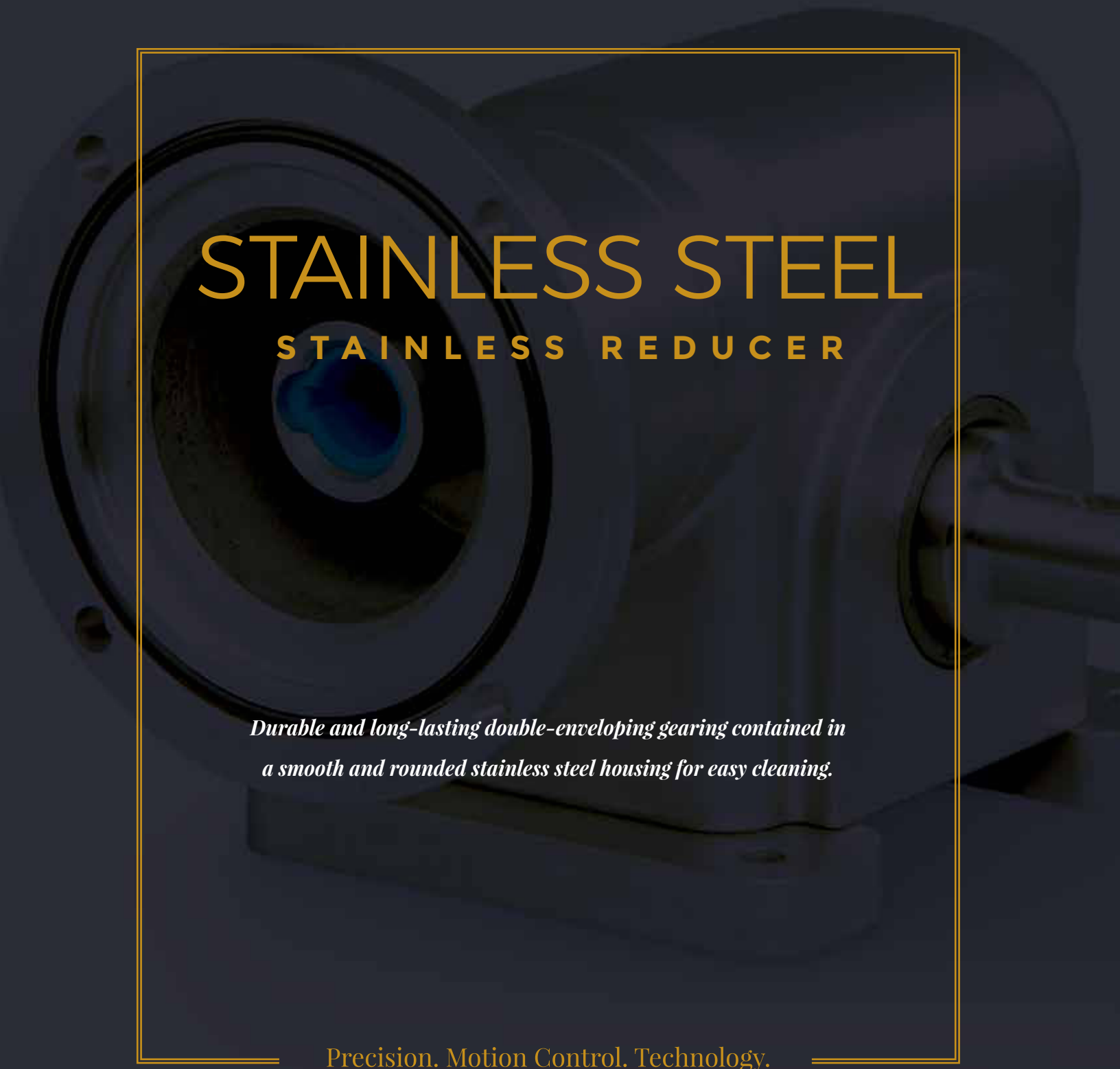
Cone Drive
BY TIMKEN



STAINLESS STEEL

STAINLESS REDUCER

Durable and long-lasting double-enveloping gearing contained in a smooth and rounded stainless steel housing for easy cleaning.

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.

Now offering Double Reduction Stainless Reducers with increased ratio of 600:1.

Powerful, clean solutions with a stainless reputation.

Cone Drive's stainless steel precision motion gearboxes are designed for sterile manufacturing environments. The product's smooth surface and curved contour allows for easy cleaning and bacteria-free surfaces, perfect for food processing and pharmaceutical applications. The product is designed and rated to IP-69K providing maximum protection against contaminant ingress as well as leak free operation.

Cone Drive's Stainless Steel Worm Gear Gearbox

1. Industry leading 5 year warranty
2. Industry leading IP-69K rated and tested double-enveloping worm gear assembly
3. Cone Drive true double-enveloping worm gearing offering 300% shock load and long durable life
4. Non-fretting motor connection bushing to guarantee motor removal
5. Double input bearings to properly and accurately align the motor to the input. Eliminates input leaks, allows for correct worm and gear mesh for longer gear and bearing life. No limitations with mounting positions
6. Double input and output seals to prevent leaks or contamination in the gearbox
7. Smooth housing to eliminate bacteria growth
8. Manufactured in the USA

Cone Drive

Why Stainless Steel Gearboxes?

Cone Drive stainless steel gearboxes offer features which cannot be found in today's market. The anti-fretting motor input shaft connection allows for easy removal of the motor. Two bearings on the input shaft ensure proper motor alignment of the motor to the gearbox. This also helps to eliminate leaks and allows the gearbox to be mounted in any position. Smooth rounded surfaces help to eliminate free-standing water and prevent bacteria growth.

Product Specifications

- **Sizes:** 39, 44, 50, 60, 76
- **Ancillary Options:** Output flange, side mount, base mounted feet
- **Motor Adaptation:** NEMA 56c through 180c, Servo, and custom options such as IEC
- **Input Options:** Solid or hollow output
- **Output Options:** Special bores or ratios available
- **Housing:** 316 Stainless

Designed to help you meet:

GOVERNMENT REGULATION

- IP 69K designed / tested / proven
- 3A Certified
- NSF Certified
- EHEDG Certification pending

IMPROVED UPTIME

- Non-fretting motor bushing for easy motor removal
- Double worm bearing support. Eliminates leaks by relying on worm alignment from the motor
- Double enveloping worm gearing: Multiple teeth in contact promotes longer life

IP-69K

The Cone Drive stainless steel worm gearbox is IP-69K independently rated and tested.

Our stainless steel gearboxes come with an industry leading 5-year warranty.

CERTIFICATIONS

PENDING CERTIFICATIONS

Food Packaging & Processing

Cone Drive has extensive experience in the Food Packaging & Processing Industry and understands the numerous applications requiring power transmission products. We offer a large range of ready-made product lines suitable for application in a diverse array of industries. These product lines provide flexible configuration options with exceptionally quick availability. The universal designs are also customizable to incorporate features that benefit integration into your system architecture.

FOOD & BEVERAGE APPLICATIONS

- Rotary Filling
- Separators & Mixers
- Extractors
- Aseptic Filling

Meat & Poultry

KEY APPLICATIONS

- Skinning & De-boning
- Cutting
- Dicing
- Slicing
- Blending & Grinding
- Conveying

Fruits & Vegetables

KEY APPLICATIONS

- Sorters, Peelers, Splitters
- Corers, Pitters, De-stemmers
- Slicers & Dicers
- Blanchers & Cookers
- Conveying

Seafood Processing

KEY APPLICATIONS

- Heading & Gutting
- Battering, Breading & Frying
- Conveying

Dairy

KEY APPLICATIONS

- Pasteurizers & Homogenizers
- Conveying Systems
- Churning

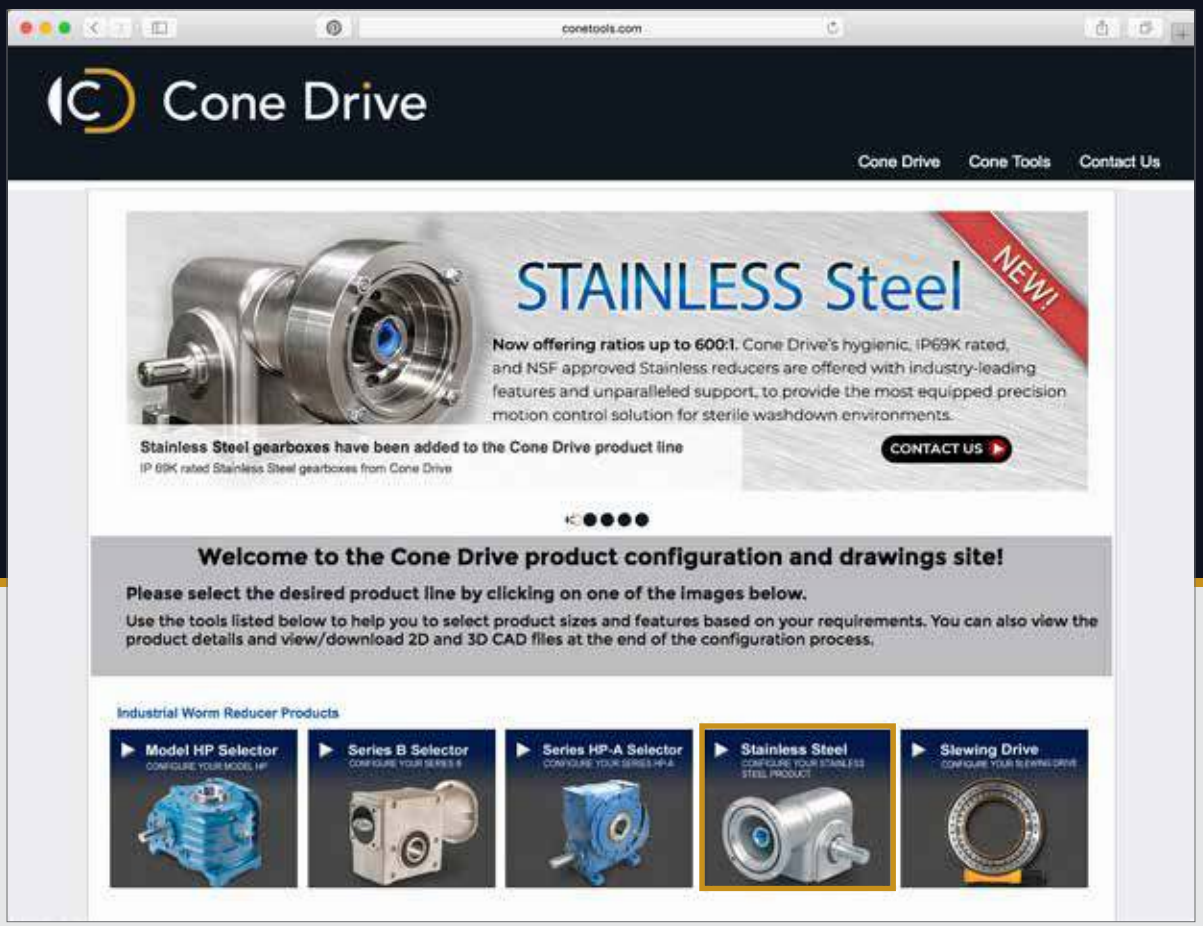
Pharmaceutical & Chemical

KEY APPLICATIONS

- Dry granulator mixers
- Wet chemical mixers
- Fluid fill stations
- Conveyor systems
- Blister packaging machines
- Cartoning equipment

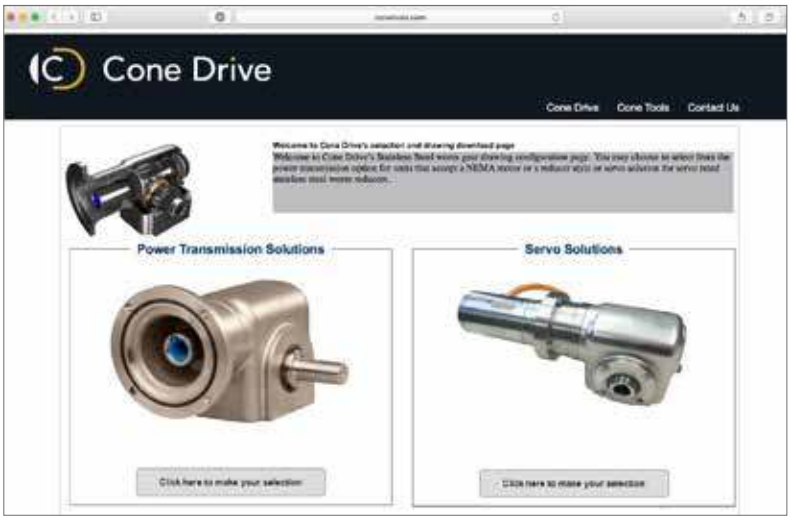
Configure stainless steel reducers online.

ConeTools.com



1

Visit ConeTools.com and Click On "Stainless Steel"



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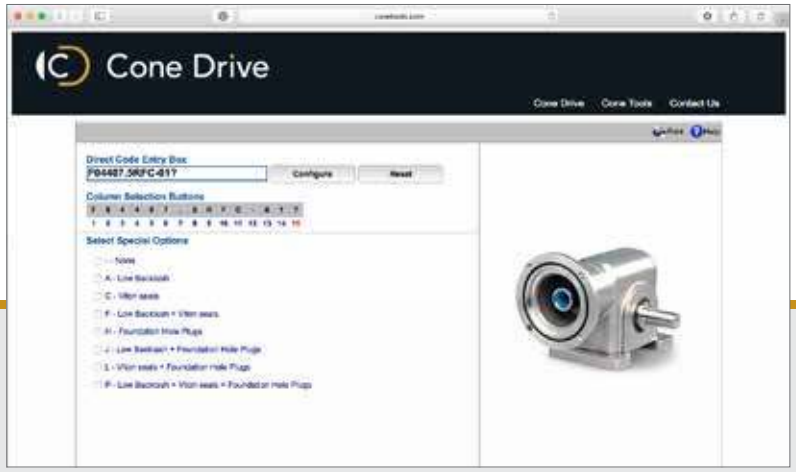
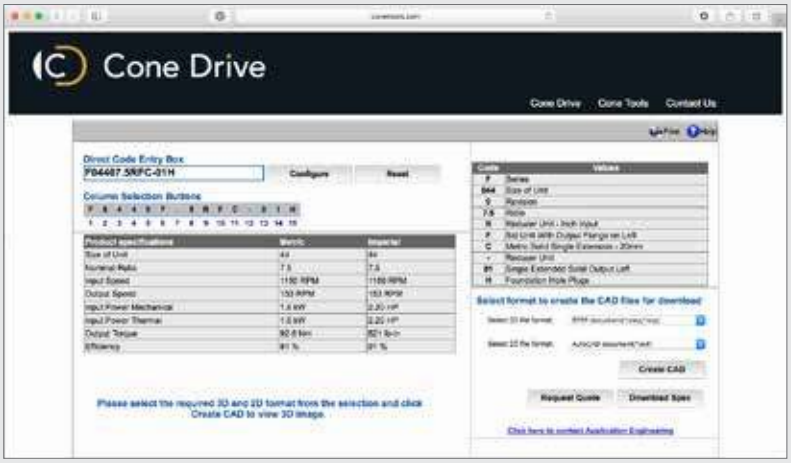
Select Power Transmission Solutions or Servo Solution



3

Click All Options then select “Configure”



4

Click Here to Download a Spec Sheet & Create a CAD

SPEC SHEET

TABLE OF CONTENTS

STAINLESS STEEL REDUCER

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

1 - SERIES

F

2 - 4 SIZE

0	3	9
0	4	4
0	5	0
0	6	0
0	7	6

5 - REVISION LEVEL

0

6, 7, 8 - EXACT RATIO

5	.	0	**
7	.	5	**
1	0	.	**
1	5	.	**
2	0	.	**
2	5	.	**
3	0	.	**
4	0	.	
5	0	.	
6	0	.	
7	5	.	
8	0	.	

1	0	0
1	2	0
1	2	5
1	5	0
1	6	0
2	0	0
2	4	0
2	5	0
3	0	0
4	0	0
5	0	0
6	0	0

** Single reduction only

9 - INPUT TYPE

- A - Unit to Allow Fitting of Motor
- D - Unit to Allow Fitting of Motor with Planetary
- R - Reducer Unit - (Inch Input)
- M - Reducer Unit - (Metric Input)

10 - UNIT VERSION

- W - Standard Unit (No Attachments)
- F - Standard Unit Output Flange on Left **
- H - Standard Unit Output Flange on Right **
- D - Standard Unit with Machined Face on Left **
- Y - Standard Unit with Machined Face on Right **
- B - Standard Unit with Base Mounted Feet
- V - Standard Unit with Base Mounted Feet and Machined Face on Left**
- J - Standard Unit with Base Mounted Feet and Machined Face on Right**

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

15 - SPECIAL OPTIONS

(See table below)

Column 15 Entry - Special Feature Options

Column 15 Entry	Low Backlash	Viton Seals	Foundation Hole Plugs
-			
A	•		
C		•	
F	•	•	
H			•
J	•		•
L		•	•
P	•	•	•

13 - 14 ASSEMBLY POSITION**

(input over output viewed from driven input - motorized end of housing)

Single Extended Input with:

0	1	- Single extended solid output - left
0	2	- Single extended solid output - right
0	3	- Hollow or double ext. solid output
3	L	- Shrink disc hollow shaft - left
3	R	- Shrink disc hollow shaft - right
4	L	- Shrink disc hollow shaft with cover - left
4	R	- Shrink disc hollow shaft with cover - right
5	L	- Hollow shaft with cover - left
5	R	- Hollow shaft with cover - right

12 - MOTOR FRAME SIZE **

- - - Reducer Unit
- T - NEMA 56C Motor Flange
- V - NEMA 143/145TC Motor Flange
- X - NEMA 182/184TC Motor Flange

**Custom motor adaptation available upon request

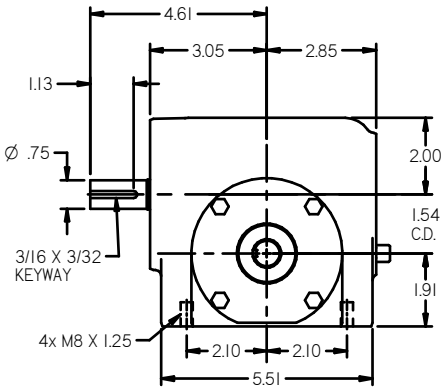
11 - OUTPUT SHAFT**

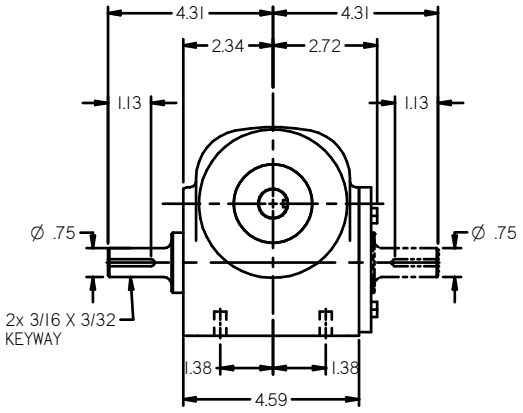
- N - Inch Single Extension
- P - Inch Double Extension
- * - Inch Hollow Shaft (*See chart for available sizes)
- Q - Inch Reduced Diameter Sgl. Ext. (sizes 44, 50 & 76 only)
- R - Inch Reduced Diameter Dbl. Ext. (sizes 44, 50 & 76 only)
- C - Metric Single Extension
- D - Metric Double Extension
- H - Metric Hollow Shaft
- L - Inch Shrink Disc Hollow Bore
- K - Metric Shrink Disc Hollow Bore

Column 11 Entry - Inch Hollow Bore Sizes

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

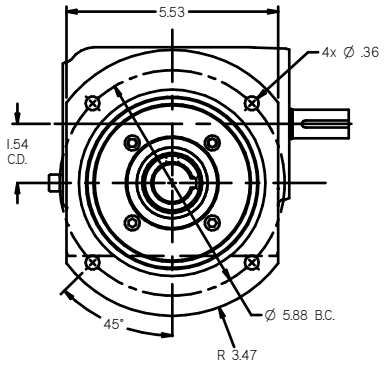
LESS MOUNTING FEET REDUCER
F039

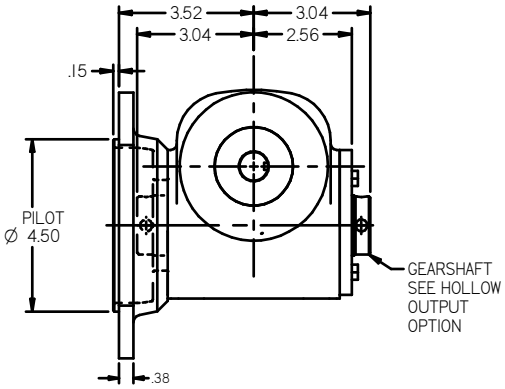




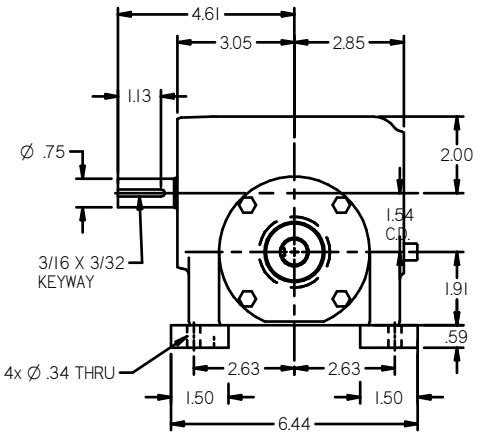
INCH SOLID		METRIC SOLID	
SHAFT DIA.	KEY WAY	SHAFT DIA.	KEY WAY
0.749-0.750	3/16 x 3/32	18-18.02	6.0 X 3.5

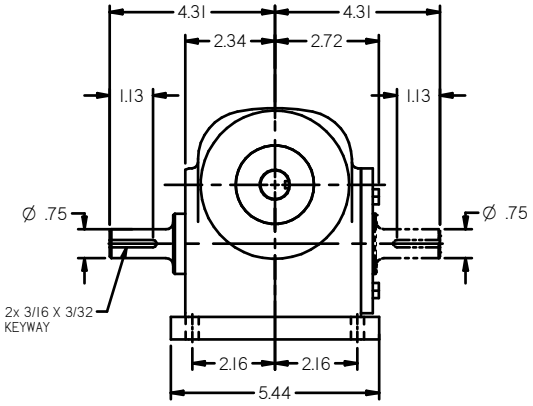
FLANGE MOUNT REDUCER
F039





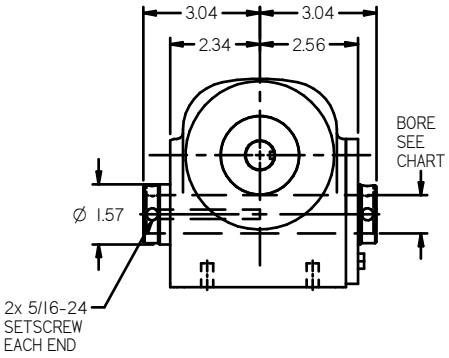
FOOT MOUNT REDUCER
F039





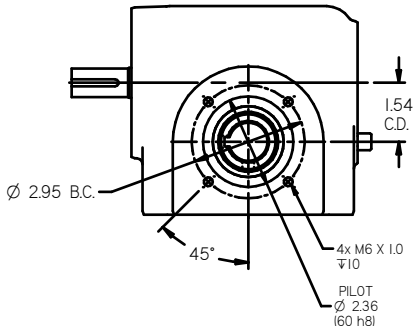
ALL DIMENSIONS ARE IN INCHES UNLESS SPECIFIED OTHERWISE. STANDARD INCH SHAFTS SHOWN,
ALTERNATIVES INCLUDING METRIC ARE OUTLINED IN CORRESPONDING TABLE. SOLID SHAFT KEYS PROVIDED.

HOLLOW OUTPUT REDUCER
F039

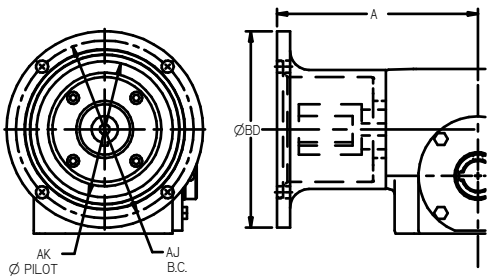


INCH HOLLOW		METRIC HOLLOW	
SHAFT DIA.	KEY WAY	SHAFT DIA.	KEY WAY
0.625-0.627	3/16 x 3/32	19-19.02	6.0 X 2.8
0.750-0.752	3/16 x 3/32		
0.875-0.877	3/16 x 3/32		
1.000-1.002	1/4 x 1/8		

SIDE MOUNT
F039



MOTOR READY
F039

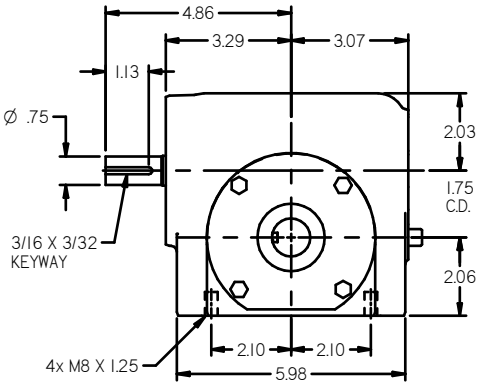


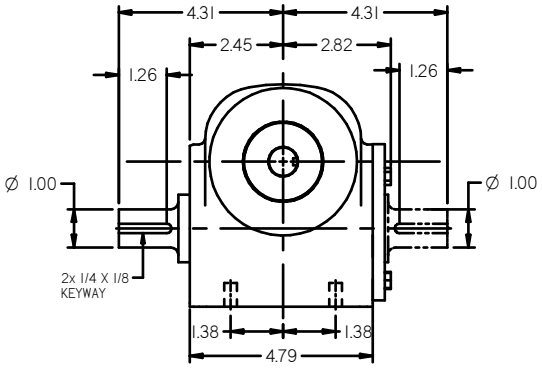
NEMA	A	BD	AK	AJ
56C/143TC/145TC	6.64	6.50	4.50	5.88
182TC/185TC	7.43	9.00	8.50	7.25

RATIO	CAPACITY	F039 INPUT SPEED, RPM	
		1150	1750
5	Input Power HP (mech)	2.02	2.59
	Input Power HP (thermal)	2.02	2.53
	Output Torque lb-in (mech)	508	429
	Efficiency	92%	92%
7.5	Input Power HP (mech)	1.69	2.20
	Input Power HP (thermal)	1.69	2.20
	Output Torque lb-in (mech)	632	540
	Efficiency	91%	91%
10	Input Power HP (mech)	1.41	1.84
	Input Power HP (thermal)	1.41	1.84
	Output Torque lb-in (mech)	698	597
	Efficiency	90%	90%
15	Input Power HP (mech)	1.15	1.50
	Input Power HP (thermal)	1.15	1.50
	Output Torque lb-in (mech)	831	715
	Efficiency	88%	88%
20	Input Power HP (mech)	0.88	1.15
	Input Power HP (thermal)	0.88	1.15
	Output Torque lb-in (mech)	809	706
	Efficiency	84%	85%
25	Input Power HP (mech)	0.71	0.93
	Input Power HP (thermal)	0.71	0.93
	Output Torque lb-in (mech)	816	703
	Efficiency	84%	84%
30	Input Power HP (mech)	0.59	0.78
	Input Power HP (thermal)	1	1
	Output Torque lb-in (mech)	780	673
	Efficiency	80%	80%
40	Input Power HP (mech)	0.45	0.59
	Input Power HP (thermal)	0.45	0.59
	Output Torque lb-in (mech)	746	643
	Efficiency	76%	76%
50	Input Power HP (mech)	0.36	0.47
	Input Power HP (thermal)	0.36	0.47
	Output Torque lb-in (mech)	718	619
	Efficiency	73%	73%
60	Input Power HP (mech)	0.30	0.39
	Input Power HP (thermal)	0.30	0.39
	Output Torque lb-in (mech)	690	594
	Efficiency	70%	70%

OVERHUNG LOAD CAPACITY: 600 LBS (solid or hollow shaft)
(Capacity is based on load acting at the center of the keyway for the solid output shaft).

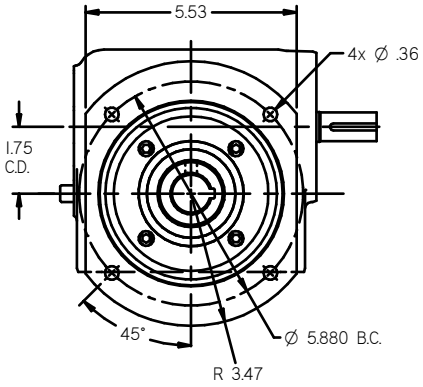
LESS MOUNTING FEET REDUCER
F044

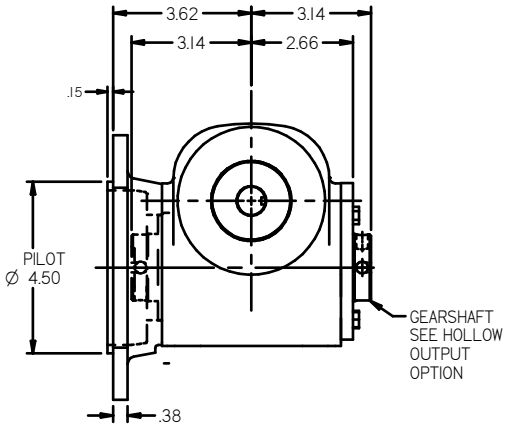




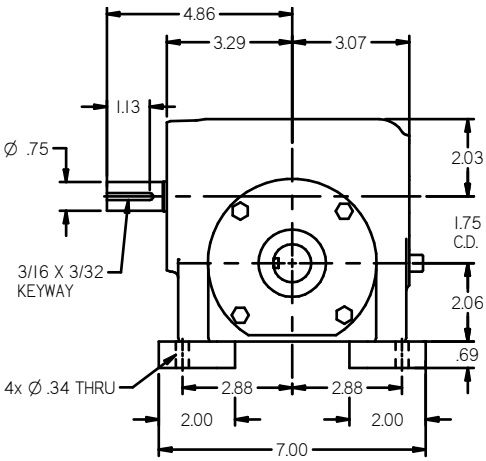
INCH SOLID		METRIC SOLID	
SHAFT DIA.	KEY WAY	SHAFT DIA.	KEY WAY
0.874-0.875	3/16 x 3/32	20.00-20.02	6.0 X 3.5
0.999-1.000	1/4 x 1/8		

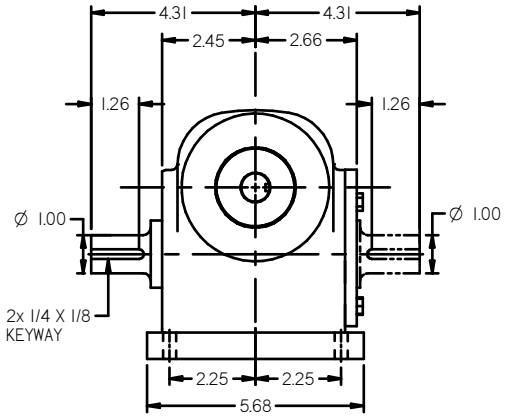
FLANGE MOUNT REDUCER
F044





FOOT MOUNT REDUCER
F044





ALL DIMENSIONS ARE IN INCHES UNLESS SPECIFIED OTHERWISE. STANDARD INCH SHAFTS SHOWN,
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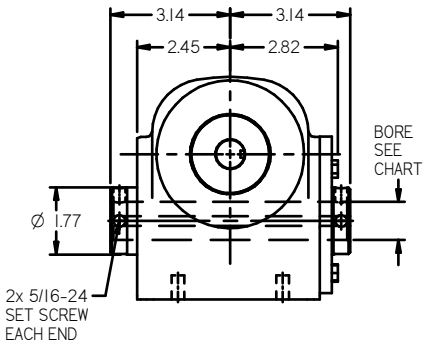
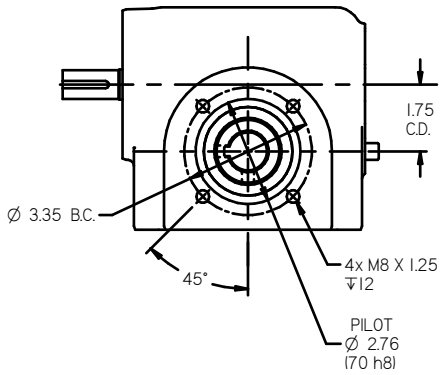
HOLLOW OUTPUT REDUCER
F044

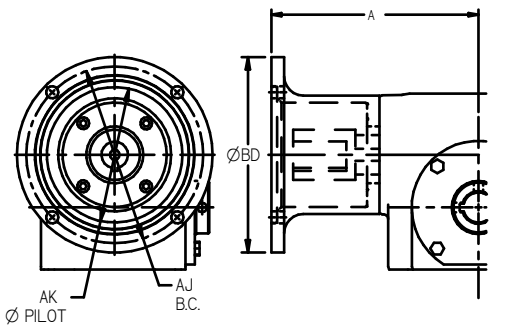


INCH HOLLOW		METRIC HOLLOW	
SHAFT DIA.	KEY WAY	SHAFT DIA.	KEY WAY
0.750-0.752	3/16 x 3/32	20.00-20.02	6.0 X 2.8
0.875-0.877	3/16 x 3/32		
1.000-1.002	1/4 x 1/8		
1.125-1.127	1/4 x 1/8		
1.250-1.252	1/4 x 1/8		

SIDE MOUNT
F044



MOTOR READY
F044

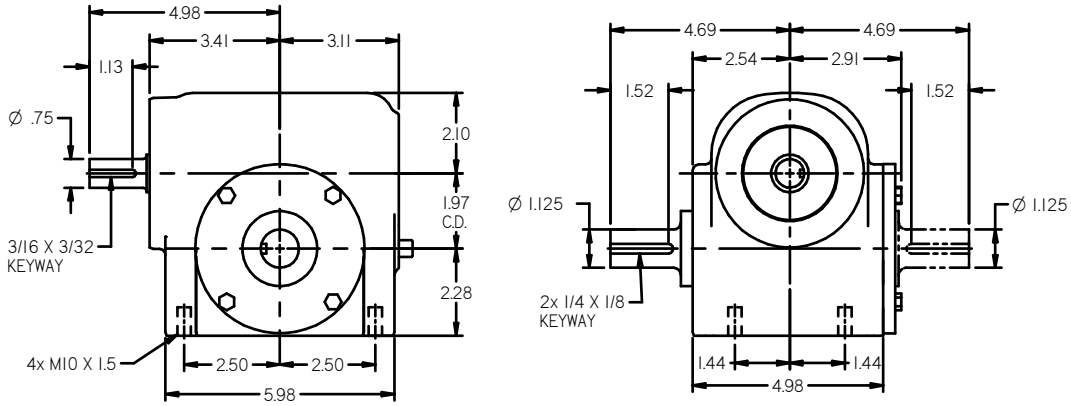


NEMA	A	BD	AK	AJ
56C/143TC/145TC	6.64	6.50	4.50	5.88
182TC/185TC	7.43	9.00	8.50	7.25

RATIO	CAPACITY	F044 INPUT SPEED, RPM	
		1150	1750
5	Input Power HP (mech)	2.71	3.46
	Input Power HP (thermal)	2.71	2.90
	Output Torque lb-in (mech)	684	574
	Efficiency	92%	92%
7.5	Input Power HP (mech)	2.29	2.95
	Input Power HP (thermal)	2.29	2.58
	Output Torque lb-in (mech)	857	726
	Efficiency	91%	91%
10	Input Power HP (mech)	1.92	2.48
	Input Power HP (thermal)	1.92	2.32
	Output Torque lb-in (mech)	946	805
	Efficiency	90%	90%
15	Input Power HP (mech)	1.56	2.04
	Input Power HP (thermal)	1.56	1.93
	Output Torque lb-in (mech)	1130	967
	Efficiency	88%	88%
20	Input Power HP (mech)	1.20	1.56
	Input Power HP (thermal)	1.20	1.55
	Output Torque lb-in (mech)	1100	957
	Efficiency	84%	85%
25	Input Power HP (mech)	0.97	1.26
	Input Power HP (thermal)	0.97	1.26
	Output Torque lb-in (mech)	1110	954
	Efficiency	84%	84%
30	Input Power HP (mech)	0.81	1.05
	Input Power HP (thermal)	1	1
	Output Torque lb-in (mech)	1060	912
	Efficiency	80%	80%
40	Input Power HP (mech)	0.61	0.80
	Input Power HP (thermal)	0.61	0.80
	Output Torque lb-in (mech)	1020	871
	Efficiency	76%	76%
50	Input Power HP (mech)	0.49	0.64
	Input Power HP (thermal)	0.49	0.64
	Output Torque lb-in (mech)	980	840
	Efficiency	73%	73%
60	Input Power HP (mech)	0.41	0.53
	Input Power HP (thermal)	0.41	0.53
	Output Torque lb-in (mech)	941	807
	Efficiency	70%	70%

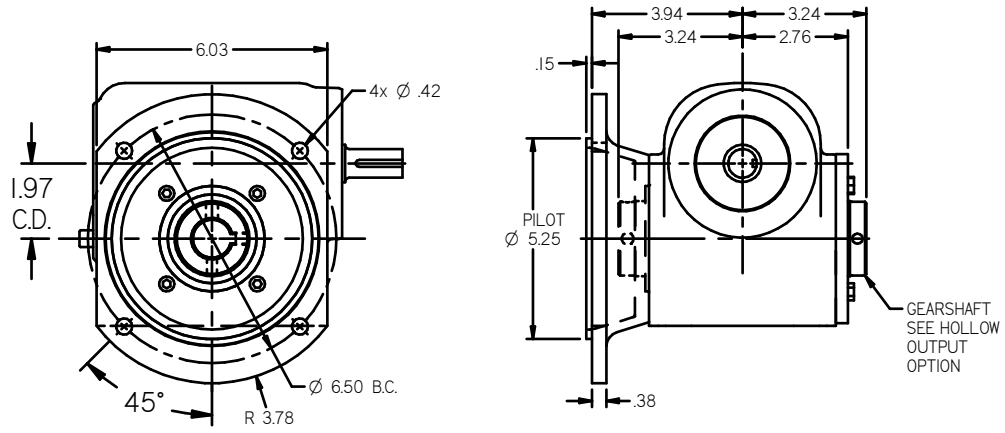
OVERHUNG LOAD CAPACITY: 1,100 LBS (solid or hollow shaft)
(Capacity is based on load acting at the center of the keyway for the solid output shaft).

LESS MOUNTING FEET REDUCER
F050



INCH SOLID		METRIC SOLID	
SHAFT DIA.	KEY WAY	SHAFT DIA.	KEY WAY
0.999-1.000	1/4 x 1/8	25.00-25.02	8.0 X 4.0
1.124-1.125	1/4 x 1/8		

FLANGE MOUNT REDUCER
F050



FOOT MOUNT REDUCER
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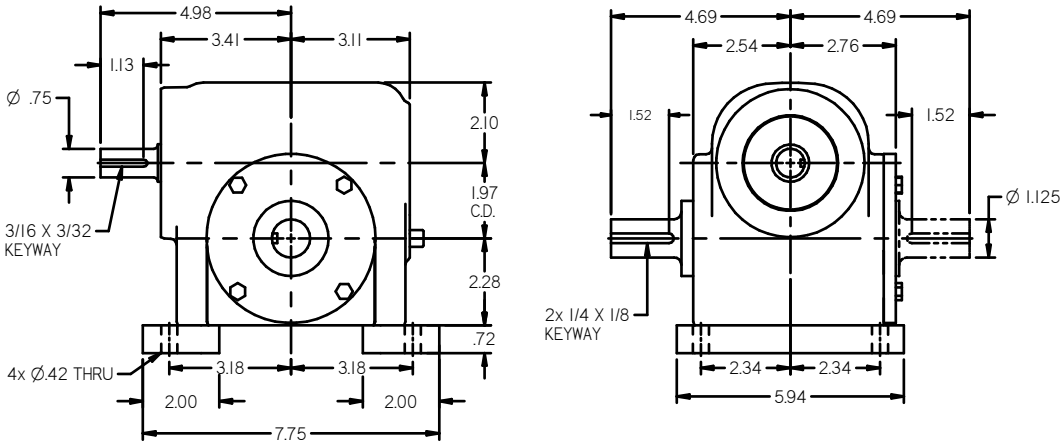

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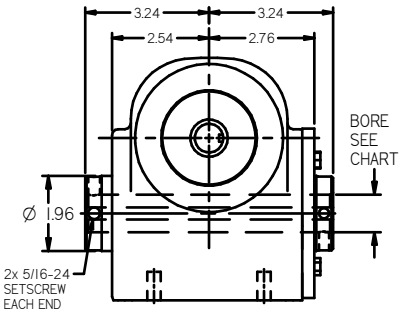
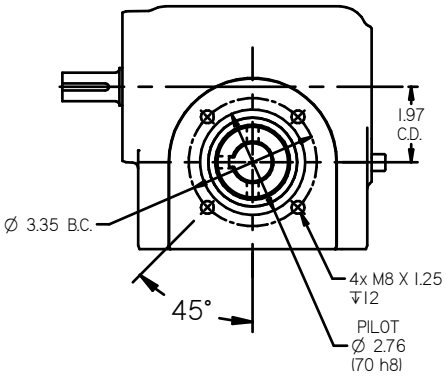
HOLLOW OUTPUT REDUCER
F050

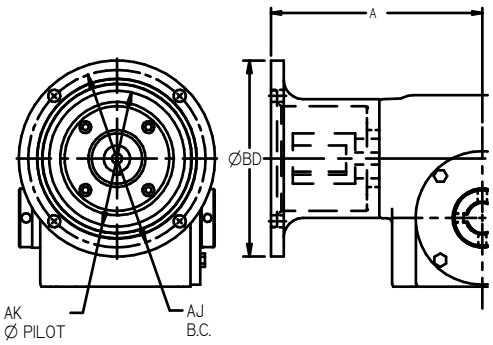


INCH HOLLOW		METRIC HOLLOW	
SHAFT DIA.	KEY WAY	SHAFT DIA.	KEY WAY
1.000-1.002	1/4 x 1/8	25.00-25.02	8.0 X 3.3
1.125-1.127	1/4 x 1/8		
1.1875-1.1895	1/4 x 1/8		
1.250-1.252	1/4 x 1/8		
1.4375-1.4395	1/4 x 1/8		

SIDE MOUNT
F050



MOTOR READY
F050

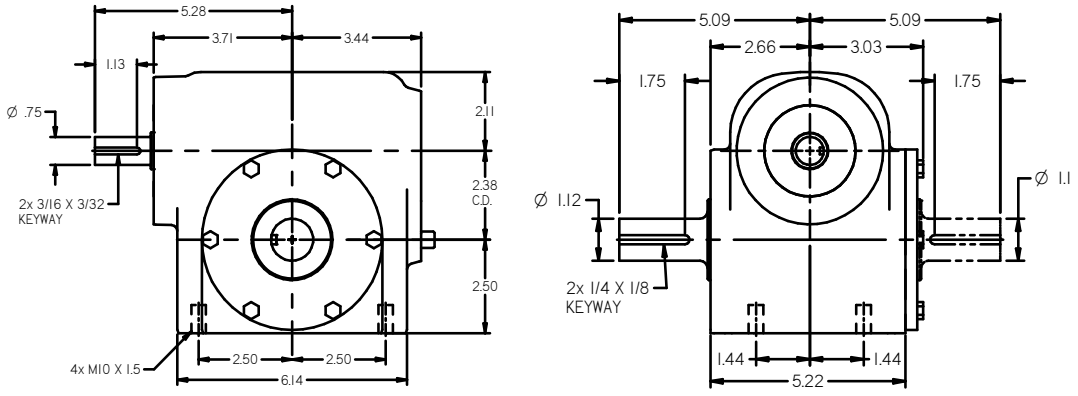


NEMA	A	BD	AK	AJ
56C/143TC/145TC	6.64	6.50	4.50	5.88
182TC/185TC	7.43	9.00	8.50	7.25

RATIO	CAPACITY	F050 INPUT SPEED, RPM	
		1150	1750
5	Input Power HP (mech)	3.52	4.44
	Input Power HP (thermal)	2.96	2.96
	Output Torque lb-in (mech)	887	736
	Efficiency	92%	92%
7.5	Input Power HP (mech)	2.99	3.81
	Input Power HP (thermal)	2.63	2.63
	Output Torque lb-in (mech)	1120	937
	Efficiency	91%	91%
10	Input Power HP (mech)	2.51	3.22
	Input Power HP (thermal)	2.37	2.37
	Output Torque lb-in (mech)	1240	1040
	Efficiency	90%	90%
15	Input Power HP (mech)	2.05	2.64
	Input Power HP (thermal)	1.97	1.97
	Output Torque lb-in (mech)	1480	1260
	Efficiency	88%	88%
20	Input Power HP (mech)	1.57	2.03
	Input Power HP (thermal)	1.48	1.58
	Output Torque lb-in (mech)	1450	1240
	Efficiency	84%	85%
25	Input Power HP (mech)	1.27	1.64
	Input Power HP (thermal)	1.27	1.48
	Output Torque lb-in (mech)	1460	1240
	Efficiency	84%	84%
30	Input Power HP (mech)	1.06	1.37
	Input Power HP (thermal)	1	1
	Output Torque lb-in (mech)	1400	1190
	Efficiency	80%	80%
40	Input Power HP (mech)	0.80	1.04
	Input Power HP (thermal)	0.80	0.99
	Output Torque lb-in (mech)	1330	1130
	Efficiency	76%	76%
50	Input Power HP (mech)	0.64	0.83
	Input Power HP (thermal)	0.64	0.83
	Output Torque lb-in (mech)	1280	1090
	Efficiency	73%	73%
60	Input Power HP (mech)	0.54	0.69
	Input Power HP (thermal)	0.54	0.69
	Output Torque lb-in (mech)	1230	1050
	Efficiency	70%	70%

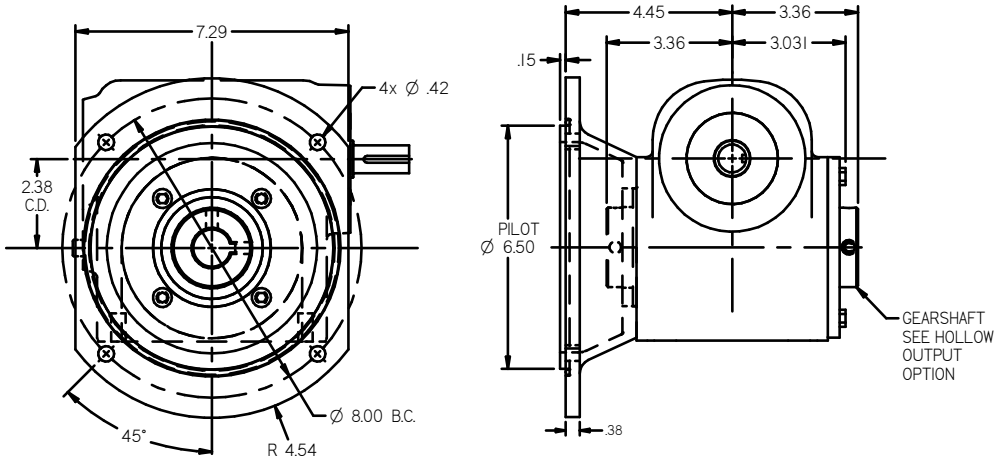
OVERHUNG LOAD CAPACITY: 1200 LBS (solid or hollow shaft)
(Capacity is based on load acting at the center of the keyway for the solid output shaft).

LESS MOUNTING FEET REDUCER
F060

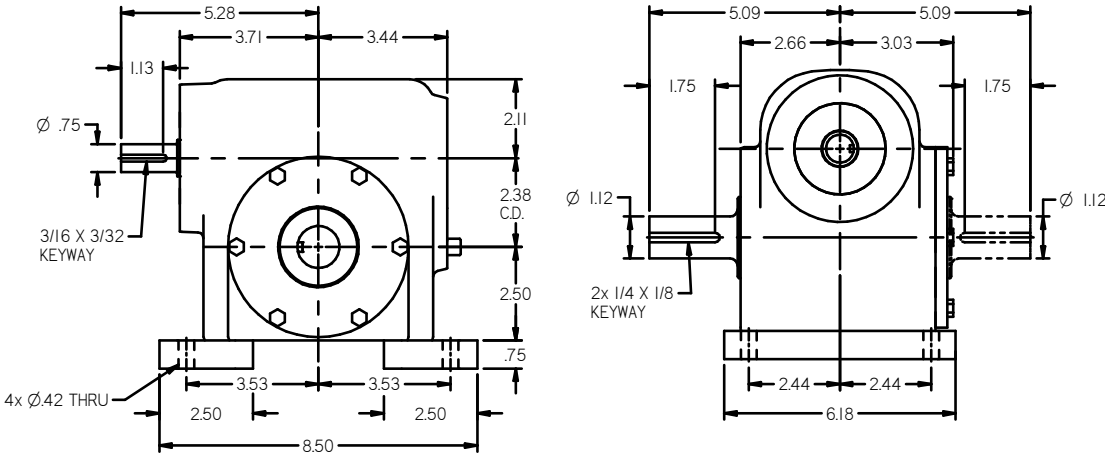


INCH SOLID		METRIC SOLID	
SHAFT DIA.	KEY WAY	SHAFT DIA.	KEY WAY
1.124-1.125	1/4 x 1/8	28.00-28.02	8.0 x 4.0

FLANGE MOUNT REDUCER
F060

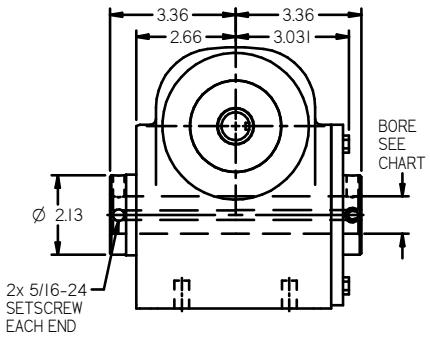


FOOT MOUNT REDUCER
F060



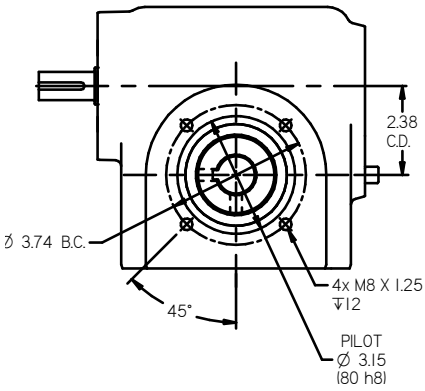
ALL DIMENSIONS ARE IN INCHES UNLESS SPECIFIED OTHERWISE. STANDARD INCH SHAFTS SHOWN,
ALTERNATIVES INCLUDING METRIC ARE OUTLINED IN CORRESPONDING TABLE. SOLID SHAFT KEYS PROVIDED.

HOLLOW OUTPUT REDUCER
F060

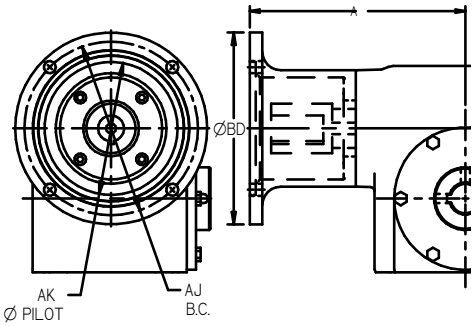


INCH HOLLOW		METRIC HOLLOW	
SHAFT DIA.	KEY WAY	SHAFT DIA.	KEY WAY
1.000-1.002	1/4 x 1/8	28.00-28.02	8.0 X 3.3
1.125-1.127	1/4 x 1/8		
1.1875-1.1895	1/4 x 1/8		
1.250-1.252	1/4 x 1/8		
1.4375-1.4395	1/4 x 1/8		

SIDE MOUNT
F060



MOTOR READY
F060

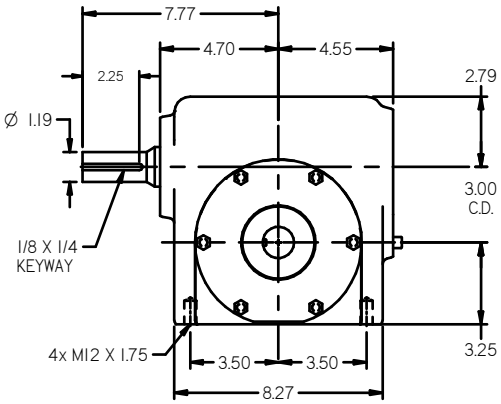


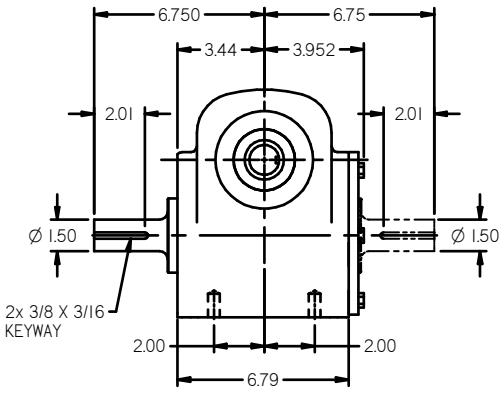
NEMA	A	BD	AK	AJ
56C/143TC/145TC	6.64	6.50	4.50	5.88
182TC/185TC	7.43	9.00	8.50	7.25

RATIO	CAPACITY	F060 INPUT SPEED, RPM	
		1150	1750
5	Input Power HP (mech)	5.47	6.83
	Input Power HP (thermal)	3.04	3.04
	Output Torque lb-in (mech)	1380	1130
	Efficiency	92%	92%
7.5	Input Power HP (mech)	4.61	5.77
	Input Power HP (thermal)	2.70	2.70
	Output Torque lb-in (mech)	1730	1420
	Efficiency	91%	91%
10	Input Power HP (mech)	3.87	4.84
	Input Power HP (thermal)	2.43	2.43
	Output Torque lb-in (mech)	1910	1570
	Efficiency	90%	90%
15	Input Power HP (mech)	3.15	3.95
	Input Power HP (thermal)	2.02	2.02
	Output Torque lb-in (mech)	2280	1880
	Efficiency	88%	88%
20	Input Power HP (mech)	2.41	3.03
	Input Power HP (thermal)	1.52	1.62
	Output Torque lb-in (mech)	2220	1860
	Efficiency	84%	85%
25	Input Power HP (mech)	1.95	2.45
	Input Power HP (thermal)	1.52	1.52
	Output Torque lb-in (mech)	2240	1850
	Efficiency	84%	84%
30	Input Power HP (mech)	1.63	2.05
	Input Power HP (thermal)	1	1
	Output Torque lb-in (mech)	2140	1770
	Efficiency	80%	80%
40	Input Power HP (mech)	1.23	1.54
	Input Power HP (thermal)	1.01	1.01
	Output Torque lb-in (mech)	2050	1690
	Efficiency	76%	76%
50	Input Power HP (mech)	0.99	1.24
	Input Power HP (thermal)	0.90	0.90
	Output Torque lb-in (mech)	1970	1630
	Efficiency	73%	73%
60	Input Power HP (mech)	0.82	1.03
	Input Power HP (thermal)	0.81	0.81
	Output Torque lb-in (mech)	1900	1560
	Efficiency	70%	70%

OVERHUNG LOAD CAPACITY: 1800 LBS (solid or hollow shaft)
(Capacity is based on load acting at the center of the keyway for the solid output shaft).

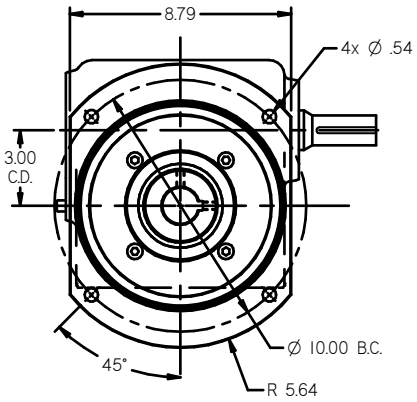
LESS MOUNTING FEET REDUCER
F076

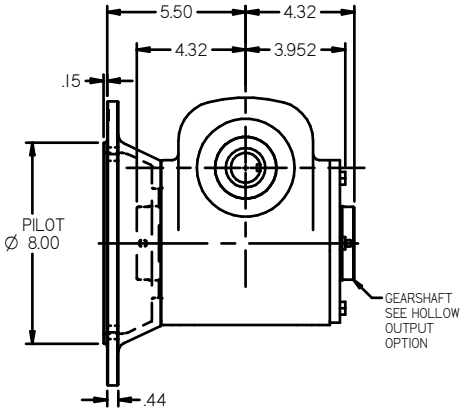




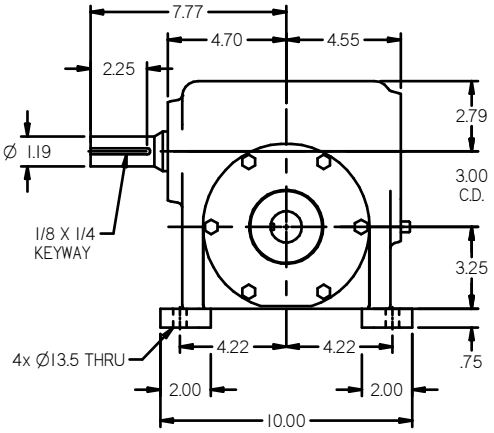
INCH SOLID		METRIC SOLID	
SHAFT DIA.	KEY WAY	SHAFT DIA.	KEY WAY
1.249-1.250	1/4 x 1/8	35.00-35.02	10.0 X 5.0
1.499-1.500	3/8 x 3/16		

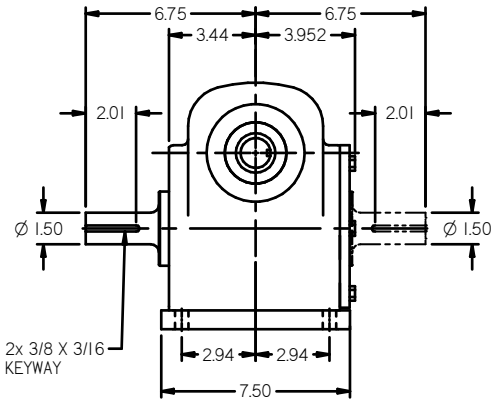
FLANGE MOUNT REDUCER
F076





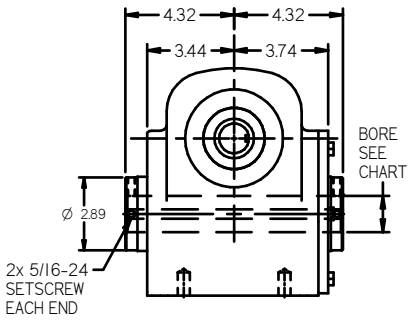
FOOT MOUNT REDUCER
F076





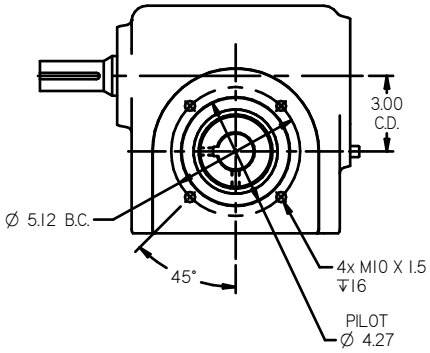
ALL DIMENSIONS ARE IN INCHES UNLESS SPECIFIED OTHERWISE. STANDARD INCH SHAFTS SHOWN, ALTERNATIVES INCLUDING METRIC ARE OUTLINED IN CORRESPONDING TABLE. SOLID SHAFT KEYS PROVIDED.

HOLLOW OUTPUT REDUCER
F076

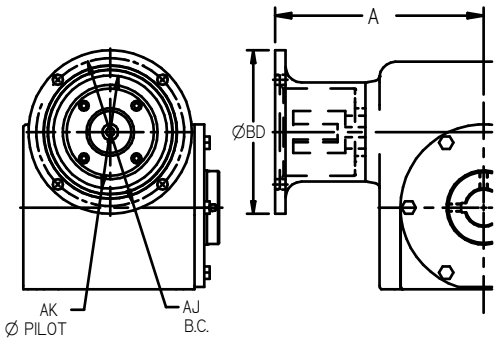


INCH HOLLOW		METRIC HOLLOW	
SHAFT DIA.	KEY WAY	SHAFT DIA.	KEY WAY
1.250-1.252	1/4 x 1/8	35.00-35.02	10.0 X 3.3
1.4375-1.4395	3/8 x 3/16		
1.750-1.752	3/8 x 3/16		
1.9375-1.9395	1/2 x 1/4		
2.1875-2.1895	1/2 X 3/16 FLAT		

SIDE MOUNT
F076



MOTOR READY
F076

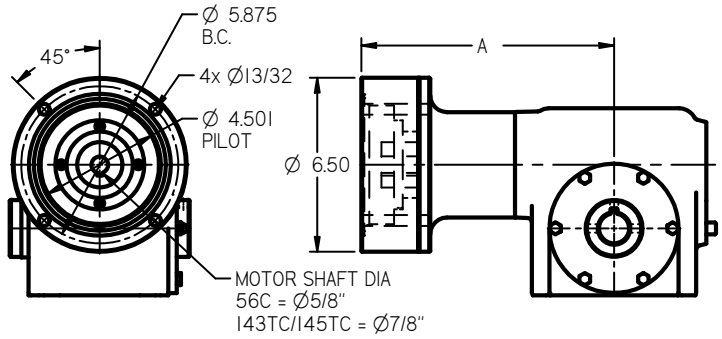


NEMA	A	BD	AK	AJ
56C/143TC/145TC	6.64	6.50	4.50	5.88
182TC/185TC	7.43	9.00	8.50	7.25

RATIO	CAPACITY	F076 INPUT SPEED, RPM	
		1150	1750
5	Input Power HP (mech)	10.80	13.60
	Input Power HP (thermal)	3.48	3.48
	Output Torque lb-in (mech)	2730	2250
	Efficiency	92%	92%
7.5	Input Power HP (mech)	9.49	11.90
	Input Power HP (thermal)	3.09	3.09
	Output Torque lb-in (mech)	3550	2920
	Efficiency	91%	91%
10	Input Power HP (mech)	8.02	10.00
	Input Power HP (thermal)	2.78	2.78
	Output Torque lb-in (mech)	3950	3250
	Efficiency	90%	90%
15	Input Power HP (mech)	6.58	8.23
	Input Power HP (thermal)	2.32	2.32
	Output Torque lb-in (mech)	4760	3910
	Efficiency	88%	88%
20	Input Power HP (mech)	5.06	6.33
	Input Power HP (thermal)	1.74	1.85
	Output Torque lb-in (mech)	4660	3880
	Efficiency	84%	85%
25	Input Power HP (mech)	4.09	5.12
	Input Power HP (thermal)	1.74	1.74
	Output Torque lb-in (mech)	4700	3870
	Efficiency	84%	84%
30	Input Power HP (mech)	3.42	4.28
	Input Power HP (thermal)	1	1
	Output Torque lb-in (mech)	4500	3700
	Efficiency	80%	80%
40	Input Power HP (mech)	2.58	3.23
	Input Power HP (thermal)	1.16	1.16
	Output Torque lb-in (mech)	4300	3530
	Efficiency	76%	76%
50	Input Power HP (mech)	2.07	2.59
	Input Power HP (thermal)	1.03	1.03
	Output Torque lb-in (mech)	4140	3410
	Efficiency	73%	73%
60	Input Power HP (mech)	1.73	2.16
	Input Power HP (thermal)	0.93	0.93
	Output Torque lb-in (mech)	3980	3270
	Efficiency	70%	70%

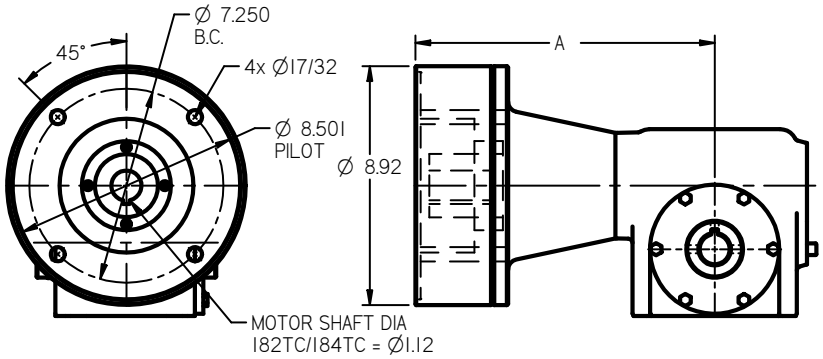
OVERHUNG LOAD CAPACITY: 2300 LBS (solid or hollow shaft)
(Capacity is based on load acting at the center of the keyway for the solid output shaft).

DOUBLE REDUCTION
56C/143TC/145TC



DOUBLE REDUCTION NEMA 56T/143TC/145TC ADAPTER	SIZE	A
	F039	8.8
	F044	9.0
	F050	9.1
	F060	9.4
	F076	10.4

DOUBLE REDUCTION
182TC/184TC



DOUBLE REDUCTION NEMA 182TC/184TC ADAPTER	SIZE	A
	F039	10.5
	F044	10.8
	F050	10.9
	F060	11.2
	F076	12.2

Overall Ratio	Primary Ratio	Worm Ratio	Capacity	F039 Double Reduction Input Speed, RPM		F044 Double Reduction Input Speed, RPM		F050 Double Reduction Input Speed, RPM		F060 Double Reduction Input Speed, RPM		F076 Double Reduction Input Speed, RPM	
				1150	1750	1150	1750	1150	1750	1150	1750	1150	1750
30	4	7.5	Input Power HP (mech)	0.56	0.8	0.76	1.1	1.01	1.45	1.71	2.45	2.1	3.2
			Input Power HP (thermal)	0.56	0.8	0.76	1.1	1.01	1.45	1.71	2.2	2.1	2.52
			Output Torque lb-in (mech)	773	735	1,060	1,010	1,400	1,330	2,380	2,250	2,920	2,940
			Efficiency	84%	85%	84%	85%	84%	85%	84%	85%	84%	85%
40	4	10	Input HP (mech)	0.46	0.67	0.63	0.91	0.84	1.21	1.42	2.04	2.1	3.2
			Input Power HP (therm)	0.46	0.67	0.63	0.91	0.84	1.21	1.42	1.81	2.07	2.07
			Output Torque lb-in (mech)	836	793	1,150	1,080	1,520	1,440	2,580	2,430	3,810	3,810
			Efficiency	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%
50	5	10	Input HP (mech)	0.38	0.55	0.52	0.75	0.69	0.99	1.17	1.69	1.68	2.56
			Input Power HP (therm)	0.38	0.55	0.52	0.75	0.69	0.99	1.17	1.69	1.68	2.07
			Output Torque lb-in (mech)	853	815	1,170	1,120	1,550	1,480	2,620	2,520	3,760	3,810
			Efficiency	82%	83%	82%	83%	82%	83%	82%	83%	82%	83%
60	4	15	Input HP (mech)	0.38	0.54	0.51	0.74	0.68	0.98	1.15	1.66	2.1	3.2
			Input Power HP (therm)	0.38	0.54	0.51	0.74	0.68	0.98	1.15	1.58	1.61	1.81
			Output Torque lb-in (mech)	971	942	1,330	1,290	1,760	1,710	2,980	2,890	5,440	5,580
			Efficiency	79%	81%	79%	81%	79%	81%	79%	81%	79%	81%
75	5	15	Input HP (mech)	0.31	0.45	0.42	0.61	0.56	0.81	0.95	1.37	1.68	2.56
			Input Power HP (therm)	0.31	0.45	0.42	0.61	0.56	0.81	0.95	1.37	1.52	1.7
			Output Torque lb-in (mech)	987	958	1,350	1,310	1,790	1,740	3,030	2,950	5,380	5,510
			Efficiency	78%	80%	78%	80%	78%	80%	78%	80%	78%	80%
80	4	20	Input HP (mech)	0.29	0.41	0.39	0.57	0.52	0.75	0.88	1.27	1.87	2.68
			Input Power HP (therm)	0.29	0.41	0.39	0.57	0.52	0.75	0.88	1.27	1.32	1.52
			Output Torque lb-in (mech)	941	927	1,290	1,270	1,710	1,680	2,890	2,840	6,130	6,010
			Efficiency	75%	78%	75%	78%	75%	78%	75%	78%	75%	78%

Overall Ratio	Primary Ratio	Worm Ratio	Capacity	F039		F044		F050		F060		F076	
				Input Speed, RPM		Input Speed, RPM		Input Speed, RPM		Input Speed, RPM		Input Speed, RPM	
				1150	1750	1150	1750	1150	1750	1150	1750	1150	1750
100	4	25	Input HP (mech)	0.23	0.33	0.32	0.46	0.42	0.6	0.71	1.02	1.51	2.16
			Input Power HP (thermal)	0.23	0.33	0.32	0.46	0.42	0.6	0.71	1.02	1.21	1.38
			Output Torque lb-in (mech)	923	911	1,270	1,250	1,680	1,650	2,840	2,790	6,020	5,910
			Efficiency	73%	76%	73%	76%	73%	76%	73%	76%	73%	76%
120	4	30	Input Power HP (mech)	0.19	0.28	0.27	0.38	0.35	0.51	0.59	0.86	1.26	1.81
			Input Power HP (thermal)	0.19	0.28	0.27	0.38	0.35	0.51	0.59	0.86	1.03	1.11
			Output Torque lb-in (mech)	879	856	1,200	1,170	1,600	1,550	2,700	2,630	5,730	5,560
			Efficiency	69%	71%	69%	71%	69%	71%	69%	71%	69%	71%
125	5	25	Input Power HP (mech)	0.19	0.27	0.26	0.38	0.35	0.5	0.59	0.85	1.24	1.79
			Input Power HP (thermal)	0.19	0.27	0.26	0.38	0.35	0.5	0.59	0.85	1.16	1.32
			Output Torque lb-in (mech)	940	925	1,290	1,270	1,710	1,680	2,890	2,850	6,120	6,040
			Efficiency	72%	75%	72%	75%	72%	75%	72%	75%	72%	75%
150	10	15	Input Power HP (mech)	0.17	0.24	0.23	0.33	0.3	0.44	0.52	0.75	0.59	0.9
			Input Power HP (thermal)	0.17	0.24	0.23	0.33	0.3	0.44	0.52	0.75	0.59	0.9
			Output Torque lb-in (mech)	1,030	1,020	1,410	1,390	1,870	1,850	3,220	3,140	3,670	3,760
			Efficiency	76%	78%	76%	78%	76%	78%	76%	78%	76%	78%
160	4	40	Input Power HP (mech)	0.15	0.21	0.2	0.29	0.26	0.38	0.45	0.64	0.95	1.36
			Input Power HP (thermal)	0.15	0.21	0.2	0.29	0.26	0.38	0.45	0.64	0.85	0.96
			Output Torque lb-in (mech)	809	813	1,110	1,110	1,470	1,480	2,490	2,490	5,270	5,280
			Efficiency	63%	67%	63%	67%	63%	67%	63%	67%	63%	67%
200	10	20	Input Power HP (mech)	0.13	0.19	0.17	0.25	0.23	0.34	0.4	0.57	0.59	0.9
			Input Power HP (thermal)	0.13	0.19	0.17	0.25	0.23	0.34	0.4	0.57	0.59	0.9
			Output Torque lb-in (mech)	996	987	1,360	1,350	1,820	1,790	3,130	3,050	4,650	4,770
			Efficiency	72%	74%	72%	74%	72%	74%	72%	74%	72%	74%
240	4	60	Input Power HP (mech)	0.1	0.14	0.13	0.19	0.18	0.26	0.3	0.43	0.64	0.91
			Input Power HP (thermal)	0.1	0.14	0.13	0.19	0.18	0.26	0.3	0.43	0.64	0.8
			Output Torque lb-in (mech)	739	747	1,010	1,020	1,340	1,350	2,270	2,290	4,810	4,850
			Efficiency	58%	61%	58%	61%	58%	61%	58%	61%	58%	61%
250	10	25	Input Power HP (mech)	0.1	0.15	0.14	0.2	0.19	0.27	0.32	0.46	0.59	0.9
			Input Power HP (thermal)	0.1	0.15	0.14	0.2	0.19	0.27	0.32	0.46	0.59	0.9
			Output Torque lb-in (mech)	950	950	1,300	1,300	1,730	1,730	2,980	2,940	5,500	5,700
			Efficiency	68%	71%	68%	71%	68%	71%	68%	71%	68%	71%
300	10	30	Input Power HP (mech)	0.09	0.12	0.12	0.17	0.15	0.23	0.27	0.39	0.57	0.82
			Input Power HP (thermal)	0.09	0.12	0.12	0.17	0.15	0.23	0.27	0.39	0.57	0.82
			Output Torque lb-in (mech)	913	907	1,250	1,240	1,660	1,650	2,860	2,800	6,070	5,940
			Efficiency	65%	67%	65%	67%	65%	67%	65%	67%	65%	67%
400	10	40	Input Power HP (mech)	0.06	0.09	0.09	0.13	0.12	0.17	0.2	0.29	0.43	0.62
			Input Power HP (thermal)	0.06	0.09	0.09	0.13	0.12	0.17	0.2	0.29	0.43	0.62
			Output Torque lb-in (mech)	822	820	1,130	1,120	1,500	1,490	2,580	2,530	5,470	5,370
			Efficiency	59%	60%	59%	60%	59%	60%	59%	60%	59%	60%
500	10	50	Input Power HP (mech)	0.05	0.08	0.07	0.1	0.09	0.14	0.16	0.23	0.34	0.49
			Input Power HP (thermal)	0.05	0.08	0.07	0.1	0.09	0.14	0.16	0.23	0.34	0.49
			Output Torque lb-in (mech)	736	765	1,010	1,050	1,340	1,390	2,310	2,360	4,900	5,010
			Efficiency	52%	56%	52%	56%	52%	56%	52%	56%	52%	56%
600	10	60	Input Power HP (mech)	0.04	0.06	0.06	0.09	0.08	0.11	0.13	0.19	0.29	0.41
			Input Power HP (thermal)	0.04	0.06	0.06	0.09	0.08	0.11	0.13	0.19	0.29	0.41
			Output Torque lb-in (mech)	724	753	990	1,030	1,320	1,370	2,270	2,330	4,820	4,930
			Efficiency	51%	55%	51%	55%	51%	55%	51%	55%	51%	55%

Stainless Steel Servo 15-Digit Code

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

1 - 2 SERIES F

F	S

3 - 4 SIZE

3	9
4	4
5	0
6	0
7	6

5 - REVISION LEVEL

0

6, 7, 8 - EXACT RATIO

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

9 - UNIT VERSION

W	- (No Attachments)
F	- Output Flange on Left **
H	- Output Flange on Right **
D	- Machined Face on Left **
Y	- Machined Face on Right **
B	- Base Mounted Feet
V	- Base Mounted Feet and Machined Face on Left **
J	- Base Mounted Feet and Machined Face on Right **

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

10 - OUTPUT SHAFT

N	- Inch Single Extension
P	- Inch Double Extension
*	- Inch Hollow Bore
Q	- Inch Reduced Diameter Sgl. Ext. (sizes 44, 50, & 76 only)
R	- Inch Reduced Diameter Dbl. Ext. (sizes 44, 50, & 76 only)
C	- Metric Single Extension
D	- Metric Double Extension
H	- Metric Hollow Bore
L	- Inch Shrink Disc Hollow Bore
K	- Metric Shrink Disc Hollow Bore

** Additional bore sizes available, see page 23

15 SPECIAL OPTIONS

(See table to right)

13 - 14 ASSEMBLY POSITION

(input over output viewed from driven input - motorized end of housing)

Single Extended Input with:

0	1	- Single extended solid output - left
0	2	- Single extended solid output - right
0	3	- Hollow or double ext. solid output
3	L	- Shrink disc hollow shaft - left
3	R	- Shrink disc hollow shaft - right
4	L	- Shrink disc hollow shaft with cover -left
4	R	- Shrink disc hollow shaft with cover -right
5	L	- Hollow shaft with shaft cover -left
5	R	- Hollow shaft with shaft cover -right

(input over output viewed from driven input - motorized end of housing)

** For options 03 output carrier installed on right if unit version (Column 9) = W or B

** If unit has output flange and single extended solid output shaft, flange & output shaft must be on same side.
examples: (column 10 = N, Q, or C)
1) column 9 = F; columns 13-14 = 01
2) column 9 = H; columns 13-14 = 02

11 - 12 MOTOR FRAME SIZE

(Custom motor adaptation available upon request)

ALLEN BRADLEY

A	A	MPS-A / B330P
A	B	MPS-A / B4540F, VPS-A1304D
A	C	MPS-A / B560F, VPS-B1653D

KOLLMORGEN

K	A	AKMH3 Code AC or AN
K	B	AKMH3 Code CC or CN
K	C	AKMH4 Code AC or AN
K	D	AKMH4 Code BK or BN
K	E	AKMH4 Code CC or CN
K	F	AKMH4 Code DK or DN
K	H	AKMH5 Code AC or AN
K	I	AKMH5 Code BK or BN
K	J	AKMH5 Code DK or DN
K	K	AKMH5 Code CC or CN
K	L	AKMH5 Code GC or GN
K	M	AKMH5 Code HC or HN
K	P	AKMH6 Code AC or AN
K	Q	AKMH6 Code CC or CN
K	R	AKMH6, Code DK or DN (NEMA Small C-Face)

Column 10 Entry - Inch Hollow Bore Sizes

BORE SIZE	FS39	FS44	FS50	FS60	FS76
0.625	E				
0.750	C	C			
0.875	F	E			
1.000	A	F	E	E	
1.125		G	F	F	
1.188		—	G	G	
1.250		A	J	J	J
1.438			A	A	E
1.750					F
1.938					G
2.188					A

Column 15 Entry - Special Feature Options

Column 15 Entry	Low Backlash	External Viton Seals	Foundation Hole Plugs
—			
A	•		
C		•	
F	•	•	
H			•
J	•		•
L		•	•
P	•	•	•

	RATIO	UNITS	SIZE				
			FS39	FS44	FS50	FS60	FS76
Moment of Inertia	5:1	$lb{\cdot}in{\cdot}s^2 \times 10^{-4}$	9.32	12.06	22.47	30.84	123.84
		$kg{\cdot}cm^2$	1.05	1.36	2.54	3.48	13.98
	7.5:1	$lb{\cdot}in{\cdot}s^2 \times 10^{-4}$	8.28	10.24	19.28	24.56	95.12
		$kg{\cdot}cm^2$	0.93	1.16	2.18	2.77	10.74
	10:1	$lb{\cdot}in{\cdot}s^2 \times 10^{-4}$	7.92	9.61	18.17	22.36	85.07
		$kg{\cdot}cm^2$	0.89	1.08	2.05	2.52	9.60
	15:1	$lb{\cdot}in{\cdot}s^2 \times 10^{-4}$	7.66	9.15	17.38	20.78	77.89
		$kg{\cdot}cm^2$	0.86	1.03	1.96	2.35	8.79
	20:1	$lb{\cdot}in{\cdot}s^2 \times 10^{-4}$	7.57	8.99	17.10	20.23	75.38
		$kg{\cdot}cm^2$	0.85	1.01	1.93	2.28	8.51
	25:1	$lb{\cdot}in{\cdot}s^2 \times 10^{-4}$	7.53	8.92	16.97	19.98	74.22
		$kg{\cdot}cm^2$	0.85	1.01	1.92	2.26	8.38
	30:1	$lb{\cdot}in{\cdot}s^2 \times 10^{-4}$	7.53	8.88	16.90	19.84	73.58
		$kg{\cdot}cm^2$	0.85	1.00	1.91	2.24	8.31
	40:1	$lb{\cdot}in{\cdot}s^2 \times 10^{-4}$	7.50	8.84	16.83	19.70	72.96
		$kg{\cdot}cm^2$	0.85	1.00	1.90	2.22	8.23
	50:1	$lb{\cdot}in{\cdot}s^2 \times 10^{-4}$	7.48	8.82	16.80	19.64	72.67
		$kg{\cdot}cm^2$	0.84	1.00	1.90	2.22	8.20
	60:1	$lb{\cdot}in{\cdot}s^2 \times 10^{-4}$	7.46	8.81	16.78	19.61	72.51
		$kg{\cdot}cm^2$	0.84	0.99	1.89	2.21	8.18

Gearhead Size	Torsional Rigidity (All Ratios)		Backlash, arcmin (All Ratios)	
	in-lb / min	Nm / min	Standard	Low
FS39	51	5.8	24	8
FS44	67	7.6	20	7
FS50	92	10.4	15	6
FS60	157	17.7	13	5
FS76	368	41.6	10	4

3D model configurator available at ConeTools.com

Letter Codes Positions		KOLLMORGEN SERVO MOTOR	Gearhead Dimensions (mm)									
			Gearhead Size FS39		Gearhead Size FS44		Gearhead Size FS50		Gearhead Size FS60		Gearhead Size FS76	
11	12		Length A	Length B	Length A	Length B	Length A	Length B	Length A	Length B	Length A	Length B
K	A	AKMH3 Code AC, AN	149.5	132.5	155.5	138.5	158.5	141.5	—	—	—	—
K	B	AKMH3 Code CC,CN	149.5	132.5	155.5	138.5	158.5	141.5	—	—	—	—
K	C	AKMH4 Code AC, AN	171.2	132.5	177.2	138.5	180.2	141.5	187.8	149.1	213	174.3
K	D	AKMH4 Code BK, BN	171.2	132.5	177.2	138.5	180.2	141.5	187.8	149.1	213	174.3
K	E	AKMH4 Code CC, CN	171.2	132.5	177.2	138.5	180.2	141.5	187.8	149.1	213	174.3
K	F	AKMH4 Code DK, DN	171.2	132.5	177.2	138.5	180.2	141.5	187.8	149.1	213	174.3
K	H	AKMH5 Code AC, AN	196.7	168.7	202.7	174.7	205.7	177.7	213.3	185.3	238.5	210.5
K	I	AKMH5 Code BK, BN	196.7	168.7	202.7	174.7	205.7	177.7	213.3	185.3	238.5	210.5
K	J	AKMH5 Code DK, DN	196.7	168.7	202.7	174.7	205.7	177.7	213.3	185.3	238.5	210.5
K	K	AKMH5 Code CC, CN	196.7	168.7	202.7	174.7	205.7	177.7	213.3	185.3	238.5	210.5
K	L	AKMH5 Code GC, GN	196.7	168.7	202.7	174.7	205.7	177.7	213.3	185.3	238.5	210.5
K	M	AKMH5 Code HC, HN	196.7	168.7	202.7	174.7	205.7	177.7	213.3	185.3	238.5	210.5
K	P	AKMH6 Code AC, AN	—	—	—	—	—	—	230.3	185.3	255.5	210.5
K	Q	AKMH6 Code CC, CN	—	—	—	—	—	—	230.3	185.3	255.5	210.5
K	R	AKMH6 Code DK, DN	—	—	—	—	—	—	240.3	185.3	265.5	210.5

Letter Codes Positions		KOLLMORGEN SERVO MOTOR	Servo Motor Adapter Plate & Servo Motor Adapter Part Numbers									
			Gearhead Size FS39		Gearhead Size FS44		Gearhead Size FS50		Gearhead Size FS60		Gearhead Size FS76	
11	12		Plate	Motor Adapter	Plate	Motor Adapter	Plate	Motor Adapter	Plate	Motor Adapter	Plate	Motor Adapter
K	A	AKMH3 Code AC, AN	FS-PAK	50FS-M20P	FS-PAK	50FS-M20P	FS-PAK	50FS-M20P	—	—	—	—
K	B	AKMH3 Code CC,CN	FS-PAL	50FS-M20P	FS-PAL	50FS-M20P	FS-PAL	50FS-M20P	—	—	—	—
K	C	AKMH4 Code AC, AN	FS-PAM	50FS-M20P	FS-PAM	50FS-M20P	FS-PAM	50FS-M20P	FS-PAM	50FS-M20P	FS-PAM	50FS-M20P
K	D	AKMH4 Code BK, BN	FS-PAE	50FS-M20P	FS-PAE	50FS-M20P	FS-PAE	50FS-M20P	FS-PAE	50FS-M20P	FS-PAE	50FS-M20P
K	E	AKMH4 Code CC, CN	FS-PAC	50FS-M20P	FS-PAC	50FS-M20P	FS-PAC	50FS-M20P	FS-PAC	50FS-M20P	FS-PAC	50FS-M20P
K	F	AKMH4 Code DK, DN	FS-PAD	50FS-M20P	FS-PAD	50FS-M20P	FS-PAD	50FS-M20P	FS-PAD	50FS-M20P	FS-PAD	50FS-M20P
K	H	AKMH5 Code AC, AN	FS-AF	50FS-M20	FS-AF	50FS-M20	FS-AF	50FS-M20	FS-AF	50FS-M20	FS-AF	50FS-M20
K	I	AKMH5 Code BK, BN	FS-AR	50FS-M20	FS-AR	50FS-M20	FS-AR	50FS-M20	FS-AR	50FS-M20	FS-AR	50FS-M20
K	J	AKMH5 Code DK, DN	FS-AS	50FS-M20	FS-AS	50FS-M20	FS-AS	50FS-M20	FS-AS	50FS-M20	FS-AS	50FS-M20
K	K	AKMH5 Code CC, CN	FS-AG	50FS-M20	FS-AG	50FS-M20	FS-AG	50FS-M20	FS-AG	50FS-M20	FS-AG	50FS-M20
K	L	AKMH5 Code GC, GN	FS-AN	50FS-M20	FS-AN	50FS-M20	FS-AN	50FS-M20	FS-AN	50FS-M20	FS-AN	50FS-M20
K	M	AKMH5 Code HC, HN	FS-AP	50FS-M20	FS-AP	50FS-M20	FS-AP	50FS-M20	FS-AP	50FS-M20	FS-AP	50FS-M20
K	P	AKMH6 Code AC, AN	—	—	—	—	—	—	FS-AH	50FS-M20	FS-AH	50FS-M20
K	Q	AKMH6 Code CC, CN	—	—	—	—	—	—	FS-AJ	50FS-M20-1	FS-AJ	50FS-M20-1
K	R	AKMH6 Code DK, DN	—	—	—	—	—	—	FS-AQ	50FS-M20	FS-AQ	50FS-M20

Letter Codes		KOLLMORGEN SERVO MOTOR	Motor Adapter & Plate Pin		Servo Motor Dimensions					
11	12		Plate	Motor Adapter	Outer Dia.	Pilot Dia.	Bolt Circle Dia.	Hole Size	Shaft Dia.	Shaft Length
K	A	AKMH3 Code AC, AN	FS-PAK	50FS-M20P	89	60	75	5.8	14	30
K	B	AKMH3 Code CC,CN	FS-PAL	50FS-M20P	89	60	75	M5	14	30
K	C	AKMH4 Code AC, AN	FS-PAM	50FS-M20P	114.5	80	100	7.0	19	40
K	D	AKMH4 Code BK, BN	FS-PAE	50FS-M20P	114.5	73.025	98.43	6.91	15.875	52.4
K	E	AKMH4 Code CC, CN	FS-PAC	50FS-M20P	114.5	80	100	M6	19	40
K	F	AKMH4 Code DK, DN	FS-PAD	50FS-M20P	114.5	73.025	98.43	1/4 - 20	15.875	52.4
K	H	AKMH5 Code AC, AN	FS-AF	50FS-M20	148	110	130	9	24	50
K	I	AKMH5 Code BK, BN	FS-AR	50FS-M20	148	55.563	125.73	8.33	19.05	57.15
K	J	AKMH5 Code DK, DN	FS-AS	50FS-M20	148	55.563	125.73	3/8 - 16	19.05	57.15
K	K	AKMH5 Code CC, CN	FS-AG	50FS-M20	148	110	130	M8	24	50
K	L	AKMH5 Code GC, GN	FS-AN	50FS-M20	148	95	115	9	24	50
K	M	AKMH5 Code HC, HN	FS-AP	50FS-M20	148	95	115	M8	24	50
K	P	AKMH6 Code AC, AN	FS-AH	50FS-M20	186.4	130	165	11	32	58
K	Q	AKMH6 Code CC, CN	FS-AJ	50FS-M20-1	186.4	130	165	M10	32	58
K	R	AKMH6 Code DK, DN	FS-AQ	50FS-M20	186.4	114.5	149.23	3/8 - 16	28.58	69.9

Letter Codes Positions		ALLEN BRADLEY SERVO MOTOR	Gearhead Dimensions (mm)									
			Gearhead Size FS39		Gearhead Size FS44		Gearhead Size FS50		Gearhead Size FS60		Gearhead Size FS76	
11	12		Length A	Length B	Length A	Length B	Length A	Length B	Length A	Length B	Length A	Length B
A	A	MPS-A,B /330P	171.2	132.5	177.2	138.5	180.2	141.5	—	—	—	—
A	B	MPS-A/B4540F, VPS-A1304D	—	—	—	—	—	—	213.3	185.3	238.5	210.5
A	C	MPS-A/B560F, VPS-B1653D	—	—	—	—	—	—	230.3	185.3	255.5	210.5

Letter Codes Positions		ALLEN BRADLEY SERVO MOTOR	Servo Motor Adapter Plate & Servo Motor Adapter Part Numbers									
			Gearhead Size FS39		Gearhead Size FS44		Gearhead Size FS50		Gearhead Size FS60		Gearhead Size FS76	
11	12		Plate	Motor Adapter	Plate	Motor Adapter	Plate	Motor Adapter	Plate	Motor Adapter	Plate	Motor Adapter
A	A	MPS-A,B /330P	FS-PAC	50FS-M20P	FS-PAC	50FS-M20P	FS-PAC	50FS-M20P	—	—	—	—
A	B	MPS-A/B4540F, VPS-A1304D	—	—	—	—	—	—	FS-AG	50FS-M20	FS-AG	50FS-M20
A	C	MPS-A/B560F, VPS-B1653D	—	—	—	—	—	—	FS-AJ	50FS-M20-1	FS-AJ	50FS-M20-1

Letter Codes		ALLEN BRADLEY SERVO MOTOR	Motor Adapter & Plate P/N		Servo Motor Dimensions					
11	12		Plate	Motor Adapter	Outer Dia.	Pilot Dia.	Bolt Circle Dia.	Hole Size	Shaft Dia.	Shaft Length
A	A	MPS-A,B /330P	FS-PAC	50FS-M20P	112	80	100	M6	16	40
A	B	MPS-A/B4540F, VPS-A1304D	FS-AG	50FS-M20	143.2	110	130	M8	24	50
A	C	MPS-A/B560F, VPS-B1653D	FS-AJ	50FS-M20-1	181	130	165	M10	28	60

Determination of the Duty Cycle, DC

DC < 50%
or
DC < 30 Min

Cyclic Operation

Required Accel Output Torque

$OT_{acc} = IT_{acc} \times Ratio \times Efficiency$

Compare Required Accel Torque

$T_{aac} \times C_F \geq OT_{acc}$

(see Chart 1 C_F values)

Continuous Operation

Required Accel Output Torque

$OT_{acc} = IT_{acc} \times Ratio \times Efficiency$

Compare Required Accel Torque

$T_{aac} \times C_F \geq OT_{acc}$

(see Chart 1 C_F values)

Calculate the Average Running Torque

Compare Average Running Torque to the Reducer's Running Torque rating

$T_{run} \times C_D \geq OT_{run}$

(see Chart 2 for C_D values)

Compare Running input torque to the Reducer's thermal Torque rating

$IT_{therm} \geq IT_{run}$

(Individual rating table for values)

GEARBOX RATINGS

T_{aac} = Gearbox acceleration torque rating
T_{run} = Gearbox run torque rating
IT_{therm} = Gearbox input torque thermal rating

APPLICATION RATINGS

IT_{aac} = Servo motor acceleration torque rating
IT_{run} = Servo motor continuous torque rating
OT_{acc} = Applied acceleration output torque
OT_{run} = Applied running output torque

CONFIRM THE MOTOR PILOT, BOLT CIRCLE, SHAFT DIAMETER AND LENGTH FIT TO THE REDUCER SELECTED

CHART 1 Cycle Factor, C_F

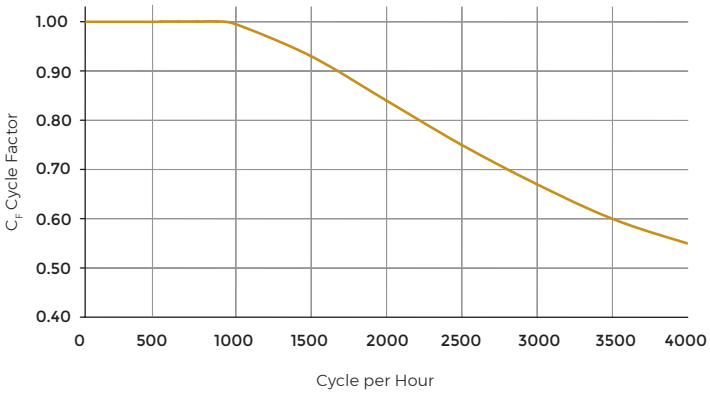
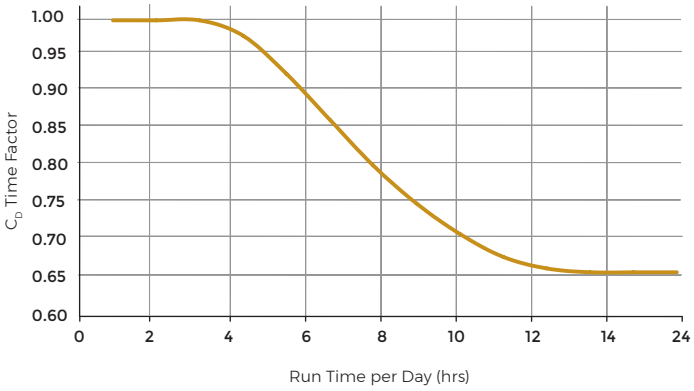


CHART 2 Time Factor, C_D



EQUATION 1

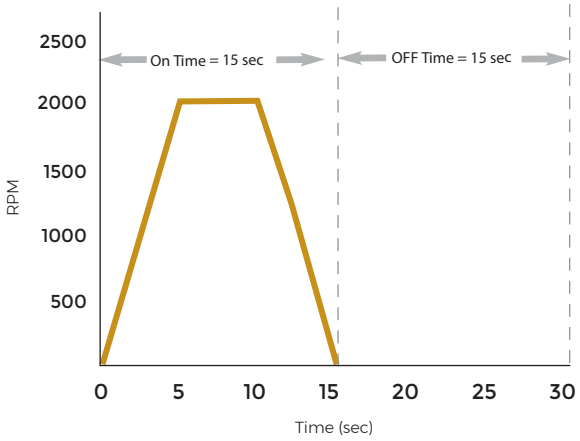
$$\text{Duty Cycle} = \frac{\text{On Time}}{\text{On Time + Off Time}} \times 100$$

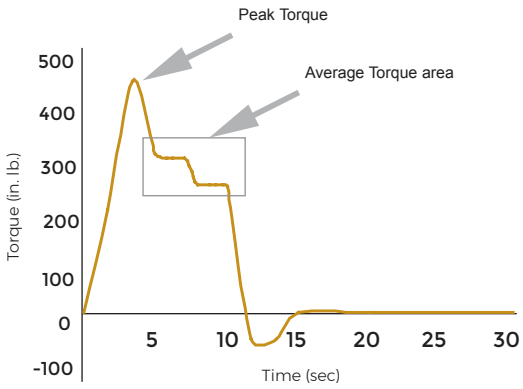
Where n = speed
t = time
T = torque for each cycle segment

EQUATION 2

$$T_2 = \sqrt{\frac{3\ (n_1.t_1.T_1^3 + \ldots\ldots + n_n.t_n.T_n^3)}{n_1.t_1 + \ldots\ldots + n_n.t_n}}$$

EXAMPLE



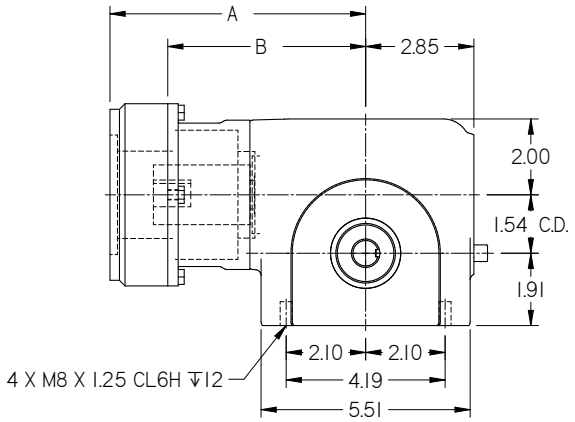


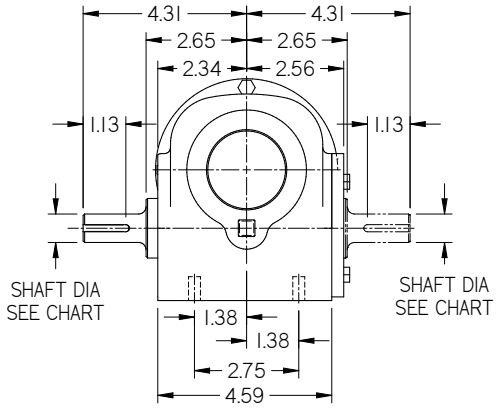
Duty cycle % = (15)/(15 + 15) x 100 = 50%

$T_{1\ acc\ motor}$ = 450 lb.in.

T_2 = (300 x 2.5 + 250 x 2.5) / (2.5 + 2.5)

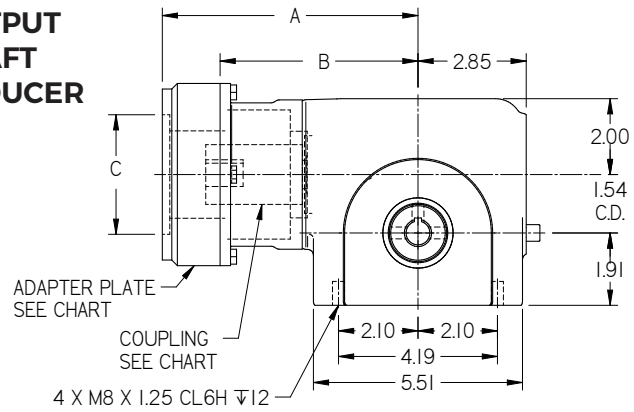
SOLID OUTPUT SHAFT REDUCER
FS39

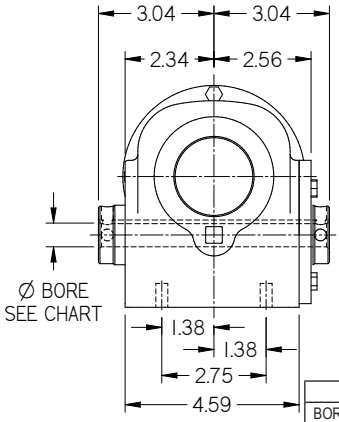




INCH SOLID		METRIC SOLID	
SHAFT DIA.	KEY WAY	SHAFT DIA.	KEY WAY
0.749-0.750	3/16 x 3/32	18-18.02	6.0 X 3.5

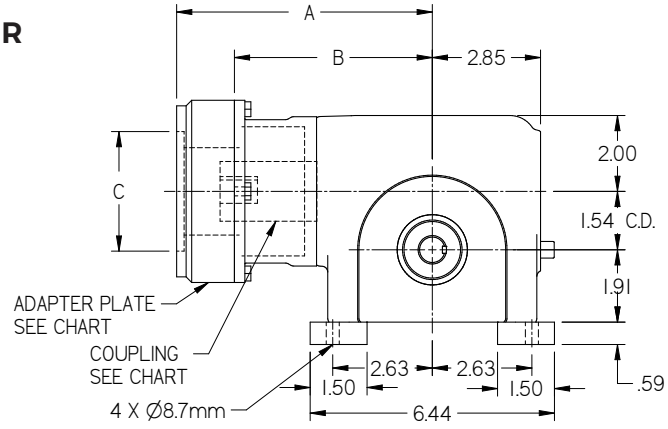
HOLLOW OUTPUT SHAFT REDUCER
FS39

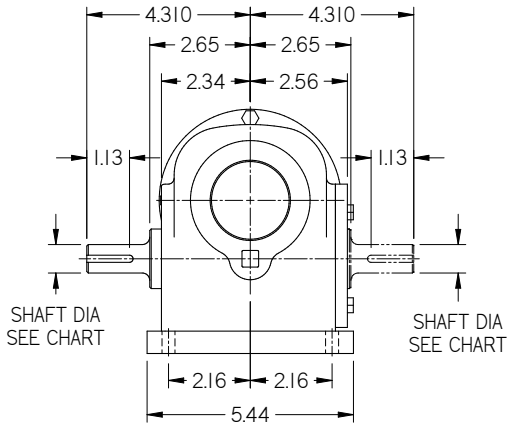




INCH HOLLOW		METRIC HOLLOW	
BORE DIA.	KEYWAY	BORE DIA.	KEYWAY
0.625-0.627	3/16 x 3/32	19-19.02	6.0 X 2.8
0.750-0.752	3/16 x 3/32		
0.875-0.877	3/16 x 3/32		
1.000-1.002	1/4 x 1/8		

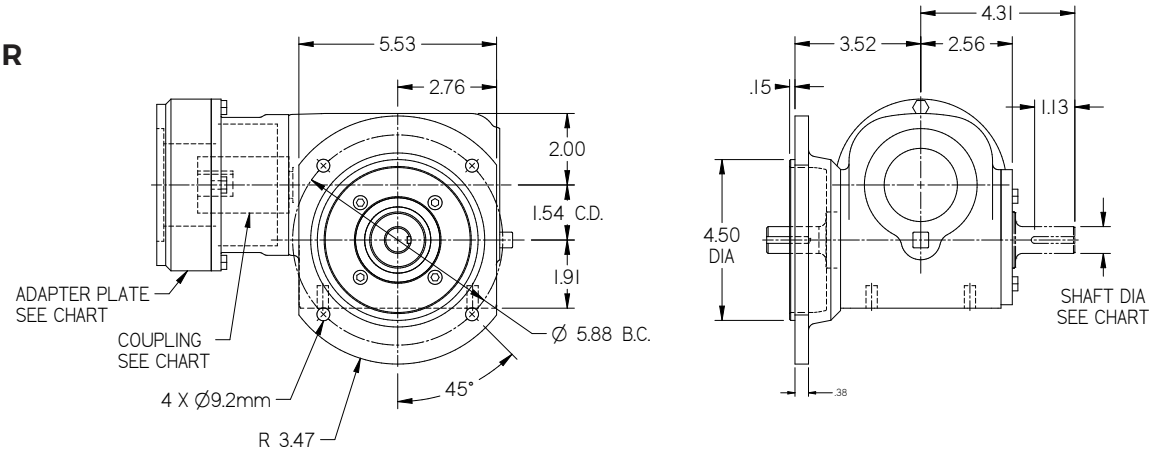
FOOT MOUNT REDUCER
FS39





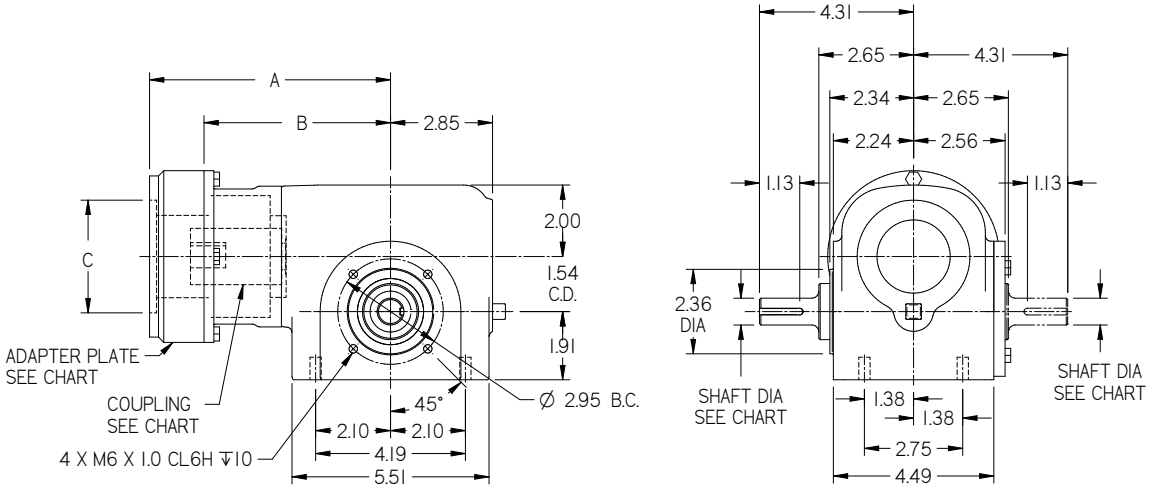
AVAILABLE WITH EITHER A SOLID OR HOLLOW OUTPUT

OUTPUT FLANGE REDUCER
FS39



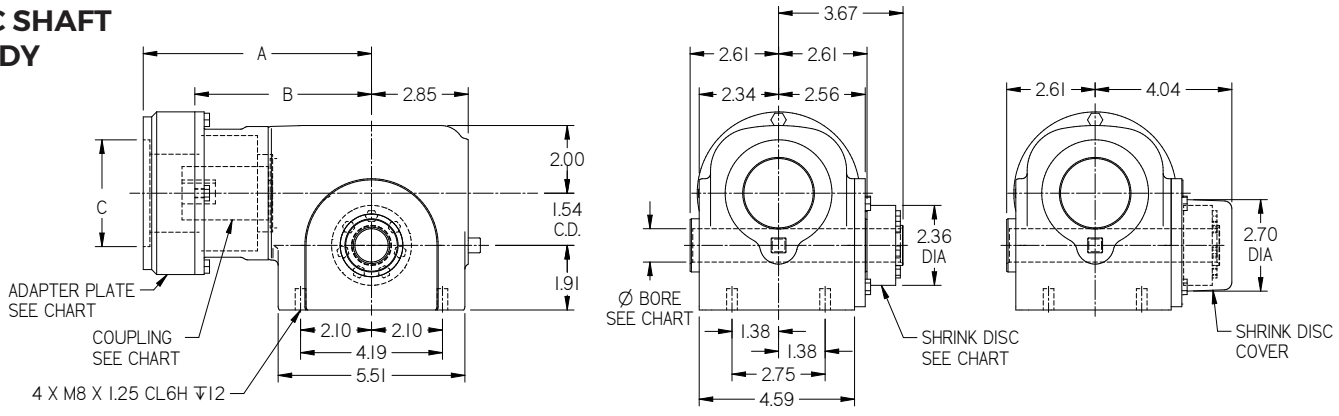
AVAILABLE WITH EITHER A SOLID OR HOLLOW OUTPUT

SIDE MOUNT
FS39



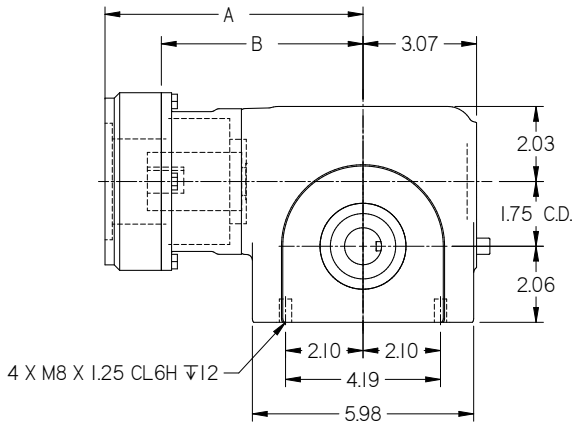
AVAILABLE WITH EITHER A SOLID OR HOLLOW OUTPUT

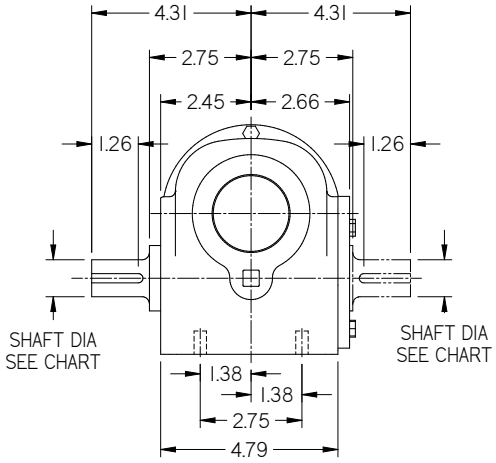
SHRINK DISC SHAFT READY
FS39



INCH BORE	METRIC BORE
1.000/1.0003	25.000/25.008

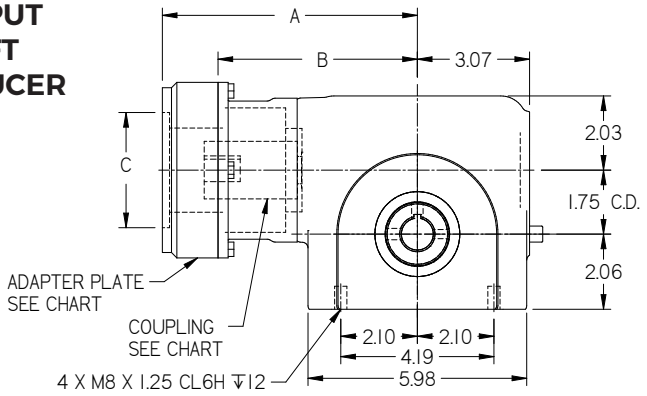
SOLID OUTPUT SHAFT REDUCER
FS44

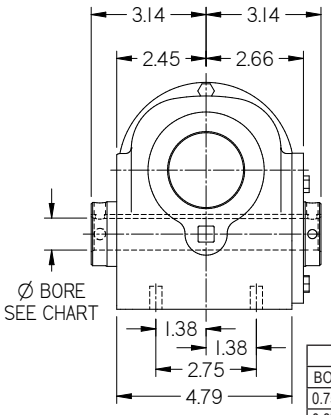




INCH SOLID		METRIC SOLID	
SHAFT DIA.	KEY WAY	SHAFT DIA.	KEY WAY
0.874-0.875	3/16 X 3/32	20.00-20.02	6.0 X 3.5
0.999-1.000	1/4 X 1/8		

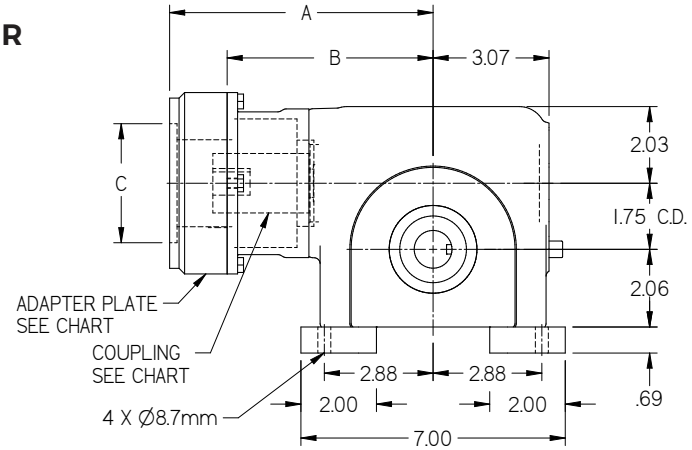
HOLLOW OUTPUT SHAFT REDUCER
FS44

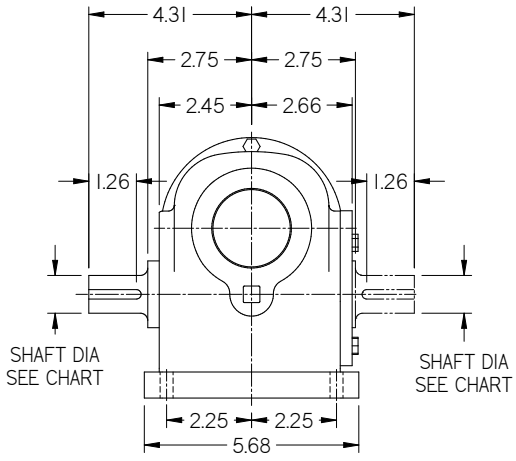




INCH HOLLOW		METRIC HOLLOW	
BORE DIA.	KEYWAY	BORE DIA.	KEYWAY
0.750-0.752	3/16 X 3/32	20.00-20.02	6.0 X 2.8
0.875-0.877	3/16 X 3/32		
1.000-1.002	1/4 X 1/8		
1.125-1.127	1/4 X 1/8		
1.250-1.252	1/4 X 1/8		

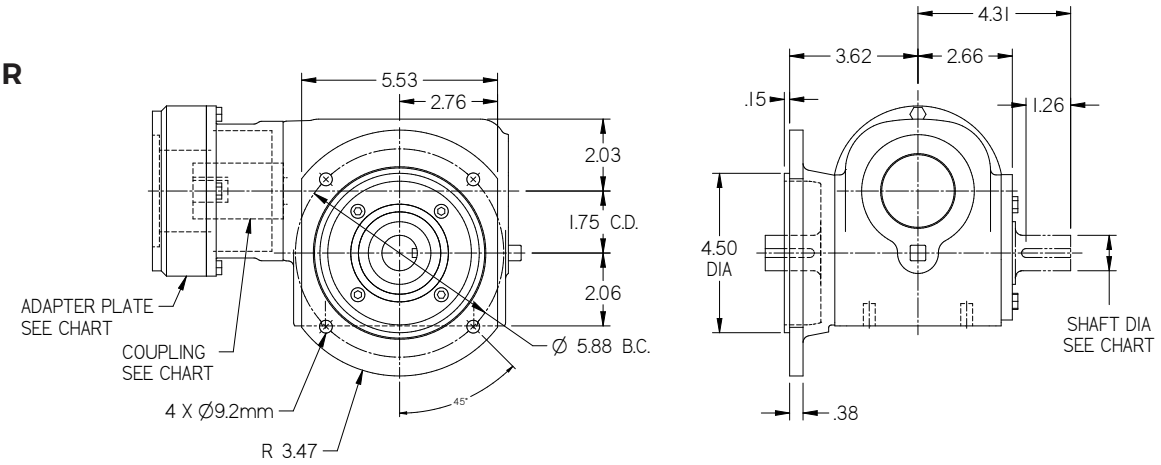
FOOT MOUNT REDUCER
FS44





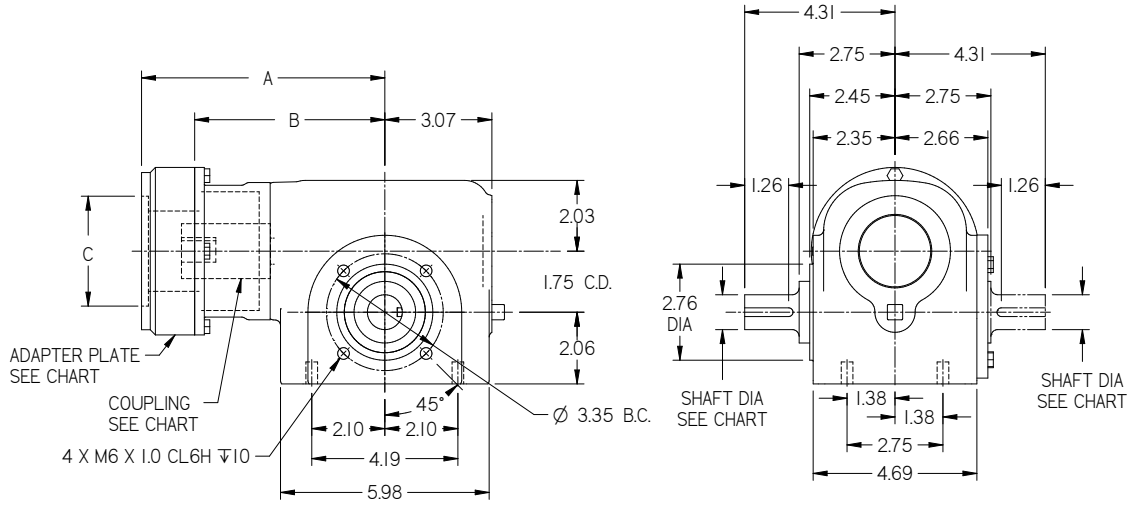
AVAILABLE WITH EITHER A SOLID OR HOLLOW OUTPUT

OUTPUT FLANGE REDUCER
FS44



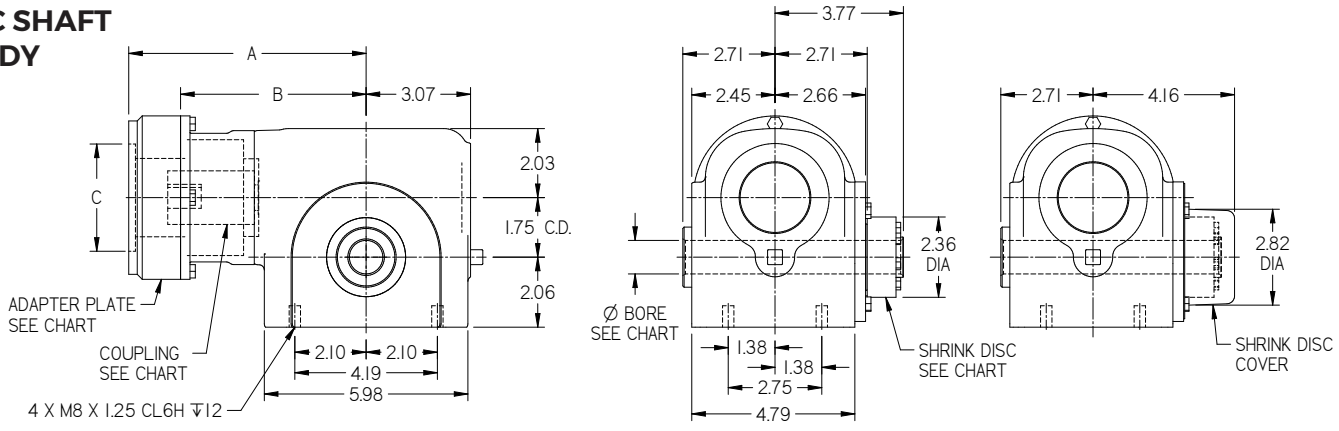
AVAILABLE WITH EITHER A SOLID OR HOLLOW OUTPUT

SIDE MOUNT
FS44



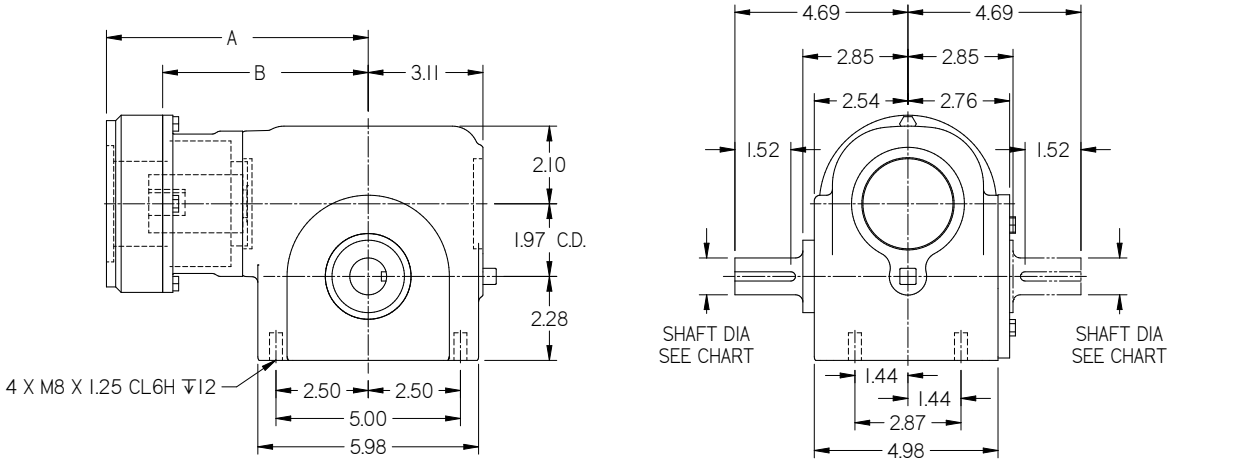
AVAILABLE WITH EITHER A SOLID OR HOLLOW OUTPUT

SHRINK DISC SHAFT READY
FS44



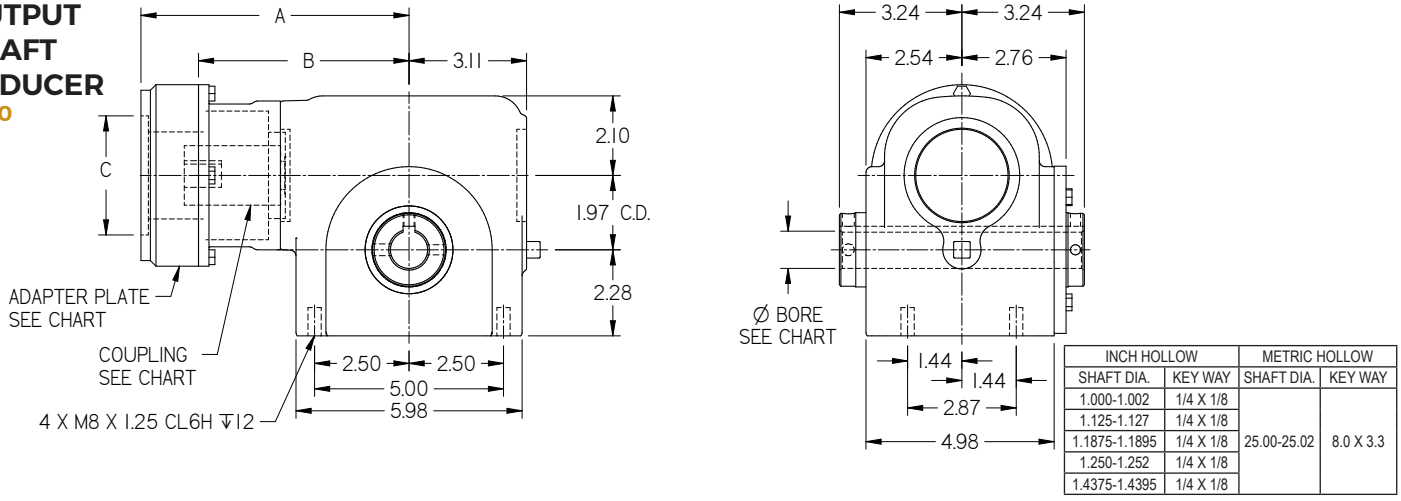
INCH BORE	METRIC BORE
1.000/1.0003	25.000/25.008

SOLID OUTPUT SHAFT REDUCER
FS50



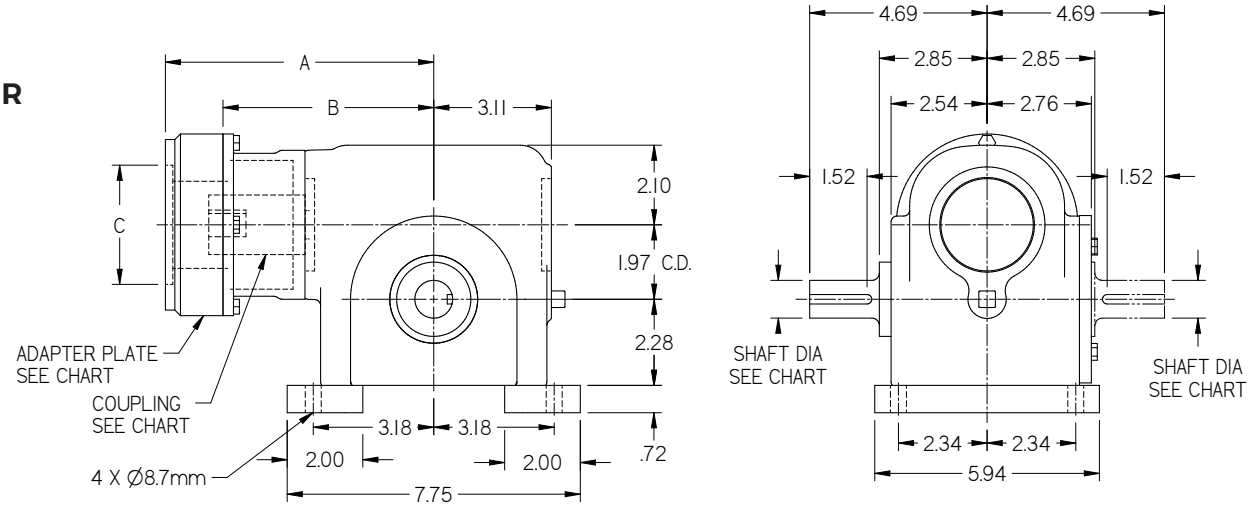
INCH SOLID		METRIC SOLID	
SHAFT DIA.	KEY WAY	SHAFT DIA.	KEY WAY
0.999-1.000	1/4 X 1/8	25.00-25.02	8.0 X 4.0
1.124-1.125	1/4 X 1/8		

HOLLOW OUTPUT SHAFT REDUCER
FS50



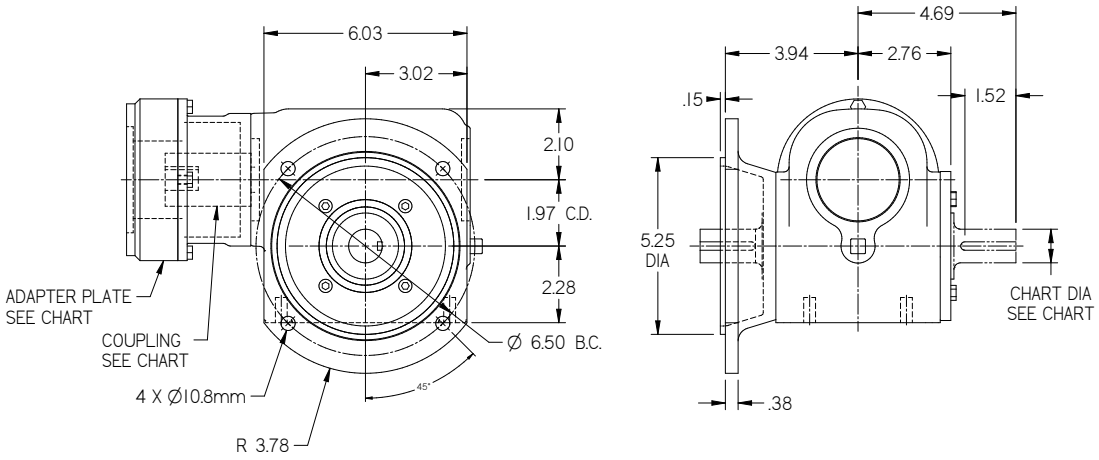
INCH HOLLOW		METRIC HOLLOW	
SHAFT DIA.	KEY WAY	SHAFT DIA.	KEY WAY
1.000-1.002	1/4 X 1/8	25.00-25.02	8.0 X 3.3
1.125-1.127	1/4 X 1/8		
1.1875-1.1895	1/4 X 1/8		
1.250-1.252	1/4 X 1/8		
1.4375-1.4395	1/4 X 1/8		

FOOT MOUNT REDUCER
FS50



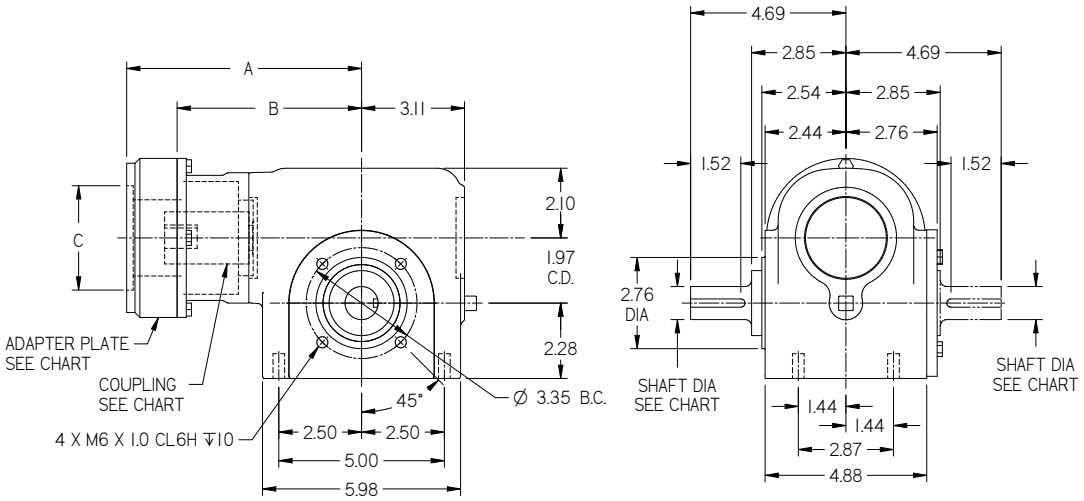
AVAILABLE WITH EITHER A SOLID OR HOLLOW OUTPUT

OUTPUT FLANGE REDUCER
FS50



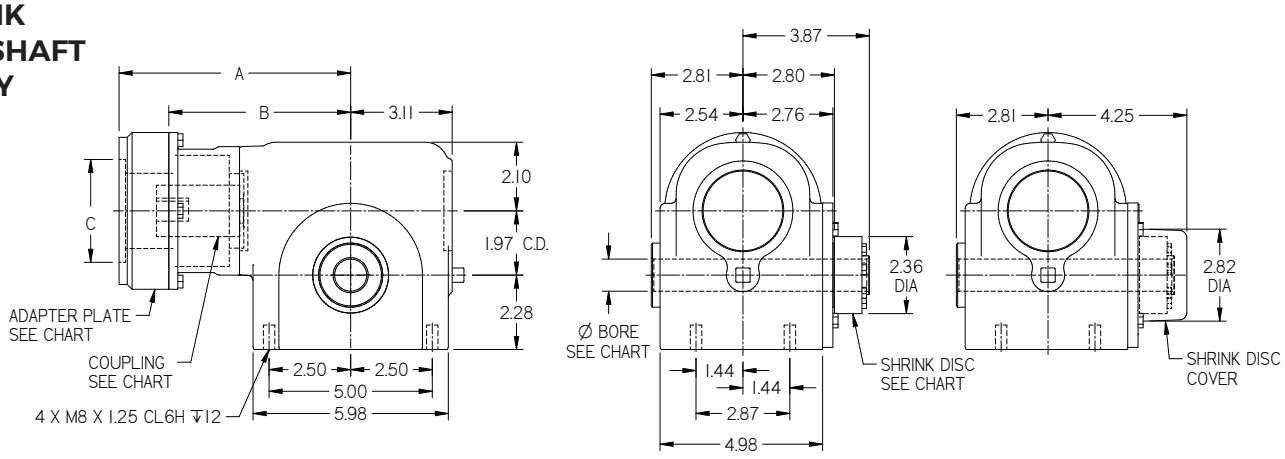
AVAILABLE WITH EITHER A SOLID OR HOLLOW OUTPUT

SIDE MOUNT
FS50



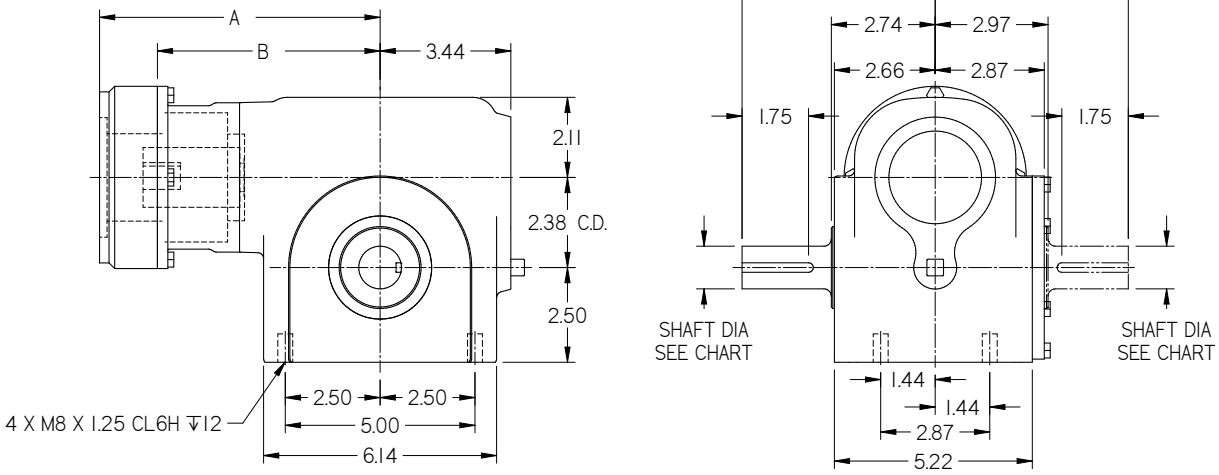
AVAILABLE WITH EITHER A SOLID OR HOLLOW OUTPUT

SHRINK DISC SHAFT READY
FS50



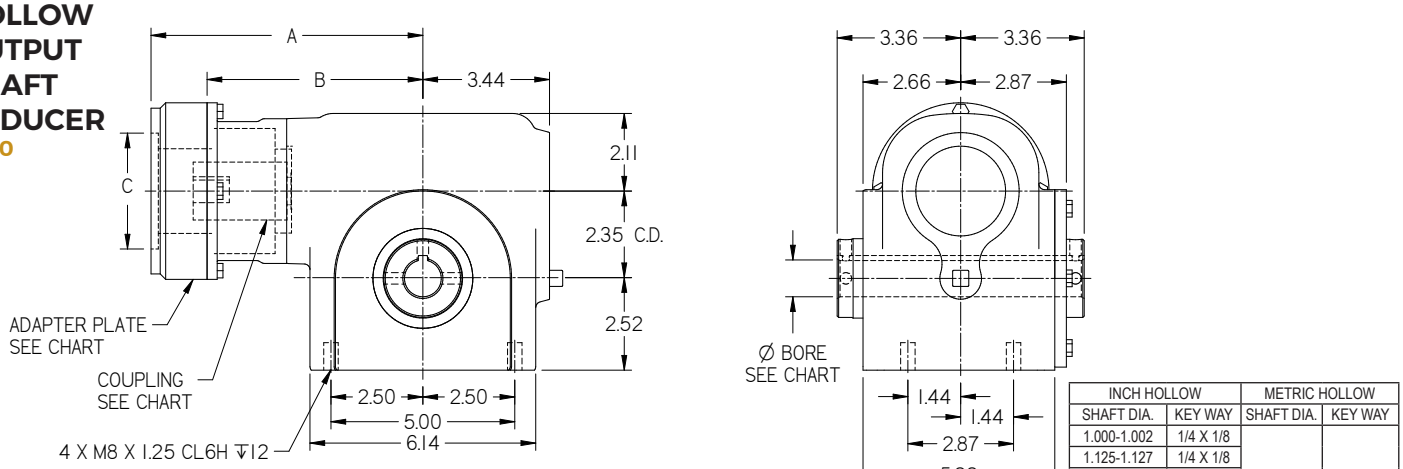
INCH BORE	METRIC BORE
1.000/1.0003	25.000/25.008

SOLID OUTPUT SHAFT REDUCER
FS60



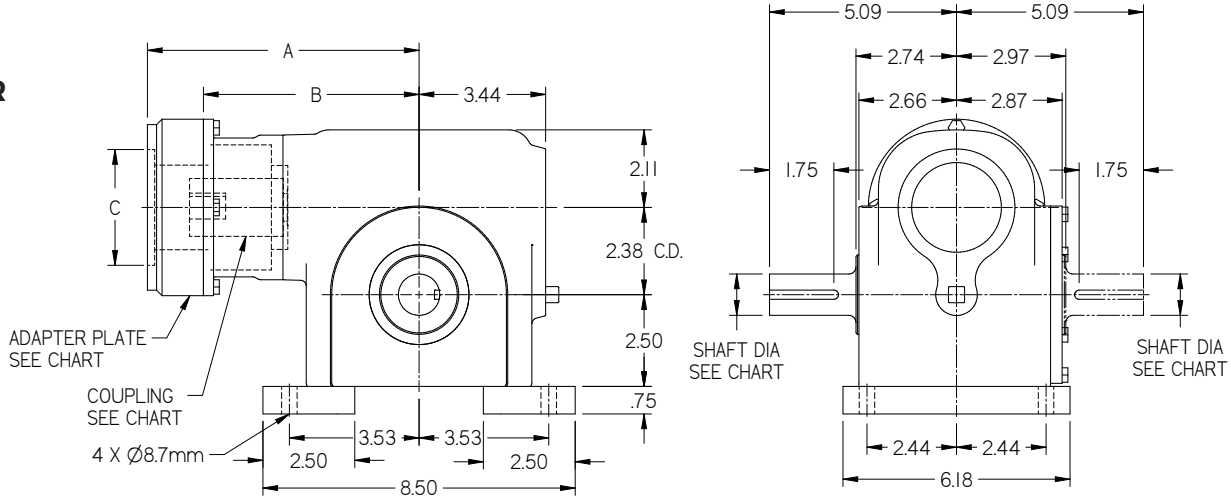
INCH SOLID		METRIC SOLID	
SHAFT DIA.	KEY WAY	SHAFT DIA.	KEY WAY
1.124-1.125	1/4 X 1/8	28.00-28.02	8.0 X 4.0

HOLLOW OUTPUT SHAFT REDUCER
FS60



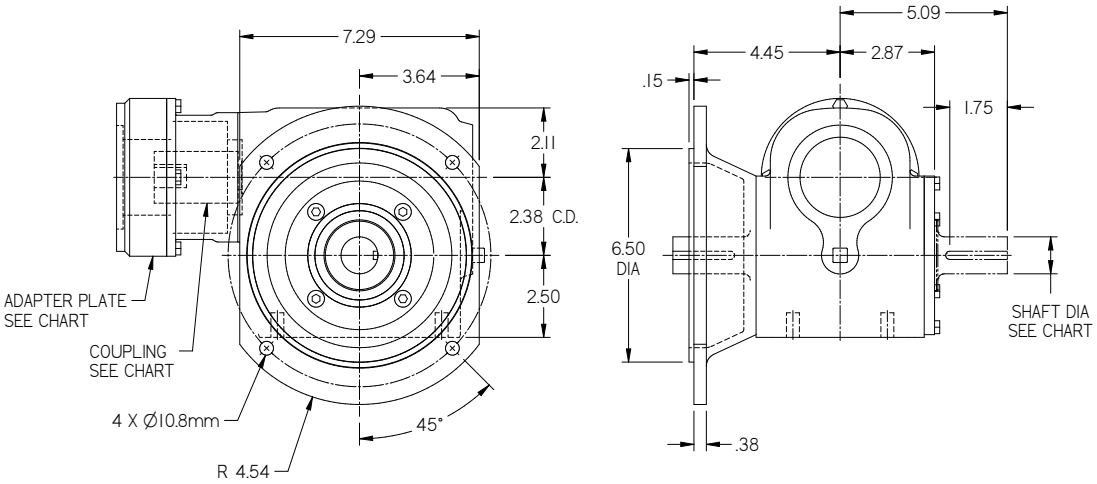
INCH HOLLOW		METRIC HOLLOW	
SHAFT DIA.	KEY WAY	SHAFT DIA.	KEY WAY
1.000-1.002	1/4 X 1/8		
1.125-1.127	1/4 X 1/8		
1.1875-1.1895	1/4 X 1/8	28.00-28.02	8.0 X 3.3
1.250-1.252	1/4 X 1/8		
1.4375-1.4395	1/4 X 1/8		

FOOT MOUNT REDUCER
FS60



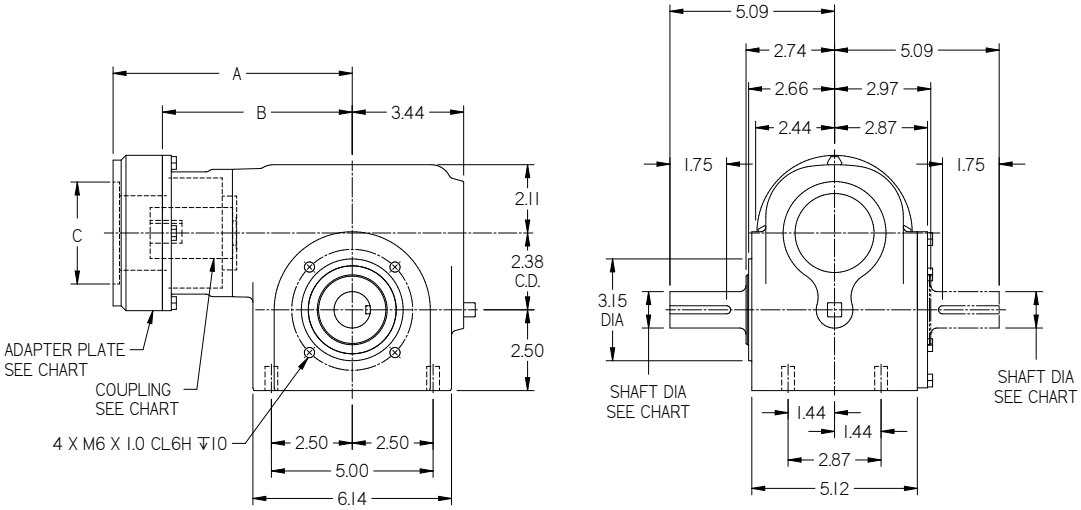
AVAILABLE WITH EITHER A SOLID OR HOLLOW OUTPUT

OUTPUT FLANGE REDUCER
FS60



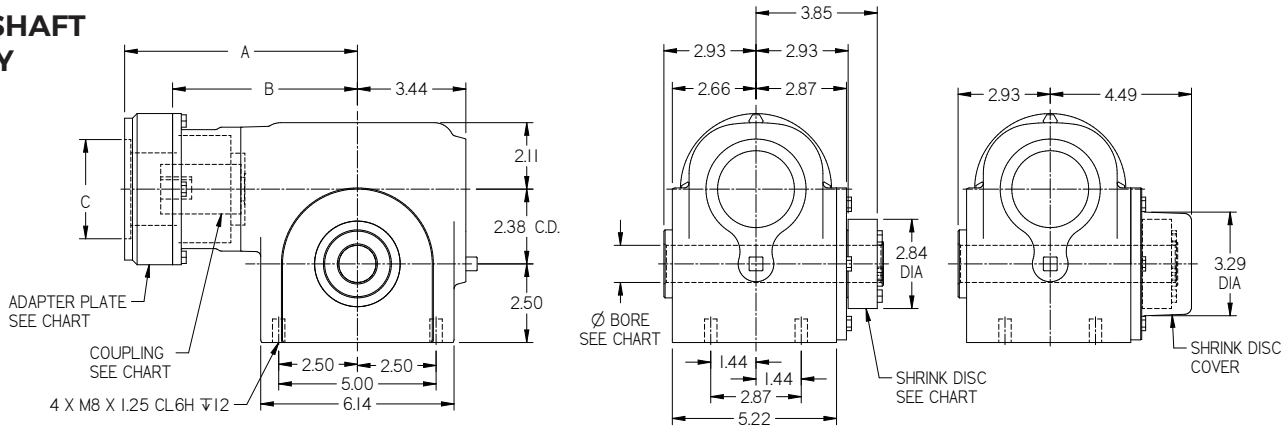
AVAILABLE WITH EITHER A SOLID OR HOLLOW OUTPUT

SIDE MOUNT
FS60



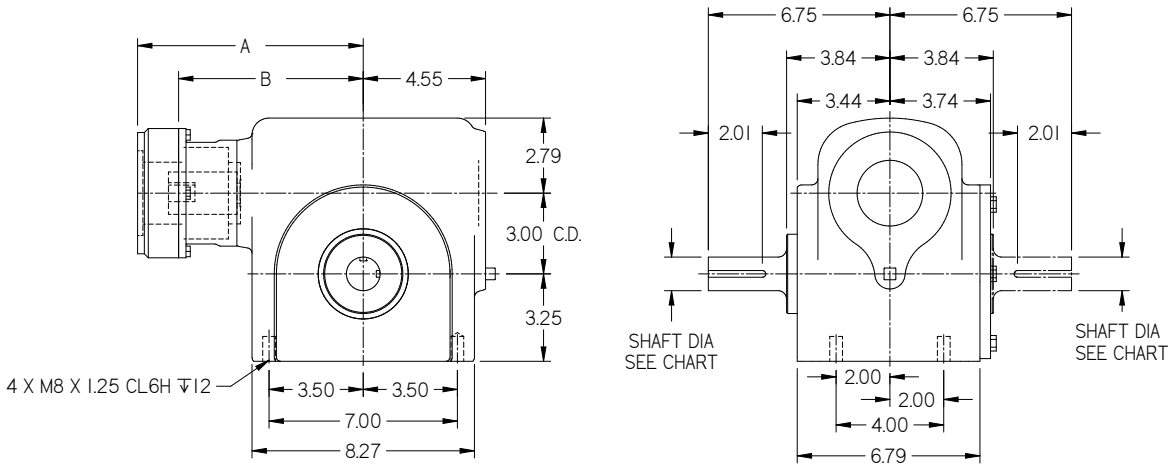
AVAILABLE WITH EITHER A SOLID OR HOLLOW OUTPUT

SHRINK DISC SHAFT READY
FS60



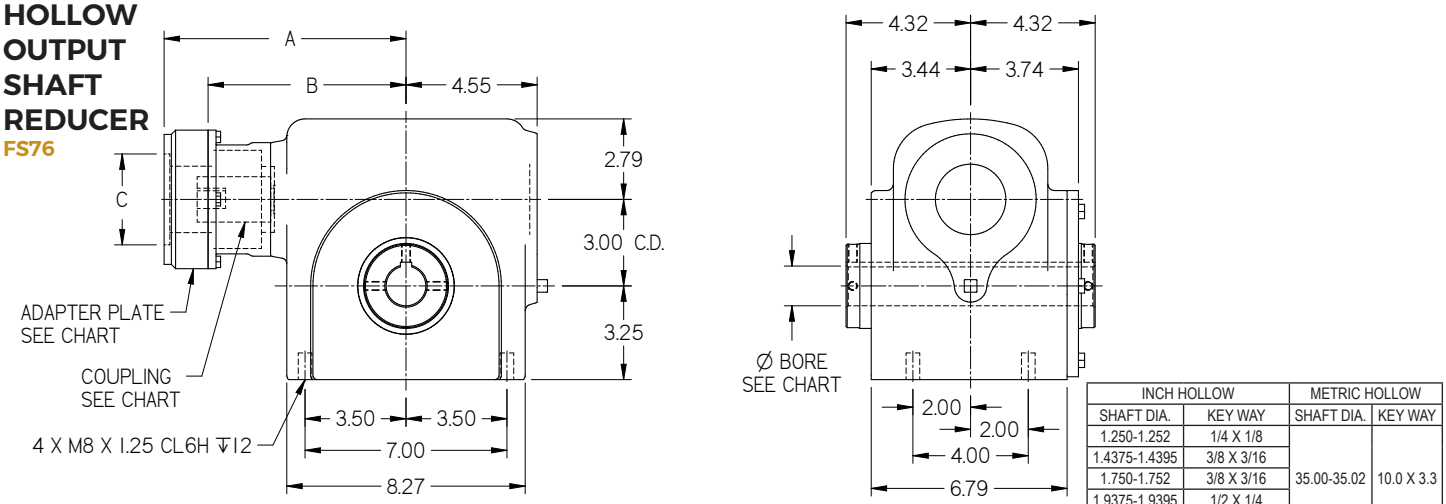
INCH BORE	METRIC BORE
1.250/1.2506	30.000/30.008

SOLID OUTPUT SHAFT REDUCER
FS76



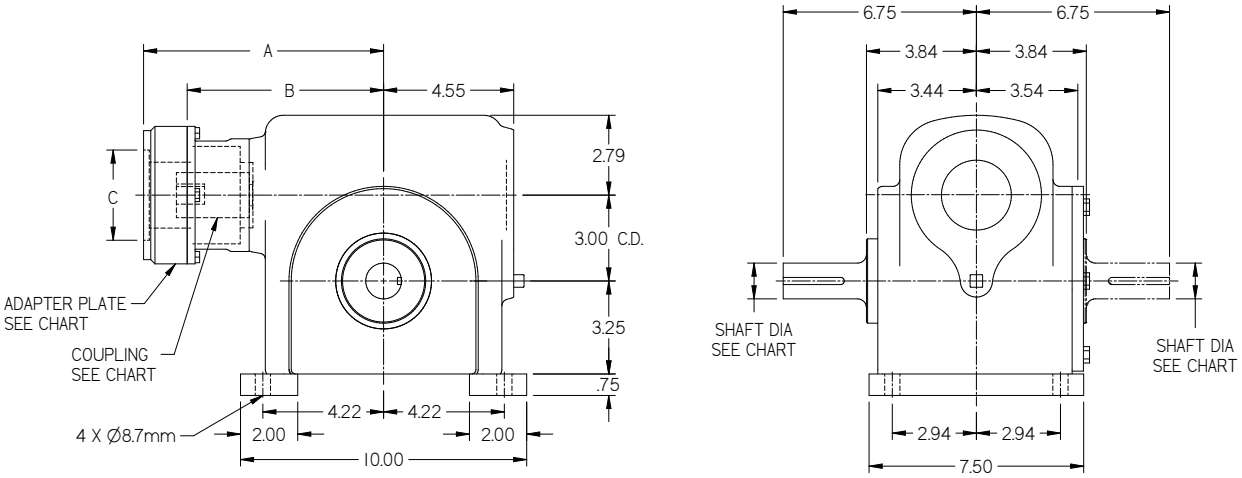
INCH SOLID		METRIC SOLID	
SHAFT DIA.	KEY WAY	SHAFT DIA.	KEY WAY
1.249-1.250	1/4 X 1/8	35.00-35.02	10.0 X 5.0
1.499-1.500	3/8 X 3/16		

HOLLOW OUTPUT SHAFT REDUCER
FS76



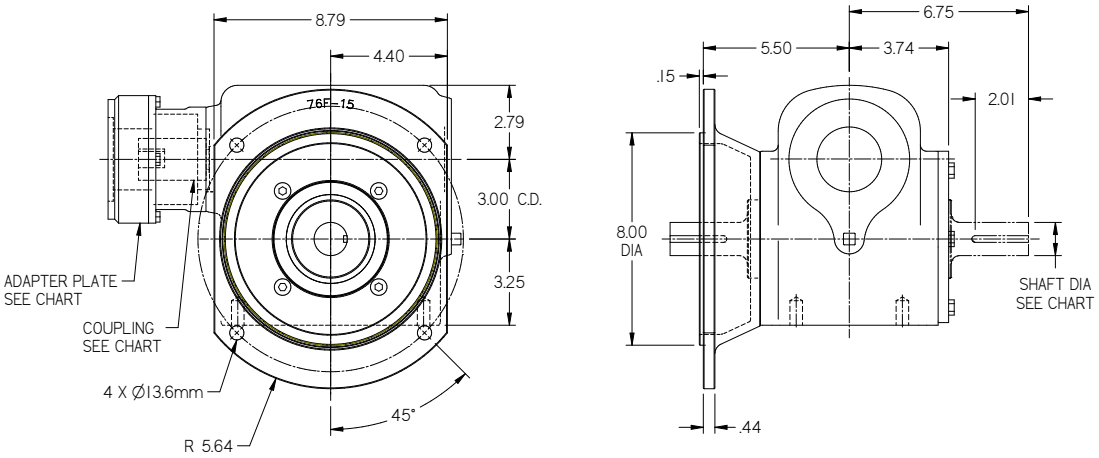
INCH HOLLOW		METRIC HOLLOW	
SHAFT DIA.	KEY WAY	SHAFT DIA.	KEY WAY
1.250-1.252	1/4 X 1/8	35.00-35.02	10.0 X 3.3
1.4375-1.4395	3/8 X 3/16		
1.750-1.752	3/8 X 3/16		
1.9375-1.9395	1/2 X 1/4		
2.1875-2.1895	1/2 X 3/16 FLAT		

FOOT MOUNT REDUCER
FS76



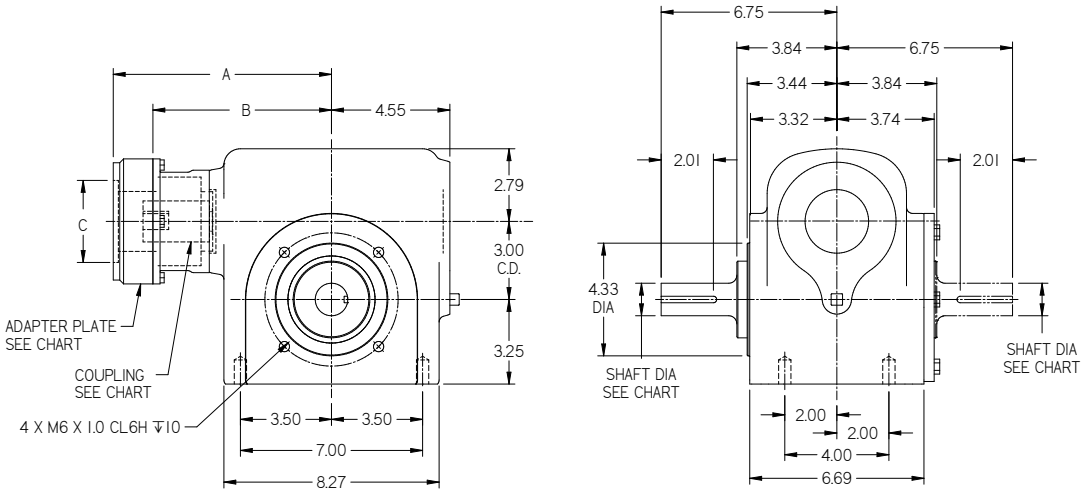
AVAILABLE WITH EITHER A SOLID OR HOLLOW OUTPUT

OUTPUT FLANGE REDUCER
FS76



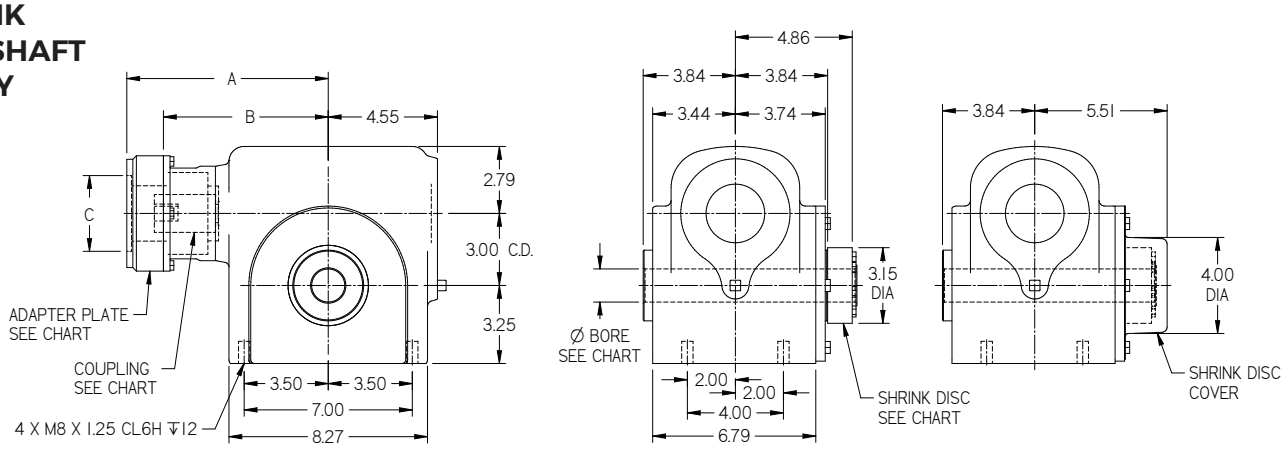
AVAILABLE WITH EITHER A SOLID OR HOLLOW OUTPUT

SIDE MOUNT
FS76



AVAILABLE WITH EITHER A SOLID OR HOLLOW OUTPUT

SHRINK DISC SHAFT READY
FS76



INCH BORE	METRIC BORE
1.4375/1.438	35.002/35.018

Ratings for Size FS39

RATIO	CAPACITY	FS39 RATINGS BY INPUT SPEED, RPM							
		500		1000		2000		3000	
		Lb-In	Nm	Lb-In	Nm	Lb-In	Nm	Lb-In	Nm
5	Input Torque, Taccel	143	16.2	131	14.8	116	13.1	102	11.5
	Input Torque, Trun	132	14.9	115	13	87.7	9.91	72.9	8.23
	IT Thermal, Ttherm	132	14.9	115	13	78.2	8.83	45	5.09
	Output Torque, Taccel	651	73.6	601	68	531	60	461	52.1
	Output Torque, Trun	601	68	531	60	403	45.5	330	37.3
	Efficiency %	91%		92%		92%		91%	
7.5	Input Torque, Taccel	118	13.3	107	12.1	96.9	11	85.9	9.71
	Input Torque, Trun	109	12.3	96.4	10.9	74.3	8.4	61.5	6.95
	IT Thermal, Ttherm	109	12.3	96.4	10.9	67	7.57	40.4	4.57
	Output Torque, Taccel	787	88.9	728	82.3	658	74.4	577	65.2
	Output Torque, Trun	728	82.3	658	74.4	505	57	413	46.7
	Efficiency %	89%		91%		91%		90%	
10	Input Torque, Taccel	97.5	11	87.8	9.92	80.5	9.09	71.9	8.13
	Input Torque, Trun	90.8	10.3	80.3	9.08	62.4	7.05	51.6	5.83
	IT Thermal, Ttherm	90.8	10.3	80.3	9.08	62.4	7.05	37.1	4.2
	Output Torque, Taccel	848	95.8	790	89.3	723	81.7	637	72
	Output Torque, Trun	790	89.3	723	81.7	560	63.3	457	51.6
	Efficiency %	87%		90%		90%		89%	
15	Input Torque, Taccel	77.8	8.79	70.3	7.95	65.4	7.39	58.6	6.62
	Input Torque, Trun	73.5	8.31	65.3	7.38	50.9	5.75	42.2	4.77
	IT Thermal, Ttherm	73.5	8.31	65.3	7.38	50.9	5.75	31.6	3.57
	Output Torque, Taccel	982	111	928	105	862	97.4	760	85.9
	Output Torque, Trun	928	105	862	97.4	671	75.8	548	61.9
	Efficiency %	84%		88%		88%		87%	
20	Input Torque, Taccel	58.4	6.6	54.5	6.16	49.5	5.59	45	5.08
	Input Torque, Trun	56.3	6.36	50	5.65	39	4.41	32.3	3.65
	IT Thermal, Ttherm	56.3	6.36	50	5.65	39	4.41	25.8	2.92
	Output Torque, Taccel	951	107	916	103	840	94.9	752	84.9
	Output Torque, Trun	916	103	840	94.9	662	74.8	541	61.1
	Efficiency %	81%		84%		85%		84%	
25	Input Torque, Taccel	46.2	5.22	44.1	4.98	40	4.52	36.2	4.09
	Input Torque, Trun	45.3	5.12	40.3	4.55	31.5	3.55	26.1	2.95
	IT Thermal, Ttherm	45.3	5.12	40.3	4.55	31.5	3.55	24.3	2.75
	Output Torque, Taccel	936	106	918	104	838	94.7	748	84.5
	Output Torque, Trun	918	104	838	94.7	659	74.5	539	60.9
	Efficiency %	81%		83%		84%		83%	
30	Input Torque, Taccel	40	4.51	35.5	4.01	33.4	3.78	30.3	3.43
	Input Torque, Trun	37.9	4.28	33.7	3.81	26.3	2.98	21.8	2.47
	IT Thermal, Ttherm	37.9	4.28	33.7	3.81	26.3	2.98	19.8	2.24
	Output Torque, Taccel	889	100	844	95.3	801	90.5	715	80.8
	Output Torque, Trun	844	95.3	801	90.5	631	71.3	515	58.2
	Efficiency %	74%		79%		80%		79%	
40	Input Torque, Taccel	28.8	3.25	26.7	3.02	25.2	2.84	23	2.59
	Input Torque, Trun	28.6	3.23	25.4	2.87	19.9	2.24	16.5	1.86
	IT Thermal, Ttherm	28.6	3.23	25.4	2.87	19.9	2.24	16.5	1.86
	Output Torque, Taccel	809	91.5	804	90.8	764	86.3	685	77.4
	Output Torque, Trun	804	90.8	764	86.3	603	68.1	491	55.5
	Efficiency %	70%		75%		76%		75%	
50	Input Torque, Taccel	22.9	2.59	21.7	2.45	20.2	2.28	18.4	2.08
	Input Torque, Trun	22.9	2.59	20.4	2.3	15.9	1.8	13.2	1.49
	IT Thermal, Ttherm	22.9	2.59	20.4	2.3	15.9	1.8	13.2	1.49
	Output Torque, Taccel	783	88.5	783	88.5	735	83.1	660	74.5
	Output Torque, Trun	783	88.5	735	83.1	580	65.6	472	53.4
	Efficiency %	68%		72%		73%		72%	
60	Input Torque, Taccel	19.3	2.18	17.8	2.01	16.9	1.91	15.4	1.74
	Input Torque, Trun	19.1	2.16	17	1.92	13.3	1.5	11	1.25
	IT Thermal, Ttherm	19.1	2.16	17	1.92	13.3	1.5	11	1.25
	Output Torque, Taccel	746	84.3	738	83.4	707	79.9	634	71.6
	Output Torque, Trun	738	83.4	707	79.9	557	63	453	51.2
	Efficiency %	64%		69%		70%		69%	

RATIO	CAPACITY	FS44 RATINGS BY INPUT SPEED, RPM							
		500		1000		2000		3000	
		Lb-In	Nm	Lb-In	Nm	Lb-In	Nm	Lb-In	Nm
5	Input Torque, Taccel	195	22	178	20.1	156	17.6	136	15.4
	Input Torque, Trun	180	20.4	156	17.6	117	13.2	97.1	11
	IT Thermal, Ttherm	180	20.4	156	17.6	89.8	10.1	51.7	5.84
	Output Torque, Taccel	888	100	820	92.6	716	80.9	616	69.6
	Output Torque, Trun	820	92.6	716	80.9	536	60.6	440	49.7
	Efficiency %	91%		92%		92%		91%	
7.5	Input Torque, Taccel	161	18.2	146	16.5	131	14.9	116	13.1
	Input Torque, Trun	149	16.9	131	14.8	99.9	11.3	82.9	9.37
	IT Thermal, Ttherm	149	16.9	131	14.8	77	8.7	46.4	5.25
	Output Torque, Taccel	1,070	121	996	112	892	101	778	87.9
	Output Torque, Trun	996	112	892	101	678	76.6	557	62.9
	Efficiency %	89%		91%		91%		90%	
10	Input Torque, Taccel	133	15	120	13.6	110	12.4	97.3	11
	Input Torque, Trun	124	14	109	12.4	84.1	9.5	69.8	7.89
	IT Thermal, Ttherm	124	14	109	12.4	72.1	8.14	42.6	4.82
	Output Torque, Taccel	1,160	131	1,080	122	984	111	861	97.3
	Output Torque, Trun	1,080	122	984	111	756	85.4	618	69.8
	Efficiency %	87%		90%		90%		89%	
15	Input Torque, Taccel	106	12	96.4	10.9	89.1	10.1	79.6	9
	Input Torque, Trun	101	11.4	88.9	10	68.9	7.78	57	6.44
	IT Thermal, Ttherm	101	11.4	88.9	10	60.2	6.8	36.3	4.1
	Output Torque, Taccel	1,340	152	1,270	144	1,170	133	1,030	117
	Output Torque, Trun	1,270	144	1,170	133	908	103	740	83.6
	Efficiency %	84%		88%		88%		87%	
20	Input Torque, Taccel	80.2	9.06	74.5	8.42	67.5	7.63	61	6.89
	Input Torque, Trun	77	8.7	68.2	7.71	52.9	5.98	43.8	4.95
	IT Thermal, Ttherm	77	8.7	68.2	7.71	48.3	5.45	29.7	3.35
	Output Torque, Taccel	1,310	147	1,250	142	1,150	129	1,020	115
	Output Torque, Trun	1,250	142	1,150	129	899	102	732	82.7
	Efficiency %	81%		84%		85%		84%	
25	Input Torque, Taccel	63.2	7.14	60.4	6.83	54.7	6.18	49.3	5.57
	Input Torque, Trun	62.1	7.02	55	6.22	42.6	4.82	35.3	3.99
	IT Thermal, Ttherm	62.1	7.02	55	6.22	42.6	4.82	28	3.16
	Output Torque, Taccel	1,280	145	1,260	142	1,150	129	1,020	115
	Output Torque, Trun	1,260	142	1,150	129	894	101	729	82.4
	Efficiency %	81%		83%		84%		83%	
30	Input Torque, Taccel	54.7	6.18	48.6	5.49	45.7	5.16	41.2	4.66
	Input Torque, Trun	51.9	5.87	46	5.2	35.7	4.03	29.6	3.34
	IT Thermal, Ttherm	51.9	5.87	46	5.2	35.7	4.03	22.7	2.57
	Output Torque, Taccel	1,220	137	1,160	131	1,090	124	972	110
	Output Torque, Trun	1,160	131	1,090	124	854	96.5	697	78.8
	Efficiency %	74%		79%		80%		79%	
40	Input Torque, Taccel	39.4	4.45	36.6	4.13	34.4	3.89	31.2	3.52
	Input Torque, Trun	39.1	4.42	34.7	3.92	26.9	3.04	22.3	2.52
	IT Thermal, Ttherm	39.1	4.42	34.7	3.92	26.9	3.04	19.2	2.17
	Output Torque, Taccel	1,110	125	1,100	124	1,040	118	929	105
	Output Torque, Trun	1,100	124	1,040	118	817	92.3	665	75.1
	Efficiency %	70%		75%		76%		75%	
50	Input Torque, Taccel	31.4	3.55	29.7	3.35	27.6	3.12	25	2.83
	Input Torque, Trun	31.4	3.55	27.8	3.14	21.6	2.44	17.9	2.02
	IT Thermal, Ttherm	31.4	3.55	27.8	3.14	21.6	2.44	17.1	1.94
	Output Torque, Taccel	1,070	121	1,070	121	1,010	114	895	101
	Output Torque, Trun	1,070	121	1,010	114	787	88.9	641	72.4
	Efficiency %	68%		72%		73%		72%	
60	Input Torque, Taccel	26.4	2.99	24.3	2.75	23	2.6	20.9	2.36
	Input Torque, Trun	26.2	2.96	23.2	2.62	18	2.04	15	1.69
	IT Thermal, Ttherm	26.2	2.96	23.2	2.62	18	2.04	15	1.69
	Output Torque, Taccel	1,020	115	1,010	114	965	109	860	97.2
	Output Torque, Trun	1,010	114	965	109	756	85.4	616	69.6
	Efficiency %	64%		69%		70%		69%	

Ratings for Size FS50

RATIO	CAPACITY	FS50 RATINGS BY INPUT SPEED, RPM							
		500		1000		2000		3000	
		Lb-In	Nm	Lb-In	Nm	Lb-In	Nm	Lb-In	Nm
5	Input Torque, Taccel	258	29.2	235	26.5	203	22.9	175	19.7
	Input Torque, Trun	237	26.8	203	22.9	150	17	124	14
	IT Thermal, Ttherm	237	26.8	187	21.1	91.7	10.4	52.8	5.97
	Output Torque, Taccel	1,170	133	1,080	122	932	105	791	89.3
	Output Torque, Trun	1,080	122	932	105	690	78	562	63.5
	Efficiency %	91%		92%		92%		91%	
7.5	Input Torque, Taccel	213	24.1	193	21.8	172	19.4	150	17
	Input Torque, Trun	197	22.3	171	19.3	129	14.6	107	12.1
	IT Thermal, Ttherm	197	22.3	166	18.8	78.6	8.88	47.4	5.36
	Output Torque, Taccel	1,420	161	1,320	149	1,170	132	1,010	114
	Output Torque, Trun	1,320	149	1,170	132	875	98.8	719	81.2
	Efficiency %	89%		91%		91%		90%	
10	Input Torque, Taccel	176	19.9	159	18	144	16.2	126	14.3
	Input Torque, Trun	164	18.6	143	16.2	109	12.3	90.5	10.2
	IT Thermal, Ttherm	164	18.6	143	16.2	73.6	8.32	43.6	4.92
	Output Torque, Taccel	1,530	173	1,430	162	1,290	146	1,120	127
	Output Torque, Trun	1,430	162	1,290	146	980	111	801	90.5
	Efficiency %	87%		90%		90%		89%	
15	Input Torque, Taccel	141	15.9	128	14.4	117	13.2	104	11.7
	Input Torque, Trun	133	15.1	117	13.2	89.3	10.1	74.2	8.38
	IT Thermal, Ttherm	133	15.1	117	13.2	61.5	6.95	37.1	4.19
	Output Torque, Taccel	1,770	200	1,680	190	1,540	174	1,350	152
	Output Torque, Trun	1,680	190	1,540	174	1,180	133	963	109
	Efficiency %	84%		88%		88%		87%	
20	Input Torque, Taccel	106	12	99	11.2	88.8	10	79.7	9
	Input Torque, Trun	102	11.6	89.7	10.1	68.8	7.77	57	6.44
	IT Thermal, Ttherm	102	11.6	89.7	10.1	49.3	5.57	30.3	3.42
	Output Torque, Taccel	1,720	194	1,660	188	1,510	170	1,330	150
	Output Torque, Trun	1,660	188	1,510	170	1,170	132	953	108
	Efficiency %	81%		84%		85%		84%	
25	Input Torque, Taccel	83.6	9.45	80.1	9.05	71.9	8.12	64.3	7.27
	Input Torque, Trun	82.4	9.31	72.4	8.18	55.5	6.27	46	5.2
	IT Thermal, Ttherm	82.4	9.31	72.4	8.18	46.3	5.23	28.6	3.23
	Output Torque, Taccel	1,690	191	1,670	188	1,510	170	1,330	150
	Output Torque, Trun	1,670	188	1,510	170	1,160	132	950	107
	Efficiency %	81%		83%		84%		83%	
30	Input Torque, Taccel	72.3	8.17	64.5	7.28	60.1	6.79	53.8	6.08
	Input Torque, Trun	68.9	7.78	60.5	6.84	46.4	5.25	38.5	4.35
	IT Thermal, Ttherm	68.9	7.78	60.5	6.84	37.1	4.19	23.2	2.63
	Output Torque, Taccel	1,610	182	1,530	173	1,440	163	1,270	143
	Output Torque, Trun	1,530	173	1,440	163	1,110	126	908	103
	Efficiency %	74%		79%		80%		79%	
40	Input Torque, Taccel	52.1	5.88	48.5	5.48	45.3	5.12	40.7	4.59
	Input Torque, Trun	51.9	5.86	45.7	5.16	35	3.96	29.1	3.28
	IT Thermal, Ttherm	51.9	5.86	45.7	5.16	30.9	3.5	19.6	2.21
	Output Torque, Taccel	1,470	166	1,460	165	1,380	155	1,210	137
	Output Torque, Trun	1,460	165	1,380	155	1,060	120	867	98
	Efficiency %	70%		75%		76%		75%	
50	Input Torque, Taccel	41.6	4.7	39.4	4.45	36.3	4.11	32.7	3.69
	Input Torque, Trun	41.6	4.7	36.6	4.14	28.1	3.18	23.3	2.64
	IT Thermal, Ttherm	41.6	4.7	36.6	4.14	27.5	3.11	17.5	1.98
	Output Torque, Taccel	1,420	161	1,420	161	1,320	150	1,170	132
	Output Torque, Trun	1,420	161	1,320	150	1,020	116	835	94.3
	Efficiency %	68%		72%		73%		72%	
60	Input Torque, Taccel	35	3.95	32.3	3.65	30.3	3.43	27.3	3.08
	Input Torque, Trun	34.7	3.93	30.6	3.46	23.5	2.65	19.5	2.2
	IT Thermal, Ttherm	34.7	3.93	30.6	3.46	23.5	2.65	15.8	1.79
	Output Torque, Taccel	1,350	153	1,340	152	1,270	144	1,120	127
	Output Torque, Trun	1,340	152	1,270	144	984	111	801	90.5
	Efficiency %	64%		69%		70%		69%	

RATIO	CAPACITY	FS60 RATINGS BY INPUT SPEED, RPM							
		500		1000		2000		3000	
		Lb-In	Nm	Lb-In	Nm	Lb-In	Nm	Lb-In	Nm
5	Input Torque, Taccel	441	49.8	395	44.6	320	36.2	269	30.4
	Input Torque, Trun	399	45.1	320	36.1	232	26.2	187	21.1
	IT Thermal, Ttherm	340	38.5	191	21.6	94	10.6	54.1	6.12
	Output Torque, Taccel	2,010	227	1,820	205	1,470	166	1,220	138
	Output Torque, Trun	1,820	205	1,470	166	1,060	120	846	95.6
	Efficiency %	91%		92%		92%		91%	
7.5	Input Torque, Taccel	363	41	324	36.6	271	30.6	227	25.7
	Input Torque, Trun	331	37.4	269	30.4	196	22.1	159	17.9
	IT Thermal, Ttherm	278	31.5	170	19.2	80.6	9.11	48.6	5.49
	Output Torque, Taccel	2,420	274	2,210	250	1,840	208	1,530	172
	Output Torque, Trun	2,210	250	1,840	208	1,330	150	1,070	120
	Efficiency %	89%		91%		91%		90%	
10	Input Torque, Taccel	299	33.8	266	30.1	226	25.5	190	21.5
	Input Torque, Trun	276	31.1	226	25.5	164	18.5	133	15
	IT Thermal, Ttherm	236	26.6	153	17.3	75.5	8.53	44.7	5.05
	Output Torque, Taccel	2,600	294	2,400	271	2,030	229	1,680	190
	Output Torque, Trun	2,400	271	2,030	229	1,470	167	1,180	133
	Efficiency %	87%		90%		90%		89%	
15	Input Torque, Taccel	239	27	214	24.2	184	20.8	155	17.5
	Input Torque, Trun	224	25.3	184	20.7	134	15.1	109	12.3
	IT Thermal, Ttherm	194	21.9	128	14.4	63.1	7.13	38	4.3
	Output Torque, Taccel	3,020	341	2,820	319	2,420	274	2,010	227
	Output Torque, Trun	2,820	319	2,420	274	1,760	199	1,410	159
	Efficiency %	84%		88%		88%		87%	
20	Input Torque, Taccel	180	20.3	166	18.7	139	15.7	119	13.4
	Input Torque, Trun	171	19.3	141	15.9	103	11.6	83.3	9.41
	IT Thermal, Ttherm	164	18.6	95.7	10.8	50.6	5.71	31.1	3.51
	Output Torque, Taccel	2,930	331	2,790	315	2,360	267	1,980	224
	Output Torque, Trun	2,790	315	2,360	267	1,740	197	1,390	157
	Efficiency %	81%		84%		85%		84%	
25	Input Torque, Taccel	142	16	134	15.2	113	12.7	95.6	10.8
	Input Torque, Trun	138	15.6	113	12.8	82.7	9.34	67.2	7.59
	IT Thermal, Ttherm	138	15.6	91.5	10.3	47.4	5.36	29.3	3.31
	Output Torque, Taccel	2,870	324	2,790	315	2,360	267	1,970	223
	Output Torque, Trun	2,790	315	2,360	267	1,730	196	1,390	157
	Efficiency %	81%		83%		84%		83%	
30	Input Torque, Taccel	123	13.8	108	12.2	94.2	10.6	80.1	9.06
	Input Torque, Trun	115	13	94.9	10.7	69.1	7.81	56.2	6.35
	IT Thermal, Ttherm	115	13	73.8	8.34	38	4.3	23.8	2.69
	Output Torque, Taccel	2,730	308	2,570	290	2,260	255	1,890	213
	Output Torque, Trun	2,570	290	2,260	255	1,660	187	1,320	150
	Efficiency %	74%		79%		80%		79%	
40	Input Torque, Taccel	88.2	9.97	81.3	9.19	71.1	8.03	60.5	6.84
	Input Torque, Trun	87	9.83	71.6	8.09	52.1	5.89	42.4	4.79
	IT Thermal, Ttherm	87	9.83	61.9	6.99	31.7	3.58	20.1	2.27
	Output Torque, Taccel	2,480	280	2,450	277	2,160	244	1,810	204
	Output Torque, Trun	2,450	277	2,160	244	1,580	179	1,260	143
	Efficiency %	70%		75%		76%		75%	
50	Input Torque, Taccel	70.2	7.93	66	7.46	57	6.44	48.6	5.49
	Input Torque, Trun	69.8	7.89	57.5	6.49	41.8	4.72	34	3.84
	IT Thermal, Ttherm	69.8	7.89	55.2	6.24	28.2	3.19	18	2.03
	Output Torque, Taccel	2,400	271	2,390	270	2,080	235	1,740	196
	Output Torque, Trun	2,390	270	2,080	235	1,520	172	1,220	137
	Efficiency %	68%		72%		73%		72%	
60	Input Torque, Taccel	59.3	6.7	54.1	6.12	47.6	5.37	40.6	4.59
	Input Torque, Trun	58.3	6.58	48	5.42	34.9	3.94	28.4	3.21
	IT Thermal, Ttherm	58.3	6.58	48	5.42	25.4	2.87	16.2	1.84
	Output Torque, Taccel	2,290	259	2,250	254	1,990	225	1,670	189
	Output Torque, Trun	2,250	254	1,990	225	1,460	165	1,170	132
	Efficiency %	64%		69%		70%		69%	

Ratings for Size FS76

RATIO	CAPACITY	FS76 RATINGS BY INPUT SPEED, RPM							
		500		1000		2000		3000	
		Lb-In	Nm	Lb-In	Nm	Lb-In	Nm	Lb-In	Nm
5	Input Torque, Taccel	922	104	812	91.7	636	71.8	534	60.3
	Input Torque, Trun	820	92.7	635	71.7	457	51.6	361	40.8
	IT Thermal, Ttherm	389	44	219	24.7	108	12.2	61.9	7
	Output Torque, Taccel	4,200	474	3,730	422	2,920	330	2,420	273
	Output Torque, Trun	3,730	422	2,920	330	2,100	237	1,630	185
	Efficiency %	91%		92%		92%		91%	
7.5	Input Torque, Taccel	765	86.4	679	76.8	558	63.1	469	52.9
	Input Torque, Trun	695	78.5	555	62.8	402	45.5	324	36.7
	IT Thermal, Ttherm	319	36	195	22	92.2	10.4	55.6	6.28
	Output Torque, Taccel	5,100	577	4,640	524	3,790	428	3,150	355
	Output Torque, Trun	4,640	524	3,790	428	2,730	309	2,180	246
	Efficiency %	89%		91%		91%		90%	
10	Input Torque, Taccel	633	71.5	560	63.3	469	53	393	44.5
	Input Torque, Trun	580	65.5	468	52.9	340	38.4	275	31.1
	IT Thermal, Ttherm	270	30.5	175	19.8	86.4	9.76	51.1	5.77
	Output Torque, Taccel	5,500	622	5,040	570	4,210	476	3,490	394
	Output Torque, Trun	5,040	570	4,210	476	3,060	345	2,430	275
	Efficiency %	87%		90%		90%		89%	
15	Input Torque, Taccel	505	57.1	451	50.9	384	43.4	324	36.6
	Input Torque, Trun	471	53.3	384	43.4	279	31.6	226	25.6
	IT Thermal, Ttherm	221	25	146	16.5	72.1	8.15	43.5	4.91
	Output Torque, Taccel	6,380	721	5,950	672	5,070	572	4,210	475
	Output Torque, Trun	5,950	672	5,070	572	3,680	416	2,940	332
	Efficiency %	84%		88%		88%		87%	
20	Input Torque, Taccel	381	43	350	39.6	292	33	249	28.1
	Input Torque, Trun	361	40.8	295	33.3	215	24.2	174	19.6
	IT Thermal, Ttherm	188	21.2	110	12.4	57.8	6.54	35.5	4.02
	Output Torque, Taccel	6,190	700	5,880	664	4,950	560	4,160	470
	Output Torque, Trun	5,880	664	4,950	560	3,640	411	2,910	328
	Efficiency %	81%		84%		85%		84%	
25	Input Torque, Taccel	300	33.9	284	32.1	236	26.7	201	22.7
	Input Torque, Trun	292	33	238	26.9	173	19.6	140	15.9
	IT Thermal, Ttherm	184	20.8	105	11.8	54.3	6.13	33.5	3.79
	Output Torque, Taccel	6,080	687	5,910	667	4,960	560	4,140	468
	Output Torque, Trun	5,910	667	4,960	560	3,630	410	2,900	327
	Efficiency %	81%		83%		84%		83%	
30	Input Torque, Taccel	260	29.4	228	25.8	198	22.4	168	19
	Input Torque, Trun	244	27.6	199	22.5	145	16.4	117	13.3
	IT Thermal, Ttherm	136	15.3	84.5	9.55	43.5	4.91	27.3	3.08
	Output Torque, Taccel	5,780	653	5,430	613	4,740	536	3,960	448
	Output Torque, Trun	5,430	613	4,740	536	3,480	393	2,770	313
	Efficiency %	74%		79%		80%		79%	
40	Input Torque, Taccel	187	21.1	172	19.4	149	16.9	127	14.4
	Input Torque, Trun	184	20.8	150	17	109	12.4	88.6	10
	IT Thermal, Ttherm	118	13.4	70.8	8	36.3	4.1	23	2.6
	Output Torque, Taccel	5,260	595	5,170	584	4,530	511	3,790	429
	Output Torque, Trun	5,170	584	4,530	511	3,320	375	2,640	299
	Efficiency %	70%		75%		76%		75%	
50	Input Torque, Taccel	149	16.8	139	15.8	120	13.5	102	11.5
	Input Torque, Trun	147	16.7	121	13.6	87.8	9.92	71.1	8.04
	IT Thermal, Ttherm	111	12.5	63.2	7.14	32.3	3.65	20.5	2.32
	Output Torque, Taccel	5,090	575	5,040	569	4,360	493	3,650	413
	Output Torque, Trun	5,040	569	4,360	493	3,200	362	2,550	288
	Efficiency %	68%		72%		73%		72%	
60	Input Torque, Taccel	126	14.2	114	12.9	99.9	11.3	85.3	9.64
	Input Torque, Trun	123	13.9	101	11.4	73.4	8.29	59.4	6.71
	IT Thermal, Ttherm	98.3	11.1	57	6.44	29.1	3.28	18.6	2.1
	Output Torque, Taccel	4,850	548	4,750	537	4,190	473	3,510	396
	Output Torque, Trun	4,750	537	4,190	473	3,080	347	2,440	276
	Efficiency %	64%		69%		70%		69%	

Cone Drive Stainless Steel Planetary Gearhead

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

Planetary 12-Digit Code

1	2	3	4	5	6	7	8	9	10	11	12
L	S	0	9	0	0	5	.	0	S	A	A

1 - 2 SERIES

L	S

3 - 5 SIZE OF UNIT

0	7	0
0	9	0
1	2	0

6 REVISION LEVEL

0

7, 8, 9 NOMINAL OVERALL RATIO

Single Stage		
5	.	0
7	.	0
1	0	.
3	.	0

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

10 TYPE OF UNIT (STAINLESS SERVO)

S - Standard Servo

11 - 12 SIZE OF UNIT

(see motor tables below for letter codes)
(Custom motor adaptation available upon request)

ALLEN BRADLEY		
A	A	MPS-A / B330P
A	B	MPS-A / B4540F, VPS-A1304D
A	C	MPS-A / B560F, VPS-B1653D
A	D	MPF-A/B310-A/B320-A/B330
A	E	MPF-A/B430
A	F	MPF-A/B4530-A/B4540
A	G	MPF-A/B540
KOLLMORGEN		
K	A	AKMH3 Code AC, AN
K	B	AKMH3 Code CC, CN
K	C	AKMH4 Code AC, AN
K	D	AKMH4 Code BK, BN
K	E	AKMH4 Code CC, CN
K	F	AKMH4 Code DK, DN
K	H	AKMH5 Code AC, AN
K	I	AKMH5 Code BK, BN
K	J	AKMH5 Code DK, DN
K	K	AKMH5 Code CC, CN
K	L	AKMH5 Code GC, GN
K	M	AKMH5 Code HC, HN
K	P	AKMH6 Code AC, AN
K	Q	AKMH6 Code CC, CN
K	R	AKMH6, Code DK, DN (NEMA Small C-Face)
K	S	AKM21/22/23/24-BN
K	T	AKM21/22/23/24-CK
K	U	AKM21/22/23/24-EN
K	V	AKM31/32/33-AN
K	W	AKM31/32/33-CN
K	X	AKM41/42/43/44-AN
K	Y	AKM41/42/43/44-BK
K	Z	AKM41/42/43/44-CN
K	1	AKM41/42/43/44-EK
K	2	AKM51/52/53/54-AN
K	3	AKM51/52/53/54-BK
K	4	AKM51/52/53/54-CN
K	5	AKM51E-DK
K	6	AKM51/52/53/54-BK
K	7	AKM62/63/64/65-AC
BALDOR		
B	A	SSBSM50N
B	B	SSBSM63N
B	C	SSBSM80C/N

Planetary Reducers

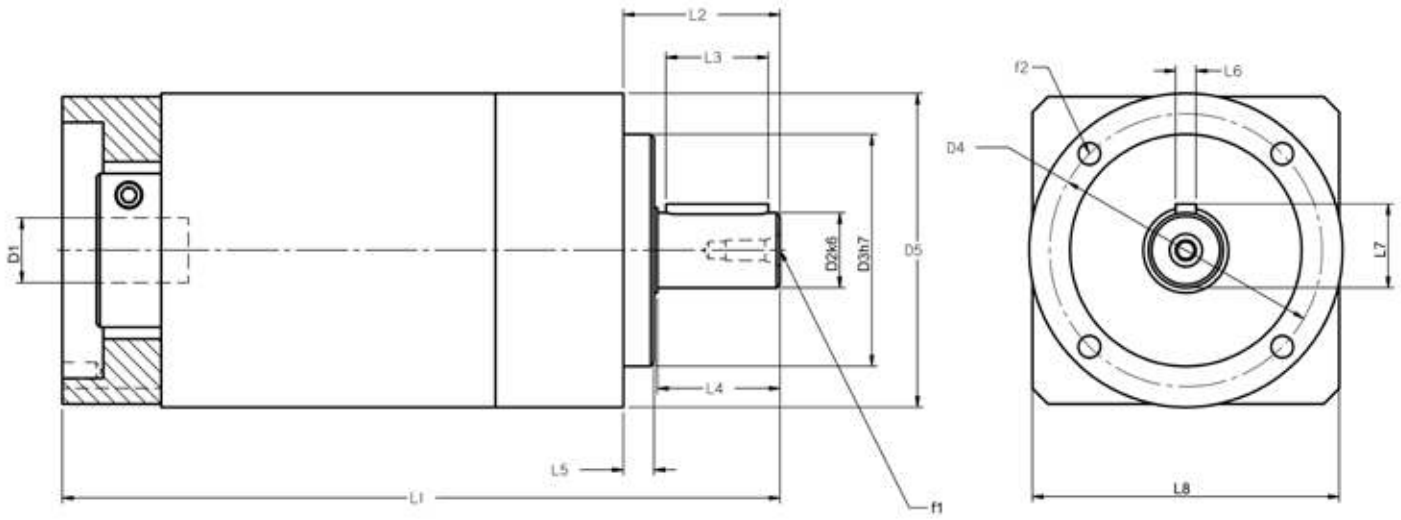
Cone Drive's stainless steel reducers are designed for sterile manufacturing environments. The smooth housings allow for easy cleaning and bacteria free surfaces. Both the worm and planetary reducers are designed to be compliant with government regulations and sanitary standards:

FSMA / 3-A / HACCP / EHEDG

RATIO	GEAR STAGES		OUTPUT TORQUE BY GEARHEAD SIZE					
			70		90		120	
			T2N	TMAX	T2N	TMAX	T2N	TMAX
3	1	lb. in.	177	319	354	620	885	1593
		Nm.	20	36	40	70	100	180
4	1	lb. in.	230	389	478	885	1062	1770
		Nm.	26	44	54	100	120	200
5	1	lb. in.	230	389	478	885	1062	1770
		Nm.	26	44	54	100	120	200
7	1	lb. in.	230	389	478	885	1062	1770
		Nm.	26	44	54	100	120	200
10	1	lb. in.	142	212	354	664	929	1593
		Nm.	16	24	40	75	105	180
12	2	lb. in.	319	398	708	885	1505	1903
		Nm.	36	45	80	100	170	215
16	2	lb. in.	372	460	885	1106	1859	2257
		Nm.	42	52	100	125	210	255
20	2	lb. in.	372	460	885	1106	1859	2257
		Nm.	42	52	100	125	210	255
25	2	lb. in.	372	460	885	1106	1859	2257
		Nm.	42	52	100	125	210	255
35	2	lb. in.	372	460	885	1106	1859	2257
		Nm.	42	52	100	125	210	255
40	2	lb. in.	372	460	885	1106	1859	2257
		Nm.	42	52	100	125	210	255
50	2	lb. in.	372	460	885	1106	1859	2257
		Nm.	42	52	100	125	210	255
70	2	lb. in.	372	460	885	1106	1859	2257
		Nm.	42	52	100	125	210	255
100	2	lb. in.	142	212	354	664	929	1593
		Nm.	16	24	40	75	105	180

INERTIA (at the input)	RATIO	GEAR STAGES		SIZE		
				70	90	120
	3	1	$kgcm^2$	0.45	1.37	6.54
			$lb\text{-}in^2$	0.154	0.468	1.640
	4	1	$kgcm^2$	0.38	1.14	4.8
			$lb\text{-}in^2$	0.130	0.390	1.640
	5	1	$kgcm^2$	0.36	1.05	4.05
			$lb\text{-}in^2$	0.123	0.359	1.384
	7	1	$kgcm^2$	0.35	0.97	3.4
			$lb\text{-}in^2$	0.120	0.331	1.162
	10	1	$kgcm^2$	0.34	0.93	3.10
			$lb\text{-}in^2$	0.116	0.319	1.059
	12	2	$kgcm^2$	0.38	1.14	4.8
			$lb\text{-}in^2$	0.130	0.390	1.640
	16	2	$kgcm^2$	0.38	1.14	4.8
			$lb\text{-}in^2$	0.130	0.390	1.640
	20	2	$kgcm^2$	0.36	1.05	4.05
			$lb\text{-}in^2$	0.123	0.359	1.384
	25	2	$kgcm^2$	0.36	1.05	4.05
			$lb\text{-}in^2$	0.123	0.359	1.384
	35	2	$kgcm^2$	0.35	0.97	3.4
			$lb\text{-}in^2$	0.120	0.331	1.162
	40	2	$kgcm^2$	0.34	0.93	3.10
			$lb\text{-}in^2$	0.116	0.319	1.059
	50	2	$kgcm^2$	0.34	0.93	3.10
			$lb\text{-}in^2$	0.116	0.319	1.059
	70	2	$kgcm^2$	0.34	0.93	3.10
			$lb\text{-}in^2$	0.116	0.319	1.059
	100	2	$kgcm^2$	0.34	0.93	3.10
			$lb\text{-}in^2$	0.116	0.319	1.059

	GEAR STAGES		SIZE		
			70	90	120
Emergency Stop			2 x T2N		
Degree of Protection			IP66		
Backlash	1	arc-mins	< 10	< 10	< 8
	2	arc-mins	< 14	< 14	< 12
Allowable Radial Load[1]		lbs.	204	337	674
		N	910	1500	3000
Allowable Axial Load[1]		lbs.	112	225	337
		N	500	1000	1500
Efficiency	1	%	94		
	2	%	92		
Lifetime		Hours	30,000		
Weight	1	lbs.	4.4	8.6	19.4
		kg.	2.0	3.9	8.8
	2	lbs.	5.1	10.3	24.0
		kg.	2.3	4.7	10.9



LS SERIES		UNIT SIZE					
		70		90		120	
		MM	INCH	MM	INCH	MM	INCH
D1 min standard	Motor shaft diameter	14	0.551	19	0.748	24	0.945
D1 max standard	Motor shaft diameter	16	0.63	24	0.945	32	1.26
D2 k6	Output shaft diameter	16	0.63	22	0.866	32	1.26
D3 h7	Pilot diameter	52	2.047	68	2.677	90	3.543
D4	Bolt circle diameter	62	2.441	80	3.15	108	4.252
D5	Housing diameter	70	2.756	92	3.622	122	4.803
f1	Shaft thread	M5 x 12		M6 x 16		M10 x 22	
f2	Mounting hole	M6 x 12		M6 x 14		M8 x 18	
L1 1-stage	Gearhead length	131	5.157	174	6.85	232	9.134
L1 2-stage		153	6.024	207	8.15	271	10.669
L2	Shaft length	36	1.417	46	1.811	70	2.756
L3	Key length	25	0.984	30	1.181	50	1.969
L4	Useable shaft length	28	1.102	36	1.417	58	2.283
L5	Pilot height	7	0.276	9	0.354	11	0.433
L6	Key width	5	0.197	6	0.236	8	0.315
L7	Key height	18	0.709	24.6	0.969	34.8	1.37

GLOBAL LOCATIONS

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