Cone Drive
BY TIMKEN

SERIES HP-A

POWER TRANSMISSION SOLUTIONS

Precision. Motion Control. Technology.

Cone Drive

BY TIMKEN

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.

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.
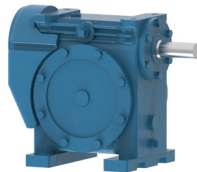
INDUSTRIAL SOLUTIONS

SERIES HP
Worm gearbox with double-enveloping worm gearing. Available in single, double and triple reductions
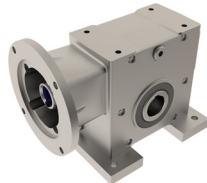
SERIES HP-A
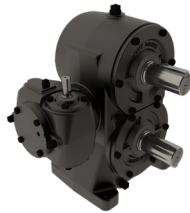Universal metric housing featuring double-enveloping gearing & drywell feature

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
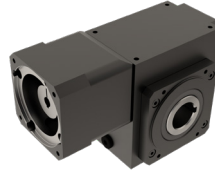
DOUBLE-ENVELOPING WORM GEAR SET
Available in standard sizes, ratios and backlash options along with custom worm gear sets

PRECISION MOTION SOLUTIONS

SERIES W
Precision right angle servo gearbox

SERIES RG
Moderate precision right angle servo gearbox
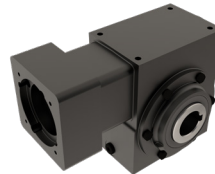
SERIES S
Value engineered right angle servo gearbox
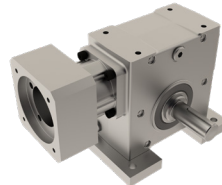
SERIES LE / P
In-line helical geared motors & reducers and precision planetary servo gearbox

HARMONIC
Cone Drive Harmonic Solutions® offer the ultimate in precision motion control technology
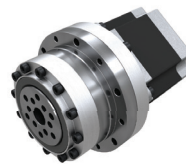
STAINLESS SERVO
Smooth, contoured stainless steel housing (316), IP69K rated right angle gearbox

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.

The Double-Enveloping Worm

A better choice for so many reasons.
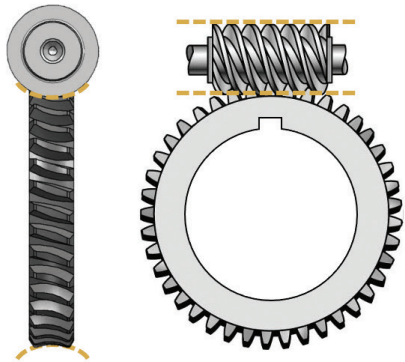
**STANDARD
CYLINDRICAL GEAR**

Total load is concentrated to
only one or two teeth
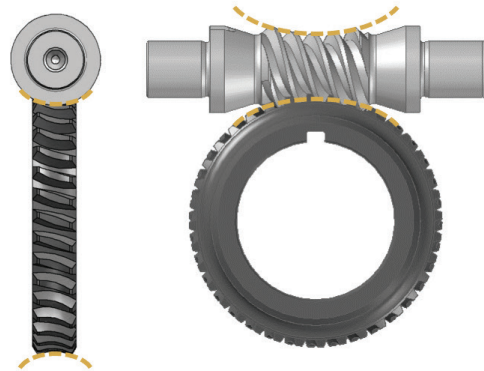
**CONE DRIVE
DOUBLE-ENVELOPING GEAR**

Total load is distributed among more
teeth and surface area

CONE DRIVE DOUBLE-ENVELOPING TECHNOLOGY

In 1925, Samuel L. Cone developed a method to machine the double-enveloping worm gear. With Cone Drive's double-enveloping technology, the worm 'hugs' the gear creating greater surface contact, higher load capacity, lower contact stress, and greater shock capacity. This gives you the flexibility to decrease the size of a worm drive gearbox to save space or increase the motor to get more power.

EFFICIENCY WITH A POWERFUL DESIGN

Greater surface area contact means the load is distributed across more teeth allowing the worm gear reducer to run cooler, quieter, and more efficiently. Cone Drive worms are through hardened to further provide additional strength. An efficient design without sacrificing power means cost savings with no loss of performance.

SERVICE FACTOR SAVINGS

Cone Drive worm drive gearboxes allow you to maintain service factor levels in a smaller package. The ability to down size equates to space savings in your system and cost savings in your pocket. We publish ratings you can rely on, Cone Drive tests their ratings in accordance with the American Gear Manufacturers Association (AGMA) standards.
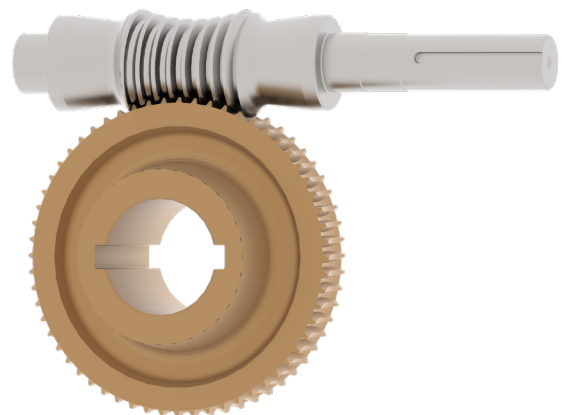
PRODUCT VARIETY

Cone Drive worm gearboxes cover a diverse spectrum of markets. We offer a wide range of hollow output bore options, including industry leading large bore sizes. If you are looking for a solution to a gearing application, Cone Drive has the answer and the product range to back it up.

LET'S TALK BEARINGS

We use two heavy duty roller bearings to provide dual support for the worm. The additional support increases the longevity of the worm gearbox which means less down time. Heavy duty bearings are used on the output shafts, which is excellent for applications that require high overhung loads. This not only simplifies the design, but lowers your cost.

WORM DRIVE GEARBOXES WITH POWER AND ACCURACY

The inherent accuracy and torsional stiffness of double-enveloping worm gearing keeps the deflection and torsional displacement low, which is exactly what you need for your most critical timing and indexing applications. For even further control, Cone Drive worm gears provide you with exact ratios, eliminating the problems posed by fractional units. We offer solutions with standard, low, and zero backlash worm gearsets.

CUSTOM IS OUR SPECIALTY

Our experienced team of customer service representatives, application engineers, design engineers and manufacturing engineers are ready and willing to take on a challenge. Let us put our expertise to work and develop a solution customized to fit your needs. We can design and manufacture any type of worm drive gearbox application that you require.

CONE DRIVE QUALITY

• QUALITY ENGINEERING: We will design the right gearbox for your application and build it with the finest materials and components.

• QUALITY MANUFACTURING: We operate with a strict attention to detail and manufacture to exact tolerances and dimensions. Your gearbox will be built with precision and accuracy.

• QUALITY SERVICE: When you need assistance with installation, Cone Drive will be there to support you. We are fully committed to offering you service before and after the sale.

WE HAVE STOOD THE TEST OF TIME

For nearly 100 years, we have been making quality, durable worm gears. Our double-enveloping worm gearboxes drive equipment in mining, steel, aerospace, automotive, printing, packaging, and solar power world-wide. When you choose Cone Drive, you have the confidence of knowing that our many years of experience are behind every unit that we build.

OUR TEAM

Cone Drive has a team of highly qualified, high character individuals to help if you have questions at any time throughout the purchasing process. Give us a call and we will offer dedicated, personal support to help get you started and identify what product will best fit your application.

Configure Stainless Steel Reducers Online

www.ConeTools.com

1

Visit
ConeTools.com

2

Scroll down
to Series HP-A
and select
"CONFIGURE" to
begin your build

Configure your Series HP - A product

Direct Code Entry Box (if product code is known)

| Product Code | | Configure | Reset |

Column Selection Buttons

| ? | ? | ? | ? | ? | ? | ? | ? | ? | ? | ? | ? | ? | ? | ? |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |

Select Series (for guided selection)

○ Series A

③

Select from a series of options to build your HP-A unit to fit your specific application needs

Configure your Series HP - A product

Direct Code Entry Box (if product code is known)

| A12557.5WMA-1-A | | Configure | Reset |

Column Selection Buttons

| A | 1 | 2 | 5 | 5 | 7 | . | 5 | W | M | A | - | 1 | - | A |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |

Product Specifications	Metric	Imperial
Gearhead	A	A
Size Of Unit	125	125
Nominal Ratio	7.5	7.5
Input Speed	200	200
Input Power Mechanical	9.4 Kw	12.6 HP
Input Power Thermal	7.8 Kw	10.4 HP
Output Torque	3002.35 Nm	26573 lb-in
Efficiency	91 %	91 %
Inertia	1.47 kg-cm^2	12.99 lb.in^2
Standard Backlash	9 arc.min	9 arc.min

Code	Values
A	Series
125	Size of Unit
5	Revision
7.5	Nominal Ratio
W	Standard Unit
M	Reducer Unit - Metric Input
A	Inch Hollow Output - 2.500"
-	None
1-	Mounting Position
A	Viton Seals

Select format to create the CAD files for download

| 3D CAD file format: | STEP document(*.step,*.stp) ▾ |
| 2D CAD file format: | AutoCAD document(*.dxf) ▾ |

| Download Spec | Create CAD |
| Request Quote | |

④

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

MADE IN
USA

HIGH TORQUE RIGHT ANGLE DRIVE

The Series HP-A gearbox features the high performance and dependability of Cone Drive's double enveloping worm gearing in a universal housing. Offering features ideal for the processing and material handling industries, the Cone Drive Series HP-A gearbox will given you high torque in a compact package.

Proven Reliability

· Configuration & rating tools for 3D models

· Tested and verified ratings

· Immediate engineering and sales support

· 5 year warranty

Cone Drive
BY TIMKEN
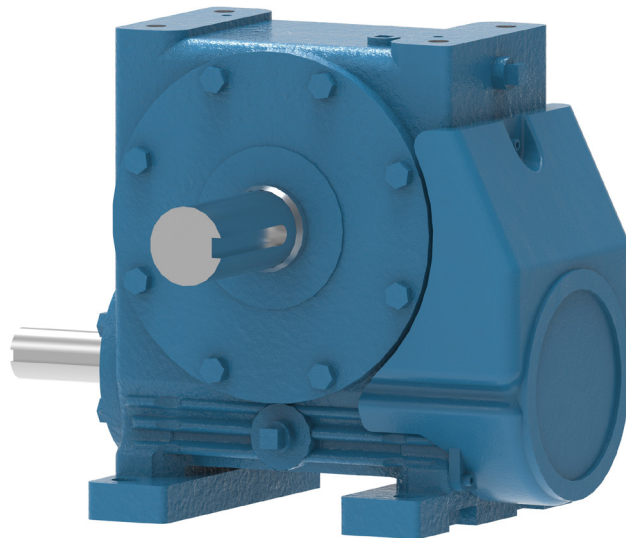
SPECIFICATIONS

PRODUCT FEATURES

Sizes (Center distance-mm): 100, 125, 160, 200

Standard Reduction Stages: Single

Interface: Inch or metric

Output Torque: Up to 129,000 lb. in. (114,575 Nm)

Gear Ratios: 5:1 to 70:1; custom ratios available

Input Options: Solid shaft, NEMA interface

Output Shaft Options: Solid, hollow shaft

Backlash Options: Standard, low

Mounting Options: Universal housing, dedicated mounting, output flange

THERMOFORMING | WELDING POSITIONERS | PAPER PRINTING | INDUSTRIAL CRANES & HOISTS

TABLE OF CONTENTS

ACCUDRIVE SERIES HP-A

A	1	2	5	5	5	.	0	F	R	N	-	1	-	Z
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

1 SERIES

A

2-4 SIZE OF UNIT

1	0	0
1	2	5
1	6	0
2	0	0

5 REVISION LEVEL

5

6-8 RATIO

5	.	0
7	.	5
1	0	.
1	2	.
1	5	.
2	0	.
2	5	.
3	0	.
4	0	.
5	0	.
6	0	.
7	0	.

Corresponding Exact Ratio by Size

Size 100	Size 125	Size 160	Size 200
5.143	5.125	5.125	5.1
7.4	7.4	7.571	7.571
9.75	9.75	9.8	9.8
12.333	12.333	12.25	12.25
15.5	15.5	14.667	15.333
19.5	19.5	20.5	20.5
25	25	24.5	24.5
30	30	30	30
40	40	40	40
50	50	50	50
60	60	60	60
70	70	70	70

9 UNIT VERSION*

W	Standard Unit
F	Standard Unit Output Flange on Left
H	Standard Unit Output Flange on Right
B	Standard Unit with Base Mounted Feet
V	Standard Vertical Unit with Output Flange Mounted on Left and with Drywell
J	Standard Vertical Unit with Output Flange Mounted on Right and with Drywell

Looking into input shaft with unit in mounting position #1 (worm under gear)

10 INPUT TYPE

R	Reducer Unit (Inch Input)
M	Reducer Unit (Metric Input)
T	Reducer Unit (Double Extended Inch Input)
N	Reducer Unit (Double Extended Metric Input)
A	Unit to Allow Fitting of Motor
B	Unit to Allow Fitting of Motor (Double Extended Inch Input)

11 OUTPUT SHAFT**

*	N	Inch Single Extension on Left	*	C	Metric Single Extension on Left
*	B	Inch Single Extension on Right	*	E	Metric Single Extension on Right
*	Q	Inch Reduced, Single Extension on Left	*	L	Metric Reduced Single Extension on Left
*	T	Inch Reduced, Single Extension on Right	*	M	Metric Reduced Single Extension on Right
	P	Inch Double Extension		D	Metric Double Extension
	G	Inch Reduced Double Extension		R	Metric Reduced Double Extension
	A	Inch Hollow Shaft		H	Metric Hollow Shaft

Looking into input shaft with unit in mounting position #1 (worm under gear)

**Additional bore sizes available; see page 14*

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

12 MOTOR ADAPTER

-	Reducer Unit
V	NEMA 143/145TC Motor Flange
X	NEMA 182/184TC Motor Flange
Y	NEMA 213/215TC Motor Flange
D	NEMA 254/256TC Motor Flange

Custom motor adaptation available upon request
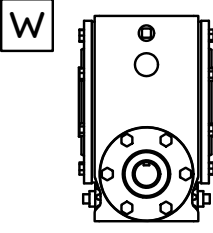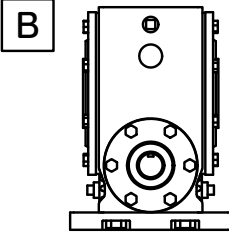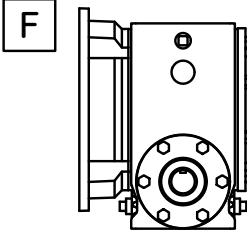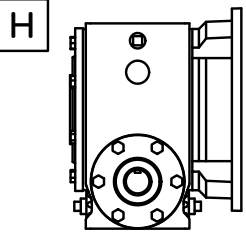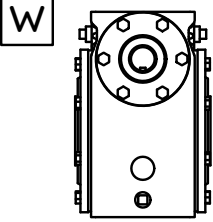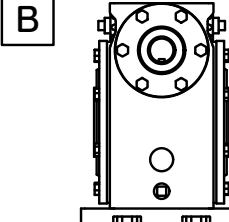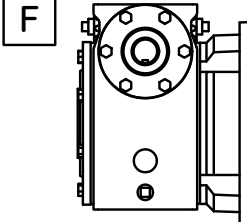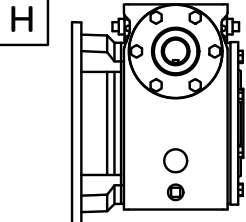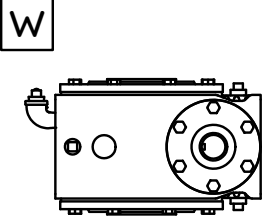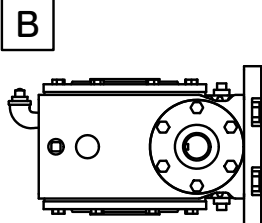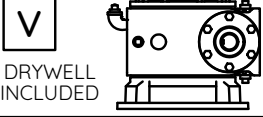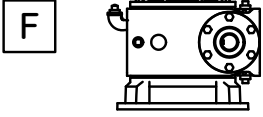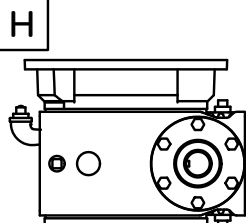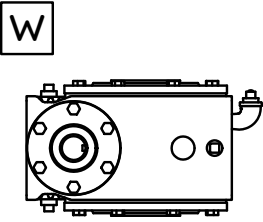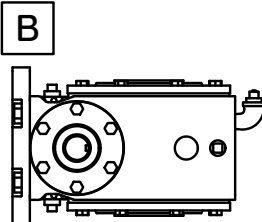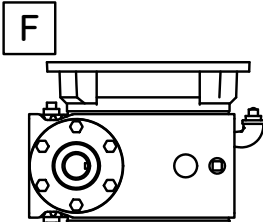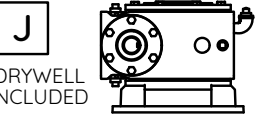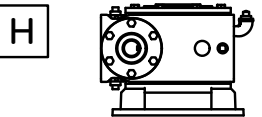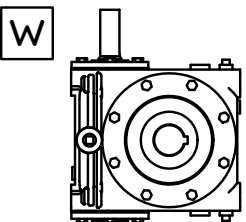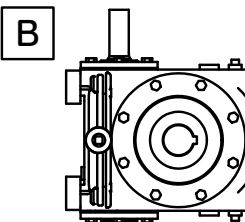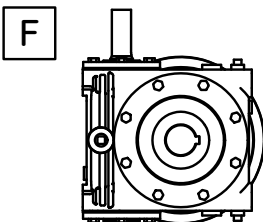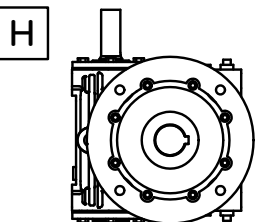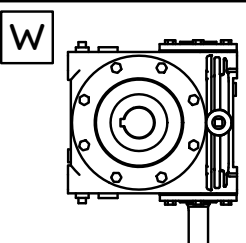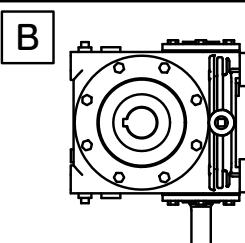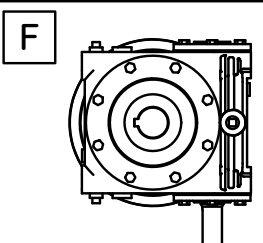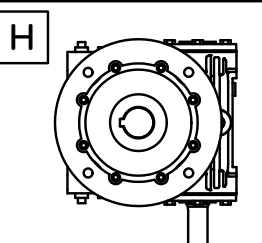
13-14 MOUNTING POSITION

1	-	Worm Under
2	-	Worm Over
3	-	Output Vertical, Input Right
4	-	Ouput Vertical, Input Left
5	-	Input Vertical, Input Extension Up
6	-	Input Vertical, Input Extension Down

15 SPECIAL FEATURES

-	None
A	Viton Seals
B	Fan Cooled + Low Backlash
C	Double Oil Seals + Viton Seals
D	Double Oil Seals
E	Low Backlash + Viton Seals
F	Fan Cooled
G	Fan Cooled + Double Oil Seals
H	Low Backlash + Double Oil Seals
I	Fan Cooled + Viton Seals
J	Low Backlash + Double Oil Seals + Viton Seals
K	Fan Cooled + Double Oil Seals + Viton Seals
L	Low Backlash
M	Fan Cooled + Low Backlash + Viton Seals
N	Fan Cooled + Low Backlash + Double Oil Seals
O	Fan Cooled + Low Backlash + Double Oil Seals + Viton Seals

Feature matrix provided on page 17

COLUMN 13 ENTRY	UNIT VERSION - COLUMN 9 ENTRY			
	BASIC UNIT	BASE MOUNTED FEET	OUTPUT FLANGE	OUTPUT FLANGE
1	W	B	F	H
2	W	B	F	H
3	W	B	V DRYWELL INCLUDED / F	H
4	W	B	F	J DRYWELL INCLUDED / H
5	W	B	F	H
6	W	B	F	H

COLUMN 13 ENTRY	OUTPUT SHAFT POSITIONS - COLUMN 11 ENTRY			
	SINGLE EXTENSION	SINGLE EXTENSION	DOUBLE EXTENSION	HOLLOW SHAFT
1	N Q C L	B T E M	P R D G	A H
2	N Q C L	B T E M	P R D G	A H
3	N Q C L	B T E M	P R D G	A H
4	N Q C L	B T E M	P R D G	A H
5	N Q C L — EXTENSION FAR SIDE	B T E M — EXTENSION NEAR SIDE	P R D G	A H
6	N Q C L — EXTENSION FAR SIDE	B T E M — EXTENSION NEAR SIDE	P R D G	A H

STANDARD SOLID SHAFT OPTIONS

Size Of Unit	Column 11 Entry		Type Of Output Shaft		A	B	C	D	E	F Dia.	Q
	Single Ext.	Double Ext.									
A100	N,B	P	Std Inch *	Inch	4.61	3.31	-	.500/.498	2.218/2.210	2.000/1.999	8.86
	Q,T	R	Inch Red. Dia.*		4.21	2.69	-	.375/.373	1.917/1.909	1.750/1.749	8.46
	C, E	D	Metric (mm)	Millimeter	116.32	90.00	10	14/13.957	53.500/53.210	50.02/50	225.00
	F, J	G	Metric Red. Dia. (mm)		106.99	56.00	10	14/13.957	48.500/48.210	45.02/45	215.00
A125	N,B	P	Std Inch *	Inch	5.17	4.00	-	.625/.623	2.773/2.765	2.500/2.499	10.04
	Q,T	R	Inch Red. Dia.*		4.36	2.75	-	.500/.498	2.218/2.210	2.000/1.999	9.06
	C, E	D	Metric (mm)	Millimeter	131.28	100.00	12	18/17.957	69.000/68.690	65.02/65	255.00
	F, J	G	Metric Red. Dia. (mm)		110.82	56.00	11	16/15.957	59.000/58.710	55.02/55	230.00
A160	N,B	P	Std Inch *	Inch	6.27	4.63	-	.750/.748	3.327/3.319	3.000/2.999	11.61
	Q,T	R	Inch Red. Dia.*		5.49	2.69	-	.625/.623	2.773/2.765	2.500/2.499	10.83
	C, E	D	Metric (mm)	Millimeter	159.14	100.00	13	20/19.948	79.520/79.210	75.01/75.03	295.00
	F, J	G	Metric Red. Dia. (mm)		139.36	82.00	12	18/17.957	69.000/68.690	65.01/65.03	275.00
A200	N,B	P	Std Inch *	Inch	6.69	5.88	-	.875/.873	4.007/3.999	3.500/3.499	12.20
	Q,T	R	Inch Red. Dia.*		5.12	4.63	-	.750/.748	3.327/3.319	3.000/2.999	13.98
	C, E	D	Metric (mm)	Millimeter	170.00	140.00	15.5	25/24.948	95.000/94.5900	90.04/90.01	310.00
	F, J	G	Metric Red. Dia. (mm)		130.00	100.00	14	22/21.948	85.000/84.690	80.03/80.01	355.00

*Inch shafts have an open ended keyway, therefore no 'C' dimension is required.

*Inch and metric reduced diameters available as special order.

STANDARD HOLLOW BORE OPTIONS

Size Of Unit	Column 11 Entry	Type of Output Shaft	Bore Diameter	Keyway Dimensions
A100	A	Inch	2.001 / 2.002	1/2 X 1/4
	H	Millimeter	50.03 / 50.08	14 x 3.8
A125	A	Inch	2.500 / 2.5003	5/8 x 5/16
	H	Millimeter	65.00 / 65.07	18 x 4.4
A160	A	Inch	3.000 / 3.003	3/4 x 3/8
	H	Millimeter	75.02 / 75.08	20 x 4.9
A200	A	Inch	3.501 / 3.503	7/8 x 1/4
	H	Millimeter	90.04 / 90.09	25 x 5.4
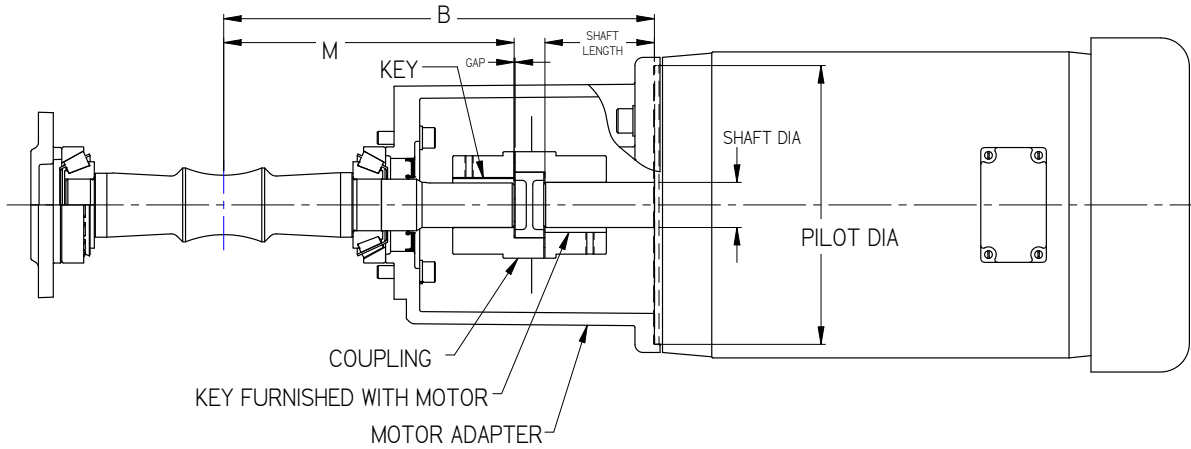
A100 MOTOR ADAPTER DIMENSIONS

Column 12 Motor Code	Motor Frame Size	Motor Pilot Diameter (in)	Motor Shaft Length (in)	Motor Shaft Diameter (in)	Coupling Part Number	Dimension B (in)	Dimension M (in)
V	143 TC	4.500	2.125	0.875	720219	10.94	7.91
	145 TC						
X	182 TC	8.500	2.625	1.125	720220	13.11	9.53
	184 TC						
Y	213 TC		3.125	1.375	720206		8.80
	215 TC						
D	254 TC		3.750	1.625	720218		8.27
	256 TC						

A125 MOTOR ADAPTER DIMENSIONS

Column 12 Motor Code	Motor Frame Size	Motor Pilot Diameter (in)	Motor Shaft Length (in)	Motor Shaft Diameter (in)	Coupling Part Number	Dimension B (in)	Dimension M (in)
V	143 TC	4.500	2.125	0.875	720216	12.09	9.09
	145 TC						
X	182 TC	8.500	2.625	1.125	720217	13.90	10.43
	184 TC						
Y	213 TC		3.125	1.375	720218		9.94
	215 TC						
D	254 TC		3.750	1.625	720259		9.57
	256 TC						

A160 MOTOR ADAPTER DIMENSIONS

Column 12 Motor Code	Motor Frame Size	Motor Pilot Diameter (in)	Motor Shaft Length (in)	Motor Shaft Diameter (in)	Coupling Part Number	Dimension B (in)	Dimension M (in)
V	143 TC	4.500	2.125	0.875	720207	12.83	9.85
	145 TC						
X	182 TC	8.500	2.625	1.125	720269	14.65	11.11
	184 TC						
Y	213 TC		3.125	1.375	720270		10.61
	215 TC						
D	254 TC		3.750	1.625	720262		10.36
	256 TC						

A200 MOTOR ADAPTER DIMENSIONS

Column 12 Motor Code	Motor Frame Size	Motor Pilot Diameter (in)	Motor Shaft Length (in)	Motor Shaft Diameter (in)	Coupling Part Number	Dimension B (in)	Dimension M (in)
X	182 TC	8.500	2.625	1.125	720316	17.28	13.58
	184 TC						
Y	213 TC		3.125	1.375	720317		13.15
	215 TC						
D	254 TC		3.750	1.625	720313		12.52
	256 TC						
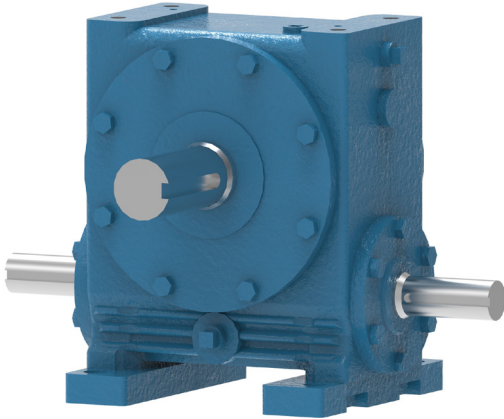
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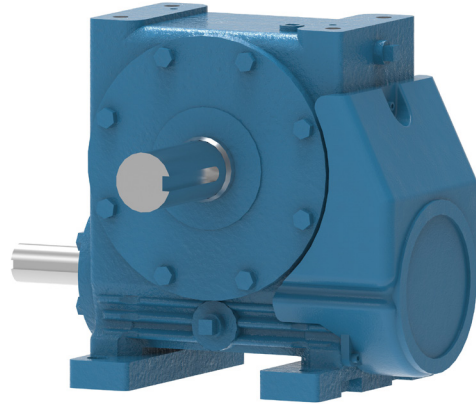
WORM UNDER FAN COOLED
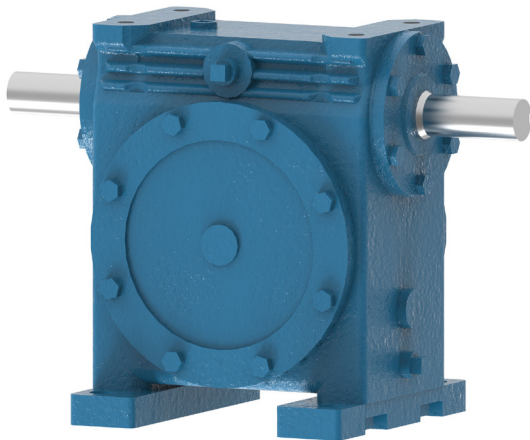
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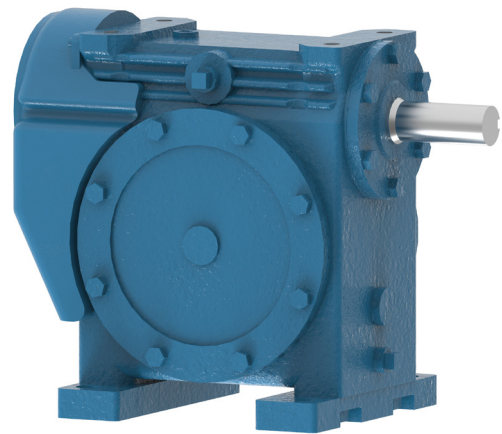
WORM OVER FAN COOLED

Column 15 Entry	Fan Cooled	Low Backlash	Double Oil Seals	Viton Seals
-				
A				●
B	●	●		
C			●	●
D			●	
E		●		●
F	●			
G	●		●	
H		●	●	
I	●			●
J		●	●	●
K	●		●	●
L		●		
M	●	●		●
N	●	●	●	
O	●	●	●	●

Customization available for the below features upon request to ae@conedrive.com

- Ratios
- Hollow output bore diameters
- Shrink disc shafts
- Solid output shaft diameters
- Input shafts with custom diameters or lengths
- Shaft materials such as stainless steel

- Motor adaptation (servo/hydraulic/IEC)
- Paint
  - White Epoxy
  - Steel-It
  - Custom Colors

MAXIMUM PERMISSIBLE RADIAL/OVERHUNG LOADS
(Standard Output Shaft)

When a sprocket, gear, etc. is mounted on the shaft, a calculation must be made to determine the overhung load on the shaft. The resultant value is then compared to the maximum permissible overhung load. Overhung loads can be reduced by increasing the diameter of the sprocket, gear, etc. If the maximum permissible overhung load is exceeded, the sprocket, gear, etc. should be mounted on a separate shaft, flexibly coupled and supported in its own bearings, or the gear unit shaft should be extended to run in an outboard bearing. Alternatively, a larger gear is often a less expensive solution.

Permissible overhung loads vary according to the direction of rotation. The values tabulated are for the most unfavorable direction with unit transmitting full rated power and the load Fr applied midway along the shaft extension. Permissible overhung loads can sometimes be increased with a more favorable direction of rotation, or if the power transmitted is less than the rated capacity of the gear unit, or if the load is applied nearer to the gear unit case. Refer to Cone Drive for further details. In any event, the sprocket, gear etc. should be positioned as close as possible to the gear unit case in order to reduce bearing loads and shaft stresses, and to prolong life.

All units will accept 100% momentary overload on stated capacities.
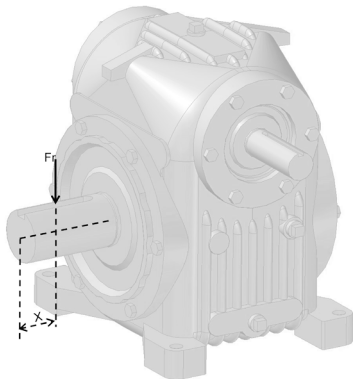
$$Fr \; = \; \frac{P \times 126{,}000 \times K}{n \times PD} \quad \textbf{OR} \quad Fr \; = \; T \frac{2}{PD} \times K$$

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

OVERHUNG LOAD TYPE	Chain Sprocket	Spur or Helical Pinion	Synchronous Belt	Timing Belt Pulley	V-belt Sheave	Flat Belt Pulley
K	1	1.25	1.3	1.5	1.5	2.5

To adjust for load locations that differ from the reference location, *X*, use the method given below:
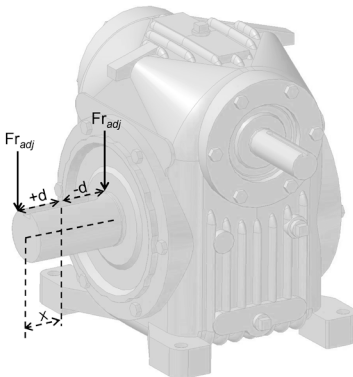
$$Fr_{adj} \; = \; Fr \; \times \; \frac{X}{(X \pm d)}$$

Fr_{adj}	Adjusted radial/overhung load (lb)*
d	Distance of load from X (in)

*Fr_{adj} must not exceed Fr value listed in Table 2 or Table 3

Table 2. Allowable Overhung Loads When Load is Applied Along **OUTPUT SHAFT**

Size	X (in)	Rating (lb)	OUTPUT Rev/min							
			700	500	350	230	140	95	70	15 & UNDER
A100	1.654	Fr	3,160	3,250	3,380	3,570	3,890	3,890	3,880	3,880
		THRUST	3,060	3,060	3,060	3,060	3,060	3,060	3,060	3,060
A125	2.094	Fr	4,220	4,390	4,510	4,740	5,620	5,620	5,620	5,620
		THRUST	3,880	3,880	3,880	3,880	3,880	3,880	3,880	3,880
A160	2.313	Fr	5,870	6,170	6,270	6,600	7,990	8,080	8,080	8,030
		THRUST	4,480	4,480	4,480	4,480	4,480	4,480	4,480	4,480
A200	2.969	Fr	6,960	7,420	7,480	7,700	9,780	10,200	10,200	10,100
		THRUST	4,530	4,530	4,530	4,530	4,530	4,530	4,530	4,520

Table 3. Allowable Overhung Loads When Load is Applied Along **INPUT SHAFT**

Size	A100	A125	A160	A200
X (in)	1.280	1.772	1.750	1.500
Ratio	Fr at 1750 rpm (lb)			
5	1,600	1,680	2,470	3,340
7.5	1,620	1,790	2,580	3,480
10	1,630	1,790	2,540	3,390
12.5	1,630	1,800	2,450	3,180
15	1,490	1,850	2,170	2,900
20	1,660	1,830	1,930	2,490
25	952	1740	2220	2720
30	1,310	1,630	1,820	1,940
40	1,360	2,170	1,620	1,720
50	1,260	1,640	1,770	2,620
60	1,150	1,310	2,050	3,150
70	1,570	1,140	2,050	2,780

The following chart lists the backlash for standard reducers. Backlash is defined as the amount of movement at the pitch line of the gear with the worm locked and the gear set on exact center distance. When the gear set is assembled into a machine or reducer, the assembled backlash may fall outside of the limits shown in the table depending on worm and gear bearing looseness, and the actual center distance on which the gear set is mounted. Backlash is measured at the pitch line of the gear and is not dependent on ratio. Backlash is generally not measured at the worm because the amount of rotation of the worm with gear locked is a function of ratio.

STANDARD BACKLASH

RPM Input	Units	Size			
		100	125	160	200
100-499	Inches	0.010	0.011	0.012	0.014
	Degrees	0.18	0.16	0.14	0.12
	Arc Minutes	11	9	9	7
500-999	Inches	0.011	0.012	0.013	0.016
	Degrees	0.20	0.17	0.16	0.14
	Arc Minutes	12	10	9	8
1000-2000	Inches	0.013	0.014	0.015	0.019
	Degrees	0.23	0.20	0.18	0.17
	Arc Minutes	14	12	11	10

LOW BACKLASH

RPM Input	Units	Size			
		100	125	160	200
100-499	Inches	0.003	0.003	0.003	0.003
	Degrees	0.05	0.04	0.04	0.03
	Arc Minutes	3	3	2	2
500-999	Inches	0.004	0.004	0.004	0.005
	Degrees	0.07	0.06	0.05	0.04
	Arc Minutes	4	3	3	3
1000-2000	Inches	0.006	0.006	0.006	0.008
	Degrees	0.11	0.09	0.07	0.07
	Arc Minutes	6	5	4	4

Nominal Backlash values in inches, degrees, and arcminutes for standard backlash reducers. Backlash in inches is measured at pitch line.

SOLID SHAFT
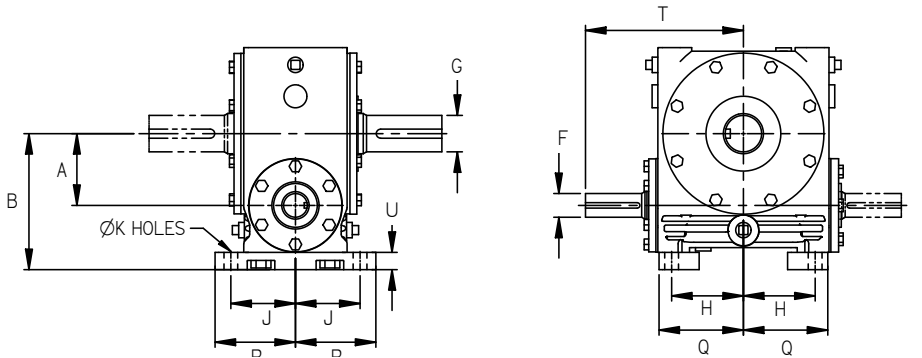
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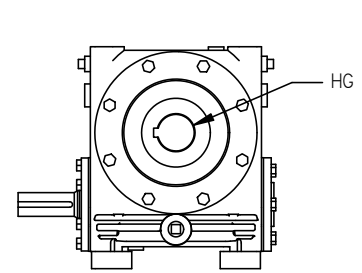
A1005	Model	A	B	F	HG	G	H	J	Q	R	T
Cone Drive	A1005	100 (3.94)	8.11	1.375	2.000	2.000	4.23	4.04	5.47	5.04	8.86
Renold - WM Metric Series	WM100	100 (3.94)	8.11	35 (1.38)	50 (1.97)	50 (1.97)	4.23	4.04	5.51	4.92	8.86
Renold - WM Inch Series	WM4	4.00	8.25	1.250	2.250	2.000	4.25	4.00	5.51	4.92	9.02
Flender - Cavex	CUA100	100 (3.94)	7.48	1.10	50 (1.97)	48 (1.89)	3.35	3.35	8.50	7.87	6.85
Delroyd	E40	4.00	8.25	1.125	2.438	1.750	4.25	4.375	5.188	5.25	7.75
Winsmith	DS941	100 (3.94)	9.69	1.500	2.438	2.250	5.25	4.13	6.38	5.00	9.00
Cleveland	40ES	4.00	7.75	1.125	2.500	1.750	3.56	3.75	4.50	4.38	7.75
Rossi	RV100	100 (3.94)	7.09	1.1	1.890	1.890	3.55	2.58	4.645	3.25	6.22
A1255	**Model**	**A**	**B**	**F**	**HG**	**G**	**H**	**J**	**Q**	**R**	**T**
Cone Drive	A1255	125 (4.92)	9.33	1.625	2.500	2.500	4.92	4.43	6.30	5.51	10.83
Renold - WM Metric Series	WM125	125 (4.92)	9.33	40 (1.57)	65 (2.56)	65 (2.56)	4.92	4.43	6.50	5.51	10.83
Renold - WM Inch Series	WM5	5.00	9.50	1.500	2.750	2.500	4.87	4.37	6.50	5.51	10.24
Flender - Cavex	CUA120	120 (4.72)	8.85	32 (1.26)	60 (2.36)	55 (2.17)	3.94	3.94	5.00	4.63	7.87
Delroyd	E50	5.00	9.63	1.375	2.938	2.000	4.75	4.875	5.75	6.00	8.75
Winsmith	DS951	125 (4.92)	10.67	1.500	2.875	2.500	6.38	4.50	7.65	5.63	9.73
Cleveland	50ES & 50M	5.00	9.00	1.375	3.000	2.000	4.38	3.88	5.50	4.38	8.75
Rossi	RV125	125 (4.92)	8.86	1.26	2.362	2.362	4.43	3.05	4.92	3.82	7.36
A1005	**Model**	**A**	**B**	**F**	**HG**	**G**	**H**	**J**	**Q**	**R**	**T**
Cone Drive	A1605	160 (6.30)	11.22	1.875	3.000	3.000	5.71	4.73	7.28	5.91	12.20
Renold - WM Metric Series	WM160	160 (6.30)	11.22	45 (1.77)	75 (2.95)	75 (2.95)	5.71	4.73	6.89	6.10	12.20
Renold - WM Inch Series	WM6	6.00	11.00	1.500	3.250	3.000	5.25	4.75	6.89	6.10	10.98
Flender - Cavex	CUA160	160 (6.30)	11.42	42 (1.65)	75 (2.95)	70 (2.76)	5.12	10.04	6.38	5.81	10.00
Delroyd	E60	6.00	11.00	1.500	3.438	2.250	5.25	5.25	6.63	6.50	10.25
Winsmith	DS961	150 (5.91)	12.16	1.750	3.000	3.125	6.88	5.13	8.29	6.38	11.10
Winsmith	DS971	175 (6.89)	14.77	1.750	3.250	3.500	8.13	6.25	9.70	7.63	13.25
Cleveland	60ES & 60M	6.00	11.00	1.500	3.500	2.500	5.62	5.25	6.75	6	11.50
Rossi	RV160	160 (6.30)	11.02	1.496	2.756	2.756	5.355	3.60	6.79	4.565	10.28
A1255	**Model**	**A**	**B**	**F**	**HG**	**G**	**H**	**J**	**Q**	**R**	**T**
Cone Drive	A2005	200 (7.87)	13.38	2.000	3.500	3.500	6.79	5.22	8.87	6.50	13.58
Renold - WM Metric Series	WM200	200 (7.87)	13.38	50 (1.97)	90 (3.54)	90 (3.54)	6.79	5.22	8.86	6.69	13.50
Renold - WM Inch Series	WM8	8.00	13.75	1.750	3.750	3.500	6.75	5.25	8.86	6.69	13.50
Flender - Cavex	CUA200	200 (7.87)	13.78	55 (2.17)	95 (3.74)	90 (3.54)	6.20	5.81	7.80	6.89	12.32
Delroyd	E80	8.00	13.75	1.875	4.438	2.750	6.75	6.00	16.50	14.50	12.50
Winsmith	DS981	200 (7.87)	16.37	2.000	3.750	3.875	9.25	6.75	11.10	8.38	15.50
Cleveland	70ES & 70M	7.00	12.25	1.625	4.000	2.750	6.5	5.75	7.75	6.50	12.50
Rossi	RV200	200 (7.87)	13.18	1.890	3.543	3.543	6.73	4.22	8.49	5.32	13.23

WORM UNDER
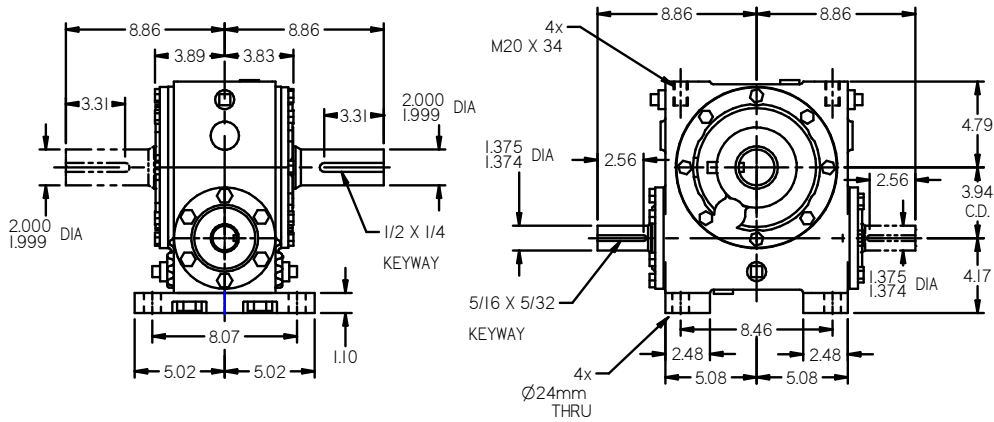
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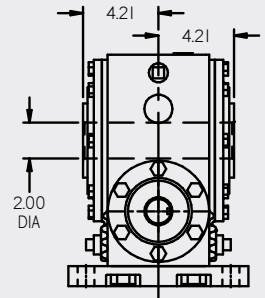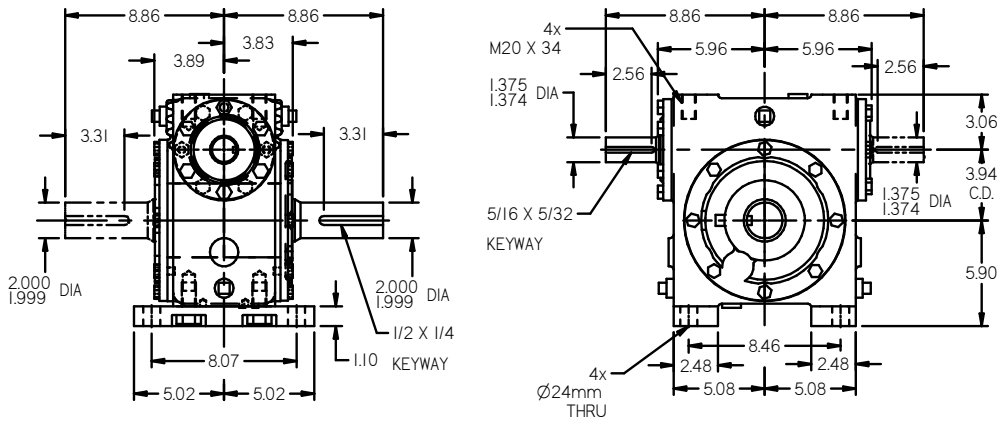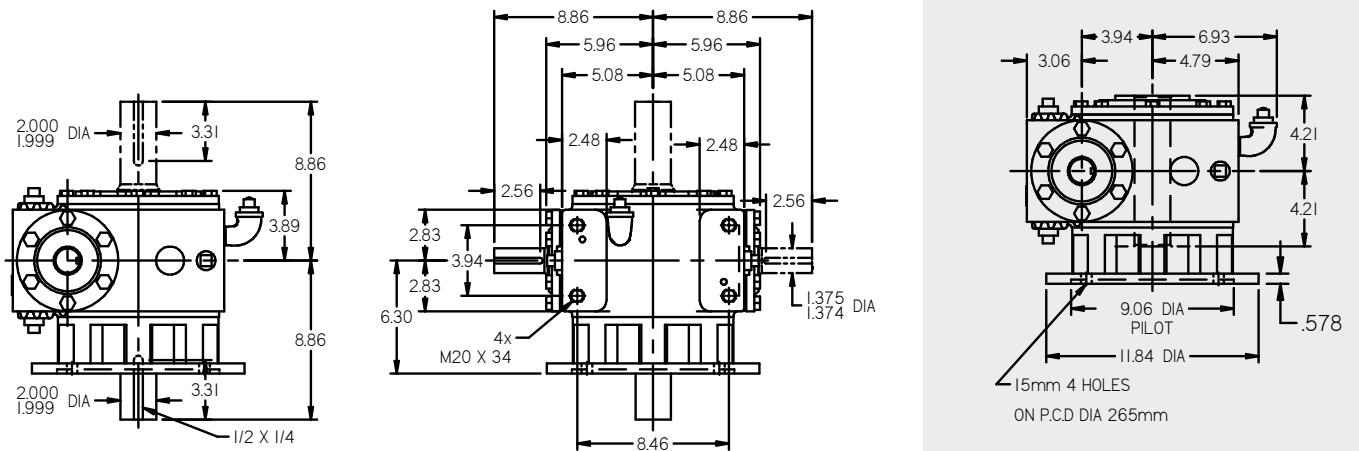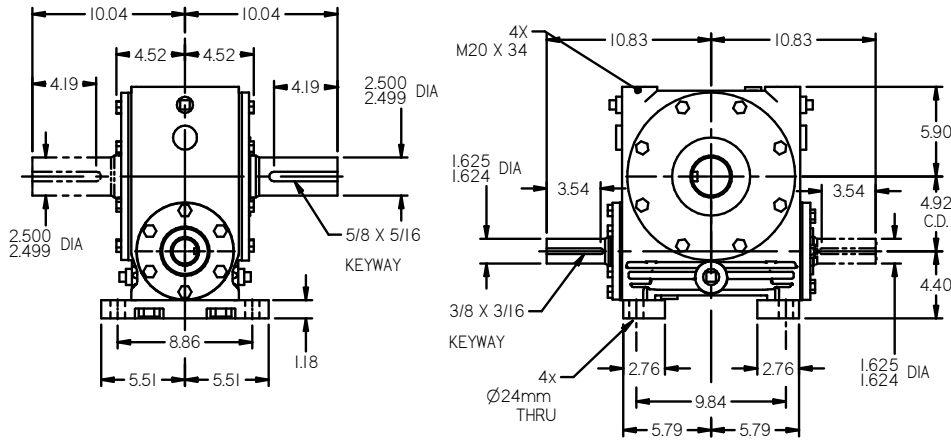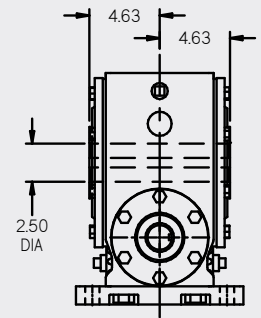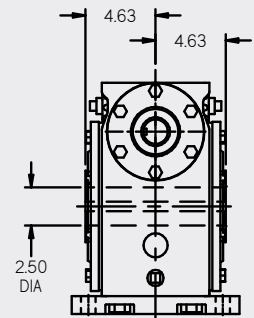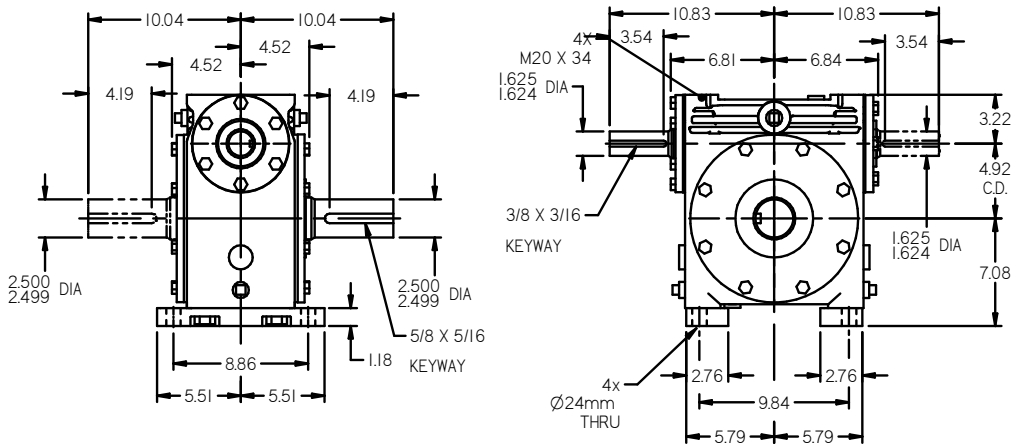
WORM OVER

OUTPUT VERTICAL

WORM UNDER

HOLLOW SHAFT

WORM OVER
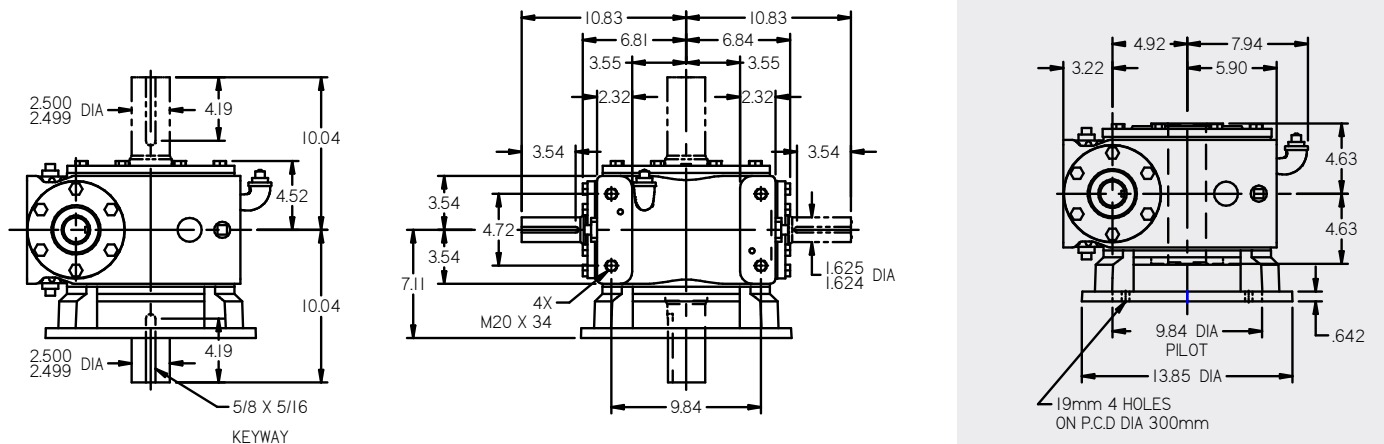
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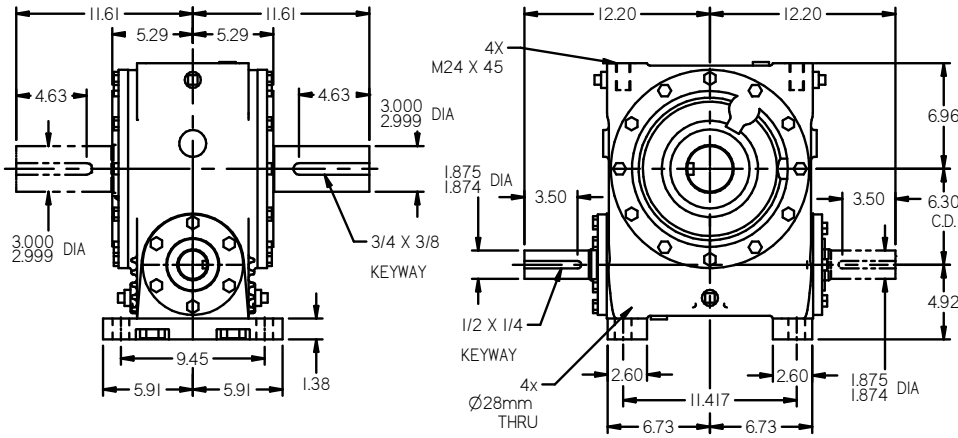
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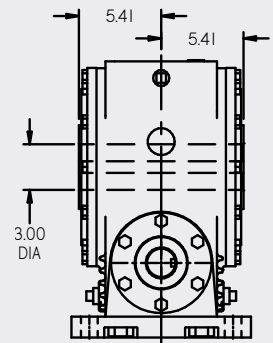
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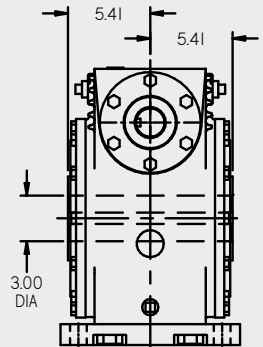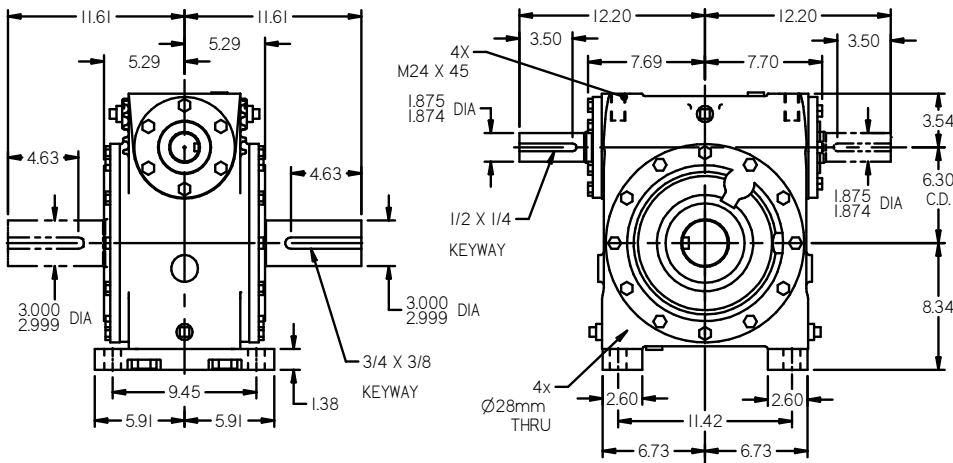
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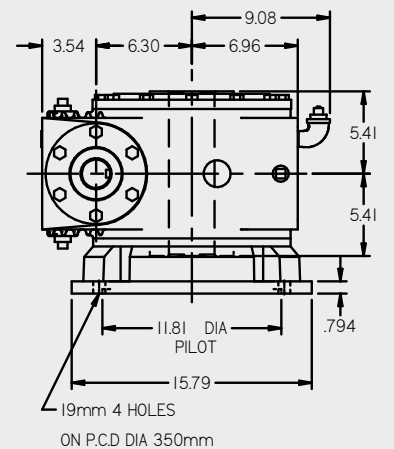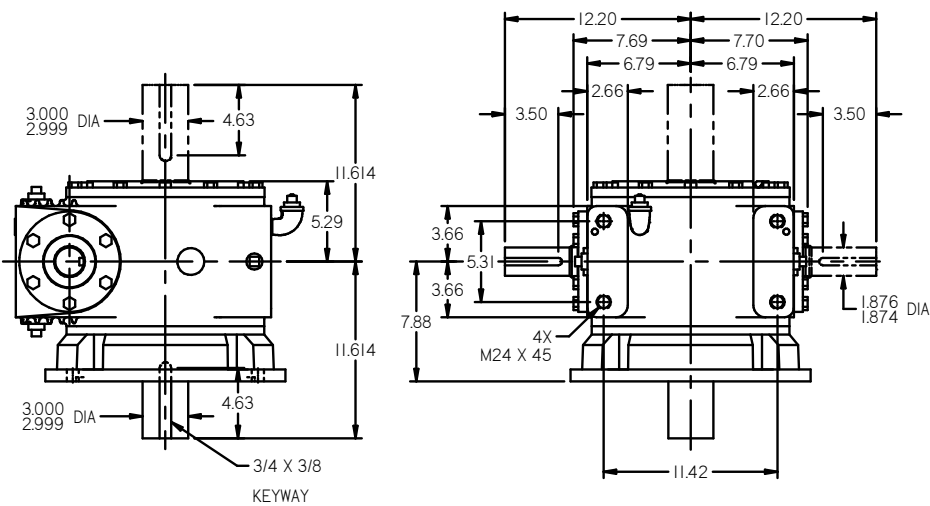
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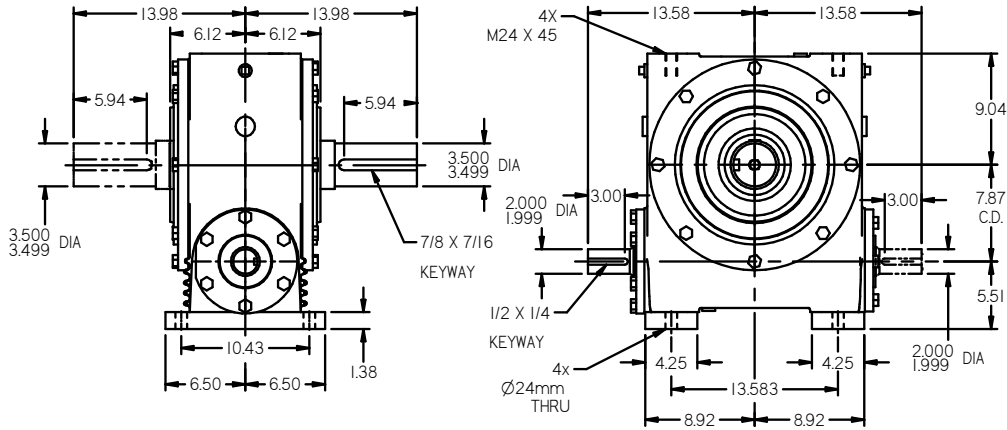
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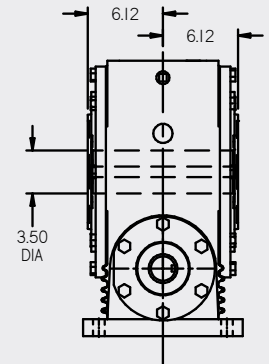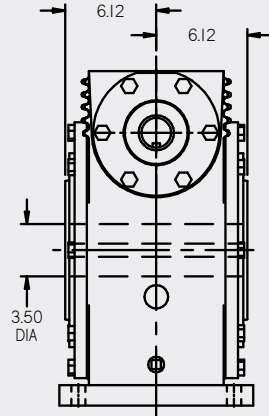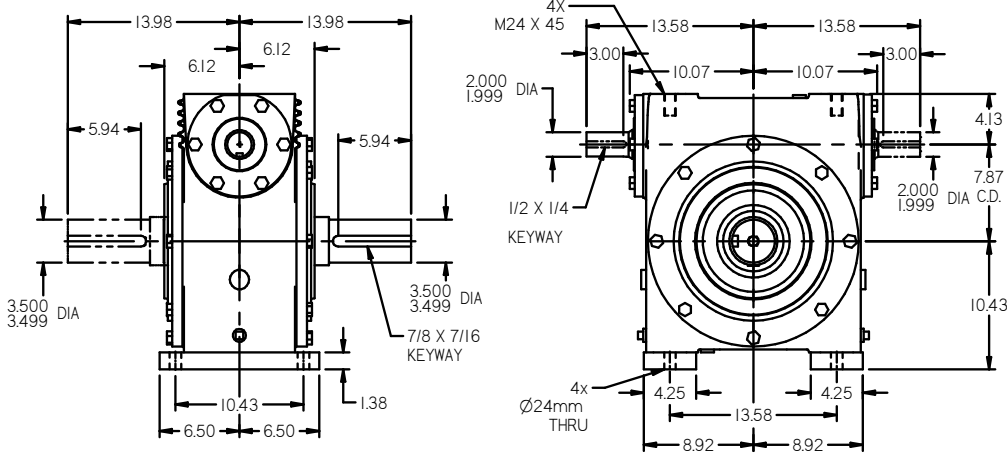
WORM OVER

OUTPUT VERTICAL
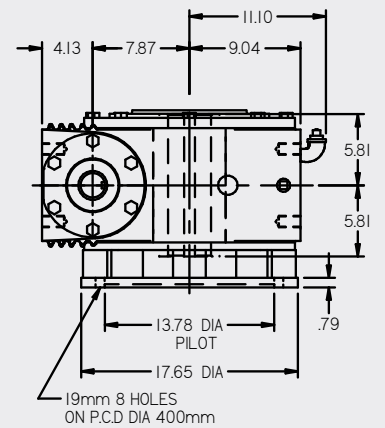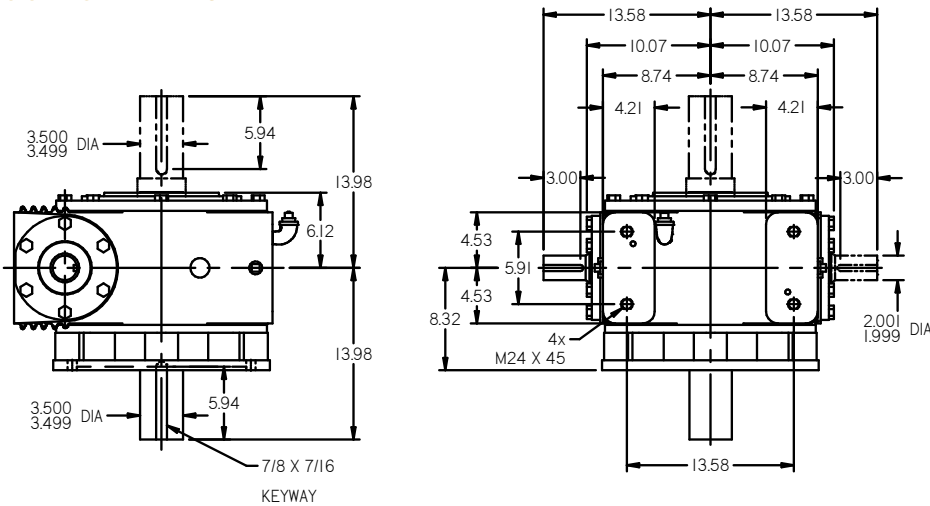
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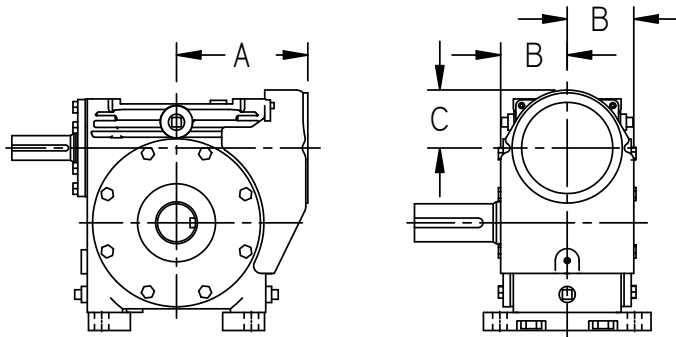
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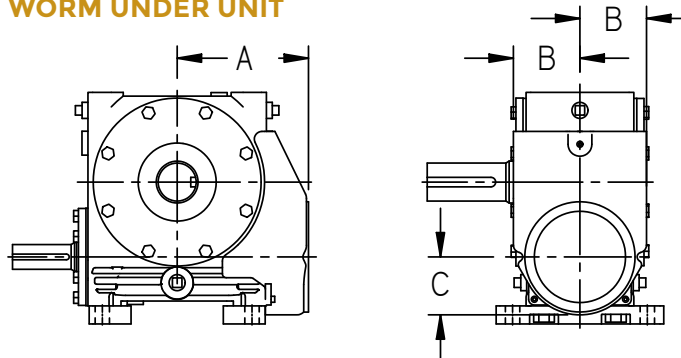
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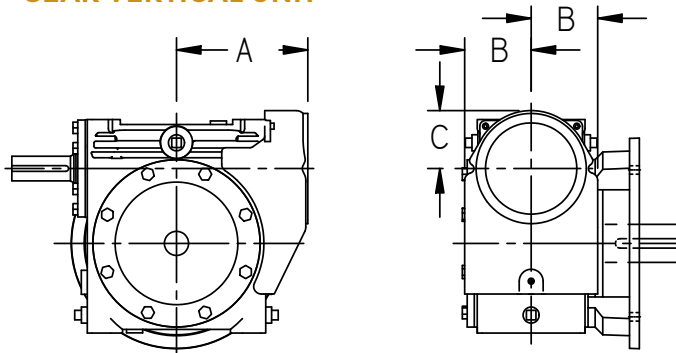
Size	A	B	C
	(inches)		
100	7.80	4.06	3.39
125	8.62	4.48	3.95
160	9.72	5.23	4.20
200	12.80	6.24	5.31
200	12.80	6.24	5.31

IMPORTANT: Do not restrict air intake flow to fan.

SIZE 100 Single Reduction

$i:1$	Ratings	Units	$N_{1\,NOM}$ rpm						$T_{2\,MAX}$	
			580	720	870	1,150	1,450	1,750	lb-in	Nm
5.143	$P_{1\,ME}$	hp	17.40	19.70	21.70	25.20	28.40	31.10	30,100	3,400
		kW	13.00	14.70	16.20	18.80	21.20	23.20		
	$P_{1\,TH}$	hp	7.57	7.62	8.53	8.56	8.56	8.56		
		kW	5.65	5.69	6.37	6.39	6.39	6.39		
	$P_{1\,TH\,Fan}$	hp	10.10	10.70	12.60	16.40	18.30	20.20		
		kW	7.53	7.98	9.41	12.20	13.70	15.10		
	$T_{2\,ME}$	lb-in	8,830	8,050	7,450	6,540	5,840	5,300		
		Nm	998	910	841	739	660	599		
	η	%	91	91	92	92	92	92		
7.4	$P_{1\,ME}$	hp	14.90	17.00	18.80	21.80	24.70	27.00	34,100	3,860
		kW	11.10	12.70	14.00	16.30	18.40	20.20		
	$P_{1\,TH}$	hp	6.32	6.93	7.31	7.70	7.70	7.70		
		kW	4.72	5.17	5.45	5.75	5.75	5.75		
	$P_{1\,TH\,Fan}$	hp	8.42	9.72	10.80	14.70	16.50	18.20		
		kW	6.29	7.25	8.06	11.00	12.30	13.60		
	$T_{2\,ME}$	lb-in	10,700	9,890	9,110	8,060	7,230	6,560		
		Nm	1,210	1,120	1,030	910	817	741		
	η	%	89	90	91	91	91	91		
9.75	$P_{1\,ME}$	hp	12.80	14.70	16.30	18.90	21.50	23.70	35,500	4,010
		kW	9.58	11.00	12.20	14.10	16.10	17.70		
	$P_{1\,TH}$	hp	5.39	6.33	6.36	6.97	6.97	6.97		
		kW	4.02	4.72	4.75	5.20	5.20	5.20		
	$P_{1\,TH\,Fan}$	hp	7.19	8.88	9.40	13.30	14.90	16.50		
		kW	5.36	6.63	7.02	9.95	11.10	12.30		
	$T_{2\,ME}$	lb-in	11,900	11,200	10,300	9,110	8,210	7,480		
		Nm	1,340	1,260	1,160	1,030	928	846		
	η	%	87	89	89	90	90	90		
12.333	$P_{1\,ME}$	hp	11.40	13.00	14.50	16.80	19.10	21.00	35,900	4,050
		kW	8.48	9.74	10.80	12.60	14.20	15.70		
	$P_{1\,TH}$	hp	4.95	5.56	5.78	6.31	6.31	6.31		
		kW	3.70	4.15	4.32	4.71	4.71	4.71		
	$P_{1\,TH\,Fan}$	hp	6.60	7.81	8.55	12.10	13.50	14.90		
		kW	4.93	5.83	6.38	9.01	10.10	11.10		
	$T_{2\,ME}$	lb-in	13,100	12,300	11,400	10,100	9,110	8,310		
		Nm	1,480	1,390	1,290	1,140	1,030	939		
	η	%	86	88	88	89	89	89		
15.5	$P_{1\,ME}$	hp	10.00	11.50	12.80	14.80	16.80	18.50	35,500	4,020
		kW	7.48	8.57	9.53	11.10	12.60	13.80		
	$P_{1\,TH}$	hp	4.54	4.83	5.15	5.56	5.61	5.61		
		kW	3.39	3.60	3.84	4.15	4.19	4.19		
	$P_{1\,TH\,Fan}$	hp	6.05	6.77	7.61	10.60	12.00	13.30		
		kW	4.52	5.05	5.68	7.94	8.95	9.89		
	$T_{2\,ME}$	lb-in	14,300	13,400	12,400	11,000	9,940	9,040		
		Nm	1,620	1,510	1,400	1,250	1,120	1,020		
	η	%	85	86	87	88	88	88		
19.5	$P_{1\,ME}$	hp	8.10	9.31	10.40	12.00	13.60	14.90	34,700	3,920
		kW	6.05	6.95	7.74	8.98	10.10	11.20		
	$P_{1\,TH}$	hp	4.11	4.13	4.16	4.42	4.69	4.69		
		kW	3.07	3.08	3.10	3.30	3.50	3.50		
	$P_{1\,TH\,Fan}$	hp	5.48	5.80	6.14	8.46	10.00	11.10		
		kW	4.09	4.33	4.59	6.31	7.49	8.27		
	$T_{2\,ME}$	lb-in	14,300	13,200	12,200	10,900	9,830	8,950		
		Nm	1,610	1,500	1,380	1,230	1,110	1,010		
	η	%	83	83	83	84	85	85		

Other ratios are available. Please contact Cone Drive for ratios and ratings.
See page 39 for rating definitions.

SIZE 100 Single Reduction

$i:1$	Ratings	Units	$N_{1\,NOM}$ rpm						$T_{2\,MAX}$	
			580	720	870	1,150	1,450	1,750	lb-in	Nm
25	$P_{1\,ME}$	hp	6.39	7.34	8.18	9.48	10.70	11.80	32,900	3,720
		kW	4.77	5.48	6.10	7.07	8.01	8.80		
	$P_{1\,TH}$	hp	3.63	3.63	4.06	4.31	4.31	4.31		
		kW	2.71	2.71	3.03	3.22	3.22	3.22		
	$P_{1\,TH\,Fan}$	hp	4.84	5.10	6.00	8.25	9.22	10.20		
		kW	3.61	3.80	4.48	6.16	6.88	7.60		
	$T_{2\,ME}$	lb-in	14,100	13,000	12,300	10,900	9,800	8,920		
		Nm	1,590	1,470	1,390	1,230	1,110	1,010		
	η	%	81	81	83	84	84	84		
30	$P_{1\,ME}$	hp	5.34	6.14	6.85	7.93	8.97	9.87	31,600	3,570
		kW	3.99	4.58	5.11	5.91	6.70	7.36		
	$P_{1\,TH}$	hp	2.76	3.14	3.29	3.45	3.45	3.45		
		kW	2.06	2.34	2.45	2.57	2.57	2.57		
	$P_{1\,TH\,Fan}$	hp	3.68	4.40	4.86	6.60	7.38	8.15		
		kW	2.75	3.28	3.62	4.93	5.50	6.08		
	$T_{2\,ME}$	lb-in	13,100	12,600	11,800	10,400	9,360	8,530		
		Nm	1,480	1,420	1,330	1,180	1,060	964		
	η	%	75	78	79	80	80	80		
40	$P_{1\,ME}$	hp	4.02	4.63	5.16	5.98	6.76	7.45	28,500	3,220
		kW	3.00	3.46	3.85	4.46	5.05	5.56		
	$P_{1\,TH}$	hp	2.46	2.76	2.76	2.87	2.87	2.87		
		kW	1.84	2.06	2.06	2.15	2.15	2.15		
	$P_{1\,TH\,Fan}$	hp	3.29	3.87	4.08	5.50	6.15	6.79		
		kW	2.45	2.89	3.04	4.10	4.59	5.07		
	$T_{2\,ME}$	lb-in	12,600	12,200	11,200	9,960	8,930	8,160		
		Nm	1,420	1,380	1,270	1,130	1,010	921		
	η	%	72	75	75	76	76	76		
50	$P_{1\,ME}$	hp	3.23	3.72	4.14	4.80	5.43	5.98	25,300	2,860
		kW	2.41	2.77	3.09	3.58	4.05	4.46		
	$P_{1\,TH}$	hp	2.30	2.46	2.46	2.56	2.56	2.56		
		kW	1.72	1.84	1.84	1.91	1.91	1.91		
	$P_{1\,TH\,Fan}$	hp	3.07	3.46	3.64	4.80	5.43	5.98		
		kW	2.29	2.58	2.72	3.58	4.05	4.46		
	$T_{2\,ME}$	lb-in	12,300	11,700	10,800	9,610	8,620	7,860		
		Nm	1,390	1,320	1,220	1,090	974	888		
	η	%	70	72	72	73	73	73		
60	$P_{1\,ME}$	hp	2.70	3.10	3.46	4.01	4.54	4.99	24,900	2,820
		kW	2.01	2.32	2.58	2.99	3.39	3.73		
	$P_{1\,TH}$	hp	2.03	2.16	2.23	2.30	2.30	2.30		
		kW	1.51	1.61	1.66	1.72	1.72	1.72		
	$P_{1\,TH\,Fan}$	hp	2.70	3.03	3.29	4.01	4.54	4.99		
		kW	2.01	2.26	2.46	2.99	3.39	3.73		
	$T_{2\,ME}$	lb-in	11,600	11,100	10,400	9,230	8,290	7,550		
		Nm	1,310	1,250	1,170	1,040	937	854		
	η	%	66	68	69	70	70	70		
70	$P_{1\,ME}$	hp	2.32	2.66	2.97	3.44	3.90	4.29	24,500	2,770
		kW	1.73	1.99	2.21	2.57	2.91	3.20		
	$P_{1\,TH}$	hp	1.97	2.09	2.16	2.23	2.23	2.23		
		kW	1.47	1.56	1.61	1.66	1.66	1.66		
	$P_{1\,TH\,Fan}$	hp	2.32	2.66	2.97	3.44	3.90	4.29		
		kW	1.73	1.99	2.21	2.57	2.91	3.20		
	$T_{2\,ME}$	lb-in	11,500	10,900	10,200	9,110	8,180	7,460		
		Nm	1,290	1,240	1,160	1,030	924	843		
	η	%	65	67	68	69	69	69		

Other ratios are available. Please contact Cone Drive for ratios and ratings.
See page 39 for rating definitions.

SIZE 125 Single Reduction

$i:1$	Ratings	Units	$N_{1\,NOM}$ rpm						$T_{2\,MAX}$	
			580	720	870	1,150	1,450	1,750	lb-in	Nm
5.125	$P_{1\,ME}$	hp	31.70	35.50	39.50	45.50	50.90	55.20	60,700	6,860
		kW	23.70	26.50	29.50	33.90	38.00	41.20		
	$P_{1\,TH}$	hp	16.10	16.20	19.30	19.40	19.40	19.40		
		kW	12.00	12.10	14.40	14.50	14.50	14.50		
	$P_{1\,TH\,Fan}$	hp	16.60	18.30	23.80	35.40	39.70	44.00		
		kW	12.40	13.60	17.80	26.50	29.60	32.80		
	$T_{2\,ME}$	lb-in	16,600	15,000	13,900	12,100	10,800	9,670		
		Nm	1,880	1,690	1,570	1,370	1,220	1,090		
	η	%	94	94	95	95	95	95		
7.4	$P_{1\,ME}$	hp	27.30	30.70	34.10	39.50	44.10	48.00	68,900	7,780
		kW	20.40	22.90	25.40	29.50	32.90	35.80		
	$P_{1\,TH}$	hp	12.40	14.10	15.20	16.40	16.40	16.40		
		kW	9.23	10.50	11.40	12.30	12.30	12.30		
	$P_{1\,TH\,Fan}$	hp	12.80	15.90	18.80	30.00	33.60	37.20		
		kW	9.52	11.90	14.00	22.40	25.10	27.80		
	$T_{2\,ME}$	lb-in	20,200	18,500	17,100	15,100	13,300	12,000		
		Nm	2,290	2,090	1,930	1,700	1,510	1,360		
	η	%	92	93	94	94	94	94		
9.75	$P_{1\,ME}$	hp	23.70	26.70	29.50	34.30	38.50	42.10	71,500	8,080
		kW	17.70	19.90	22.00	25.60	28.70	31.40		
	$P_{1\,TH}$	hp	10.00	12.40	12.50	14.20	14.20	14.20		
		kW	7.46	9.26	9.32	10.60	10.60	10.60		
	$P_{1\,TH\,Fan}$	hp	10.30	14.00	15.40	25.90	29.10	32.20		
		kW	7.69	10.50	11.50	19.40	21.70	24.00		
	$T_{2\,ME}$	lb-in	22,600	21,000	19,200	17,100	15,200	13,800		
		Nm	2,560	2,370	2,170	1,930	1,720	1,550		
	η	%	90	92	92	93	93	93		
12.333	$P_{1\,ME}$	hp	21.00	23.70	26.20	30.50	34.30	37.30	72,200	8,160
		kW	15.70	17.70	19.50	22.70	25.60	27.80		
	$P_{1\,TH}$	hp	8.96	10.40	11.00	12.40	12.40	12.40		
		kW	6.69	7.78	8.19	9.22	9.22	9.22		
	$P_{1\,TH\,Fan}$	hp	9.24	11.80	13.50	22.60	25.30	28.00		
		kW	6.89	8.79	10.10	16.80	18.90	20.90		
	$T_{2\,ME}$	lb-in	25,100	23,200	21,300	19,000	16,900	15,300		
		Nm	2,840	2,620	2,400	2,140	1,910	1,720		
	η	%	89	91	91	92	92	92		
15.5	$P_{1\,ME}$	hp	18.50	20.90	23.00	26.80	30.20	32.90	71,800	8,110
		kW	13.80	15.60	17.20	20.00	22.60	24.60		
	$P_{1\,TH}$	hp	8.03	8.67	9.42	10.40	10.50	10.50		
		kW	5.99	6.47	7.03	7.78	7.86	7.86		
	$P_{1\,TH\,Fan}$	hp	8.28	9.79	11.60	19.00	21.60	23.90		
		kW	6.18	7.31	8.68	14.20	16.10	17.80		
	$T_{2\,ME}$	lb-in	27,400	25,100	23,100	20,700	18,500	16,700		
		Nm	3,090	2,840	2,610	2,330	2,090	1,880		
	η	%	88	89	90	91	91	91		
19.5	$P_{1\,ME}$	hp	15.00	16.90	18.60	21.70	24.50	26.70	70,100	7,920
		kW	11.20	12.60	13.90	16.20	18.30	19.90		
	$P_{1\,TH}$	hp	7.10	7.15	7.21	7.78	8.38	8.38		
		kW	5.30	5.34	5.38	5.80	6.25	6.25		
	$P_{1\,TH\,Fan}$	hp	7.32	8.08	8.90	14.20	17.10	19.00		
		kW	5.46	6.03	6.64	10.60	12.80	14.20		
	$T_{2\,ME}$	lb-in	27,400	24,900	22,800	20,300	18,300	16,600		
		Nm	3,090	2,810	2,570	2,290	2,070	1,870		
	η	%	86	86	86	87	88	88		

Other ratios are available. Please contact Cone Drive for ratios and ratings.
See page 39 for rating definitions.

SIZE 125 Single Reduction

$i:1$	Ratings	Units	$N_{1\,NOM}$ rpm						$T_{2\,MAX}$	
			580	720	870	1,150	1,450	1,750	lb-in	Nm
25	$P_{1\,ME}$	hp	11.80	13.30	14.70	17.10	19.30	21.10	66,700	7,540
		kW	8.82	9.95	11.00	12.80	14.40	15.70		
	$P_{1\,TH}$	hp	6.12	6.12	7.00	7.54	7.54	7.54		
		kW	4.57	4.57	5.22	5.63	5.63	5.63		
	$P_{1\,TH\,Fan}$	hp	6.31	6.92	8.64	13.80	15.40	17.10		
		kW	4.71	5.16	6.45	10.30	11.50	12.70		
	$T_{2\,ME}$	lb-in	27,000	24,500	22,900	20,400	18,300	16,500		
		Nm	3,050	2,770	2,590	2,300	2,060	1,860		
	η	%	84	84	86	87	87	87		
30	$P_{1\,ME}$	hp	9.90	11.20	12.30	14.30	16.20	17.60	64,300	7,260
		kW	7.39	8.32	9.19	10.70	12.10	13.20		
	$P_{1\,TH}$	hp	4.45	5.16	5.44	5.76	5.76	5.76		
		kW	3.32	3.85	4.06	4.30	4.30	4.30		
	$P_{1\,TH\,Fan}$	hp	4.59	5.82	6.72	10.50	11.80	13.10		
		kW	3.43	4.35	5.02	7.86	8.80	9.75		
	$T_{2\,ME}$	lb-in	25,200	23,700	22,000	19,600	17,500	15,800		
		Nm	2,850	2,680	2,480	2,210	1,980	1,790		
	η	%	78	81	82	83	83	83		
40	$P_{1\,ME}$	hp	7.46	8.42	9.29	10.80	12.20	13.30	58,200	6,570
		kW	5.57	6.29	6.93	8.06	9.10	9.92		
	$P_{1\,TH}$	hp	3.92	4.45	4.45	4.67	4.67	4.67		
		kW	2.93	3.32	3.32	3.48	3.48	3.48		
	$P_{1\,TH\,Fan}$	hp	4.04	5.03	5.50	8.52	9.55	10.60		
		kW	3.01	3.75	4.10	6.36	7.13	7.89		
	$T_{2\,ME}$	lb-in	24,300	23,000	21,000	18,700	16,800	15,100		
		Nm	2,750	2,600	2,370	2,110	1,890	1,710		
	η	%	75	78	78	79	79	79		
50	$P_{1\,ME}$	hp	6.00	6.76	7.45	8.67	9.79	10.70	52,000	5,870
		kW	4.48	5.04	5.56	6.47	7.31	7.96		
	$P_{1\,TH}$	hp	3.63	3.92	3.92	4.08	4.08	4.08		
		kW	2.71	2.93	2.93	3.05	3.05	3.05		
	$P_{1\,TH\,Fan}$	hp	3.74	4.43	4.84	7.46	8.35	9.25		
		kW	2.79	3.30	3.61	5.57	6.23	6.90		
	$T_{2\,ME}$	lb-in	23,800	22,200	20,200	18,100	16,200	14,600		
		Nm	2,690	2,510	2,290	2,040	1,830	1,650		
	η	%	73	75	75	76	76	76		
60	$P_{1\,ME}$	hp	5.01	5.65	6.22	7.25	8.18	8.91	51,100	5,780
		kW	3.74	4.21	4.64	5.41	6.10	6.65		
	$P_{1\,TH}$	hp	3.16	3.38	3.50	3.63	3.63	3.63		
		kW	2.36	2.52	2.61	2.71	2.71	2.71		
	$P_{1\,TH\,Fan}$	hp	3.26	3.82	4.32	6.63	7.43	8.22		
		kW	2.43	2.85	3.22	4.95	5.54	6.14		
	$T_{2\,ME}$	lb-in	22,500	21,100	19,500	17,400	15,600	14,100		
		Nm	2,540	2,380	2,200	1,970	1,760	1,590		
	η	%	69	71	72	73	73	73		
70	$P_{1\,ME}$	hp	4.30	4.85	5.34	6.22	7.02	7.65	50,400	5,700
		kW	3.21	3.62	3.98	4.64	5.24	5.71		
	$P_{1\,TH}$	hp	3.06	3.27	3.38	3.50	3.50	3.50		
		kW	2.29	2.44	2.52	2.61	2.61	2.61		
	$P_{1\,TH\,Fan}$	hp	3.16	3.69	4.17	6.22	7.02	7.65		
		kW	2.36	2.75	3.11	4.64	5.24	5.71		
	$T_{2\,ME}$	lb-in	22,200	20,800	19,200	17,200	15,400	13,900		
		Nm	2,510	2,350	2,170	1,940	1,740	1,570		
	η	%	68	70	71	72	72	72		

Other ratios are available. Please contact Cone Drive for ratios and ratings.
See page 39 for rating definitions.

SIZE 160 Single Reduction

$i:1$	Ratings	Units	$N_{1\,NOM}$ rpm						$T_{2\,MAX}$	
			580	720	870	1,150	1,450	1,750	lb-in	Nm
5.125	$P_{1\,ME}$	hp	54.50	61.30	67.80	77.30	85.10	89.80	113,000	12,700
		kW	40.60	45.80	50.60	57.70	63.50	67.00		
	$P_{1\,TH}$	hp	19.80	20.00	23.80	24.00	24.00	24.00		
		kW	14.80	14.90	17.80	17.90	17.90	17.90		
	$P_{1\,TH\,Fan}$	hp	22.30	26.30	36.30	47.10	52.60	58.00		
		kW	16.60	19.60	27.10	35.20	39.20	43.30		
	$T_{2\,ME}$	lb-in	28,500	25,900	23,900	20,600	18,000	15,700		
		Nm	3,220	2,920	2,700	2,330	2,030	1,780		
	η	%	94	94	95	95	95	95		
7.571	$P_{1\,ME}$	hp	46.60	52.60	58.10	66.70	73.90	78.30	129,000	14,600
		kW	34.80	39.30	43.40	49.80	55.10	58.40		
	$P_{1\,TH}$	hp	15.00	17.20	18.50	20.10	20.10	20.10		
		kW	11.20	12.80	13.80	15.00	15.00	15.00		
	$P_{1\,TH\,Fan}$	hp	16.90	22.60	28.10	39.50	44.00	48.60		
		kW	12.60	16.90	21.00	29.50	32.90	36.30		
	$T_{2\,ME}$	lb-in	35,300	32,400	29,800	26,000	22,800	20,100		
		Nm	3,980	3,670	3,370	2,940	2,580	2,270		
	η	%	92	93	93	94	94	94		
9.8	$P_{1\,ME}$	hp	40.70	45.60	50.40	58.20	64.90	69.30	133,000	15,000
		kW	30.40	34.00	37.60	43.40	48.40	51.70		
	$P_{1\,TH}$	hp	12.30	15.30	15.40	17.50	17.50	17.50		
		kW	9.18	11.40	11.50	13.00	13.00	13.00		
	$P_{1\,TH\,Fan}$	hp	13.80	20.10	23.40	34.40	38.40	42.30		
		kW	10.30	15.00	17.40	25.70	28.60	31.60		
	$T_{2\,ME}$	lb-in	39,100	36,000	33,000	29,100	25,700	22,800		
		Nm	4,410	4,070	3,730	3,290	2,910	2,570		
	η	%	90	92	92	93	93	93		
12.25	$P_{1\,ME}$	hp	36.30	40.70	44.90	52.10	58.20	62.10	134,000	15,100
		kW	27.10	30.40	33.50	38.90	43.40	46.40		
	$P_{1\,TH}$	hp	11.10	12.90	13.60	15.30	15.30	15.30		
		kW	8.28	9.66	10.10	11.40	11.40	11.40		
	$P_{1\,TH\,Fan}$	hp	12.50	17.00	20.70	30.10	33.60	37.10		
		kW	9.31	12.70	15.40	22.50	25.10	27.70		
	$T_{2\,ME}$	lb-in	43,100	39,600	36,300	32,200	28,500	25,200		
		Nm	4,870	4,470	4,100	3,640	3,220	2,850		
	η	%	89	91	91	92	92	92		
14.667	$P_{1\,ME}$	hp	33.20	37.40	41.30	47.70	53.20	56.90	134,000	15,100
		kW	24.80	27.90	30.80	35.60	39.70	42.50		
	$P_{1\,TH}$	hp	10.20	11.20	12.30	13.60	13.60	13.60		
		kW	7.61	8.36	9.15	10.20	10.20	10.20		
	$P_{1\,TH\,Fan}$	hp	11.50	14.70	18.60	26.80	29.90	33.00		
		kW	8.55	11.00	13.90	20.00	22.30	24.70		
	$T_{2\,ME}$	lb-in	46,600	42,800	39,500	35,000	30,900	27,400		
		Nm	5,270	4,840	4,470	3,950	3,500	3,100		
	η	%	88	89	90	91	91	91		
20.5	$P_{1\,ME}$	hp	24.70	27.70	30.70	35.50	39.50	42.50	130,000	14,600
		kW	18.40	20.70	22.90	26.50	29.50	31.70		
	$P_{1\,TH}$	hp	8.52	8.52	8.64	9.31	10.00	10.00		
		kW	6.36	6.36	6.45	6.95	7.46	7.46		
	$P_{1\,TH\,Fan}$	hp	9.58	11.20	13.10	18.30	21.90	24.20		
		kW	7.15	8.37	9.81	13.70	16.40	18.10		
	$T_{2\,ME}$	lb-in	47,200	42,600	39,200	34,700	31,000	27,600		
		Nm	5,330	4,820	4,430	3,920	3,500	3,120		
	η	%	86	86	86	87	88	88		

Other ratios are available. Please contact Cone Drive for ratios and ratings.
See page 39 for rating definitions.

SIZE 160 Single Reduction

$i:1$	Ratings	Units	$N_{1\,NOM}$ rpm						$T_{2\,MAX}$	
			580	720	870	1,150	1,450	1,750	lb-in	Nm
24.5	$P_{1\,ME}$	hp	20.80	23.30	25.80	29.90	33.30	35.80	125,000	14,100
		kW	15.50	17.40	19.30	22.30	24.80	26.70		
	$P_{1\,TH}$	hp	7.66	7.66	8.64	9.31	9.38	9.38		
		kW	5.72	5.72	6.45	6.95	7.00	7.00		
	$P_{1\,TH\,Fan}$	hp	8.61	10.10	13.10	18.30	20.60	22.70		
		kW	6.42	7.52	9.81	13.70	15.40	17.00		
	$T_{2\,ME}$	lb-in	46,600	42,100	39,400	34,900	30,900	27,500		
		Nm	5,270	4,750	4,450	3,940	3,490	3,110		
	η	%	84	84	86	87	87	87		
30	$P_{1\,ME}$	hp	17.10	19.10	21.20	24.50	27.30	29.40	120,000	13,500
		kW	12.70	14.30	15.80	18.30	20.40	22.00		
	$P_{1\,TH}$	hp	5.50	6.37	6.72	7.12	7.12	7.12		
		kW	4.10	4.75	5.02	5.31	5.31	5.31		
	$P_{1\,TH\,Fan}$	hp	6.18	8.38	10.20	14.00	15.60	17.20		
		kW	4.61	6.25	7.63	10.40	11.70	12.90		
	$T_{2\,ME}$	lb-in	43,400	40,700	37,800	33,400	29,600	26,400		
		Nm	4,910	4,600	4,270	3,780	3,340	2,980		
	η	%	78	81	82	83	83	83		
40	$P_{1\,ME}$	hp	12.90	14.40	16.00	18.50	20.60	22.20	108,000	12,200
		kW	9.61	10.80	11.90	13.80	15.40	16.60		
	$P_{1\,TH}$	hp	4.84	5.50	5.50	5.76	5.76	5.76		
		kW	3.61	4.10	4.10	4.30	4.30	4.30		
	$P_{1\,TH\,Fan}$	hp	5.44	7.24	8.36	11.30	12.60	14.00		
		kW	4.06	5.40	6.24	8.46	9.43	10.40		
	$T_{2\,ME}$	lb-in	42,000	39,300	36,200	32,000	28,300	25,300		
		Nm	4,740	4,450	4,090	3,620	3,200	2,850		
	η	%	75	78	78	79	79	79		
50	$P_{1\,ME}$	hp	10.30	11.60	12.80	14.80	16.50	17.80	96,800	10,900
		kW	7.71	8.64	9.59	11.10	12.30	13.30		
	$P_{1\,TH}$	hp	4.48	4.84	4.84	5.04	5.04	5.04		
		kW	3.34	3.61	3.61	3.76	3.76	3.76		
	$P_{1\,TH\,Fan}$	hp	5.04	6.37	7.36	9.92	11.10	12.20		
		kW	3.76	4.75	5.49	7.40	8.26	9.11		
	$T_{2\,ME}$	lb-in	41,000	38,000	34,900	30,900	27,300	24,400		
		Nm	4,630	4,290	3,940	3,490	3,090	2,760		
	η	%	73	75	75	76	76	76		
60	$P_{1\,ME}$	hp	8.62	9.66	10.70	12.40	13.80	14.90	95,200	10,800
		kW	6.44	7.21	8.01	9.24	10.30	11.10		
	$P_{1\,TH}$	hp	3.90	4.17	4.32	4.48	4.48	4.48		
		kW	2.91	3.11	3.22	3.34	3.34	3.34		
	$P_{1\,TH\,Fan}$	hp	4.39	5.49	6.57	8.81	9.83	10.90		
		kW	3.27	4.10	4.90	6.58	7.34	8.10		
	$T_{2\,ME}$	lb-in	38,800	36,000	33,600	29,700	26,300	23,500		
		Nm	4,380	4,070	3,790	3,360	2,970	2,650		
	η	%	69	71	72	73	73	73		
70	$P_{1\,ME}$	hp	7.40	8.30	9.21	10.60	11.90	12.80	93,700	10,600
		kW	5.52	6.20	6.87	7.94	8.85	9.54		
	$P_{1\,TH}$	hp	3.78	4.03	4.17	4.32	4.32	4.32		
		kW	2.82	3.01	3.11	3.22	3.22	3.22		
	$P_{1\,TH\,Fan}$	hp	4.25	5.31	6.34	8.50	9.48	10.50		
		kW	3.17	3.96	4.73	6.34	7.08	7.81		
	$T_{2\,ME}$	lb-in	38,300	35,600	33,100	29,400	26,000	23,200		
		Nm	4,330	4,020	3,750	3,320	2,930	2,620		
	η	%	68	70	71	72	72	72		

Other ratios are available. Please contact Cone Drive for ratios and ratings.
See page 39 for rating definitions.

SIZE 200 Single Reduction

$i:1$	Ratings	Units	$N_{1\,NOM}$ rpm						$T_{2\,MAX}$	
			580	720	870	1,150	1,450	1,750	lb-in	Nm
5.1	$P_{1\,ME}$	hp	97.40	109.00	120.00	134.00	144.00	155.00	216,000	24,400
		kW	72.70	81.20	89.30	100.00	108.00	115.00		
	$P_{1\,TH}$	hp	33.90	34.10	40.70	40.90	40.90	40.90		
		kW	25.30	25.50	30.40	30.50	30.50	30.50		
	$P_{1\,TH\,Fan}$	hp	49.30	51.30	63.40	77.40	86.20	95.00		
		kW	36.80	38.30	47.30	57.70	64.30	70.90		
	$T_{2\,ME}$	lb-in	50,700	45,600	42,000	35,700	30,400	27,000		
		Nm	5,730	5,150	4,740	4,030	3,430	3,050		
	η	%	94	94	95	95	95	95		
7.571	$P_{1\,ME}$	hp	83.40	93.50	103.00	116.00	125.00	134.00	247,000	27,900
		kW	62.20	69.80	76.50	86.70	93.00	100.00		
	$P_{1\,TH}$	hp	25.60	29.30	31.50	34.20	34.20	34.20		
		kW	19.10	21.90	23.50	25.50	25.50	25.50		
	$P_{1\,TH\,Fan}$	hp	37.20	44.10	49.10	64.70	72.10	79.50		
		kW	27.80	32.90	36.60	48.30	53.80	59.30		
	$T_{2\,ME}$	lb-in	63,100	57,600	52,600	45,300	38,500	34,300		
		Nm	7,130	6,510	5,940	5,120	4,350	3,880		
	η	%	92	93	93	94	94	94		
9.8	$P_{1\,ME}$	hp	75.40	84.80	94.00	107.00	118.00	125.00	257,000	29,100
		kW	56.30	63.30	70.10	80.00	88.20	93.20		
	$P_{1\,TH}$	hp	20.90	26.00	26.10	29.80	29.80	29.80		
		kW	15.60	19.40	19.50	22.20	22.20	22.20		
	$P_{1\,TH\,Fan}$	hp	30.50	39.20	40.70	56.40	62.80	69.20		
		kW	22.80	29.20	30.40	42.10	46.90	51.70		
	$T_{2\,ME}$	lb-in	72,400	67,000	61,500	53,600	46,900	41,000		
		Nm	8,180	7,570	6,950	6,060	5,300	4,640		
	η	%	90	92	92	93	93	93		
12.25	$P_{1\,ME}$	hp	67.60	76.10	84.30	96.50	107.00	112.00	260,000	29,400
		kW	50.40	56.80	62.90	72.00	79.50	83.70		
	$P_{1\,TH}$	hp	18.90	22.00	23.10	26.10	26.10	26.10		
		kW	14.10	16.40	17.30	19.50	19.50	19.50		
	$P_{1\,TH\,Fan}$	hp	27.50	33.20	36.10	49.40	55.00	60.60		
		kW	20.50	24.80	26.90	36.80	41.00	45.20		
	$T_{2\,ME}$	lb-in	80,200	74,000	68,100	59,600	52,200	45,600		
		Nm	9,060	8,360	7,700	6,740	5,900	5,150		
	η	%	89	91	91	92	92	92		
15.333	$P_{1\,ME}$	hp	60.20	67.70	74.90	85.80	94.80	100.00	259,000	29,300
		kW	44.90	50.50	55.90	64.00	70.80	74.70		
	$P_{1\,TH}$	hp	17.00	18.40	20.10	22.20	22.40	22.40		
		kW	12.70	13.70	15.00	16.60	16.70	16.70		
	$P_{1\,TH\,Fan}$	hp	24.70	27.70	31.30	42.10	47.20	52.10		
		kW	18.50	20.70	23.30	31.40	35.20	38.90		
	$T_{2\,ME}$	lb-in	88,100	80,600	74,700	65,400	57,400	50,200		
		Nm	9,960	9,110	8,440	7,390	6,480	5,670		
	η	%	88	89	90	91	91	91		
20.5	$P_{1\,ME}$	hp	46.10	52.00	57.40	65.90	73.00	77.30	251,000	28,400
		kW	34.40	38.80	42.90	49.20	54.50	57.70		
	$P_{1\,TH}$	hp	14.50	14.50	14.70	15.80	17.00	17.00		
		kW	10.80	10.80	11.00	11.80	12.70	12.70		
	$P_{1\,TH\,Fan}$	hp	21.10	21.80	22.90	30.00	35.90	39.60		
		kW	15.80	16.30	17.10	22.40	26.80	29.50		
	$T_{2\,ME}$	lb-in	88,100	80,100	73,400	64,400	57,200	50,200		
		Nm	9,950	9,050	8,290	7,280	6,460	5,670		
	η	%	86	86	86	87	88	88		

Other ratios are available. Please contact Cone Drive for ratios and ratings.
See page 39 for rating definitions.

SIZE 200 Single Reduction

$i:1$	Ratings	Units	$N_{1\,NOM}$ rpm						$T_{2\,MAX}$	
			580	720	870	1,150	1,450	1,750	lb-in	Nm
24.5	$P_{1\,ME}$	hp	38.90	43.90	48.40	55.50	61.50	65.30	242,000	27,400
		kW	29.00	32.70	36.10	41.40	45.90	48.70		
	$P_{1\,TH}$	hp	13.00	13.00	14.70	15.80	16.00	16.00		
		kW	9.73	9.73	11.00	11.80	11.90	11.90		
	$P_{1\,TH\,Fan}$	hp	19.00	19.60	22.90	30.00	33.70	37.10		
		kW	14.20	14.60	17.10	22.40	25.10	27.70		
	$T_{2\,ME}$	lb-in	87,100	79,200	73,900	64,900	57,100	50,200		
		Nm	9,850	8,950	8,350	7,330	6,450	5,670		
	η	%	84	84	86	87	87	87		
30	$P_{1\,ME}$	hp	32.00	36.00	39.80	45.60	50.60	53.70	232,000	26,200
		kW	23.90	26.80	29.70	34.10	37.70	40.10		
	$P_{1\,TH}$	hp	9.36	10.80	11.40	12.10	12.10	12.10		
		kW	6.99	8.09	8.54	9.04	9.04	9.04		
	$P_{1\,TH\,Fan}$	hp	13.60	16.30	17.80	22.90	25.60	28.20		
		kW	10.20	12.20	13.30	17.10	19.10	21.00		
	$T_{2\,ME}$	lb-in	81,300	76,500	70,900	62,300	54,700	48,100		
		Nm	9,180	8,640	8,010	7,040	6,180	5,440		
	η	%	78	81	82	83	83	83		
40	$P_{1\,ME}$	hp	24.10	27.20	30.00	34.40	38.20	40.50	210,000	23,700
		kW	18.00	20.30	22.40	25.70	28.50	30.20		
	$P_{1\,TH}$	hp	8.24	9.36	9.36	9.81	9.81	9.81		
		kW	6.15	6.99	6.99	7.32	7.32	7.32		
	$P_{1\,TH\,Fan}$	hp	12.00	14.10	14.60	18.60	20.70	22.80		
		kW	8.96	10.50	10.90	13.90	15.40	17.00		
	$T_{2\,ME}$	lb-in	78,700	74,200	67,800	59,600	52,400	46,100		
		Nm	8,890	8,380	7,660	6,740	5,920	5,210		
	η	%	75	78	78	79	79	79		
50	$P_{1\,ME}$	hp	19.40	21.80	24.10	27.70	30.60	32.50	188,000	21,200
		kW	14.40	16.30	18.00	20.60	22.90	24.30		
	$P_{1\,TH}$	hp	7.63	8.24	8.24	8.58	8.58	8.58		
		kW	5.69	6.15	6.15	6.41	6.41	6.41		
	$P_{1\,TH\,Fan}$	hp	11.10	12.40	12.80	16.20	18.10	20.00		
		kW	8.29	9.26	9.58	12.10	13.50	14.90		
	$T_{2\,ME}$	lb-in	76,800	71,500	65,500	57,600	50,600	44,500		
		Nm	8,680	8,080	7,400	6,510	5,720	5,030		
	η	%	73	75	75	76	76	76		
60	$P_{1\,ME}$	hp	16.20	18.20	20.10	23.10	25.60	27.20	185,000	20,900
		kW	12.10	13.60	15.00	17.20	19.10	20.30		
	$P_{1\,TH}$	hp	6.65	7.10	7.36	7.63	7.63	7.63		
		kW	4.96	5.30	5.49	5.69	5.69	5.69		
	$P_{1\,TH\,Fan}$	hp	9.68	10.70	11.50	14.40	16.10	17.70		
		kW	7.22	7.98	8.56	10.80	12.00	13.20		
	$T_{2\,ME}$	lb-in	72,700	67,800	62,900	55,500	48,700	42,900		
		Nm	8,220	7,660	7,110	6,270	5,500	4,850		
	η	%	69	71	72	73	73	73		
70	$P_{1\,ME}$	hp	13.90	15.60	17.30	19.80	22.00	23.30	181,000	20,500
		kW	10.40	11.60	12.90	14.80	16.40	17.40		
	$P_{1\,TH}$	hp	6.44	6.87	7.10	7.36	7.36	7.36		
		kW	4.80	5.12	5.30	5.49	5.49	5.49		
	$P_{1\,TH\,Fan}$	hp	9.38	10.30	11.10	13.90	15.50	17.10		
		kW	7.00	7.71	8.26	10.40	11.60	12.80		
	$T_{2\,ME}$	lb-in	71,800	67,000	62,200	54,800	48,100	42,400		
		Nm	8,110	7,570	7,030	6,190	5,440	4,790		
	η	%	68	70	71	72	72	72		

Other ratios are available. Please contact Cone Drive for ratios and ratings.
See page 39 for rating definitions.

Size Of Unit	100	125	160	200
Weight	(lbs)			
Single Ext. Solid Output Shaft Reducer	149	226	333	646
Hollow Output Shaft Reducer	154	250	360	592
Output Flange	17	25	36	55
Hollow Output Shaft Reducer with Feet	166	266	378	630
Single Ext. Solid Output Shaft Reducer with Feet	161	243	351	684
Single Ext. Solid Output Shaft Reducer with Flange	166	251	369	701
Hollow Output Shaft Reducer with Flange	171	275	396	647

Weights listed exclude lubrication

UNITS	100A-ASSY		125A-ASSY		160A-ASSY		200A-ASSY	
	Ratio	Inertia	Ratio	Inertia	Ratio	Inertia	Ratio	Inertia
lb.in. s² 10⁻⁴	5.143:1	322.20	5.125:1	518.43	5.125:1	1367.18	5.1:1	4023.70
kg cm²		36.37		58.51		154.31		454.14
lb.in. s² 10⁻⁴	7.4:1	275.59	7.4:1	449.12	7.571:1	1137.03	7.571:1	2996.64
kg cm²		31.11		50.69		128.33		338.22
lb.in. s² 10⁻⁴	9.75:1	257.13	9.75:1	422.03	9.8:1	1058.55	9.8:1	2652.66
kg cm²		29.02		47.63		119.48		299.40
lb.in. s² 10⁻⁴	12.33:1	240.92	12.333:1	408.23	12.25:1	1016.73	12.25:1	2469.34
kg cm²		27.19		46.08		114.76		278.71
lb.in. S² 10⁻⁴	15.5:1	235.16	15.5:1	399.79	14.667:1	994.24	15.333:1	2351.46
kg cm²		26.54		45.12		112.22		265.40
lb.in. s² 10⁻⁴	19.5:1	231.51	19.5:1	394.43	20.5:1	968.93	20.5:1	2259.81
kg cm²		26.13		44.52		109.36		255.06
lb.in. s² 10⁻⁴	25:1	229.05	25:1	390.83	24.5:1	960.97	24.5:1	2224.91
kg cm²		25.85		44.11		108.46		251.12
lb.in. s² 10⁻⁴	30:1	227.89	30:1	389.12	30:1	954.78	30:1	2197.78
kg cm²		25.72		43.92		107.76		248.06
lb.in. s² 10⁻⁴	40:1	226.73	40:1	387.42	40:1	949.35	40:1	2174.00
kg cm²		25.59		43.73		107.15		245.37
lb.in. s² 10⁻⁴	50:1	226.19	50:1	386.63	50:1	946.84	50:1	2163.00
kg cm²		25.53		43.64		106.87		244.13
lb.in. s² 10⁻⁴	60:1	225.90	60:1	386.20	60:1	945.48	60:1	2157.02
kg cm²		25.50		43.59		106.71		243.46
lb.in. s² 10⁻⁴	70:1	225.73	70:1	385.94	70:1	944.66	70:1	2153.42
kg cm²		25.48		43.56		106.62		243.05

UNITS	F100A-S-ASSY		F125A-S-ASSY		F160A-S-ASSY		F200A-S-ASSY	
	Ratio	Inertia	Ratio	Inertia	Ratio	Inertia	Ratio	Inertia
lb.in. s² 10⁻⁴	5.143:1	357.53	5.125:1	587.65	5:1	1479.48	5.1:1	4261.17
kg cm²		40.35		66.33		166.98		480.94
lb.in. s² 10⁻⁴	7.4:1	310.92	7.4:1	518.34	7.5:1	1249.34	7.571:1	3234.11
kg cm²		35.09		58.50		141.01		365.02
lb.in. s² 10⁻⁴	9.75:1	292.46	9.75:1	491.25	10:1	1170.86	9.8:1	2890.12
kg cm²		33.01		55.45		132.15		326.20
lb.in. s² 10⁻⁴	12.33:1	276.24	12.333:1	477.45	12.5:1	1129.01	12.25:1	2706.80
kg cm²		31.18		53.89		127.43		305.51
lb.in. S² 10⁻⁴	15.5:1	270.49	15.5:1	469.01	15:1	1106.53	15.333:1	2588.92
kg cm²		30.53		52.94		124.89		292.20
lb.in. s² 10⁻⁴	19.5:1	266.84	19.5:1	463.65	20:1	1081.21	20.5:1	2497.27
kg cm²		30.12		52.33		122.03		281.86
lb.in. s² 10⁻⁴	25:1	264.38	25:1	460.05	25:1	1073.25	24.5:1	2462.38
kg cm²		29.84		51.92		121.13		277.92
lb.in. s² 10⁻⁴	30:1	263.22	30:1	458.34	30:1	1067.06	30:1	2435.24
kg cm²		29.71		51.73		120.44		274.86
lb.in. s² 10⁻⁴	40:1	262.06	40:1	456.64	40:1	1061.63	40:1	2411.47
kg cm²		29.58		51.54		119.82		272.17
lb.in. s² 10⁻⁴	50:1	261.52	50:1	455.85	50:1	1059.12	50:1	2400.46
kg cm²		29.52		51.45		119.54		270.93
lb.in. s² 10⁻⁴	60:1	261.23	60:1	455.42	60:1	1057.76	60:1	2394.49
kg cm²		29.48		51.40		119.39		270.26
lb.in. s² 10⁻⁴	70:1	261.05	70:1	455.16	70:1	1056.94	70:1	2390.88
kg cm²		29.46		51.37		119.29		269.85

UNITS	100A-ASSY Ratio	Inertia	125A-ASSY Ratio	Inertia	160A-ASSY Ratio	Inertia	200A-ASSY Ratio	Inertia
lb.in. s² 10⁻⁴	5.143:1	377.69	5.125:1	377.69	5.125:1	2124.47	5.1:1	3941.62
kg cm²		42.63		42.63		239.78		444.88
lb.in. s² 10⁻⁴	7.4:1	298.88	7.4:1	298.88	7.571:1	1484.04	7.571:1	2959.39
kg cm²		33.73		33.73		167.50		334.02
lb.in. s² 10⁻⁴	9.75:1	267.66	9.75:1	267.66	9.8:1	1265.66	9.8:1	2630.43
kg cm²		30.21		30.21		142.85		296.89
lb.in. s² 10⁻⁴	12.33:1	251.75	12.333:1	251.75	12.25:1	1149.28	12.25:1	2455.11
kg cm²		28.41		28.41		129.72		277.10
lb.in. S² 10⁻⁴	15.5:1	242.02	15.5:1	242.02	14.667:1	1086.71	15.333:1	2360.85
kg cm²		27.32		27.32		122.65		266.46
lb.in. s² 10⁻⁴	19.5:1	235.84	19.5:1	235.84	20.5:1	1016.26	20.5:1	2254.73
kg cm²		26.62		26.62		114.70		254.48
lb.in. s² 10⁻⁴	25:1	231.69	25:1	231.69	24.5:1	994.10	24.5:1	2221.35
kg cm²		26.15		26.15		112.20		250.72
lb.in. s² 10⁻⁴	30:1	229.72	30:1	229.72	30:1	976.88	30:1	2195.40
kg cm²		25.93		25.93		110.26		247.79
lb.in. s² 10⁻⁴	40:1	227.76	40:1	227.76	40:1	961.78	40:1	2172.67
kg cm²		25.71		25.71		108.55		245.22
lb.in. s² 10⁻⁴	50:1	226.85	50:1	226.85	50:1	954.80	50:1	2162.14
kg cm²		25.60		25.60		107.76		244.03
lb.in. s² 10⁻⁴	60:1	226.36	60:1	226.36	60:1	951.00	60:1	2156.43
kg cm²		25.55		25.55		107.34		243.39
lb.in. s² 10⁻⁴	70:1	226.06	70:1	226.06	70:1	948.71	70:1	2152.98
kg cm²		25.51		25.51		107.08		243.00

UNITS	F100A-S-ASSY Ratio	Inertia	F125A-S-ASSY Ratio	Inertia	F160A-S-ASSY Ratio	Inertia	F200A-S-ASSY Ratio	Inertia
lb.in. s² 10⁻⁴	5.143:1	413.02	5.125:1	855.56	5.125:1	2236.75	5.1:1	4179.08
kg cm²		46.62		96.56		252.46		471.68
lb.in. s² 10⁻⁴	7.4:1	334.21	7.4:1	646.84	7.571:1	1596.33	7.571:1	3196.86
kg cm²		37.72		73.01		180.17		360.82
lb.in. s² 10⁻⁴	9.75:1	302.99	9.75:1	565.27	9.8:1	1377.95	9.8:1	2867.89
kg cm²		34.20		63.80		155.52		323.69
lb.in. s² 10⁻⁴	12.33:1	287.08	12.333:1	523.71	12.25:1	1261.56	12.25:1	2692.57
kg cm²		32.40		59.11		142.39		303.90
lb.in. S² 10⁻⁴	15.5:1	277.35	15.5:1	498.30	14.667:1	1198.99	15.333:1	2598.32
kg cm²		31.30		56.24		135.33		293.26
lb.in. s² 10⁻⁴	19.5:1	271.17	19.5:1	482.16	20.5:1	1128.54	20.5:1	2492.19
kg cm²		30.61		54.42		127.37		281.29
lb.in. s² 10⁻⁴	25:1	267.02	25:1	471.31	24.5:1	1106.39	24.5:1	2458.82
kg cm²		30.14		53.19		124.87		277.52
lb.in. s² 10⁻⁴	30:1	265.05	30:1	466.15	30:1	1089.16	30:1	2432.87
kg cm²		29.92		52.61		122.93		274.59
lb.in. s² 10⁻⁴	40:1	263.09	40:1	461.03	40:1	1074.07	40:1	2410.13
kg cm²		29.69		52.04		121.23		272.02
lb.in. s² 10⁻⁴	50:1	262.18	50:1	458.66	50:1	1067.08	50:1	2399.61
kg cm²		29.59		51.77		120.44		270.84
lb.in. s² 10⁻⁴	60:1	261.69	60:1	457.38	60:1	1063.29	60:1	2393.89
kg cm²		29.54		51.62		120.01		270.19
lb.in. s² 10⁻⁴	70:1	261.39	70:1	456.60	70:1	1061.00	70:1	2390.45
kg cm²		29.50		51.53		119.75		269.80

APPLICATION TYPE

CYCLIC DUTY or MOTION CONTROL	CONTINUOUS DUTY or STEADY SPEED

Determine Torque and Speed of Application

Identify maximum input speed (N_{1PK})
and
torque (T_{1ACC} or T_{2ACC}) applied per cycle

Determine Power and Speed

Identify input power (P_{1ME}) and speed (N_{1NOM})
or
required ouput torque (T_{2ME})

Determine Cycle Factor (CF)

($^{Cycles}/_{hour}$) x ($^{hours\ of\ runtime}/_{day}$) = "Cycles per Day"

Use Figure 1 and calculated Cycles per Day to determine corresponding CF

Determine Service Factor (SF)

Use Table 1 to determine Service Factor (SF)
based on "Type of Load"
and "Hours of Service per Day"

Calculate Adjusted Load

T_{1ACC} x CF = "Adjusted Input Load"
or
T_{2ACC} x CF = "Adjusted Output Load"

Calculate Adjusted Load

P_{1ME} x SF = "Adjusted Input Load"
or
T_{2ME} x SF = "Adjusted Output Load"

Select Gearbox Rated for Adjusted Load

Gearbox rated T_{1ACC} > Adjusted Input Load
or
Gearbox rated T_{2ACC} > Adjusted Output Load

(@ speed N_{1PK})

Select Gearbox Rated for Adjusted Load

Gearbox rated P_{1ME} > Adjusted Input Load
or
Gearbox rated T_{2ME} > Adjusted Output Load

(@ speed N_{1NOM})

Verify Thermal Rating

Average input power of application (P_{NOM})
Gearbox rated P_{1TH} > P_{NOM}

Verify Thermal Rating

Average input power of application (P_{NOM})
Gearbox rated P_{1TH} > P_{NOM}

Verify E-Stop and Overload Torque Ratings

Gearbox rated T_{2MAX} > E-Stop
and
Gearbox rated T_{2MAX} > Overload Torque

Verify E-Stop and Overload Torque Ratings

Gearbox rated T_{2MAX} > E-Stop
and
Gearbox rated T_{2MAX} > Overload Torque

CYCLE FACTOR
FOR CYCLIC DUTY OR MOTION CONTROL APPLICATIONS
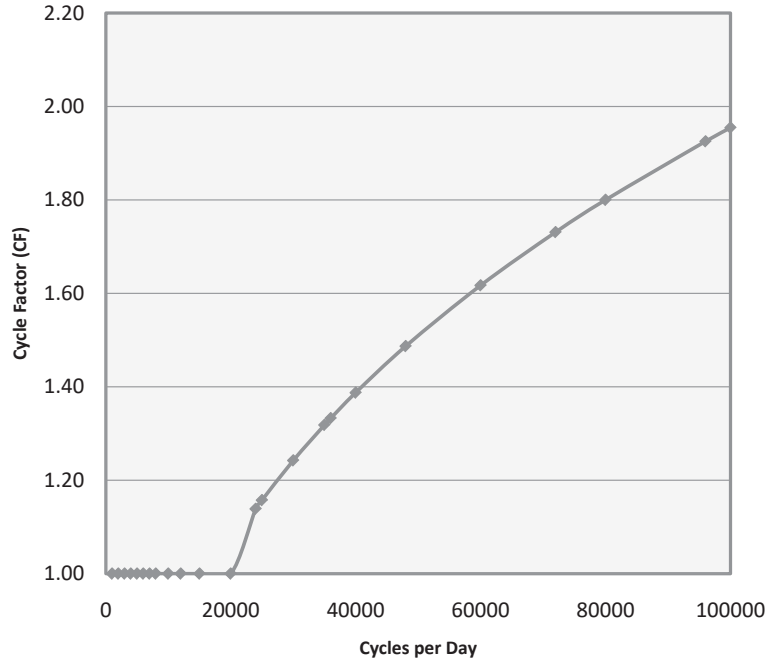
SERVICE FACTOR
FOR CONTINUOUS DUTY OR STEADY SPEED APPLICATIONS

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
$N_{1\,NOM}$	RPM	Nominal input speed
$P_{1\,ME}$	HP	Mechanical input power rating (SF = 1.0)
$P_{1\,TH}$	HP	Continuous average thermal input power rating, Fan Cooled
$P_{1\,TH\,Fan}$	HP	Continuous average thermal input power rating, Water Cooled, Worm Vertical
$P_{1\,TH\,WHV}$	HP	Continuous average thermal input power rating, Water Cooled, Worm Under Gear
$P_{1\,TH\,WHU}$	HP	Continuous average thermal input power rating, Water Cooled, Worm Over Gear
$P_{1\,TH\,WHO}$	HP	Continuous average thermal input power rating
$T_{1\,ME}$	lb-in	Mechanical input torque rating (SF = 1.0)
$T_{1\,ACC}$	lb-in	Cyclic operation input torque rating
$T_{2\,ME}$	lb-in	Mechanical output torque rating (SF = 1.0)
$T_{2\,ACC}$	lb-in	Cyclic operation output torque rating
$T_{2\,MAX}$	lb-in	Maximum E-stop output torque
η	%	Efficiency

CONVERSION EQUATIONS

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

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

LUBRICATION, INSTALLATION, OPERATION, & MAINTENANCE INSTRUCTIONS FOR MODEL HP-A 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 stamped on the reducer nameplate. 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. Each reducer is specifically arranged to operate at the input speed specified on the nameplate. If the input speed is not specified by the customer, it is set up for 1750 RPM and service factor 1.0. Do not operate the reducer at speeds or under service other than specified on the nameplate without contacting Cone Drive for specific instructions on oil level location and bearing settings

4. Do not alter the reducer without approval from Cone Drive.

5. 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.

6. 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.

7. 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.

8. Cone Drive products are furnished without guard covers. It is the responsibility of the purchases 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.

9. Failure to follow the instructions contained in this bulletin may result in unit failure, property damage or personal injury.
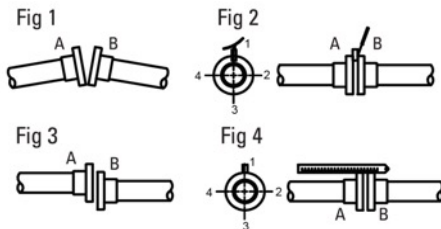
FINISH COAT PAINTING

Cone Drive speed reducers are furnished with a prime coat of paint on exterior housing surfaces. The reducer should be painted with a finish coat to protect the housing exterior, particularly if subjected to outdoor service, periodic wash down or harsh environments. Mask all shafts, oil seals, tags, name plates, oil level stickers, breathers, gauges etc. before painting. (Painting seal lips can result in oil leakage.)

INSTALLATION

IMPORTANT: Unless otherwise specified on the reducer or in accompanying documentation, all Cone Drive speed reducers are shipped without oil and must be filled to the oil level gage or plug with the proper oil before start-up. See the following section on lubrication.

1. The speed reducer must be securely mounted to a rigid foundation or base plate. If necessary, shim under the reducer feet to provide a flat mounting surface.

2. Bolt the reducer to the foundation or mounting base using the largest diameter bolt that will fit through the foot holes of the reducer. Be sure to use a bolt in all available threaded mounting holes. Mount the reducer using bolts to SAE Grade 8 or ISO Grade 8.8 minimum.

3. Angular and parallel alignment of the output shaft to the rotating machine interface is critical to prevent premature output seal leaks. Recommended angular alignment to be within ½ degree and parallel alignment to be within +/-.005" unless otherwise specified by coupling manufacturer.

Angular Errors

1. Take up end float pushing in shaft ends

2. Using thickness and feeler gauges take readings in positions 1, 2, 3, and 4 (Fig 2).

3. Adjust unit by shimming under feet

Parallel Errors

1. Place straight edge across coupling halves at points 1, 2, 3, and 4 (Fig 4). If coupling diameters are not equal, use feeler gauge equal to half the difference in diameters.

2. If error is in the vertical plane, adjust the height of the unit. If error is in the horizontal plane, move unit transversely.

4. 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.

5. 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.

6. **Note:** Exposed metal parts are coated with commercial rust inhibitor. This rust inhibitor must be removed prior to installation. Failure to do so may result in difficulty in assembling close tolerance mating components.

7. 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.

8. **IMPORTANT:** Fill unit to proper level with recommended oil. Grease all fittings with recommended grease (see section on lubrication). In the case of double or triple reduction reducers, be sure to fill each reduction stage to the proper oil level. **Note: Some reducers may have been factory filled. Read all tags.**

   Note: All reducers are built for one mounting position, i.e.; floor mounted or wall mounted with worm vertical up or ceiling mounted, etc. If the reducer is to be mounted in any position other than the position for which it was furnished, contact Cone Drive for information on relocating oil level, grease packing bearings, etc., before start-up. If a reducer is operated in a mounting position other than the position for which it was assembled, reducer failure may occur from improper oil level or grease fitting location resulting in lack of lubrication to the gearset and bearings.

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. The reducer oil levels should be checked regularly and the recommended oil added as required to maintain the proper oil level.

2. Grease fittings and internal retainers are furnished when required. They should be greased with a high quality lithium base NLGI #2 or NLGI #3 bearing grease at normal maintenance intervals depending on the duty cycle of the reducer.

3. The reducer, particularly finned areas and fan covers, should be kept clean to allow maximum heat dissipation.

4. All reducers and foundation bolts should be checked for tightness after three (3) months of service and annually thereafter.

5. 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.

6. If a reducer is to be returned, contact Cone Drive for instructions and a return material authorization (CASE) number.

OIL CHANGE
If an approved synthetic lubricant is used, it should be changed after 5000 hours of operation or once per year, whichever occurs first. See Cone Drive's *Approved List of Lubricants* (23169) for recommended lubricants. These change intervals are recommended for units operating under favorable conditions. Where operating conditions are severe, such a rapid rise and fall in temperature of the gear case with accompanied sweating of the inside walls and resulting formation of sludge, or where operation is in moist or dusty atmospheres, or in the presence of chemical fumes or extended running at sump temperatures in excess of 180°F, it may be necessary to change the oil at intervals of one to three months. It is recommended a sampling program be established with your lubricant manufacturer where reducers are exposed to the severe operating conditions, mentioned above.

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

STORAGE RECOMMENDATIONS FOR CONE DRIVE SPEED REDUCERS

If a reducer is to be stored or shut down for more than 60 days, it should be protected from water condensation and corrosion as follows:

Any enclosed system of gearing is subject to water condensation on the inside of the reducer caused by fluctuating ambient temperatures. This condensation can cause severe rusting of the worm and bearings which could lead to premature failure of the reducer. However, this condition can be prevented by following the recommendations outlined for various storage conditions. If the reducer is furnished with a motor, follow the motor manufacturer's recommendations for motor preservation.

1. **Standard Shipping Procedure - Protection for Maximum Storage Duration of 60 Days.** Cone Drive speed reducers are treated inside using a rust inhibitor, the exterior is painted with one coat of primer and all exposed shafting coated with a rust preventative prior to shipment. This procedure is intended to protect the reducers during shipment and short term inside storage for a maximum period of sixty (60) days after shipment.

2. **Long Term Storage (Indoors) for Periods up to One Year.**
    2a. Fill the reducer completely full with one of the lubricants shown on Cone Drive's Approved List of Lubricants (23169). A copy of the lubricant list is shipped with each unit.
    2b. Rotate the worm shaft and gear shaft at least every 60 days to keep the seals from sticking to the shafts.

2c. If it is not practical to rotate the worm shaft periodically, it is recommended to purchase a spare set of oil seals to have on hand in case of seal leakage at start-up.
2d. Before putting the reducer into service, lower the oil in the reducer to the proper operating level

3. **Long Term Storage (Outdoors) for Periods Up to One Year.**
    Proceed as in (2) with the following additions:
    3a. After filling the unit with oil, plug the breather with a pipe plug and wire the breather to the unit.
    3b. Paint the outside of the unit with a finish coat of paint. (Reducer from the factory is prime coated only.)
    3c. Coat all exposed shafting with a long term rust preventative.

4. **Extended Storage Periods Exceeding One Year.** Immediately after receipt of the reducer:
    4a. Apply finish paint to the exterior of the unit, excluding shafts and mounting points
    4b. Coat all exposed unpainted surfaces with a long term rust preventative
    4c. Place the unit in a vapor corrosion inhibitor (VCI) bag and seal the bag air tight.
    4d. Crate the unit and cover the crate to keep out water.
    4e. Purchase a spare set of oil seals to have on hand in case of leakage at start-up.

LUBRICATION

Lubrication is very important for successful operation of Cone Drive gearsets and speed reducers. Inadequate lubrication can result in increased power consumption, added maintenance and gearset failure. Please review the following recommendations and the "Approved List of Lubricants" shipped with all Cone Drive gearsets and speed reducers. Use of other lubricants can result in gearset failure which will not be covered under warranty. See reducer's nameplate for the recommended lubricant.

TYPE OF OIL
Rated performance of Cone Drive products is based on synthetic lubricants.

AMBIENT TEMPERATURE
The oils shown in Cone Drives *Approved List of Lubricants* (23169) are for use in an ambient temperature range of approximately 15°F to 125°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 and shim materials.

DOUBLE AND TRIPLE REDUCTION REDUCERS
These units utilize separate housings and are furnished with separate oil sumps. It is important that all sumps are filled to the proper oil level.

SLUDGE
It is necessary that the oil be clean and free from sludge at all times to obtain long life from a gear unit. Sludge in gear units may be caused by excessive heat, from dust and dirt and other contaminates and by the presence of moisture or chemical fumes. Therefore, every precaution should be taken to prevent water and foreign particles from entering the gear case.

OIL LEVEL
Cone Drive reducers are furnished with a bronze colored hex head pipe plug to indicate oil level. An oil level tag is affixed to the unit near the oil level indicator. Oil level should always be checked with the unit stopped. Estimated oil capacities for standard reducers are listed in *Oil Capacity for Model HP-A* (25173) and are shipped with all Cone Drive reducers.
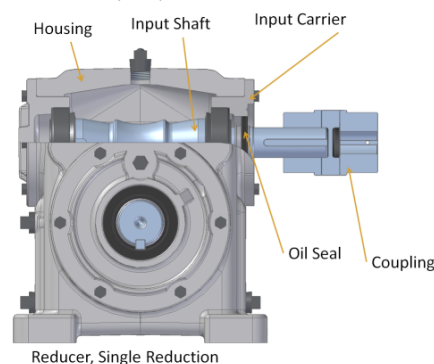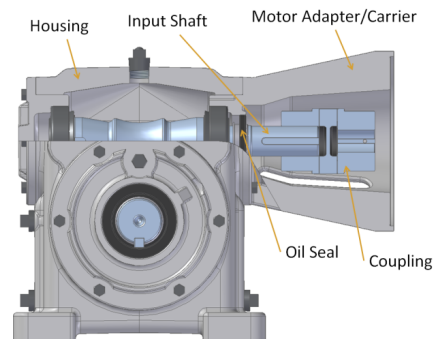
EXTREME PRESSURE OR ANTI-SCUFFING LUBRICANTS
Lubricants rated extreme pressure (EP), anti-scuffing (AS), or having sulphur-phosphorus additives are not acceptable and should not be used in Cone Drive speed reducers or worm gearing.

# OIL SEAL REPLACEMENT INSTRUCTIONS

IF THE INPUT OIL SEALS REQUIRE REPLACEMENT

1. Uninstall reducer
2. Drain lubricant from reducer
3. Remove exterior components (motor, adapter plate, coupling etc.)
4. Unbolt motor adapter bell with the seal from the housing
    - o Be sure to not damage the shims located between the motor adapter bell and the housing. The shims are necessary for proper spacing of the input shaft bearings
5. In the case of units without a motor adapter bell, the input carrier does not need to be unbolted from the housing
6. Remove seal(s)
    - o 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
7. Install replacement seals
    - o Press-up seals evenly and carefully to avoid damage to the seal and reducer components
8. Re-attach the motor adapter with the new seal to the housing, ensuring the shims are between the motor adapter and housing
9. Flush and refill the reducer with an approved lubricant, see *Approved List of Lubricants* (23169)
10. Reattach coupling and any exterior components
11. Reinstall reducer

Housing · Input Shaft · Motor Adapter/Carrier · Oil Seal · Coupling

Housing · Input Shaft · Input Carrier · Oil Seal · Coupling

Reducer, Single Reduction

IF THE OUTPUT OIL SEALS REQUIRE REPLACEMENT

1. Uninstall reducer
2. Drain lubricant
3. Remove exterior components (output flange)
4. Remove seal(s)
    - o 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
5. Install replacement seals
    - o Press-up seals evenly and carefully to avoid damage to the seal and reducer components
6. Flush and refill the reducer with an approved lubricant (See table 1 and 2)
7. Reattach exterior components
8. Reinstall reducer

Housing · Output Shaft · Oil Seal · Output Carrier
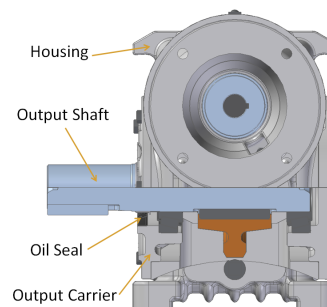
SAFETY PRECAUTIONS

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