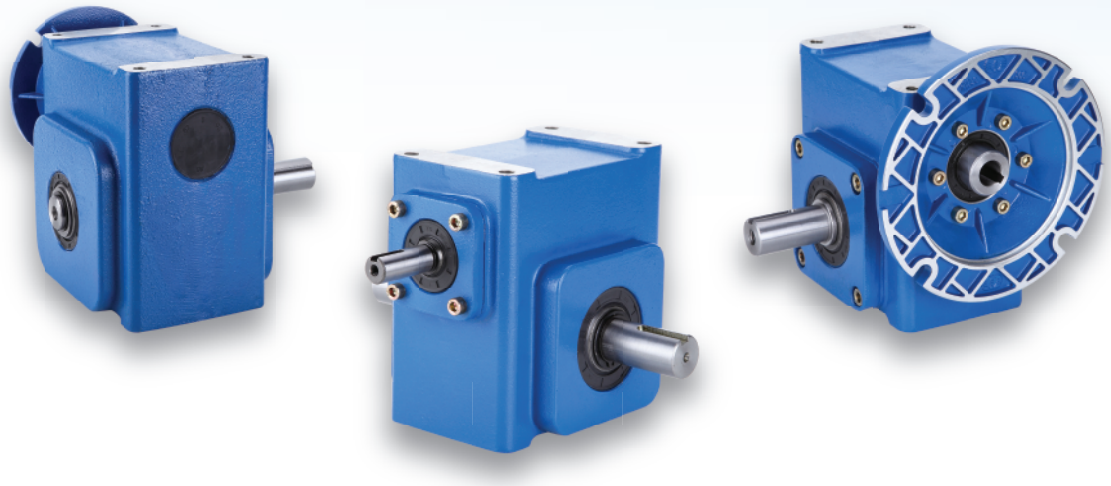
Haitec-GR®

Worm Gear Speed Reducer

X-series



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INTRODUCTION

X-SERIES Worm Gear Speed Reducer

Since 1990, **Haitec Transmission Equipment Co., Ltd.** has been manufacturing different types of gears and reducers for various industry sectors. With close to 30 years in manufacturing gear boxes, Haitec has emerged as a brand of high quality and durable gearboxes manufacturer in both the local and international market.

Haitec not only provides standard products, but also customized products for your specific project needs. Haitec offers the full range of service: from design of the gearbox to production and after sale support to help clients with all that they need throughout the project cycle.

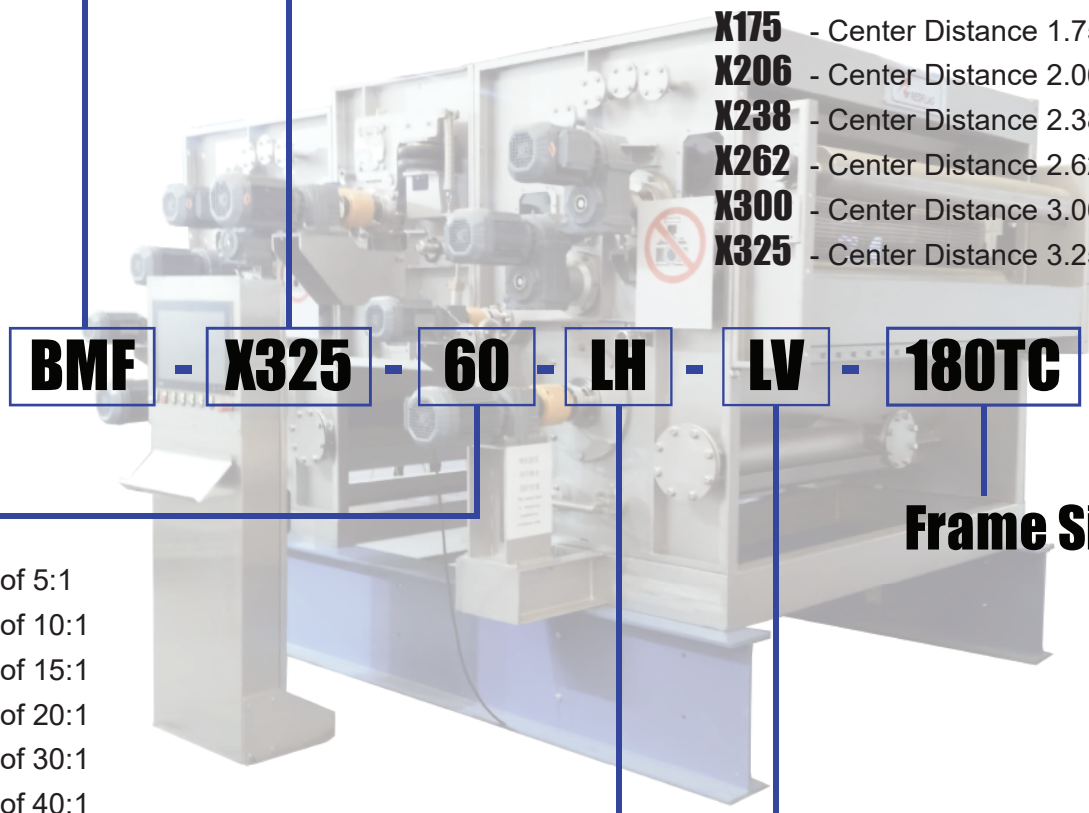
X-Series Worm Gear Speed Reducer is the next generation speed reducer from Haitec Transmission Equipment Co., Ltd. for wide ranges of application including textile, automotive, lighting manufacturers and heavy machinary facitlities etc.

Features of the X-series includes:

- light weight alumimium body: easy to transport and install while maintaining the same durablility to meet different site conditions
- can be interchanged with existing product from other manufacturers. (See **Interchange Guide** section)
- different outer coat of paint to best match the condition needed to prolong the life of the reducer.
- worm and gear components made of durable material to maximize the life of the reducers
- various size suitable to wide range of application
- low noise and high stability
- Can be used in environment other than atmospheric pressure

PRODUCT NUMBERING SYSTEM

For size selection and ordering, users can refer to the following Product Numbering System to choose the configuration of the worm gear speed reducer X-series.



BMF - X325 - 60 - LH - LV - 180TC

Model Name:

- **B** - Basic Unit
- **BMF** - Basic-Motor-Flange
- **P** - Horizontal Base Unit
- **PMF** - Horizontal Base-Motor-Flange

Size:

- **X133** - Center distance 1.33”
- **X154** - Center distance 1.54”
- **X175** - Center Distance 1.75”
- **X206** - Center Distance 2.06”
- **X238** - Center Distance 2.38”
- **X262** - Center Distance 2.62”
- **X300** - Center Distance 3.00”
- **X325** - Center Distance 3.25”

Ratio:

- **5** = ratio of 5:1
- **10** = ratio of 10:1
- **15** = ratio of 15:1
- **20** = ratio of 20:1
- **30** = ratio of 30:1
- **40** = ratio of 40:1
- **50** = ratio of 50:1
- **60** = ratio of 60:1
- **80** = ratio of 80:1
- **100** = ratio of 100:1

Frame Size:

- **56C**
- **140TC**
- **180TC**
- **210TC**
- **250TC**

Output Flange:

- **LV** - Right Output
- **LW** - Left Output

Assembly Type:

- **RH** - Single Right Output Shaft
- **LH** - Single Left Output Shaft
- **D** - Dual Left and Right Output Shaft
- **OH** - Hollow Output Shaft

SIZE SELECTION OUTLINE

Below is the **Size Selection Outline** based on different **Service Factor** of **1.0**, **1.25** and **1.75**. (To determine the Service Factor value, please refer to Appendix A for further details or contact our representative.) By locating the **INPUT HP** (along top of the columns) and selecting the needed reduction **RATIO** (down the first column of the table), the best size of worm gear can be identified.

* Please contact our resaler or office if assistance is needed on selecting the correct size

SERVICE FACTOR 1.0

RATIO	INPUT HP									
	1/6	1/4	1/3	1/2	3/4	1	1.5	2	3	5
5	X133	X133	X133	X133	X133	X175	X154	X206	X238	X262
10	X133	X133	X133	X133	X154	X175	X206	X238	X262	X325
15	X133	X133	X133	X154	X175	X206	X238	X262	X300	X325
20	X133	X133	X133	X154	X175	X206	X238	X262	X300	-
25	X133	X133	X154	X154	X206	X238	X262	X300	X325	-
30	X133	X133	X154	X154	X206	X238	X262	X300	-	-
40	X133	X154	X175	X206	X238	X262	X300	X325	-	-
50	X133	X175	X175	X206	X262	X300	X325	X325	-	-
60	X154	X175	X206	X262	X262	X300	X325	-	-	-

SERVICE FACTOR 1.25

RATIO	INPUT HP									
	1/6	1/4	1/3	1/2	3/4	1	1.5	2	3	5
5	X133	X133	X133	X133	X133	X154	X175	X206	X262	X325
10	X133	X133	X133	X133	X154	X175	X206	X238	X300	X325
15	X133	X133	X133	X154	X206	X206	X262	X300	X325	-
20	X133	X133	X133	X175	X206	X238	X262	X300	X325	-
25	X133	X154	X154	X206	X238	X262	X300	X325	-	-
30	X133	X154	X154	X206	X238	X262	X300	X325	-	-
40	X133	X154	X175	X238	X262	X300	X325	-	-	-
50	X154	X175	X206	X238	X262	X300	X325	-	-	-
60	X154	X206	X206	X238	X300	X325	-	-	-	-

SERVICE FACTOR 1.75

RATIO	INPUT HP									
	1/6	1/4	1/3	1/2	3/4	1	1.5	2	3	5
5	X133	X133	X133	X133	X154	X175	X206	X238	X300	-
10	X133	X133	X133	X154	X175	X206	X238	X300	X325	-
15	X133	X133	X154	X206	X206	X238	X300	X300	-	-
20	X133	X154	X154	X206	X238	X262	X300	X325	-	-
25	X133	X175	X206	X238	X262	X300	X325	-	-	-
30	X133	X175	X206	X238	X262	X300	X325	-	-	-
40	X154	X175	X206	X238	X300	X325	-	-	-	-
50	X175	X206	X238	X262	X300	X325	-	-	-	-
60	X175	X206	X238	X300	X325	X325	-	-	-	-

SIZE SELECTION GUIDE

Output RPM & Capacity Selection Table

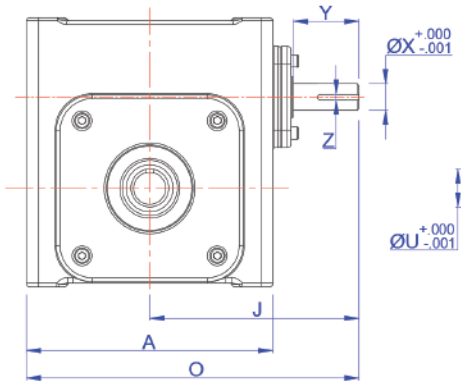
Model Size		Ratio									
		5	10	15	20	30	40	50	60	80	100
X133	Input HP	1.1	0.66	0.49	0.4	0.28	0.21	0.17	0.15	0.11	0.08
	Output Torque (lb-in)	152	182	196	198	198	194	179	151	130	105
	Output RPM	350	175	117	88	58	44	35	29	22	17.5
	Output Overhung Load (lbs.)	145	145	145	145	145	145	145	145	145	145
X154	Input HP	1.54	0.94	0.64	0.56	0.4	0.3	0.24	0.19	0.16	0.13
	Output Torque (lb-in)	211	257	277	283	281	276	263	211	192	178
	Output RPM	350	175	117	88	58	44	35	29	22	17.5
	Output Overhung Load (lbs.)	256	256	256	256	256	256	256	256	256	256
X175	Input HP	1.84	1.26	0.8	0.77	0.47	0.41	0.33	0.28	0.25	0.21
	Output Torque (lb-in)	253	345	317	383	330	375	350	330	300	280
	Output RPM	350	175	117	88	58	44	35	29	22	17.5
	Output Overhung Load (lbs.)	256	256	256	256	256	256	256	256	256	256
X206	Input HP	2.96	1.89	1.24	1.1	0.71	0.6	0.48	0.44	0.33	0.28
	Output Torque (lb-in)	405	518	485	566	510	553	515	520	400	375
	Output RPM	350	175	117	88	58	44	35	29	22	17.5
	Output Overhung Load (lbs.)	450	450	450	450	450	450	450	450	450	450
X238	Input HP	3.67	2.654	1.72	1.56	1.01	0.85	0.7	0.62	0.49	0.44
	Output Torque (lb-in)	506	726	675	802	735	784	776	734	595	580
	Output RPM	350	175	117	88	58	44	35	29	22	17.5
	Output Overhung Load (lbs.)	480	480	480	480	480	480	480	480	480	480
X262	Input HP	4.91	3.2	2.18	2.03	1.32	1.09	0.92	0.8	0.62	0.56
	Output Torque (lb-in)	675	886	863	1055	975	1031	1031	975	750	745
	Output RPM	350	175	117	88	58	44	35	29	22	17.5
	Output Overhung Load (lbs.)	652	652	652	652	652	652	652	652	652	652
X300	Input HP	5.96	4.84	3.59	2.99	2.06	1.66	1.38	1.17	0.8	0.75
	Output Torque (lb-in)	855	1350	1458	1580	1515	1544	1544	1481	970	1000
	Output RPM	350	175	117	88	58	44	35	29	22	17.5
	Output Overhung Load (lbs.)	810	810	810	810	810	810	810	810	810	810
X325	Input HP	8	6.23	3.96	4.18	2.71	2.25	1.91	1.68	1.38	1.17
	Output Torque (lb-in)	1148	1730	1583	2194	2025	2145	2145	2063	1700	1600
	Output RPM	350	175	117	88	58	44	35	29	22	17.5
	Output Overhung Load (lbs.)	1035	1035	1035	1035	1035	1035	1035	1035	1035	1035

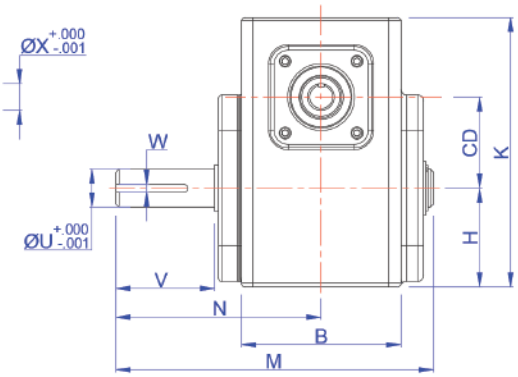
*Note: All ratings are based on 1.0 Service Factor with all Input RPM at 1750

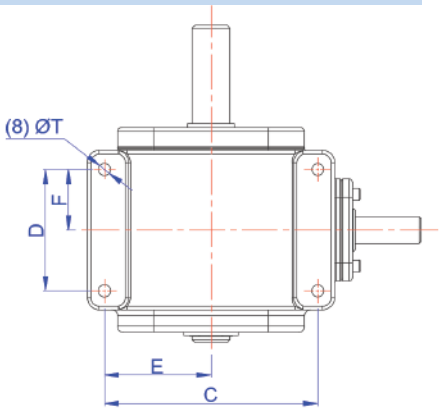
MODEL B

Worm Gear Speed Reducers

Basic Unit







Unit Base

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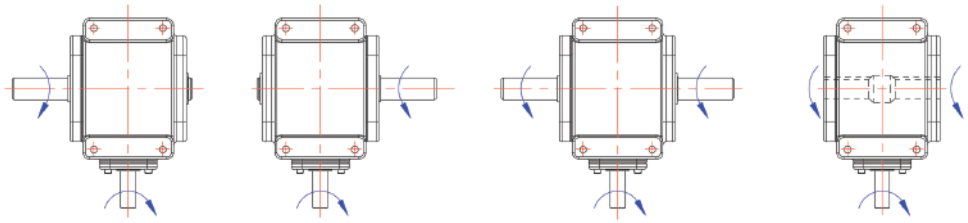


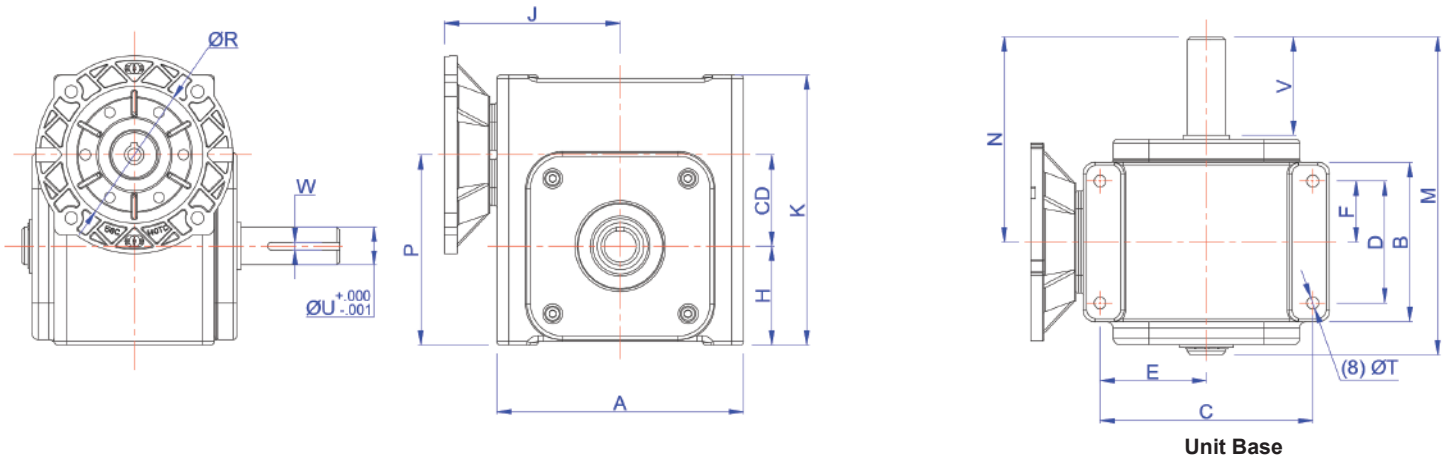
LH RH D OH

MODEL SIZE	DIMENSIONS (Inches)																				
	CD	A	B	C	D	E	F	H	J	K	M	N	O	T		U	V	W	X	Y	Z
														TAP Size	Depth						
X133	1.33	4.25	2.88	3.25	2.00	1.63	1.00	1.72	3.91	4.66	6.03	4.00	6.03	5/16 - 18	0.50	0.625	2.00	3/16 x 3/16 L = 1.00	0.500	1.31	1/8 x 1/8 L = 0.625
X154	1.54	5.13	3.69	4.19	2.75	2.09	1.38	1.91	4.69	5.38	6.84	4.31	7.25	5/16 - 18	0.50	0.750	1.78	3/16 x 3/16 L = 1.00	0.625	1.56	3/16 x 3/16 L = 0.8125
X175	1.75	5.50	3.38	4.19	2.75	2.09	1.38	2.06	4.88	5.75	6.84	4.31	7.63	5/16 - 18	0.50	0.875	1.78	3/16 x 3/16 L = 1.00	0.625	1.56	3/16 x 3/16 L = 0.8125
X206	2.06	6.00	3.75	5.00	2.88	2.50	1.44	2.28	5.13	6.38	7.28	4.69	8.13	3/8 - 16	0.56	1.000	2.09	1/4 x 1/4 L = 1.25	0.625	1.56	3/16 x 3/16 L = 0.8125
X238	2.38	6.38	4.06	5.00	2.88	2.50	1.44	2.50	5.75	6.94	7.81	5.09	8.94	3/8 - 16	0.56	1.125	2.37	1/4 x 1/4 L = 1.25	0.750	2.00	3/16 x 3/16 L = 1.00
X262	2.62	7.38	4.44	6.38	3.38	3.19	1.69	2.94	6.31	8.00	8.53	5.63	10.00	3/8 - 16	0.56	1.125	2.63	1/4 x 1/4 L = 1.94	0.075	2.00	3/16 x 3/16 L = 1.00
X300	3.00	8.12	5.50	7.00	4.00	3.50	2.00	3.25	6.88	8.88	10.02	6.75	10.94	7/16 - 14	0.88	1.250	3.25	1/4 x 1/4 L = 2.25	0.875	2.24	3/16 x 3/16 L = 1.00
X325	3.25	9.00	5.00	7.50	4.00	3.75	2.00	3.50	7.44	9.38	10.81	7.06	11.94	7/16 - 14	0.66	1.375	3.25	5/16 x 5/16 L = 2.44	0.875	2.34	3/16 x 3/16 L = 1.00

MODEL BMF

Worm Gear Speed Reducers

Basic-Motor-Flange

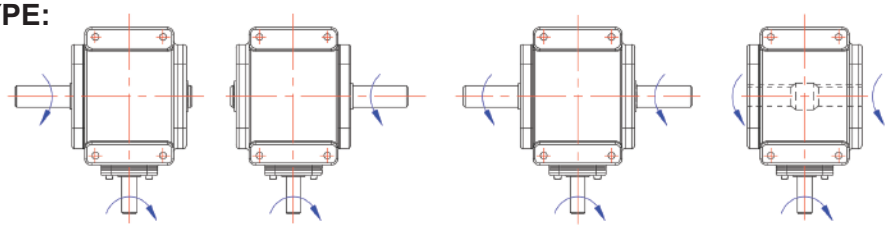


Unit Base

FLANGE SIZE:

SIZE	Bore	Keyway
56C	0.625	3/16
140TC	0.875	3/16
180TC	1.125	1/4
210TC	1.375	5/16

ASSEMBLY TYPE:

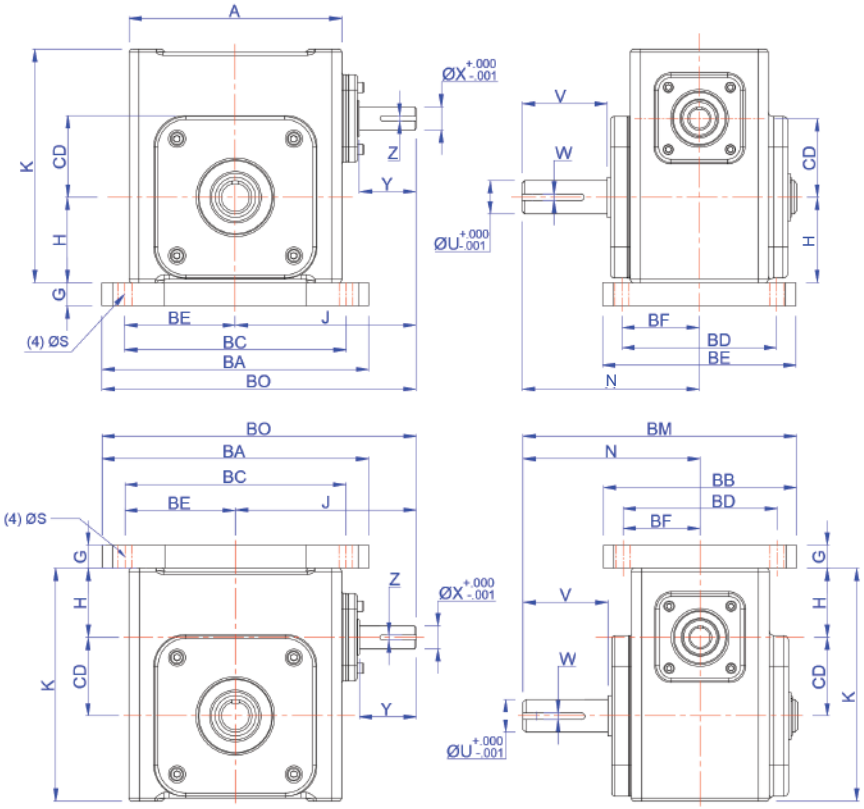


LH RH D OH

MODEL SIZE	DIMENSIONS (Inches)																					
	CD	A	B	C	D	E	F	H	J			K	M	N	P	R		T		U	V	W
									56C	140TC	180TC					56C 140TC	180TC 210TC	TAP Size	Depth			
X133	1.33	4.25	2.88	3.25	2.00	1.63	1.00	1.72	3.94	/	/	4.66	6.03	4.00	3.06	6.50	9.00	5/6 - 18	0.50	0.625	2.00	3/16 x 3/16 L = 1.00
X154	1.54	5.13	3.69	4.19	2.75	2.09	1.38	1.91	4.50	/	/	5.38	6.84	4.31	3.44	6.50	9.00	5/6 - 18	0.50	0.750	1.78	3/16 x 3/16 L = 1.00
X175	1.75	5.50	3.69	4.19	2.75	2.09	1.38	2.06	4.69	/	/	5.75	6.81	4.31	3.81	6.50	9.00	5/6 - 18	0.50	0.875	1.88	3/16 x 3/16 L = 1.00
X206	2.06	6.00	3.81	5.00	2.88	2.50	1.44	2.28	5.06	/	/	6.38	7.28	4.69	4.34	6.50	9.00	3/8 - 16	0.56	1.000	2.09	1/4 x 1/4 L = 1.25
X238	2.38	6.38	4.06	5.00	2.88	2.50	1.44	2.50	5.25	5.25	5.69	6.94	7.81	5.09	4.88	6.50	9.00	3/8 - 16	0.56	1.125	2.38	1/4 x 1/4 L = 1.25
X262	2.62	7.38	4.44	6.38	3.38	3.19	1.69	2.94	5.75	5.75	6.19	8.00	8.53	5.63	5.56	6.50	9.00	3/8 - 16	0.56	1.125	2.63	1/4 x 1/4 L = 1.94
X300	3.00	8.12	5.25	7.00	4.00	3.50	2.00	3.25	6.20	6.20	6.64	8.88	10.02	6.75	6.25	6.50	9.00	7/16 - 14	0.88	1.125	3.25	1/4 x 1/4 L = 2.25
X325	3.25	9.00	5.88	7.50	4.00	3.75	2.00	3.50	6.56	6.56	7.00	9.38	10.81	7.06	6.75	6.50	9.00	7/16 - 14	0.66	1.375	3.25	5/16 x 5/16 L = 2.44

MODEL P Horizontal Base Unit

Worm Gear Speed Reducers



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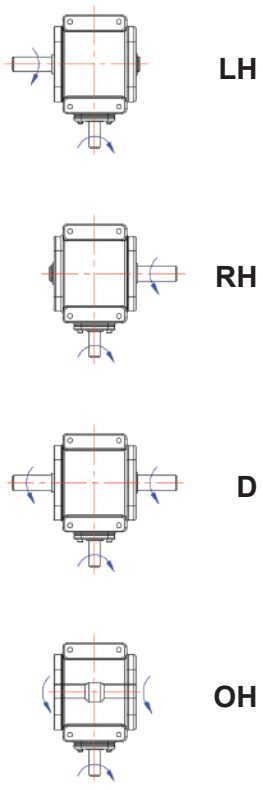
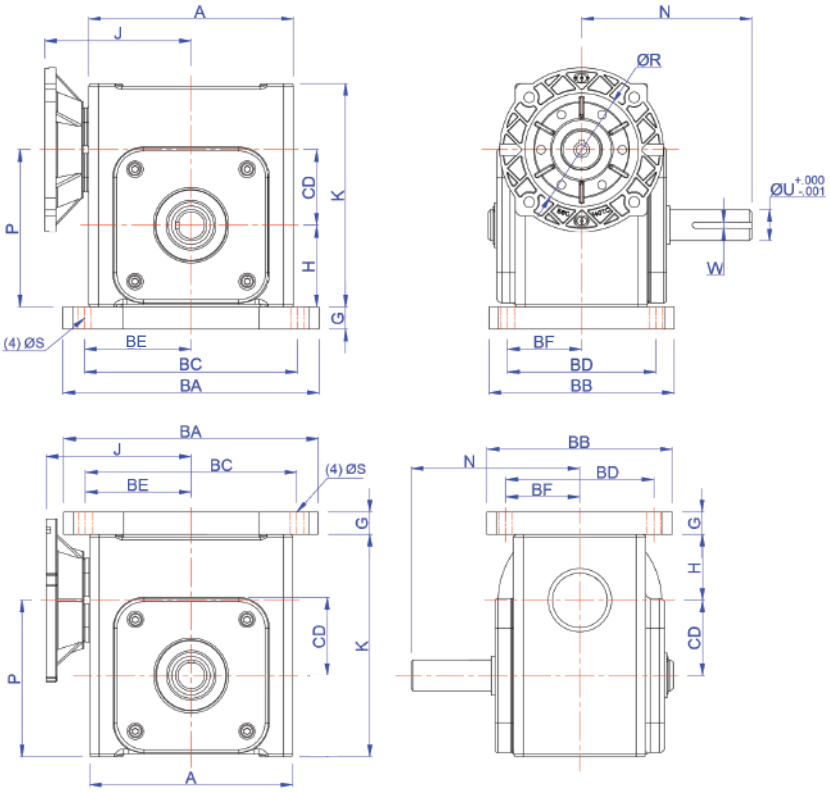
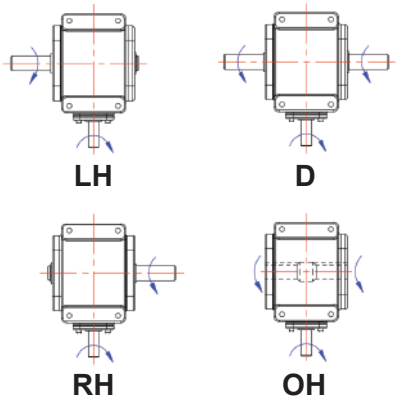


MODEL SIZE	DIMENSIONS (Inches)																			
	CD	A	G	H	J	K	N	S	V	W	X	Y	Z	BA	BB	BC	BD	BE	BO	BM	BF
X133	1.33	4.25	0.53	1.72	3.91	4.66	4.00	Φ.34	2.00	3/16 x 3/16 L = 1.00	0.500	1.31	1/8 x 1/8 L = 0.625	5.38	4.19	4.38	3.31	2.19	6.59	6.09	1.66
X154	1.54	5.13	0.59	1.91	4.69	5.38	4.31	Φ.41	1.78	3/16 x 3/16 L = 1.00	0.625	1.56	3/16 x 3/16 L = 0.81	6.44	5.44	5.25	4.31	2.63	7.91	7.03	2.16
X175	1.75	5.50	0.69	2.06	4.88	5.75	4.31	Φ.41	1.78	3/16 x 3/16 L = 1.00	0.625	1.56	3/16 x 3/16 L = 0.81	7.00	5.59	5.75	4.50	2.88	8.38	7.16	2.25
X206	2.06	6.00	0.72	2.28	5.13	6.38	4.69	Φ.47	2.09	1/4 x 1/4 L = 1.25	0.625	1.56	3/16 x 3/16 L = 0.81	7.75	5.94	6.38	4.69	3.19	9.00	7.66	2.34
X238	2.38	6.38	0.75	2.50	5.75	6.94	5.08	Φ.47	2.37	1/4 x 1/4 L = 1.25	0.750	2.00	3/16 x 3/16 L = 1.00	8.50	6.19	7.06	4.88	3.53	10.00	8.19	2.44
X262	2.62	7.38	0.75	2.94	6.31	8.00	5.63	Φ.53	2.62	1/4 x 1/4 L = 1.94	0.750	2.00	3/16 x 3/16 L = 1.00	9.63	6.66	8.00	5.25	4.00	11.13	8.97	2.63
X300	3.00	8.12	0.75	3.25	6.81	8.88	6.75	Φ.53	3.25	1/4 x 1/4 L = 2.25	0.875	2.24	3/16 x 3/16 L = 1.00	10.00	7.50	8.44	5.88	4.22	11.88	10.50	2.94
X325	3.25	9.00	0.88	3.50	7.44	9.38	7.06	Φ.53	3.25	5/16 x 5/16 L = 2.44	0.875	2.31	3/16 x 3/16 L = 1.00	11.19	7.66	9.50	6.13	4.75	13.03	10.94	3.06

MODEL PMF Horizontal Base-Motor-Flange

Worm Gear Speed Reducers



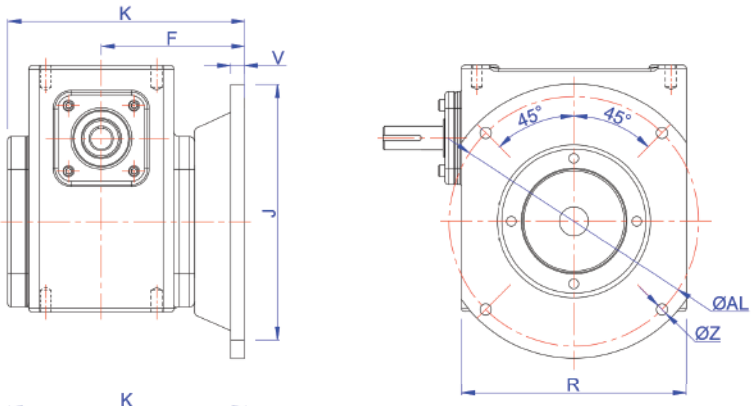


FLANGE SIZE:

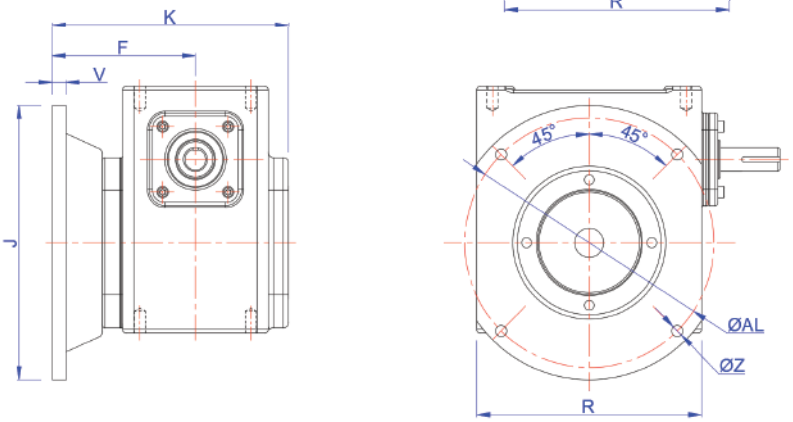
SIZE	Bore	Keyway
56C	0.625	3/16
140TC	0.875	3/16
180TC	1.125	1/4
210TC	1.375	5/16

MODEL SIZE	DIMENSIONS (Inches)																			
	CD	A	G	H	J			K	N	P	R		S	U	W	BA	BB	BC	BD	BE	BF
					56C	140TC	180TC				56C 140TC	180TC 210TC									
X133	1.33	4.25	0.53	1.72	3.96	/	/	4.66	4.00	3.05	6.50	9.00	Φ.34	0.625	3/16 x 3/16 L = 1.00	5.38	4.19	4.38	3.31	2.19	1.66
X154	1.54	5.13	0.59	1.91	4.50	/	/	5.38	4.31	3.45	6.50	9.00	Φ.41	0.750	3/16 x 3/16 L = 1.00	6.44	5.44	5.25	4.31	2.63	2.16
X175	1.75	5.50	0.69	2.06	4.37	/	/	5.75	4.31	3.81	6.50	9.00	Φ.41	0.875	3/16 x 3/16 L = 1.00	7.00	5.56	5.75	4.50	2.88	2.25
X206	2.06	6.00	0.72	2.28	4.76	/	/	6.38	4.69	4.34	6.50	9.00	Φ.47	1.000	1/4 x 1/4 L = 1.25	7.75	5.76	6.38	4.69	3.19	2.34
X238	2.38	6.38	0.75	2.50	5.10	5.25	5.69	6.94	5.09	4.88	6.50	9.00	Φ.47	1.125	1/4 x 1/4 L = 1.25	8.50	6.19	7.06	4.88	3.53	2.44
X262	2.62	7.38	0.75	2.94	5.69	5.75	6.19	8.00	5.63	5.57	6.50	9.00	Φ.53	1.125	1/4 x 1/4 L = 1.94	9.63	6.50	8.00	5.25	4.00	2.63
X300	3.00	8.12	0.75	3.25	5.67	6.20	6.64	8.88	6.75	6.25	6.50	9.00	Φ.53	1.250	1/4 x 1/4 L = 2.25	10.00	7.36	8.44	5.88	4.22	2.94
X325	3.25	9.00	0.88	3.50	5.69	6.56	7.00	9.38	7.06	6.75	6.50	9.00	Φ.53	1.375	5/16 x 5/16 **L = 2.44**	11.19	7.75	9.50	6.13	4.75	3.06

Output Flange LV:
[Right Output]



Output Flange LW:
[Left Output]



MODEL SIZE	DIMENSIONS (Inches)						
	F	J	R	Z	AL	K	V
X133	2.52	5.92	4.50	0.34	5.00	4.55	0.38
X154	2.87	5.92	4.50	0.34	5.00	5.32	0.38
X175	3.18	6.64	5.00	0.34	5.88	5.62	0.38
X206	3.69	7.88	5.99	0.41	7.00	6.25	0.44
X238	3.67	8.39	6.27	0.41	7.50	6.37	0.44
X262	3.64	8.88	6.67	0.41	8.00	6.51	0.50
X300	3.72	9.89	7.37	0.41	9.00	7.22	0.50
X325	3.98	9.89	7.37	0.41	9.000	7.42	0.50

*Below tables are for reference only. Please contact our customer service to verify.

X-Series: X133

Manufacturer	Model Number	Center Distance [in]
Boston Gear	713	1.33
Grove Gear	813	1.33
Hub City	130	1.33
Morse-Raider	133	1.33

X-Series: X238

Manufacturer	Model Number	Center Distance [in]
Boston Gear	724	2.38
Grove Gear	824	2.38
Hub City	240	2.38
Morse-Raider	237	2.37

X-Series: X154

Manufacturer	Model Number	Center Distance [in]
Boston Gear	715	0.54
Grove Gear	815	1.54
Hub City	N/A	N/A
Morse-Raider	154	1.54

X-Series: X262

Manufacturer	Model Number	Center Distance [in]
Boston Gear	726	2.62
Grove Gear	826	2.63
Hub City	260	2.63
Morse-Raider	262	2.62

X-Series: X175

Manufacturer	Model Number	Center Distance [in]
Boston Gear	718	1.75
Grove Gear	818	1.75
Hub City	180	1.75
Morse-Raider	175	1.75

X-Series: X300

Manufacturer	Model Number	Center Distance [in]
Boston Gear	730	3.00
Grove Gear	830	3.00
Hub City	300	3.00
Morse-Raider	300	3.00

X-Series: X206

Manufacturer	Model Number	Center Distance [in]
Boston Gear	721	2.06
Grove Gear	821	2.06
Hub City	210	2.06
Morse-Raider	206	2.06

X-Series: X325

Manufacturer	Model Number	Center Distance [in]
Boston Gear	732	3.25
Grove Gear	832	3.25
Hub City	320	3.25
Morse-Raider	325	3.25

SERVICE FACTOR GUIDE

Worm Gear Speed Reducers

AGMA Load Classification

Load class (S.F.)	Up to 3 hrs Total Operation Per Day	3 to 10 hrs Total Operation Per Day	Over 10 hrs . Total Operation Per Day
1.00	Moderate Shock Load	Uniform Load	
1.25		Moderate Shock Load	Uniform Load
1.5	Heavy Shock Load		Moderate Shock Load
1.75		Heavy Shock Load	
2.0			Heavy Shock Load

The Load Classification and Service Factor charts are for general guidelines in determining required service factors and are based on the AGMA guideline.

For other operating conditions or unusual application, please contact our office to determine the best model of worm gear for the application.

AGMA Service Factor

Application	Total Operation Up to 3 hour/day	3 to 10 hour/day	Over 10 hour/day
Agitators (mixers)			
Pure liquids	-	1.00	1.25
Liquids - variable density	1.00	1.25	1.50
Blowers			
Centrifugal	-	1.00	1.25
Lobe	1.00	1.25	1.50
Vane			
Brewing and distilling			
Bottling Machinery	-	1.00	1.25
Brew kettles - continuous duty	-	1.00	1.25
Cookers - continuous duty	-	1.00	1.25
Mash tubs - continuous duty	-	1.00	1.25
Scale hopper - frequent starts	1.00	1.25	1.50
Can filling machines	-	1.00	1.25
Car dumpers	1.25	1.50	1.75
Car pullers	1.00	1.25	1.50
Clarifiers	-	1.00	1.25
Classifiers	1.00	1.25	1.50
Clay working machinery			
Brick press	-	1.75	2.00
Briquette machine	-	1.75	2.00
Pug mil	1.00	1.25	1.50
Colling towers			
Forced draft	1.25	1.25	1.25
Induced draft	1.00	1.25	1.50
Industrial & mine	1.00	1.25	1.50
Compactors	1.50	1.75	2.00
Compressors			
Centrifugal	-	1.00	1.25
Lobe	1.00	1.25	1.50
Reciprocating, multi-cylinder	1.00	1.25	1.50
Reciprocating, single-cylinder	1.25	1.50	1.75
Conveyors			
Uniformly loaded or fed	-	1.00	1.25
Conveyors - Severe duty			
Reciprocating or shaker	1.25	1.50	1.75
Cranes			
Dry Dock			
Main hoist	1.25	1.50	1.75
Auxiliary hoist	1.25	1.50	1.75
Boom hoist	1.25	1.50	1.75
Slewing drive	1.25	1.50	1.75
Traction drive	1.50	1.50	1.50
Crusher			
Stone or ore	1.50	1.75	2.00
Sugar	-	1.50	1.50
Dredges			
Cable reels	1.00	1.25	1.50
Conveyors	1.00	1.25	1.50
Cutter head & jig drives	1.25	1.50	1.75
Pumps	1.00	1.25	1.50
Screen drives	1.25	1.50	1.75
Stackers + Utility winches	1.00	1.25	1.50
Elevators			
Bucket	1.00	1.25	1.50
Centrifugal discharge	-	1.25	1.50
Gravity discharge	-	1.00	1.25
Extruders			
General	1.25	1.25	1.25
Plastics			
Variable speed drive	1.50	1.50	1.50
Fixed speed drive	1.75	1.75	1.75
Rubber			
Continuous screw operation	1.50	1.50	1.50
Intermittent screw operation	1.75	1.75	1.75
Fan			
Centrifugal	-	1.00	1.25
Feeders			
Apron	-	1.25	1.50
Belt	1.00	1.25	1.50
Disc	-	1.00	1.25
Reciprocating	-	1.75	2.00
Screw	1.00	1.25	1.50

Application	Total Operation Up to 3 hour/day	3 to 10 hour/day	Over 10 hour/day
Food industry			
Bottling, can filling machine	-	1.00	1.25
Cereal cooker	-	1.00	1.25
Dough mixer	1.00	1.25	1.50
Meat grinders	1.00	1.25	1.50
Sliciers	1.00	1.25	1.50
Hammer mills	1.50	1.50	1.75
Hoist			
Heavy duty	-	1.75	2.00
Medium duty	1.00	1.25	1.50
Skip hoist	1.00	1.25	1.50
Laundry			
Tumblers	1.00	1.25	1.50
Washers	1.25	1.25	1.50
Lumber industry			
Barkers			
Spindle feed	1.25	1.25	1.50
Main drive	1.50	1.75	1.75
Conveyors			
Burner	1.25	1.25	1.50
Main or heavy duty	1.50	1.50	1.50
Main log	1.50	1.75	2.00
Re-saw, merry-go-round	1.25	1.25	1.50
Slab	1.50	1.75	2.00
Transfer	1.25	1.25	1.50
Chains - Floor	1.50	1.50	1.50
Chains - Green	1.50	1.50	1.75
Cut-off saws - chain & drag	1.50	1.50	1.75
Debarking drums	1.50	1.75	2.00
Feeds - Edger	1.25	1.25	1.50
Feeds - Gang	1.50	1.50	1.50
Feeds - Trimmer	1.25	1.25	1.50
Log Deck	1.50	1.50	1.50
Log hauls - incine - well type	1.50	1.50	1.50
Log turning devices	1.50	1.50	1.50
Planer feed	1.25	1.25	1.50
Planer tilting hoists	1.50	1.50	1.50
Rolls - live-off bearing - roll cases	1.50	1.50	1.50
Sorting table, tipple hoist	1.25	1.50	1.50
Transfer-Chain & Craneway	1.50	1.50	1.50
Tray drives	1.25	1.25	1.50
Veneer lathe drives	Refer to Manufacturer		
Metal mills			
Draw bench carriage and main drive	1.00	1.25	1.50
Table conveyors non-reversing			
Group drives	1.00	1.25	1.50
Individual dirves	1.50	1.50	1.75
Reversing wire drawing & flattening machine	1.00	1.25	1.50
Wire winding machine	1.00	1.25	1.50
Metal strip processing machinery			
Bridles	1.25	1.25	1.50
Coilers & uncoilers	1.00	1.00	1.25
Edge trimmers	1.00	1.25	1.50
Flatteners	1.25	1.25	1.50
Loopers (accumulators)	1.00	1.00	1.00
Pinch rolls	1.25	1.25	1.50
Scrap choppers	1.00	1.25	1.50
Shears	1.50	1.50	1.75
Slitters	1.00	1.25	1.50
Mills (rotary type)			
Ball & rod with			
Spur ring gear	1.50	1.50	1.75
Helical ring gear	1.50	1.50	1.50
Direct connected	1.50	1.50	1.75
Cement kilns	1.50	1.50	1.50
Dryers & coolers	1.50	1.50	1.50
Mixers			
Concrete, Cont. & int.	1.00	1.25	1.50
Consistant density	-	1.00	1.25
Variable density	-	1.25	1.50
Paper mills			
Agitator (mixer)	1.50	1.50	1.50
Agitator for pure liquors	1.25	1.25	1.25
Barking drums - Mechanical Barker	1.75	1.75	2.00
Beater	1.50	1.50	1.50
Breaker stack	1.25	1.25	1.25
Calendar - Anti-friction bearing	1.25	1.25	1.25
Chipper	1.75	1.75	2.00
Chip feeder	1.50	1.50	1.50

Application	Total Operation Up to 3 hour/day	3 to 10 hour/day	Over 10 hour/day
Paper mills			
Coating rolls	1.25	1.25	1.25
Conveyors			
Chip, bark, chemical	1.25	1.25	1.25
Log and slab	1.75	1.75	2.00
Couch rolls	1.25	1.25	1.25
Cutter	1.75	1.75	2.00
Screens			
Chip	1.50	1.50	1.50
Rotary	1.50	1.50	1.50
Vibrating	1.75	1.75	1.75
Thickener			
AC motor	1.50	1.50	1.50
DC motor	1.25	1.25	1.25
Washer			
AC motor	1.50	1.50	1.50
DC motor	1.25	1.25	1.25
Winders (surface type)	1.25	1.25	1.25
Plastics & rubber industry			
Primary processing			
Intensive internal batch mixers	1.75	1.75	1.75
Intensive internal continuous mixers	1.50	1.50	1.50
Batch drop mill - 2 smooth rolls	1.25	1.25	1.25
Continuous feed, holding & blend mill	1.25	1.25	1.25
Compounding mill	1.25	1.25	1.25
Calendars	1.50	1.50	1.50
Secondary processing			
Blow molders	1.50	1.50	1.50
Coating	1.25	1.25	1.25
Film	1.25	1.25	1.25
Pipe	1.25	1.25	1.25
Pre-plasticizers	1.50	1.50	1.50
Rods	1.25	1.25	1.25
Sheet	1.25	1.25	1.25
Tubing	1.25	1.25	1.50
Pullers - barge haul	1.00	1.50	1.75
Pumps			
Centrifugal		1.00	1.25
Proportioning	1.00	1.25	1.50
Reciprocating			
Single acting, 3 or more cylinders	1.00	1.25	1.50
Double acting, 2 or more cylinders	1.00	1.25	1.50
Rotary			
Gear type	-	1.00	0.50
Lobe	-	1.00	1.25
Vane	-	1.00	1.25
Sand muller	1.00	1.25	1.50
Screens			
Air washing	-	1.00	1.25
Rotary - stone or gravel	1.00	1.25	1.50
Traveling water intake	-	1.00	1.25
Sewage disposal equiment			
Bar screns	-	1.00	1.25
Chemical feeders	-	1.00	1.25
Dewatering screens	1.00	1.25	1.50
Scum breakers	1.00	1.25	1.50
Slow or rapid mixers	1.00	1.25	1.50
Sludge collectors	1.00	1.00	1.25
Thickeners	1.00	1.25	1.50
Vacuum filters	1.00	1.25	1.50
Sugar industry			
Beet slicer	1.50	1.50	1.75
Cane knives	1.50	1.50	1.50
Crushers	1.50	1.50	1.50
Mills (low speed end)	1.50	1.50	1.50
Textile Industry			
Batchers & Calenders	1.00	1.25	1.50
Cards	1.00	1.25	1.50
Dry cans & Dryers	1.00	1.25	1.50
Dyeing machinery	1.00	1.25	1.50
Looms	1.00	1.25	1.50
Mangles, Nappers and Pads	1.00	1.25	1.50
Slashers	1.00	1.25	1.50
Soapers, Tenter frames	1.00	1.25	1.50
Spinners, Washers, Winders	1.00	1.25	1.50

X-series

Worm Gear Speed Reducer

Haitec-GR®

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