

A large, dark, semi-transparent image of a stainless steel reducer gearbox, shown from a three-quarter perspective, serving as the background for the central text.

# STAINLESS STEEL

STAINLESS REDUCER

Precision. Motion Control. Technology.



Cone Drive is a world leader in precision motion control technology.

We work with our customers every step of the way – from design specs to the final solution – to create highly precise, highly specific products that keep our customers' technology at the forefront of their industry. Cone Drive offers engineering support, unique solutions, and innovative technology across a breadth of markets and products to drive your company forward.



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Serving an entire spectrum of mechanical drive applications from food, energy, mining and metal; to automotive, aerospace and marine propulsion, we are your source for drive solutions.

**INDUSTRIAL SOLUTIONS**

**SERIES HP**

Worm gearbox with double-enveloping worm gearing. Available in single, double and triple reductions



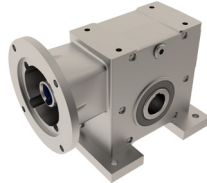
**SERIES HP-A**

Universal metric housing featuring double-enveloping gearing & drywell feature



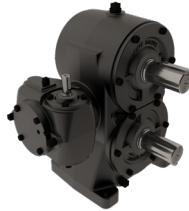
**SERIES B**

Industrial duty worm gearbox featuring Conex gearing



**DUO DRIVE**

Dual gears on parallel output shafts



**SLEWING SOLUTIONS**

Versatile slew bearings and slew drives featuring external, internal and without teeth options in a low profile, ready-to-install package



**STAINLESS NEMA**

Smooth, contoured stainless steel housing (316), IP69K rated, right angle gearbox



**DOUBLE-ENVELOPING WORM GEAR SET**

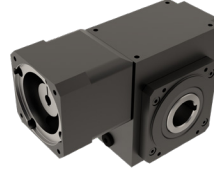
Available in standard sizes, ratios and backlash options along with custom worm gear sets



**PRECISION MOTION SOLUTIONS**

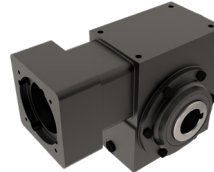
**SERIES W**

Precision right angle servo gearbox



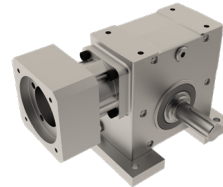
**SERIES RG**

Moderate precision right angle servo gearbox



**SERIES S**

Value engineered right angle servo gearbox



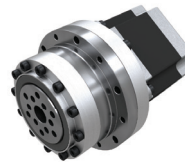
**SERIES LE / P**

In-line helical geared motors & reducers and precision planetary servo gearbox



**HARMONIC**

Cone Drive Harmonic Solutions® offer the ultimate in precision motion control technology



**STAINLESS SERVO**

Smooth, contoured stainless steel housing (316), IP69K rated right angle gearbox



**HP SERVO**

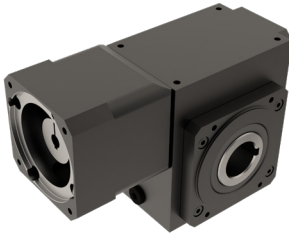
This double-enveloping worm gearing, high torque gearbox meets the most demanding needs as servo motor capacities increase



We can create custom engineered transmission solutions of any size and configuration.

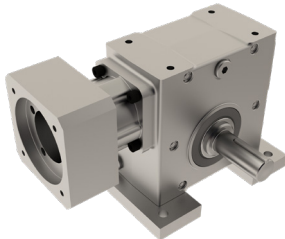
Design flexibility and lasting performance with our complete family of AccuDrive Precision Products.

### SERIES W RIGHT ANGLE GEARHEAD



- Output torque capacity up to 10,000 lb.in. (1,130 Nm)
- Solid shaft and Servo motor interfaces standard (NEMA and IEC available upon request)
- Center distance 38 to 89 mm
- IP65 rated
- Input speeds up to 6,000rpm
- Sizes available 38, 51, 64, 76, and 89
- Universal mounting
- Gear ratios from 5:1 to 60:1

### SERIES S SERVO GEARHEAD



- Economical servo solution
- Output torque up to 7,540 lb.in. (852 Nm)
- Motor adapters to fit servo motors
- Center distance from 1.33 inch up to 3.54 inch
- Speed range up to 4,000 RPM
- Flexible mounting (hollow output standard with plug in solid shaft)
- Ratios from 5:1 to 60:1

### SERIES P IN-LINE PLANETARY SERVO GEARHEAD



- Output torque capacity up to 21,240 lb.in. (2,400 Nm)
- Speed range up to 6,000 RPM input
- Sizes available 42, 60, 90, 120, 140, 180, 220 (S-Type)
- Sizes available 60, 75, 100, 140, 180, 210, 240 (P-Type)
- Gear ratios from 3:1 to 100:1 available from stock (S-Type & P-Type)
- Universal Mounting with shaft mount and flange mount standard
- 3 arc-minutes backlash or better

### SERIES LE IN-LINE PLANETARY SERVO GEARHEAD



- Output torque capacity up to 7,080 lb.in. (800 Nm)
- Speed range up to 6,000 RPM input
- Sizes 40, 60, 90, 115, 512 and 160 (Series E)
- Gear ratios from 3:1 to 64:1 (Series E)
- Sizes 50, 70, 90, 120, 155, 205, 235 (Series LE)
- Gear ratios from 3:1 to 100:1 (Series LE)
- Universal Mounting with shaft mount and flange mount standard
- Backlash as low as 8 arc-minutes (Series E) and 5 arc-minutes (Series LE)

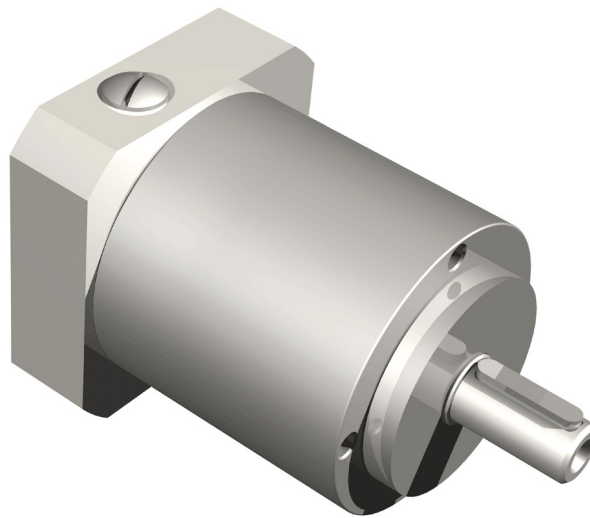
### ABSOLUTE ZERO BACKLASH ACCUDRIVE GEARING



- Unique design captures both sides of the gear tooth to completely eliminate backlash. Automatically compensates for wear-guaranteed zero backlash for the life of the gear. Available for single, double and triple reduction types, gear sets, special designs and the Series W.

# Stainless Steel Planetary Gearhead

Stainless steel planetary gearheads offer an inline solution for high efficiency and low backlash applications. Visit the Cone Drive Planetary Series Catalog to see all of our options available or contact Cone Drive Application Engineering.



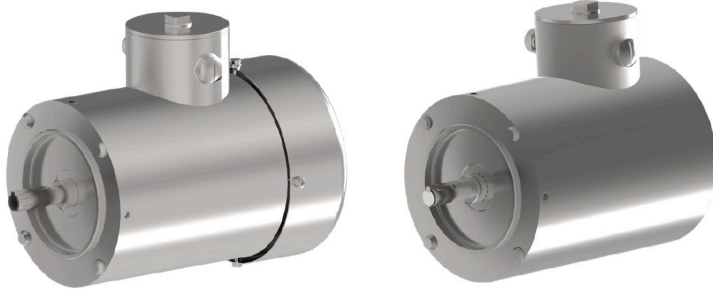
 [CONFIGURE & DOWNLOAD YOUR MODEL AT ConeTools.com](https://www.conedrives.com)

## S P E C I F I C A T I O N S

- 300 Series stainless steel construction
- IP 66 rating
- Viton® seals
- Dimensional drop in for most planetary manufacturers
- Frame sizes 70 / 90 / 120

# Stainless Steel Washdown Motors

Cone Drive now offers the option to bundle a NEMA stainless steel (304) washdown motor with your Series F gearbox. Adding a TECO-Westinghouse motor to your order provides an affordable and simple solution.



Fan Cooled

Non Vented

## Reliable and Trusted

TECO-Westinghouse motors are specifically designed for the rugged and demanding environments required for washdown applications.

PACKAGING | FOOD & BEVERAGE | PHARMACEUTICAL | MEAT & DAIRY

 [CONFIGURE & DOWNLOAD YOUR MODEL AT ConeTools.com](https://www.conetools.com)

# S P E C I F I C A T I O N S

HP	Frame	Part Number	
		Fan Cooled	Non Vented
0.5	56C	WFPV0/54C	WFNV0/54C
0.75	56C	WFPV0/74C	WFNV0/74C
1	56C	WFPV0014C	WFNV0014C
1.5	56C	WFPV1/54C	WFNV1/54C
2	56C	WFPV0024C	WFNV0024C
3	182TC	WPV0034C	WNV0034C
5	182TC	WPV0054C	—

**Frame Sizes:** 56C, 182/184TC

**Horsepower:** 0.5 - 5.0 hp

**Voltage:** 230/460 V

**Style:** C-Face, Non-Footed

**Ingress Protection:** IP 66

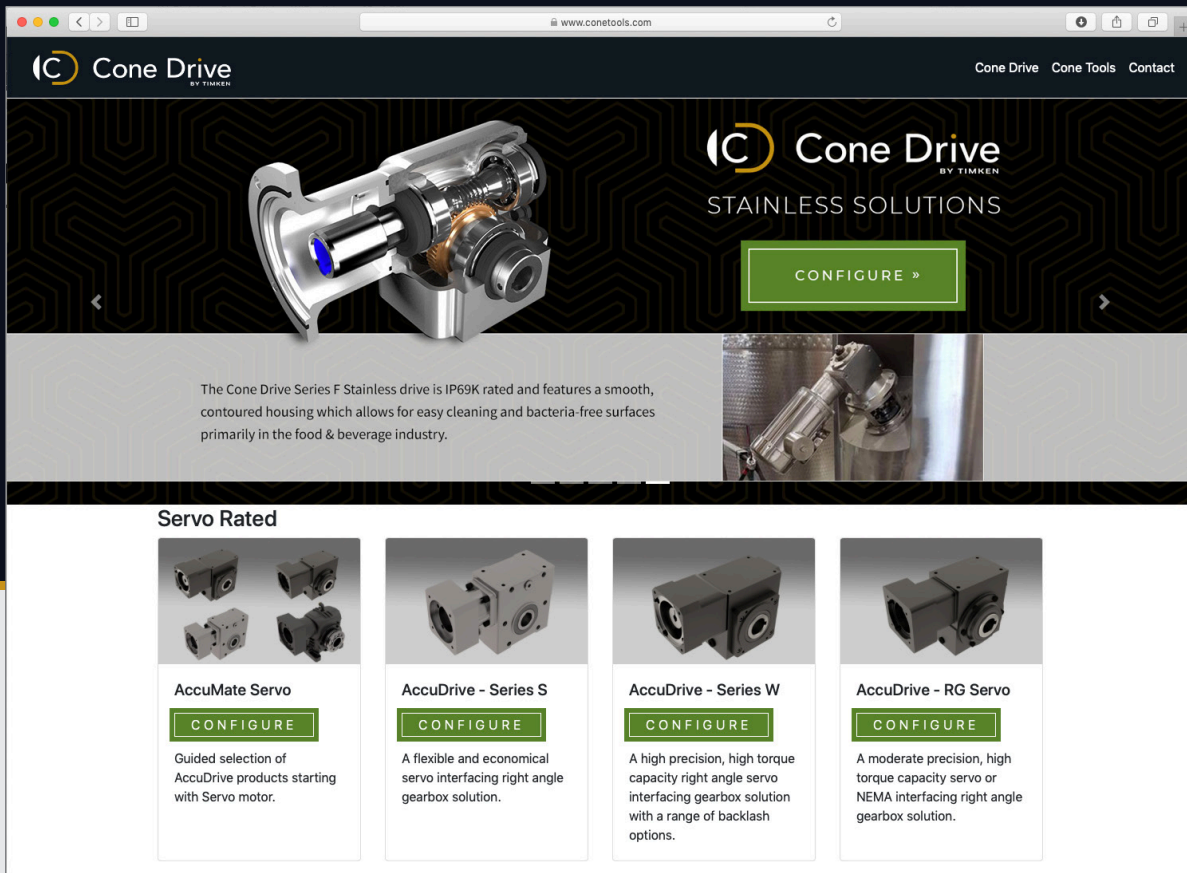
**Phase:** 3 Phase



Delivery from stock  
Additional information provided on page 24 and 25

# Configure Stainless Steel Reducers Online

[www.ConeTools.com](http://www.ConeTools.com)



The screenshot shows the Cone Drive website interface. At the top, the logo 'Cone Drive BY TIMKEN' is visible on the left, and navigation links 'Cone Drive', 'Cone Tools', and 'Contact' are on the right. The main banner features a large image of a stainless steel reducer with a cutaway view, and the text 'Cone Drive BY TIMKEN STAINLESS SOLUTIONS' with a prominent green 'CONFIGURE »' button. Below the banner, a paragraph describes the Cone Drive Series F Stainless drive as IP69K rated with a smooth, contoured housing for easy cleaning and bacteria-free surfaces, primarily used in the food & beverage industry. The 'Servo Rated' section below contains four product cards, each with an image, a title, a 'CONFIGURE' button, and a brief description:

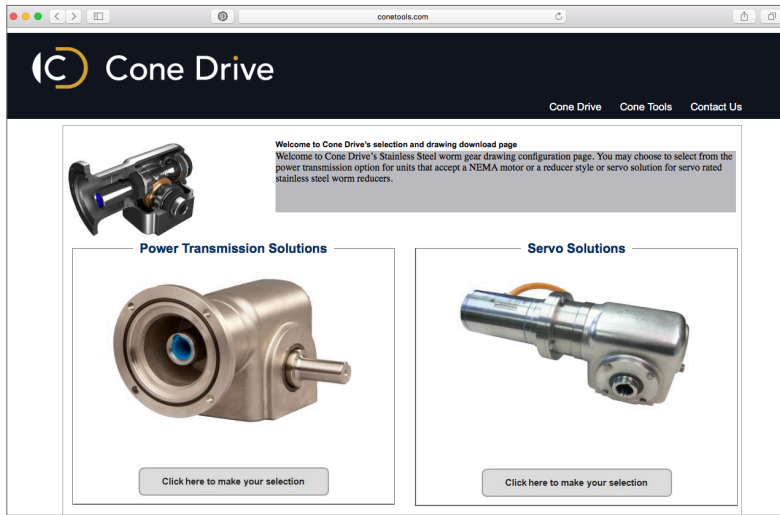
- AccuMate Servo**: Guided selection of AccuDrive products starting with Servo motor.
- AccuDrive - Series S**: A flexible and economical servo interfacing right angle gearbox solution.
- AccuDrive - Series W**: A high precision, high torque capacity right angle servo interfacing gearbox solution with a range of backlash options.
- AccuDrive - RG Servo**: A moderate precision, high torque capacity servo or NEMA interfacing right angle gearbox solution.



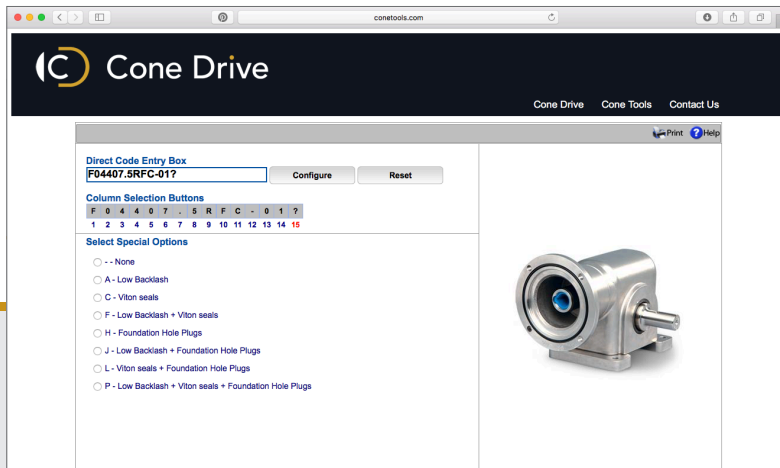
1

Visit [ConeTools.com](http://ConeTools.com)  
and Click On  
"Stainless Steel"

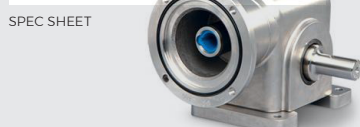
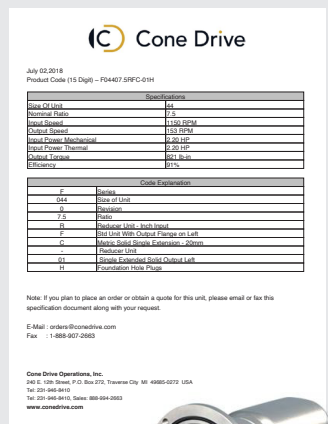
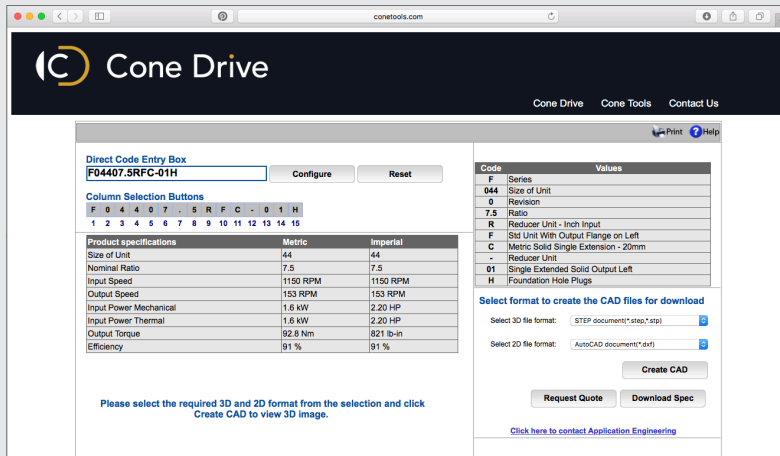




**2**  
**Select Power Transmission Solutions or Servo Solution**



**3**  
**Click All Options then select "Configure"**



**4**

**Click Here to Download a Spec Sheet & Create a CAD**

## POWERFUL, CLEAN SOLUTIONS WITH A STAINLESS REPUTATION

Cone Drive's stainless steel precision motion gearboxes are designed for sterile manufacturing environments. The product's smooth, contoured housing allows for easy cleaning to ensure bacteria-free surfaces; perfect for food processing and pharmaceutical applications. Cone Drive's stainless steel gearbox is NSF certified and IP69k rated providing maximum protection against contaminant ingress as well as leak free operation.



- Industry leading 5 year warranty
- Cone Drive true double-enveloping worm gearing (able to without 300% shock loading, provides longer life, and increased durability)
- IP69k rated
- Smooth housing to eliminate bacteria growth
- Stainless steel (316) construction on all exposed surfaces
- Non-fretting motor connection bushing for convenient motor removal
- Double input bearings for accurate motor alignment
- Double input and output seals to prevent leaks or contamination
- Factory filled with food grade lubricant, sealed for life, and maintenance free
- Manufactured complete in the USA

# S P E C I F I C A T I O N S

### PRODUCT FEATURES

**Sizes (Center Distance-in):** 1.54, 1.75, 1.97, 2.38, 3.00 in  
(39, 44, 50, 60, 76 mm)

**Standard Reduction Stages:** Single, Double (NEMA)

**Interface:** Inch or metric

**Output Torque (NEMA):** Up to 6,200 lb.in. (700 Nm)  
**(Servo):** Up to 6,400 lb.in. (725 Nm)

**Gear Ratios (NEMA):** 5:1 to 600:1; custom ratios available  
**(Servo):** 5:1 to 60:1; custom ratios available

### PRODUCT SPECIFICATIONS

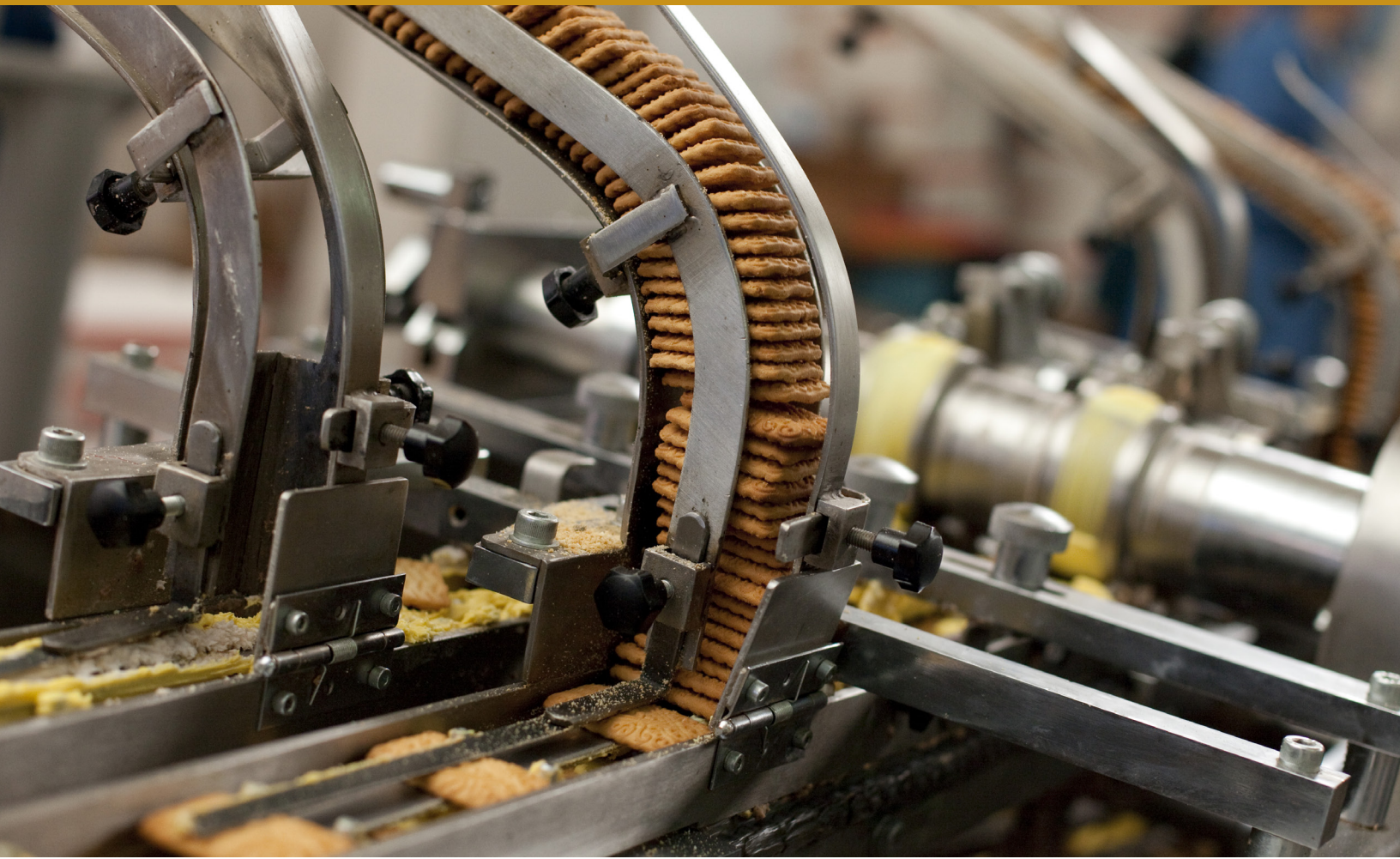
**Ingress Protection:** IP69k

**Input Options:** Solid shaft, NEMA + Servo motor interfaces  
**Output**

**Shaft Options:** Solid, Hollow, Shrink Disc

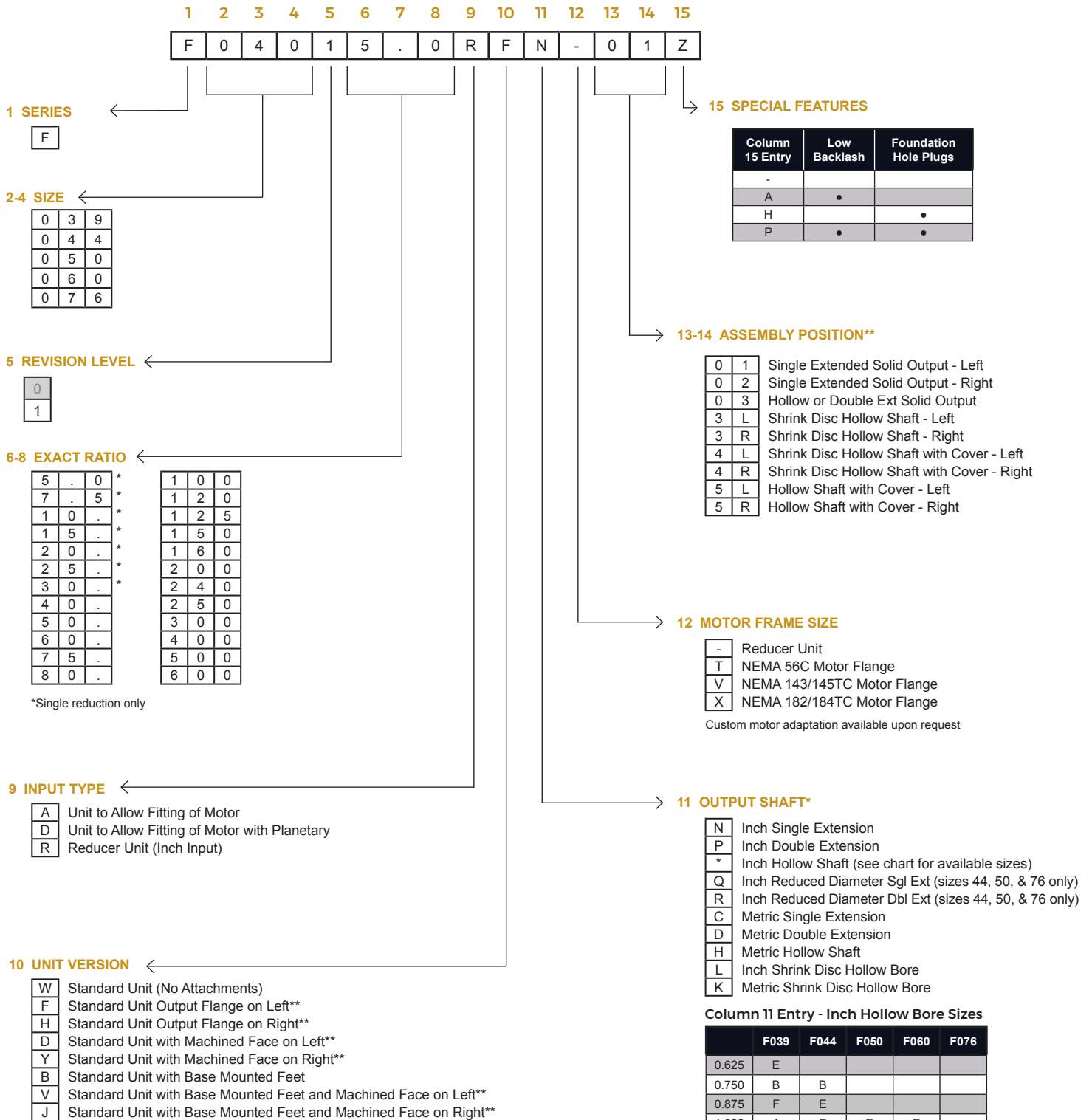
**Backlash Options:** Standard, Low

**Mounting Options:** Universal mount, Output flange



PACKAGING & PROCESSING | FOOD & BEVERAGE | PHARMACEUTICAL & CHEMICAL



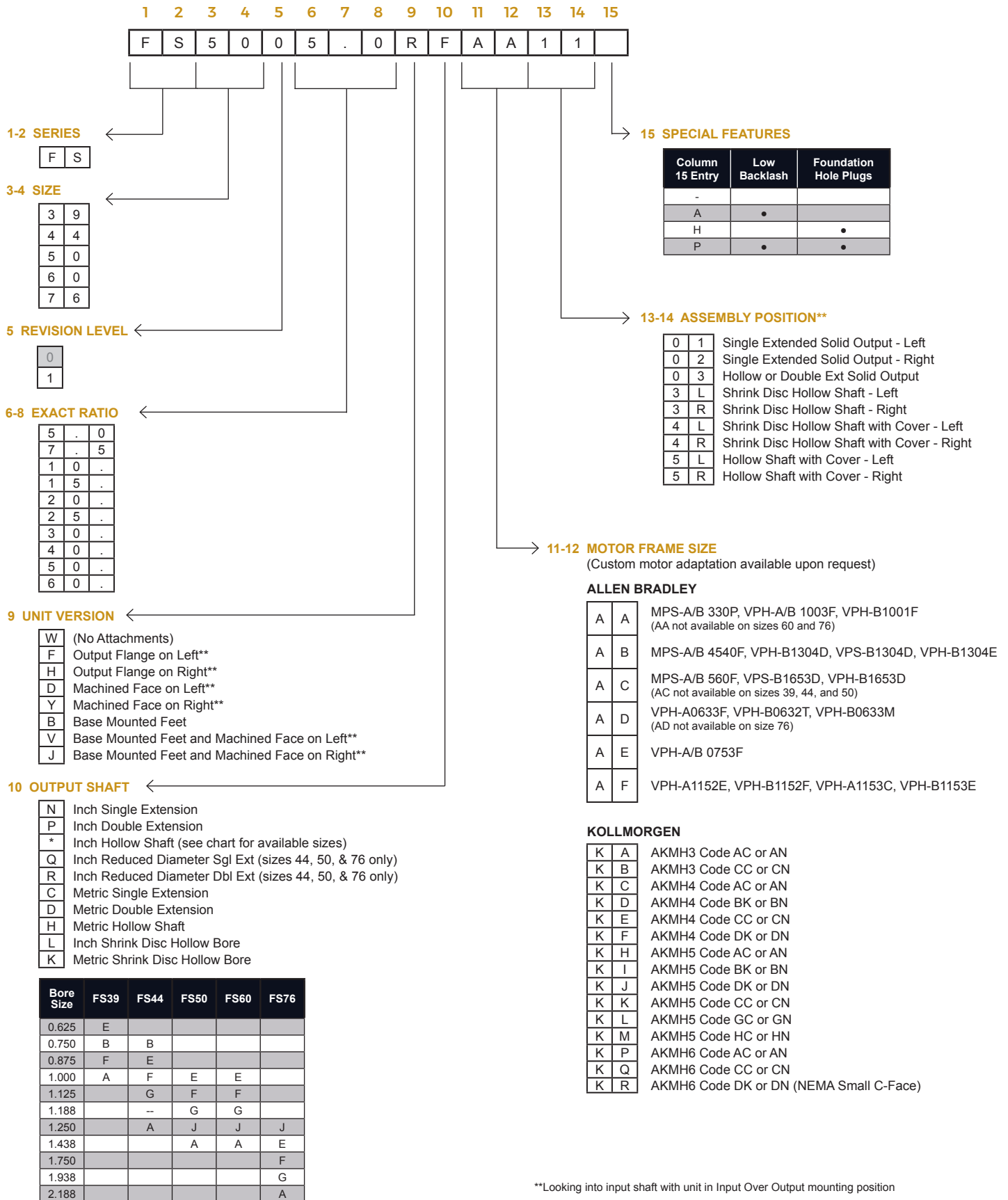


**Column 11 Entry - Inch Hollow Bore Sizes**

	F039	F044	F050	F060	F076
0.625	E				
0.750	B	B			
0.875	F	E			
1.000	A	F	E	E	
1.125		G	F	F	
1.188		--	G	G	
1.250		A	J	J	J
1.438			A	A	E
1.750					F
1.938					G
2.188					A

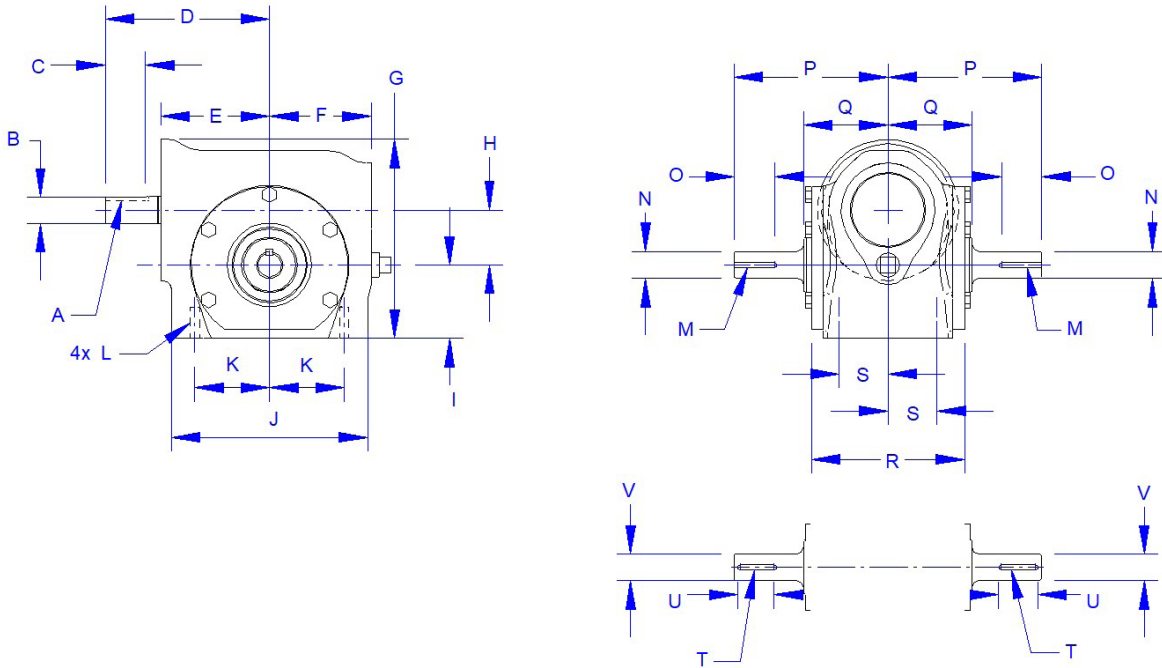
\*\*Looking into input shaft with unit in Input over output mounting position

We reserve the right to improve or change product design and specifications without notice.



\*\*Looking into input shaft with unit in Input Over Output mounting position

We reserve the right to improve or change product design and specifications without notice.

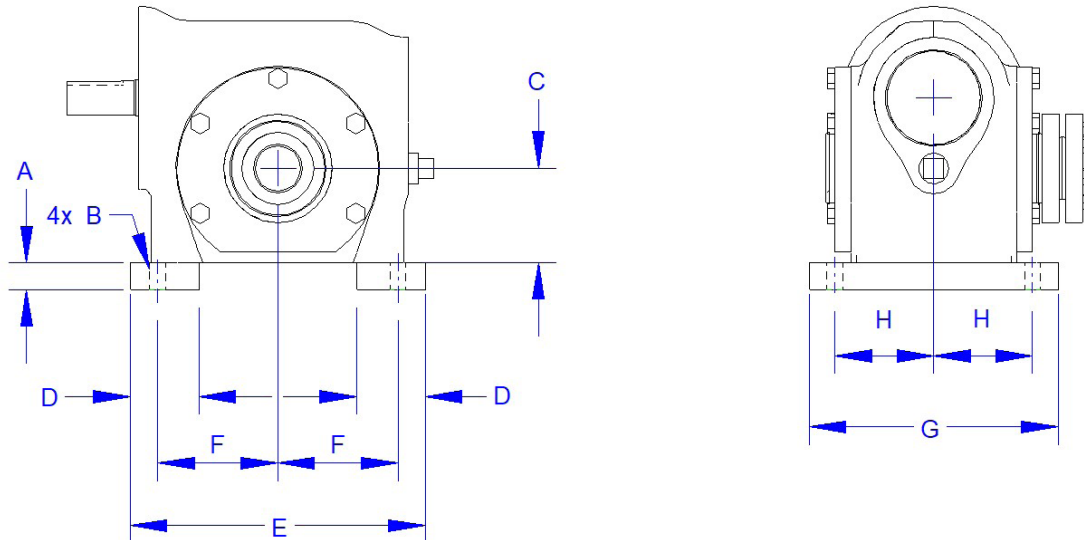


SIZE	A		B		C		D		E	
	Keyway - in		in	mm	in	mm	in	mm	in	mm
F039	3/16 x 3/32		0.750	19.1	1.13	28.6	4.61	117.0	3.05	77.5
F044	3/16 x 3/32		0.750	19.1	1.13	28.6	4.86	123.5	3.29	83.5
F050	3/16 x 3/32		0.750	19.1	1.13	28.6	4.98	126.5	3.41	86.5
F060	3/16 x 3/32		0.750	19.1	1.13	28.6	5.28	134.0	3.70	94.1
F076	1/4 x 1/8		1.1875	30.2	2.24	56.9	7.63	193.7	4.70	119.3

SIZE	F		G		H		I		J	
	in	mm	in	mm	in	mm	in	mm	in	mm
F039	2.85	72.5	5.59	142.0	1.54	39.1	1.91	48.4	5.51	140.0
F044	3.07	78.0	5.79	147.0	1.75	44.5	2.06	52.3	5.98	152.0
F050	3.13	79.5	6.22	158.0	1.97	50.0	2.28	58.0	5.98	152.0
F060	3.44	87.4	6.85	174.0	2.37	60.3	2.50	63.4	6.14	156.0
F076	4.55	115.5	8.50	216.0	3.00	76.2	3.25	82.5	8.27	210.0

SIZE	K		L		P		Q		R		S	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
F039	2.10	53.2	M8 x 1.25 x 16		4.31	109.5	2.36	60.0	4.30	109.2	1.37	34.9
F044	2.10	53.2	M8 x 1.25 x 16		4.31	109.5	2.36	60.0	4.30	109.2	1.37	34.9
F050	2.50	63.5	M10 x 1.5 x 20		4.69	119.0	2.76	70.0	5.00	127.0	1.44	36.5
F060	2.50	63.5	M10 x 1.5 x 20		5.08	129.0	2.83	72.0	5.24	133.0	1.44	36.5
F076	3.50	88.9	M12 x 1.75 x 24		6.75	171.5	3.84	97.5	6.22	158.0	2.00	50.8

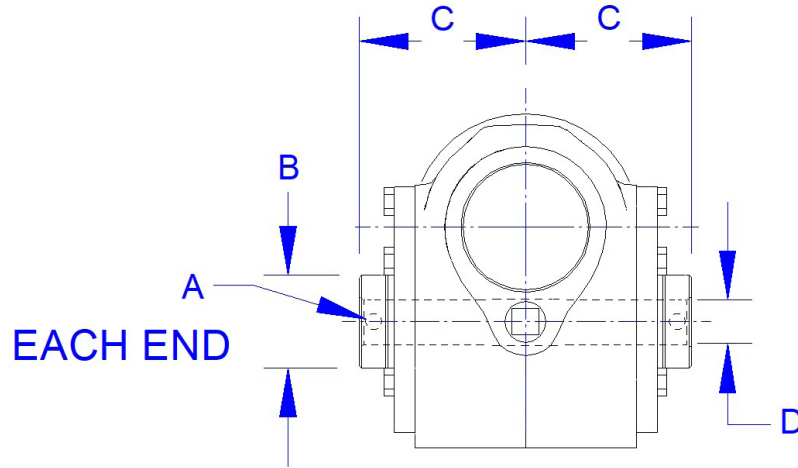
SIZE	Inch Shaft Option			Metric Shaft Option		
	O	M	N	U	T	V
	in	Keyway	in	mm	Keyway	mm
F039	1.13	3/16 x 3/32	0.749-0.750	28.0	6.0 x 3.5	18-18.02
F044	1.26	3/16 x 3/32	0.874-0.875	28.0	6.0 x 3.5	20.00-20.02
		1/4 x 1/8	0.999-1.000			
F050	1.26	1/4 x 1/8	0.999-1.000	36.0	8.0 x 4.0	25.00-25.02
		1/4 x 1/8	1.124-1.125			
F060	1.75	1/4 x 1/8	1.124-1.125	40.0	8.0 x 4.0	28.00-28.02
F076	2.01	1/4 x 1/8	1.249-1.250	50.0	10.0 x 5.0	35.00-35.02
		3/8 x 3/16	1.499-1.500			



SIZE	A		B		C		D	
	in	mm	in	mm	in	mm	in	mm
F039	0.59	15.0	0.34	8.7	1.91	48.4	1.50	38.1
F044	0.69	17.5	0.34	8.7	2.06	52.3	2.00	50.8
F050	0.72	18.4	0.42	10.7	2.28	57.8	2.00	50.8
F060	0.75	19.0	0.42	10.7	2.50	63.4	2.50	63.5
F076	0.75	19.0	0.53	13.5	3.25	82.5	2.00	50.8

SIZE	E		F		G		H	
	in	mm	in	mm	in	mm	in	mm
F039	6.44	163.6	2.63	66.7	5.44	138.2	2.16	54.8
F044	7.00	177.8	2.88	73.2	5.68	144.3	2.25	57.2
F050	7.75	196.8	3.19	80.9	5.94	150.9	2.34	59.5
F060	8.50	215.9	3.53	89.7	6.18	157.0	2.44	61.9
F076	10.00	254.0	4.22	107.2	7.50	190.5	2.94	74.6

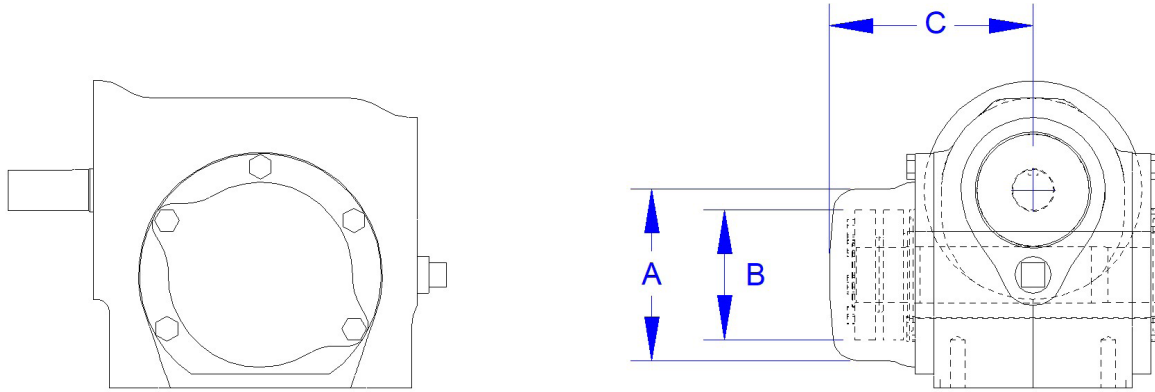
# Stainless Steel Hollow Output Dimensions



————— Inch Shaft Option ————— Metric Shaft Option —————

SIZE	A		B		C		D		
	in	in	mm	in	mm	Shaft Dia. - in	Keyway - in	Shaft Dia. - mm	Keyway - mm
F039	5/16 - 24	1.57	39.9	2.72	69.0	0.625-0.627	3/16 x 3/32	19-19.02	6.0 x 2.8
						0.750-0.752	3/16 x 3/32		
						0.875-0.877	3/16 x 3/32		
						1.000-1.002	1/4 x 1/8		
F044	5/16 - 24	1.77	44.9	2.72	69.0	0.750-0.752	3/16 x 3/32	20.00-20.02	6.0 x 2.8
						0.875-0.877	3/16 x 3/32		
						1.000-1.002	1/4 x 1/8		
						1.125-1.127	1/4 x 1/8		
F050	5/16 - 24	1.96	49.9	3.14	79.8	1.000-1.002	1/4 x 1/8	25.00-25.02	8.0 x 3.3
						1.125-1.127	1/4 x 1/8		
						1.1875-1.1895	1/4 x 1/8		
						1.250-1.252	1/4 x 1/8		
F060	5/16 - 24	2.16	54.9	3.23	82.0	1.000-1.002	1/4 x 1/8	28.00-28.02	8.0 x 3.3
						1.125-1.127	1/4 x 1/8		
						1.1875-1.1895	1/4 x 1/8		
						1.250-1.252	1/4 x 1/8		
F076	5/16 - 24	2.95	74.9	4.21	107.0	1.250-1.252	1/4 x 1/8	35.00-35.02	10.0 x 3.3
						1.4375-1.4395	3/8 x 3/16		
						1.750-1.752	3/8 x 3/16		
						1.9375-1.9395	1/2 x 1/4		
						2.1875-2.1895	1/2 x 3/16 FLAT		

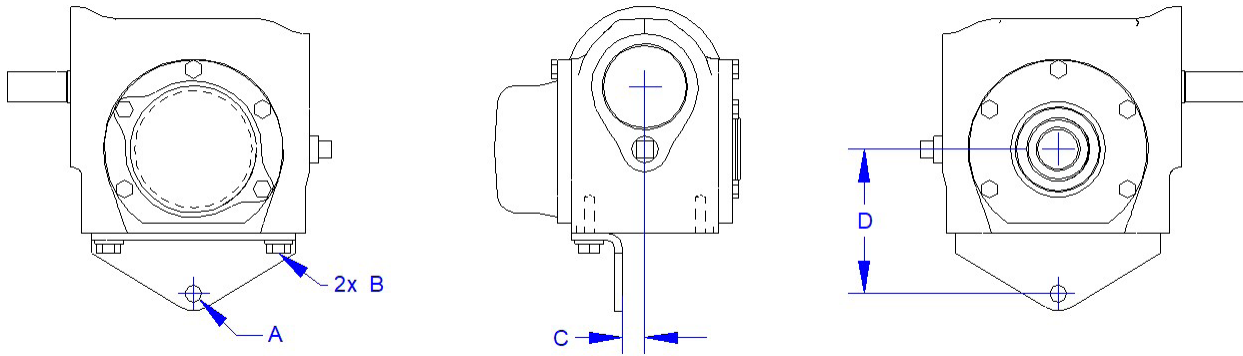




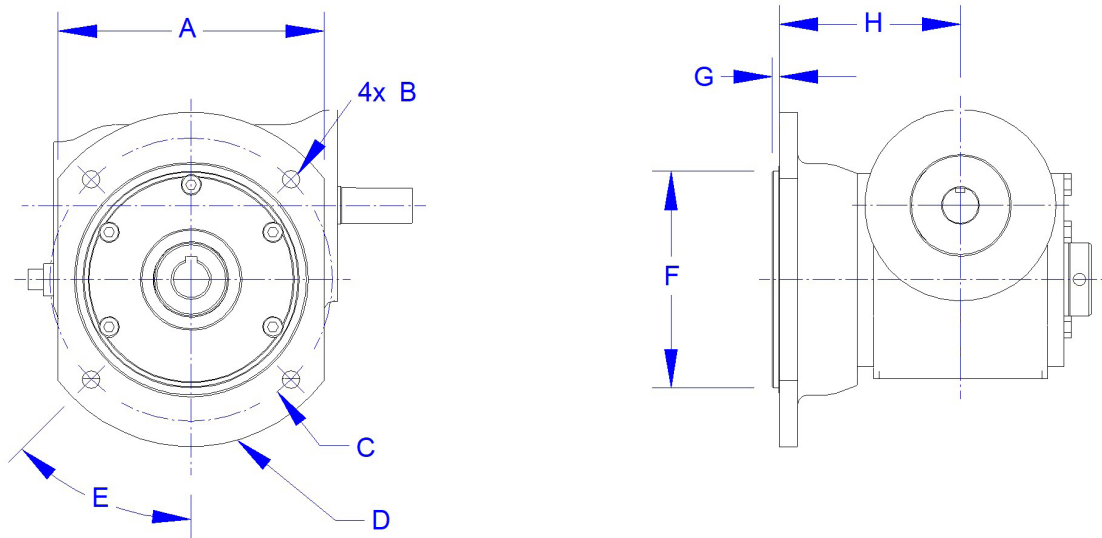
←——— Inch Bore ———→
←——— Metric Bore ———→

SIZE	A		Bore	B	Bore	B	C	
	in	mm	in	in	mm	mm	in	mm
F039	3.13	79.5	1.0000-1.0003	2.360	25-25.008	59.94	3.70	94.0
F044	3.13	79.5	1.0000-1.0003	2.360	25-25.008	59.94	3.37	94.0
F050	3.13	79.5	1.0000-1.0003	2.360	25-25.008	59.94	4.06	103.0
F060	3.40	86.3	1.2500-1.2506	2.835	30-30.008	72.01	3.37	111.0
F076	4.96	126.0	1.4375-1.4380	3.150	35-35.016	72.01	5.55	141.0

# Stainless Steel Torque Arm Dimensions



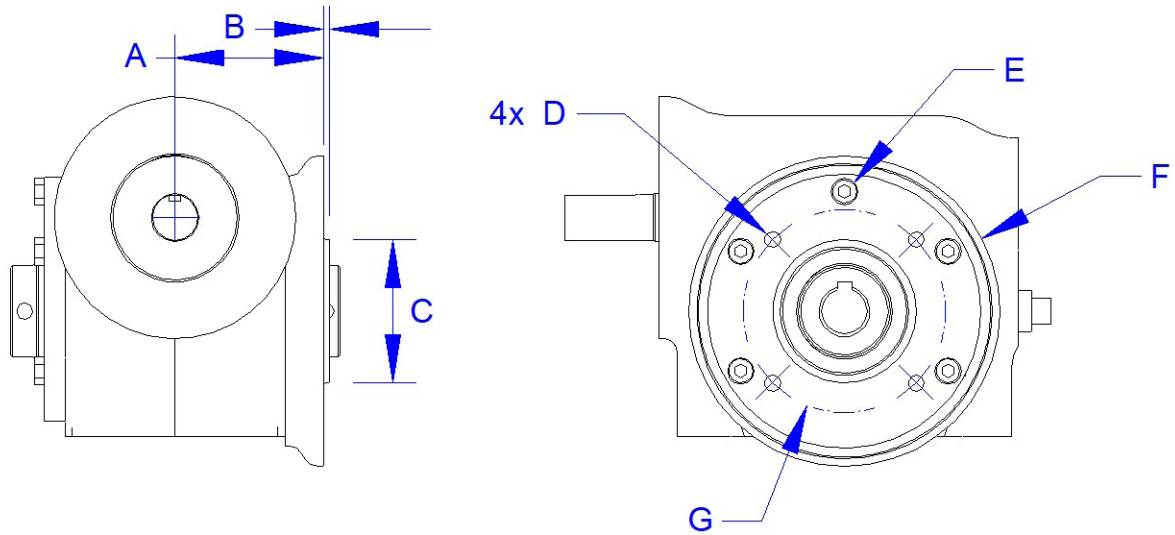
SIZE	A		B	C		D	
	in	mm	Bolts	in	mm	in	mm
F039	0.41	10.5	M8 x 1.25	0.56	14.35	3.41	86.6
F044	0.41	10.5	M8 x 1.25	0.56	14.35	3.56	90.4
F050	0.41	10.5	M10 x 1.5	0.38	9.76	4.28	108.7
F060	0.41	10.5	M10 x 1.5	0.38	9.76	4.50	114.3
F076	0.45	11.5	M12 x 1.75	0.88	22.29	6.00	152.4



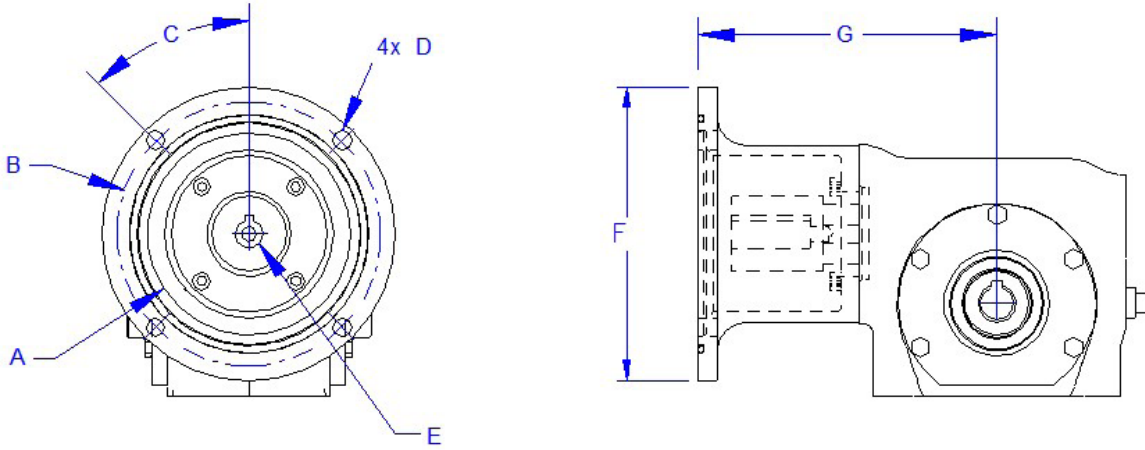
SIZE	A		B		C		D	
	in	mm	in	mm	in	mm	in	mm
F039	5.53	140.5	0.36	9.2	5.88	149.4	6.9	176
F044	5.53	140.5	0.36	9.2	5.88	149.4	6.9	176
F050	6.03	153.2	0.42	10.7	6.50	165.1	7.6	192
F060	7.29	185.2	0.42	10.7	8.00	203.2	9.1	231
F076	8.79	223.3	0.54	13.6	10.00	254.0	11.3	287

SIZE	E	F		G		H	
	deg	in	mm	in	mm	in	mm
F039	45	4.50	114.3	0.15	3.8	3.43	87.0
F044	45	4.50	114.3	0.15	3.8	3.43	87.0
F050	45	5.25	133.3	0.15	3.8	4.00	101.6
F060	45	6.50	165.1	0.15	3.8	4.51	114.5
F076	45	8.00	203.2	0.15	3.8	5.70	144.7

# Stainless Steel Side Mount Dimensions

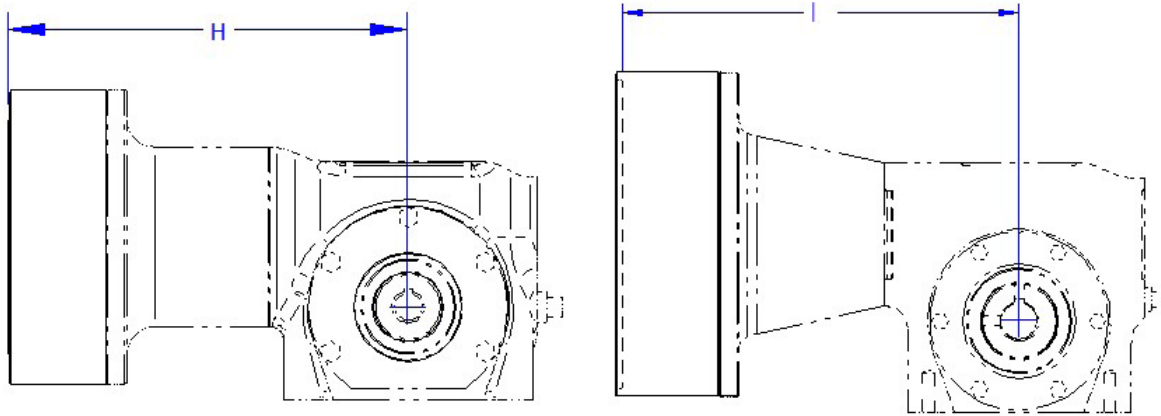


SIZE	A		B		C		D	E	F - outer dia.		G - bolt circle	
	in	mm	in	mm	in	mm	in	Bolts	in	mm	in	mm
F039	2.44	62.0	0.10	2.5	2.36	60.0	M6 x 1.0 x 12	5 x M6 x 1.0 x 20	5.12	130.0	2.95	75.0
F044	2.44	62.0	0.10	2.5	2.76	70.0	M8 x 1.25 x 12	6 x M6 x 1.0 x 20	5.12	130.0	3.35	85.0
F050	2.80	71.0	0.10	2.5	2.76	70.0	M8 x 1.25 x 12	6 x M6 x 1.0 x 20	5.12	130.0	3.35	85.0
F060	2.89	73.5	0.10	2.5	3.15	80.0	M8 x 1.25 x 12	6 x M6 x 1.0 x 20	5.51	140.0	3.74	95.0
F076	3.54	90.0	0.10	2.5	4.33	110.0	M10 x 1.5 x 16	6 x M8 x 1.25 x 20	7.09	180.0	5.12	130.0

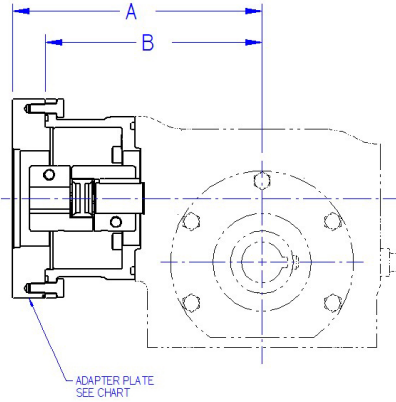


← Single Reduction →

SIZE	FRAME	A		B		C	D		E		F		G	
		in	mm	in	mm	deg	in	mm	in	mm	in	mm	in	mm
F039	56C	4.50	114.3	5.88	149.2	45	13/32	10.3	0.63	15.9	6.50	165.1	6.64	168.7
	143TC/145TC	4.50	114.3	5.88	149.2	45	13/32	10.3	0.88	22.2	6.50	165.1	6.64	168.7
	182TC/184TC	8.50	215.9	7.25	184.2	45	17/32	13.5	1.13	28.6	8.92	226.6	7.44	189.1
F044	56C	4.50	114.3	5.88	149.2	45	13/32	10.3	0.63	15.9	6.50	165.1	6.88	174.7
	143TC/145TC	4.50	114.3	5.88	149.2	45	13/32	10.3	0.88	22.2	6.50	165.1	6.88	174.7
	182TC/184TC	8.50	215.9	7.25	184.2	45	17/32	13.5	1.13	28.6	8.92	226.6	7.68	195.1
F050	56C	4.50	114.3	5.88	149.2	45	13/32	10.3	0.63	15.9	6.50	165.1	7.00	177.7
	143TC/145TC	4.50	114.3	5.88	149.2	45	13/32	10.3	0.88	22.2	6.50	165.1	7.00	177.7
	182TC/184TC	8.50	215.9	7.25	184.2	45	17/32	13.5	1.13	28.6	8.92	226.6	7.80	198.1
F060	56C	4.50	114.3	5.88	149.2	45	13/32	10.3	0.63	15.9	6.50	165.1	7.30	185.3
	143TC/145TC	4.50	114.3	5.88	149.2	45	13/32	10.3	0.88	22.2	6.50	165.1	7.30	185.3
	182TC/184TC	8.50	215.9	7.25	184.2	45	17/32	13.5	1.13	28.6	8.92	226.6	8.10	205.7
F076	56C	4.50	114.3	5.88	149.2	45	13/32	10.3	0.63	15.9	6.50	165.1	8.29	210.5
	143TC/145TC	4.50	114.3	5.88	149.2	45	13/32	10.3	0.88	22.2	6.50	165.1	8.29	210.5
	182TC/184TC	8.50	215.9	7.25	184.2	45	17/32	13.5	1.13	28.6	8.92	226.6	9.09	230.9



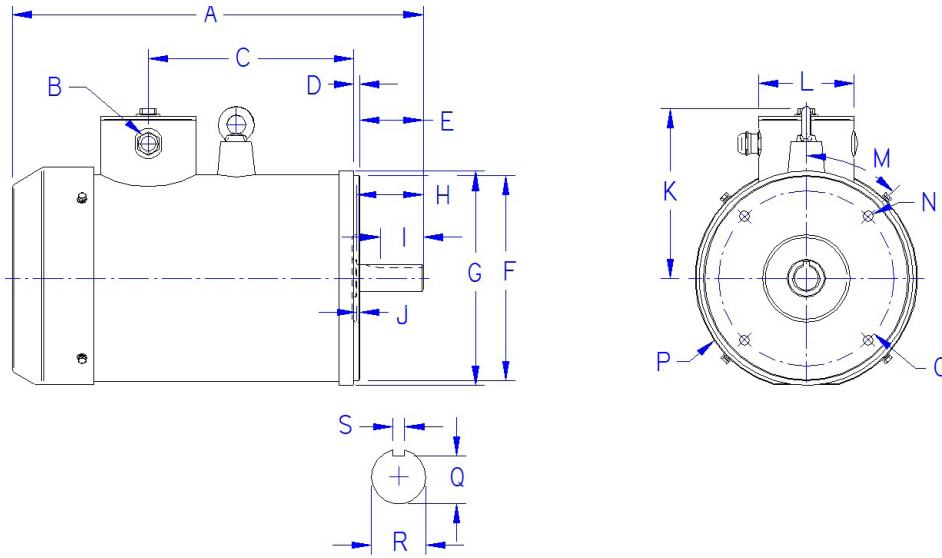
SIZE	FRAME	Double Reduction			
		H		I	
		in	mm	in	mm
F039	56C	8.79	223.2	-	-
	143TC/145TC	8.79	223.2	-	-
	182TC/184TC	-	-	10.3	262.4
F044	56C	9.02	229.2	-	-
	143TC/145TC	9.02	229.2	-	-
	182TC/184TC	-	-	10.6	268.4
F050	56C	9.14	232.2	-	-
	143TC/145TC	9.14	232.2	-	-
	182TC/184TC	-	-	10.7	271.4
F060	56C	9.44	239.8	-	-
	143TC/145TC	9.44	239.8	-	-
	182TC/184TC	-	-	11.0	279.0
F076	56C	10.43	265.0	-	-
	143TC/145TC	10.43	265.0	-	-
	182TC/184TC	-	-	12.0	304.2



COLUMN ENTRY		Part Number	Gearbox Dimensions									
			FS39		FS44		FS50		FS60		FS76	
			A	B	A	B	A	B	A	B	A	B
11	12		mm									
ALLEN BRADLEY SERVO MOTORS												
A	A	MPS-A/B 330P, VPH-A/B 1003F, VPH-B1001F	171.2	132.5	177.2	138.5	180.2	141.5	—	—	—	—
A	B	MPS-A/B 4540F, VPH-B1304D, VPS-B1304D, VPH-B1304E	—	—	—	—	—	—	213.3	185.3	238.5	210.5
A	C	MPS-A/B 560F, VPS-B1653D, VPH-B1653D	—	—	—	—	—	—	230.3	185.3	255.5	210.5
A	D	VPH-A0633F, VPH-B0632T, VPH-B0633M	162.5	132.5	168.5	138.5	171.5	141.5	179.1	149.1	—	—
A	E	VPH-A/B 0753F	152.5	132.5	158.5	138.5	161.5	141.5	169.1	149.1	194	174.3
A	F	VPH-A1152E, VPH-B1152F, VPH-A1153C, VPH-B1153E	197	168.7	203	174.7	206	177.7	213.0	185.3	239	210.5
KOLLMORGEN SERVO MOTORS												
K	A	AKMH3 Code AC, AN	152.5	132.5	158.5	138.5	161.5	141.5	—	—	—	—
K	B	AKMH3 Code CC, CN	152.5	132.5	158.5	138.5	161.5	141.5	—	—	—	—
K	C	AKMH4 Code AC, AN	171.2	132.5	177.2	138.5	180.2	141.5	187.8	149.1	213	174.3
K	D	AKMH4 Code BK, BN	171.2	132.5	177.2	138.5	180.2	141.5	187.8	149.1	213	174.3
K	E	AKMH4 Code CC, CN	171.2	132.5	177.2	138.5	180.2	141.5	187.8	149.1	213	174.3
K	F	AKMH4 Code DK, DN	171.2	132.5	177.2	138.5	180.2	141.5	187.8	149.1	213	174.3
K	H	AKMH5 Code AC, AN	196.7	168.7	202.7	174.7	205.7	177.7	213.3	185.3	238.5	210.5
K	I	AKMH5 Code BK, BN	196.7	168.7	202.7	174.7	205.7	177.7	213.3	185.3	238.5	210.5
K	J	AKMH5 Code DK, DN	196.7	168.7	202.7	174.7	205.7	177.7	213.3	185.3	238.5	210.5
K	K	AKMH5 Code CC, CN	196.7	168.7	202.7	174.7	205.7	177.7	213.3	185.3	238.5	210.5
K	L	AKMH5 Code GC, GN	196.7	168.7	202.7	174.7	205.7	177.7	213.3	185.3	238.5	210.5
K	M	AKMH5 Code HC, HN	196.7	168.7	202.7	174.7	205.7	177.7	213.3	185.3	238.5	210.5
K	P	AKMH6 Code AC, AN	—	—	—	—	—	—	230.3	185.3	255.5	210.5
K	Q	AKMH6 Code CC, CN	—	—	—	—	—	—	230.3	185.3	255.5	210.5
K	R	AKMH6 Code DK, DN	—	—	—	—	—	—	240.3	185.3	265.5	210.5

COLUMN ENTRY		Part Number	Gearbox Dimensions							
			Plate	Motor Adaptor	Outer Dia.	Pilot Dia.	Bolt Circle Dia.	Hole Size	Shaft Dia.	Shaft Length
11	12		mm							
ALLEN BRADLEY SERVO MOTORS										
A	A	MPS-A/B 330P, VPH-A/B 1003F, VPH-B1001F	FS-PAC	50FS-M20P	119.8	80	100	M6	16	40
A	B	MPS-A/B 4540F, VPH-B1304D, VPS-B1304D, VPH-B1304E	FS-AG	50FS-M20	155.1	110	130	M8	24	50
A	C	MPS-A/B 560F, VPS-B1653D, VPH-B1653D	FS-AJ	50FS-M20-1	186.0	130	165	M10	28	60
A	D	VPH-A0633F, VPH-B0632T, VPH-B0633M	FS-PAA	50FS-M20P	81.9	40	63	M5	9.0	30
A	E	VPH-A/B 0753F	FS-PAL	50FS-M20P	94.9	60	75	M5	11.0	23
A	F	VPH-A1152E, VPH-B1152F, VPH-A1153C, VPH-B1153E	FS-AP	50FS-M20	133.0	95	115	M8	19.0	40
KOLLMORGEN SERVO MOTORS										
K	A	AKMH3 Code AC, AN	FS-PAK	50FS-M20P	89	60	75	5.8	14	30
K	B	AKMH3 Code CC, CN	FS-PAL	50FS-M20P	89	60	75	M5	14	30
K	C	AKMH4 Code AC, AN	FS-PAM	50FS-M20P	114.5	80	100	7.0	19	40
K	D	AKMH4 Code BK, BN	FS-PAE	50FS-M20P	114.5	73.025	98.43	6.91	15.875	52.4
K	E	AKMH4 Code CC, CN	FS-PAC	50FS-M20P	114.5	80	100	M6	19	40
K	F	AKMH4 Code DK, DN	FS-PAD	50FS-M20P	114.5	73.025	98.43	1/4 - 20	15.875	52.4
K	H	AKMH5 Code AC, AN	FS-AF	50FS-M20	148	110	130	9	24	50
K	I	AKMH5 Code BK, BN	FS-AR	50FS-M20	148	55.563	125.73	8.33	19.05	57.15
K	J	AKMH5 Code DK, DN	FS-AS	50FS-M20	148	55.563	125.73	3/8 - 16	19.05	57.15
K	K	AKMH5 Code CC, CN	FS-AG	50FS-M20	148	110	130	M8	24	50
K	L	AKMH5 Code GC, GN	FS-AN	50FS-M20	148	95	115	9	24	50
K	M	AKMH5 Code HC, HN	FS-AP	50FS-M20	148	95	115	M8	24	50
K	P	AKMH6 Code AC, AN	FS-AH	50FS-M20	186.4	130	165	11	32	58
K	Q	AKMH6 Code CC, CN	FS-AJ	50FS-M20-1	186.4	130	165	M10	32	58
K	R	AKMH6 Code DK, DN	FS-AQ	50FS-M20	186.4	114.5	149.23	3/8 - 16	28.58	69.9

# Stainless Steel Fan Cooled Motors



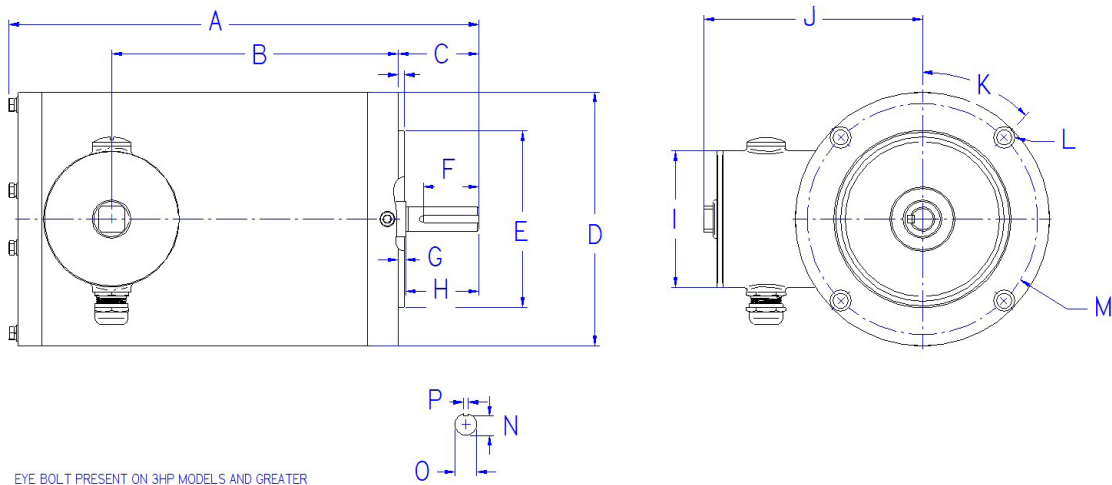
EYE BOLT PRESENT ON 3HP MODELS AND HIGHER

SIZE	A	B	C	D	E	F	G	H	I
	in	mm	in	in	in	in	in	in	in
WFPV0/54C	11.05	0.50 Cable Gland	4.20	0.16	1.90	4.50	6.45	1.88	1.41
WFPV0/74C	11.05	0.50 Cable Gland	4.20	0.16	1.90	4.50	6.45	1.88	1.41
WFPV0014C	12.65	0.50 Cable Gland	5.75	0.16	1.90	4.50	6.45	1.88	1.41
WFPV1/54C	12.65	0.50 Cable Gland	5.75	0.16	1.90	4.50	6.45	1.88	1.41
WFPV0024C	12.65	0.50 Cable Gland	5.75	0.16	1.90	4.50	6.45	1.88	1.41
WPV0034C	17.00	0.50 Cable Gland	8.50	0.25	2.62	8.50	8.85	2.75	1.78
WPV0054C	17.00	0.50 Cable Gland	8.50	0.25	2.62	8.50	8.85	2.75	1.78

SIZE	J <sub>1</sub>	J <sub>2</sub>	K	L	M	N	O	P	Q	R	S
	in	in	in	in	deg	in	in	in	in	in	in
WFPV0/54C	0.19	-	5.55	3.45	45.00	4 3/8-16	5.88	6.95	0.52	0.63	0.19
WFPV0/74C	0.19	-	5.55	3.45	45.00	4 3/8-16	5.88	6.95	0.52	0.63	0.19
WFPV0014C	0.19	-	5.55	3.45	45.00	4 3/8-16	5.88	6.95	0.52	0.63	0.19
WFPV1/54C	0.19	-	5.55	3.45	45.00	4 3/8-16	5.88	6.95	0.52	0.63	0.19
WFPV0024C	0.19	-	5.55	3.45	45.00	4 3/8-16	5.88	6.95	0.52	0.63	0.19
WPV0034C	-	0.12	7.00	3.95	45.00	4 1/2-13	7.25	9.25	0.99	1.13	0.25
WPV0054C	-	0.12	7.00	3.95	45.00	4 1/2-13	7.25	9.25	0.99	1.13	0.25

SIZE	HP	RPM	Frame	IP Rating	Phase	Pole	Voltage	Hz	Time Rating	Insulation Class	Service Factor	Weight (lbs)
WFPV0/54C	0.5	1800	56C	IP66	3	4	230/460	60	Cont.	F	1.15	31
WFPV0/74C	0.75	1800	56C	IP66	3	4	230/460	60	Cont.	F	1.15	39
WFPV0014C	1	1800	56C	IP66	3	4	230/460	60	Cont.	F	1.15	44
WFPV1/54C	1.5	1800	56C	IP66	3	4	230/460	60	Cont.	F	1.15	55
WFPV0024C	2	1800	56C	IP66	3	4	230/460	60	Cont.	F	1.15	62
WPV0034C	3	1800	182TC	IP66	3	4	230/460	60	Cont.	F	1.15	81
WPV0054C	5	1800	184TC	IP66	3	4	230/460	60	Cont.	F	1.15	104





SIZE	A	B	C	D	E	F	G	G
	in	in	in	in	in	in	in	in
WFNV0/54C	9.80	4.75	2.06	6.45	4.50	1.41	0.19	
WFNV0/74C	10.78	5.75	2.06	6.45	4.50	1.41	0.19	
WFNV0014C	10.78	5.75	2.06	6.45	4.50	1.41	0.19	
WFNV1/54C	11.96	6.95	2.06	6.45	4.50	1.41	0.19	
WFNV0024C	13.75	8.75	2.06	6.45	4.50	1.41	0.19	
WNV0034C	14.70	8.50	2.37	8.85	8.50	1.78	-	0.12

SIZE	H	I	J	K	L	M	N	O	P
	in	in	in	in	deg	in	in	in	in
WFNV0/54C	1.88	3.45	5.55	45.00	4 3/8-16	5.88	0.52	0.63	0.19
WFNV0/74C	1.88	3.45	5.55	45.00	4 3/8-16	5.88	0.52	0.63	0.19
WFNV0014C	1.88	3.45	5.55	45.00	4 3/8-16	5.88	0.52	0.63	0.19
WFNV1/54C	1.88	3.45	5.55	45.00	4 3/8-16	5.88	0.52	0.63	0.19
WFNV0024C	1.88	3.45	5.55	45.00	4 3/8-16	5.88	0.52	0.63	0.19
WNV0034C	2.75	3.95	7.00	45.00	4 1/2-13	7.25	0.99	1.13	0.25

SIZE	HP	RPM	Frame	IP Rating	Phase	Pole	Voltage	Hz	Time Rating	Insulation Class	Service Factor	Weight (lbs)
WFNV0/54C	0.5	1800	56C	IP66	3	4	230/460	60	Cont.	F	1.15	37
WFNV0/74C	0.75	1800	56C	IP66	3	4	230/460	60	Cont.	F	1.15	39
WFNV0014C	1	1800	56C	IP66	3	4	230/460	60	Cont.	F	1.15	45
WFNV1/54C	1.5	1800	56C	IP66	3	4	230/460	60	Cont.	F	1.15	55
WFNV0024C	2	1800	56C	IP66	3	4	230/460	60	Cont.	F	1.15	62
WNV0034C	3	1800	182TC	IP66	3	4	230/460	60	Cont.	F	1.15	115

		SIZE					
		Size 39	Size 44	Size 50	Size 60	Size 76	
Emergency Stop		$T_{2MAX}$ (see expanded rating tables)					
Maximum Axial Load <sup>1</sup>	lb	450	750	800	850	1000	
	N	2000	3335	3560	3780	4450	
Operating Temperature	°F	-22° to 200°					
	°C	-30° to 93°					
Degree of Protection		IP69k					
Lubrication		Food Grade Lubricant - Factory Filled					
Mounting Position		Any					
Weight (Hollow Shaft Unit; Filled with Oil)	lb	26	28	33	41	72	
Nominal Backlash	Low	arcmin	8	7	6	5	4
	Standard	arcmin	24	20	15	13	10
Torsional Rigidity	lb-in/min	51	67	92	157	368	
	Nm/min	5.8	7.6	10.4	17.7	41.6	

<sup>1</sup> Axial load capacity assumes zero overhung load. For overhung load calculations, refer to page 27.

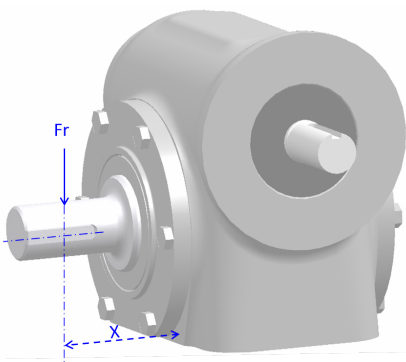
Ratios 30:1 and above can be self-locking. It is important to review the input torque applied during stopping and reversing. This is of particular importance when unrestrained high inertia loads are involved.

## MAXIMUM PERMISSIBLE RADIAL/OVERHUNG LOADS

### (Standard Output Shaft)

When a sprocket, gear, etc., is mounted on the shaft, you must calculate the application's radial/overhung load ( $Fr$ ) to verify the maximum permissible load rating is not exceeded.

The gearbox radial/overhung load ratings apply to both solid and hollow shafts.



$$Fr = \frac{P \times 126,000 \times K}{n \times PD} \quad \text{OR} \quad Fr = T \frac{2}{PD} \times K$$

- $Fr$  : Radial/Overhung load (lb)
- $X$  : Housing face to center of solid shaft keyway (in)
- $P$  : Power transmitted by shaft (hp)
- $n$  : Shaft speed (rpm)
- $PD$  : Pitch Diameter of sprocket, pinion or pulley (in)
- $K$  : Overhung load factor (Table 1 below)
- $T$  : Torque transmitted by shaft (lb-in)

Table 1. Overhung Load Factor by Load Type

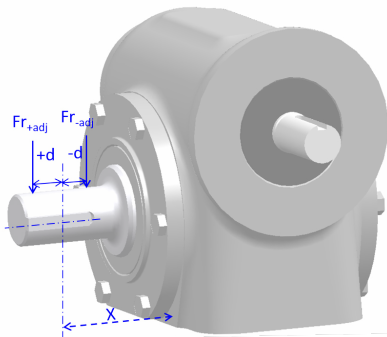
$K$	Overhung Load Type
1.00	Chain Sprocket
1.25	Spur or helical pinion
1.50	Timing belt pulley
1.50	V-belt sheave
2.50	Flat belt pulley

Table 2. Overhung Load Rating by Gearbox Size

Radial/OHL Specifications		SIZE				
		F039	F044	F050	F060	F076
$Fr$	lb	450	750	950	1250	1500
	N	2000	3300	4200	5500	6700
$X$	in	1.9	1.9	1.3	1.4	1.9
	mm	49	48	33	35	48

Overhung loads can be reduced by increasing the diameter of the sprockets, gear, etc., or by moving the part closer to the gearbox. If the maximum permissible overhung load is exceeded, the sprocket, gear, etc., should be extended to run in an outboard bearing.

To adjust for load locations that differ from the reference location,  $X$ , use the method given below:



$$Fr_{adj} = Fr \times \frac{X}{(X \pm d)}$$

- $Fr_{adj}$ : Adjusted radial/overhung load (lb)\*
- $d$ : Distance of load from center (in)

\* $Fr_{adj}$  must not exceed  $Fr$  value listed in Table 2

	RATIO	UNITS	SIZE				
			FS39	FS44	FS50	FS60	FS76
Moment of Inertia <sup>1</sup>	5	lb.in. s <sup>2</sup> 10 <sup>-4</sup>	10.87	13.94	23.42	35.61	173.14
		kg cm <sup>2</sup>	1.23	1.57	2.64	4.02	19.54
	7.5	lb.in. s <sup>2</sup> 10 <sup>-4</sup>	9.75	11.86	19.11	28.71	140.70
		kg cm <sup>2</sup>	1.10	1.34	2.16	3.24	15.88
	10	lb.in. s <sup>2</sup> 10 <sup>-4</sup>	9.36	11.13	17.60	26.30	129.35
		kg cm <sup>2</sup>	1.06	1.26	1.99	2.97	14.60
	15	lb.in. s <sup>2</sup> 10 <sup>-4</sup>	9.08	10.61	16.53	24.57	121.24
		kg cm <sup>2</sup>	1.03	1.20	1.87	2.77	13.68
	20	lb.in. S <sup>2</sup> 10 <sup>-4</sup>	8.99	10.43	16.15	23.97	118.40
		kg cm <sup>2</sup>	1.01	1.18	1.82	2.71	13.36
	25	lb.in. s <sup>2</sup> 10 <sup>-4</sup>	8.94	10.35	15.98	23.69	117.08
		kg cm <sup>2</sup>	1.01	1.17	1.80	2.67	13.21
	30	lb.in. s <sup>2</sup> 10 <sup>-4</sup>	8.92	10.30	15.88	23.54	116.37
		kg cm <sup>2</sup>	1.01	1.16	1.79	2.66	13.13
	40	lb.in. s <sup>2</sup> 10 <sup>-4</sup>	8.89	10.26	15.79	23.39	115.66
		kg cm <sup>2</sup>	1.00	1.16	1.78	2.64	13.05
	50	lb.in. s <sup>2</sup> 10 <sup>-4</sup>	8.88	10.24	15.74	23.32	115.33
		kg cm <sup>2</sup>	1.00	1.16	1.78	2.63	13.02
	60	lb.in. s <sup>2</sup> 10 <sup>-4</sup>	8.88	10.22	15.72	23.28	115.15
		kg cm <sup>2</sup>	1.00	1.15	1.77	2.63	13.00

1 The moment of inertia values reflected at the input shaft and includes coupling

## Series F39 Single Reduction

$i:1$	Ratings	Units	Servo				NEMA						$T_{2\text{MAX}}$	
			$N_{1\text{NOM}}$ (rpm)											
			500	1,000	2,000	3,000	580	720	870	1,150	1,450	1,750	lb-in	Nm
<b>5</b>	$P_{1\text{ME}}$	hp	1.05	1.83	2.78	3.47	1.19	1.42	1.65	2.02	2.34	2.59	1,760	199
		kW	0.78	1.37	2.08	2.59	0.89	1.06	1.23	1.50	1.75	1.93		
	$P_{1\text{TH}}$	hp	1.05	1.83	2.48	2.14	1.19	1.42	1.65	2.02	2.34	2.53		
		kW	0.78	1.37	1.85	1.60	0.89	1.06	1.23	1.50	1.75	1.88		
	$T_{2\text{ME}}$	lb-in	601	531	403	330	588	566	551	508	468	429		
		Nm	68	60	46	37	66	64	62	57	53	49		
	$T_{2\text{ACC}}$	lb-in	651	601	531	461	644	627	611	590	565	549		
		Nm	74	68	60	52	73	71	69	67	64	62		
$\eta$	%	91	92	92	91	91	91	92	92	92	92			
<b>7.5</b>	$P_{1\text{ME}}$	hp	0.87	1.53	2.36	2.93	0.99	1.18	1.37	1.69	1.97	2.20	2,020	229
		kW	0.65	1.14	1.76	2.18	0.74	0.88	1.02	1.26	1.47	1.64		
	$P_{1\text{TH}}$	hp	0.87	1.53	2.21	1.94	0.99	1.18	1.37	1.69	1.97	2.20		
		kW	0.65	1.14	1.65	1.45	0.74	0.88	1.02	1.26	1.47	1.64		
	$T_{2\text{ME}}$	lb-in	728	658	507	413	715	698	675	632	585	540		
		Nm	82	74	57	47	81	79	76	71	66	61		
	$T_{2\text{ACC}}$	lb-in	785	728	658	577	776	755	735	715	695	675		
		Nm	89	82	74	65	88	85	83	81	79	76		
$\eta$	%	89	91	91	90	89	90	91	91	91	91			
<b>10</b>	$P_{1\text{ME}}$	hp	0.72	1.27	1.98	2.46	0.82	0.98	1.15	1.41	1.65	1.84	2,080	235
		kW	0.54	0.95	1.48	1.83	0.61	0.73	0.85	1.06	1.23	1.37		
	$P_{1\text{TH}}$	hp	0.72	1.27	1.98	1.77	0.82	0.98	1.15	1.41	1.65	1.84		
		kW	0.54	0.95	1.48	1.32	0.61	0.73	0.85	1.06	1.23	1.37		
	$T_{2\text{ME}}$	lb-in	790	723	560	457	775	765	739	698	644	597		
		Nm	89	82	63	52	88	86	84	79	73	68		
	$T_{2\text{ACC}}$	lb-in	848	790	723	637	836	812	793	776	764	737		
		Nm	96	89	82	72	95	92	90	88	86	83		
$\eta$	%	87	90	90	89	87	89	89	90	90	90			
<b>15</b>	$P_{1\text{ME}}$	hp	0.58	1.04	1.62	2.01	0.66	0.80	0.93	1.15	1.34	1.50	2,080	235
		kW	0.44	0.77	1.21	1.50	0.50	0.60	0.69	0.86	1.00	1.12		
	$P_{1\text{TH}}$	hp	0.58	1.04	1.62	1.50	0.66	0.80	0.93	1.15	1.34	1.50		
		kW	0.44	0.77	1.21	1.12	0.50	0.60	0.69	0.86	1.00	1.12		
	$T_{2\text{ME}}$	lb-in	928	862	671	548	920	901	879	831	770	715		
		Nm	105	97	76	62	104	102	99	94	87	81		
	$T_{2\text{ACC}}$	lb-in	982	928	862	760	970	953	942	921	898	877		
		Nm	111	105	97	86	110	108	106	104	101	99		
$\eta$	%	84	88	88	87	85	86	87	88	88	88			
<b>20</b>	$P_{1\text{ME}}$	hp	0.45	0.79	1.24	1.54	0.51	0.61	0.71	0.88	1.03	1.15	2,010	227
		kW	0.33	0.59	0.92	1.15	0.38	0.46	0.53	0.66	0.77	0.86		
	$P_{1\text{TH}}$	hp	0.45	0.79	1.24	1.23	0.51	0.61	0.71	0.88	1.03	1.15		
		kW	0.33	0.59	0.92	0.92	0.38	0.46	0.53	0.66	0.77	0.86		
	$T_{2\text{ME}}$	lb-in	916	840	662	541	917	886	856	809	761	706		
		Nm	103	95	75	61	104	100	97	91	86	80		
	$T_{2\text{ACC}}$	lb-in	951	916	840	752	941	928	926	917	886	854		
			107	103	95	85	106	105	105	104	100	97		
$\eta$	%	81	84	85	84	83	83	83	84	85	85			

Please contact Cone Drive for additional ratios and ratings as well as for information for speeds above 3,000 rpm. See page 44 for rating definitions.

**Series F39 Single Reduction**

<i>i</i> :1	Ratings	Units	Servo				NEMA						$T_{2\text{ MAX}}$	
			500	1,000	2,000	3,000	$N_{1\text{ NOM}}$ (rpm)							
							580	720	870	1,150	1,450	1,750	lb-in	Nm
25	$P_{1\text{ ME}}$	hp	0.36	0.64	1.00	1.24	0.41	0.49	0.57	0.71	0.83	0.93	1,920	217
		kW	0.27	0.48	0.74	0.93	0.31	0.37	0.43	0.53	0.62	0.69		
	$P_{1\text{ TH}}$	hp	0.36	0.64	1.00	1.16	0.41	0.49	0.57	0.71	0.83	0.93		
		kW	0.27	0.48	0.74	0.86	0.31	0.37	0.43	0.53	0.62	0.69		
	$T_{2\text{ ME}}$	lb-in	918	838	659	539	901	871	862	816	758	703		
		Nm	104	95	75	61	102	98	97	92	86	79		
	$T_{2\text{ ACC}}$	lb-in	936	918	838	748	925	924	911	902	872	862		
		Nm	106	104	95	85	105	104	103	102	99	97		
	$\eta$	%	81	83	84	83	81	81	83	84	84	84		
	30	$P_{1\text{ ME}}$	hp	0.30	0.53	0.84	1.04	0.34	0.41	0.48	0.59	0.69		
kW			0.22	0.40	0.62	0.78	0.26	0.31	0.36	0.44	0.52	0.58		
$P_{1\text{ TH}}$		hp	0.30	0.53	0.84	0.94	0.34	0.41	0.48	0.59	0.69	0.78		
		kW	0.22	0.40	0.62	0.70	0.26	0.31	0.36	0.44	0.52	0.58		
$T_{2\text{ ME}}$		lb-in	844	801	631	515	837	843	823	780	724	673		
		Nm	95	91	71	58	95	95	93	88	82	76		
$T_{2\text{ ACC}}$		lb-in	889	844	801	715	878	864	856	838	841	823		
		Nm	100	95	91	81	99	98	97	95	95	93		
$\eta$		%	74	79	80	79	75	78	79	80	80	80		
40		$P_{1\text{ ME}}$	hp	0.23	0.40	0.63	0.78	0.26	0.31	0.36	0.45	0.52	0.59	1,660
	kW		0.17	0.30	0.47	0.58	0.19	0.23	0.27	0.33	0.39	0.44		
	$P_{1\text{ TH}}$	hp	0.23	0.40	0.63	0.78	0.26	0.31	0.36	0.45	0.52	0.59		
		kW	0.17	0.30	0.47	0.58	0.19	0.23	0.27	0.33	0.39	0.44		
	$T_{2\text{ ME}}$	lb-in	804	764	603	491	807	814	785	746	692	643		
		Nm	91	86	68	56	91	92	89	84	78	73		
	$T_{2\text{ ACC}}$	lb-in	809	804	764	685	810	814	812	807	813	785		
		Nm	92	91	86	77	92	92	92	91	92	89		
	$\eta$	%	70	75	76	75	72	75	75	76	76	76		
	50	$P_{1\text{ ME}}$	hp	0.18	0.32	0.51	0.63	0.21	0.25	0.29	0.36	0.42	0.47	
kW			0.14	0.24	0.38	0.47	0.15	0.19	0.22	0.27	0.31	0.35		
$P_{1\text{ TH}}$		hp	0.18	0.32	0.51	0.63	0.21	0.25	0.29	0.36	0.42	0.47		
		kW	0.14	0.24	0.38	0.47	0.15	0.19	0.22	0.27	0.31	0.35		
$T_{2\text{ ME}}$		lb-in	783	735	580	472	787	784	757	718	667	619		
		Nm	89	83	66	53	89	89	86	81	75	70		
$T_{2\text{ ACC}}$		lb-in	783	783	735	660	787	784	780	787	782	755		
		Nm	89	89	83	75	89	89	88	89	88	85		
$\eta$		%	68	72	73	72	70	72	72	73	73	73		
60		$P_{1\text{ ME}}$	hp	0.15	0.27	0.42	0.52	0.17	0.21	0.24	0.30	0.35	0.39	1,450
	kW		0.11	0.20	0.31	0.39	0.13	0.15	0.18	0.22	0.26	0.29		
	$P_{1\text{ TH}}$	hp	0.15	0.27	0.42	0.52	0.17	0.21	0.24	0.30	0.35	0.39		
		kW	0.11	0.20	0.31	0.39	0.13	0.15	0.18	0.22	0.26	0.29		
	$T_{2\text{ ME}}$	lb-in	738	707	557	453	743	741	726	690	641	594		
		Nm	83	80	63	51	84	84	82	78	72	67		
	$T_{2\text{ ACC}}$	lb-in	746	738	707	634	743	744	746	744	740	725		
			84	83	80	72	84	84	84	84	84	82		
	$\eta$	%	64	69	70	69	66	68	69	70	70	70		

Please contact Cone Drive for additional ratios and ratings as well as for information for speeds above 3,000 rpm. See page 44 for rating definitions.

## Series F44 Single Reduction

<i>i</i> :1	Ratings	Units	Servo				NEMA						<i>T</i> <sub>2 MAX</sub>	
			<i>N</i> <sub>1 NOM</sub> (rpm)											
			500	1,000	2,000	3,000	580	720	870	1,150	1,450	1,750	lb-in	Nm
<b>5</b>	<i>P</i> <sub>1 ME</sub>	hp	1.43	2.47	3.71	4.62	1.62	1.93	2.23	2.71	3.13	3.46	2,410	273
		kW	1.07	1.84	2.77	3.45	1.21	1.44	1.67	2.03	2.33	2.58		
	<i>P</i> <sub>1 TH</sub>	hp	1.43	2.47	2.85	2.46	1.62	1.93	2.23	2.71	2.90	2.90		
		kW	1.07	1.84	2.13	1.84	1.21	1.44	1.67	2.03	2.16	2.16		
	<i>T</i> <sub>2 ME</sub>	lb-in	820	716	536	440	801	769	744	684	625	574		
		Nm	93	81	61	50	91	87	84	77	71	65		
	<i>T</i> <sub>2 ACC</sub>	lb-in	888	820	716	616	877	854	834	801	768	744		
Nm		100	93	81	70	99	97	94	91	87	84			
<i>η</i>	%	91	92	92	91	91	91	92	92	92	92			
<b>7.5</b>	<i>P</i> <sub>1 ME</sub>	hp	1.18	2.07	3.17	3.95	1.35	1.61	1.87	2.29	2.66	2.95	2,770	313
		kW	0.88	1.55	2.36	2.95	1.00	1.20	1.39	1.71	1.98	2.20		
	<i>P</i> <sub>1 TH</sub>	hp	1.18	2.07	2.54	2.22	1.35	1.61	1.87	2.29	2.58	2.58		
		kW	0.88	1.55	1.89	1.66	1.00	1.20	1.39	1.71	1.92	1.92		
	<i>T</i> <sub>2 ME</sub>	lb-in	996	892	680	557	976	951	919	857	789	726		
		Nm	112	101	77	63	110	107	104	97	89	82		
	<i>T</i> <sub>2 ACC</sub>	lb-in	1,070	996	892	778	1,060	1,030	1,010	976	949	917		
Nm		121	112	101	88	120	117	114	110	107	104			
<i>η</i>	%	89	91	91	90	89	90	91	91	91	91			
<b>10</b>	<i>P</i> <sub>1 ME</sub>	hp	0.99	1.74	2.67	3.32	1.12	1.34	1.56	1.92	2.23	2.48	2,850	322
		kW	0.74	1.29	1.99	2.48	0.84	1.00	1.16	1.43	1.67	1.85		
	<i>P</i> <sub>1 TH</sub>	hp	0.99	1.74	2.29	2.03	1.12	1.34	1.56	1.92	2.23	2.32		
		kW	0.74	1.29	1.71	1.51	0.84	1.00	1.16	1.43	1.67	1.73		
	<i>T</i> <sub>2 ME</sub>	lb-in	1,080	984	756	618	1,060	1,040	1,010	946	874	805		
		Nm	122	111	85	70	120	118	114	107	99	91		
	<i>T</i> <sub>2 ACC</sub>	lb-in	1,160	1,080	984	861	1,140	1,110	1,080	1,060	1,040	1,000		
Nm		131	122	111	97	129	126	122	120	118	113			
<i>η</i>	%	87	90	90	89	87	89	89	90	90	90			
<b>15</b>	<i>P</i> <sub>1 ME</sub>	hp	0.80	1.41	2.19	2.71	0.91	1.09	1.27	1.56	1.82	2.04	2,850	322
		kW	0.60	1.05	1.63	2.02	0.68	0.81	0.95	1.17	1.36	1.52		
	<i>P</i> <sub>1 TH</sub>	hp	0.80	1.41	1.91	1.73	0.91	1.09	1.27	1.56	1.82	1.93		
		kW	0.60	1.05	1.43	1.29	0.68	0.81	0.95	1.17	1.36	1.44		
	<i>T</i> <sub>2 ME</sub>	lb-in	1,270	1,170	908	740	1,260	1,230	1,200	1,130	1,050	967		
		Nm	144	133	103	84	142	139	135	128	118	109		
	<i>T</i> <sub>2 ACC</sub>	lb-in	1,340	1,270	1,170	1,030	1,330	1,310	1,290	1,260	1,230	1,200		
Nm		152	144	133	117	150	148	146	142	139	135			
<i>η</i>	%	84	88	88	87	85	86	87	88	88	88			
<b>20</b>	<i>P</i> <sub>1 ME</sub>	hp	0.61	1.08	1.68	2.08	0.69	0.83	0.97	1.20	1.40	1.56	2,760	312
		kW	0.46	0.81	1.25	1.56	0.52	0.62	0.72	0.89	1.04	1.17		
	<i>P</i> <sub>1 TH</sub>	hp	0.61	1.08	1.53	1.41	0.69	0.83	0.97	1.20	1.40	1.55		
		kW	0.46	0.81	1.14	1.05	0.52	0.62	0.72	0.89	1.04	1.15		
	<i>T</i> <sub>2 ME</sub>	lb-in	1,250	1,150	899	732	1,250	1,210	1,170	1,100	1,030	957		
		Nm	142	129	102	83	142	137	132	125	117	108		
	<i>T</i> <sub>2 ACC</sub>	lb-in	1,310	1,250	1,150	1,020	1,290	1,270	1,270	1,260	1,210	1,170		
Nm		147	142	129	115	145	144	143	142	137	132			
<i>η</i>	%	81	84	85	84	83	83	83	84	85	85			

Please contact Cone Drive for additional ratios and ratings as well as for information for speeds above 3,000 rpm. See page 44 for rating definitions.

**Series F44 Single Reduction**

i : 1	Ratings	Units	Servo				NEMA						T <sub>2 MAX</sub>	
			N <sub>1,NOM</sub> (rpm)											
			500	1,000	2,000	3,000	580	720	870	1,150	1,450	1,750	lb-in	Nm
25	P <sub>1 ME</sub>	hp	0.49	0.87	1.35	1.68	0.56	0.67	0.78	0.97	1.13	1.26	2,640	298
		kW	0.37	0.65	1.01	1.25	0.42	0.50	0.58	0.72	0.84	0.94		
	P <sub>1 TH</sub>	hp	0.49	0.87	1.35	1.33	0.56	0.67	0.78	0.97	1.13	1.26		
		kW	0.37	0.65	1.01	0.99	0.42	0.50	0.58	0.72	0.84	0.94		
	T <sub>2 ME</sub>	lb-in	1,260	1,150	894	729	1,230	1,190	1,180	1,110	1,030	954		
		Nm	142	129	101	82	139	135	133	126	117	108		
	T <sub>2 ACC</sub>	lb-in	1,280	1,260	1,150	1,020	1,270	1,260	1,250	1,240	1,190	1,180		
Nm		145	142	129	115	143	143	141	140	134	133			
η	%	81	83	84	83	81	81	83	84	84	84			
30	P <sub>1 ME</sub>	hp	0.41	0.73	1.13	1.41	0.47	0.56	0.66	0.81	0.95	1.05	2,530	286
		kW	0.31	0.55	0.84	1.05	0.35	0.42	0.49	0.60	0.71	0.79		
	P <sub>1 TH</sub>	hp	0.41	0.73	1.13	1.08	0.47	0.56	0.66	0.81	0.95	1.05		
		kW	0.31	0.55	0.84	0.81	0.35	0.42	0.49	0.60	0.71	0.79		
	T <sub>2 ME</sub>	lb-in	1,160	1,090	854	697	1,150	1,150	1,120	1,060	987	912		
		Nm	131	124	97	79	130	130	127	120	112	103		
	T <sub>2 ACC</sub>	lb-in	1,220	1,160	1,090	972	1,200	1,180	1,170	1,150	1,150	1,120		
Nm		137	131	124	110	136	134	133	130	130	127			
η	%	74	79	80	79	75	78	79	80	80	80			
40	P <sub>1 ME</sub>	hp	0.31	0.55	0.85	1.06	0.35	0.42	0.49	0.61	0.71	0.80	2,280	258
		kW	0.23	0.41	0.64	0.79	0.26	0.32	0.37	0.45	0.53	0.59		
	P <sub>1 TH</sub>	hp	0.31	0.55	0.85	0.91	0.35	0.42	0.49	0.61	0.71	0.80		
		kW	0.23	0.41	0.64	0.68	0.26	0.32	0.37	0.45	0.53	0.59		
	T <sub>2 ME</sub>	lb-in	1,100	1,040	817	665	1,110	1,110	1,070	1,020	942	871		
		Nm	124	118	92	75	125	126	121	115	106	98		
	T <sub>2 ACC</sub>	lb-in	1,110	1,100	1,040	929	1,110	1,110	1,110	1,110	1,110	1,070		
Nm		125	124	118	105	125	126	126	125	126	121			
η	%	70	75	76	75	72	75	75	76	76	76			
50	P <sub>1 ME</sub>	hp	0.25	0.44	0.69	0.85	0.28	0.34	0.40	0.49	0.57	0.64	2,030	229
		kW	0.19	0.33	0.51	0.64	0.21	0.25	0.30	0.37	0.43	0.48		
	P <sub>1 TH</sub>	hp	0.25	0.44	0.69	0.82	0.28	0.34	0.40	0.49	0.57	0.64		
		kW	0.19	0.33	0.51	0.61	0.21	0.25	0.30	0.37	0.43	0.48		
	T <sub>2 ME</sub>	lb-in	1,070	1,010	787	641	1,080	1,070	1,030	980	907	840		
		Nm	121	114	89	72	122	121	117	111	102	95		
	T <sub>2 ACC</sub>	lb-in	1,070	1,070	1,010	895	1,080	1,070	1,070	1,080	1,070	1,030		
Nm		121	121	114	101	122	121	121	122	121	117			
η	%	68	72	73	72	70	72	72	73	73	73			
60	P <sub>1 ME</sub>	hp	0.21	0.37	0.57	0.71	0.24	0.28	0.33	0.41	0.48	0.53	1,990	225
		kW	0.16	0.27	0.43	0.53	0.18	0.21	0.25	0.31	0.36	0.40		
	P <sub>1 TH</sub>	hp	0.21	0.37	0.57	0.71	0.24	0.28	0.33	0.41	0.48	0.53		
		kW	0.16	0.27	0.43	0.53	0.18	0.21	0.25	0.31	0.36	0.40		
	T <sub>2 ME</sub>	lb-in	1,010	965	756	616	1,020	1,010	991	941	871	807		
		Nm	114	109	85	70	115	115	112	106	98	91		
	T <sub>2 ACC</sub>	lb-in	1,020	1,010	965	860	1,020	1,020	1,020	1,020	1,010	991		
		115	114	109	97	115	115	115	115	114	112			
η	%	64	69	70	69	66	68	69	70	70	70			

Please contact Cone Drive for additional ratios and ratings as well as for information for speeds above 3,000 rpm. See page 44 for rating definitions.



## Series F50 Single Reduction

$i:1$	Ratings	Units	Servo				NEMA						$T_{2\text{MAX}}$	
			$N_{1\text{NOM}}$ (rpm)											
			500	1,000	2,000	3,000	580	720	870	1,150	1,450	1,750	lb-in	Nm
<b>5</b>	$P_{1\text{ME}}$	hp	1.88	3.21	4.77	5.91	2.13	2.53	2.92	3.52	4.02	4.44	3,200	361
		kW	1.40	2.40	3.56	4.41	1.59	1.89	2.18	2.63	3.00	3.32		
	$P_{1\text{TH}}$	hp	1.88	2.96	2.91	2.51	2.13	2.53	2.92	2.96	2.96	2.96		
		kW	1.40	2.21	2.17	1.88	1.59	1.89	2.18	2.21	2.21	2.21		
	$T_{2\text{ME}}$	lb-in	1,080	932	690	562	1,050	1,010	972	887	804	736		
		Nm	122	105	78	64	119	114	110	100	91	83		
	$T_{2\text{ACC}}$	lb-in	1,170	1,080	932	791	1,160	1,130	1,100	1,050	1,010	970		
		Nm	133	122	105	89	131	127	125	119	114	110		
$\eta$	%	91	92	92	91	91	91	92	92	92	92			
<b>7.5</b>	$P_{1\text{ME}}$	hp	1.57	2.72	4.09	5.10	1.78	2.12	2.45	2.99	3.45	3.81	3,670	415
		kW	1.17	2.03	3.05	3.80	1.33	1.58	1.83	2.23	2.57	2.85		
	$P_{1\text{TH}}$	hp	1.57	2.63	2.59	2.27	1.78	2.12	2.45	2.63	2.63	2.63		
		kW	1.17	1.97	1.93	1.70	1.33	1.58	1.83	1.97	1.97	1.97		
	$T_{2\text{ME}}$	lb-in	1,320	1,170	878	720	1,290	1,250	1,210	1,120	1,020	937		
		Nm	149	132	99	81	146	141	136	126	116	106		
	$T_{2\text{ACC}}$	lb-in	1,420	1,320	1,170	1,010	1,400	1,360	1,330	1,290	1,250	1,210		
		Nm	160	149	132	114	159	154	151	146	141	136		
$\eta$	%	89	91	91	90	89	90	91	91	91	91			
<b>10</b>	$P_{1\text{ME}}$	hp	1.30	2.28	3.46	4.31	1.48	1.77	2.05	2.51	2.90	3.22	3,780	427
		kW	0.97	1.70	2.58	3.21	1.11	1.32	1.53	1.87	2.17	2.40		
	$P_{1\text{TH}}$	hp	1.30	2.28	2.34	2.07	1.48	1.77	2.05	2.37	2.37	2.37		
		kW	0.97	1.70	1.74	1.55	1.11	1.32	1.53	1.77	1.77	1.77		
	$T_{2\text{ME}}$	lb-in	1,430	1,290	980	801	1,400	1,380	1,320	1,240	1,140	1,040		
		Nm	162	146	111	91	158	156	149	140	128	118		
	$T_{2\text{ACC}}$	lb-in	1,530	1,430	1,290	1,120	1,520	1,470	1,440	1,400	1,380	1,320		
		Nm	173	162	146	127	171	166	163	158	156	149		
$\eta$	%	87	90	90	89	87	89	89	90	90	90			
<b>15</b>	$P_{1\text{ME}}$	hp	1.06	1.85	2.83	3.53	1.20	1.44	1.67	2.05	2.38	2.64	3,790	429
		kW	0.79	1.38	2.11	2.64	0.90	1.07	1.25	1.53	1.77	1.97		
	$P_{1\text{TH}}$	hp	1.06	1.85	1.95	1.76	1.20	1.44	1.67	1.97	1.97	1.97		
		kW	0.79	1.38	1.46	1.32	0.90	1.07	1.25	1.47	1.47	1.47		
	$T_{2\text{ME}}$	lb-in	1,680	1,540	1,180	963	1,670	1,620	1,580	1,480	1,360	1,260		
		Nm	190	174	133	109	188	184	179	167	154	142		
	$T_{2\text{ACC}}$	lb-in	1,770	1,680	1,540	1,350	1,760	1,730	1,710	1,670	1,620	1,580		
		Nm	200	190	174	152	199	195	193	188	183	178		
$\eta$	%	84	88	88	87	85	86	87	88	88	88			
<b>20</b>	$P_{1\text{ME}}$	hp	0.81	1.42	2.18	2.71	0.92	1.10	1.28	1.57	1.83	2.03	3,670	415
		kW	0.61	1.06	1.63	2.02	0.69	0.82	0.96	1.17	1.36	1.52		
	$P_{1\text{TH}}$	hp	0.81	1.42	1.56	1.44	0.92	1.10	1.28	1.48	1.58	1.58		
		kW	0.61	1.06	1.17	1.08	0.69	0.82	0.96	1.11	1.18	1.18		
	$T_{2\text{ME}}$	lb-in	1,660	1,510	1,170	953	1,660	1,600	1,540	1,450	1,350	1,240		
		Nm	188	170	132	108	187	181	174	164	153	141		
	$T_{2\text{ACC}}$	lb-in	1,720	1,660	1,510	1,330	1,710	1,690	1,680	1,660	1,600	1,540		
			194	188	170	150	193	191	190	188	181	174		
$\eta$	%	81	84	85	84	83	83	83	84	85	85			

Please contact Cone Drive for additional ratios and ratings as well as for information for speeds above 3,000 rpm. See page 44 for rating definitions.

## Series F50 Single Reduction

i : 1	Ratings	Units	Servo				NEMA						$T_{2\text{MAX}}$	
			$N_{1\text{NOM}}$ (rpm)											
			500	1,000	2,000	3,000	580	720	870	1,150	1,450	1,750	lb-in	Nm
25	$P_{1\text{ME}}$	hp	0.65	1.15	1.76	2.19	0.74	0.89	1.03	1.27	1.47	1.64	3,500	395
		kW	0.49	0.86	1.32	1.63	0.55	0.66	0.77	0.95	1.10	1.22		
	$P_{1\text{TH}}$	hp	0.65	1.15	1.47	1.36	0.74	0.89	1.03	1.27	1.47	1.48		
		kW	0.49	0.86	1.10	1.01	0.55	0.66	0.77	0.95	1.10	1.11		
	$T_{2\text{ME}}$	lb-in	1,670	1,510	1,160	950	1,630	1,570	1,550	1,460	1,350	1,240		
		Nm	188	170	132	107	185	178	175	165	152	140		
	$T_{2\text{ACC}}$	lb-in	1,690	1,670	1,510	1,330	1,680	1,680	1,650	1,640	1,570	1,550		
		Nm	191	188	170	150	190	189	187	185	178	175		
$\eta$	%	81	83	84	83	81	81	83	84	84	84			
30	$P_{1\text{ME}}$	hp	0.55	0.96	1.47	1.83	0.62	0.74	0.87	1.06	1.23	1.37	3,360	380
		kW	0.41	0.72	1.10	1.37	0.46	0.55	0.65	0.79	0.92	1.03		
	$P_{1\text{TH}}$	hp	0.55	0.96	1.18	1.11	0.62	0.74	0.87	1.06	1.19	1.19		
		kW	0.41	0.72	0.88	0.83	0.46	0.55	0.65	0.79	0.88	0.88		
	$T_{2\text{ME}}$	lb-in	1,530	1,440	1,110	908	1,520	1,520	1,490	1,400	1,290	1,190		
		Nm	173	163	126	103	171	172	168	158	145	134		
	$T_{2\text{ACC}}$	lb-in	1,610	1,530	1,440	1,270	1,590	1,570	1,550	1,520	1,520	1,480		
		Nm	182	173	163	143	180	178	175	172	172	168		
$\eta$	%	74	79	80	79	75	78	79	80	80	80			
40	$P_{1\text{ME}}$	hp	0.41	0.72	1.11	1.38	0.47	0.56	0.65	0.80	0.93	1.04	3,030	342
		kW	0.31	0.54	0.83	1.03	0.35	0.42	0.49	0.60	0.69	0.77		
	$P_{1\text{TH}}$	hp	0.41	0.72	0.98	0.93	0.47	0.56	0.65	0.80	0.93	0.99		
		kW	0.31	0.54	0.73	0.70	0.35	0.42	0.49	0.60	0.69	0.74		
	$T_{2\text{ME}}$	lb-in	1,460	1,380	1,060	867	1,470	1,470	1,420	1,330	1,230	1,130		
		Nm	165	155	120	98	166	166	160	151	139	128		
	$T_{2\text{ACC}}$	lb-in	1,470	1,460	1,380	1,210	1,470	1,480	1,470	1,460	1,470	1,410		
		Nm	166	165	155	137	166	167	167	165	166	160		
$\eta$	%	70	75	76	75	72	75	75	76	76	76			
50	$P_{1\text{ME}}$	hp	0.33	0.58	0.89	1.11	0.38	0.45	0.52	0.64	0.75	0.83	2,690	304
		kW	0.25	0.43	0.67	0.83	0.28	0.34	0.39	0.48	0.56	0.62		
	$P_{1\text{TH}}$	hp	0.33	0.58	0.87	0.83	0.38	0.45	0.52	0.64	0.75	0.83		
		kW	0.25	0.43	0.65	0.62	0.28	0.34	0.39	0.48	0.56	0.62		
	$T_{2\text{ME}}$	lb-in	1,420	1,320	1,020	835	1,430	1,420	1,360	1,280	1,180	1,090		
		Nm	161	150	116	94	161	160	154	145	134	123		
	$T_{2\text{ACC}}$	lb-in	1,420	1,420	1,320	1,170	1,430	1,420	1,410	1,430	1,410	1,360		
		Nm	161	161	150	132	161	160	160	161	160	154		
$\eta$	%	68	72	73	72	70	72	72	73	73	73			
60	$P_{1\text{ME}}$	hp	0.28	0.49	0.75	0.93	0.31	0.37	0.44	0.54	0.62	0.69	2,640	299
		kW	0.21	0.36	0.56	0.69	0.23	0.28	0.33	0.40	0.47	0.52		
	$P_{1\text{TH}}$	hp	0.28	0.49	0.75	0.75	0.31	0.37	0.44	0.54	0.62	0.69		
		kW	0.21	0.36	0.56	0.56	0.23	0.28	0.33	0.40	0.47	0.52		
	$T_{2\text{ME}}$	lb-in	1,340	1,270	984	801	1,350	1,340	1,310	1,230	1,140	1,050		
		Nm	152	144	111	91	153	151	148	139	129	119		
	$T_{2\text{ACC}}$	lb-in	1,350	1,340	1,270	1,120	1,350	1,350	1,350	1,350	1,340	1,310		
		Nm	153	152	144	127	153	153	153	152	151	148		
$\eta$	%	64	69	70	69	66	68	69	70	70	70			

Please contact Cone Drive for additional ratios and ratings as well as for information for speeds above 3,000 rpm. See page 44 for rating definitions.

## Series F60 Single Reduction

<i>i</i> : 1	Ratings	Units	Servo				NEMA						<i>T</i> <sub>2 MAX</sub>	
			<i>N</i> <sub>1 NOM</sub> (rpm)											
			500	1,000	2,000	3,000	580	720	870	1,150	1,450	1,750	lb-in	Nm
<b>5</b>	<i>P</i> <sub>1 ME</sub>	hp	3.17	5.07	7.35	8.89	3.55	4.15	4.68	5.47	6.18	6.83	5,550	627
		kW	2.36	3.79	5.49	6.64	2.65	3.10	3.49	4.08	4.61	5.10		
	<i>P</i> <sub>1 TH</sub>	hp	2.70	3.04	2.98	2.58	2.70	2.70	3.04	3.04	3.04	3.04		
		kW	2.01	2.27	2.23	1.92	2.01	2.01	2.27	2.27	2.27	2.27		
	<i>T</i> <sub>2 ME</sub>	lb-in	1,820	1,470	1,060	846	1,750	1,650	1,560	1,380	1,240	1,130		
		Nm	205	166	120	96	198	187	176	156	140	128		
	<i>T</i> <sub>2 ACC</sub>	lb-in	2,010	1,820	1,470	1,220	1,990	1,930	1,860	1,760	1,650	1,560		
		Nm	227	205	166	138	225	218	211	199	186	176		
<i>η</i>	%	91	92	92	91	91	91	92	92	92	92			
<b>7.5</b>	<i>P</i> <sub>1 ME</sub>	hp	2.62	4.28	6.21	7.56	2.95	3.46	3.93	4.61	5.21	5.77	6,360	719
		kW	1.96	3.19	4.64	5.64	2.20	2.58	2.93	3.44	3.89	4.30		
	<i>P</i> <sub>1 TH</sub>	hp	2.21	2.70	2.66	2.33	2.21	2.43	2.56	2.70	2.70	2.70		
		kW	1.65	2.01	1.98	1.74	1.65	1.81	1.91	2.01	2.01	2.01		
	<i>T</i> <sub>2 ME</sub>	lb-in	2,210	1,840	1,330	1,070	2,140	2,050	1,930	1,730	1,550	1,420		
		Nm	250	208	151	121	242	231	218	195	175	160		
	<i>T</i> <sub>2 ACC</sub>	lb-in	2,420	2,210	1,840	1,530	2,390	2,330	2,260	2,150	2,040	1,930		
		Nm	273	250	208	172	270	263	255	243	231	218		
<i>η</i>	%	89	91	91	90	89	90	91	91	91	91			
<b>10</b>	<i>P</i> <sub>1 ME</sub>	hp	2.19	3.58	5.21	6.33	2.46	2.89	3.28	3.87	4.36	4.84	6,540	739
		kW	1.63	2.67	3.89	4.72	1.84	2.16	2.45	2.89	3.26	3.61		
	<i>P</i> <sub>1 TH</sub>	hp	1.87	2.43	2.40	2.13	1.87	2.21	2.21	2.43	2.43	2.43		
		kW	1.39	1.81	1.79	1.59	1.39	1.65	1.65	1.81	1.81	1.81		
	<i>T</i> <sub>2 ME</sub>	lb-in	2,400	2,030	1,470	1,180	2,330	2,250	2,120	1,910	1,710	1,570		
		Nm	271	229	167	133	263	255	239	216	193	177		
	<i>T</i> <sub>2 ACC</sub>	lb-in	2,600	2,400	2,030	1,680	2,580	2,510	2,430	2,330	2,250	2,110		
		Nm	294	271	229	190	291	283	275	263	254	239		
<i>η</i>	%	87	90	90	89	87	89	89	90	90	90			
<b>15</b>	<i>P</i> <sub>1 ME</sub>	hp	1.77	2.91	4.24	5.17	2.00	2.35	2.67	3.15	3.56	3.95	6,560	742
		kW	1.32	2.17	3.17	3.86	1.49	1.75	1.99	2.35	2.66	2.95		
	<i>P</i> <sub>1 TH</sub>	hp	1.54	2.02	2.00	1.81	1.62	1.74	1.87	2.02	2.02	2.02		
		kW	1.15	1.51	1.49	1.35	1.21	1.30	1.39	1.51	1.51	1.51		
	<i>T</i> <sub>2 ME</sub>	lb-in	2,820	2,420	1,760	1,410	2,770	2,650	2,520	2,280	2,040	1,880		
		Nm	319	274	199	159	313	299	285	257	231	212		
	<i>T</i> <sub>2 ACC</sub>	lb-in	3,020	2,820	2,420	2,010	2,980	2,940	2,890	2,770	2,650	2,520		
		Nm	341	319	274	227	337	333	327	313	299	285		
<i>η</i>	%	84	88	88	87	85	86	87	88	88	88			
<b>20</b>	<i>P</i> <sub>1 ME</sub>	hp	1.36	2.23	3.25	3.96	1.53	1.80	2.04	2.41	2.73	3.03	6,350	717
		kW	1.01	1.67	2.43	2.96	1.14	1.34	1.53	1.80	2.04	2.26		
	<i>P</i> <sub>1 TH</sub>	hp	1.30	1.52	1.60	1.48	1.43	1.43	1.43	1.52	1.62	1.62		
		kW	0.97	1.13	1.20	1.10	1.07	1.07	1.07	1.13	1.21	1.21		
	<i>T</i> <sub>2 ME</sub>	lb-in	2,790	2,360	1,740	1,390	2,760	2,610	2,460	2,220	2,020	1,860		
		Nm	315	267	197	157	312	295	278	251	228	210		
	<i>T</i> <sub>2 ACC</sub>	lb-in	2,930	2,790	2,360	1,980	2,890	2,870	2,840	2,760	2,610	2,450		
		Nm	331	315	267	224	326	324	321	312	294	277		
<i>η</i>	%	81	84	85	84	83	83	83	84	85	85			

Please contact Cone Drive for additional ratios and ratings as well as for information for speeds above 3,000 rpm. See page 44 for rating definitions.

**Series F60 Single Reduction**

i : 1	Ratings	Units	Servo				NEMA						T <sub>2 MAX</sub>	
			N <sub>1 NOM</sub> (rpm)											
			500	1,000	2,000	3,000	580	720	870	1,150	1,450	1,750	lb-in	Nm
25	P <sub>1 ME</sub>	hp	1.09	1.80	2.62	3.20	1.23	1.45	1.65	1.95	2.20	2.45	6,050	684
		kW	0.82	1.34	1.96	2.39	0.92	1.08	1.23	1.45	1.64	1.83		
	P <sub>1 TH</sub>	hp	1.09	1.45	1.51	1.39	1.23	1.28	1.43	1.52	1.52	1.52		
		kW	0.82	1.08	1.12	1.04	0.92	0.95	1.07	1.13	1.13	1.13		
	T <sub>2 ME</sub>	lb-in	2,790	2,360	1,730	1,390	2,710	2,570	2,480	2,240	2,010	1,850		
		Nm	315	267	196	157	306	290	280	254	227	209		
	T <sub>2 ACC</sub>	lb-in	2,870	2,790	2,360	1,970	2,840	2,850	2,790	2,710	2,570	2,480		
		Nm	324	315	267	223	321	322	316	307	290	280		
	η	%	81	83	84	83	81	81	83	84	84	84		
	30	P <sub>1 ME</sub>	hp	0.91	1.51	2.19	2.67	1.03	1.21	1.38	1.63	1.84		
kW			0.68	1.12	1.64	2.00	0.77	0.91	1.03	1.22	1.38	1.53		
P <sub>1 TH</sub>		hp	0.91	1.17	1.21	1.13	0.97	1.10	1.16	1.22	1.22	1.22		
		kW	0.68	0.87	0.90	0.85	0.73	0.82	0.86	0.91	0.91	0.91		
T <sub>2 ME</sub>		lb-in	2,570	2,260	1,660	1,320	2,520	2,480	2,370	2,140	1,920	1,770		
		Nm	290	255	187	150	284	281	268	242	217	200		
T <sub>2 ACC</sub>		lb-in	2,730	2,570	2,260	1,890	2,700	2,660	2,630	2,520	2,480	2,360		
		Nm	308	290	255	213	305	301	297	285	280	267		
η		%	74	79	80	79	75	78	79	80	80	80		
40		P <sub>1 ME</sub>	hp	0.69	1.14	1.65	2.02	0.78	0.91	1.04	1.23	1.39	1.54	5,240
	kW		0.52	0.85	1.23	1.50	0.58	0.68	0.78	0.92	1.04	1.15		
	P <sub>1 TH</sub>	hp	0.69	0.98	1.01	0.96	0.78	0.91	0.97	1.01	1.01	1.01		
		kW	0.52	0.73	0.75	0.71	0.58	0.68	0.73	0.76	0.76	0.76		
	T <sub>2 ME</sub>	lb-in	2,450	2,160	1,580	1,260	2,430	2,400	2,260	2,050	1,840	1,690		
		Nm	277	244	179	143	275	271	255	231	208	191		
	T <sub>2 ACC</sub>	lb-in	2,480	2,450	2,160	1,810	2,490	2,500	2,490	2,430	2,390	2,250		
		Nm	280	277	244	204	281	283	282	274	271	255		
	η	%	70	75	76	75	72	75	75	76	76	76		
	50	P <sub>1 ME</sub>	hp	0.55	0.91	1.33	1.62	0.62	0.73	0.83	0.99	1.11	1.24	
kW			0.41	0.68	0.99	1.21	0.47	0.55	0.62	0.74	0.83	0.92		
P <sub>1 TH</sub>		hp	0.55	0.88	0.90	0.85	0.62	0.73	0.83	0.90	0.90	0.90		
		kW	0.41	0.65	0.67	0.64	0.47	0.55	0.62	0.67	0.67	0.67		
T <sub>2 ME</sub>		lb-in	2,390	2,080	1,520	1,220	2,370	2,310	2,180	1,970	1,770	1,630		
		Nm	270	235	172	137	268	261	246	223	200	184		
T <sub>2 ACC</sub>		lb-in	2,400	2,390	2,080	1,740	2,380	2,400	2,390	2,370	2,300	2,170		
		Nm	271	270	235	196	269	271	270	268	260	245		
η		%	68	72	73	72	70	72	72	73	73	73		
60		P <sub>1 ME</sub>	hp	0.46	0.76	1.11	1.35	0.52	0.61	0.70	0.82	0.93	1.03	4,570
	kW		0.34	0.57	0.83	1.01	0.39	0.46	0.52	0.61	0.70	0.77		
	P <sub>1 TH</sub>	hp	0.46	0.76	0.81	0.77	0.52	0.61	0.70	0.81	0.81	0.81		
		kW	0.34	0.57	0.60	0.58	0.39	0.46	0.52	0.60	0.60	0.60		
	T <sub>2 ME</sub>	lb-in	2,250	1,990	1,460	1,170	2,240	2,180	2,090	1,900	1,700	1,560		
		Nm	254	225	165	132	253	247	236	214	192	177		
	T <sub>2 ACC</sub>	lb-in	2,290	2,250	1,990	1,670	2,270	2,300	2,290	2,240	2,180	2,080		
			259	254	225	189	257	260	259	253	246	235		
	η	%	64	69	70	69	66	68	69	70	70	70		

Please contact Cone Drive for additional ratios and ratings as well as for information for speeds above 3,000 rpm. See page 44 for rating definitions.

## Series F76 Single Reduction

$i:1$	Ratings	Units	Servo				NEMA						$T_{2\text{ MAX}}$	
			$N_{1\text{ NOM}}$ (rpm)											
			500	1,000	2,000	3,000	580	720	870	1,150	1,450	1,750	lb-in	Nm
<b>5</b>	$P_{1\text{ ME}}$	hp	6.51	10.10	14.50	17.20	7.26	8.37	9.36	10.80	12.30	13.60	11,600	1,310
		kW	4.86	7.51	10.80	12.80	5.41	6.24	6.98	8.07	9.18	10.10		
	$P_{1\text{ TH}}$	hp	3.09	3.48	3.41	2.95	3.09	3.09	3.48	3.48	3.48	3.48		
		kW	2.31	2.59	2.55	2.20	2.31	2.31	2.59	2.59	2.59	2.59		
	$T_{2\text{ ME}}$	lb-in	3,730	2,920	2,100	1,630	3,590	3,330	3,120	2,730	2,460	2,250		
		Nm	422	330	237	185	405	377	352	308	278	255		
	$T_{2\text{ ACC}}$	lb-in	4,200	3,730	2,920	2,420	4,150	4,000	3,860	3,590	3,320	3,110		
		Nm	474	422	330	273	469	452	436	406	376	351		
$\eta$	%	91	92	92	91	91	91	92	92	92	92			
<b>7.5</b>	$P_{1\text{ ME}}$	hp	5.51	8.81	12.80	15.40	6.17	7.20	8.14	9.49	10.70	11.90	13,400	1,520
		kW	4.11	6.58	9.53	11.50	4.61	5.37	6.07	7.08	8.01	8.87		
	$P_{1\text{ TH}}$	hp	2.53	3.09	3.04	2.67	2.53	2.78	2.93	3.09	3.09	3.09		
		kW	1.89	2.31	2.27	1.99	1.89	2.07	2.18	2.31	2.31	2.31		
	$T_{2\text{ ME}}$	lb-in	4,640	3,790	2,740	2,180	4,480	4,250	4,000	3,550	3,190	2,920		
		Nm	524	428	310	246	506	481	452	401	360	330		
	$T_{2\text{ ACC}}$	lb-in	5,090	4,640	3,790	3,150	5,050	4,900	4,740	4,490	4,250	3,990		
		Nm	576	524	428	355	570	553	536	507	480	451		
$\eta$	%	89	91	91	90	89	90	91	91	91	91			
<b>10</b>	$P_{1\text{ ME}}$	hp	4.60	7.43	10.80	13.10	5.17	6.05	6.83	8.02	9.07	10.00	13,800	1,560
		kW	3.43	5.54	8.05	9.76	3.85	4.52	5.10	5.98	6.77	7.48		
	$P_{1\text{ TH}}$	hp	2.14	2.78	2.74	2.43	2.14	2.53	2.53	2.78	2.78	2.78		
		kW	1.60	2.07	2.05	1.82	1.60	1.89	1.89	2.07	2.07	2.07		
	$T_{2\text{ ME}}$	lb-in	5,040	4,210	3,060	2,430	4,880	4,710	4,400	3,950	3,550	3,250		
		Nm	570	476	345	275	552	533	498	447	401	367		
	$T_{2\text{ ACC}}$	lb-in	5,500	5,040	4,210	3,490	5,430	5,290	5,130	4,890	4,700	4,400		
		Nm	622	570	476	394	614	598	579	553	531	498		
$\eta$	%	87	90	90	89	87	89	89	90	90	90			
<b>15</b>	$P_{1\text{ ME}}$	hp	3.74	6.09	8.86	10.80	4.21	4.94	5.60	6.58	7.42	8.23	13,900	1,570
		kW	2.79	4.54	6.61	8.04	3.14	3.69	4.18	4.91	5.54	6.14		
	$P_{1\text{ TH}}$	hp	1.76	2.32	2.29	2.07	1.85	1.99	2.14	2.32	2.32	2.32		
		kW	1.31	1.73	1.71	1.54	1.38	1.48	1.60	1.73	1.73	1.73		
	$T_{2\text{ ME}}$	lb-in	5,950	5,070	3,680	2,940	5,830	5,580	5,290	4,760	4,260	3,910		
		Nm	672	572	416	332	659	631	598	538	481	442		
	$T_{2\text{ ACC}}$	lb-in	6,380	5,950	5,070	4,210	6,320	6,220	6,100	5,840	5,560	5,280		
		Nm	721	672	572	475	714	703	690	660	628	596		
$\eta$	%	84	88	88	87	85	86	87	88	88	88			
<b>20</b>	$P_{1\text{ ME}}$	hp	2.87	4.68	6.81	8.28	3.23	3.78	4.29	5.06	5.70	6.33	13,500	1,520
		kW	2.14	3.49	5.08	6.18	2.41	2.82	3.20	3.77	4.26	4.73		
	$P_{1\text{ TH}}$	hp	1.49	1.74	1.84	1.69	1.64	1.64	1.64	1.74	1.85	1.85		
		kW	1.11	1.30	1.37	1.26	1.22	1.22	1.22	1.30	1.38	1.38		
	$T_{2\text{ ME}}$	lb-in	5,880	4,950	3,640	2,910	5,820	5,500	5,160	4,660	4,210	3,880		
		Nm	664	560	411	328	658	621	583	526	476	438		
	$T_{2\text{ ACC}}$	lb-in	6,190	5,880	4,950	4,160	6,120	6,060	6,010	5,830	5,490	5,160		
			700	664	560	470	692	685	679	658	620	583		
$\eta$	%	81	84	85	84	83	83	83	84	85	85			

Please contact Cone Drive for additional ratios and ratings as well as for information for speeds above 3,000 rpm. See page 44 for rating definitions.

**Series F76 Single Reduction**

i : 1	Ratings	Units	Servo				NEMA						$T_{2\text{MAX}}$	
			$N_{1\text{NOM}}$ (rpm)											
			500	1,000	2,000	3,000	580	720	870	1,150	1,450	1,750	lb-in	Nm
25	$P_{1\text{ME}}$	hp	2.31	3.78	5.50	6.68	2.60	3.05	3.47	4.09	4.60	5.12	12,800	1,450
		kW	1.73	2.82	4.10	4.99	1.94	2.28	2.59	3.05	3.43	3.82		
	$P_{1\text{TH}}$	hp	1.46	1.66	1.72	1.60	1.46	1.46	1.64	1.74	1.74	1.74		
		kW	1.09	1.24	1.29	1.19	1.09	1.09	1.22	1.30	1.30	1.30		
	$T_{2\text{ME}}$	lb-in	5,910	4,960	3,630	2,900	5,720	5,410	5,210	4,700	4,200	3,870		
		Nm	667	560	410	327	646	612	589	532	474	437		
	$T_{2\text{ACC}}$	lb-in	6,080	5,910	4,960	4,140	6,030	6,040	5,910	5,740	5,410	5,200		
		Nm	687	667	560	468	681	682	668	649	611	587		
	$\eta$	%	81	83	84	83	81	81	83	84	84	84		
	30	$P_{1\text{ME}}$	hp	1.94	3.16	4.60	5.59	2.18	2.55	2.90	3.42	3.85		
kW			1.44	2.36	3.44	4.17	1.63	1.91	2.17	2.55	2.87	3.20		
$P_{1\text{TH}}$		hp	1.08	1.34	1.38	1.30	1.11	1.26	1.32	1.39	1.39	1.39		
		kW	0.80	1.00	1.03	0.97	0.83	0.94	0.99	1.04	1.04	1.04		
$T_{2\text{ME}}$		lb-in	5,430	4,740	3,480	2,770	5,330	5,230	4,990	4,500	4,020	3,700		
		Nm	613	536	393	313	602	591	564	509	454	418		
$T_{2\text{ACC}}$		lb-in	5,780	5,430	4,740	3,960	5,720	5,650	5,560	5,330	5,220	4,980		
		Nm	653	613	536	448	646	638	628	602	590	562		
$\eta$		%	74	79	80	79	75	78	79	80	80	80		
40		$P_{1\text{ME}}$	hp	1.46	2.39	3.47	4.22	1.64	1.93	2.19	2.58	2.91	3.23	11,100
	kW		1.09	1.78	2.59	3.15	1.22	1.44	1.63	1.93	2.17	2.41		
	$P_{1\text{TH}}$	hp	0.94	1.12	1.15	1.09	0.99	1.11	1.11	1.16	1.16	1.16		
		kW	0.70	0.84	0.86	0.82	0.74	0.83	0.83	0.86	0.86	0.86		
	$T_{2\text{ME}}$	lb-in	5,170	4,530	3,320	2,640	5,130	5,060	4,760	4,300	3,840	3,530		
		Nm	584	511	375	299	580	572	537	486	434	399		
	$T_{2\text{ACC}}$	lb-in	5,260	5,170	4,530	3,790	5,290	5,310	5,270	5,140	5,050	4,750		
		Nm	595	584	511	429	597	600	596	580	571	536		
	$\eta$	%	70	75	76	75	72	75	75	76	76	76		
	50	$P_{1\text{ME}}$	hp	1.17	1.92	2.79	3.39	1.32	1.55	1.76	2.07	2.34	2.59	
kW			0.87	1.43	2.08	2.53	0.98	1.15	1.31	1.55	1.74	1.93		
$P_{1\text{TH}}$		hp	0.88	1.00	1.02	0.98	0.93	0.99	0.99	1.03	1.03	1.03		
		kW	0.66	0.75	0.76	0.73	0.69	0.74	0.74	0.77	0.77	0.77		
$T_{2\text{ME}}$		lb-in	5,040	4,360	3,200	2,550	5,010	4,870	4,580	4,140	3,710	3,410		
		Nm	569	493	362	288	567	551	517	468	419	385		
$T_{2\text{ACC}}$		lb-in	5,090	5,040	4,360	3,650	5,060	5,100	5,070	5,010	4,860	4,570		
		Nm	575	569	493	413	572	576	573	566	549	516		
$\eta$		%	68	72	73	72	70	72	72	73	73	73		
60		$P_{1\text{ME}}$	hp	0.98	1.60	2.33	2.83	1.10	1.29	1.47	1.73	1.95	2.16	9,700
	kW		0.73	1.19	1.74	2.11	0.82	0.96	1.09	1.29	1.46	1.62		
	$P_{1\text{TH}}$	hp	0.78	0.90	0.92	0.88	0.82	0.87	0.90	0.93	0.93	0.93		
		kW	0.58	0.67	0.69	0.66	0.61	0.65	0.67	0.69	0.69	0.69		
	$T_{2\text{ME}}$	lb-in	4,750	4,190	3,080	2,440	4,740	4,610	4,390	3,980	3,560	3,270		
		Nm	537	473	347	276	535	521	497	450	402	370		
	$T_{2\text{ACC}}$	lb-in	4,850	4,750	4,190	3,510	4,830	4,870	4,850	4,730	4,600	4,390		
			548	537	473	396	546	551	548	534	520	497		
	$\eta$	%	64	69	70	69	66	68	69	70	70	70		

Please contact Cone Drive for additional ratios and ratings as well as for information for speeds above 3,000 rpm. See page 44 for rating definitions.

## Size 39 Double Reduction

Ratings	Units	Overall	Primary	Worm	N <sub>1 NOM</sub> (rpm)		T <sub>2 MAX</sub>						
					1,150	1,750	lb-in	Nm					
P <sub>1 ME</sub>	hp	40	4	10	0.46	0.67	2,080	235					
	kW				0.34	0.50							
P <sub>1 TH</sub>	hp				0.46	0.67							
	kW				0.34	0.50							
T <sub>2 ME</sub>	lb-in				836	793							
	Nm				95	90							
η	%				83	83							
P <sub>1 ME</sub>	hp				50	5			10	0.38	0.55	2,080	235
	kW									0.28	0.41		
P <sub>1 TH</sub>	hp									0.38	0.55		
	kW									0.28	0.41		
T <sub>2 ME</sub>	lb-in									853	815		
	Nm	96	92										
η	%	82	83										
P <sub>1 ME</sub>	hp	60	4	15			0.38	0.54		2,080	235		
	kW						0.28	0.40					
P <sub>1 TH</sub>	hp						0.38	0.54					
	kW						0.28	0.40					
T <sub>2 ME</sub>	lb-in						971	942					
	Nm				110	106							
η	%				79	81							
P <sub>1 ME</sub>	hp				75	5	15	0.31	0.45			2,080	235
	kW							0.23	0.33				
P <sub>1 TH</sub>	hp							0.31	0.45				
	kW							0.23	0.33				
T <sub>2 ME</sub>	lb-in							987	958				
	Nm	112	108										
η	%	78	80										
P <sub>1 ME</sub>	hp	80	4	20				0.29	0.41	2,010	227		
	kW							0.21	0.31				
P <sub>1 TH</sub>	hp							0.29	0.41				
	kW							0.21	0.31				
T <sub>2 ME</sub>	lb-in							941	927				
	Nm				106	105							
η	%				75	78							
P <sub>1 ME</sub>	hp				100	4	25	0.23	0.33			1,920	217
	kW							0.17	0.25				
P <sub>1 TH</sub>	hp							0.23	0.33				
	kW							0.17	0.25				
T <sub>2 ME</sub>	lb-in							923	911				
	Nm	104	103										
η	%	73	76										
P <sub>1 ME</sub>	hp	120	4	30				0.19	0.28	1,840	208		
	kW							0.14	0.21				
P <sub>1 TH</sub>	hp							0.19	0.28				
	kW							0.14	0.21				
T <sub>2 ME</sub>	lb-in							879	856				
	Nm				99	97							
η	%				69	71							
P <sub>1 ME</sub>	hp				125	5	25	0.19	0.27			1,920	217
	kW							0.14	0.20				
P <sub>1 TH</sub>	hp							0.19	0.27				
	kW							0.14	0.20				
T <sub>2 ME</sub>	lb-in							940	925				
	Nm	106	105										
η	%	72	75										
P <sub>1 ME</sub>	hp	150	10	15				0.17	0.24	2,080	235		
	kW							0.12	0.18				
P <sub>1 TH</sub>	hp							0.17	0.24				
	kW							0.12	0.18				
T <sub>2 ME</sub>	lb-in							1,030	1,020				
	Nm				116	115							
η	%				76	78							

Overall	Primary	Worm	N <sub>1 NOM</sub> (rpm)		T <sub>2 MAX</sub>	
			1,150	1,750	lb-in	Nm
160	4	40	0.15	0.21	1,660	188
			0.11	0.16		
			0.15	0.21		
			0.11	0.16		
			809	813		
			91	92		
200	10	20	0.13	0.19	2,010	227
			0.09	0.14		
			0.13	0.19		
			0.09	0.14		
			996	987		
			113	112		
240	4	60	0.10	0.14	1,450	164
			0.07	0.10		
			0.10	0.14		
			0.07	0.10		
			739	747		
			84	84		
250	10	25	0.10	0.15	1,920	217
			0.08	0.11		
			0.10	0.15		
			0.08	0.11		
			950	950		
			107	107		
300	10	30	0.09	0.12	1,840	208
			0.06	0.09		
			0.09	0.12		
			0.06	0.09		
			913	907		
			103	102		
400	10	40	0.06	0.09	1,660	188
			0.05	0.07		
			0.06	0.09		
			0.05	0.07		
			822	820		
			93	93		
500	10	50	0.05	0.08	1,470	167
			0.04	0.06		
			0.05	0.08		
			0.04	0.06		
			736	765		
			83	86		
600	10	60	0.04	0.06	1,450	164
			0.03	0.05		
			0.04	0.06		
			0.03	0.05		
			724	753		
			82	85		

Other ratios are available. Please contact Cone Drive for ratios and ratings. See page 44 for rating definitions.

**Size 44 Double Reduction**

Ratings	Units	Overall	Primary	Worm	N <sub>1,NOM</sub> (rpm)		T <sub>2,MAX</sub>						
					1,150	1,750	lb-in	Nm					
P <sub>1,ME</sub>	hp	40	4	10	0.63	0.91	2,850	322					
	kW				0.47	0.68							
P <sub>1,TH</sub>	hp				0.63	0.91							
	kW				0.47	0.68							
T <sub>2,ME</sub>	lb-in				1,150	1,080							
	Nm				129	122							
η	%				83	83							
P <sub>1,ME</sub>	hp				50	5			10	0.52	0.75	2,850	322
	kW									0.39	0.56		
P <sub>1,TH</sub>	hp									0.52	0.75		
	kW									0.39	0.56		
T <sub>2,ME</sub>	lb-in									1,170	1,120		
	Nm	132	126										
η	%	82	83										
P <sub>1,ME</sub>	hp	60	4	15			0.51	0.74		2,850	322		
	kW						0.38	0.55					
P <sub>1,TH</sub>	hp						0.51	0.74					
	kW						0.38	0.55					
T <sub>2,ME</sub>	lb-in						1,330	1,290					
	Nm				150	145							
η	%				79	81							
P <sub>1,ME</sub>	hp				75	5	15	0.42	0.61			2,850	322
	kW							0.32	0.45				
P <sub>1,TH</sub>	hp							0.42	0.61				
	kW							0.32	0.45				
T <sub>2,ME</sub>	lb-in							1,350	1,310				
	Nm	153	148										
η	%	78	80										
P <sub>1,ME</sub>	hp	80	4	20				0.39	0.57	2,850	312		
	kW							0.29	0.42				
P <sub>1,TH</sub>	hp							0.39	0.57				
	kW							0.29	0.42				
T <sub>2,ME</sub>	lb-in							1,290	1,270				
	Nm				145	143							
η	%				75	78							
P <sub>1,ME</sub>	hp				100	4	25	0.32	0.46			2,640	298
	kW							0.24	0.34				
P <sub>1,TH</sub>	hp							0.32	0.46				
	kW							0.24	0.34				
T <sub>2,ME</sub>	lb-in							1,270	1,250				
	Nm	143	141										
η	%	73	76										
P <sub>1,ME</sub>	hp	120	4	30				0.27	0.38	2,530	286		
	kW							0.20	0.28				
P <sub>1,TH</sub>	hp							0.27	0.38				
	kW							0.20	0.28				
T <sub>2,ME</sub>	lb-in							1,200	1,170				
	Nm				136	132							
η	%				69	71							
P <sub>1,ME</sub>	hp				125	5	25	0.26	0.38			2,640	298
	kW							0.19	0.28				
P <sub>1,TH</sub>	hp							0.26	0.38				
	kW							0.19	0.28				
T <sub>2,ME</sub>	lb-in							1,290	1,270				
	Nm	145	143										
η	%	72	75										
P <sub>1,ME</sub>	hp	150	10	15				0.23	0.33	2,850	322		
	kW							0.17	0.25				
P <sub>1,TH</sub>	hp							0.23	0.33				
	kW							0.17	0.25				
T <sub>2,ME</sub>	lb-in							1,410	1,390				
	Nm				159	157							
η	%				76	78							

Overall	Primary	Worm	N <sub>1,NOM</sub> (rpm)		T <sub>2,MAX</sub>	
			1,150	1,750	lb-in	Nm
160	4	40	0.20	0.29	2,280	258
			0.15	0.21		
			0.20	0.29		
			0.15	0.21		
			1,110	1,110		
			125	126		
200	10	20	0.17	0.25	2,760	312
			0.13	0.19		
			0.17	0.25		
			0.13	0.19		
			1,360	1,350		
			154	153		
240	4	60	0.13	0.19	1,990	225
			0.10	0.14		
			0.13	0.19		
			0.10	0.14		
			1,010	1,020		
			114	116		
250	10	25	0.14	0.20	2,640	298
			0.10	0.15		
			0.14	0.20		
			0.10	0.15		
			1,300	1,300		
			147	147		
300	10	30	0.12	0.17	2,530	286
			0.09	0.13		
			0.12	0.17		
			0.09	0.13		
			1,250	1,240		
			141	140		
400	10	40	0.09	0.13	2,280	258
			0.07	0.10		
			0.09	0.13		
			0.07	0.10		
			1,130	1,120		
			127	127		
500	10	50	0.07	0.10	2,030	229
			0.05	0.08		
			0.07	0.10		
			0.05	0.08		
			1,010	1,050		
			114	118		
600	10	60	0.06	0.09	1,990	225
			0.04	0.06		
			0.06	0.09		
			0.04	0.06		
			990	1,030		
			112	117		

Other ratios are available. Please contact Cone Drive for ratios and ratings. See page 44 for rating definitions.



## Size 50 Double Reduction

Ratings	Units	Overall	Primary	Worm	N <sub>1 NOM</sub> (rpm)		T <sub>2 MAX</sub>						
					1,150	1,750	lb-in	Nm					
P <sub>1 ME</sub>	hp	40	4	10	0.84	1.21	3,780	427					
	kW				0.63	0.90							
P <sub>1 TH</sub>	hp				0.84	1.21							
	kW				0.63	0.90							
T <sub>2 ME</sub>	lb-in				1,520	1,440							
	Nm				171	163							
η	%				83	83							
P <sub>1 ME</sub>	hp				50	5			10	0.69	0.99	3,780	427
	kW									0.52	0.74		
P <sub>1 TH</sub>	hp									0.69	0.99		
	kW									0.52	0.74		
T <sub>2 ME</sub>	lb-in									1,550	1,480		
	Nm	175	167										
η	%	82	83										
P <sub>1 ME</sub>	hp	60	4	15			0.68	0.98		3,790	429		
	kW						0.51	0.73					
P <sub>1 TH</sub>	hp						0.68	0.98					
	kW						0.51	0.73					
T <sub>2 ME</sub>	lb-in						1,760	1,710					
	Nm				199	193							
η	%				79	81							
P <sub>1 ME</sub>	hp				75	5	15	0.56	0.81			3,790	429
	kW							0.42	0.60				
P <sub>1 TH</sub>	hp							0.56	0.81				
	kW							0.42	0.60				
T <sub>2 ME</sub>	lb-in							1,790	1,740				
	Nm	203	196										
η	%	78	80										
P <sub>1 ME</sub>	hp	80	4	20				0.52	0.75	3,670	415		
	kW							0.39	0.56				
P <sub>1 TH</sub>	hp							0.52	0.75				
	kW							0.39	0.56				
T <sub>2 ME</sub>	lb-in							1,710	1,680				
	Nm				193	190							
η	%				75	78							
P <sub>1 ME</sub>	hp				100	4	25	0.42	0.60			3,500	395
	kW							0.31	0.45				
P <sub>1 TH</sub>	hp							0.42	0.60				
	kW							0.31	0.45				
T <sub>2 ME</sub>	lb-in							1,680	1,650				
	Nm	190	187										
η	%	73	76										
P <sub>1 ME</sub>	hp	120	4	30				0.35	0.51	3,360	380		
	kW							0.26	0.38				
P <sub>1 TH</sub>	hp							0.35	0.51				
	kW							0.26	0.38				
T <sub>2 ME</sub>	lb-in							1,600	1,550				
	Nm				180	175							
η	%				69	71							
P <sub>1 ME</sub>	hp				125	5	25	0.35	0.50			3,500	395
	kW							0.26	0.37				
P <sub>1 TH</sub>	hp							0.35	0.50				
	kW							0.26	0.37				
T <sub>2 ME</sub>	lb-in							1,710	1,680				
	Nm	193	190										
η	%	72	75										
P <sub>1 ME</sub>	hp	150	10	15				0.30	0.44	3,790	429		
	kW							0.22	0.33				
P <sub>1 TH</sub>	hp							0.30	0.44				
	kW							0.22	0.33				
T <sub>2 ME</sub>	lb-in							1,870	1,850				
	Nm				211	209							
η	%				76	78							

Overall	Primary	Worm	N <sub>1 NOM</sub> (rpm)		T <sub>2 MAX</sub>	
			1,150	1,750	lb-in	Nm
160	4	40	0.26	0.38	3,030	342
			0.20	0.28		
			0.26	0.38		
			0.20	0.28		
			1,470	1,480		
			166	167		
200	10	20	0.23	0.34	3,670	415
			0.17	0.25		
			0.23	0.34		
			0.17	0.25		
			1,820	1,790		
			205	203		
240	4	60	0.18	0.26	2,640	299
			0.13	0.19		
			0.18	0.26		
			0.13	0.19		
			1,340	1,350		
			152	153		
250	10	25	0.19	0.27	3,500	395
			0.14	0.20		
			0.19	0.27		
			0.14	0.20		
			1,730	1,730		
			196	195		
300	10	30	0.15	0.23	3,360	380
			0.12	0.17		
			0.15	0.23		
			0.12	0.17		
			1,660	1,650		
			188	186		
400	10	40	0.12	0.17	3,030	342
			0.09	0.13		
			0.12	0.17		
			0.09	0.13		
			1,500	1,490		
			169	169		
500	10	50	0.09	0.14	2,690	304
			0.07	0.10		
			0.09	0.14		
			0.07	0.10		
			1,340	1,390		
			152	157		
600	10	60	0.08	0.11	2,640	299
			0.06	0.09		
			0.08	0.11		
			0.06	0.09		
			1,320	1,370		
			149	155		

Other ratios are available. Please contact Cone Drive for ratios and ratings. See page 44 for rating definitions.

**Size 60 Double Reduction**

Ratings	Units	Overall	Primary	Worm	N <sub>1,NOM</sub> (rpm)		T <sub>2,MAX</sub>						
					1,150	1,750	lb-in	Nm					
P <sub>1,ME</sub>	hp	40	4	10	1.42	2.04	6,540	739					
	kW				1.06	1.53							
P <sub>1,TH</sub>	hp				1.42	1.81							
	kW				1.06	1.35							
T <sub>2,ME</sub>	lb-in				2,580	2,430							
	Nm				291	275							
η	%				83	83							
P <sub>1,ME</sub>	hp				50	5			10	1.17	1.69	6,540	739
	kW									0.87	1.26		
P <sub>1,TH</sub>	hp									1.17	1.69		
	kW									0.87	1.26		
T <sub>2,ME</sub>	lb-in									2,620	2,520		
	Nm	296	284										
η	%	82	83										
P <sub>1,ME</sub>	hp	60	4	15			1.15	1.66		6,560	742		
	kW						0.86	1.24					
P <sub>1,TH</sub>	hp						1.15	1.58					
	kW						0.86	1.18					
T <sub>2,ME</sub>	lb-in						2,980	2,890					
	Nm				337	326							
η	%				79	81							
P <sub>1,ME</sub>	hp				75	5	15	0.95	1.37			6,560	742
	kW							0.71	1.02				
P <sub>1,TH</sub>	hp							0.95	1.37				
	kW							0.71	1.02				
T <sub>2,ME</sub>	lb-in							3,030	2,950				
	Nm	343	334										
η	%	78	80										
P <sub>1,ME</sub>	hp	80	4	20				0.88	1.27	6,350	717		
	kW							0.66	0.95				
P <sub>1,TH</sub>	hp							0.88	1.27				
	kW							0.66	0.95				
T <sub>2,ME</sub>	lb-in							2,890	2,840				
	Nm				327	321							
η	%				75	78							
P <sub>1,ME</sub>	hp				100	4	25	0.71	1.02			6,050	684
	kW							0.53	0.76				
P <sub>1,TH</sub>	hp							0.71	1.02				
	kW							0.53	0.76				
T <sub>2,ME</sub>	lb-in							2,840	2,790				
	Nm	321	316										
η	%	73	76										
P <sub>1,ME</sub>	hp	120	4	30				0.59	0.86	5,820	657		
	kW							0.44	0.64				
P <sub>1,TH</sub>	hp							0.59	0.86				
	kW							0.44	0.64				
T <sub>2,ME</sub>	lb-in							2,700	2,630				
	Nm				305	297							
η	%				69	71							
P <sub>1,ME</sub>	hp				125	5	25	0.59	0.85			6,050	684
	kW							0.44	0.63				
P <sub>1,TH</sub>	hp							0.59	0.85				
	kW							0.44	0.63				
T <sub>2,ME</sub>	lb-in							2,890	2,850				
	Nm	326	323										
η	%	72	75										
P <sub>1,ME</sub>	hp	150	10	15				0.52	0.75	6,560	742		
	kW							0.39	0.56				
P <sub>1,TH</sub>	hp							0.52	0.75				
	kW							0.39	0.56				
T <sub>2,ME</sub>	lb-in							3,220	3,140				
	Nm				364	355							
η	%				76	78							

Overall	Primary	Worm	N <sub>1,NOM</sub> (rpm)		T <sub>2,MAX</sub>	
			1,150	1,750	lb-in	Nm
160	4	40	0.45	0.64	5,240	592
			0.33	0.48		
			0.45	0.64		
			0.33	0.48		
			2,490	2,490		
			281	282		
63	67					
200	10	20	0.40	0.57	6,350	717
			0.30	0.43		
			0.40	0.57		
			0.30	0.43		
			3,130	3,050		
			353	345		
72	74					
240	4	60	0.30	0.43	4,570	517
			0.22	0.32		
			0.30	0.43		
			0.22	0.32		
			2,270	2,290		
			257	259		
58	61					
250	10	25	0.32	0.46	6,050	684
			0.24	0.34		
			0.32	0.46		
			0.24	0.34		
			2,980	2,940		
			337	332		
68	71					
300	10	30	0.27	0.39	5,820	657
			0.20	0.29		
			0.27	0.39		
			0.20	0.29		
			2,860	2,800		
			324	317		
65	67					
400	10	40	0.20	0.29	5,240	592
			0.15	0.22		
			0.20	0.29		
			0.15	0.22		
			2,580	2,530		
			292	286		
59	60					
500	10	50	0.16	0.23	4,650	526
			0.12	0.17		
			0.16	0.23		
			0.12	0.17		
			2,310	2,360		
			261	267		
52	56					
600	10	60	0.13	0.19	4,570	517
			0.10	0.15		
			0.13	0.19		
			0.10	0.15		
			2,270	2,330		
			257	263		
51	55					

Other ratios are available. Please contact Cone Drive for ratios and ratings. See page 44 for rating definitions.

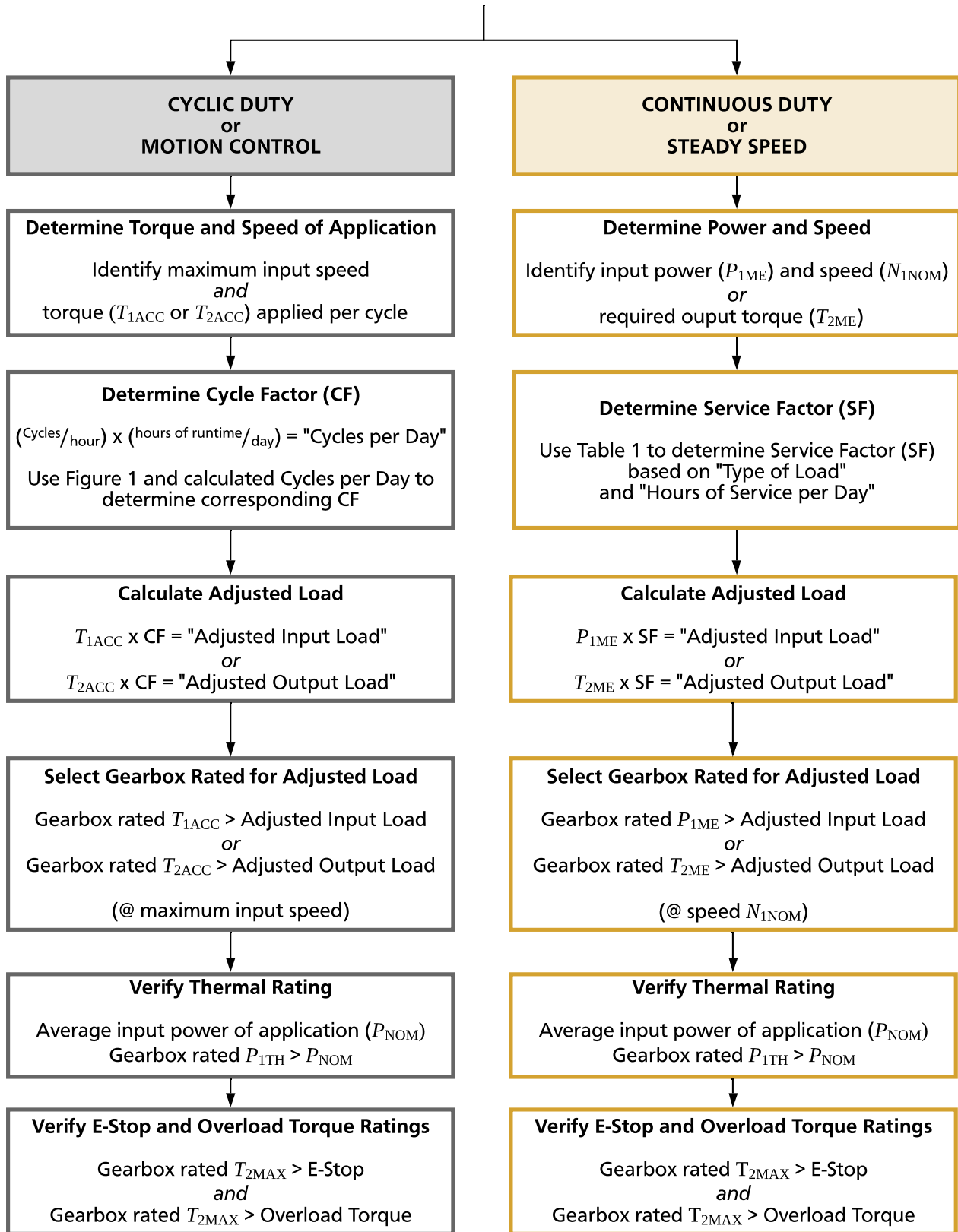
## Size 76 Double Reduction

Ratings	Units	Overall	Primary	Worm	N <sub>1,NOM</sub> (rpm)		T <sub>2,MAX</sub>						
					1,150	1,750	lb-in	Nm					
P <sub>1,ME</sub>	hp	40	4	10	2.10	3.20	7,380	834					
	kW				1.57	2.39							
P <sub>1,TH</sub>	hp				2.07	2.07							
	kW				1.54	1.54							
T <sub>2,ME</sub>	lb-in				3,810	3,810							
	Nm				430	430							
η	%				83	83							
P <sub>1,ME</sub>	hp				50	5			10	1.68	2.56	7,350	830
	kW									1.26	1.91		
P <sub>1,TH</sub>	hp									1.68	2.07		
	kW									1.26	1.54		
T <sub>2,ME</sub>	lb-in									3,760	3,810		
	Nm	425	430										
η	%	82	83										
P <sub>1,ME</sub>	hp	60	4	15			2.10	3.20		10,500	1,190		
	kW						1.57	2.39					
P <sub>1,TH</sub>	hp						1.61	1.81					
	kW						1.20	1.35					
T <sub>2,ME</sub>	lb-in						5,440	5,580					
	Nm				615	630							
η	%				79	81							
P <sub>1,ME</sub>	hp				75	5	15	1.68	2.56			10,500	1,190
	kW							1.26	1.91				
P <sub>1,TH</sub>	hp							1.52	1.70				
	kW							1.14	1.27				
T <sub>2,ME</sub>	lb-in							5,380	5,510				
	Nm	608	623										
η	%	78	80										
P <sub>1,ME</sub>	hp	80	4	20				1.87	2.68	13,300	1,510		
	kW							1.39	2.00				
P <sub>1,TH</sub>	hp							1.32	1.52				
	kW							0.98	1.14				
T <sub>2,ME</sub>	lb-in							6,130	6,010				
	Nm				693	679							
η	%				75	78							
P <sub>1,ME</sub>	hp				100	4	25	1.51	2.16			12,800	1,450
	kW							1.12	1.61				
P <sub>1,TH</sub>	hp							1.21	1.38				
	kW							0.90	1.03				
T <sub>2,ME</sub>	lb-in							6,020	5,910				
	Nm	681	668										
η	%	73	76										
P <sub>1,ME</sub>	hp	120	4	30				1.26	1.81	12,300	1,390		
	kW							0.94	1.35				
P <sub>1,TH</sub>	hp							1.03	1.11				
	kW							0.77	0.83				
T <sub>2,ME</sub>	lb-in							5,730	5,560				
	Nm				647	628							
η	%				69	71							
P <sub>1,ME</sub>	hp				125	5	25	1.24	1.79			12,800	1,450
	kW							0.93	1.34				
P <sub>1,TH</sub>	hp							1.16	1.32				
	kW							0.86	0.98				
T <sub>2,ME</sub>	lb-in							6,120	6,040				
	Nm	691	682										
η	%	72	75										
P <sub>1,ME</sub>	hp	150	10	15				0.59	0.90	7,060	798		
	kW							0.44	0.67				
P <sub>1,TH</sub>	hp							0.59	0.90				
	kW							0.44	0.67				
T <sub>2,ME</sub>	lb-in							3,670	3,760				
	Nm				415	425							
η	%				76	78							

Overall	Primary	Worm	N <sub>1,NOM</sub> (rpm)		T <sub>2,MAX</sub>	
			1,150	1,750	lb-in	Nm
160	4	40	0.95	1.36	11,100	1,260
			0.71	1.02		
			0.85	0.96		
			0.64	0.72		
			5,270	5,280		
			596	596		
63	67					
200	10	20	0.59	0.90	8,800	994
			0.44	0.67		
			0.59	0.90		
			0.44	0.67		
			4,650	4,770		
			525	539		
72	74					
240	4	60	0.64	0.91	9,700	1,100
			0.47	0.68		
			0.64	0.80		
			0.47	0.60		
			4,810	4,850		
			544	548		
58	61					
250	10	25	0.59	0.90	10,400	1,170
			0.44	0.67		
			0.59	0.90		
			0.44	0.67		
			5,500	5,700		
			621	644		
68	71					
300	10	30	0.57	0.82	11,900	1,340
			0.42	0.61		
			0.57	0.82		
			0.42	0.61		
			6,070	5,940		
			685	671		
65	67					
400	10	40	0.43	0.62	11,100	1,260
			0.32	0.46		
			0.43	0.62		
			0.32	0.46		
			5,470	5,370		
			618	607		
59	60					
500	10	50	0.34	0.49	9,860	1,110
			0.26	0.37		
			0.34	0.49		
			0.26	0.37		
			4,900	5,010		
			553	566		
52	56					
600	10	60	0.29	0.41	9,700	1,100
			0.21	0.31		
			0.29	0.41		
			0.21	0.31		
			4,820	4,930		
			544	557		
51	55					

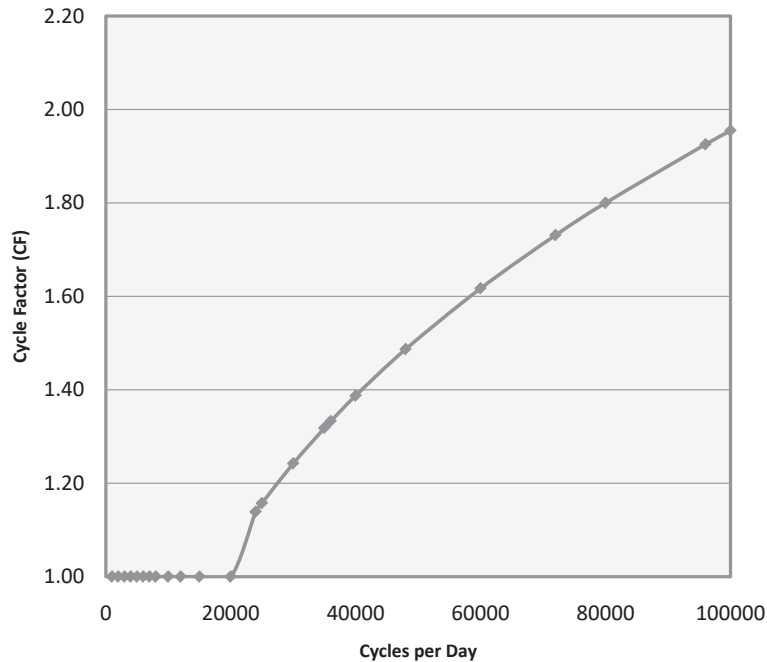
Other ratios are available. Please contact Cone Drive for ratios and ratings. See page 44 for rating definitions.

## APPLICATION TYPE



## CYCLE FACTOR

FOR CYCLIC DUTY OR MOTION CONTROL APPLICATIONS



## SERVICE FACTOR

FOR CONTINUOUS DUTY OR STEADY SPEED APPLICATIONS

Hours of Service per Day	TYPE OF LOAD			
	Uniform	Moderate	Heavy	Extreme
0.5	0.8	0.9	1.0	1.2
2	0.9	1.0	1.2	1.3
10	1.0	1.3	1.5	1.7
24	1.3	1.5	1.7	2.0

### Appendix

#### REFERENCED NOMENCLATURE

SYMBOL	UNITS	PRODUCT RATING DEFINITIONS
$i$	—	Ratio
$N_{1\text{NOM}}$	RPM	Nominal input speed
$P_{1\text{ME}}$	HP	Mechanical input power rating (SF = 1.0)
$P_{1\text{TH}}$	HP	Continuous average thermal input power rating
$T_{1\text{ME}}$	lb-in	Mechanical input torque rating (SF = 1.0)
$T_{1\text{ACC}}$	lb-in	Cyclic operation input torque rating
$T_{2\text{ME}}$	lb-in	Mechanical output torque rating (SF = 1.0)
$T_{2\text{ACC}}$	lb-in	Cyclic operation output torque rating
$T_{2\text{MAX}}$	lb-in	Maximum E-stop output torque
$\eta$	%	Efficiency

#### CONVERSION EQUATIONS

$$1. \quad T_2 = T_1 \times i \times \eta$$

$$2. \quad P_1 = \frac{(T_2 \times N_1)}{(63,000 \times i \times \eta)}$$

## LUBRICATION, INSTALLATION, OPERATION, & MAINTENANCE INSTRUCTIONS FOR STAINLESS STEEL CONE DRIVE SPEED REDUCERS

Cone Drive double-enveloping worm gear speed reducers are used throughout industry to provide smooth and quiet speed reduction. When properly selected, applied and maintained, they will provide optimum performance.

**IMPORTANT:** In any applications of Cone Drive Products where breakage, damage, disconnection, any other malfunction of any drive train component, or excessive wear could result in personal injury or property damage, a failsafe device capable of stopping and holding the load in the event of such an occurrence must be incorporated after the drive train.

### THE FOLLOWING INFORMATION IS FOR YOUR PROTECTION. PLEASE READ CAREFULLY.

1. Do not attempt to install or operate this reducer until these instructions are read and thoroughly understood. If you have any questions, please contact Cone Drive.
2. The horsepower or output torque capacity of this reducer and the service factor (maximum allowable operating cycle) are documented in the product catalog. These values are not to be exceeded as overloading can result in reducer failure. Exceeding the rating and duty cycle will void the warranty. Please contact Cone Drive with any questions regarding rating and service factors.
3. Do not alter the reducer without approval from Cone Drive.
4. This reducer has moving mechanical components and connected electrical devices, operating under high voltage to achieve its intended purpose. Operation and repair should only be done by qualified personnel.
5. Before servicing a speed reducer, the main electrical disconnect must be moved to and locked in the off position. The person performing the work should post on that disconnect a warning to others not to turn on the power.
6. It is normal for the reducer to operate at a housing temperature of up to 200°F. To prevent burns, proper guards or shields should be provided by the purchaser or user to prevent personnel from touching the reducer.
7. Cone Drive products are furnished without guard covers. It is the responsibility of the purchaser or user to provide guards for all exposed shafting, couplings, sprockets, sheaves, belts, chains, clutches, and any other moving parts in accordance with current local, state, and federal requirements.
8. Failure to follow the instructions contained in this bulletin may result in unit failure, property damage or personal injury.

## INSTALLATION

1. The speed reducer must be securely mounted to a rigid foundation or base plate, flat enough to mate with the underside of the reducer housing to prevent creating an unsanitary trap.
2. Bolt the reducer to the foundation or mounting base using metric bolts that correspond to the threaded holes in the reducer housing. Be sure to use a bolt in all available threaded mounting holes. Mount the reducer using bolts of minimum SAE Grade A2, Property Class 70, 304 Stainless Steel.
3. Couplings, sheaves and sprockets should be mounted on the reducer shafts carefully. Do not pound or hammer them onto the shafts as this will damage bearings and oil seals. Angular and axial alignment of the output shaft to the rotating machine interface is critical to prevent premature output seal leaks.
4. Sprockets and sheaves should be mounted as close to the reducer as possible and “V” belts and chains adjusted to the proper tension to keep bearing loading and shaft deflection to a minimum. Too much tension in belts and improper location of sheaves and sprockets will lead to excessive chain pull, bearing wear and shaft deflection. For specific information on chain pull capacity, shaft stress and bearing life please contact Cone Drive.
5. Before starting motor review motor rotation, reducer rotation and required direction of driven machine to ensure that the motor is wired for proper direction of rotation. In many instances a machine must run in one direction and failure to wire the motor properly can result in damage to the driven machine.
6. **Note: only use the approved lubricants if oil level top-off is necessary, as the factory filled PAG oil is not compatible with other oil types.** Stainless steel speed reducers ship factory filled with oil and grease. For lubrication guidelines, see the Approved Lubricants and Lubrication Quantities tables in the maintenance section.
7. The speed reducer must be securely mounted to a rigid flat foundation or base plate, either directly to the speed reducer or via the provided mounting feet. **Note: stainless steel speed reducers are built for universal mounting, ready to mount in any position.**

## START-UP

1. After the reducer has been properly mounted, aligned and lubricated, it is ready for startup.
2. Make sure driven machine is clear of all obstructions and all safety guards and covers are in place, according to appropriate local, state, and federal requirements. If possible, turn motor shaft by hand to confirm drive system is operating freely and in correct direction of rotation.
3. Jog motor to confirm proper rotation.
4. Operate reducer with minimum load for approximately 15 minutes (in both directions if applicable) to seat gears, bearings, and oil seals

## OPERATION

1. All reducers require a few hours of “run-in” under load to achieve optimum efficiency. During this initial run-in the reducer will probably run warmer than normal and draw more current than after the run-in period. Reducers operating at a very low load or speed will take much longer to run-in and even if operated continuously at low load or speed may never achieve the efficiency that they would if operated at or near their catalog rating.
2. **IMPORTANT:** Normal reducer operating temperature measured at the oil sump area of the housing should not exceed 200°F. Excessive oil sump temperature is indicative of overloading, misalignment, or improper or marginal lubrication. Continuous operation of the reducer with the oil sump temperature above 200°F will result in premature breakdown of the oil and reduce the useful life of the reducer or result in premature failure

### MAINTENANCE

1. All reducers and foundation bolts should be checked for tightness after three (3) months of service and annually thereafter.
2. If a reducer is to be repaired, contact Cone Drive for detailed instructions, drawings, parts lists, etc. If it is necessary, field service is available.
3. If a reducer is to be returned, contact Cone Drive for instructions and a return material authorization (CASE) number.

### LUBRICATION

Stainless steel reducers are factory filled with a high-quality food Grade synthetic lubricant. They are “Lubricated for Life” and require no routine maintenance in service. In the event of a major overhaul involving strip-down and reassembly of the gear unit, refer to Table 1 for a list of approved lubricants. Lubricant quantities are given in Table 2.

If switching to the alternative lubricant, care should be taken to thoroughly flush out all the old lubricant before filling with new lubricant. Mixing of different lubricants can result in degraded performance or failure.

The Polyalkylene Glycol based synthetic lubricants listed in Table 1 are suitable for ambient temperatures of -10°F to 200°F (-23°C to 93°C); outside of the listed range, please contact our Application Engineers.

**Table 1 Approved Lubricants**

SUPPLIER	OIL SUPPLIERS' CORRESPONDING DESIGNATIONS	ISO VISCOSITY GRADE/POUR POINT
Kluber Lubrication	Klubersynth Synthetic UH1 6-460	460 (-22°F, -30°C)
Exxon Mobil Corporation	Synthetic Glygoyle 460	460 (-27°F, -33°C)

**Table 2 Lubricant Quantities** (applicable for all mounting positions)

SUPPLIER	SIZE										
	F039		F044		F050		F060		F076		
Ratio	< 60:1	> 60:1	< 60:1	> 60:1	< 60:1	> 60:1	< 60:1	> 60:1	< 60:1	> 60:1	
Oil Capacity	Quarts	0.36	0.44	0.39	0.5	0.5	0.65	0.56	0.7	1.4	1.85
	Liters	0.34	0.42	0.37	0.47	0.47	0.62	0.53	0.66	1.32	1.75

### LUBRICATION

Cone Drive stainless steel speed reducers are fully corrosion resistant with an electro-polished coating which does not require a rust inhibitor. For extended storage periods of up to one year, rotate the worm and gearshaft every 90 days to keep the seals from sticking to the shaft. For storage periods exceeding one year, purchase a spare set of oil seals to have on hand in case of leaking at start-up.

### AMBIENT TEMPERATURE

The oils shown in the Approved Lubricants table are for use in an ambient temperature range of approximately -10°F to 200°F with the low end of the range depending on the pour point of the specific oil used. If the ambient temperature will be below or above this range, please contact Cone Drive for specific recommendations on proper lubricant as well as proper oil seal materials

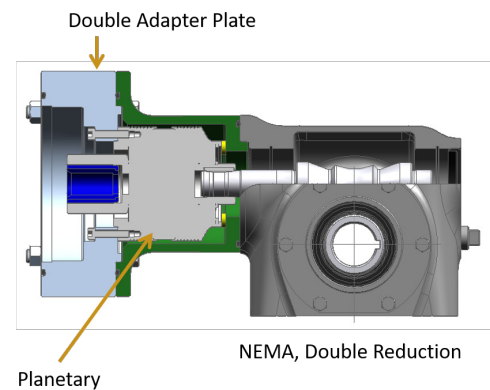
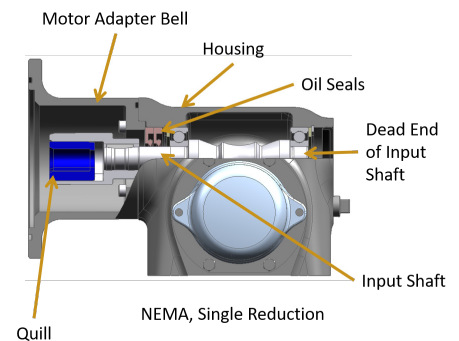
Lubrication is very important for successful operation of Cone Drive gearsets and speed reducers. Please review these lubrication recommendations and maintenance guidelines, as inadequate lubrication can result in increased power consumption, added maintenance, and gearset failure. Cone Drive recommends only the listed lubricants as the use of other lubricants can result in gearset failure food grade standards.



## OIL SEAL REPLACEMENT INSTRUCTIONS

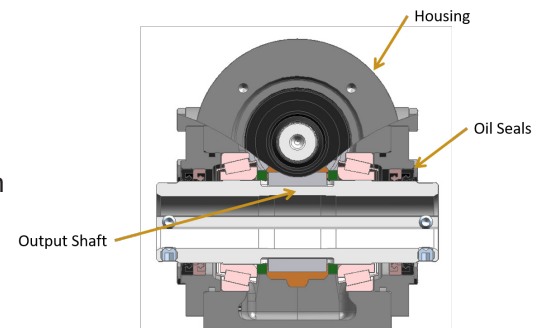
### IF THE INPUT OIL SEALS REQUIRE REPLACEMENT

- Uninstall reducer
- Drain lubricant from reducer
- Remove exterior components (motor, adapter plate, motor bell, etc.)
  - Adapter Plate Removal (all motors)
- Tap each side of adapter plate using a brass hammer. leave planetary connected to adapter plate.
- Detach motor adapter bell
  - Quill removal
- 56c-143/145tc: M62 quill
- Detach motor adapter bell
- Use 2/3 jaw gear puller to remove quill
- 182/184tc: M66 quill
- Use 2/3 jaw gear puller to remove quill
- Detach motor adapter bell
- Remove seals
  - Be careful not to scratch housing or shaft, or create fragments that could enter reducer as damage or penetration could result in potential leaks and failure
- Install replacement seals
  - Press-up seals evenly and carefully to avoid damage to the seal and reducer components
- Re-press quill onto input shaft (single reduction only)
  - Dead end of shaft must be reacted to avoid damage to reducer components
  - For single-extended shafts the bore plug must be removed to support the shaft, then reinstalled
- Double reduction, re-install adapter plate with planetary
- Flush and refill the reducer with an approved lubricant (see Lubrication Table 1 and 2)
- Reattach motor adapter bell
- Reinstall reducer



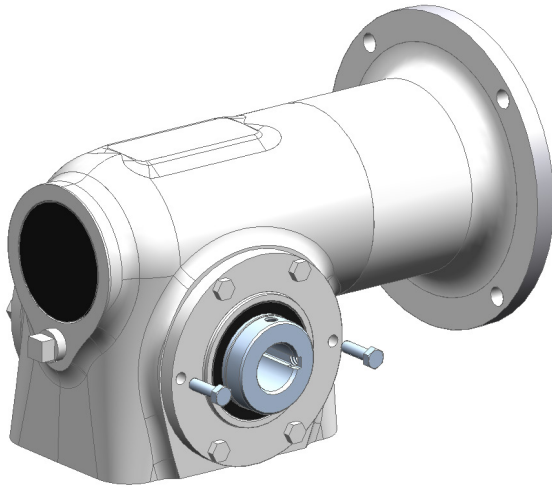
### IF THE OUTPUT OIL SEALS REQUIRE REPLACEMENT

- Uninstall reducer
- Drain lubricant
- Remove exterior components (output flange)
- Remove seals
  - Be careful not to scratch housing or shaft, or create fragments that could enter reducer as damage or penetration could result in potential leaks and failure
- Install replacement seals
  - Press-up seals evenly and carefully to avoid damage to the seal and reducer components
- Flush and refill the reducer with an approved lubricant (See table 1 and 2)
- Reattach exterior components
- Reinstall reducer



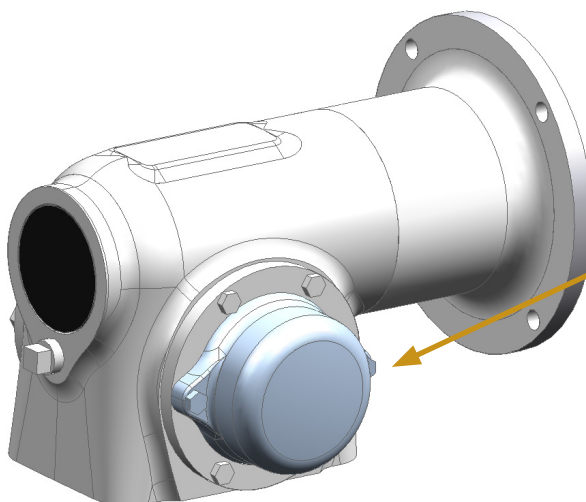
### SHRINK DISC / HOLLOW SHAFT COVER ASSEMBLY

The shrink disc/hollow shaft cover is shipped loose and is to be assembled after the reducer is mounted and the customer's shaft (and shrink disc, if used) is assembled.



REMOVE ONLY TWO CAP BOLTS THAT ARE 180° APART ON THE SIDE OF THE HOUSING WHERE THE COVER WILL BE INSTALLED

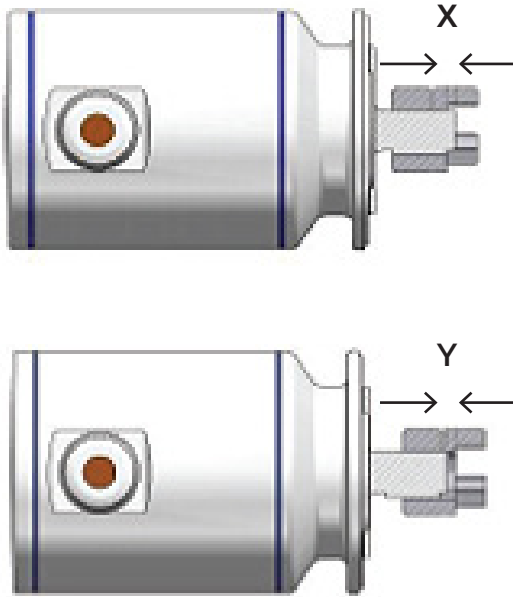
ENSURE THE O-RING IS PROPERLY SEATED IN THE GROOVE OF THE SHAFT COVER



MOUNT THE COVER. INSTALL THE LENGTHENED CARRIER BOLTS PROVIDED. TORQUE IN ALTERNATING PATTERN TO:  
8 – 9.6 Nm (SIZE 39, 44, 50, 60)  
19-23 Nm (SIZE 76)

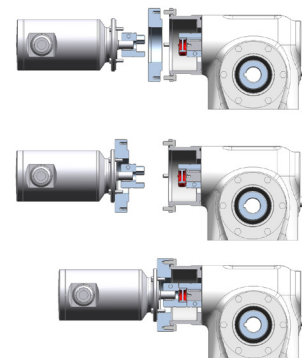
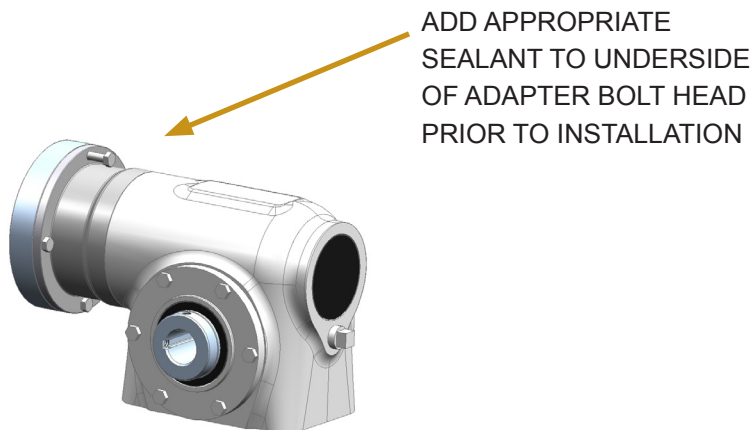
## SERVO MOTOR INSTALLATION

- The coupling's three-piece design allows the hubs to be installed on each individual shaft, then joined axially.
- Mount the motor's coupling half on the motor shaft. Position to the dimension shown for the appropriate assembly.



Reducer Size	Kollmorgen	Allen-Bradley	"X" Shaft Protrudes Beyond Coupling Hub (mm)	"Y" Coupling Hub Extends Beyond Shaft (mm)	SetScrew Torque (Nm)	
39, 44, 50	AKMH3-ALL FACES			5.4	10.5	
	AKMH4-(BK, BN, DK, DN)		1.7		10.5	
	AKMH4-(AC, AN, CC, CN)			14.1	10.5	
	AKMH5-(AC, AN, CC, CN, GC, GN, HC, HN)			2.3	10.5	
	AKMH5-(BK, BN, DK, DN)		4.8		10.5	
	AKMH6-(AC, AN, CC, CN)				9.3	25.0
	AKMH6-(DK, DN)				7.4	25.0
		MPS-A/B 330P, VPH-(A1003F, B1001F, B1003F)			14.1	10.5
		VPH-(A0633F, B0632T, B0633M)			15.4	10.5
		VPH-A/B0753F			12.4	10.5
		MPS-A/B 4540F, VPH-B1304D, VPS-B1304D			2.3	10.5
		VPH - (A1152E, B1152F, A1153C, B1153E)			12.3	10.5
60	AKMH3-ALL FACES			5.4	10.5	
	AKMH4-(BK, BN, DK, DN)		1.7		10.5	
	AKMH4-(AC, AN, CC, CN)			14.1	10.5	
	AKMH5-(AC, AN, CC, CN, GC, GN, HC, HN)			2.3	10.5	
	AKMH5-(BK, BN, DK, DN)		4.8		10.5	
	AKMH6-(AC, AN, CC, CN)				9.3	25.0
	AKMH6-(DK, DN)				7.4	25.0
		MPS-A/B 330P, VPH-(A1003F, B1001F, B1003F)			14.1	10.5
		VPH-(A0633F, B0632T, B0633M)			15.4	10.5
		VPH-A/B0753F			12.4	10.5
		MPS-A/B 4540F, VPH-B1304D, VPS-B1304D			2.3	10.5
		MPS-B560F, VPH-B1653D, VPS-B1653			9.3	10.5
	VPH - (A1152E, B1152F, A1153C, B1153E)			12.3	10.5	
76	AKMH4-(BK, BN, DK, DN)		3.6		10.5	
	AKMH4-(AC, AN, CC, CN)			8.8	10.5	
	AKMH5-(AC, AN, CC, CN, GC, GN, HC, HN)		0.2		25.0	
	AKMH5-(BK, BN, DK, DN)		7.3		25.0	
	AKMH6-(AC, AN, CC, CN)				8.8	25.0
	AKMH6-(DK, DN)				6.9	25.0
		MPS-A/B 330P, VPH-(A1003F, B1001F, B1003F)			8.8	10.5
		VPH-A/B0753F			7.1	10.5
		MPS-A/B 4540F, VPH-B1304D, VPS-B1304D		0.2		25.0
		MPS-B560F, VPH-B1653D, VPS-B1653			6.8	25.0
		VPH - (A1152E, B1152F, A1153C, B1153E)			9.8	25.0

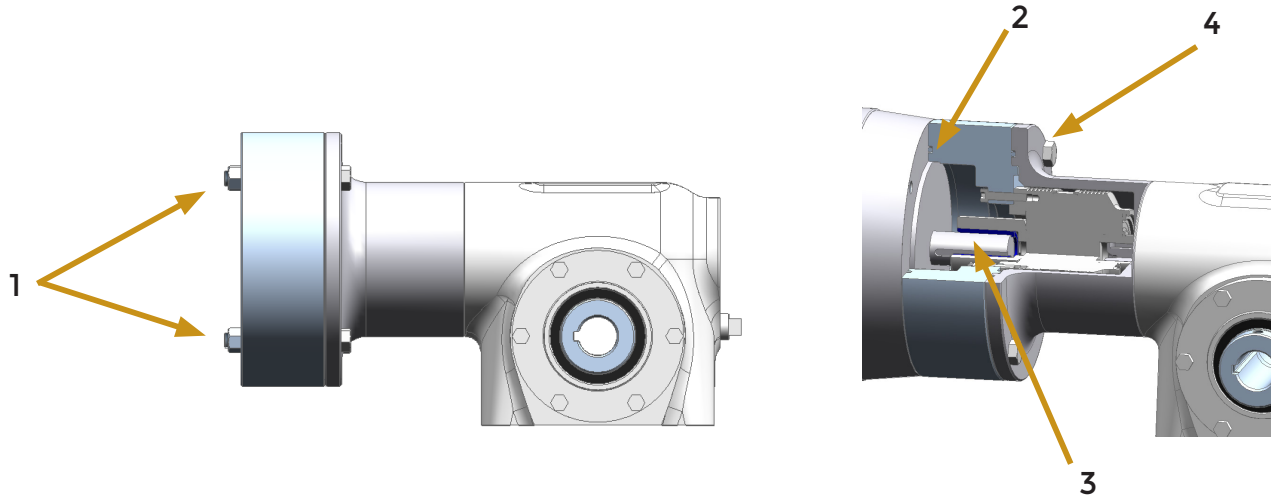
- For some motors (particularly face-mount motors), it will be necessary to remove the motor plate from the motor adapter.
- Fasten the plate to the motor, then mount the motor and plate back to the reducer.



MOUNT THE MOTOR'S COUPLING HALF ON THE MOTOR SHAFT. POSITION TO THE DIMENSION SHOWN FOR THE APPROPRIATE ASSEMBLY.

### DOUBLE REDUCTION NEMA MOTOR INSTALLATION

1. Remove the nuts but keep the bolts that are between the motor adapter and motor bell
2. Insert O-Ring or apply gasket (182/184tc only) to motor adapter face
3. Align motor shaft and key with blue bushing and insert the motor
4. Tighten bolts

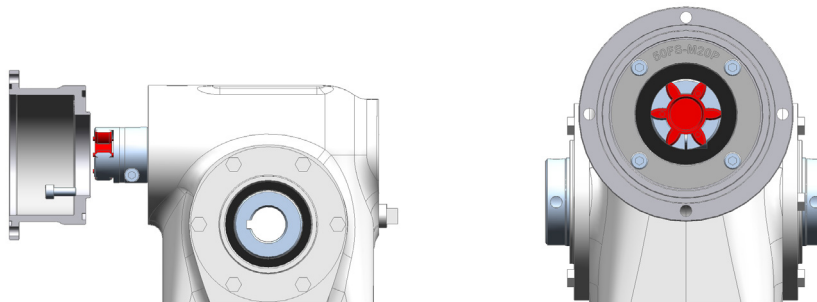


### SERVO MOTOR INSTALLATION

**IF IT IS NECESSARY TO REPOSITION THE COUPLING HALF MOUNTED TO THE GEARBOX**

1. Remove the (4) M6 socket cap screws
2. Remove the motor adapter
3. Loosen and reposition coupling as required on previous page
4. Tighten the coupling setscrew.
5. Replace the motor adapter; tighten screws

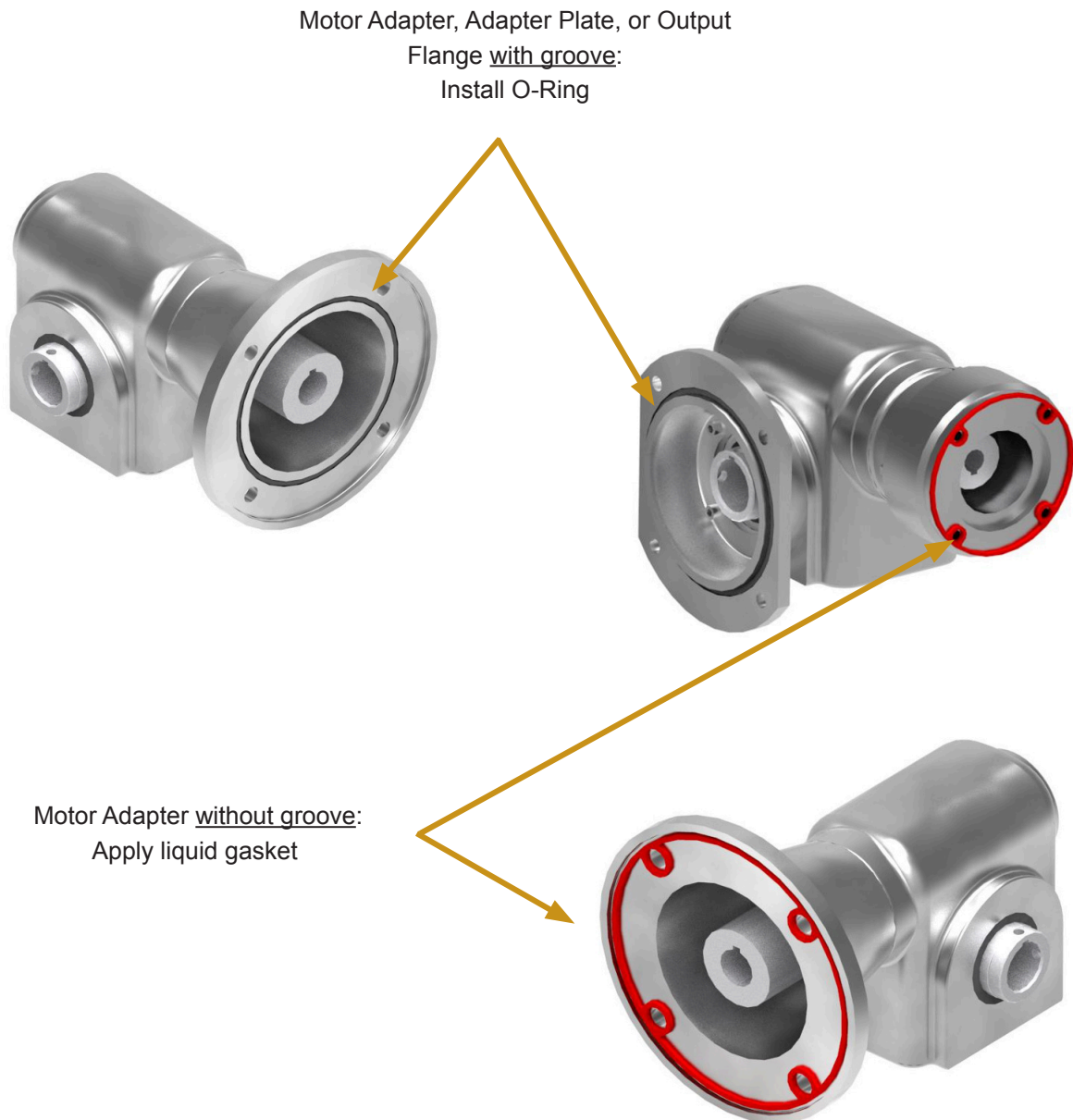
SCREW TORQUES (Nm)		
	Standard Bolt	Stainless Bolt
M5	9.5-12	5-7
M6	16-20	8-9.6
M8	42-48	24-30
M10	---	38-46
1/4-20	10-14	---
5/16-18	---	24-29
3/8-16	33-54	27-40



## INTERFACE FLANGE SEALING

End user is responsible for sealing the motor and output flange interfaces. For flanges with O-ring grooves the reducer will be supplied with O-rings that are shipped loose. Install the O-ring in motor adapter groove or output flange groove prior to mounting the motor /reducer. Care should be taken to avoid damaging to the O-ring.

NEMA 182/184tc motor flanges and some servo motor adapters are supplied without O-ring grooves. For these, the end user must use a suitable liquid gasket. The gasket shall be applied as shown below (in red) around the bolt holes and pilot face prior to installing the motor.



## SAFETY PRECAUTIONS

**IMPORTANT:** In any applications of Cone Drive Products where breakage, damage, disconnection, any other malfunction of any drive train component, or excessive wear could result in personal injury or property damage, a fail-safe device capable of stopping and holding the load in the event of such an occurrence must be incorporated after the drive train.

**THE FOLLOWING INFORMATION IS FOR YOUR PROTECTION. DO NOT ATTEMPT TO INSTALL OR OPERATE THIS GEARBOX UNTIL ALL OF THESE INSTRUCTIONS ARE READ AND THOROUGHLY UNDERSTOOD.**

### SELF-LOCKING

It is a common misconception that all worm gears are self-locking or non-overhauling. Actually, worm gear ratios up to 15:1 will overhaul quite freely. Ratios from 20:1 to 40:1 can generally be considered as overhauling with difficulty (particularly from rest). Ratios above 40:1 may or may not overhaul depending on loading, lubrication, and the amount of vibration present. Cone Drive cannot guarantee any worm gear ratio to be self-locking. There have been instances where single reduction ratios as high as 100:1 have overhauled. Therefore, it is not acceptable to rely on a worm gear to prevent movement in a system. Whenever a load must be stopped or held in place, a positive mechanical device must be incorporated into the system to prevent rotation of the gear set.

### BACKDRIVING OR OVERHAULING

Applications such as wheel drives that require a brake on the motor or input shaft to decelerate a high inertial load require special attention to brake selection. Whenever possible, these applications should utilize freely overhauling ratios (15:1 or less). If self-locking ratios are used with a brake, the gear set can, under certain conditions, lock-up during decelerations and impose severe shock loading on the gearbox and driven equipment. Each reduction should be limited to 15:1 or less to allow the gearbox to overhaul. Contact Cone Drive for specific information on backdriving efficiency and brake selection.

### RATINGS & SERVICE FACTORS

The horsepower or output torque capacity of this gearbox and the service factor (maximum allowable operating cycle) are documented in the product catalog. These values are not to be exceeded as overloading can result in gearbox failure. Exceeding the rating and duty cycle will void the warranty. Please contact Cone Drive with any questions regarding rating and service factors.

### ALTERATION

Do not alter the gearbox without approval from Cone Drive.

### OPERATION & REPAIR

This gearbox has moving mechanical components and may have connected electrical devices operating under high voltage. Operation and repair should only be done by qualified personnel.

### PROTECTIVE GUARDING

Cone Drive products are furnished without guard covers. It is the responsibility of the purchase or user to provide guards for all exposed shafting, couplings, sprockets, sheaves, belts, chains, clutches, and any other moving parts in accordance with current local, state, and federal requirements.

### LOCK-OUT/TAG-OUT

Before servicing a gearbox, the main electrical disconnect or other input power sources must be moved to and locked in the off-position. The person performing the work should post on that disconnect a warning to others not to turn on the power. Loads on the input and output shafts should be disconnected prior to working on the gearbox.

### GEARBOX SURFACE IS HOT

It is normal for the gearbox to operate at temperatures up to and exceeding 200°F. To prevent burns, proper personal protective equipment, guards, or shields should be provided by the purchaser or user to prevent personnel from touching the gearbox.





# GLOBAL LOCATIONS

NORTH AMERICA | EUROPE | ASIA

