

# SHIMPO

## VRAF-Series

# ABLE

## Planetary Servo Reducers



### Your Low Cost Servo Reducer Solution

3 Backlash Levels, as low as 3 arc-min

IP65 environment protection

Motor adaptors for any servo motor, 50w through 5kW

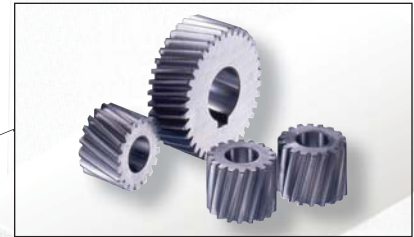
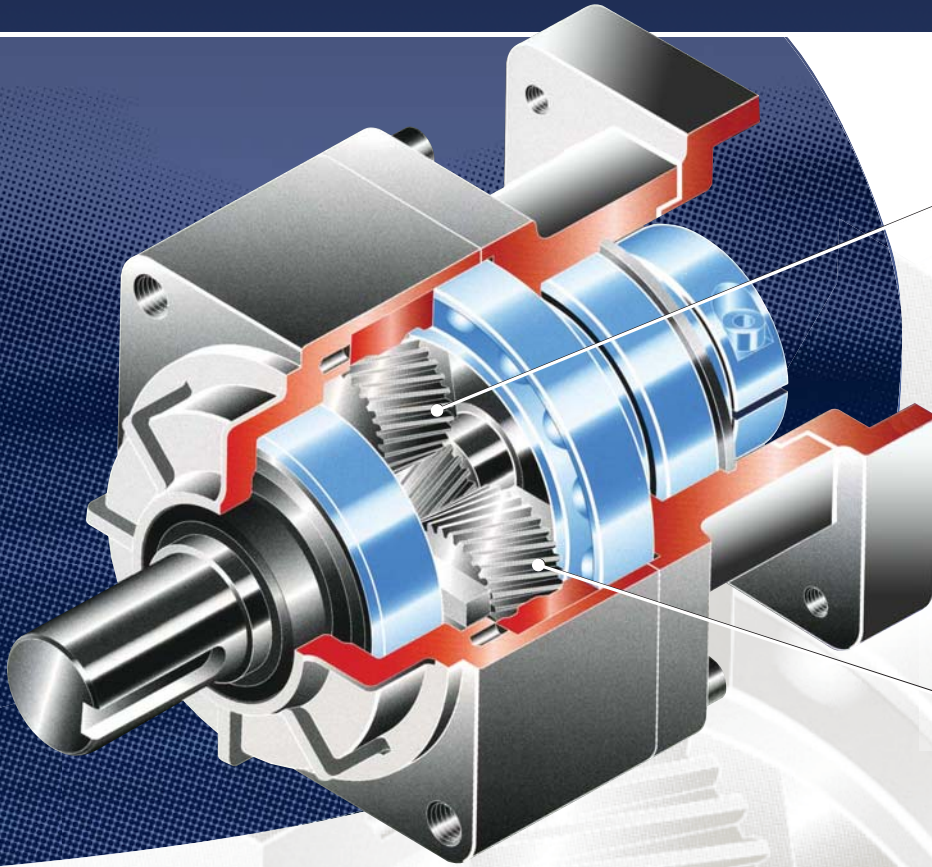
24 hour delivery

A *Nidec* Group Company

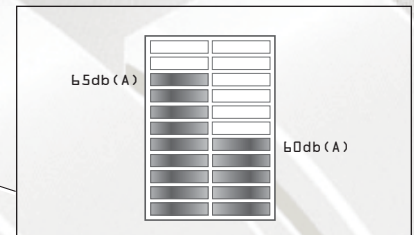
# SHIMPO

All for dreams

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



Helical gears have slanted teeth compared to spur gears with straight cut teeth, producing a smoother gear mesh, yielding significantly lower noise **levels**.



Typical sound level difference between spur gearing (left) and helical cut gearing. The db(A) scale is logarithmic. An increase of 3db doubles the apparent volume.

## Features & Benefits

### Case carburized and hard-cut helical gears (right angle has spiral bevel gear)

- Smooth, quiet operation
- Input speeds up to 6000 RPM

### O-Ring in piloted adaptor flange (Patent Pending)

- Absorbs clearance between motor and adaptor eliminating misalignment and minimizing vibration
- Provides additional seal to keep contaminants out

### Modular adaptor flange and keyless compressible bushings

- Easily adapts to any manufacturer's servo motor
- 1 day shipping

### Grease lubrication

- Allows mounting in any position without modifications
- 20,000 hour maintenance free operation

### Contact lip seals and sealed input shaft bearing (IP64 rating)

- Excellent protection against lubricant leakage and external contamination
- Can be easily modified for an IP65 rating (optional epoxy or Steel-It® paint available)

### ACCULOK keyless locking hub

- Provides tight fit with motor shaft (key is not required) without adding backlash

### Oversized bearings

- Exceptional output shaft overhung and thrust load capabilities

### Standard, low, and precision backlash available in the same housing design

- Choose only the level of precision you need for your application without having to modify your design
- Housing style matches shape of servo motor

### Optional output flanges

- Versatility in mounting

# Model Number Chart

	A	F										
Model	Input		Frame	Ratio	Backlash	Motor Attachment			Bushings			Modifications
												1 2 3 (See Notes Below)

### Model

Ordering Code

VR	Concentric
NEV	Right Angle

### Frame Size

Ordering Code

B	B Frame
C	C Frame
D	D Frame
E	E Frame

### Backlash

Ordering Code

0	Standard
L	Low
P	Precision

### Adaptor Flange Re-Threaded Hole

(with T Code)

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

### Ratio

Ordering Code VRAF/VRSF

03	Single Reduction	3:1
05		5:1
09		9:1
15	Double Reduction	15:1
20		20:1
25		25:1
35		35:1
45		45:1
81		81:1

### Ordering Code

NEVAF/NEVSF

05	Double Reduction	5:1
09		9:1
15		15:1
27	Triple Reduction	27:1
45		45:1
75		75:1
1H		105:1

### Motor Attachment (Bolt Circle of motor in mm)

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
S	Dedicated w/ clamp hub

### Bushing

Ordering Code

0000	No Bushing Required OD(mm) ID(mm)	
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
2408	24	11

### Modifications/Motor Attachment Threaded Hole

Ordering Code

000	Standard
1	VRAF - w/ Metric output flange
N	VRAF - w/ NEMA output flange
5	Keyless output shaft
6	NEVAF - solid shaft
7	NEVAF - hollow shaft
I	IP65 - no paint - 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:

1, N, 6, or 7 is always in position 1 the modification section. 5 is in position one unless 1 or N is present. B or R is always in position 3 of the modification section. If position 1 is not taken by 1, N, 5, 6, or 7, list first modification in position 1. If there is more than one modification, list in alphabetical order. Use 0's (zeros) in any position not taken by a modification.

#### Additional Information:

Japanese Part Number (if complete unit from Japan)

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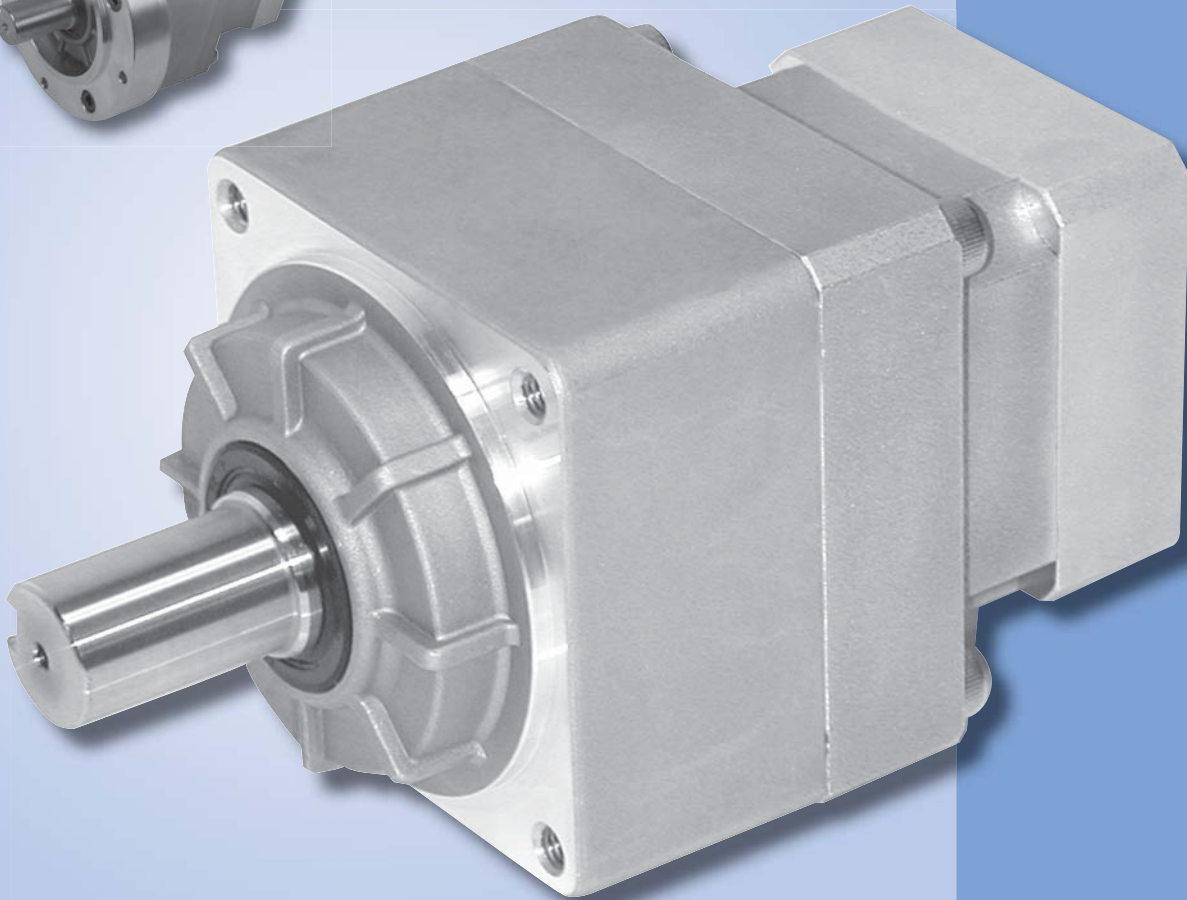
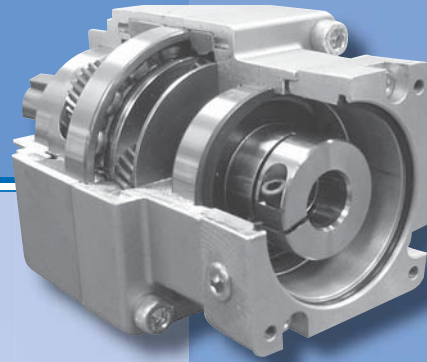
#### Pricing

Catalog Price				
CIF Price				

## Options & Modifications Available

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

# VR CONCENTRIC Shaft Series



Sizes from 50W to 5000W

Ratios from 3:1 to 81:1

Backlash from 3 arc-min

Input speeds up to 6000 RPM

# VRAF/VRSF Concentric Shaft Series Selection Table

Based on 3000 RPM Input

Motor Rated Output (W)	Ratio								
	3:1	5:1	9:1	15:1	20:1	25:1	35:1	45:1	81:1
50								C	
100	B							C	
200				C				D	
400								E	
500	C				D				
600									
750	C				D				
1000	D			E					
1200									
1500	D				E				
2000									
2500	E								
3000									
3500	E				See VRAS Catalog				
4000									
4500	E								
5000									

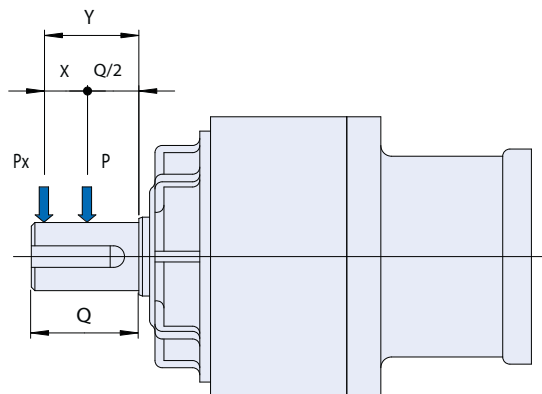
3:1, 5:1, & 9:1 are single reduction, 15:1, 20:1, 25:1, 35:1, 45:1, & 81:1 are double reduction.  
 Other sizes and ratios available. Contact Shimpo Drives Customer Service for additional information.

## 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<sub>x</sub>:** Actual overhung load
- Q:** Output shaft length



Frame Size	Constant (K)		Q	
	mm	in	mm	in
B	46	1.81	20	0.79
C	70	2.76	30	1.18
D	79.5	3.13	40	1.57
E	105	4.13	55	2.17

# VRAF/VRSF 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 <sup>2</sup>	lb-in-sec <sup>2</sup>	Nm/ arc-min	in-lbs/ arc-min	RPM
B	3:1	3.9	35	10	88	17	150	0.197	0.000174	0.8	7	6000
	5:1	5.6	50	13	115	17	150	0.170	0.000150			
	9:1	4.9	43	12	106	17	150	0.162	0.000143			
	15:1	4.8	42	12	106	17	150	0.041	0.000036			
	20:1	4.8	42	12	106	17	150	0.041	0.000036			
	25:1	6.4	57	13	115	17	150	0.040	0.000035			
	35:1	6.4	57	13	115	17	150	0.020	0.000018			
	45:1	6.4	57	13	115	17	150	0.004	0.000004			
C	3:1	21	186	47	416	93	823	1.182	0.001046	3	27	6000
	5:1	21	186	47	416	93	823	0.902	0.000798			
	9:1	21	186	47	416	93	823	0.821	0.000726			
	15:1	26	230	47	416	93	823	0.331	0.000293			
	20:1	26	230	47	416	93	823	0.331	0.000293			
	25:1	26	230	47	416	93	823	0.319	0.000282			
	35:1	26	230	47	416	93	823	0.160	0.000141			
	45:1	26	230	47	416	93	823	0.035	0.000031			
D	3:1	30	265	74	655	131	1159	3.203	0.002834	6	53	5100
	5:1	33	292	81	717	131	1159	2.478	0.002193			
	9:1	38	336	93	823	131	1159	2.217	0.001962			
	15:1	45	398	104	920	131	1159	0.906	0.000802			
	20:1	45	398	104	920	131	1159	0.906	0.000802			
	25:1	54	478	104	920	131	1159	0.876	0.000775			
	35:1	54	478	104	920	131	1159	0.440	0.000390			
	45:1	54	478	104	920	131	1159	0.031	0.000027			
E	3:1	87	770	158	1398	316	2815	5.780	0.005104	20	177	5000
	5:1	87	770	158	1398	316	2815	3.750	0.003311			
	9:1	87	770	158	1398	316	2815	2.809	0.002480			
	15:1	108	956	197	1744	393	3478	2.800	0.002472			
	20:1	108	956	197	1744	393	3478	2.800	0.002472			
	25:1	108	956	197	1744	393	3478	2.800	0.002379			
	35:1	108	956	197	1744	393	3478	2.800	0.001202			
	45:1	108	956	197	1744	393	3478	0.245	0.000216			
81:1	108	956	197	1744	393	3478	0.240	0.000212				

3:1, 5:1, & 9:1 are single reduction, 15:1, 20:1 25:1, 35:1 45:1, and 81:1 are double reduction.

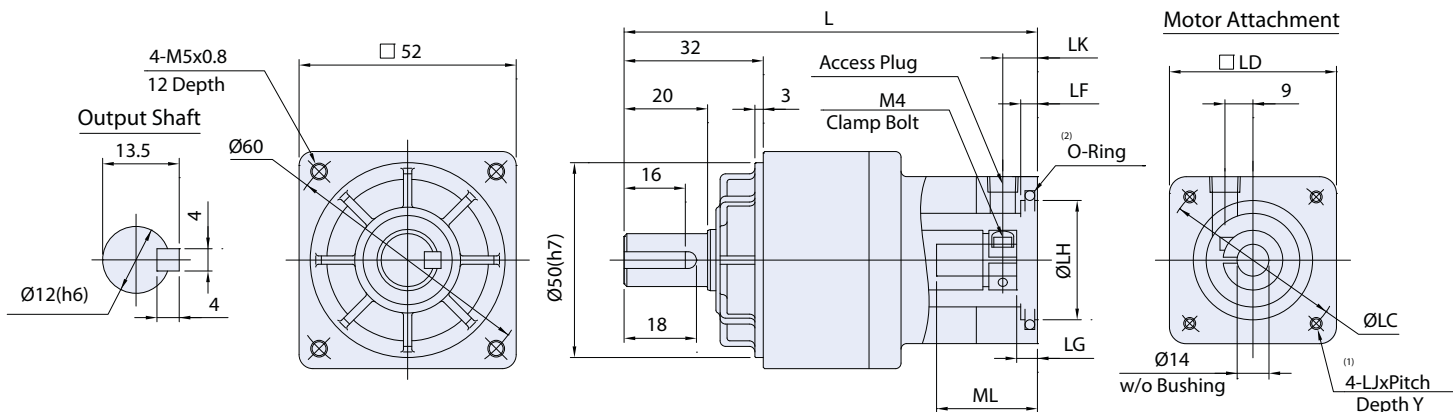
- (1) Based on B10 bearing life of 10000 hours and 3000 RPM input.
- (2) Based on 1000 cycles.
- (3) Measured at a distance of 1 meter at 3000 RPM input at no load.
- (4) Actual efficiency will vary depending on ratio, input speed, and load.

# VRAF/VRSF Concentric Shaft Series Specifications

Frame Size	Ratio	Output Shaft Radial Load		Output Shaft Thrust Load		Noise Level (3) dB(A)	Backlash			Efficiency (4) %	Weight	
		N	lbs	N	lbs		Standard	Low	Precision		kg	lbs
							arc-min	arc-min	arc-min			
B	3:1	370	83	185	42	≤72	≤15	≤10	≤3	95	0.6	1.2
	5:1	450	101	225	51	≤65						
	9:1	570	128	285	64	≤65						
	15:1	700	157	350	79	≤65				92	0.7	1.6
	20:1	700	157	350	79	≤65						
	25:1	860	193	430	97	≤65						
	35:1	860	193	430	97	≤65						
	45:1	860	193	430	97	≤65						
81:1	860	193	430	97	≤65							
C	3:1	840	189	420	94	≤72	≤15	≤5	≤3	95	1.7	3.7
	5:1	980	220	490	110	≤65						
	9:1	1180	265	590	133	≤65						
	15:1	1450	326	725	163	≤65				92	2.1	4.6
	20:1	1450	326	725	163	≤65						
	25:1	1670	375	835	188	≤65						
	35:1	1670	375	835	188	≤65						
	45:1	1670	375	835	188	≤65						
81:1	1670	375	835	188	≤65							
D	3:1	1100	247	550	124	≤72	≤15	≤5	≤3	95	3.2	7.0
	5:1	1300	292	650	146	≤65						
	9:1	1600	360	800	180	≤65						
	15:1	1900	427	950	214	≤65				92	3.9	8.6
	20:1	1900	427	950	214	≤65						
	25:1	2200	494	1100	247	≤65						
	35:1	2200	494	1100	247	≤65						
	45:1	2200	494	1100	247	≤65						
81:1	2200	494	1100	247	≤65							
E	3:1	3530	794	1765	397	≤75	≤15	≤5	≤3	95	12	25.4
	5:1	3530	794	1765	397	≤75						
	9:1	3530	794	1765	397	≤75						
	15:1	3530	794	1765	397	≤75				92	13	28
	20:1	3530	794	1765	397	≤75						
	25:1	3530	794	1765	397	≤75						
	35:1	3530	794	1765	397	≤75						
	45:1	3530	794	1765	397	≤75						
81:1	3530	794	1765	397	≤75							

# B Frame VRAF Series Dimensions

Ratios: 3:1, 5:1, 9:1

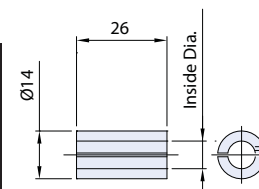


See Page 16 for NEMA/Metric Output Flange Dimensions.

Adapter	CAD Download #	Unit	Bolt Circle LC	Pilot LH	Square LD	Tapping Bolt LJ	Depth Y	Length L	Plug LK	Flange Depth		
										LF	LG	ML
044 (NEMA17)	SB07	mm	43.80	22	42	2-3.3 dia.	-	106.5	12	4	7	34
		in	1.724	0.866	1.65	2-0.13 dia.	-	4.193	0.47	0.16	0.28	1.34
045	SB01	mm	45	30	42	M3x0.5	8	104.5	10	6	5	32
		in	1.772	1.181	1.65	-	0.31	4.114	0.39	0.24	0.20	1.26
046	SB02	mm	46	30	42	M4X0.7	10	104.5	10	6	5	32
		in	1.811	1.181	1.65	-	0.39	4.114	0.39	0.24	0.20	1.26
046R	SB02R	mm	46	30	42	M4X0.7	10	107.5	13	6	8	35
		in	1.811	1.181	1.65	-	0.39	4.232	0.51	0.24	0.31	1.38
060	SB03	mm	60	50	60	M4X0.7	10	104.5	10	4	5	32
		in	2.362	1.969	2.36	-	0.39	4.114	0.39	0.16	0.20	1.26
063	SB10	mm	63	40	58	M4X0.7	10	104.5	10	4	5	32
		in	2.480	1.575	2.28	-	0.39	4.114	0.39	0.16	0.20	1.26
067 (NEMA23)	SB05	mm	66.68	38.100	58	M4X0.7	10	104.5	10	4	5	32
		in	2.625	1.500	2.28	-	0.39	4.114	0.39	0.16	0.20	1.26
067R (NEMA23)	SB05R	mm	66.68	38.100	58	M5X0.8	-	112.5	18	4	13	40
		in	2.625	1.500	2.28	-	-	4.429	0.71	0.16	0.51	1.57
070	SB04	mm	70	50	60	M4X0.7	10	104.5	10	4	5	32
		in	2.756	1.969	2.36	-	0.39	4.114	0.39	0.16	0.20	1.26
070T	SB04T	mm	70	50	60	M5X0.8	12	104.5	10	4	5	32
		in	2.756	1.969	2.36	-	0.47	4.114	0.39	0.16	0.20	1.26
070R	SB04R	mm	70	50	60	M5X0.8	20	109.5	15	9	10	37
		in	2.756	1.969	2.36	-	0.79	4.311	0.59	0.35	0.39	1.46
090	SB06	mm	90	70	80	M5X0.8	12	104.5	10	4	5	32
		in	3.543	2.756	3.15	-	0.47	4.114	0.39	0.16	0.20	1.26

## Bushings

Bushing Ordering Code		1401	1402	1403	1404	1405	1406	1407	1408	1409	1410
Inside Diameter	mm	6	8	11	6.350	9.525	12.700	12	10	9	5
	in	0.236	0.315	0.433	0.250	0.375	0.500	0.472	0.394	0.354	0.197



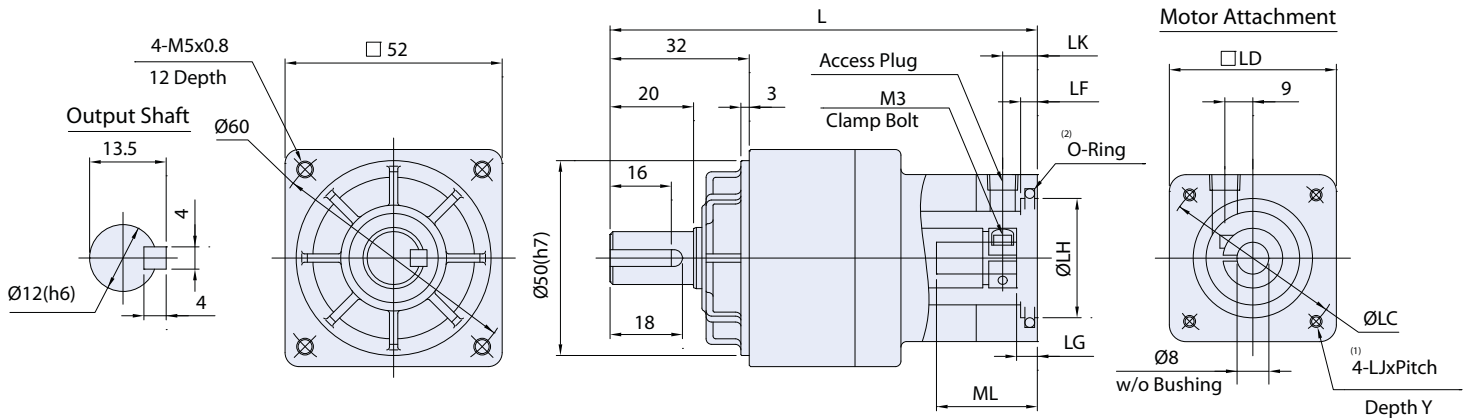
(1) Depending on the servo motor, this dimension is subject to change. Contact Shimpo Drives Customer Service for additional information.

(2) Some adapter flanges don't have a O-Ring.



# B Frame VRAF Series Dimensions

Ratios: 15:1, 20:1, 25:1, 35:1, 45:1, 81:1

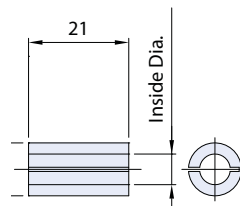


See Page 16 for NEMA/Metric Output Flange Dimensions.

Adapter	CAD Download#	Unit	Bolt Circle LC	Pilot LH	Square LD	Tapping Bolt LJ	Depth Y	Length L	Plug LK	Flange Depth		
										LF	LG	ML
044 (NEMA17)	DB07	mm	43.80	22	42	2-3.3 dia.	-	112	12	4	7	29
		in	1.724	0.866	1.65	2-0.13 dia.	-	4.409	0.47	0.16	0.28	1.14
045	DB01	mm	45	30	42	M3x0.5	8	110	10	6	5	27
		in	1.772	1.181	1.65	-	0.31	4.331	0.39	0.24	0.20	1.06
046	DB02	mm	46	30	42	M4X0.7	10	110	10	6	5	27
		in	1.811	1.181	1.65	-	0.39	4.331	0.39	0.24	0.20	1.06
046R	DB02R	mm	46	30	42	M4X0.7	10	113	13	6	8	30
		in	1.811	1.181	1.65	-	0.39	4.449	0.51	0.24	0.31	1.18
060	DB03	mm	60	50	60	M4X0.7	10	110	10	4	5	27
		in	2.362	1.969	2.36	-	0.39	4.331	0.39	0.16	0.20	1.06
063	DB10	mm	63	40	58	M4X0.7	10	110	10	4	5	27
		in	2.480	1.575	2.28	-	0.39	4.331	0.39	0.16	0.20	1.06
067 (NEMA23)	DB05	mm	66.68	38.100	58	M4X0.7	10	110	10	4	5	27
		in	2.625	1.500	2.28	-	0.39	4.331	0.39	0.16	0.20	1.06
067R (NEMA23)	DB05R	mm	66.68	38.100	58	M5X0.8	-	118	18	4	13	40
		in	2.625	1.500	2.28	-	-	4.646	0.71	0.16	0.51	1.57
070	DB04	mm	70	50	60	M4X0.7	10	110	10	4	5	27
		in	2.756	1.969	2.36	-	0.39	4.331	0.39	0.16	0.20	1.06
070T	DB04T	mm	70	50	60	M5X0.8	12	110	10	4	5	27
		in	2.756	1.969	2.36	-	0.47	4.331	0.39	0.16	0.20	1.06
070R	DB04R	mm	70	50	60	M5X0.8	20	115	15	9	10	32
		in	2.756	1.969	2.36	-	0.79	4.528	0.59	0.35	0.39	1.26
090	DB06	mm	90	70	80	M5X0.8	12	110	10	4	5	27
		in	3.543	2.756	3.15	-	0.47	4.331	0.39	0.16	0.20	1.06

## Bushings

Bushing Ordering Code		0801	0802	0803
Inside Diameter	mm	6	6.350	5
	in	0.236	0.250	0.197

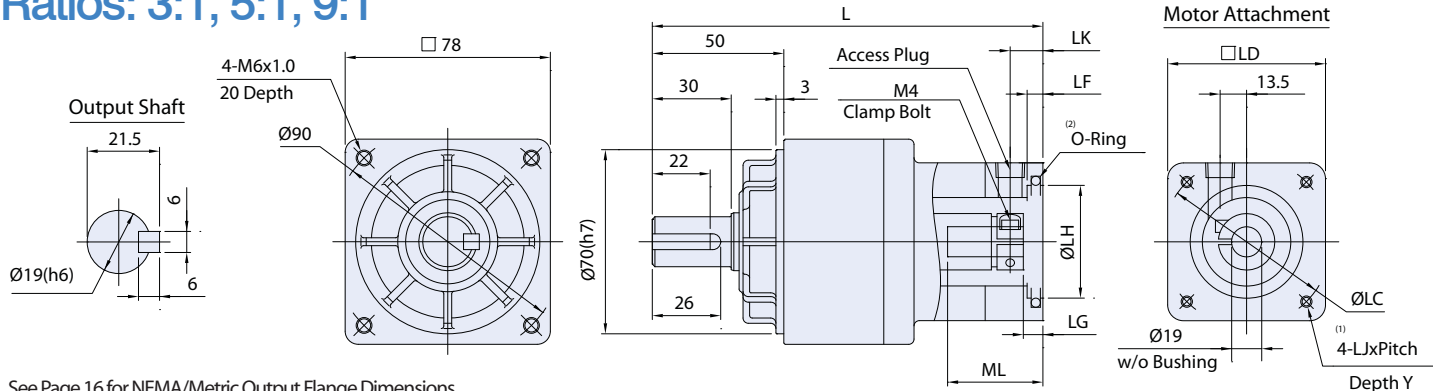


(1) Depending on the servo motor, this dimension is subject to change. Contact Shimpo Drives Customer Service for additional information.

(2) Some adapter flanges don't have a O-Ring.

# C Frame VRAF Series Dimensions

Ratios: 3:1, 5:1, 9:1

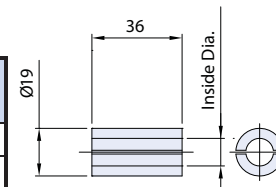


See Page 16 for NEMA/Metric Output Flange Dimensions.

Adapter	CAD Download#	Unit	Bolt Circle LC	Pilot LH	Square LD	Tapping Bolt LJ	Depth Y	Length L	Plug LK	Flange Depth		
										LF	LG	ML
046	SC12	mm	46	30	60	M4X0.7	10	148.5	11	4	6	33
		in	1.811	1.181	2.36	-	0.39	5.846	0.43	0.16	0.24	1.30
060	SC00	mm	60	50	60	M4X0.7	10	148.5	11	4	5	42
		in	2.362	1.969	2.36	-	0.39	5.846	0.43	0.16	0.20	1.65
063	SC10	mm	63	40	60	M4X0.7	10	148.5	11	4	5	42
		in	2.480	1.575	2.36	-	0.39	5.846	0.43	0.16	0.20	1.65
067 (NEMA23)	SC09	mm	66.68	38.100	60	M4X0.7	10	148.5	11	4	5	42
		in	2.625	1.500	2.36	-	0.39	5.846	0.43	0.16	0.20	1.65
067R (NEMA23)	SC09R	mm	66.68	38.100	60	M5X0.8	12	156.5	19	4	13	50
		in	2.625	1.500	2.36	-	0.47	6.161	0.75	0.16	0.51	1.97
070	SC01	mm	70	50	60	M4X0.7	10	148.5	11	4	5	42
		in	2.756	1.969	2.36	-	0.39	5.846	0.43	0.16	0.20	1.65
070T	SC01T	mm	70	50	60	M5X0.8	12	148.5	11	4	5	42
		in	2.756	1.969	2.36	-	0.47	5.846	0.43	0.16	0.20	1.65
070R	SC01R	mm	70	50	60	M5X0.8	12	152.5	15	6	9	46
		in	2.756	1.969	2.36	-	0.47	6.004	0.59	0.24	0.35	1.81
075	SC05	mm	75	60	67	M5X0.8	12	148.5	11	4	5	42
		in	2.953	2.362	2.64	-	0.47	5.846	0.43	0.16	0.20	1.65
090	SC02	mm	90	70	80	M5X0.8	12	148.5	11	4	5	42
		in	3.543	2.756	3.15	-	0.47	5.846	0.43	0.16	0.20	1.65
090T	SC02T	mm	90	70	80	M6X1.0	16	148.5	11	4	5	42
		in	3.543	2.756	3.15	-	0.63	5.846	0.43	0.16	0.20	1.65
090R	SC02R	mm	90	70	80	M6X1.0	21	153.5	16	9	10	47
		in	3.543	2.756	3.15	-	0.83	6.043	0.63	0.35	0.39	1.85
095	SC11	mm	95	80	86	M6X1.0	16	148.5	11	4	5	42
		in	3.740	3.150	3.39	-	0.63	5.846	0.43	0.16	0.20	1.65
098 (NEMA34)	SC04	mm	98.43	73.025	83	M5X0.8	12	148.5	11	4	5	42
		in	3.875	2.875	3.27	-	0.47	5.846	0.43	0.16	0.20	1.65
098R (NEMA34)	SC04R	mm	98.43	73.025	83	M5X0.8	12	156.5	19	4	13	50
		in	3.875	2.875	3.27	-	0.47	6.161	0.75	0.16	0.51	1.97
100	SC03	mm	100	80	86	M6X1.0	16	148.5	11	4	5	42
		in	3.937	3.150	3.39	-	0.63	5.846	0.43	0.16	0.20	1.65
115	SC06	mm	115	95	100	M6X1.0	16	148.5	11	4	5	42
		in	4.528	3.740	3.94	-	0.63	5.846	0.43	0.16	0.20	1.65
115T	SC06T	mm	115	95	100	M8X1.25	16	148.5	11	4	5	42
		in	4.528	3.740	3.94	-	0.63	5.846	0.43	0.16	0.20	1.65

## 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

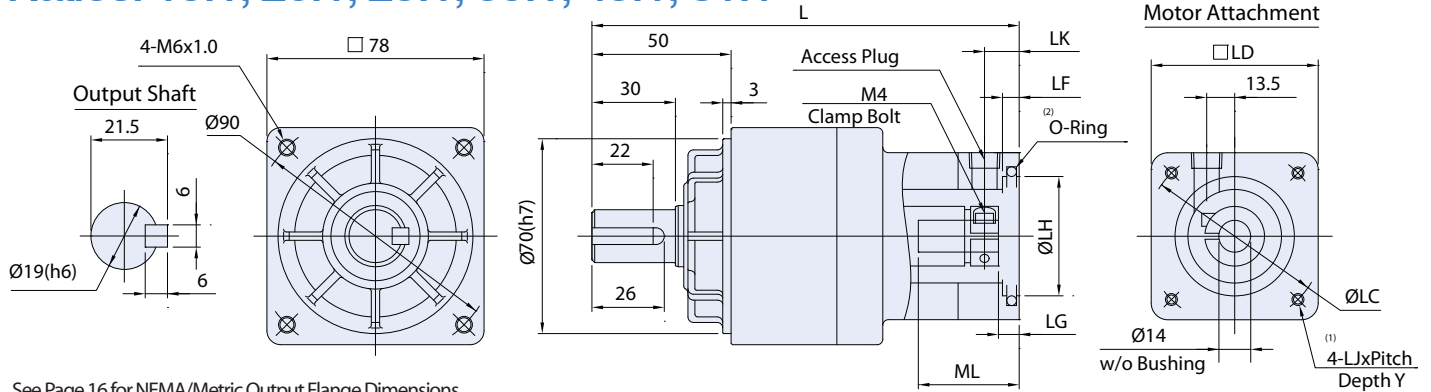


(1) Depending on the servo motor, this dimension is subject to change. Contact Shimpo Drives Customer Service for additional information.

(2) Some adapter flanges don't have a O-Ring.

# C Frame VRAF Series Dimensions

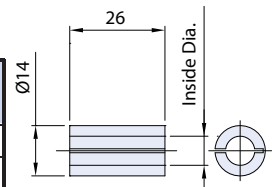
Ratios: 15:1, 20:1, 25:1, 35:1, 45:1, 81:1



Adapter	CAD Download#	Unit	Bolt Circle LC	Pilot LH	Square LD	Tapping Bolt LJ	Depth Y	Length L	Plug LK	Flange Depth		
										LF	LG	ML
046	DC12	mm	46	30	60	M4X0.7	10	151	11	4	6	33
		in	1.811	1.181	2.36	-	0.39	5.945	0.43	0.16	0.24	1.30
060	DC00	mm	60	50	60	M4X0.7	10	151	11	4	6	33
		in	2.362	1.969	2.36	-	0.39	5.945	0.43	0.16	0.24	1.30
063	DC10	mm	63	40	60	M4X0.7	10	151	11	4	6	33
		in	2.480	1.575	2.36	-	0.39	5.945	0.43	0.16	0.24	1.30
067 (NEMA23)	DC09	mm	66.68	38.100	60	M4X0.7	10	151	11	4	6	33
		in	2.625	1.500	2.36	-	0.39	5.945	0.43	0.16	0.24	1.30
067R (NEMA23)	DC09R	mm	66.68	38.100	60	M5X0.8	12	159	19	4	14	41
		in	2.625	1.500	2.36	-	0.47	6.260	0.75	0.16	0.55	1.61
070	DC01	mm	70	50	60	M4X0.7	10	151	11	4	6	33
		in	2.756	1.969	2.36	-	0.39	5.945	0.43	0.16	0.24	1.30
070T	DC01T	mm	70	50	60	M5X0.8	12	151	11	4	6	33
		in	2.756	1.969	2.36	-	0.47	5.945	0.43	0.16	0.24	1.30
070R	DC01R	mm	70	50	60	M5X0.8	12	155	15	6	9	37
		in	2.756	1.969	2.36	-	0.47	6.102	0.59	0.24	0.35	1.46
075	DC05	mm	75	60	67	M5X0.8	12	151	11	4	6	33
		in	2.953	2.362	2.64	-	0.47	5.945	0.43	0.16	0.24	1.30
090	DC02	mm	90	70	80	M5X0.8	12	151	11	4	6	33
		in	3.543	2.756	3.15	-	0.47	5.945	0.43	0.16	0.24	1.30
090T	DC02T	mm	90	70	80	M6X1.0	16	151	11	4	6	33
		in	3.543	2.756	3.15	-	0.63	5.945	0.43	0.16	0.24	1.30
090R	DC02R	mm	90	70	80	M6X1.0	21	156	16	9	10	38
		in	3.543	2.756	3.15	-	0.83	6.142	0.63	0.35	0.39	1.50
095	DC11	mm	95	80	86	M6X1.0	16	151	11	4	6	33
		in	3.740	3.150	3.39	-	0.63	5.945	0.43	0.16	0.24	1.30
098 (NEMA34)	DC04	mm	98.43	73.025	83	M5X0.8	12	151	11	4	6	33
		in	3.875	2.875	3.27	-	0.47	5.945	0.43	0.16	0.24	1.30
098R (NEMA34)	DC04R	mm	98.43	73.025	83	M5X0.8	12	159	19	4	14	41
		in	3.875	2.875	3.27	-	0.47	6.260	0.75	0.16	0.55	1.61
100	DC03	mm	100	80	86	M6X1.0	16	151	11	4	6	33
		in	3.937	3.150	3.39	-	0.63	5.945	0.43	0.16	0.24	1.30
115	DC06	mm	115	95	100	M6X1.0	16	151	11	4	6	33
		in	4.528	3.740	3.94	-	0.63	5.945	0.43	0.16	0.24	1.30
115T	DC06T	mm	115	95	100	M8X1.25	16	151	11	4	6	33
		in	4.528	3.740	3.94	-	0.63	5.945	0.43	0.16	0.24	1.30

## Bushings

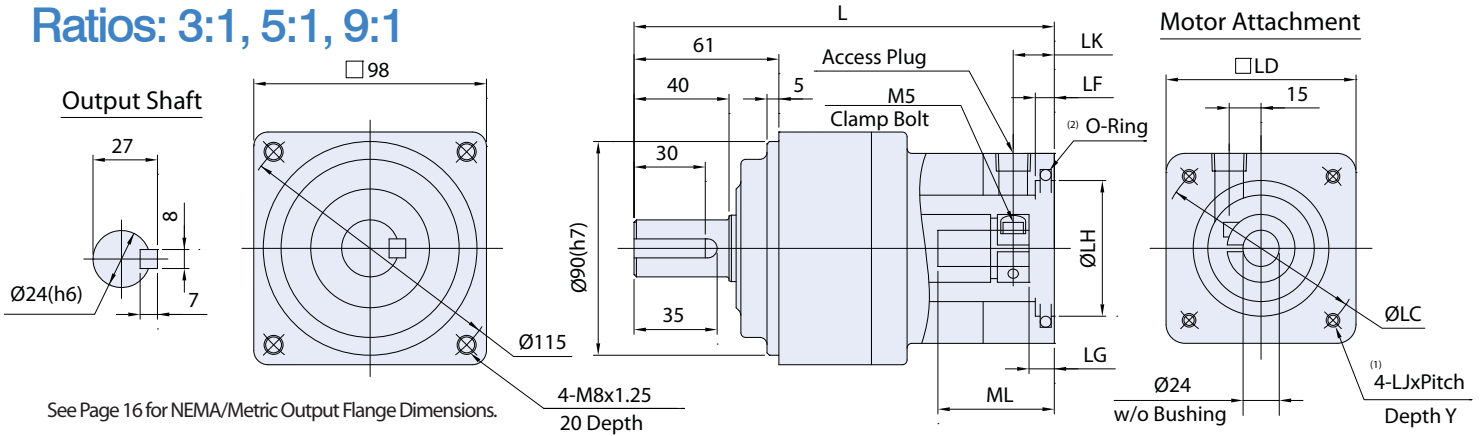
Bushing Ordering Code	1401	1402	1403	1404	1405	1406	1407	1408	1409	1410
Inside Diameter	mm 6	8	11	6.350	9.535	12.700	12	10	9	5
	in 0.236	0.315	0.433	0.250	0.375	0.500	0.472	0.393	0.354	0.196



(1) Depending on the servo motor, this dimension is subject to change. Contact Shimpo Drives Customer Service for additional information.  
 (2) Some adapter flanges don't have a O-Ring.

# D Frame VRAF Series Dimensions

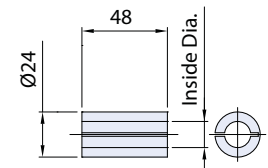
Ratios: 3:1, 5:1, 9:1



Adapter	CAD Download#	Unit	Bolt Circle LC	Pilot LH	Square LD	Tapping Bolt LJ	Depth Y	Length L	Plug LK	Flange Depth		
										LF	LG	ML
067 (NEMA23)	SD13	mm	66.68	38.100	80	M4X0.7	10	177	14	4	7	57
		in	2.625	1.500	3.15	-	0.39	6.969	0.55	0.16	0.28	2.24
070	SD14	mm	70	50	80	M4X0.7	10	177	14	4	7	57
		in	2.756	1.969	3.15	-	0.39	6.969	0.55	0.16	0.28	2.24
070T	SD14T	mm	70	50	80	M5X0.8	12	177	14	4	7	57
		in	2.756	1.969	3.15	-	0.47	6.969	0.55	0.16	0.28	2.24
075	SD15	mm	75	60	80	M5X0.8	12	177	14	4	7	57
		in	2.953	2.362	3.15	-	0.47	6.969	0.55	0.16	0.28	2.24
090	SD02	mm	90	70	80	M5X0.8	12	177	14	4	7	57
		in	3.543	2.756	3.15	-	0.47	6.969	0.55	0.16	0.28	2.24
090T	SD02T	mm	90	70	80	M6X1.0	15	177	14	4	7	57
		in	3.543	2.756	3.15	-	0.59	6.969	0.55	0.16	0.28	2.24
090R	SD02R	mm	90	70	80	M6X1.0	15	180	17	6	10	60
		in	3.543	2.756	3.15	-	0.59	7.087	0.67	0.24	0.39	2.36
095	SD08	mm	95	80	90	M6X1.0	15	177	14	4	7	57
		in	3.740	3.150	3.54	-	0.59	6.969	0.55	0.16	0.28	2.24
098 (NEMA34)	SD11	mm	98.43	73.025	90	M5X0.8	12	177	14	6	7	57
		in	3.875	2.875	3.54	-	0.47	6.969	0.55	0.24	0.28	2.24
098R (NEMA34)	SD11R	mm	98.43	73.025	83	M5X0.8	12	185	22	4	15	65
		in	3.875	2.875	3.27	-	0.47	7.283	0.87	0.16	0.59	2.56
100	SD03	mm	100	80	90	M6X1.0	15	177	14	4	7	57
		in	3.937	3.150	3.54	-	0.59	6.969	0.55	0.16	0.28	2.24
115	SD01	mm	115	95	100	M6X1.0	15	177	15	4	7	57
		in	4.528	3.740	3.94	-	0.59	6.969	0.59	0.16	0.28	2.24
115T	SD01T	mm	115	95	100	M8X1.25	16	177	15	4	7	57
		in	4.528	3.740	3.94	-	0.63	6.969	0.59	0.16	0.28	2.24
126 (NEMA42)	SD04	mm	125.73	55.563	108	M6X1.0	15	177	15	5	7	57
		in	4.950	2.188	4.25	-	0.59	6.969	0.59	0.20	0.28	2.24
130	SD06	mm	130	110	115	M8X1.25	16	177	15	6	7	57
		in	5.118	4.331	4.53	-	0.63	6.969	0.59	0.24	0.28	2.24
145	SD05	mm	145	110	130	M8X1.25	16	180	18	6	10	60
		in	5.709	4.331	5.12	-	0.63	7.087	0.71	0.24	0.39	2.36
145R	SD05R	mm	145	110	130	M8X1.25	16	193	31	8	23	73
		in	5.709	4.331	5.12	-	0.63	7.598	1.22	0.31	0.91	2.87
149 (NEMA56)	SD12	mm	149.23	114.3	130	-	-	180	18	6	10	60
		in	5.875	4.500	5.12	3/8UNC-16	-	7.087	0.71	0.24	0.39	2.36

## Bushing

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

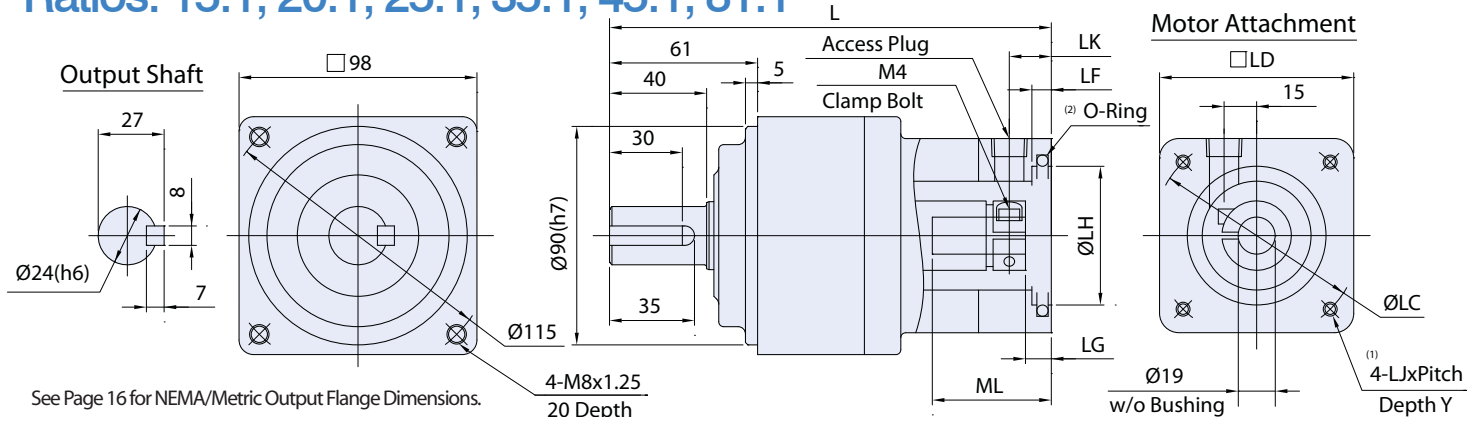


(1) Depending on the servo motor, this dimension is subject to change. Contact Shimpo Drives Customer Service for additional information.

(2) Some adapter flanges don't have a O-Ring.

# D Frame VRAF Series Dimensions

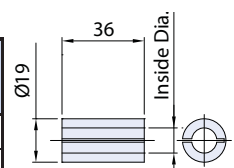
Ratios: 15:1, 20:1, 25:1, 35:1, 45:1, 81:1



Adapter	CAD Download#	Unit	Bolt Circle LC	Pilot LH	Square LD	Tapping Bolt LJ	Depth Y	Length L	Plug LK	Flange Depth		
										LF	LG	ML
067 (NEMA23)	DD13	mm	66.68	38.100	80	M4X0.7	10	178	14	4	7	44
		in	2.625	1.500	3.15	-	0.39	7.008	0.55	0.16	0.28	1.73
070	DD14	mm	70	50	80	M4X0.7	10	178	14	4	7	44
		in	2.756	1.969	3.15	-	0.39	7.008	0.55	0.16	0.28	1.73
070T	DD14T	mm	70	50	80	M5X0.8	12	178	14	4	7	44
		in	2.756	1.969	3.15	-	0.47	7.008	0.55	0.16	0.28	1.73
075	DD15	mm	75	60	80	M5X0.8	12	178	14	4	7	44
		in	2.953	2.362	3.15	-	0.47	7.008	0.55	0.16	0.28	1.73
090	DD02	mm	90	70	80	M5X0.8	12	178	14	4	7	44
		in	3.543	2.756	3.15	-	0.47	7.008	0.55	0.16	0.28	1.73
090T	DD02T	mm	90	70	80	M6X1.0	15	178	14	4	7	44
		in	3.543	2.756	3.15	-	0.59	7.008	0.55	0.16	0.28	1.73
090R	DD02R	mm	90	70	80	M6X1.0	15	181	17	6	10	47
		in	3.543	2.756	3.15	-	0.59	7.126	0.67	0.24	0.39	1.85
095	DD08	mm	95	80	90	M6X1.0	15	178	14	4	7	44
		in	3.740	3.150	3.54	-	0.59	7.008	0.55	0.16	0.28	1.73
098 (NEMA34)	DD11	mm	98.43	73.025	90	M5X0.8	12	178	14	6	7	44
		in	3.875	2.875	3.54	-	0.47	7.008	0.55	0.24	0.28	1.73
098R (NEMA34)	DD11R	mm	98.43	73.025	83	M5X0.8	12	186	22	4	15	52
		in	3.875	2.875	3.27	-	0.47	7.323	0.87	0.16	0.59	2.05
100	DD03	mm	100	80	90	M6X1.0	15	178	14	4	7	44
		in	3.937	3.150	3.54	-	0.59	7.008	0.55	0.16	0.28	1.73
115	DD01	mm	115	95	100	M6X1.0	15	178	15	4	7	44
		in	4.528	3.740	3.94	-	0.59	7.008	0.59	0.16	0.28	1.73
115T	DD01T	mm	115	95	100	M8X1.25	16	178	15	4	7	44
		in	4.528	3.740	3.94	-	0.63	7.008	0.59	0.16	0.28	1.73
126 (NEMA42)	DD04	mm	125.73	55.563	108	M6X1.0	15	178	15	5	7	44
		in	4.950	2.188	4.25	-	0.59	7.008	0.59	0.20	0.28	1.73
130	DD06	mm	130	110	115	M8X1.25	16	178	15	6	7	44
		in	5.118	4.331	4.53	-	0.63	7.008	0.59	0.24	0.28	1.73
145	DD05	mm	145	110	130	M8X1.25	16	181	18	6	10	47
		in	5.709	4.331	5.12	-	0.63	7.126	0.71	0.24	0.39	1.85
145R	DD05R	mm	145	110	130	M8X1.25	16	194	31	8	23	60
		in	5.709	4.331	5.12	-	0.63	7.638	1.22	0.31	0.91	2.36
149 (NEMA56)	SD12	mm	149.23	114.3	130	-	-	181	18	6	10	47
		in	5.875	4.500	5.12	3/8UNC-16	-	7.126	0.71	0.24	0.39	1.85

## Bushing

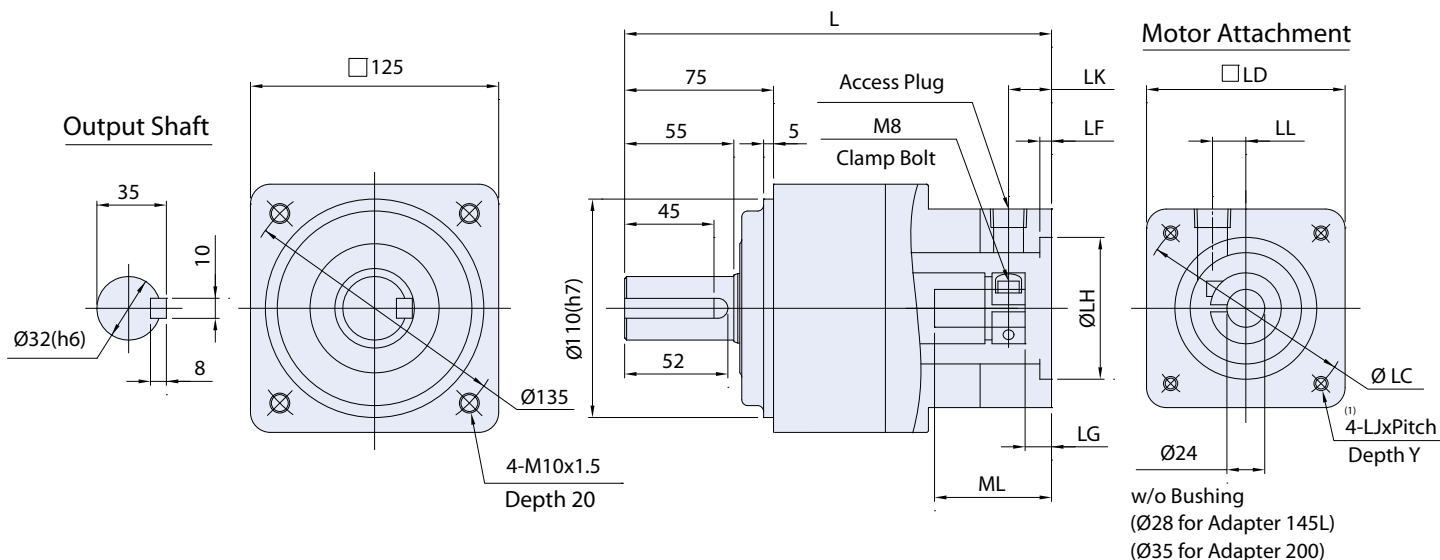
Bushing Ordering Code	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	
Inside Diameter	mm	11	14	16	9.525	12.700	15.875	12	10	9	8
	in	0.433	0.551	0.630	0.375	0.500	0.625	0.472	0.394	0.354	0.315



(1) Depending on the servo motor, this dimension is subject to change. Contact Shimpo Drives Customer Service for additional information.  
 (2) Some adapter flanges don't have a O-Ring.

# E Frame VRAF Series Dimensions

Ratios: 3:1, 5:1, 9:1

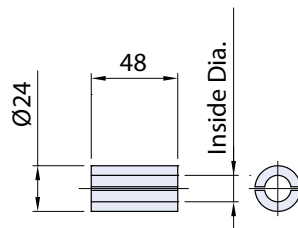


See Page 16 for NEMA/Metric Output Flange Dimensions.

Adapter	CAD Download#	Unit	Bolt Circle LC	Pilot LH	Square LD	Tapping Bolt LJ	Depth Y	Length L	Plug LK	Flange Depth			Plug LL
										LF	LG	ML	
100	SE01	mm	100	80	90	M6X1.0	15	215	18	4	7	57	19
		in	3.937	3.150	3.54	-	0.59	8.465	0.71	0.16	0.28	2.24	0.75
115	SE02	mm	115	95	100	M6X1.0	15	215	18	4	7	57	19
		in	4.528	3.740	3.94	-	0.59	8.465	0.71	0.16	0.28	2.24	0.75
130	SE04	mm	130	110	120	M8X1.25	16	215	18	4	7	57	19
		in	5.118	4.331	4.72	-	0.63	8.465	0.71	0.16	0.28	2.24	0.75
145	SE05	mm	145	110	130	M8X1.25	16	215	18	4	7	57	19
		in	5.709	4.331	5.12	-	0.63	8.465	0.71	0.16	0.28	2.24	0.75
145L	SE06	mm	145	110	130	M8X1.25	16	225	21	7	10	65	19
		in	5.709	4.331	5.12	-	0.63	8.858	0.83	0.28	0.39	2.56	0.75
165	SE09	mm	165	130	142	M10X1.5	20	215	18	5	7	57	19
		in	6.496	5.118	5.59	-	0.79	8.465	0.71	0.20	0.28	2.24	0.75
200	SE10	mm	200	114.3	174	M12X1.75	27	245	18	4	8	82	26.5
		in	7.874	4.500	6.85	-	1.06	9.646	0.71	0.16	0.31	3.23	1.04

## Bushing

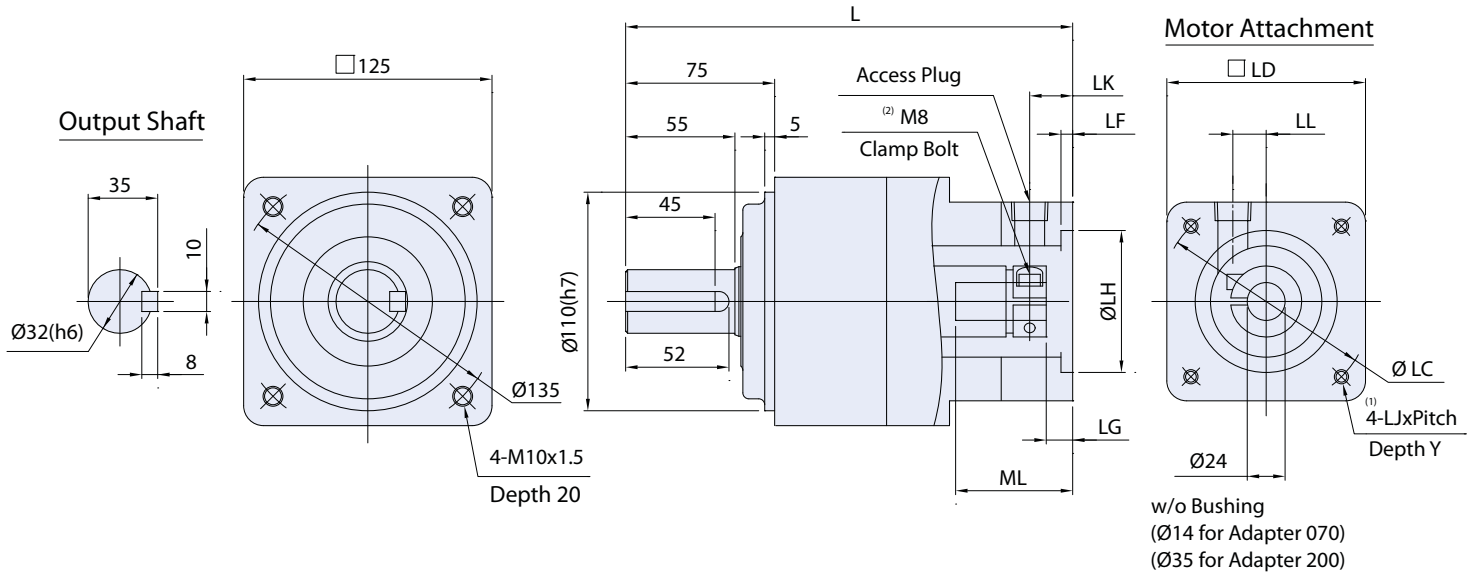
Bushing Ordering Code		2401	2402	2403	2404	2405	2406	2407
Inside Diameter	mm	14	16	19	12.700	15.875	22	19.050
	in	0.551	0.630	0.748	0.500	0.625	0.866	0.750



(1) Depending on the servo motor, this dimension is subject to change.  
Contact Shimpo Drives Customer Service for additional information.

# E Frame VRAF Series Dimensions

Ratios: 15:1, 20:1, 25:1, 35:1, 45:1

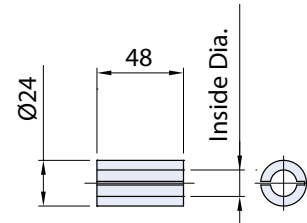


See Page 16 for NEMA/Metric Output Flange Dimensions.

Adapter	CAD Download#	Unit	Bolt Circle LC	Pilot LH	Square LD	Tapping Bolt LJ	Depth Y	Length L	Plug LK	Flange Depth			Plug LL
										LF	LG	ML	
(4)070	DE07SF	mm	70	50	60	M4X0.7	10	210	11	4	6	33	13.5
		in	2.756	1.969	2.36	-	0.39	8.268	0.43	0.16	0.24	1.30	0.53
090	DE18	mm	90	70	80	M6X1.0	15	235	18	4	7	57	18
		in	3.543	2.756	3.15	-	0.59	9.252	0.71	0.16	0.28	2.24	0.71
100	DE01	mm	100	80	90	M6X1.0	15	235	18	4	7	57	18
		in	3.937	3.150	3.54	-	0.59	9.252	0.71	0.16	0.28	2.24	0.71
115	DE03	mm	115	95	100	M6X1.0	15	235	18	4	7	57	18
		in	4.528	3.740	3.94	-	0.59	9.252	0.71	0.16	0.28	2.24	0.71
130	DE04	mm	130	110	120	M8X1.25	16	233	18	4	5	55	19
		in	5.118	4.331	4.72	-	0.63	9.173	0.71	0.16	0.20	2.17	0.75
145	DE05	mm	145	110	130	M8X1.25	16	235	18	4	7	57	18
		in	5.709	4.331	5.12	-	0.63	9.252	0.71	0.16	0.28	2.24	0.71
149 (NEMA56)	DE12	mm	149.23	114.3	130	10.2 dia	-	235	18	5.5	7	57	15
		in	5.875	4.500	5.12	-	-	9.252	0.71	0.22	0.28	2.24	0.59
165	DE09	mm	165	130	142	M10X1.5	20	233	18	5	7	57	19
		in	6.496	5.118	5.59	-	0.79	9.173	0.71	0.20	0.28	2.24	0.75
200	DE10	mm	200	114.3	174	M12X1.75	27	265	18	4	8	82	26.5
		in	7.874	4.500	6.85	-	1.06	10.433	0.71	0.16	0.31	3.23	1.04

## 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



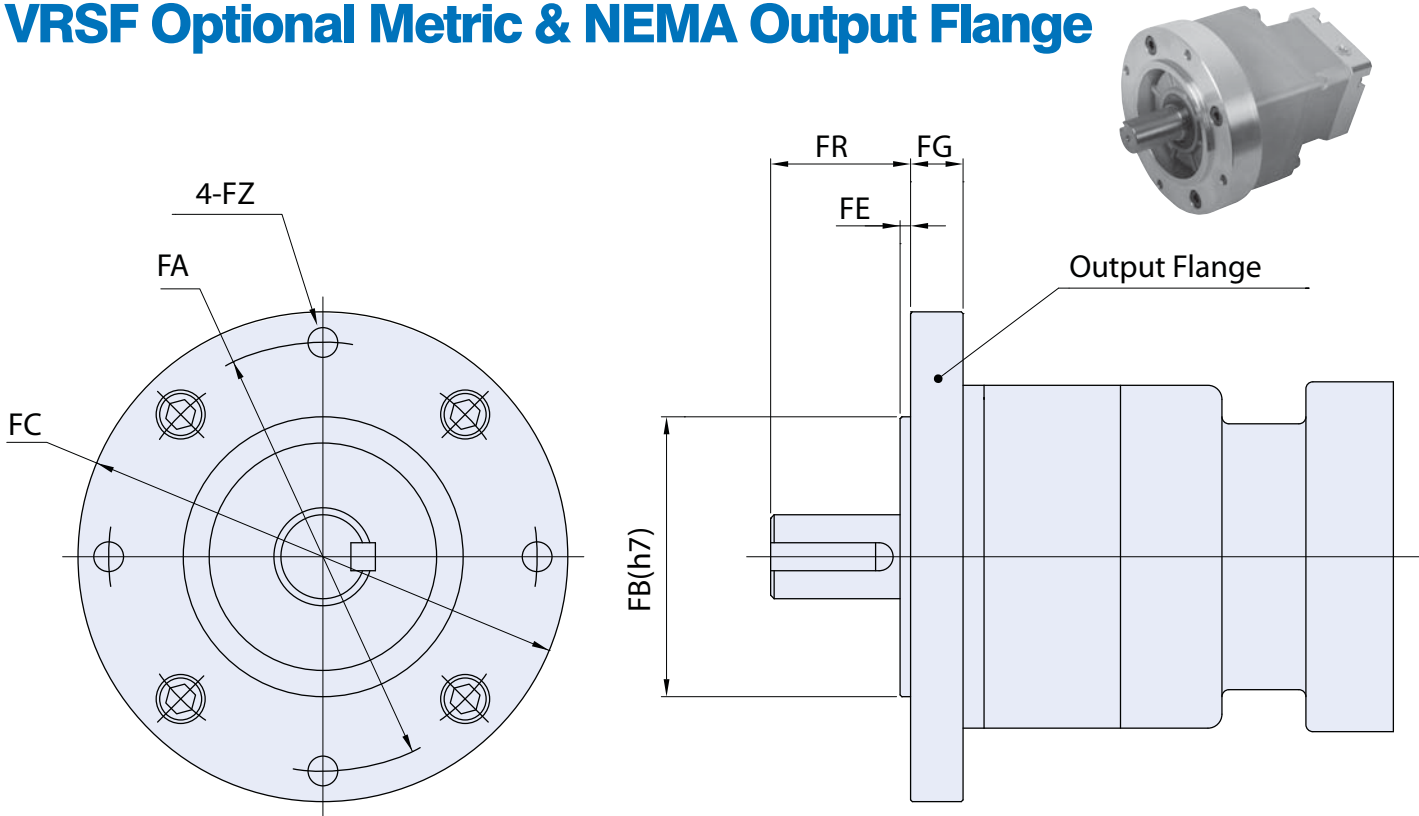
(1) Depending on the servo motor, this dimension is subject to change. Contact Shimpo Drives Customer Service for additional information.

(2) M4 for Adapter 070.

(3) Ratio 81:1 is available only Adapter 070.

(4) Adapter 070 can use only ratio 45:1 and 81:1. These are a VRSF type (Dedicated w/ clamp hub).

# VRSF Optional Metric & NEMA Output Flange



## Metric Flange

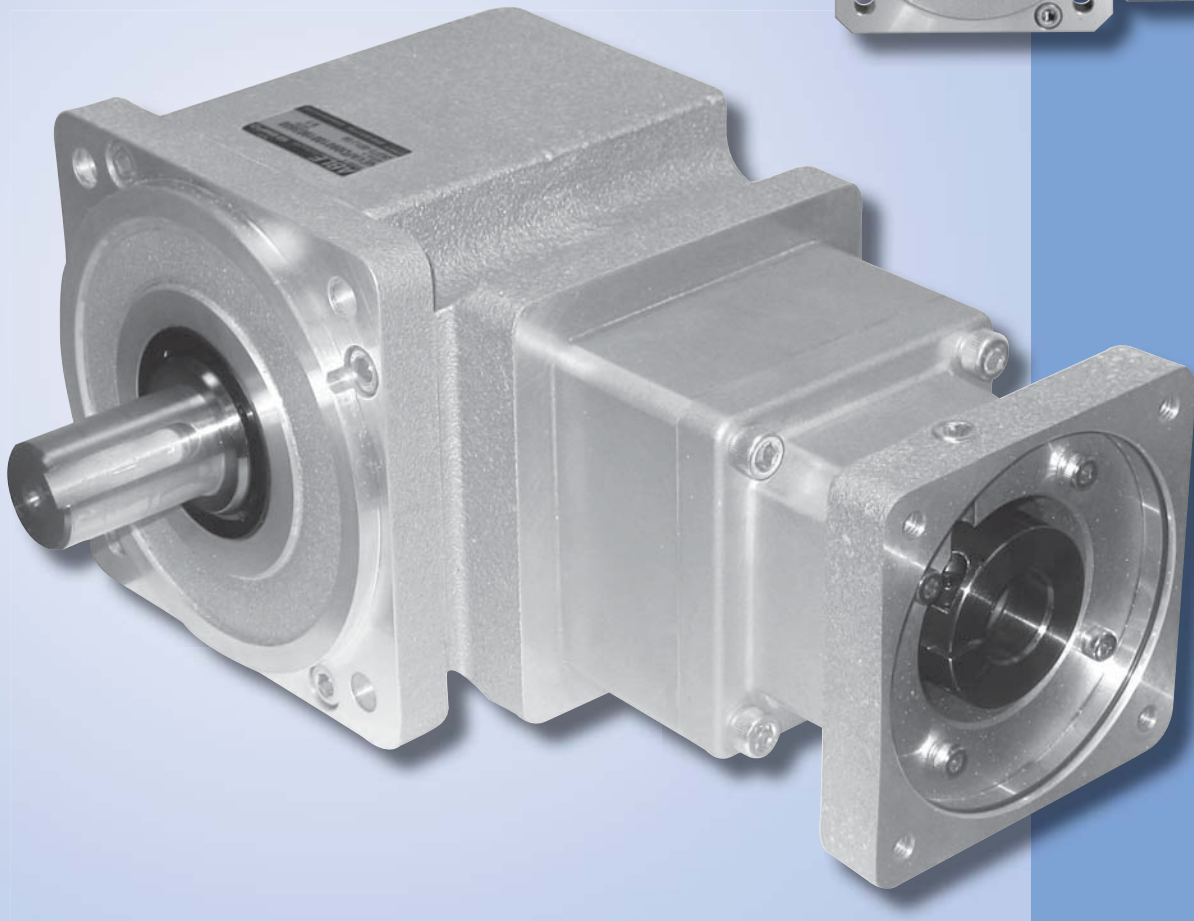
Frame Size		FG	FR	FE	FB	FC	FA	FZ
B	mm	8	24	3	50	75	65	6
	inch	0.315	0.945	0.118	1.969	2.953	2.559	0.236
C	mm	12	33	3	72	110	95	7
	inch	0.472	1.299	0.118	2.835	4.331	3.740	0.276
D	mm	13	48	5	90	134	115	8.8
	inch	0.512	1.890	0.197	3.543	5.276	4.528	0.346

## NEMA Flange

Frame Size		FG	FR	FE	FB	FC	FA	FZ
B (NEMA 23)	mm	12	20	2	38.10	78	66.68	5.2
	inch	0.472	0.787	0.079	1.500	3.071	2.625	0.205
C (NEMA 34)	mm	12	30	2	73.02	110	98.43	5.6
	inch	0.472	1.181	0.079	2.875	4.331	3.875	0.220
D (NEMA 42)	mm	15	40	3	55.56	140	125.73	7.1
	inch	0.591	1.575	0.118	2.187	5.512	4.950	0.280
E (NEMA 56)	mm	20	55	3	114.30	168	149.23	10.2
	inch	0.787	2.165	0.118	4.500	6.614	5.875	0.402



# NEV RIGHT ANGLE Shaft Series



**Sizes from 50W to 3.5kw**

**Ratios from 5:1 to 105:1**

**Solid and hollow output shaft configurations**

**Input speeds up to 6000 RPM**

# NEVAF Right Angle Shaft Series Selection Table

Based on 3000 RPM Input

Motor Rated Output (W)	Ratio						
	5:1	9:1	15:1	27:1	45:1	75:1	105:1
50							
100							
150		B					
200		B					
400		B		C			
500		C		D		E	
600		C		E			
750		D					
1000		D					
1500		E					
2000		E					
2500							
3000							
3500							

5:1 to 27:1 are double reduction, 45:1 to 105:1 are triple reduction.

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

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 <sup>2</sup>	lb-in-sec <sup>2</sup>	Nm/arc-min	in-lbs/arc-min	RPM
B	5:1	6	53	20	177	35	310	0.275	0.000243	0.4	3.6	6000
	9:1	6	53	20	177	40	354	0.110	0.000097			
	15:1	10	89	30	266	50	443	0.059	0.000052			
	27:1	10	89	30	266	50	443	0.146	0.000129			
	45:1	10	89	30	266	50	443	0.091	0.000080			
	75:1	15	133	30	266	50	443	0.083	0.000073			
C	105:1	15	133	30	266	50	443	0.078	0.000069	1.0	9.1	6000
	5:1	15	133	30	266	50	443	0.806	0.000711			
	9:1	20	177	35	310	50	443	0.744	0.000657			
	15:1	20	177	40	354	60	531	0.415	0.000366			
	27:1	30	266	40	354	75	664	0.585	0.000516			
	45:1	30	266	40	354	75	664	0.794	0.000701			
D	75:1	30	266	40	354	75	664	0.690	0.000609	1.5	13.6	6000
	105:1	30	266	40	354	75	664	0.590	0.000521			
	5:1	25	221	55	487	100	885	1.502	0.001326			
	9:1	25	221	75	664	140	1239	1.254	0.001107			
	15:1	25	221	75	664	140	1239	0.464	0.000410			
	27:1	40	354	80	708	180	1593	0.720	0.000635			
E	45:1	45	398	80	708	180	1593	0.806	0.000711	4.0	36.2	5000
	75:1	50	443	80	708	180	1593	0.694	0.000613			
	105:1	50	443	80	708	180	1593	0.648	0.000572			
	5:1	50	443	100	885	250	2213	3.559	0.003141			
	9:1	50	443	140	1239	250	2213	2.940	0.002595			
	15:1	55	487	140	1239	250	2213	1.193	0.001053			
E	27:1	60	531	180	1593	300	2655	2.044	0.001804	4.0	36.2	5000
	45:1	80	708	180	1593	300	2655	1.878	0.001658			
	75:1	90	797	180	1593	300	2655	1.303	0.001150			
E	105:1	90	797	180	1593	300	2655	1.184	0.001045			

# NEVAF Right Angle Shaft Series Selection Table

Based on 3000 RPM Input

Frame Size	Ratio	Output Shaft Overhung Load		Output Shaft Thrust Load		Noise Level (3) dB(A)	Backlash arc-min	Efficiency (4) %	Weight			
		N	lbs	N	lbs				Solid Shaft		Hollow Shaft	
									kg	lbs	kg	lbs
B	5:1	1000	225	500	112	≤73	≤30	85	3.8	8.4	3.6	7.9
	9:1	1200	270	600	135	≤67						
	15:1	1500	337	750	169	≤65						
	27:1	1800	405	900	202	≤65						
	45:1	1800	405	900	202	≤63						
	75:1	1800	405	900	202	≤63						
	105:1	1800	405	900	202	≤63						
C	5:1	1000	225	500	112	≤73	≤30	85	4.1	9.0	4.0	8.8
	9:1	1500	337	750	169	≤67						
	15:1	1800	405	900	202	≤65						
	27:1	1800	405	900	202	≤65						
	45:1	1800	405	900	202	≤63						
	75:1	1800	405	900	202	≤63						
	105:1	1800	405	900	202	≤63						
D	5:1	2200	495	1100	247	≤73	≤30	85	7.1	15.7	6.7	14.8
	9:1	2200	495	1100	247	≤72						
	15:1	2600	584	1300	292	≤69						
	27:1	2600	584	1300	292	≤69						
	45:1	2600	584	1300	292	≤67						
	75:1	2600	584	1300	292	≤67						
	105:1	2600	584	1300	292	≤67						
E	5:1	3000	674	1500	337	≤74	≤30	85	11.0	24.3	10.0	22.1
	9:1	3000	674	1500	337	≤73						
	15:1	3000	674	1500	337	≤71						
	27:1	4000	899	2000	450	≤71						
	45:1	4000	899	2000	450	≤69						
	75:1	4000	899	2000	450	≤69						
	105:1	4000	899	2000	450	≤69						

## Notes:

5:1, 9:1, 15:1 and 27:1 are double reduction, 45:1, 75:1 and 105:1 are triple 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.

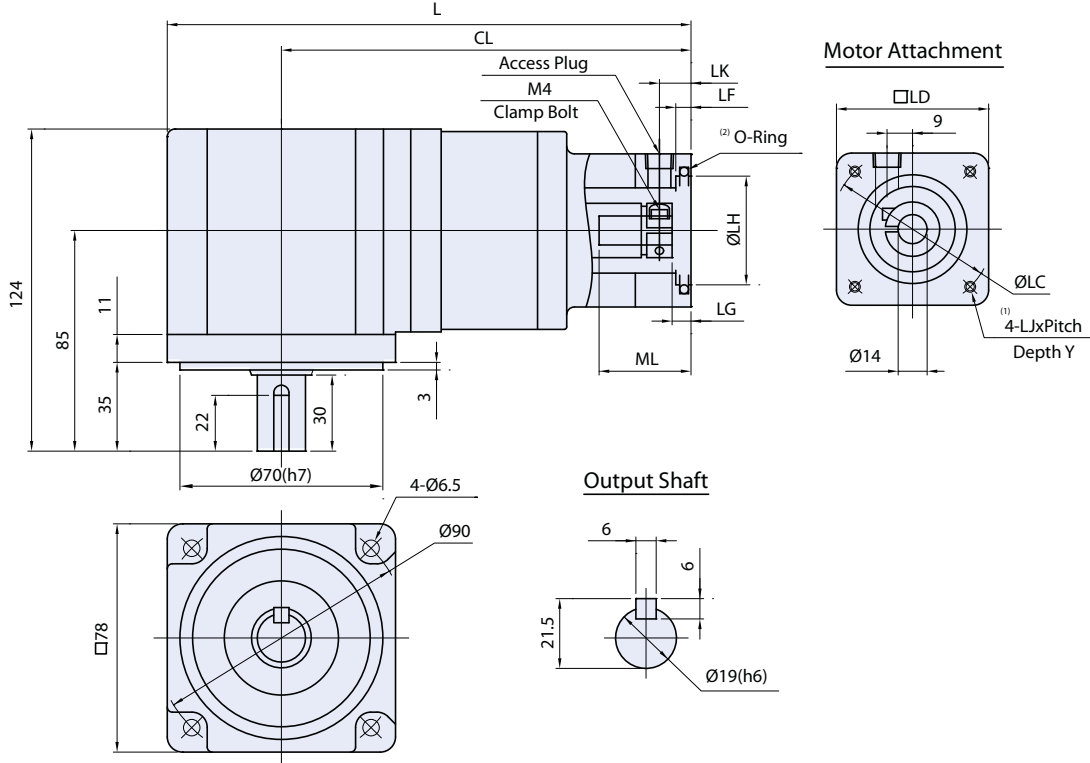
(5) Please ask Shimpo Drives customer service for other ratios and large capacity.

# B Frame (78mm) NEVAF Series Dimension

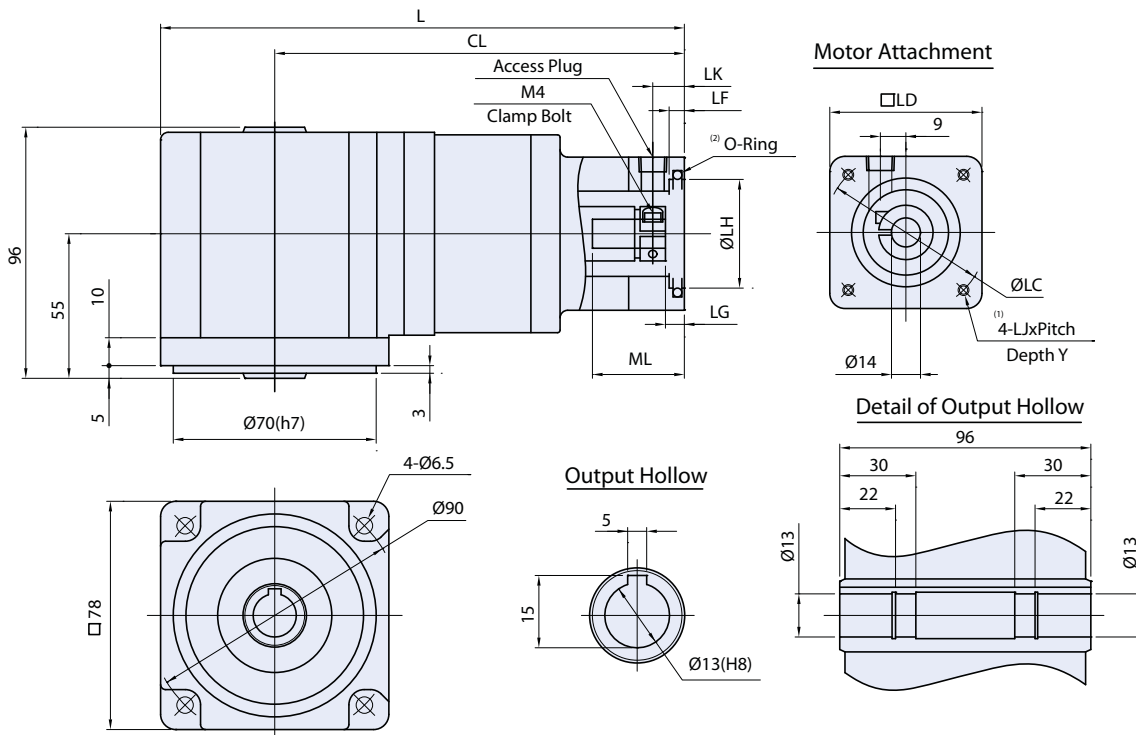
Double Reduction

Ratios: 5:1, 9:1, 15:1, 27:1

## Solid Output Shaft Type



## Hollow Output Shaft Type



(1) Depending on the servo motor, this dimension is subject to change. Contact Shimpo Drives Customer Service for additional information.

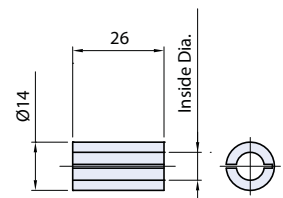
(2) Some adapter flanges don't have a O-Ring.

# B Frame (78mm) NEVAF Series Dimension, Double Reduction (Solid / Hollow Output Shaft Type) Ratios: 5:1, 9:1, 15:1, 27:1

Adapter	CAD Download#		Unit	Bolt Circle LC	Pilot LH	Square LD	Tapping Bolt LJ	Depth Y	Length		Plug LK	Flange Depth		
	Solid	Hollow							L	CL		LF	LG	ML
044 (NEMA17)	B07	B57	mm	43.80	22	42	2-3.3 dia.	-	170.5	131.5	12	4	7	34
			in	1.724	0.866	1.65	2-0.13 dia.	-	6.713	5.177	0.47	0.16	0.28	1.34
045	B01	B51	mm	45	30	42	M3x0.5	8	168.5	129.5	10	6	5	32
			in	1.772	1.181	1.65	-	0.31	6.634	5.098	0.39	0.24	0.20	1.26
046	B02	B52	mm	46	30	42	M4X0.7	10	168.5	129.5	10	6	5	32
			in	1.811	1.181	1.65	-	0.39	6.634	5.098	0.39	0.24	0.20	1.26
046R	B02R	B52R	mm	46	30	42	M4X0.7	10	171.5	132.5	13	6	8	35
			in	1.811	1.181	1.65	-	0.39	6.752	5.217	0.51	0.24	0.31	1.38
060	B03	B53	mm	60	50	60	M4X0.7	10	168.5	129.5	10	4	5	32
			in	2.362	1.969	2.36	-	0.39	6.634	5.098	0.39	0.16	0.20	1.26
063	B10	B60	mm	63	40	58	M4X0.7	10	168.5	129.5	10	4	5	32
			in	2.480	1.575	2.28	-	0.39	6.634	5.098	0.39	0.16	0.20	1.26
067 (NEMA23)	B05	B55	mm	66.68	38.100	58	M4X0.7	10	168.5	129.5	10	4	5	32
			in	2.625	1.500	2.28	-	0.39	6.634	5.098	0.39	0.16	0.20	1.26
067R (NEMA23)	B05R	B55R	mm	66.68	38.100	58	M5X0.8	-	176.5	137.5	18	4	13	40
			in	2.625	1.500	2.28	-	-	6.949	5.413	0.71	0.16	0.51	1.57
070	B04	B54	mm	70	50	60	M4X0.7	10	168.5	129.5	10	4	5	32
			in	2.756	1.969	2.36	-	0.39	6.634	5.098	0.39	0.16	0.20	1.26
070T	B04T	B54T	mm	70	50	60	M5X0.8	12	168.5	129.5	10	4	5	32
			in	2.756	1.969	2.36	-	0.47	6.634	5.098	0.39	0.16	0.20	1.26
070R	B04R	B54R	mm	70	50	60	M5X0.8	20	173.5	134.5	15	9	10	37
			in	2.756	1.969	2.36	-	0.79	6.831	5.295	0.59	0.35	0.39	1.46
090	B06	B56	mm	90	70	80	M5X0.8	12	168.5	129.5	10	4	5	32
			in	3.543	2.756	3.15	-	0.47	6.634	5.098	0.39	0.16	0.20	1.26

## Bushings

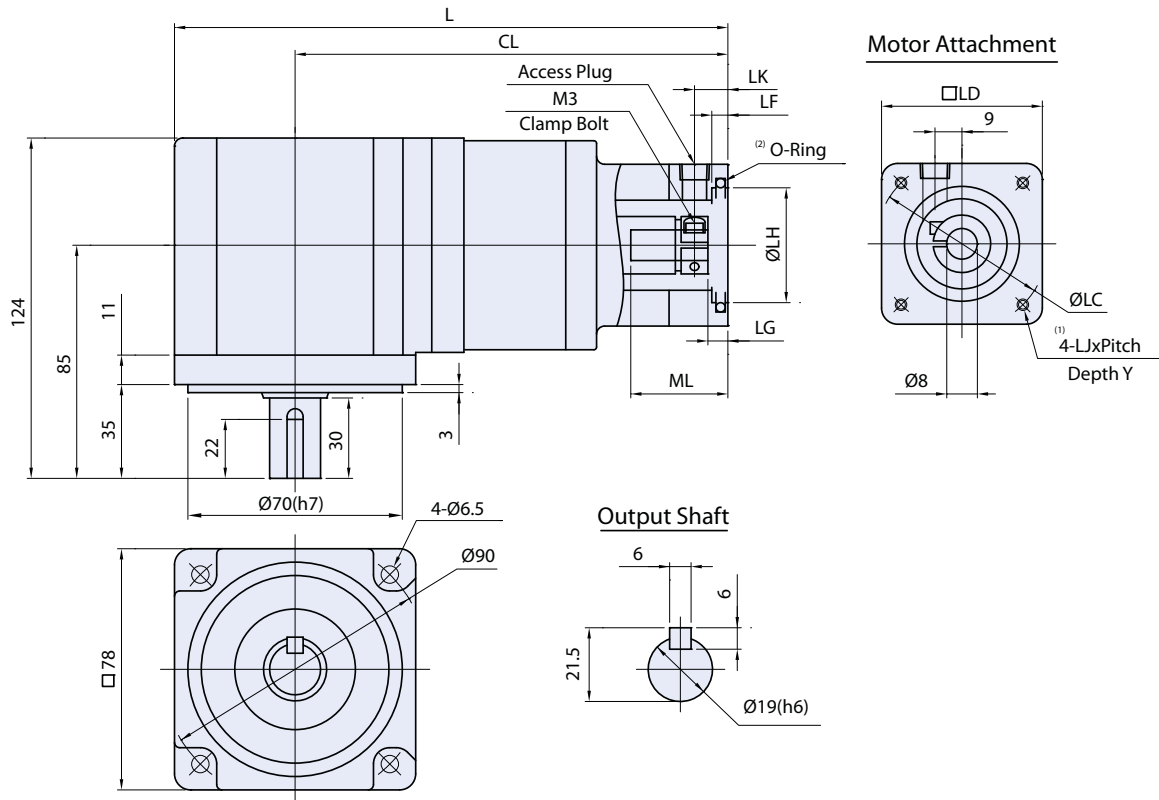
Bushing Ordering Code		1401	1402	1403	1404	1405	1406	1407	1408	1409	1410
Inside Diameter	mm	6	8	11	6.350	9.525	12.700	12	10	9	5
	in	0.236	0.315	0.433	0.250	0.375	0.500	0.472	0.394	0.354	0.197



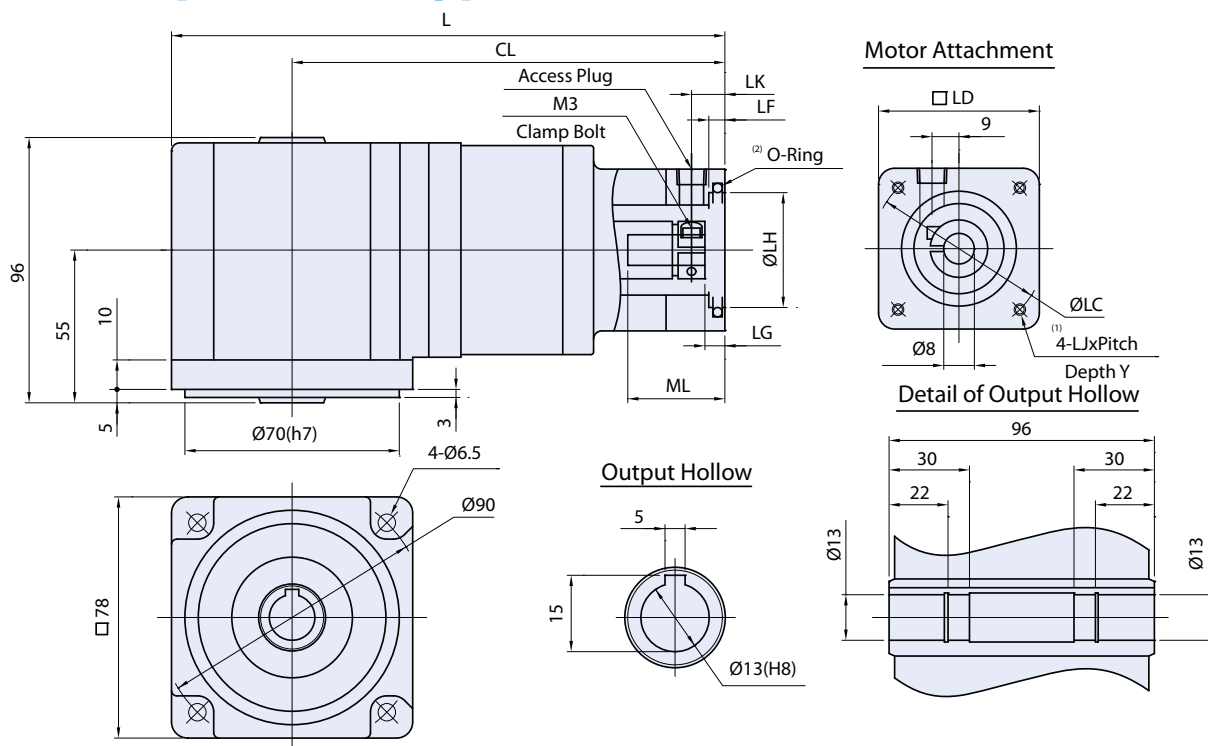
# B Frame (78mm) NEVAF Series Dimension, Triple Reduction

Ratios Double: 45:1, 75:1, 105:1

## Solid Output Shaft Type



## Hollow Output Shaft Type



(1) Depending on the servo motor, this dimension is subject to change. Contact Shimpo Drives Customer Service for additional information.

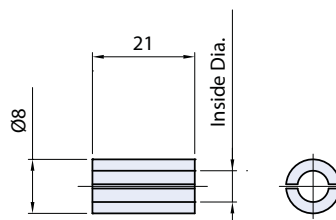
(2) Some adapter flanges don't have a O-Ring.

# B Frame (78mm) NEVAF Series Dimension, Triple Reduction (Solid / Hollow Output Shaft Type) Ratios: 45:1, 75:1, 105:1

Adapter	CAD Download#		Unit	Bolt Circle LC	Pilot LH	Square LD	Tapping Bolt LJ	Depth Y	Length		Plug LK	Flange Depth		
	Solid	Hollow							L	CL		LF	LG	ML
044 (NEMA17)	TB07	TB57	mm	43.80	22	42	2-3.3 dia.	-	176	137	12	4	7	29
			in	1.724	0.866	1.65	2-0.13 dia.	-	6.929	5.394	0.47	0.16	0.28	1.14
045	TB01	TB51	mm	45	30	42	M3x0.5	8	174	135	10	6	5	27
			in	1.772	1.181	1.65	-	0.31	6.850	5.315	0.39	0.24	0.20	1.06
046	TB02	TB52	mm	46	30	42	M4X0.7	10	174	135	10	6	5	27
			in	1.811	1.181	1.65	-	0.39	6.850	5.315	0.39	0.24	0.20	1.06
046R	TB02R	TB52R	mm	46	30	42	M4X0.7	10	177	138	13	6	8	30
			in	1.811	1.181	1.65	-	0.39	6.969	5.433	0.51	0.24	0.31	1.18
060	TB03	TB53	mm	60	50	60	M4X0.7	10	174	135	10	4	5	27
			in	2.362	1.969	2.36	-	0.39	6.850	5.315	0.39	0.16	0.20	1.06
063	TB10	TB60	mm	63	40	58	M4X0.7	10	174	135	10	4	5	27
			in	2.480	1.575	2.28	-	0.39	6.850	5.315	0.39	0.16	0.20	1.06
067 (NEMA23)	TB05	TB55	mm	66.68	38.100	58	M4X0.7	10	174	135	10	4	5	27
			in	2.625	1.500	2.28	-	0.39	6.850	5.315	0.39	0.16	0.20	1.06
067R (NEMA23)	TB05R	TB55R	mm	66.68	38.100	58	M5X0.8	-	182	143	18	4	13	35
			in	2.625	1.500	2.28	-	-	7.165	5.630	0.71	0.16	0.51	1.38
070	TB04	TB54	mm	70	50	60	M4X0.7	10	174	135	10	4	5	27
			in	2.756	1.969	2.36	-	0.39	6.850	5.315	0.39	0.16	0.20	1.06
070T	TB04T	TB54T	mm	70	50	60	M5X0.8	12	174	135	10	4	5	27
			in	2.756	1.969	2.36	-	0.47	6.850	5.315	0.39	0.16	0.20	1.06
070R	TB04R	TB54R	mm	70	50	60	M5X0.8	20	179	140	15	9	10	32
			in	2.756	1.969	2.36	-	0.79	7.047	5.512	0.59	0.35	0.39	1.26
090	TB06	TB56	mm	90	70	80	M5X0.8	12	174	135	10	4	5	27
			in	3.543	2.756	3.15	-	0.47	6.850	5.315	0.39	0.16	0.20	1.06

## Bushings

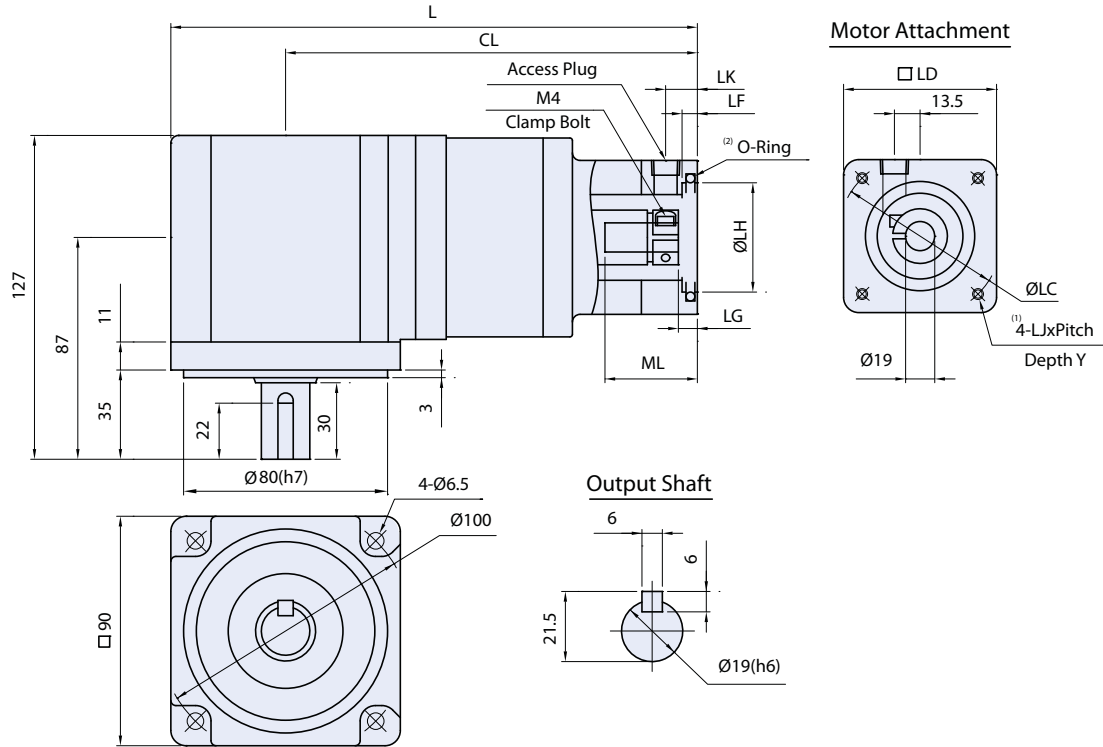
Bushing Ordering Code		0801	0802	0803
Inside Diameter	mm	6	6.350	5
	in	0.236	0.250	0.197



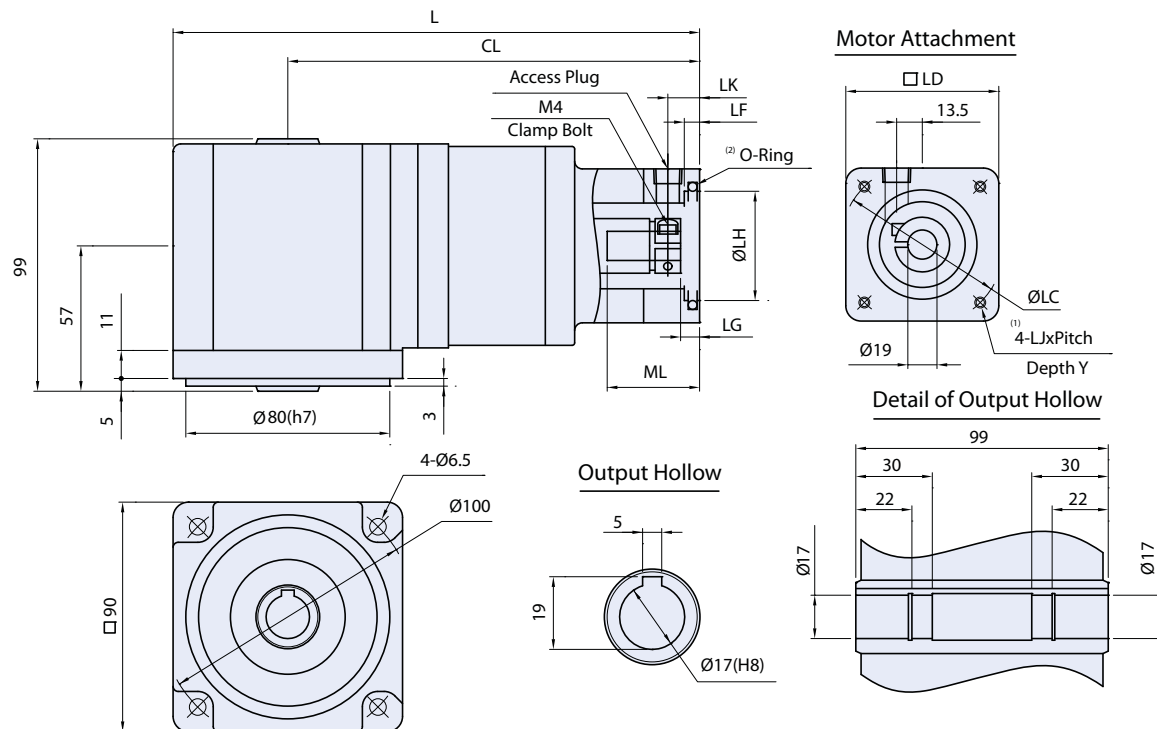
# C Frame (90mm) NEVAF Series Dimension, Double Reduction

Ratios: 1:5, 1:9, 15:1, 27:1

## Solid Output Shaft Type



## Hollow Output Shaft Type



(1) Depending on the servo motor, this dimension is subject to change. Contact Shimpo Drives Customer Service for additional information.

(2) Some adapter flanges don't have a O-Ring.

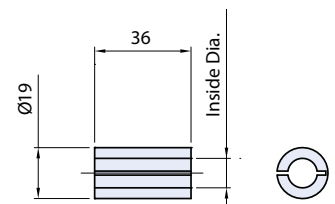


# C Frame (90mm) NEVAF Series Dimension, Double Reduction (Solid / Hollow Output Shaft Type) Ratios: 5:1, 9:1, 15.1, 27.1

Adapter	CAD Download#		Unit	Bolt Circle LC	Pilot LH	Square LD	Tapping Bolt LJ	Depth Y	Length		Plug LK	Flange Depth		
	Solid	Hollow							L	CL		LF	LG	ML
046	C12	C62	mm	46	30	60	M4X0.7	10	206.5	161.5	11	4	5	42
			in	1.811	1.181	2.36	-	0.39	8.130	6.358	0.43	0.16	0.20	1.65
060	C00	C50	mm	60	50	60	M4X0.7	10	206.5	161.5	11	4	5	42
			in	2.362	1.969	2.36	-	0.39	8.130	6.358	0.43	0.16	0.20	1.65
063	C10	C60	mm	63	40	60	M4X0.7	10	206.5	161.5	11	4	5	42
			in	2.480	1.575	2.36	-	0.39	8.130	6.358	0.43	0.16	0.20	1.65
067 (NEMA23)	C09	C59	mm	66.68	38.100	60	M4X0.7	10	206.5	161.5	11	4	5	42
			in	2.625	1.500	2.36	-	0.39	8.130	6.358	0.43	0.16	0.20	1.65
067R (NEMA23)	C09R	C59R	mm	66.68	38.100	60	M5X0.8	12	214.5	169.5	19	4	13	50
			in	2.625	1.500	2.36	-	0.47	8.445	6.673	0.75	0.16	0.51	1.97
070	C01	C51	mm	70	50	60	M4X0.7	10	206.5	161.5	11	4	5	42
			in	2.756	1.969	2.36	-	0.39	8.130	6.358	0.43	0.16	0.20	1.65
070T	C01T	C51T	mm	70	50	60	M5X0.8	12	206.5	161.5	11	4	5	42
			in	2.756	1.969	2.36	-	0.47	8.130	6.358	0.43	0.16	0.20	1.65
070R	C01R	C51R	mm	70	50	60	M5X0.8	12	210.5	165.5	15	6	9	46
			in	2.756	1.969	2.36	-	0.47	8.287	6.516	0.59	0.24	0.35	1.81
075	C05	C55	mm	75	60	67	M5X0.8	12	206.5	161.5	11	4	5	42
			in	2.953	2.362	2.64	-	0.47	8.130	6.358	0.43	0.16	0.20	1.65
090	C02	C52	mm	90	70	80	M5X0.8	12	206.5	161.5	11	4	5	42
			in	3.543	2.756	3.15	-	0.47	8.130	6.358	0.43	0.16	0.20	1.65
090T	C02T	C52T	mm	90	70	80	M6X1.0	16	206.5	161.5	11	4	5	42
			in	3.543	2.756	3.15	-	0.63	8.130	6.358	0.43	0.16	0.20	1.65
090R	C02R	C52R	mm	90	70	80	M6X1.0	21	211.5	166.5	16	9	10	47
			in	3.543	2.756	3.15	-	0.83	8.327	6.555	0.63	0.35	0.39	1.85
095	C11	C61	mm	95	80	86	M6X1.0	16	206.5	161.5	11	4	5	42
			in	3.740	3.150	3.39	-	0.63	8.130	6.358	0.43	0.16	0.20	1.65
098 (NEMA34)	C04	C54	mm	98.43	73.025	83	M5X0.8	12	206.5	161.5	11	4	5	42
			in	3.875	2.875	3.27	-	0.47	8.130	6.358	0.43	0.16	0.20	1.65
098R (NEMA34)	C04R	C54R	mm	98.43	73.025	83	M5X0.8	12	214.5	169.5	19	4	13	50
			in	3.875	2.875	3.27	-	0.47	8.445	6.673	0.75	0.16	0.51	1.97
100	C03	C53	mm	100	80	86	M6X1.0	16	206.5	161.5	11	4	5	42
			in	3.937	3.150	3.39	-	0.63	8.130	6.358	0.43	0.16	0.20	1.65
115	C06	C56	mm	115	95	100	M6X1.0	16	206.5	161.5	11	4	5	42
			in	4.528	3.740	3.94	-	0.63	8.130	6.358	0.43	0.16	0.20	1.65
115T	C06T	C56T	mm	115	95	100	M8X1.25	16	206.5	161.5	11	4	5	42
			in	4.528	3.740	3.94	-	0.63	8.130	6.358	0.43	0.16	0.20	1.65

## Bushings

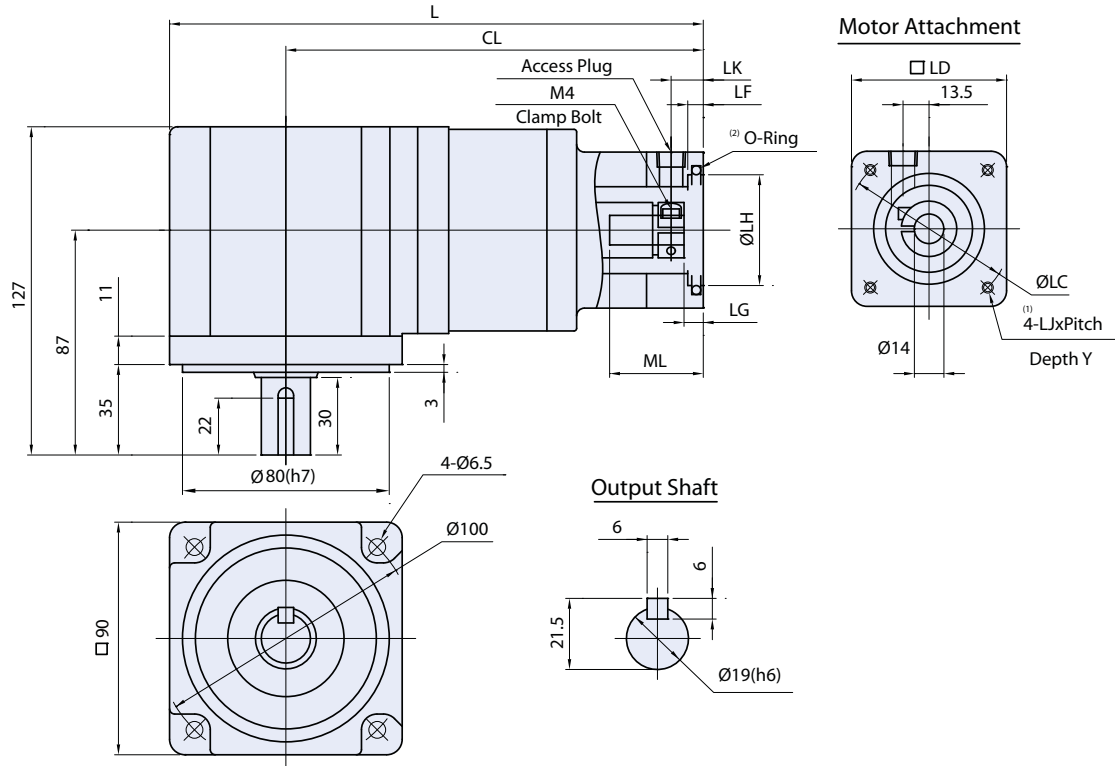
Bushing Ordering Code		1901	1902	1903	1904	1905	1906	1907	1908	1909	1910
Inside Diameter	mm	11	14	16	9.525	12.700	15.875	12	10	9	8
	in	0.433	0.551	0.630	0.375	0.500	0.625	0.472	0.394	0.354	0.315



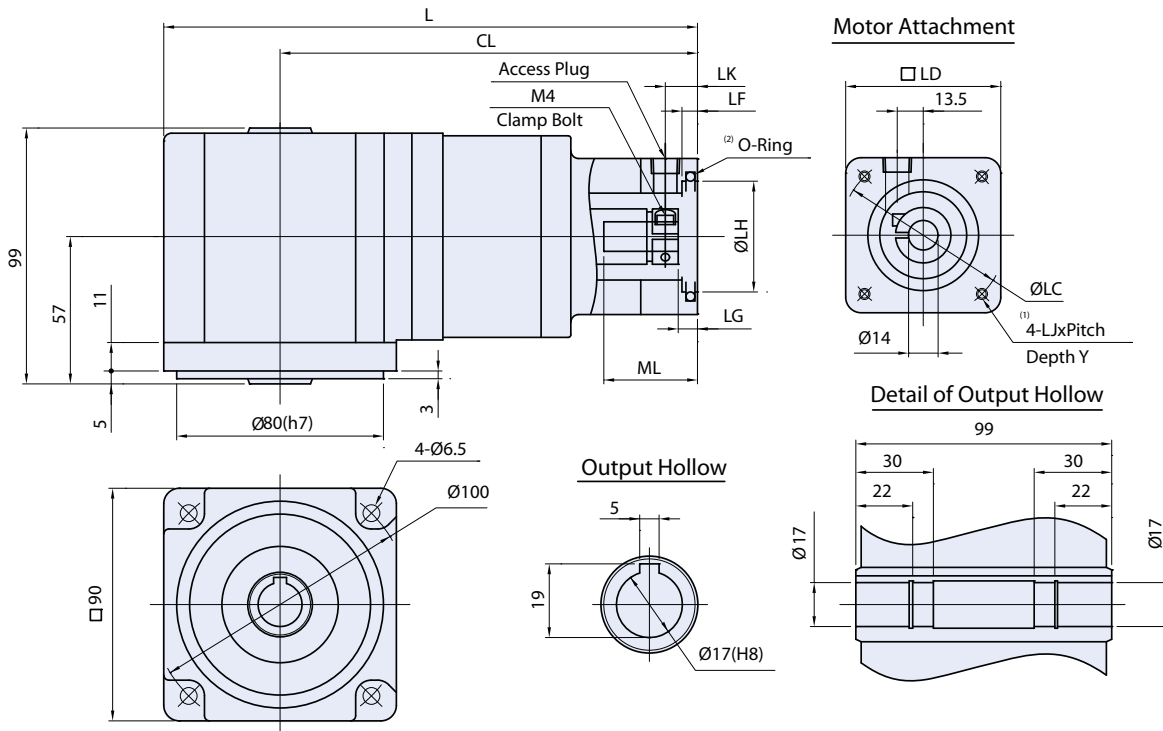
# C Frame (90mm) NEVAF Series Dimension, Triple Reduction

Ratios: 45:1, 75:1, 105:1

## Solid Output Shaft Type



## Hollow Output Shaft Type



(1) Depending on the servo motor, this dimension is subject to change. Contact Shimpo Drives Customer Service for additional information.

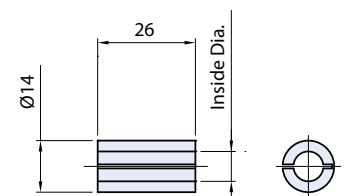
(2) Some adapter flanges don't have a O-Ring.

# C Frame (90mm) NEVAF Series Dimension, Triple Reduction (Solid / Hollow Output Shaft Type) Ratios: 45:1, 75:1, 105:1

Adapter	CAD Download#		Unit	Bolt Circle LC	Pilot LH	Square LD	Tapping Bolt LJ	Depth Y	Length		Plug LK	Flange Depth		
	Solid	Hollow							L	CL		LF	LG	ML
046	TC12	TC62	mm	46	30	60	M4X0.7	10	209	164	11	4	6	33
			in	1.811	1.181	2.36	-	0.39	8.228	6.457	0.43	0.16	0.24	1.30
060	TC00	TC50	mm	60	50	60	M4X0.7	10	209	164	11	4	6	33
			in	2.362	1.969	2.36	-	0.39	8.228	6.457	0.43	0.16	0.24	1.30
063	TC10	TC60	mm	63	40	60	M4X0.7	10	209	164	11	4	6	33
			in	2.480	1.575	2.36	-	0.39	8.228	6.457	0.43	0.16	0.24	1.30
067 (NEMA23)	TC09	TC59	mm	66.68	38.100	60	M4X0.7	10	209	164	11	4	6	33
			in	2.625	1.500	2.36	-	0.39	8.228	6.457	0.43	0.16	0.24	1.30
067R (NEMA23)	TC09R	TC59R	mm	66.68	38.100	60	M5X0.8	12	217	172	19	4	14	41
			in	2.625	1.500	2.36	-	0.47	8.543	6.772	0.75	0.16	0.55	1.61
070	TC01	TC51	mm	70	50	60	M4X0.7	10	209	164	11	4	6	33
			in	2.756	1.969	2.36	-	0.39	8.228	6.457	0.43	0.16	0.24	1.30
070T	TC01T	TC51T	mm	70	50	60	M5X0.8	12	209	164	11	4	6	33
			in	2.756	1.969	2.36	-	0.47	8.228	6.457	0.43	0.16	0.24	1.30
070R	TC01R	TC51R	mm	70	50	60	M5X0.8	12	213	168	15	6	10	37
			in	2.756	1.969	2.36	-	0.47	8.386	6.614	0.59	0.24	0.39	1.46
075	TC05	TC55	mm	75	60	67	M5X0.8	12	209	164	11	4	6	33
			in	2.953	2.362	2.64	-	0.47	8.228	6.457	0.43	0.16	0.24	1.30
090	TC02	TC52	mm	90	70	80	M5X0.8	12	209	164	11	4	6	33
			in	3.543	2.756	3.15	-	0.47	8.228	6.457	0.43	0.16	0.24	1.30
090T	TC02T	TC52T	mm	90	70	80	M6X1.0	16	209	164	11	4	6	33
			in	3.543	2.756	3.15	-	0.63	8.228	6.457	0.43	0.16	0.24	1.30
090R	TC02R	TC52R	mm	90	70	80	M6X1.0	21	214	169	16	9	11	38
			in	3.543	2.756	3.15	-	0.83	8.425	6.654	0.63	0.35	0.43	1.50
095	TC11	TC61	mm	95	80	86	M6X1.0	16	209	164	11	4	6	33
			in	3.740	3.150	3.39	-	0.63	8.228	6.457	0.43	0.16	0.24	1.30
098 (NEMA34)	TC04	TC54	mm	98.43	73.025	83	M5X0.8	12	209	164	11	4	6	33
			in	3.875	2.875	3.27	-	0.47	8.228	6.457	0.43	0.16	0.24	1.30
098R (NEMA34)	TC04R	TC54R	mm	98.43	73.025	83	M5X0.8	12	217	172	19	4	14	41
			in	3.875	2.875	3.27	-	0.47	8.543	6.772	0.75	0.16	0.55	1.61
100	TC03	TC53	mm	100	80	86	M6X1.0	16	209	164	11	4	6	33
			in	3.937	3.150	3.39	-	0.63	8.228	6.457	0.43	0.16	0.24	1.30
115	TC06	TC56	mm	115	95	100	M6X1.0	16	209	164	11	4	6	33
			in	4.528	3.740	3.94	-	0.63	8.228	6.457	0.43	0.16	0.24	1.30
115T	TC06T	TC56T	mm	115	95	100	M8X1.25	16	209	164	11	4	6	33
			in	4.528	3.740	3.94	-	0.63	8.228	6.457	0.43	0.16	0.24	1.30

## Bushings

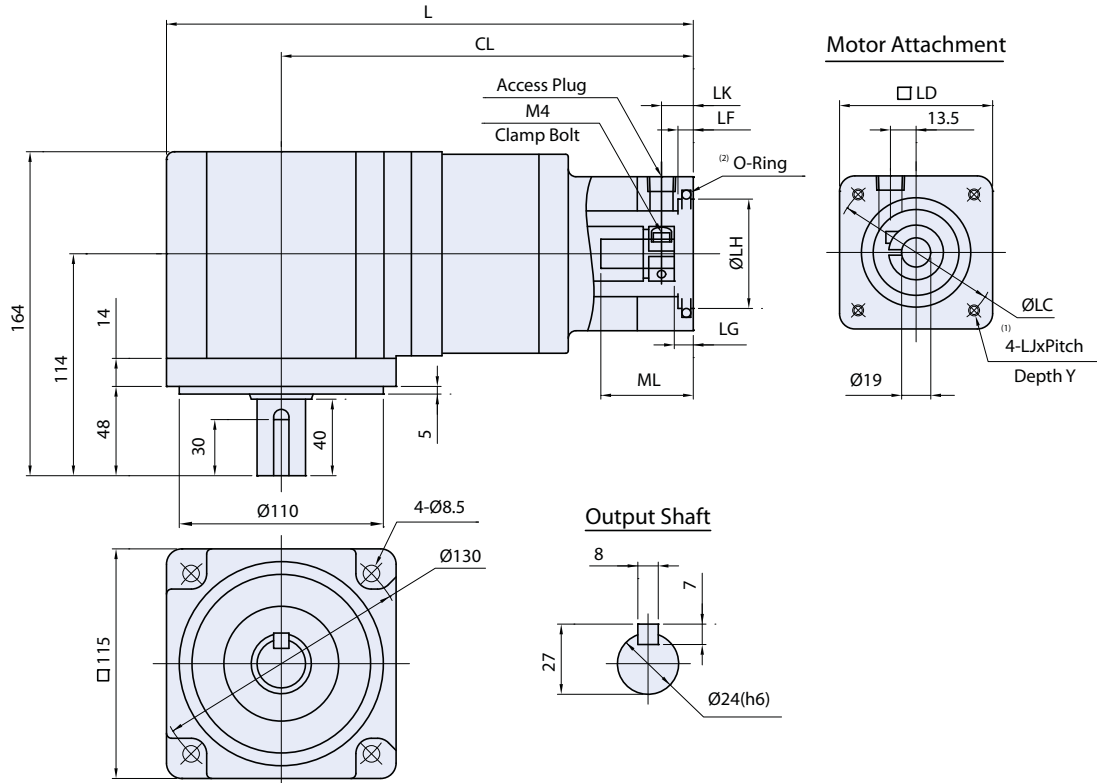
Bushing Ordering Code		1401	1402	1403	1404	1405	1406	1407	1408	1409	1410
Inside Diameter	mm	6	8	11	6.350	9.525	12.700	12	10	9	5
	in	0.236	0.315	0.433	0.250	0.375	0.500	0.472	0.394	0.354	0.197



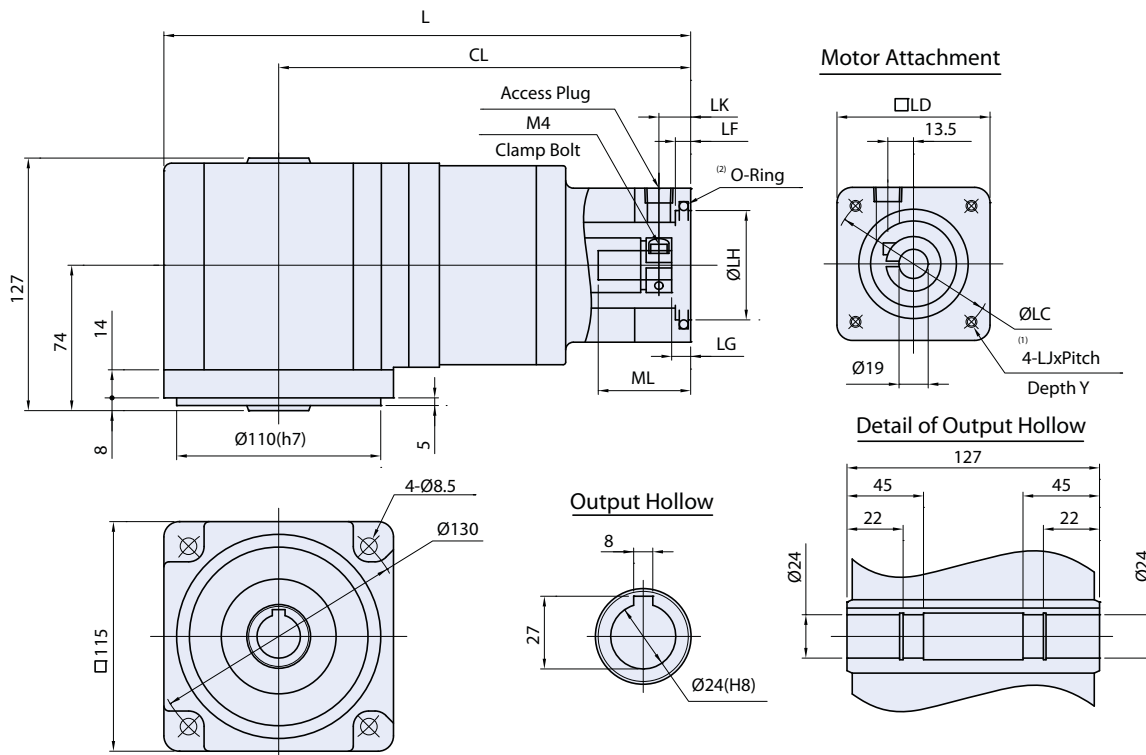
# D Frame (115mm) NEVAF Series Dimension, Double Reduction

Ratios: 5:1, 9:1, 15:1, 27:1

## Solid Output Shaft Type



## Hollow Output Shaft Type



(1) Depending on the servo motor, this dimension is subject to change. Contact Shimpo Drives Customer Service for additional information.

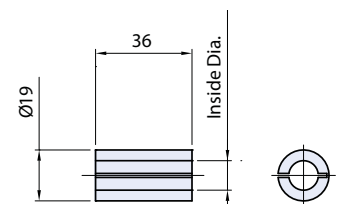
(2) Some adapter flanges don't have a O-Ring.

# D Frame (115mm) NEVAF Series Dimension, Double Reduction (Solid / Hollow Output Shaft Type) Ratios: 5:1, 9:1, 15:1, 27:1

Adapter	CAD Download#		Unit	Bolt Circle LC	Pilot LH	Square LD	Tapping Bolt LJ	Depth Y	Length		Plug LK	Flange Depth		
	Solid	Hollow							L	CL		LF	LG	ML
046	D12	D62	mm	46	30	60	M4X0.7	10	234	176.5	11	4	5	42
			in	1.811	1.181	2.36	-	0.39	9.213	6.949	0.43	0.16	0.20	1.65
060	D00	D50	mm	60	50	60	M4X0.7	10	234	176.5	11	4	5	42
			in	2.362	1.969	2.36	-	0.39	9.213	6.949	0.43	0.16	0.20	1.65
063	D10	D60	mm	63	40	60	M4X0.7	10	234	176.5	11	4	5	42
			in	2.480	1.575	2.36	-	0.39	9.213	6.949	0.43	0.16	0.20	1.65
067 (NEMA23)	D09	D59	mm	66.68	38.100	60	M4X0.7	10	234	176.5	11	4	5	42
			in	2.625	1.500	2.36	-	0.39	9.213	6.949	0.43	0.16	0.20	1.65
067R (NEMA23)	D09R	D59R	mm	66.68	38.100	60	M5X0.8	12	242	184.5	19	4	13	50
			in	2.625	1.500	2.36	-	0.47	9.528	7.264	0.75	0.16	0.51	1.97
070	D01	D51	mm	70	50	60	M4X0.7	10	234	176.5	11	4	5	42
			in	2.756	1.969	2.36	-	0.39	9.213	6.949	0.43	0.16	0.20	1.65
070T	D01T	D51T	mm	70	50	60	M5X0.8	12	234	176.5	11	4	5	42
			in	2.756	1.969	2.36	-	0.47	9.213	6.949	0.43	0.16	0.20	1.65
070R	D01R	D51R	mm	70	50	60	M5X0.8	12	238	180.5	15	6	9	46
			in	2.756	1.969	2.36	-	0.47	9.370	7.106	0.59	0.24	0.35	1.81
075	D05	D55	mm	75	60	67	M5X0.8	12	234	176.5	11	4	5	42
			in	2.953	2.362	2.64	-	0.47	9.213	6.949	0.43	0.16	0.20	1.65
090	D02	D52	mm	90	70	80	M5X0.8	12	234	176.5	11	4	5	42
			in	3.543	2.756	3.15	-	0.47	9.213	6.949	0.43	0.16	0.20	1.65
090T	D02T	D52T	mm	90	70	80	M6X1.0	16	234	176.5	11	4	5	42
			in	3.543	2.756	3.15	-	0.63	9.213	6.949	0.43	0.16	0.20	1.65
090R	D02R	D52R	mm	90	70	80	M6X1.0	21	239	181.5	16	9	10	47
			in	3.543	2.756	3.15	-	0.83	9.409	7.146	0.63	0.35	0.39	1.85
095	D11	D61	mm	95	80	86	M6X1.0	16	234	176.5	11	4	5	42
			in	3.740	3.150	3.39	-	0.63	9.213	6.949	0.43	0.16	0.20	1.65
098 (NEMA34)	D04	D54	mm	98.43	73.025	83	M5X0.8	12	234	176.5	11	4	5	42
			in	3.875	2.875	3.27	-	0.47	9.213	6.949	0.43	0.16	0.20	1.65
098R (NEMA34)	D04R	D54R	mm	98.43	73.025	83	M5X0.8	12	242	184.5	19	4	13	50
			in	3.875	2.875	3.27	-	0.47	9.528	7.264	0.75	0.16	0.51	1.97
100	D03	D53	mm	100	80	86	M6X1.0	16	234	176.5	11	4	5	42
			in	3.937	3.150	3.39	-	0.63	9.213	6.949	0.43	0.16	0.20	1.65
115	D06	D56	mm	115	95	100	M6X1.0	16	234	176.5	11	4	5	42
			in	4.528	3.740	3.94	-	0.63	9.213	6.949	0.43	0.16	0.20	1.65
115T	D06T	D56T	mm	115	95	100	M8X1.25	16	234	176.5	11	4	5	42
			in	4.528	3.740	3.94	-	0.63	9.213	6.949	0.43	0.16	0.20	1.65

## Bushings

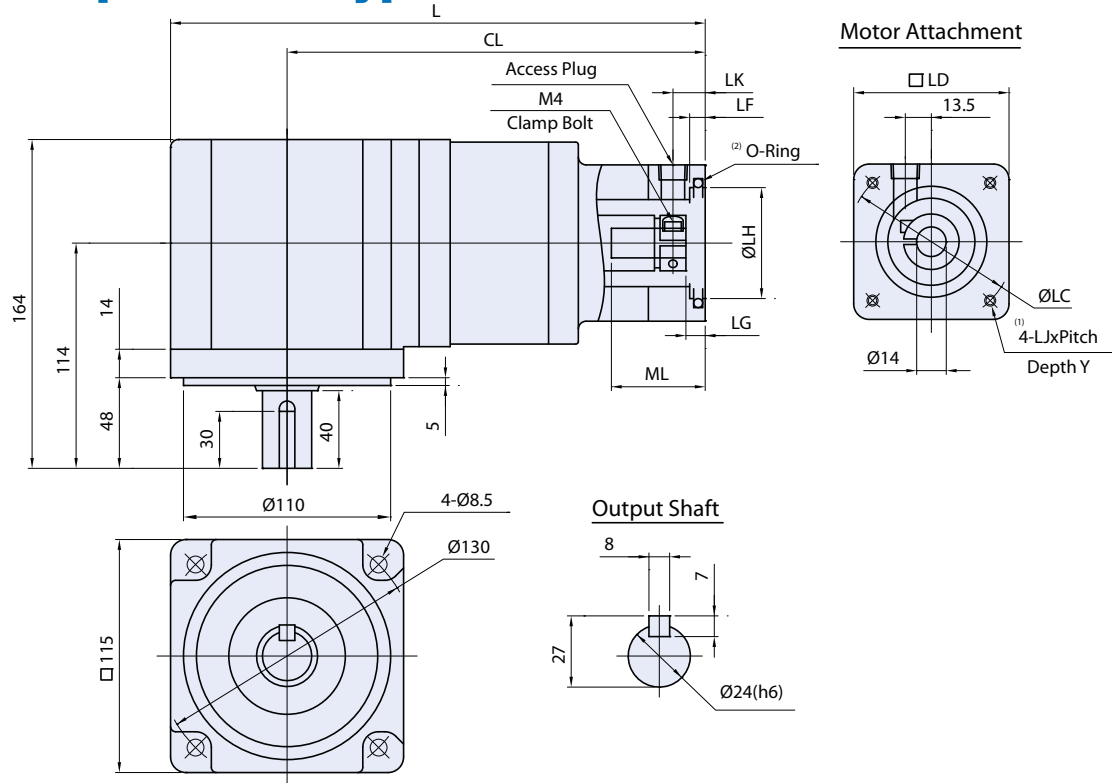
Bushing Ordering Code	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	
Inside Diameter	mm	11	14	16	9.525	12.700	15.875	12	10	9	8
	in	0.433	0.551	0.630	0.375	0.500	0.625	0.472	0.394	0.354	0.315



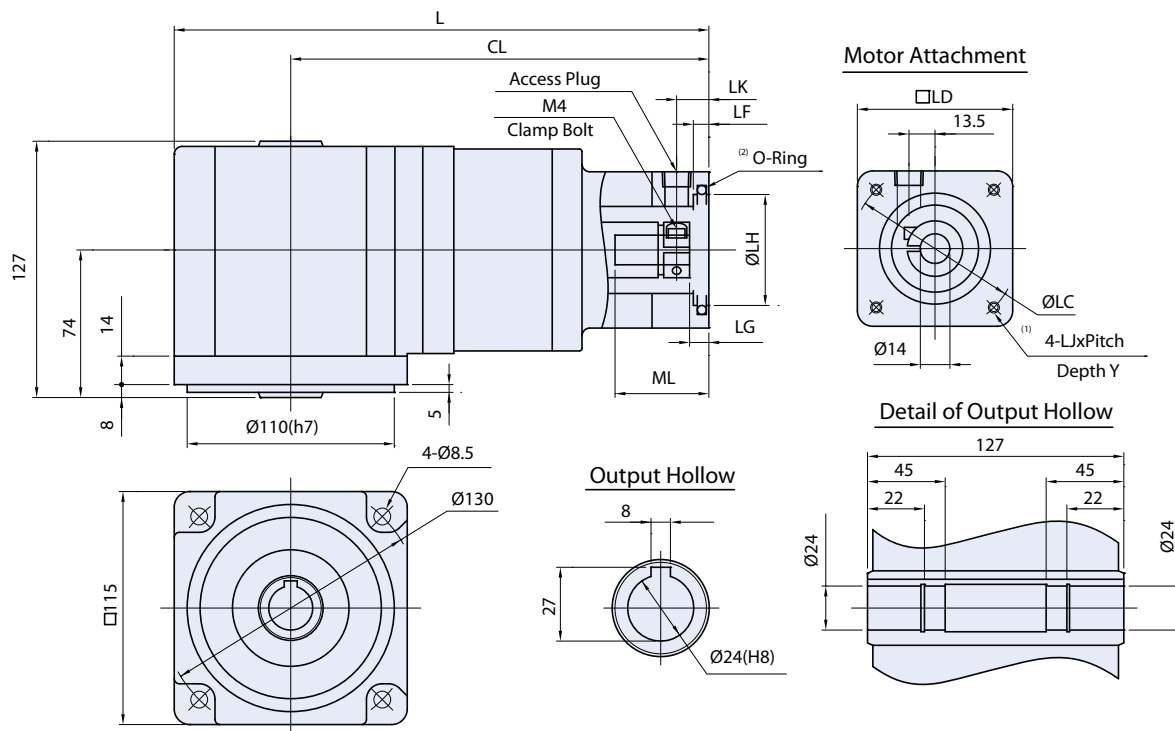
# D Frame (115mm) NEVAF Series Dimension, Triple Reduction

Ratios: 45:1, 75:1, 105:1

## Solid Output Shaft Type



## Hollow Output Shaft Type



(1) Depending on the servo motor, this dimension is subject to change. Contact Shimpo Drives Customer Service for additional information.

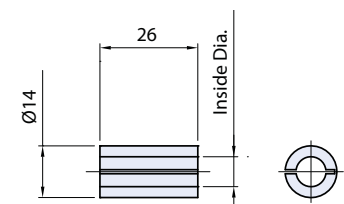
(2) Some adapter flanges don't have a O-Ring.

# D Frame (115mm) NEVAF Series Dimension, Triple Reduction (Solid / Hollow Output Shaft Type) Ratios: 45:1, 75:1, 105:1

Adapter	CAD Download#		Unit	Bolt Circle LC	Pilot LH	Square LD	Tapping Bolt LJ	Depth Y	Length		Plug LK	Flange Depth		
	Solid	Hollow							L	CL		LF	LG	ML
046	TD12	TD62	mm	46	30	60	M4X0.7	10	236.5	179	11	4	6	33
			in	1.811	1.181	2.36	-	0.39	9.311	7.047	0.43	0.16	0.24	1.30
060	TD00	TD50	mm	60	50	60	M4X0.7	10	236.5	179	11	4	6	33
			in	2.362	1.969	2.36	-	0.39	9.311	7.047	0.43	0.16	0.24	1.30
063	TD10	TD60	mm	63	40	60	M4X0.7	10	236.5	179	11	4	6	33
			in	2.480	1.575	2.36	-	0.39	9.311	7.047	0.43	0.16	0.24	1.30
067 (NEMA23)	TD09	TD59	mm	66.68	38.100	60	M4X0.7	10	236.5	179	11	4	6	33
			in	2.625	1.500	2.36	-	0.39	9.311	7.047	0.43	0.16	0.24	1.30
067R (NEMA23)	TD09R	TD59R	mm	66.68	38.100	60	M5X0.8	12	244.5	187	19	4	14	41
			in	2.625	1.500	2.36	-	0.47	9.626	7.362	0.75	0.16	0.55	1.61
070	TD01	TD51	mm	70	50	60	M4X0.7	10	236.5	179	11	4	6	33
			in	2.756	1.969	2.36	-	0.39	9.311	7.047	0.43	0.16	0.24	1.30
070T	TD01T	TD51T	mm	70	50	60	M5X0.8	12	236.5	179	11	4	6	33
			in	2.756	1.969	2.36	-	0.47	9.311	7.047	0.43	0.16	0.24	1.30
070R	TD01R	TD51R	mm	70	50	60	M5X0.8	12	240.5	183	15	6	10	37
			in	2.756	1.969	2.36	-	0.47	9.469	7.205	0.59	0.24	0.39	1.46
075	TD05	TD55	mm	75	60	67	M5X0.8	12	236.5	179	11	4	6	33
			in	2.953	2.362	2.64	-	0.47	9.311	7.047	0.43	0.16	0.24	1.30
090	TD02	TD52	mm	90	70	80	M5X0.8	12	236.5	179	11	4	6	33
			in	3.543	2.756	3.15	-	0.47	9.311	7.047	0.43	0.16	0.24	1.30
090T	TD02T	TD52T	mm	90	70	80	M6X1.0	16	236.5	179	11	4	6	33
			in	3.543	2.756	3.15	-	0.63	9.311	7.047	0.43	0.16	0.24	1.30
090R	TD02R	TD52R	mm	90	70	80	M6X1.0	21	241.5	184	16	9	11	38
			in	3.543	2.756	3.15	-	0.83	9.508	7.244	0.63	0.35	0.43	1.50
095	TD11	TD61	mm	95	80	86	M6X1.0	16	236.5	179	11	4	6	33
			in	3.740	3.150	3.39	-	0.63	9.311	7.047	0.43	0.16	0.24	1.30
098 (NEMA34)	TD04	TD54	mm	98.43	73.025	83	M5X0.8	12	236.5	179	11	4	6	33
			in	3.875	2.875	3.27	-	0.47	9.311	7.047	0.43	0.16	0.24	1.30
098R (NEMA34)	TD04R	TD54R	mm	98.43	73.025	83	M5X0.8	12	244.5	187	19	4	14	41
			in	3.875	2.875	3.27	-	0.47	9.626	7.362	0.75	0.16	0.55	1.61
100	TD03	TD53	mm	100	80	86	M6X1.0	16	236.5	179	11	4	6	33
			in	3.937	3.150	3.39	-	0.63	9.311	7.047	0.43	0.16	0.24	1.30
115	TD06	TD56	mm	115	95	100	M6X1.0	16	236.5	179	11	4	6	33
			in	4.528	3.740	3.94	-	0.63	9.311	7.047	0.43	0.16	0.24	1.30
115T	TD06T	TD56T	mm	115	95	100	M8X1.25	16	236.5	179	11	4	6	33
			in	4.528	3.740	3.94	-	0.63	9.311	7.047	0.43	0.16	0.24	1.30

## Bushings

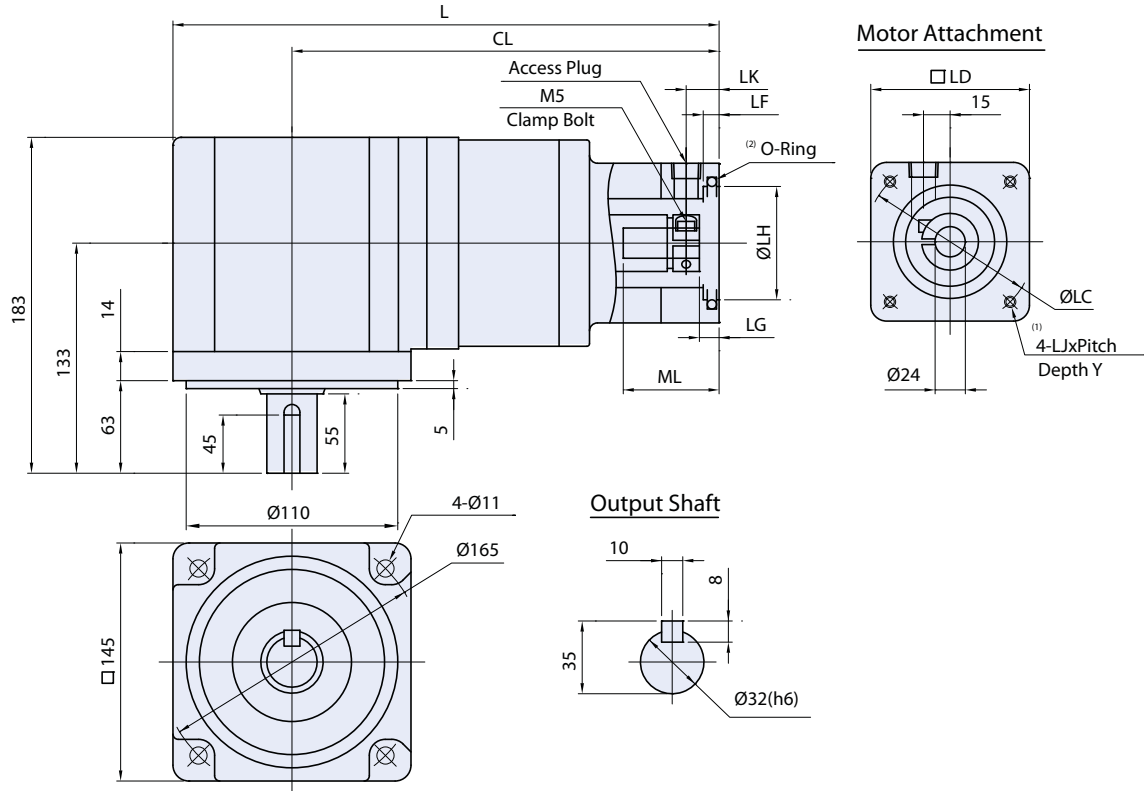
Bushing Ordering Code		1401	1402	1403	1404	1405	1406	1407	1408	1409	1410
Inside Diameter	mm	6	8	11	6.350	9.525	12.700	12	10	9	5
	in	0.236	0.315	0.433	0.250	0.375	0.500	0.472	0.394	0.354	0.197



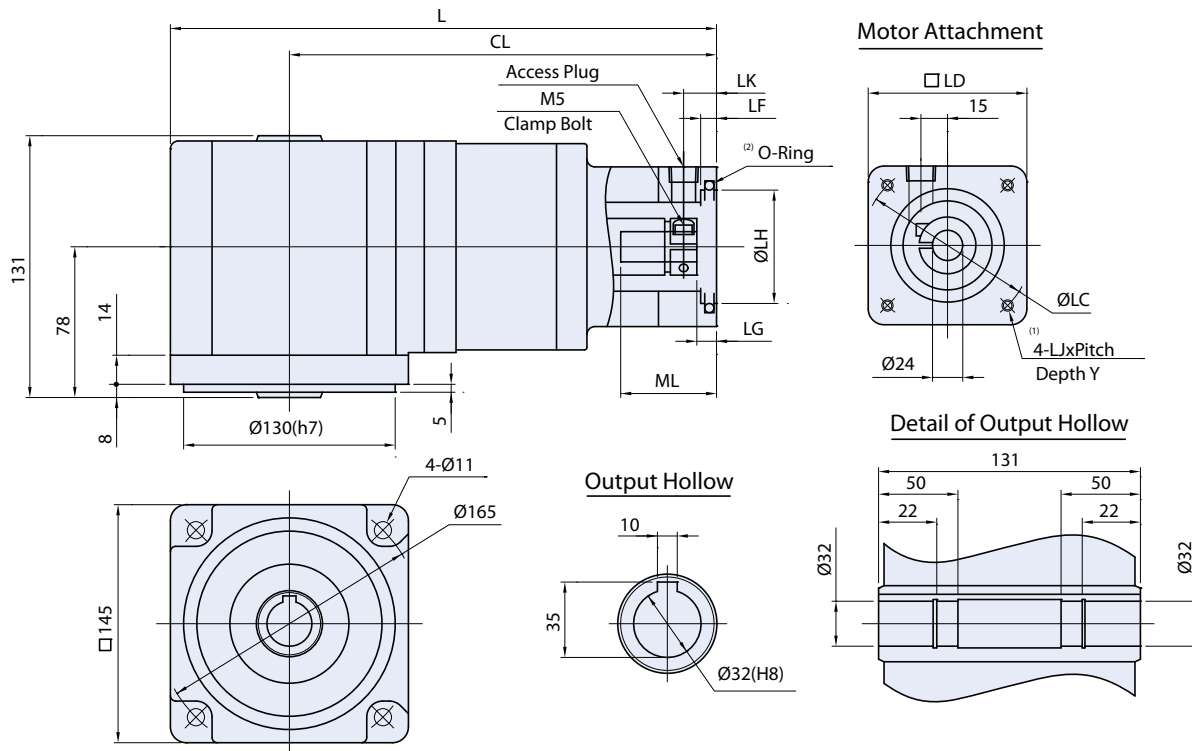
# E Frame (145mm) NEVAF Series Dimension, Double Reduction

Ratios: 5:1, 9:1, 15:1, 27:1

## Solid Output Shaft Type



## Hollow Output Shaft Type



(1) Depending on the servo motor, this dimension is subject to change. Contact Shimpo Drives Customer Service for additional information.

(2) Some adapter flanges don't have a O-Ring.

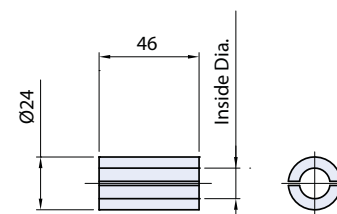


# E Frame (145mm) NEVAF Series Dimension, Double Reduction (Solid / Hollow Output Shaft Type) Ratios: 5:1, 9:1, 15:1, 27:1

Adapter	CAD Download#		Unit	Bolt Circle LC	Pilot LH	Square LD	Tapping Bolt LJ	Depth Y	Length		Plug LK	Flange Depth		
	Solid	Hollow							L	CL		LF	LG	ML
067 (NEMA23)	E13	E63	mm	66.68	38.100	80	M4X0.7	10	282.5	210	14	4	7	57
			in	2.625	1.500	3.15	-	0.39	11.122	8.268	0.55	0.16	0.28	2.24
070	E14	E64	mm	70	50	80	M4X0.7	10	282.5	210	14	4	7	57
			in	2.756	1.969	3.15	-	0.39	11.122	8.268	0.55	0.16	0.28	2.24
070T	E14T	E64T	mm	70	50	80	M5X0.8	12	282.5	210	14	4	7	57
			in	2.756	1.969	3.15	-	0.47	11.122	8.268	0.55	0.16	0.28	2.24
075	E15	E65	mm	75	60	80	M5X0.8	12	282.5	210	14	4	7	57
			in	2.953	2.362	3.15	-	0.47	11.122	8.268	0.55	0.16	0.28	2.24
090	E02	E52	mm	90	70	80	M5X0.8	12	282.5	210	14	4	7	57
			in	3.543	2.756	3.15	-	0.47	11.122	8.268	0.55	0.16	0.28	2.24
090T	E02T	E52T	mm	90	70	80	M6X1.0	15	282.5	210	14	4	7	57
			in	3.543	2.756	3.15	-	0.59	11.122	8.268	0.55	0.16	0.28	2.24
090R	E02R	E52R	mm	90	70	80	M6X1.0	15	285.5	213	17	6	10	60
			in	3.543	2.756	3.15	-	0.59	11.240	8.386	0.67	0.24	0.39	2.36
095	E08	E58	mm	95	80	90	M6X1.0	15	282.5	210	14	4	7	57
			in	3.740	3.150	3.54	-	0.59	11.122	8.268	0.55	0.16	0.28	2.24
098 (NEMA34)	E11	E61	mm	98.43	73.025	90	M5X0.8	12	282.5	210	14	6	7	57
			in	3.875	2.875	3.54	-	0.47	11.122	8.268	0.55	0.24	0.28	2.24
098R (NEMA34)	E11R	E61R	mm	98.43	73.025	83	M5X0.8	12	290.5	218	22	4	15	65
			in	3.875	2.875	3.27	-	0.47	11.437	8.583	0.87	0.16	0.59	2.56
100	E03	E53	mm	100	80	86	M6X1.0	15	282.5	210	14	4	7	57
			in	3.937	3.150	3.39	-	0.59	11.122	8.268	0.55	0.16	0.28	2.24
115	E01	E51	mm	115	95	100	M6X1.0	15	282.5	210	15	4	7	57
			in	4.528	3.740	3.94	-	0.59	11.122	8.268	0.59	0.16	0.28	2.24
115T	E01T	E51T	mm	115	95	100	M8X1.25	16	282.5	210	15	4	7	57
			in	4.528	3.740	3.94	-	0.63	11.122	8.268	0.59	0.16	0.28	2.24
126 (NEMA42)	E04	E54	mm	125.73	55.563	108	M6X1.0	15	282.5	210	15	5	7	57
			in	4.950	2.188	4.25	-	0.59	11.122	8.268	0.59	0.20	0.28	2.24
130	E06	E56	mm	130	110	115	M8X1.25	16	282.5	210	15	6	7	57
			in	5.118	4.331	4.53	-	0.63	11.122	8.268	0.59	0.24	0.28	2.24
145	E05	E55	mm	145	110	130	M8X1.25	16	285.5	213	18	6	10	60
			in	5.709	4.331	5.12	-	0.63	11.240	8.386	0.71	0.24	0.39	2.36
145R	E05R	E55R	mm	145	110	130	M8X1.25	16	298.5	226	31	8	23	73
			in	5.709	4.331	5.12	-	0.63	11.752	8.898	1.22	0.31	0.91	2.87
149 (NEMA56)	E12	E62	mm	149.23	114.3	130	-	-	285.5	213	18	6	10	60
			in	5.875	4.500	5.12	3/8UNC-16	-	11.240	8.386	0.71	0.24	0.39	2.36

## Bushings

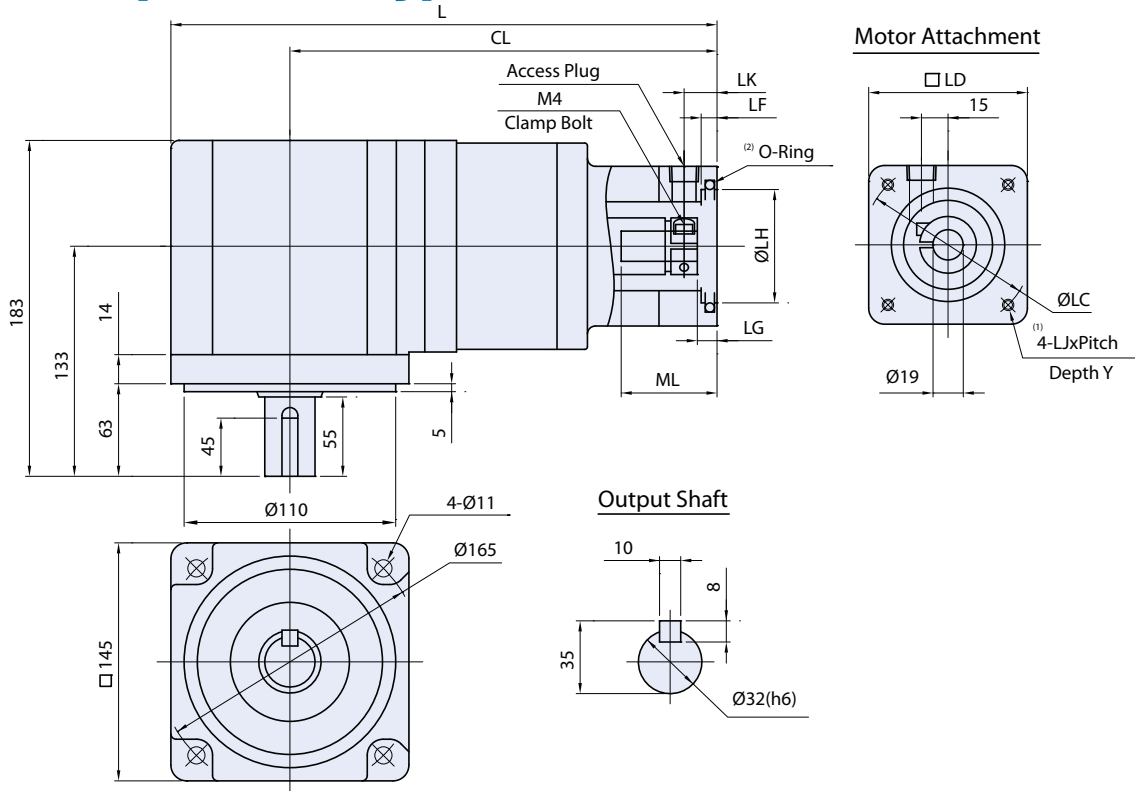
Bushing Ordering Code		2401	2402	2403	2404	2405	2406	2407	2408
Inside Diameter	mm	14	16	19	12.700	15.875	22	19.050	11
	in	0.551	0.630	0.748	0.500	0.625	0.866	0.750	0.433



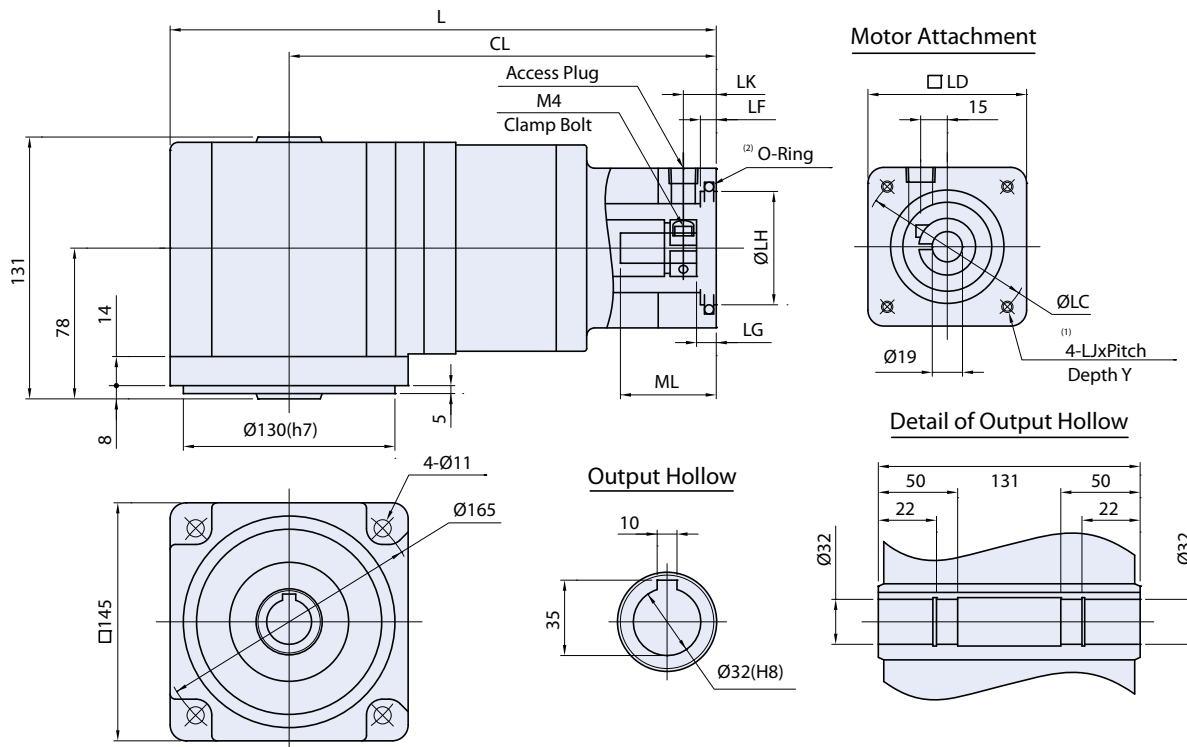
# E Frame (145mm) NEVAF Series Dimension, Triple Reduction

Ratios: 45:1, 75:1, 105:1

## Solid Output Shaft Type



## Hollow Output Shaft Type



(1) Depending on the servo motor, this dimension is subject to change. Contact Shimpo Drives Customer Service for additional information.

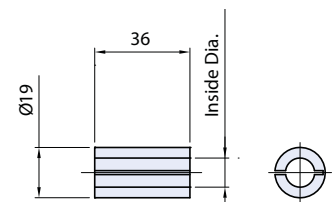
(2) Some adapter flanges don't have a O-Ring.

# E Frame (145mm) NEVAF Series Dimension, Triple Reduction (Solid / Hollow Output Shaft Type) Ratios: 45:1, 75:1, 105:1

Adapter	CAD Download#		Unit	Bolt Circle LC	Pilot LH	Square LD	Tapping Bolt LJ	Depth Y	Length		Plug LK	Flange Depth		
	Solid	Hollow							L	CL		LF	LG	ML
067 (NEMA23)	TE13	TE63	mm	66.68	38.100	80	M4X0.7	10	283.5	211	14	4	7	44
			in	2.625	1.500	3.15	-	0.39	11.161	8.307	0.55	0.16	0.28	1.73
070	TE14	TE64	mm	70	50	80	M4X0.7	10	283.5	211	14	4	7	44
			in	2.756	1.969	3.15	-	0.39	11.161	8.307	0.55	0.16	0.28	1.73
070T	TE14T	TE64T	mm	70	50	80	M5X0.8	12	283.5	211	14	4	7	44
			in	2.756	1.969	3.15	-	0.47	11.161	8.307	0.55	0.16	0.28	1.73
075	TE15	TE65	mm	75	60	80	M5X0.8	12	283.5	211	14	4	7	44
			in	2.953	2.362	3.15	-	0.47	11.161	8.307	0.55	0.16	0.28	1.73
090	TE02	TE52	mm	90	70	80	M5X0.8	12	283.5	211	14	4	7	44
			in	3.543	2.756	3.15	-	0.47	11.161	8.307	0.55	0.16	0.28	1.73
090T	TE02T	TE52T	mm	90	70	80	M6X1.0	15	283.5	211	14	4	7	44
			in	3.543	2.756	3.15	-	0.59	11.161	8.307	0.55	0.16	0.28	1.73
090R	TE02R	TE52R	mm	90	70	80	M6X1.0	15	286.5	214	17	6	10	47
			in	3.543	2.756	3.15	-	0.59	11.280	8.425	0.67	0.24	0.39	1.85
095	TE08	TE58	mm	95	80	90	M6X1.0	15	283.5	211	14	4	7	44
			in	3.740	3.150	3.54	-	0.59	11.161	8.307	0.55	0.16	0.28	1.73
098 (NEMA34)	TE11	TE61	mm	98.43	73.025	90	M5X0.8	12	283.5	211	14	6	7	44
			in	3.875	2.875	3.54	-	0.47	11.161	8.307	0.55	0.24	0.28	1.73
098R (NEMA34)	TE11R	TE61R	mm	98.43	73.025	83	M5X0.8	12	291.5	219	22	4	15	52
			in	3.875	2.875	3.27	-	0.47	11.476	8.622	0.87	0.16	0.59	2.05
100	TE03	TE53	mm	100	80	86	M6X1.0	15	283.5	211	14	4	7	44
			in	3.937	3.150	3.39	-	0.59	11.161	8.307	0.55	0.16	0.28	1.73
115	TE01	TE51	mm	115	95	100	M6X1.0	15	283.5	211	15	4	7	44
			in	4.528	3.740	3.94	-	0.59	11.161	8.307	0.59	0.16	0.28	1.73
115T	TE01T	TE51T	mm	115	95	100	M8X1.25	16	283.5	211	15	4	7	44
			in	4.528	3.740	3.94	-	0.63	11.161	8.307	0.59	0.16	0.28	1.73
126 (NEMA42)	TE04	TE54	mm	125.73	55.563	108	M6X1.0	15	283.5	211	15	5	7	44
			in	4.950	2.188	4.25	-	0.59	11.161	8.307	0.59	0.20	0.28	1.73
130	TE06	TE56	mm	130	110	115	M8X1.25	16	283.5	211	15	6	7	44
			in	5.118	4.331	4.53	-	0.63	11.161	8.307	0.59	0.24	0.28	1.73
145	TE05	TE55	mm	145	110	130	M8X1.25	16	286.5	214	18	6	10	47
			in	5.709	4.331	5.12	-	0.63	11.280	8.425	0.71	0.24	0.39	1.85
145R	TE05R	TE55R	mm	145	110	130	M8X1.25	16	299.5	227	31	8	23	60
			in	5.709	4.331	5.12	-	0.63	11.791	8.937	1.22	0.31	0.91	2.36
149 (NEMA56)	TE12	TE62	mm	149.23	114.3	130	-	-	286.5	214	18	6	10	47
			in	5.875	4.500	5.12	3/8UNC-16	-	11.280	8.425	0.71	0.24	0.39	1.85

## 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



# NEV 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 >

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

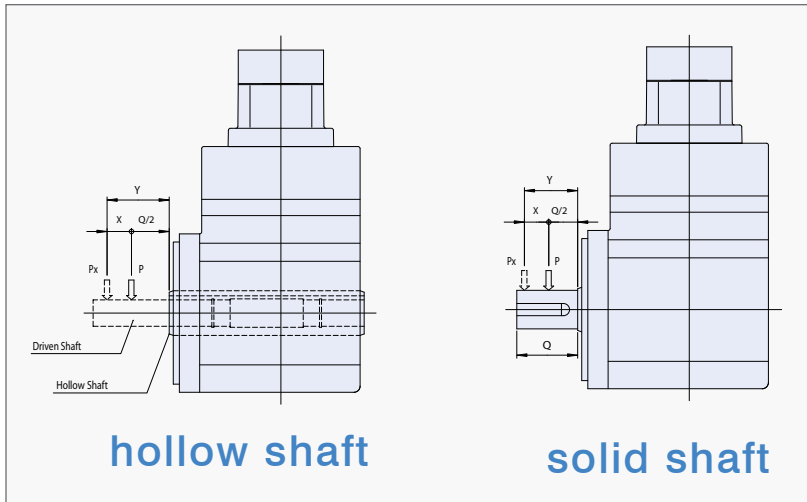
**P:** Allowable radial load  
(N or lbs from specification table)

**K:** Constant (from table below)

**Y:** Position of radial load

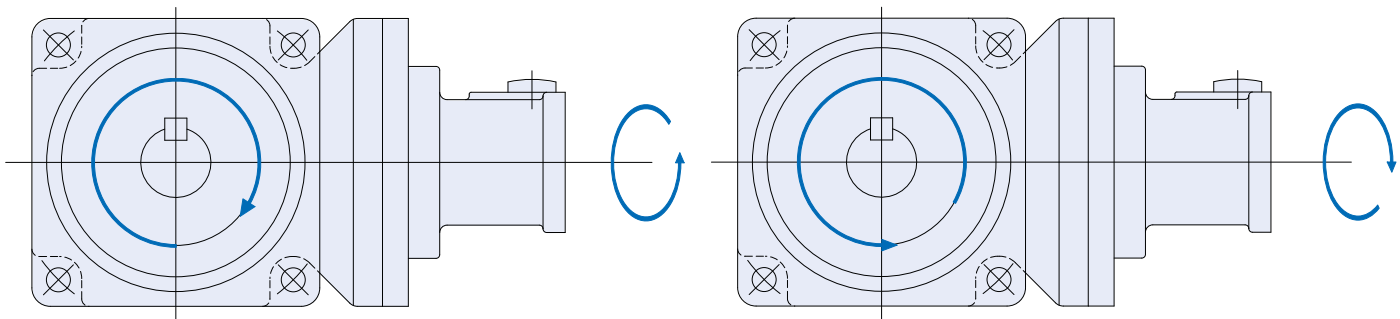
**P<sub>x</sub>:** Actual overhung load

**Q:** Output shaft length



Frame Size	Constant (K)		Q	
	mm	in	mm	in
B	94.5	3.72	30	1.18
C	97.5	3.84	30	1.18
D	128	5.04	40	1.57
E	138.5	5.45	55	2.17

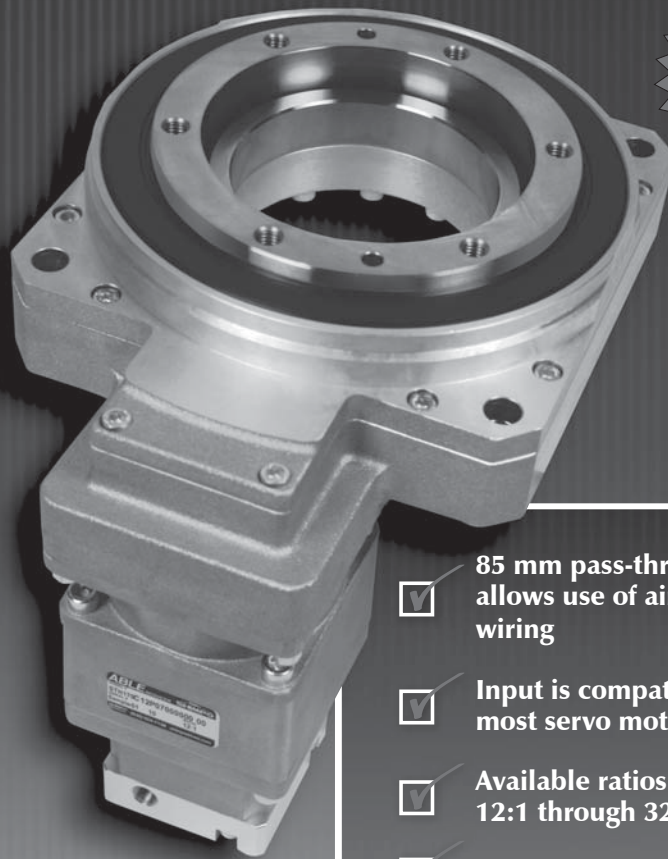
## Direction of Shaft Rotation



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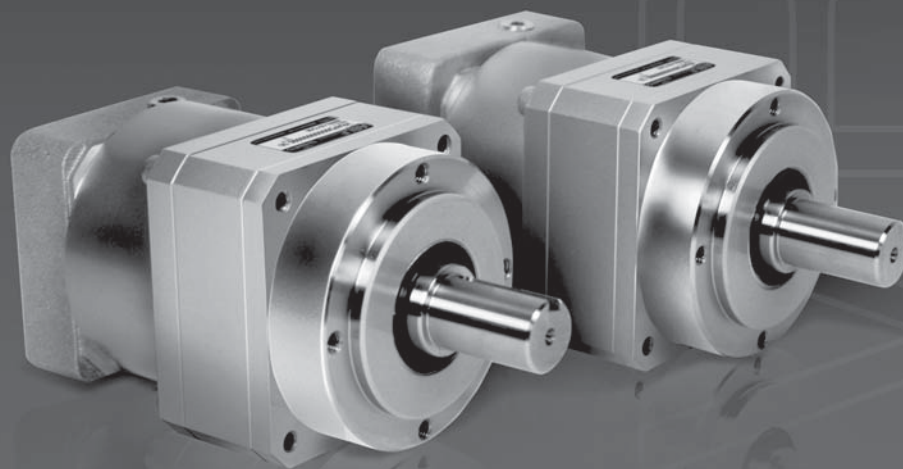
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