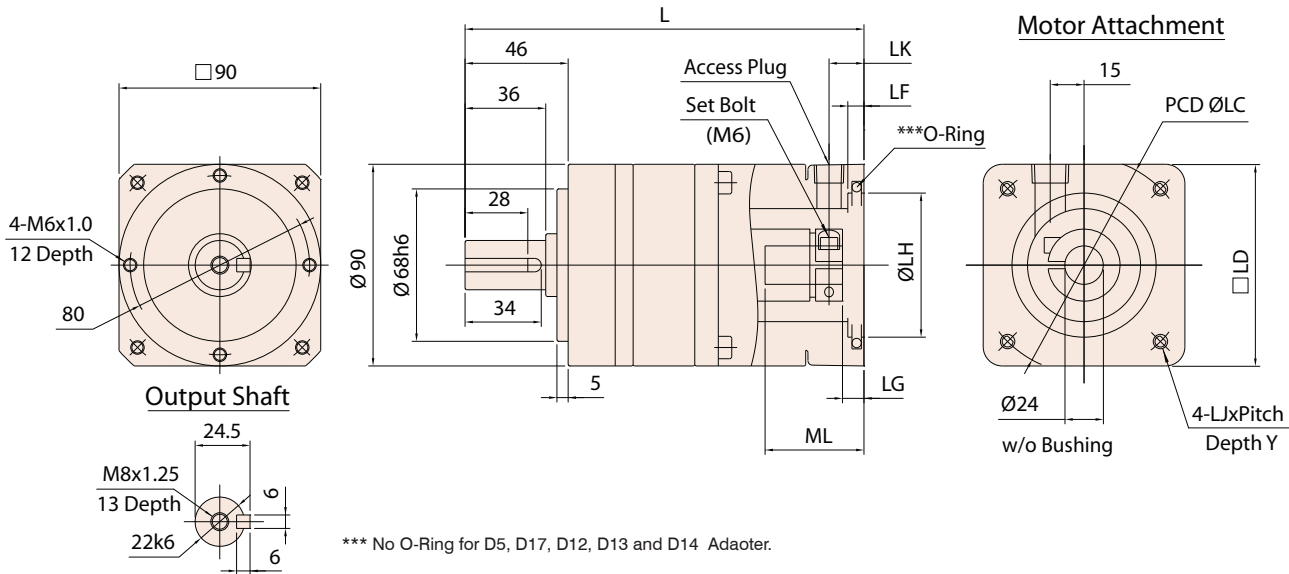
Ratio 4:1, 20:1, 35:1, 40:1 and 70:1 are non-stock items. Please contact Shimpo Drives Customer Service for the availability of these ratios.

Bushings

Bushing Ordering Code	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	
Inside Diameter	mm	11	14	16	9.525	12.700	15.875	12	10	9	8
	in	0.433	0.551	0.630	0.375	0.500	0.625	0.472	0.394	0.354	0.315

D Frame VRAL Series Dimensions

Ratios Single: 3, 4, 5, 7, 10:1 - Ratios Double: 15, 20, 25, 30, 35, 40, 50, 70, 100:1



Adapter	CAD Download #		Unit	Bolt Circle LC	Pilot LH	Square LD	Threaded Hole LJ	Depth Y	Length L	
	Single	Double							Single	Double
115	LSD01	LDD01	mm	115	95	100	M6x1.0	15	178	192.5
			in	4.528	3.740	3.94	-	0.59	7.008	7.579
090	LSD02	LDD02	mm	90	70	80	M5X0.8	12	178	192.5
			in	3.543	2.756	3.15	-	0.47	7.008	7.579
090R	LSD02R	LDD02R	mm	90	70	80	M6X1.0	15	181	195.5
			in	3.543	2.756	3.15	-	0.59	7.126	7.697
100	LSD03	LDD03	mm	100	80	90	M6X1.0	15	178	192.5
			in	3.937	3.150	3.54	-	0.59	7.008	7.579
126 (NEMA42)	LSD04	LDD04	mm	125.73	55.563	108	M6X1.0	15	178	192.5
			in	4.950	2.188	4.25	-	0.59	7.008	7.579
145	LSD05	LDD05	mm	145	110	130	M8X1.25	16	181	195.5
			in	5.709	4.331	5.12	-	0.63	7.126	7.697
145R	LSD05R	LDD05R	mm	145	110	130	M8X1.25	16	194	208.5
			in	5.709	4.331	5.12	-	0.63	7.638	8.209

Adapter	CAD Download #		Unit	Plug LK	Flange Depth		
	Single	Double			LF	LG	ML
115	LSD01	LDD01	mm	15	4	7	57
			in	0.59	0.16	0.28	2.24
090	LSD02	LDD02	mm	14	4	7	57
			in	0.55	0.16	0.28	2.24
090R	LSD02R	LDD02R	mm	17	6	10	60
			in	0.67	0.24	0.39	2.36
100	LSD03	LDD03	mm	14	4	7	57
			in	0.55	0.16	0.28	2.24
126 (NEMA42)	LSD04	LDD04	mm	15	5	7	57
			in	0.59	0.20	0.28	2.24
145	LSD05	LDD05	mm	18	6	10	60
			in	0.71	0.24	0.39	2.36
145R	LSD05R	LDD05R	mm	31	8	23	73
			in	1.22	0.31	0.91	2.87

D Frame VRAL Series Dimensions

Ratios Single: 3, 4, 5, 7, 10:1 - Ratios Double: 15, 20, 25, 30, 35, 40, 50, 70, 100:1

Adapter	CAD Download #		Unit	Bolt Circle LC	Pilot LH	Square LD	Threaded Hole LJ	Depth Y	Length L	
	Single	Double							Single	Double
130	LSD06	LDD06	mm	130	110	115	M8X1.25	16	178	192.5
			in	5.118	4.331	4.53	-	0.63	7.008	7.579
095	LSD08	LDD08	mm	95	80	90	M6X1.0	15	178	192.5
			in	3.740	3.150	3.54	-	0.59	7.008	7.579
098 (NEMA34)	LSD11	LDD11	mm	98.43	73.025	90	M5X0.8	12	178	192.5
			in	3.875	2.875	3.54	-	0.47	7.008	7.579
098R (NEMA34)	LSD11R	LDD11R	mm	98.43	73.025	83	M5X0.8	12	186	200.5
			in	3.875	2.875	3.27	-	0.47	7.323	7.894
149 (NEMA56)	LSD12	LDD12	mm	149.23	114.300	130	-	-	181	195.5
			in	5.875	4.500	5.12	3/8UNC-16	-	7.126	7.697
067 (NEMA23)	LSD13	LDD13	mm	66.7	38.1	80	M4X0.7	10	178	192.5
			in	2.626	1.500	3.15	-	0.39	7.008	7.579
070T	LSD14	LDD14	mm	70	50	80	M5X0.8	10	178	192.5
			in	2.756	1.969	3.15	-	0.39	7.008	7.579
075	LSD15	LDD15	mm	75	60	80	M5X0.8	12	178	192.5
			in	2.953	2.362	3.15	-	0.47	7.008	7.579
090T	LSD18	LDD18	mm	90	70	80	M6X1.0	12	178	192.5
			in	3.543	2.756	3.15	-	0.47	7.008	7.579
115T	LSD19	LDD19	mm	115	95	100	M8x1.25	16	178	192.5
			in	4.528	3.740	3.94	-	0.63	7.008	7.579

Adapter	CAD Download #		Unit	Plug LK	Flange Depth		
	Single	Double			LF	LG	ML
130	LSD06	LDD06	mm	15	6	7	57
			in	0.59	0.24	0.28	2.24
095	LSD08	LDD08	mm	14	4	7	57
			in	0.55	0.16	0.28	2.24
098 (NEMA34)	LSD11	LDD11	mm	14	6	7	57
			in	0.55	0.24	0.28	2.24
098R (NEMA34)	LSD11R	LDD11R	mm	22	3	15	52
			in	0.87	0.12	0.59	2.05
149 (NEMA56)	LSD12	LDD12	mm	18	6	10	60
			in	0.71	0.24	0.39	2.36
067 (NEMA23)	LSD13	LDD13	mm	14	4	7	57
			in	0.55	0.16	0.28	2.24
070T	LSD14	LDD14	mm	14	4	7	57
			in	0.55	0.16	0.28	2.24
075	LSD15	LDD15	mm	14	4	7	57
			in	0.55	0.16	0.28	2.24
090T	LSD18	LDD18	mm	14	4	7	57
			in	0.55	0.16	0.28	2.24
115T	LSD19	LDD19	mm	15	4	7	57
			in	0.59	0.16	0.28	2.24

Ratio 4:1, 20:1, 35:1, 40:1 and 70:1 are non-stock items. Please contact Shimpo Drives Customer Service for the availability of these ratios.

Bushings

Bushing Ordering Code		2401	2402	2403	2404	2405	2406	2407
Inside Diameter	mm	14	16	19	12.700	15.875	22	19.050
	in	0.551	0.630	0.748	0.500	0.625	0.866	0.750

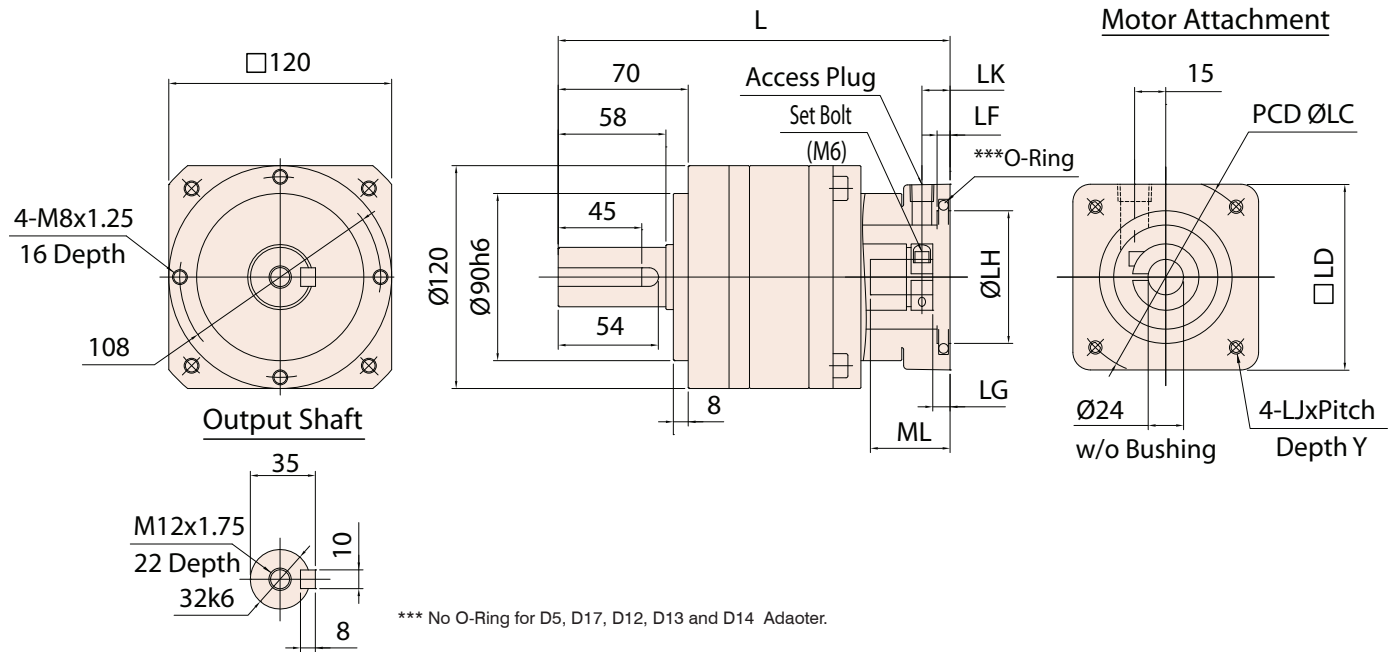
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E Frame VRAL Series Dimensions

Ratios Single: 3, 4, 5, 7, 10:1 - Ratios Double: 15, 20, 25, 30, 35, 40, 50, 70, 100:1



Adapter	CAD Drawing #		Unit	Bolt Circle LC	Pilot LH	Square LD	Threaded Hole LJ	Depth Y	Length L	
	Single	Double							Single	Double
115	LSE01	LDE01	mm	115	95	100	M6x1.0	15	211	229.5
			in	4.528	3.740	3.94	-	0.59	8.307	9.035
090	LSE02	LDE02	mm	90	70	80	M5x0.8	12	211	229.5
			in	3.543	2.756	3.15	-	0.47	8.307	9.035
090R	LSE02R	LDE02R	mm	90	70	80	M6x1.0	15	214	232.5
			in	3.543	2.756	3.15	-	0.59	8.425	9.154
100	LSE03	LDE03	mm	100	80	90	M6x1.0	15	211	229.5
			in	3.937	3.150	3.54	-	0.59	8.307	9.035
126 (NEMA42)	LSE04	LDE04	mm	125.73	55.563	108	M6x1.0	15	211	229.5
			in	4.950	2.188	4.25	-	0.59	8.307	9.035
145	LSE05	LDE05	mm	145	110	130	M8x1.25	16	214	232.5
			in	5.709	4.331	5.12	-	0.63	8.425	9.154
145R	LSE05R	LDE05R	mm	145	110	130	M8x1.25	16	227	245.5
			in	5.709	4.331	5.12	-	0.63	8.937	9.665

Adapter	CAD Drawing #		Unit	Plug LK	Flange Depth		
	Single	Double			LF	LG	ML
115	LSE01	LDE01	mm	15	4	7	57
			in	0.59	0.16	0.28	2.24
090	LSE02	LDE02	mm	14	4	7	57
			in	0.55	0.16	0.28	2.24
090R	LSE02R	LDE02R	mm	17	6	10	60
			in	0.67	0.24	0.39	2.36
100	LSE03	LDE03	mm	14	4	7	57
			in	0.55	0.16	0.28	2.24
126 (NEMA42)	LSE04	LDE04	mm	15	5	7	57
			in	0.59	0.20	0.28	2.24
145	LSE05	LDE05	mm	18	6	10	60
			in	0.71	0.24	0.39	2.36
145R	LSE05R	LDE05R	mm	31	8	23	73
			in	1.22	0.31	0.91	2.87

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E Frame VRAL Series Dimensions

Ratios Single: 3, 4, 5, 7, 10:1 - Ratios Double: 15, 20, 25, 30, 35, 40, 50, 70, 100:1

Adapter	CAD Drawing #		Unit	Bolt Circle LC	Pilot LH	Square LD	Threaded Hole LJ	Depth Y	Length L	
	Single	Double							Single	Double
130	LSE06	LDE06	mm	130	110	115	M8X1.25	16	211	229.5
			in	5.118	4.331	4.53	-	0.63	8.307	9.035
095	LSE08	LDE08	mm	95	80	90	M6x1.0	15	211	229.5
			in	3.740	3.150	3.54	-	0.59	8.307	9.035
098 (NEMA34)	LSE11	LDE11	mm	98.43	73.025	83	M5X0.8	12	211	229.5
			in	3.875	2.875	3.27	-	0.47	8.307	9.035
098R (NEMA34)	LSE11R	LDE11R	mm	98.43	73.025	83	M5X0.8	12	219	237.5
			in	3.875	2.875	3.27	-	0.47	8.622	9.350
149 (NEMA56)	LSE12	LDE12	mm	149.225	114.3	130	-	-	214	232.5
			in	5.875	4.500	5.12	3/8UNC	-	8.425	9.154
067 (NEMA23)	LSE13	LDE13	mm	66.68	38.1	80	M4X0.7	10	211	229.5
			in	2.625	1.500	3.15	-	0.39	8.307	9.035
070T	LSE14	LDE14	mm	70	50	80	M5X0.8	10	211	229.5
			in	2.756	1.969	3.15	-	0.39	8.307	9.035
075	LSE15	LDE15	mm	75	60	80	M5X0.8	12	211	229.5
			in	2.953	2.362	3.15	-	0.47	8.307	9.035
090T	LSE18	LDE18	mm	90	70	80	M6x1.0	12	211	229.5
			in	3.543	2.756	3.15	-	0.47	8.307	9.035
115T	LSE19	LDE19	mm	115	95	100	M8X1.25	16	211	229.5
			in	4.528	3.740	3.94	-	0.63	8.307	9.035

Adapter	CAD Drawing #		Unit	Plug LK	Flange Depth		
	Single	Double			LF	LG	ML
130	LSE06	LDE06	mm	15	6	7	57
			in	0.59	0.24	0.28	2.24
095	LSE08	LDE08	mm	14	4	7	57
			in	0.55	0.16	0.28	2.24
098 (NEMA34)	LSE11	LDE11	mm	14	6	7	57
			in	0.55	0.24	0.28	2.24
098R (NEMA34)	LSE11R	LDE11R	mm	22	3	15	65
			in	0.87	0.12	0.59	2.56
149 (NEMA56)	LSE12	LDE12	mm	18	6	10	60
			in	0.71	0.24	0.39	2.36
067 (NEMA23)	LSE13	LDE13	mm	14	4	7	57
			in	0.55	0.16	0.28	2.24
070T	LSE14	LDE14	mm	14	4	7	57
			in	0.55	0.16	0.28	2.24
075	LSE15	LDE15	mm	14	4	7	57
			in	0.55	0.16	0.28	2.24
090T	LSE18	LDE18	mm	14	4	7	57
			in	0.55	0.16	0.28	2.24
115T	LSE19	LDE19	mm	15	4	7	57
			in	0.59	0.16	0.28	2.24

Ratio 4:1, 20:1, 35:1, 40:1 and 70:1 are non-stock items. Please contact Shimpo Drives Customer Service for the availability of these ratios.

Bushings

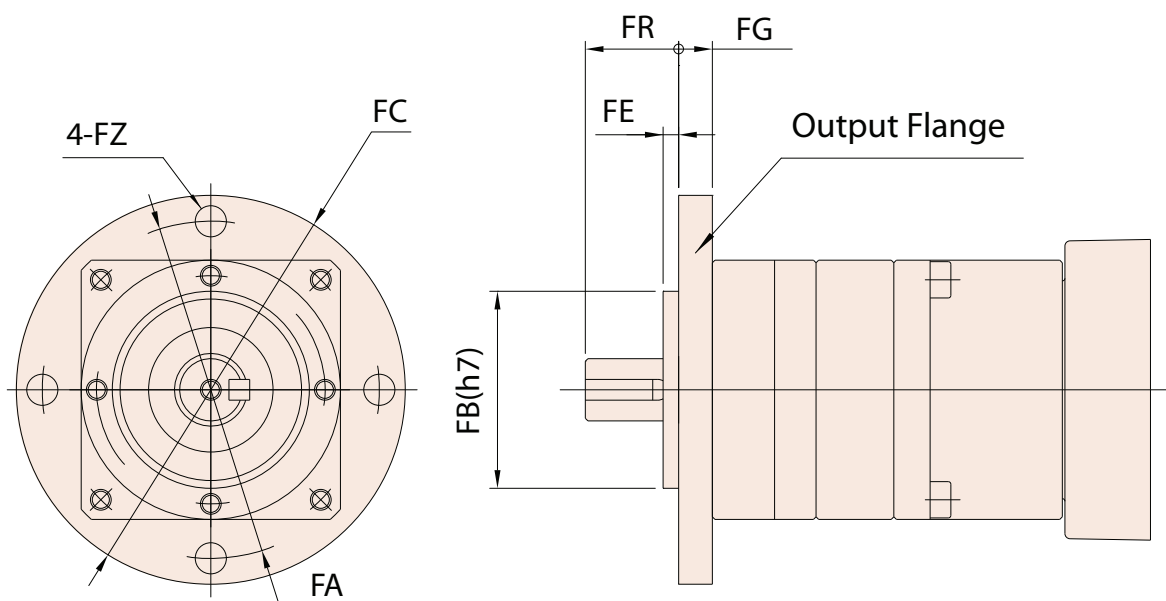
Bushing Ordering Code	2401	2402	2403	2404	2405	2406	2407
Inside Diameter	mm	14	16	19	12.700	15.875	19.050
	in	0.551	0.630	0.748	0.500	0.625	0.750

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NEMA Output Flange Dimensions



NEMA Flange

Frame Size		FG	FR	FE	FB	FC	FA	FZ
B (NEMA 23)	mm	6.5	18	2	38.100	78	66.68	5.2
	in	0.26	0.71	0.08	1.500	3.07	2.625	0.20
C (NEMA 34)	mm	8.0	28	2	73.025	110	98.43	5.6
	in	0.31	1.10	0.08	2.875	4.33	3.875	0.22
D (NEMA 42)	mm	10.0	36	3	55.563	140	125.73	7.1
	in	0.39	1.42	0.12	2.188	5.51	4.950	0.28
E (NEMA 56)	mm	12.0	58	3	114.300	170	149.23	9.5
	in	0.47	2.28	0.12	4.500	6.69	5.875	0.38

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Notes

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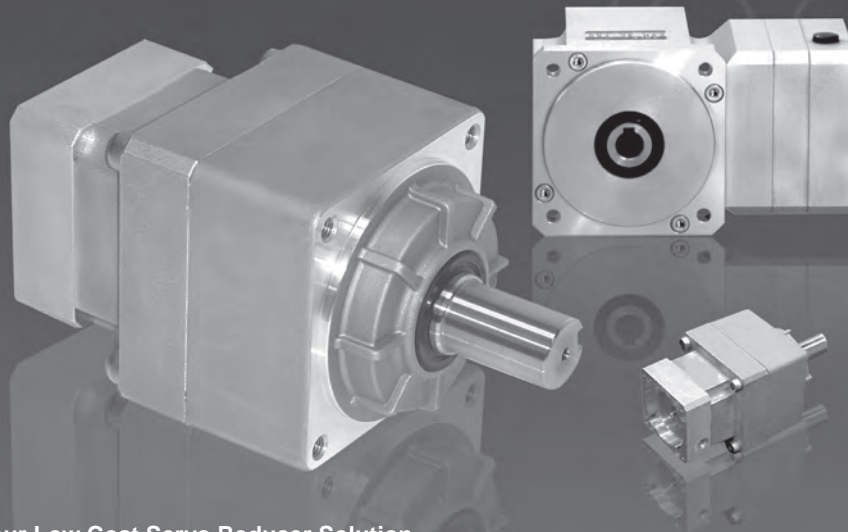
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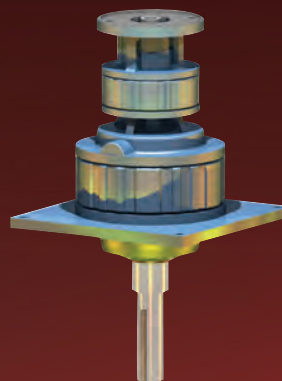
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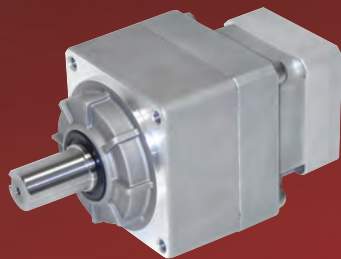
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