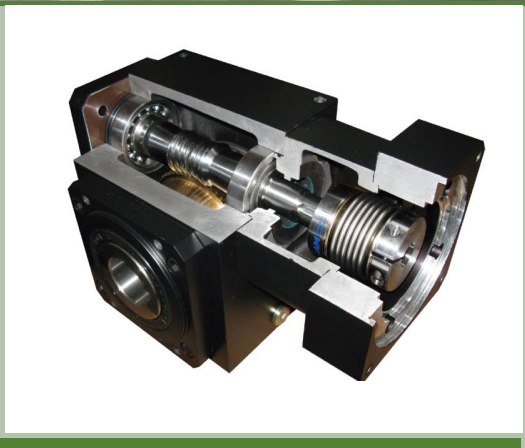
fang TOOTH

High Precision Gearboxes & Industrial Gear Reducers



SERVO WORM GEAR BOXES

- GhostDRIVE "GhD"
- IronDRIVE "FeD"
- HeavyDRIVE "HvD"
- IP69K "69K"

NEMA WORM GEAR BOXES

- HeavyDRIVE "HvD"
- IP69K "69K"
- Conveyor Killer "CvK"
- "CvK" Interchanges with
  - Boston Gear
  - Grove
  - Winsmitih
  - Raider
  - Cobra
  - Tigear
  - Omnibox

SPIRAL BEVEL "SpB" SERIES

NEMA/IEC/SERVO WORM GEARMOTORS GEARBOXES

SideCAR Series
"CaR" Interchanges with
Motovario, transtecno...

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Automation Ideas with Teeth

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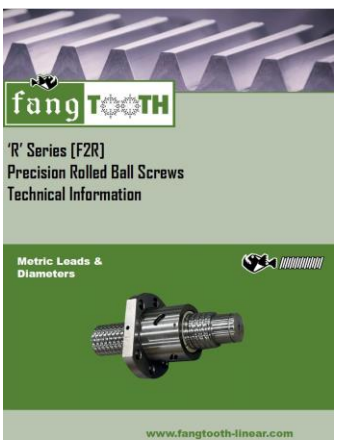

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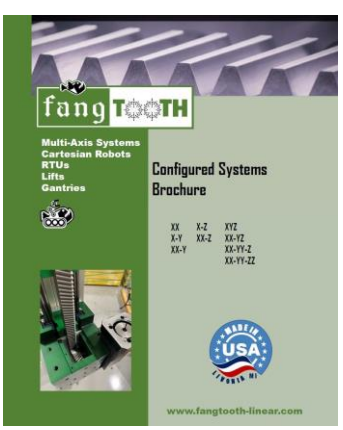

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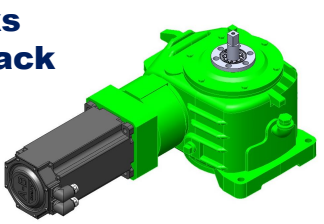

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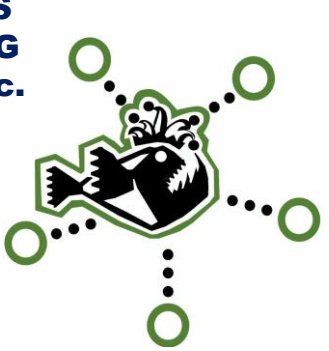

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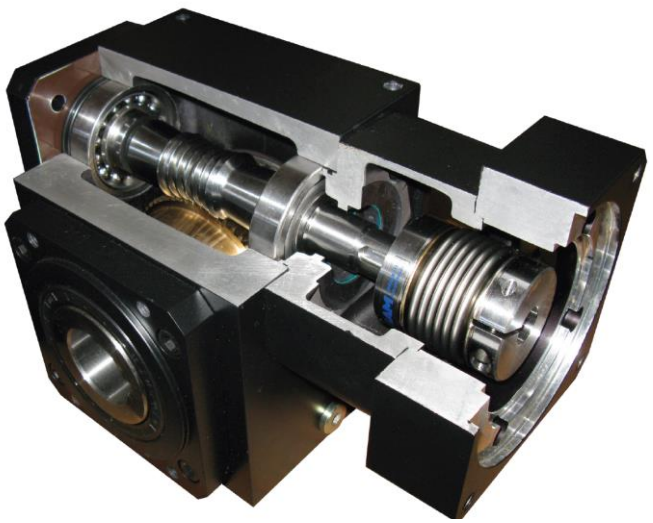
Servo Worm Gearboxes
Ultra Quiet & Ultra Light

Double Enveloping Worm Aluminum Housing

Ghost Drive "GhD" Series



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Compact mounting saves space
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Integrated zero backlash belows coupling provides fast, error-free alignment
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Compact cube design saves space
Machined pilots on output shaft caps
Universal housing mounts in any orientation
Lightweight aluminum reduces weight

Sizes

GhD38SW
GhD51SW
GhD64SW
GhD76SW
GhD89SW

- CUSTOM RATIOS
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- CUSTOM ADAPTERS
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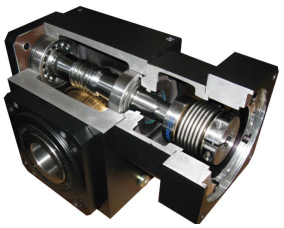


ORDERING CODES
Ghost Drive "GhD" Series

Servo Worm Gearboxes
Ultra Quiet & Ultra Light

Model: GhD038SW-S010Q-012Z2K/MS2N04

Gearbox Series
GhD – Ghost Drive

Gearbox Size
038 – 38.1mm CD
051 – 50.9mm CD
064 – 63.5mm CD
076 – 76.2mm CD
089 – 88.9mm CD

Gearbox Drive Type
SW – Servo Worm

Gearbox Backlash
S – Standard
L – Low
Z – Zero

Gearbox Ratio
005 – 5:1
006 – 6:1
007 – 7:1
008 – 8:1
009 – 9:1
010 – 10:1
015 – 15:1
020 – 20:1
025 – 25:1
030 – 30:1
040 – 40:1
050 – 50:1
060 – 60:1

Gearbox Input
SIP – Single Input
DIP – Dual Input
Motor Model – Mounting Kit

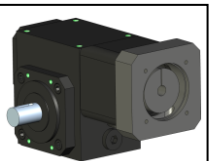
Gearbox Output Type
K – Keyed
S – Smooth
D – Shrink Disc
E – End Mount

Gearbox Output Location
HH – Hollow Bore Through
H1 – Hollow Bore "1" side
H2 – Hollow Bore "2" side
ZZ – Solid Shaft, Double Ext
Z1 – Solid Shaft "1" side
Z2 – Solid Shaft "2" side

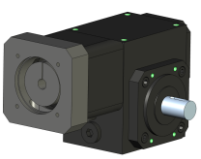
Gearbox Output Size
– size in 16th of an inch
##M – size in mm

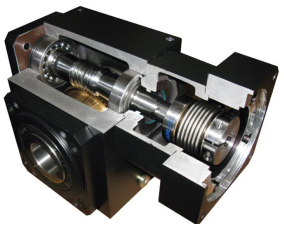
Gearbox Mounting
Q – Standard

Side "1" of gearbox
Z1K shown



Side "2" of gearbox
Z2K shown

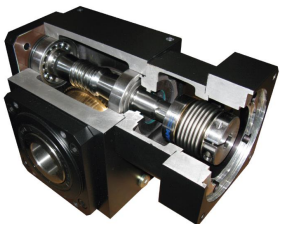




RATINGS
Ghost Drive "GhD" Series

Servo Worm Gearboxes
Ultra Quiet & Ultra Light

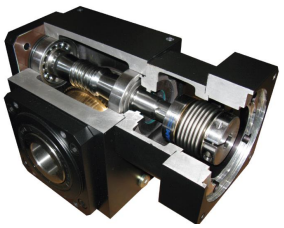
	RATIO	EFF%		Ghd038	GhD051	GhD064	GhD076	GhD089
Output Torque (1) T_{ACCEL}	5	92%	lb.In.	410	800	1470	2430	4250
			Nm	46	90	170	270	480
	6	91%	lb.In.		880	1630	2710	4750
			Nm		99	180	310	540
	7	91%	lb.In.		930	1720	2870	5030
			Nm		110	190	320	570
	8	91%	lb.In.		980	1820	3050	5340
			Nm		110	210	340	600
	9	90%	lb.In.		1000	1850	3140	5480
			Nm		110	210	350	620
	10	90%	lb.In.	520	1020	1900	3240	5650
			Nm	59	120	210	370	640
	15	88%	lb.In.	540	1060	1960	3370	5870
			Nm	61	120	220	380	660
	20	85%	lb.In.	530	1060	1920	3300	5740
			Nm	60	120	220	370	650
	25	84%	lb.In.		1020	1920	3300	5740
			Nm		120	220	370	650
	30(3)	80%	lb.In.	500	990	1840	3160	5510
			Nm	56	110	210	360	620
	40(3)	76%	lb.In.	460	940	1750	3020	5250
			Nm	52	110	200	340	590
	50(3)	73%	lb.In.	460	910	1690	2910	5060
			Nm	52	100	190	330	570
	60(3)	70%	lb.In.	420	870	1620	2790	4850
			Nm	47	100	180	320	550
Emergency Stop				(3 - Times T_{Run})				
Maximum Radial Load(2)			lbs.	700	1500	2000	2500	3500
			N	3110	6670	8890	11110	15560
Maximum Axial Load			lbs.	400	410	420	950	900
			N	1780	1820	1860	4220	4000
Average Lifetime			Hours.	25,000				
Weight			lbs.	9	18	32	56	110
			kg	4.1	8.2	14.5	25.4	49.9
Operating Temperature			°F	(-13 to +210)				
			°C	(-25 to +100)				
Degree of Protection				IP 65				
Lubrication				Synthetic SHC 634 gear oil				
Mounting Position				any				



RATINGS
Ghost Drive "GhD" Series

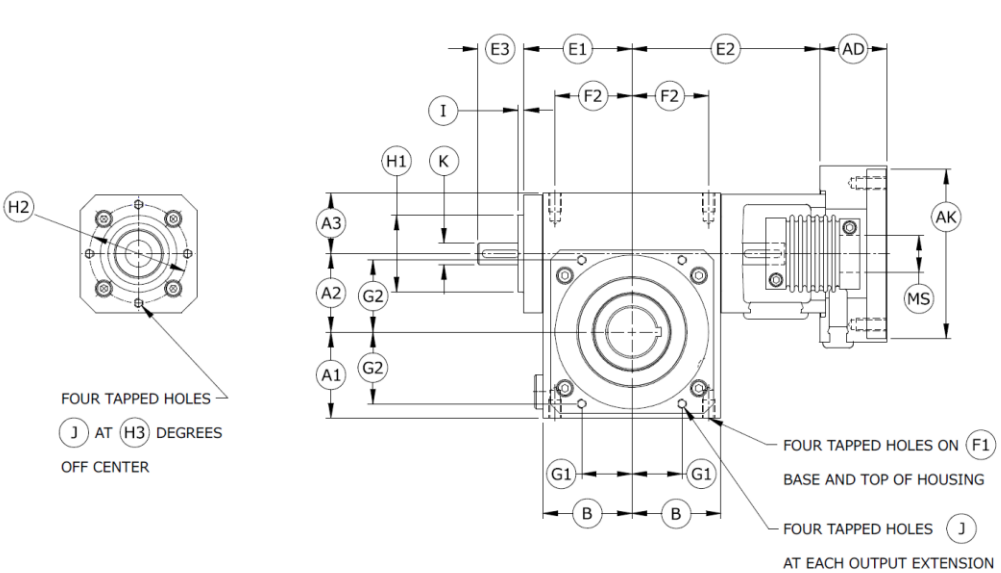
Servo Worm Gearboxes
Ultra Quiet & Ultra Light

	RATIO		Ghd038	GhD051	GhD064	GhD076	GhD089
Moment of Inertia [1] J_{gear}	5	lb.in. S^2 10^{-4}	11.10	20.40	74.20	127.00	220.00
		$kgcm^2$	1.26	2.31	8.38	14.40	24.80
	6	lb.in. S^2 10^{-4}		18.60	69.20	111.00	180.00
		$kgcm^2$		2.10	7.82	12.50	23.30
	7	lb.in. S^2 10^{-4}		17.50	66.00	100.00	156.00
		$kgcm^2$		1.97	7.45	11.30	17.60
	8	lb.in. S^2 10^{-4}		16.80	64.30	93.90	140.00
		$kgcm^2$		1.90	7.26	10.60	15.80
	9	lb.in. S^2 10^{-4}		16.30	63.00	89.40	129.00
		$kgcm^2$		1.84	7.11	10.10	14.60
	10	lb.in. S^2 10^{-4}	9.66	15.90	62.00	86.20	122.00
		$kgcm^2$	1.09	1.80	7.00	9.73	13.80
	15	lb.in. S^2 10^{-4}	9.38	15.10	59.80	78.50	104.00
		$kgcm^2$	1.06	1.71	6.75	8.87	11.70
	20	lb.in. S^2 10^{-4}	9.30	1.48	59.80	78.50	104.00
		$kgcm^2$	1.05	1.67	6.67	8.57	11.00
	25	lb.in. S^2 10^{-4}		14.70	58.70	74.60	94.40
		$kgcm^2$		1.66	6.62	8.43	10.70
	30	lb.in. S^2 10^{-4}	9.22	14.60	58.40	74.00	92.70
		$kgcm^2$	1.04	1.65	6.60	8.35	10.50
	40	lb.in. S^2 10^{-4}	9.20	14.60	58.30	73.30	91.20
		$kgcm^2$	1.40	1.64	6.58	8.28	10.30
	50	lb.in. S^2 10^{-4}	9.20	14.50	58.20	73.00	90.40
		$kgcm^2$	1.04	1.64	6.57	8.24	10.20
	60	lb.in. S^2 10^{-4}	9.20	14.50	58.10	72.80	90.00
		$kgcm^2$	1.04	1.64	6.56	8.22	10.20
Nominal Backlash	Zero	arcmin.		0	0	0	0
	Low	arcmin.	8	6	5	4	3
	Standard	arcmin.	24	15	12	10	10
Torsional Rigidity		lb.in./min	34	67	155	341	628
		Nm/min	3.8	7.6	17.5	38.5	71
Max. cyclic input speed [2] [4]		rpm	6000	6000	6000	6000	6000
Max. cyclic input speed [3] [4]		rpm	4000	4000	4000	4000	4000



DIMENSION HOLLOW
Ghost Drive "GhD" Series

Servo Worm Gearboxes
Ultra Quiet & Ultra Light

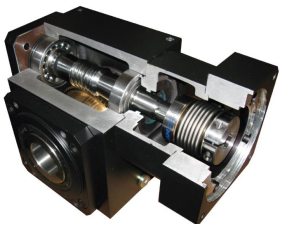


Size	A1		A2 (CD)		A3		B		C		D		E1	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
38	1.772	45	1.500	38.1	1.378	35.0	1.988	50.5	1.535	39.0	2.004	50.9	2.484	63.1
51	2.205	56	2.000	50.8	1.555	39.5	2.283	58.0	1.929	49.0	2.378	60.4	2.732	69.4
64	2.874	73	2.500	63.5	1.752	44.5	3.110	79.0	2.126	54.0	2.752	69.9	3.697	93.9
76	3.228	82	3.000	76.2	2.197	55.8	3.524	89.5	2.894	73.5	3.697	93.9	4.327	109.9
89	3.937	100	3.500	88.9	2.484	63.1	4.134	105	3.543	90.0	4.382	111.3	4.937	125.4

Size	E2		E3		F1	F2		F3		G1		G2		G3	
	inch	mm	inch	mm	tap	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
38	4.520	114.80	1.189	30.2	M8	1.654	42.0	1.260	32	0.721	18.31	1.356	34.43	2.520	64 h8
51	4.815	122.30	1.224	31.1	M8	1.969	50.0	1.614	41	1.287	32.69	1.838	46.69	3.937	100 h8
64	5.986	152.00	1.461	37.1	M8	2.697	68.5	1.732	44	1.581	40.15	2.257	57.34	4.724	120 h8
76	6.478	164.55	1.323	33.6	M10	3.110	79.0	2.480	63	1.785	45.34	2.548	64.73	5.276	134 h8
89	7.795	198.00	2.031	51.6	M10	3.740	95.0	3.150	80	1.831	46.50	3.171	80.54	5.709	145 h8

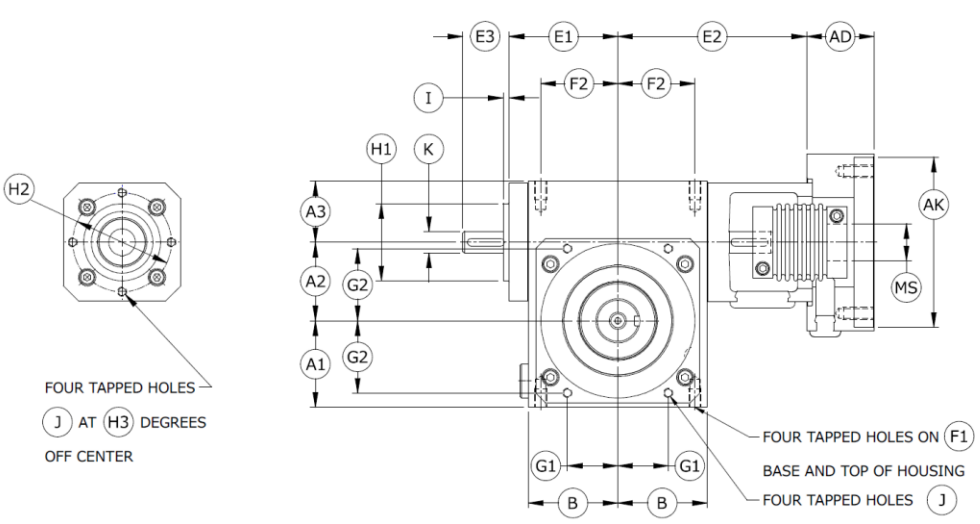
Size	H1		H2		H3	I		J	K			L	
	inch	mm	inch	mm	dgrs.	inch	mm	tap	inch	mm	keyway	inch	mm
38	1.811	46 h8	2.205	56	0	0.157	4	M6	0.551	14 k6	5 x 2.3 x 25	2.205	56
51	1.969	50 h8	2.520	64	0	0.157	4	M6	0.551	14 k6	5 x 2.3 x 24	2.598	66
64	2.362	60 h8	3.071	78	25	0.157	4	M8	0.748	19 k6	6 x 2.8 x 25	2.913	74
76	2.756	70 h8	3.622	92	25	0.157	4	M10	0.945	24 k6	8 x 3 x 28	3.937	100
89	3.543	90 h8	4.331	110	25	0.157	4	M10	1.102	28 k6	8 x 4 x 40	4.606	117

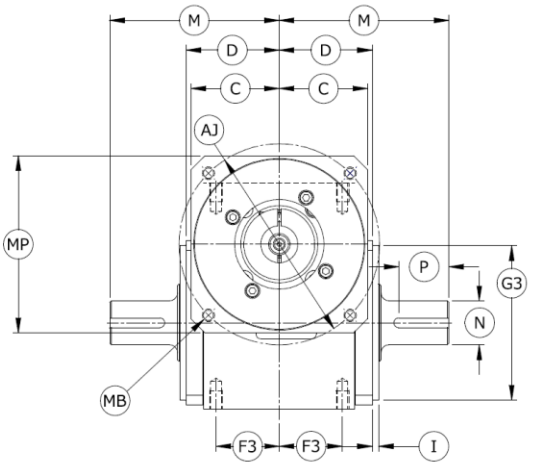
Size	Inch Bore			Metric Bore			Alternative Metric Bore			AD Max.	
	inch	tol.	mm	inch	tol.	mm	inch	tol.	mm	tap	mm
38	0.8754	+/- .0004	3/16 x 3/32	25	H7	8 x 3.3	22	H9	6 x 2.8	2.055	52.2
51	1.2505	+/- .0005	1/4 x 1/8	30	H7	8 x 3.3	-	-	-	2.055	52.2
64	1.6880	+/- .0005	3/8 x 3/16	35	H7	10 x 3.3	38	H9	10 x 3.3	2.717	69.0
76	1.9380	+/- .0005	1/2 x 1/4	45	H7	14 x 3.8	48	H9	14 x 3.8	2.717	69.0
89	2.4380	+/- .0005	5/8 x 5/16	60	H7	18 x 4.4	-	-	-	2.717	69.0



DIMENSION SOLID
Ghost Drive "GhD" Series

Servo Worm Gearboxes
Ultra Quiet & Ultra Light





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	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
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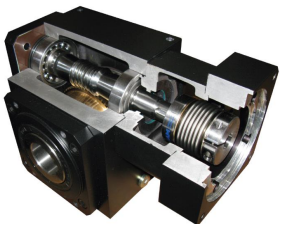
51	2.205	56	2.000	50.8	1.555	39.5	2.283	58.0	1.929	49.0	2.378	60.4	2.732	69.4
64	2.874	73	2.500	63.5	1.752	44.5	3.110	79.0	2.126	54.0	2.752	69.9	3.697	93.9
76	3.228	82	3.000	76.2	2.197	55.8	3.524	89.5	2.894	73.5	3.697	93.9	4.327	109.9
89	3.937	100	3.500	88.9	2.484	63.1	4.134	105	3.543	90.0	4.382	111.3	4.937	125.4

Size	E2		E3		F1	F2		F3		G1		G2		G3	
	inch	mm	inch	mm	tap	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
38	4.520	114.80	1.189	30.2	M8	1.654	42.0	1.260	32	0.721	18.31	1.356	34.43	2.520	64 h8
51	4.815	122.30	1.224	31.1	M8	1.969	50.0	1.614	41	1.287	32.69	1.838	46.69	3.937	100 h8
64	5.986	152.00	1.461	37.1	M8	2.697	68.5	1.732	44	1.581	40.15	2.257	57.34	4.724	120 h8
76	6.478	164.55	1.323	33.6	M10	3.110	79.0	2.480	63	1.785	45.34	2.548	64.73	5.276	134 h8
89	7.795	198.00	2.031	51.6	M10	3.740	95.0	3.150	80	1.831	46.50	3.171	80.54	5.709	145 h8

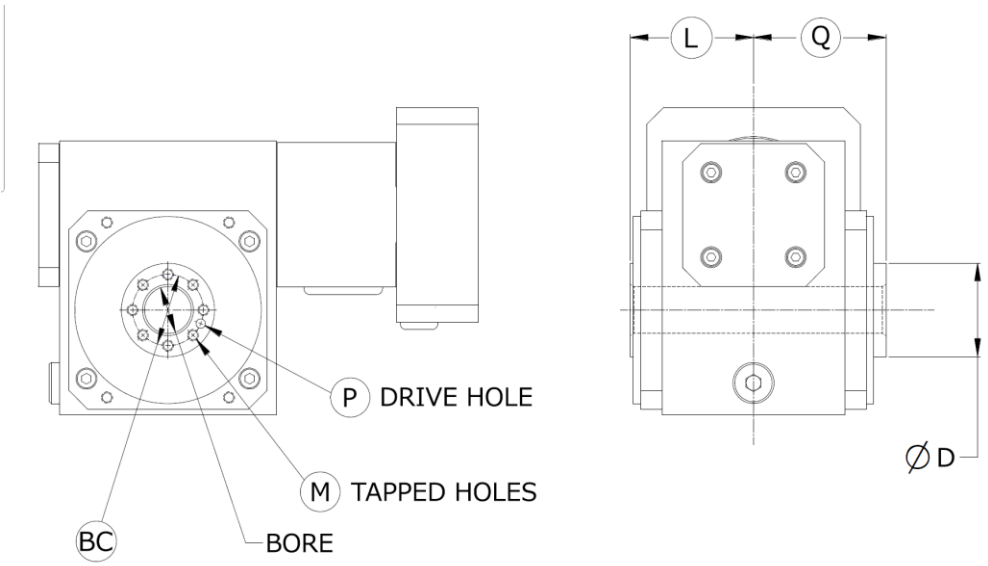
Size	H1		H2		H3	I		J	K			M	
	inch	mm	inch	mm	dgrs.	inch	mm	tap	inch	mm	keyway	inch	mm
38	1.811	46 h8	2.205	56	0	0.157	4	M6	0.551	14 k6	5 x 2.3 x 25	3.386	86
51	1.969	50 h8	2.520	64	0	0.157	4	M6	0.551	14 k6	5 x 2.3 x 24	4.331	110
64	2.362	60 h8	3.071	78	25	0.157	4	M8	0.748	19 k6	6 x 2.8 x 25	4.882	124
76	2.756	70 h8	3.622	92	25	0.157	4	M10	0.945	24 k6	8 x 3 x 28	6.417	164
89	3.543	90 h8	4.331	110	25	0.157	4	M10	1.102	28 k6	8 x 4 x 40	7.874	200

Size	N (Inch)		P (Inch)		N (mm)			P (mm)*			AD Max.	
	inch	tol.	keyway	length	mm	tol.	keyway	inch	length	ofst.	Inch	mm
38	0.7497	+/- .0003	3/16 x 3/32	26	20	k6	6 x 3.5	22	22	4	2.055	52.2
51	1.1247	+/- .0003	1/4 x 1/8	38	25	k6	8 x 4	36	36	4	2.055	52.2
64	1.2497	+/- .0003	1/4 x 1/8	40	30	k6	8 x 4	40	40	4	2.717	69.0
76	1.4997	+/- .0003	3/8 x 3/16	45	35	k6	10 x 5	50	50	5	2.717	69.0
89	1.8747	+/- .0003	1/2 x 1/4	60	45	k6	14 x 5.5	63	63	5	2.717	69.0



DIMENSION END MOUNT
Ghost Drive "GhD" Series

Servo Worm Gearboxes
Ultra Quiet & Ultra Light



Optional Shaft End Mount

Size	BC	L	M	P	Q	BORE	Ø D
38	28	56	4 x M6 x 1, 12 Deep	5 H9, 10 Deep	61	16 H8	40 h11
51	38	66	8 x M6 x 1, 12 Deep	5 H9, 10 Deep	71	25 H7	50 h11
64	50	74	8 x M8 x 1.25, 16 Deep	6 H9, 10 Deep	79	30 H7	65 h11
76	60	100	8 x M8 x 1.25, 16 Deep	8 H9, 10 Deep	105	35 H7	80 h11
89	70	117	8 x M10 x 1.5, 20 Deep	8 H9, 10 Deep	122	45 H7	90 h11

Servo Worm Gearboxes
Ultra Quiet Cast Iron Housing

Double Enveloping Worm Cast Iron Housing

IronDRIVE "FeD" Series

Cost Saving Features

Ask about Self-Locking Ratios

Maintenance Free
Factory filled with synthetic gear oil
No lubrication service throughout unit life
Anodized housing, double oil seals and O-rings provide IP65 protection, ensure worry-free operation and protection against harsh environments

Double Enveloping Worm Gearing
High torque capacity
High efficiency
Quiet and smooth running
Exact ratios 5:1 and 60:1 in a single stage
High torsional rigidity

Two Levels of Precision
Low Backlash
Standard Backlash - long lasting ruggedness for less demanding applications

Hollow Shaft Standard
Compact mounting saves space
No coupling required saves cost
Single and double oil extended solid shafts provide mounting flexibility

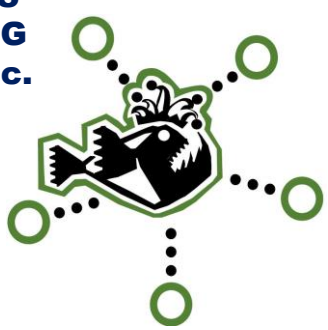
Easy Motor Mounting
Integrated zero backlash bellows coupling provides fast, error-free alignment
Integrated motor flange mounts directly to your servomotor, NEMA motor, or IEC motor

Sizes

FeD15SW
FeD20SW
FeD25SW
FeD30SW
FeD35SW

- **CUSTOM RATIOS**
- **CUSTOM BORES**
- **CUSTOM ADAPTERS**
- **CUSTOM MOUNTING**
- **CUSTOM SEALS, etc.**

Fangtooth will tackle any solution by making a custom to fit your exact requirement



CALL TODAY

ORDERING CODES
IronDRIVE "FeD" Series

Servo Worm Gearboxes
Ultra Quiet Cast Iron Housing

Model: FeD015SW-S010Q-25MHHK/MS2N04

Gearbox Series
FeD – IronDrive

Gearbox Size
015 – 1.500 inch CD
020 – 2.000 inch CD
025 – 2.500 inch CD
030 – 3.000 inch CD
035 – 3.500 inch CD

Gearbox Drive Type
SW – Servo Worm

Gearbox Backlash
S – Standard
L – Low

Gearbox Ratio
005 – 5:1
006 – 6:1
007 – 7:1
008 – 8:1
009 – 9:1
010 – 10:1
015 – 15:1
020 – 20:1
025 – 25:1
030 – 30:1
040 – 40:1
050 – 50:1
060 – 60:1

Gearbox Input
SIP – Single Input
DIP – Dual Input
Motor Model – Mounting Kit

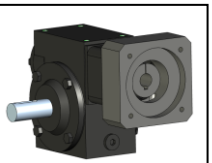
Gearbox Output Type
K – Keyed
S – Smooth
E – End Mount (Flange)

Gearbox Output Location
HH – Hollow Bore Through
H1 – Hollow Bore "1" side
H2 – Hollow Bore "2" side
ZZ – Solid Shaft, Double Ext
Z1 – Solid Shaft "1" side
Z2 – Solid Shaft "2" side

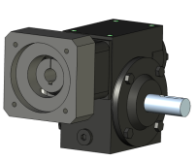
Gearbox Output Size
– size in 16th of an inch
##M – size in mm

Gearbox Mounting
Q – Standard

Side "1" of gearbox
Z1K shown



Side "2" of gearbox
Z2K shown



RATINGS
IronDRIVE “FeD” Series

Servo Worm Gearboxes
Ultra Quiet Cast Iron Housing

Size			Ratio											
			5:1	6:1	7:1	8:1	9:1	10:1	15:1	20:1	25:1	30:1	40:1	50:1	60:1
15	Output torque (lb.in.)	E-Stop	1620					1920	1911	1848		1701	1314	1326	1134
		Accel/decel	411					523	538	525		504	459	455	423
		Run	314					412	427	422		405	369	366	340
	Input torque	Accel/decel	89					58	41	31		21	15	13	10
		Run	71					48	34	26		18	13	11	9
20	Output torque (lb.in.)	E-Stop	3400	3600	3800	3900	3900	3900	4000	3700	3700	3500	3200	2700	2600
		Accel/decel	800	880	930	980	1000	1020	1060	1030	1030	990	940	900	870
		Run	590	650	690	730	740	760	790	790	780	750	720	690	660
	Input torque	Accel/decel	174	159	146	135	124	113	80	61	50	42	32	25	21
		Run	130	119	108	101	91	85	61	46	38	32	24	19	16
25	Output torque (lb.in.)	E-Stop	6600	7100	7300	7600	7700	7800	7800	7500	7000	6900	6000	5500	5400
		Accel/decel	1474	1632	1718	1816	1850	1895	1964	1920	1918	1839	1752	1688	1620
		Run	1063	1179	1242	1312	1335	1373	1427	1411	1404	1347	1285	1238	1189
	Input torque	Accel/decel	320	296	270	249	228	211	149	114	91	77	59	47	39
		Run	123	214	195	180	165	153	108	83	67	56	42	34	28
30	Output torque (lb.in.)	E-Stop	11600	12600	13100	13700	13700	13800	13900	13300	12700	12300	11100	9700	9600
		Accel/decel	2434	2710	2871	3050	3138	3244	3372	3301	3300	3162	3015	2905	2789
		Run	1738	1940	2060	2196	2258	2337	2433	2411	2404	2303	2197	2116	2032
	Input torque	Accel/decel	529	491	451	419	387	360	255	196	157	132	102	81	66
		Run	378	351	323	302	279	260	184	142	114	96	72	58	48
35	Output torque (lb.in.)	E-Stop	21447	23397	24174	25179	25350	25569	25533	24948	23820	22749	20292	18372	18030
		Accel/decel	4247	4750	5027	5343	5477	5648	5870	5744	5741	5502	5247	5055	4853
		Run	3014	3376	3577	3809	3908	4032	4202	4166	4143	3980	3796	3657	3511
	Input torque	Accel/decel	923	861	789	734	676	628	445	342	277	232	175	140	117
		Run	662	618	562	529	482	453	322	248	207	168	127	102	85

Torque ratings based on 2000 RPM, service factor 1.0.

RATINGS
IronDRIVE "FeD" Series

Servo Worm Gearboxes
Ultra Quiet Cast Iron Housing

Inertia of the complete speed reducer, at the input shaft

Size	Ratio to 1	5	6	7	8	9	10	15	20	25	30	40	50	60
15	Total Inertia - kg cm^2	1.5					1.3	1.3	1.3		1.3	1.3	1.3	1.3
	Total Inertia - lb·in·s^{2}x10^{-4}	13.2					11.7	11.5	11.4		11.3	11.3	11.3	11.3
20	Total Inertia - kg cm^2	2.6	2.3	2.2	2.1	2.0	2.0	1.9	1.9	1.8	1.8	1.8	1.8	1.8
	Total Inertia - lb·in·s^{2}x10^{-4}	22.8	20.7	19.5	18.6	18.1	17.7	16.7	16.4	16.2	16.2	16.1	16.0	16.0
25	Total Inertia - kg cm^2	6.0	5.2	4.8	4.5	4.3	4.1	3.8	3.6	3.6	3.6	3.5	3.5	3.5
	Total Inertia - lb·in·s^{2}x10^{-4}	53.0	46.2	42.1	39.5	37.7	36.4	33.3	32.2	31.7	31.4	31.2	31.0	31.0
30	Total Inertia - kg cm^2	13.0	10.8	9.5	8.6	8.0	7.6	6.6	6.3	6.1	6.0	5.9	5.9	5.9
	Total Inertia - lb·in·s^{2}x10^{-4}	115.1	95.6	83.9	76.3	71.0	67.3	58.4	55.3	53.9	53.1	52.4	52.0	51.8
35	Total Inertia - kg cm^2	27.6	23.2	20.5	18.8	17.6	16.7	14.7	14.0	13.7	13.5	13.3	13.2	13.2
	Total Inertia - lb·in·s^{2}x10^{-4}	244.4	205.1	181.4	166.0	155.5	147.9	130.1	123.8	120.9	119.4	117.8	117.1	116.7

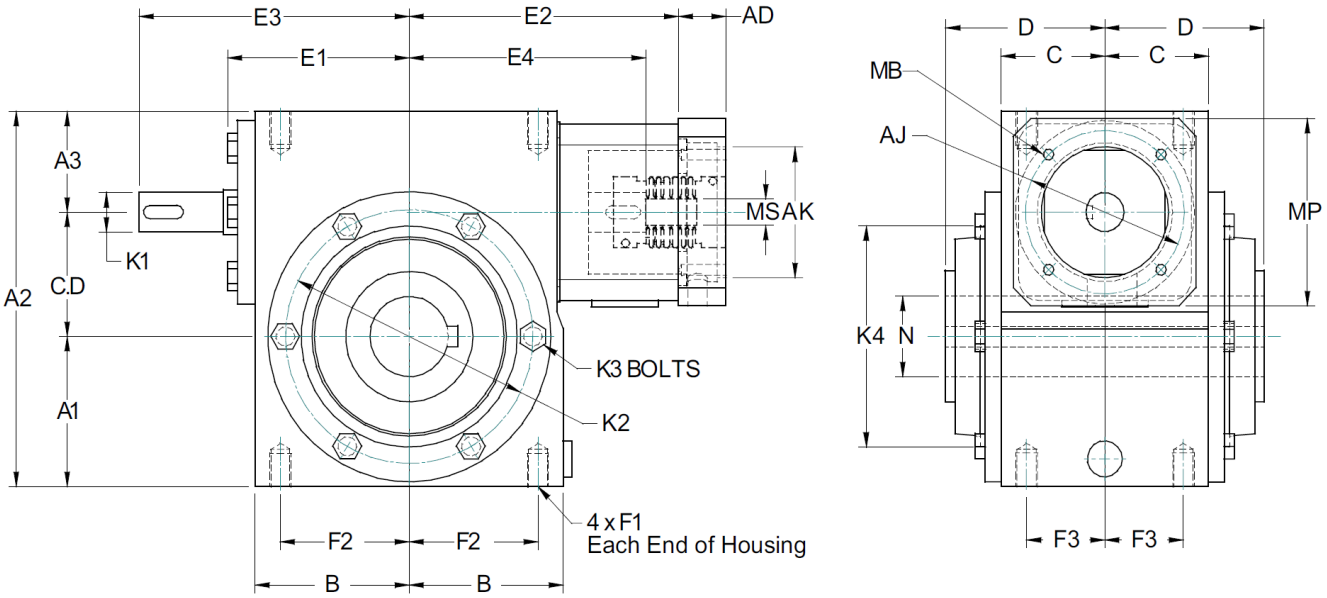
Torsional Stiffness of Model RG Units at output, input held (less coupling)

	Unit Size									
	15		20		25		30		35	
	Lb.In./min.	Nm /min.	Lb.In./min.	Nm /min.	Lb.In./min.	Nm /min.	Lb.In./min.	Nm /min.	Lb.In./min.	Nm /min.
Stiffness	91	10.3	157	17.8	204	23.1	367	41.6	699	79.2

	Unit Sizes				
	15	20	25	30	35
Standard Backlash (arc. mins.)	27	17	14	11	11
Low Backlash (arc. mins.)	11	8	7	5	4

DIMENSIONS HOLLOW IronDRIVE "FeD" Series

Servo Worm Gearboxes
Ultra Quiet Cast Iron Housing



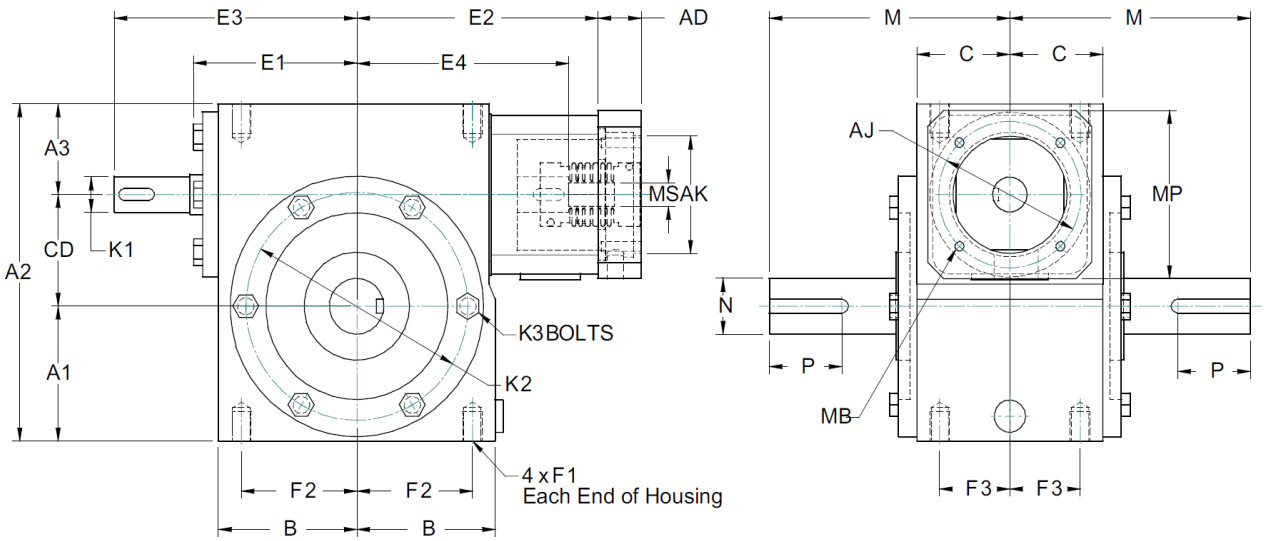
Size	CD		A1		A2		A3		B		C		D	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
15	1.500	38.1	1.625	41.3	4.75	121	1.625	41.3	1.78	45	1.66	42	2.31	59
20	2.000	50.8	2.500	63.5	6.25	159	1.750	44.5	2.41	61	1.57	40	2.63	67
25	2.500	63.5	3.000	76.2	7.50	191	2.000	50.8	3.09	79	1.94	49	2.91	74
30	3.000	76.2	3.625	92.1	9.06	230	2.438	61.9	3.86	98	2.56	65	3.94	100
35	3.500	88.9	4.250	108	10.31	262	2.563	65.1	4.44	113	3.44	87	4.61	117

Size	E1		E2		E3		E4		F1	F2		F3		K1			K2	
	inch	mm	inch	mm	inch	mm	inch	mm	tap	inch	mm	inch	mm	inch	mm	keyway (mm)	inch	mm
15	2.17	55	4.46	113	3.31	84	3.62	91.9	M8	1.44	36.5	1.31	33.4	0.551	14 k6	5 x 2.3 x 16	3.125	79.4
20	2.88	73	5.13	130	4.59	117	4.30	109.2	M10	2.00	50.8	1.13	28.6	0.551	14 k6	5 x 2.3 x 25	4.125	104.8
25	3.65	93	6.25	159	5.25	133	5.44	138.2	M10	2.56	65.1	1.50	38.1	0.748	19 k6	6 x 2.8 x 25	4.938	125.4
30	4.53	115	6.66	169	6.69	170	5.85	148.6	M12	3.19	81	1.94	49.2	0.945	24 k6	8 x 3 x 25	6.125	155.6
35	5.16	131	7.44	189	7.75	197	6.63	168.4	M12	3.81	96.9	2.81	71.5	1.103	28 k6	8 x 4 x 32	7.250	184.2

Size	K3 bolts	K4 pilot dia.		N (inch)			N (mm)			AD Max		AK	AJ	MP	MB	MS	Weight
	mm	inch	mm	inch	tol	keyway	mm	tol	keyway	inch	mm						lbs
15	M6	2.498	63.4	0.876	+/-.001	3/16 x 3/32	25	H7	8 x 3.3	2.055	52.2	Will Provide CAD for your motor					15
20	M8	3.336	84.7	1.251	+/-.001	1/4 x 1/8	30	H7	8 x 3.3	2.055	52.2						27
25	M8	4.217	107.1	1.688	+/-.001	3/8 x 3/16	35	H7	10 x 3.3	2.717	69.0						44
30	M10	5.342	135.7	1.938	+/-.001	1/2 x 1/4	45	H7	14 x 3.8	2.717	69.0						78
35	M10	6.467	164.3	2.438	+/-.001	5/8 x 5/16	60	H7	18 x 4.4	2.717	69.0						116

DIMENSIONS SOLID IronDRIVE "FeD" Series

Servo Worm Gearboxes Ultra Quiet Cast Iron Housing



Size	CD		A1		A2		A3		B		C		M	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
15	1.500	38.1	1.625	41.3	4.75	121	1.625	41.3	1.78	45	1.66	42	3.50	89
20	2.000	50.8	2.500	63.5	6.25	159	1.750	44.5	2.41	61	1.57	40	4.63	118
25	2.500	63.5	3.000	76.2	7.50	191	2.000	50.8	3.09	79	1.94	49	4.78	121
30	3.000	76.2	3.625	92.1	9.06	230	2.438	61.9	3.86	98	2.56	65	6.64	169
35	3.500	88.9	4.250	108	10.31	262	2.563	65.1	4.44	113	3.44	87	8.25	210

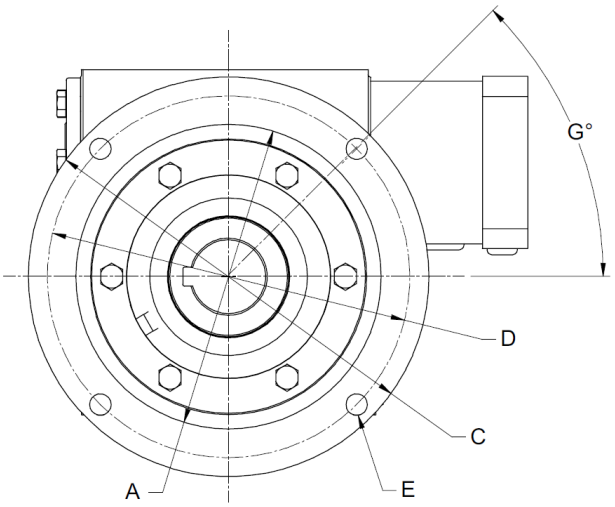
Size	E1		E2		E3		E4		F1	F2		F3		K1			K2		K3 bolts
	inch	mm	inch	mm	inch	mm	inch	mm	tap	inch	mm	inch	mm	inch	mm	keyway(mm)	inch	mm	mm
15	2.17	55	4.46	113	3.31	84	3.62	91.9	M8	1.44	36.5	1.31	33.4	0.551	14 k6	5 x 2.3 x 16	3.125	79.4	M6
20	2.88	73	5.13	130	4.59	117	4.30	109.2	M10	2.00	50.8	1.13	28.6	0.551	14 k6	5 x 2.3 x 25	4.125	104.8	M8
25	3.65	93	6.25	159	5.25	133	5.44	138.2	M10	2.56	65.1	1.50	38.1	0.748	19 k6	6 x 2.8 x 25	4.938	125.4	M8
30	4.53	115	6.66	169	6.69	170	5.85	148.6	M12	3.19	81	1.94	49.2	0.945	24 k6	8 x 3 x 25	6.125	155.6	M10
35	5.16	131	7.44	189	7.75	197	6.63	168.4	M12	3.81	96.9	2.81	71.5	1.103	28 k6	8 x 4 x 32	7.250	184.2	M10

Size	N (inch)		P (inch)		N (inch)		P (mm)*			AD Max		AK	AJ	MP	MB	MS	Weight
	inch	tol	Keyway	length	mm	tol	keyway	length	offset	inch	mm						lbs.
15	0.7497	± 0.0003	3/16 x 3/32	0.89	20	k6	6 x 3.5	22	4	2.055	52.2	Will Provide CAD for your motor					16
20	1.1245	± 0.0005	1/4 x 1/8	1.50	25	k6	8 x 4	36	4	2.055	52.2						28
25	1.2495	± 0.0005	1/4 x 1/8	1.38	30	k6	8 x 4	40	3	2.717	69.0						45
30	1.4995	± 0.0005	3/8 x 3/16	2.00	38	k6	10 x 5	50	3	2.717	69.0						73
35	1.8745	± 0.0005	1/2 x 1/4	2.62	45	k6	14 x 5.5	63	5	2.717	69.0						112

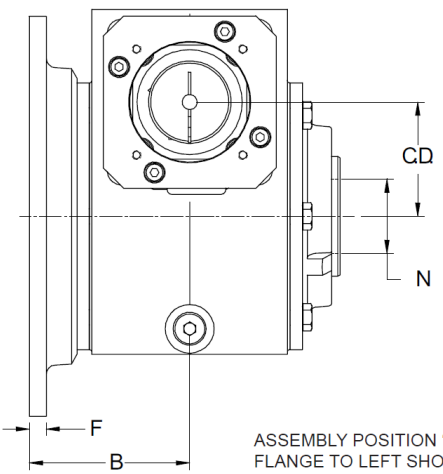
*Note: P (mm) is length of pocket-style keyway and offset from shaft end.

DIMENSIONS FLANGE
IronDRIVE “FeD” Series

Servo Worm Gearboxes
Ultra Quiet Cast Iron Housing



BOLT PATTERN ARRANGEMENT SHOWN APPLIES TO SIZES 15 / 30 / 35



ASSEMBLY POSITION “F3”
FLANGE TO LEFT SHOWN HERE

Size	CD		A		B		C		D		E		F		G	N (if hollow shaft)	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	degree	mm	tol
15	1.50	38	4.500	114.3	3.40	86	6.63	168	5.88	149	0.41	10	0.38	10	45	25	H7
20	2.00	51	5.376	136.6	3.41	87	8.00	203	7.00	178	0.41	10	0.50	13	90	30	H7
25	2.50	64	6.626	168.3	3.52	89	9.25	235	8.25	210	0.47	12	0.50	13	90	35	H7
30	3.00	76	7.751	196.9	4.35	111	10.50	267	9.50	241	0.56	14	0.50	13	45	45	H7
35	3.50	89	8.751	222.3	5.08	129	11.75	298	10.50	267	0.56	14	0.50	13	45	60	H7

Servo & NEMA Worm Gearboxes
Ultra Quiet Cast Iron Housing

Double Enveloping Worm Cast Iron Housing

Heavy Drive "HvD" Series

Ask about Self-Locking Ratios

Many Housing Configurations

Double Enveloping Worm Gearing
High torque capacity
High efficiency
Quiet and smooth running
Exact ratios 5:1 and 60:1 in a single stage
High torsional rigidity

Hollow Shaft Standard
Compact mounting saves space
No coupling required saves cost
Single and double oil extended solid shafts provide mounting flexibility

Easy Motor Mounting
Integrated zero backlash bellows coupling provides fast, error-free alignment
Integrated motor flange mounts directly to your servomotor, NEMA motor, or IEC motor

Servo Sizes	NEMA Sizes
HvD035SW	HvD015NW
HvD040SW	HvD020NW
HvD050SW	HvD025NW
HvD060SW	HvD030NW
HvD070SW	HvD035NW
HvD080SW	HvD040NW
HvD100SW	HvD050NW
HvD120SW	HvD060NW
	HvD070NW
	HvD080NW
	HvD100NW
	HvD120NW

- CUSTOM RATIOS
- CUSTOM BORES
- CUSTOM ADAPTERS
- CUSTOM MOUNTING
- CUSTOM SEALS, etc.

Fangtooth will tackle any solution by making a custom to fit your exact requirement

CALL TODAY

ORDERING CODES
heavyDRIVE "HvD" Series

Servo Worm Gearboxes
Ultra Quiet Cast Iron Housing

Model: HvD035SW-S010V-044HF1/MS2N04

Gearbox Series
HvD – HeavyDrive

Gearbox Size
015 – 1.500 inch CD
020 – 2.000 inch CD
025 – 2.500 inch CD
030 – 3.000 inch CD
035 – 3.500 inch CD
040 – 4.000 inch CD
050 – 5.000 inch CD
060 – 6.000 inch CD
070 – 7.000 inch CD
080 – 8.000 inch CD
100 – 10.000 inch CD
120 – 12.000 inch CD

Gearbox Drive Type
SW – Servo Worm (sizes 35-120)
NW – NEMA Worm (sizes 15-120)

Gearbox Backlash
S – Standard
L – Low

Gearbox Ratio
005 – 5:1
010 – 10:1
015 – 15:1
020 – 20:1
025 – 25:1
030 – 30:1
040 – 40:1
050 – 50:1
060 – 60:1
070 – 70:1 *
* Only sizes 050-120

Gearbox Input
SIP – Single Input
DIP – Dual Input
Motor Model – Mounting Kit

Gearbox Output Location
See Pages 20-22

Gearbox Output Type
H – Hollow Bore
Z – Solid Shaft

Gearbox Output Size
– size in 16th of an inch

Gearbox Mounting

O – Worm Over Gear

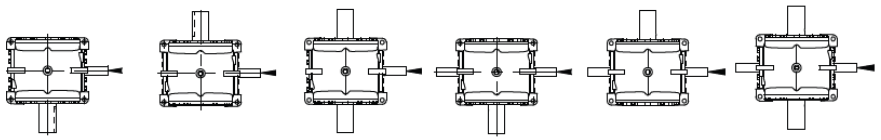

U – Worm Under Gear


V – Vertical Gear Shaft

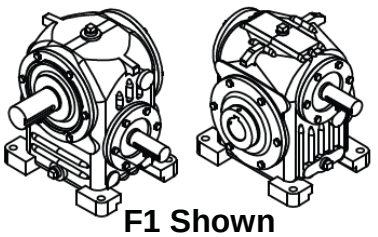
MOUNTING “U” & “O”
heavyDRIVE “HvD” Series

Servo Worm Gearboxes
Ultra Quiet Cast Iron Housing

Top View, Floor Mounted

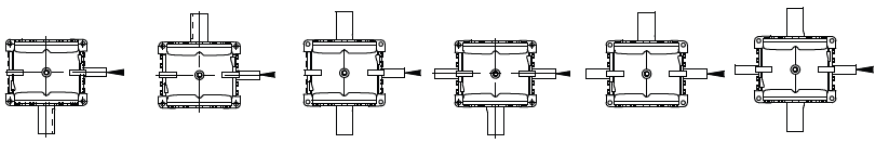


F1.....F2.....F3.....F4.....F5.....F6

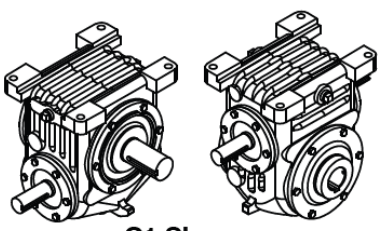


F1 Shown

Ceiling Mounted

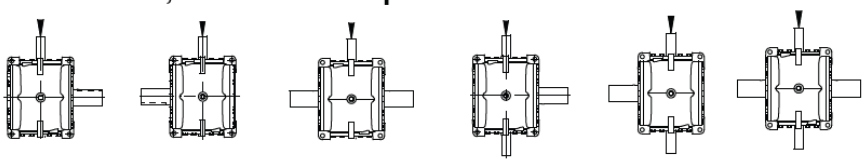


C1.....C2.....C3.....C4.....C5.....C6

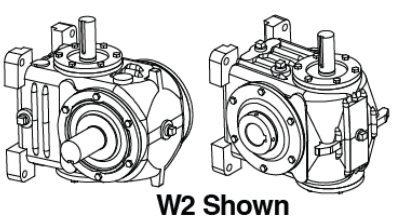


C1 Shown

Wall Mounted, Worm Vertical Up

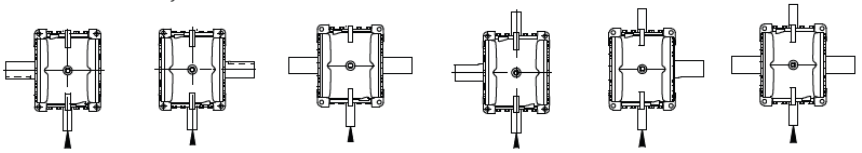


W1.....W2.....W3.....W4.....W5.....W6

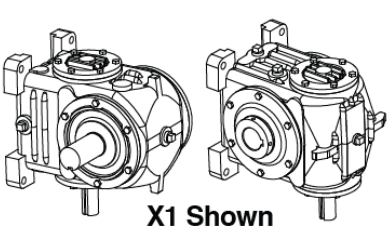


W2 Shown

Wall Mounted, Worm Vertical Down

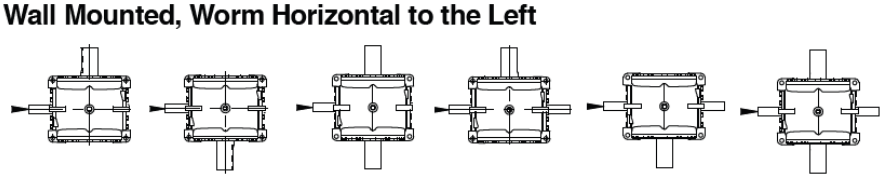


X1.....X2.....X3.....X4.....X5.....X6

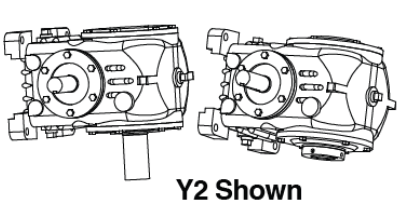


X1 Shown

Wall Mounted, Worm Horizontal to the Left

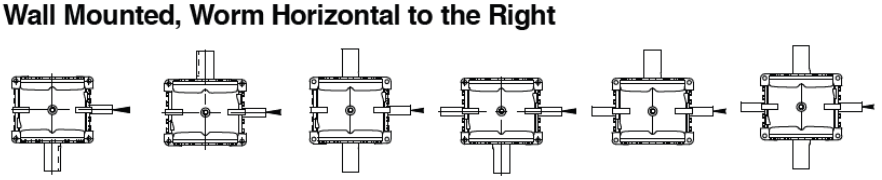


Y1.....Y2.....Y3.....Y4.....Y5.....Y6

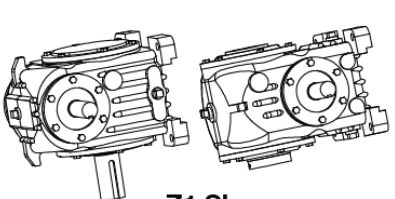


Y2 Shown

Wall Mounted, Worm Horizontal to the Right



Z1.....Z2.....Z3.....Z4.....Z5.....Z6

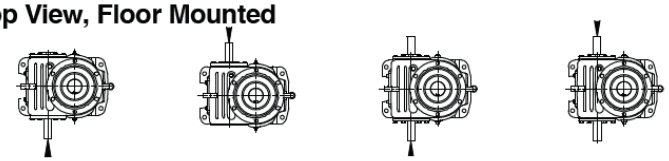


Z1 Shown

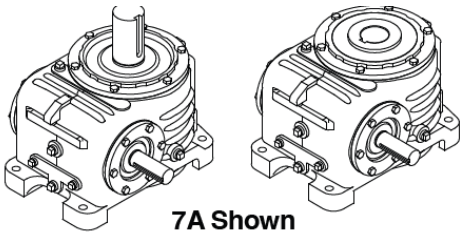
MOUNTING "V"
heavyDRIVE "HvD" Series

Servo Worm Gearboxes
Ultra Quiet Cast Iron Housing

Top View, Floor Mounted

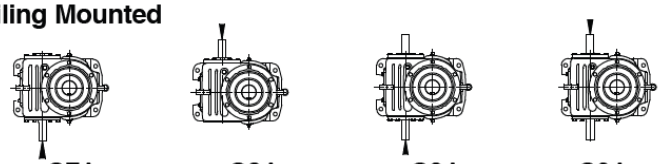


7A.....8A.....9A.....0A
7B.....8B.....9B.....0B
7C.....8C.....9C.....0C

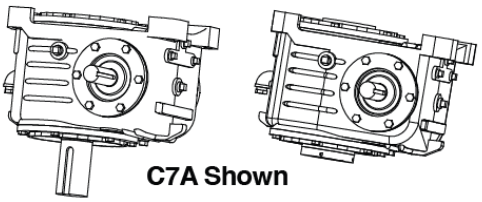


7A Shown

Ceiling Mounted

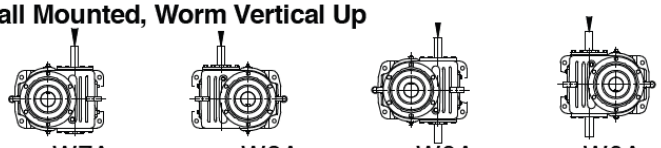


C7A.....C8A.....C9A.....C0A
C7B.....C8B.....C9B.....C0B
C7C.....C8C.....C9C.....C0C

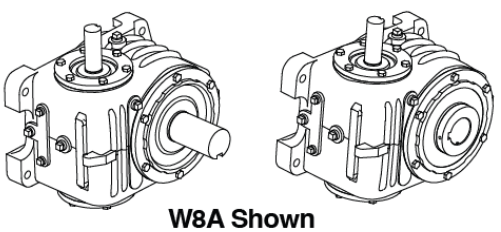


C7A Shown

Wall Mounted, Worm Vertical Up

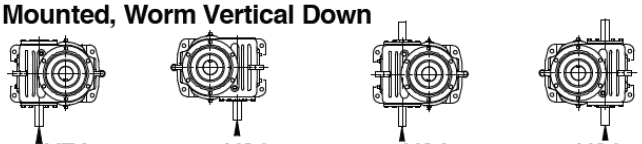


W7A.....W8A.....W9A.....W0A
W7B.....W8B.....W9B.....W0B
W7C.....W8C.....W9C.....W0C

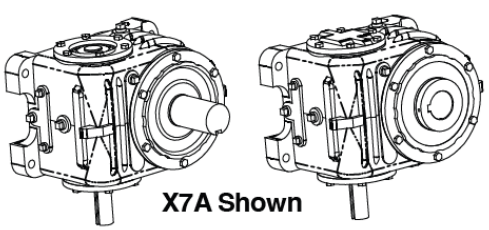


W8A Shown

Wall Mounted, Worm Vertical Down



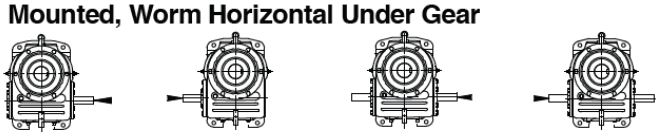
X7A.....X8A.....X9A.....X0A
X7B.....X8B.....X9B.....X0B
X7C.....X8C.....X9C.....X0C



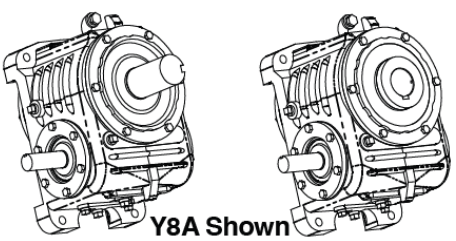
X7A Shown

Size 100 and larger - Contact Cone Drive Regarding Lubrication of Upper Worm Bearing

Wall Mounted, Worm Horizontal Under Gear

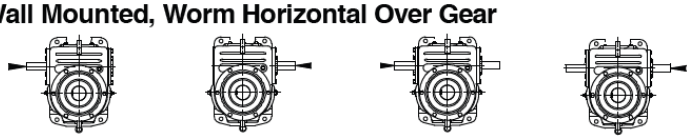


Y7A.....Y8A.....Y9A.....Y0A
Y7B.....Y8B.....Y9B.....Y0B
Y7C.....Y8C.....Y9C.....Y0C

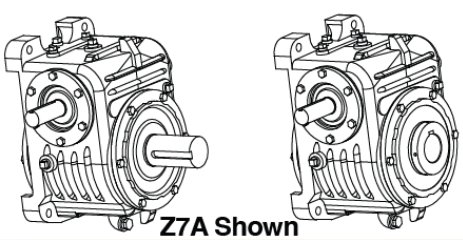


Y8A Shown

Wall Mounted, Worm Horizontal Over Gear



Z7A.....Z8A.....Z9A.....Z0A
Z7B.....Z8B.....Z9B.....Z0B
Z7C.....Z8C.....Z9C.....Z0C

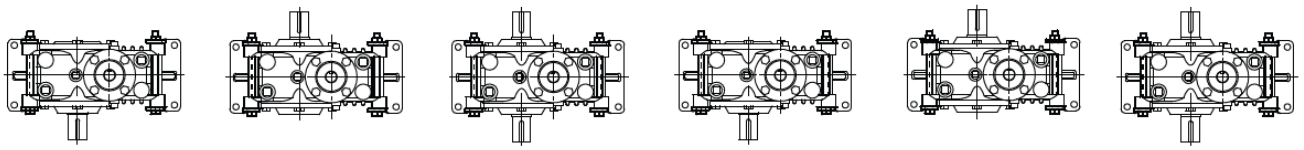


Z7A Shown

MOUNTING "UU"
heavyDRIVE "HvD" Series

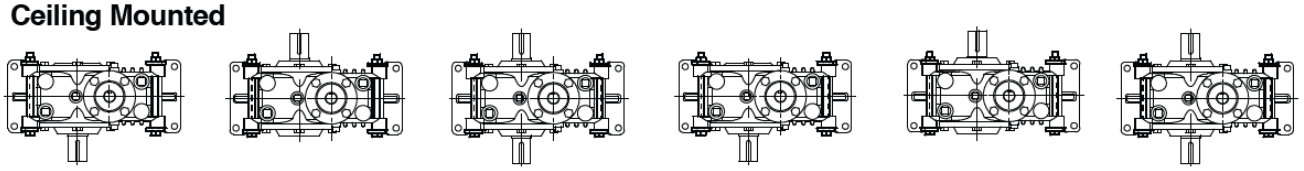
Servo Worm Gearboxes
Ultra Quiet Cast Iron Housing

Top View, Floor Mounted



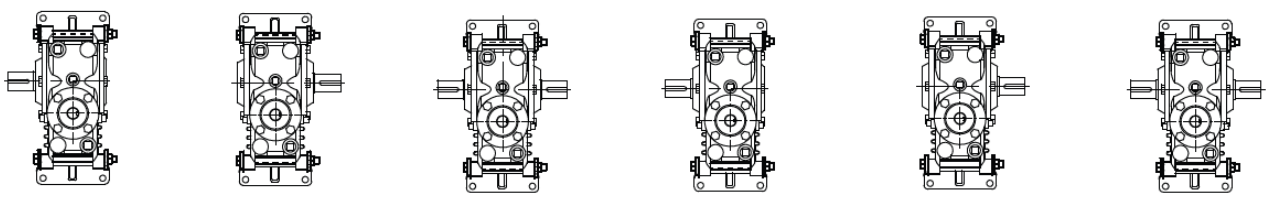
F1.....F2.....F3.....F4.....F5.....F6

Ceiling Mounted



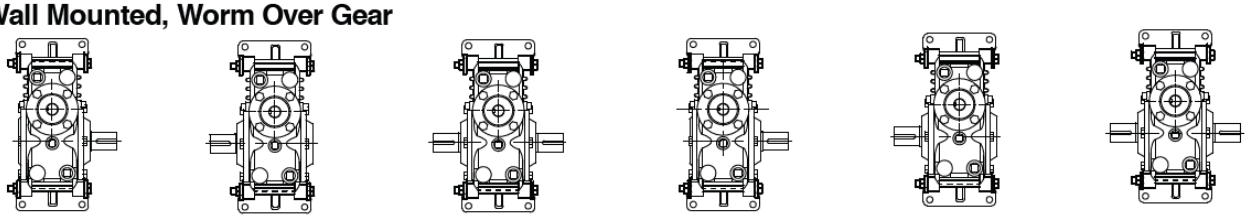
C1.....C2.....C3.....C4.....C5.....C6

Wall Mounted, Worm Under Gear



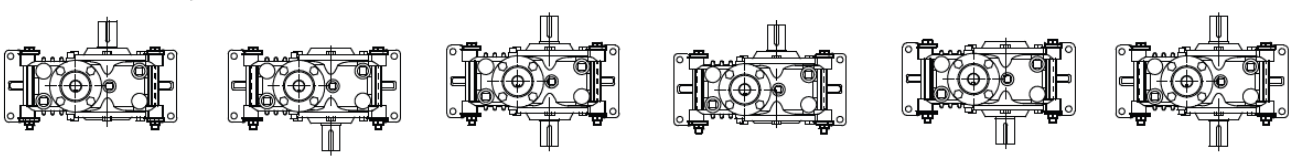
W1.....W2.....W3.....W4.....W5.....W6

Wall Mounted, Worm Over Gear



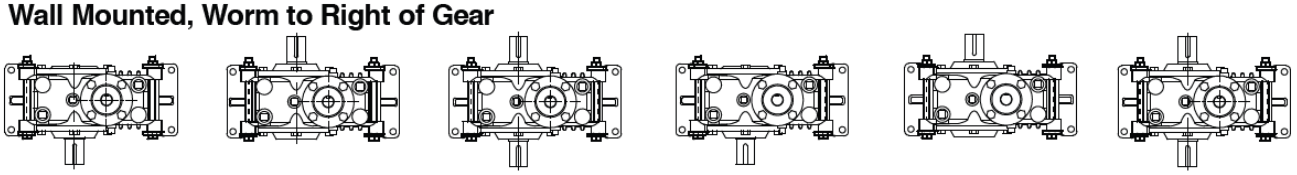
X1.....X2.....X3.....X4.....X5.....X6

Wall Mounted, Worm to the Left of Gear



Y1.....Y2.....Y3.....Y4.....Y5.....Y6

Wall Mounted, Worm to Right of Gear

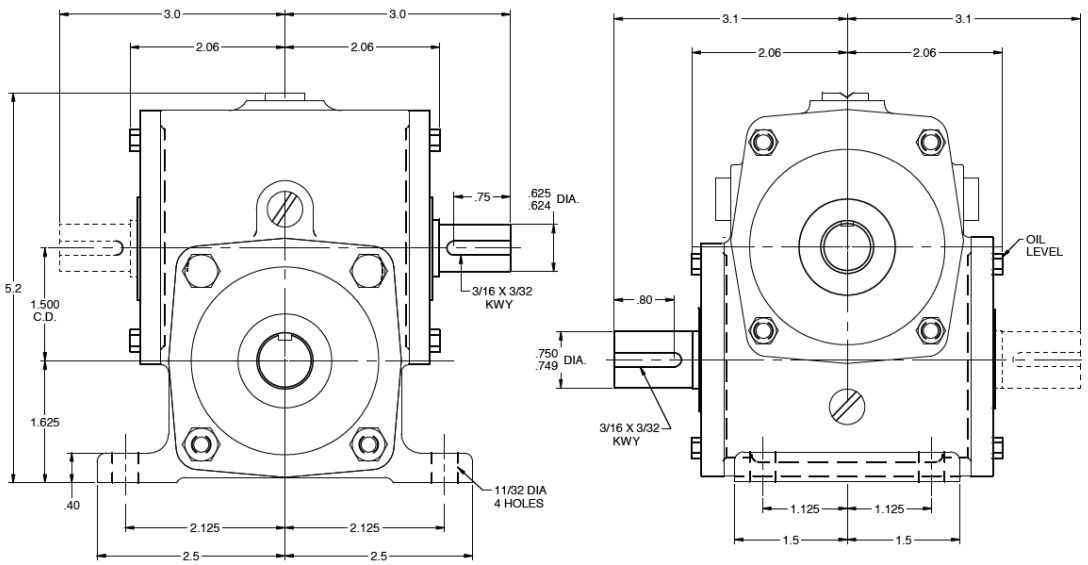


Z1.....Z2.....Z3.....Z4.....Z5.....Z6

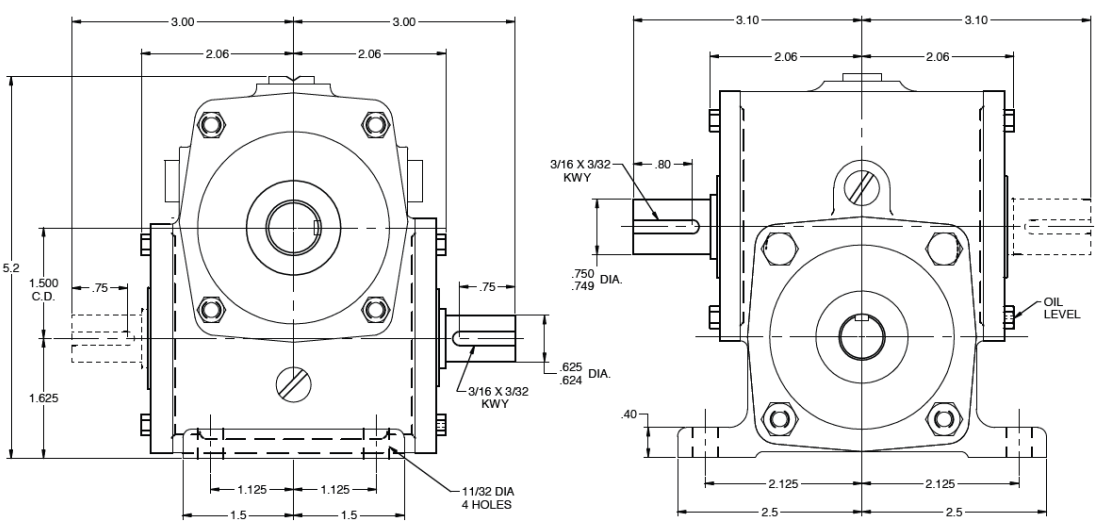
DIMENSIONS Size 15 heavyDRIVE "HvD" Series

AGMA HORSEPOWER & OUTPUT TORQUE RATINGS FOR 1.0 SERVICE FACTOR									
		Worm RPM							
Ratio to 1		100	200	300	580	720	870	1150	1750
5	Me.HP	0.24	0.45	0.64	1.13	1.35	1.58	1.94	2.51
	Efficiency	89	90	91	91	91	92	92	92
	O.T.	670	635	610	560	540	530	490	420
10	Me.HP	0.16	0.31	0.44	0.78	0.94	1.10	1.37	1.81
	Efficiency	83	85	86	87	87	89	90	90
	O.T.	860	825	800	745	720	715	675	590
15	Me.HP	0.13	0.25	0.36	0.63	0.76	0.89	1.11	1.48
	Efficiency	79	81	82	85	85	87	88	88
	O.T.	990	955	925	880	855	845	805	705
20	Me.HP	0.10	0.19	0.27	0.49	0.58	0.68	0.85	1.14
	Efficiency	75	77	78	83	83	83	84	85
	O.T.	955	930	895	880	850	825	785	700
30	Me.HP	0.07	0.13	0.18	0.33	0.40	0.46	0.58	0.77
	Efficiency	68	70	72	75	75	79	80	80
	O.T.	880	855	835	805	780	795	760	665
40	Me.HP	0.05	0.10	0.14	0.25	0.30	0.35	0.43	0.58
	Efficiency	61	63	67	72	75	75	76	76
	O.T.	795	770	785	775	785	760	725	635
50	Me.HP	0.04	0.08	0.11	0.20	0.24	0.28	0.35	0.46
	Efficiency	54	60	64	70	70	72	73	73
	O.T.	705	735	750	755	735	730	700	610
60	Me.HP	0.03	0.06	0.09	0.16	0.20	0.23	0.29	0.39
	Efficiency	53	59	61	66	66	69	70	70
	O.T.	695	725	715	710	690	700	670	585

Model HvD015 – Worm Over Gear net wt. 11 lbs



Model HvD015 – Worm Under Gear net wt. 11 lbs

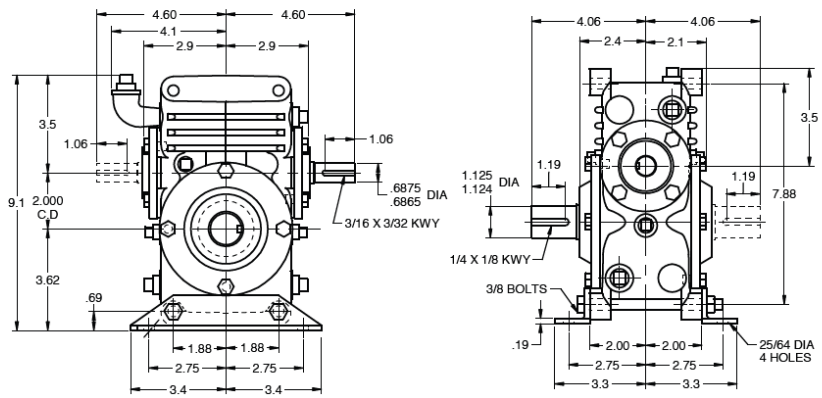


DIMENSIONS Size 20
heavyDRIVE "HvD" Series

BORE INCHES	GEARSHAFT NUMBER	KEYWAY SIZE
1.375*	20-S60-106	1/4 X 1/8
1.250*	20-S60-104	1/4 X 1/8
1.1875*	20-S60-103	1/4 X 1/8
1.125*	20-S60-102	1/4 X 1/8
1.000*	20-S60-100	1/4 X 1/8

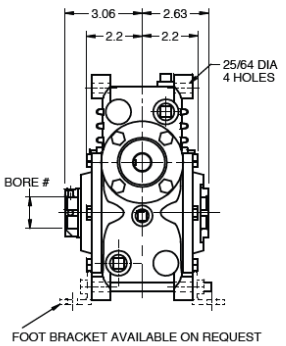
Size 20 Solid Shaft

Model HvD020 – Worm Over Gear net wt. 26 lbs



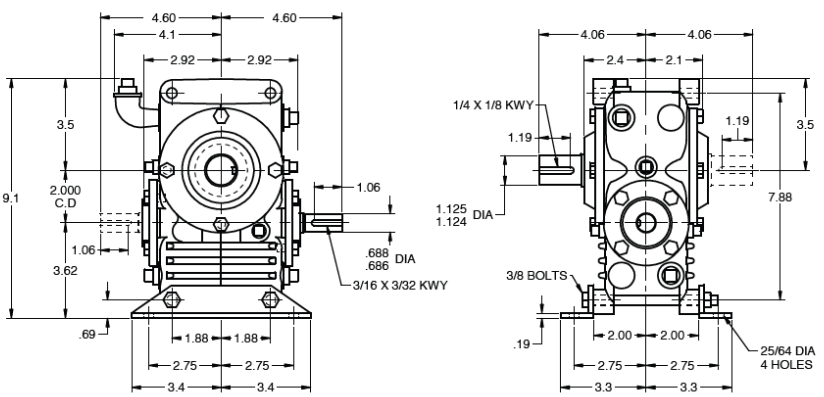
Hollow Shaft

net wt. 27 lbs

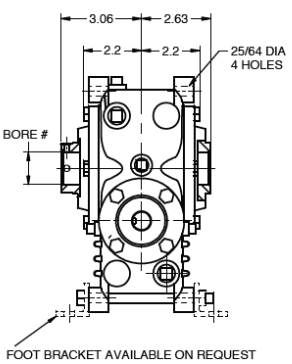


SEE GEAR SHAFT CHART
SET SCREW END OF SHAFT
MAY EXTEND ON EITHER SIDE

Model HvD020 – Worm Under Gear net wt. 26 lbs

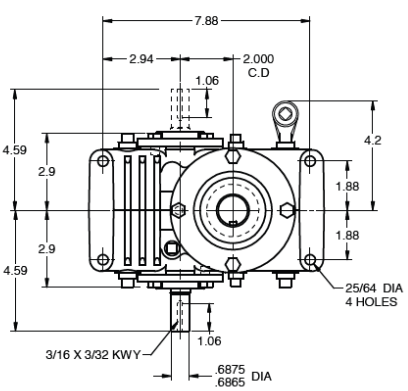


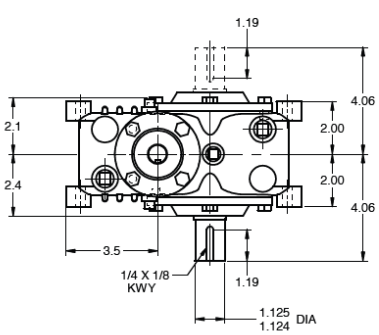
net wt. 27 lbs



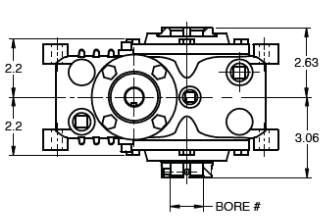
SEE GEAR SHAFT CHART
SET SCREW END OF SHAFT
MAY EXTEND ON EITHER SIDE

Model HvD020 – Vertical Gear Shaft net wt. 26 lbs





net wt. 27 lbs



SEE GEAR SHAFT CHART
SET SCREW END OF SHAFT MAY EXTEND ON EITHER SIDE

WHEN REVIEWING END OF SHAFT MODEL, REFER TO COMPLETE DIMENSIONS ON SAME SOLID SHAFT MODEL SHOWN AT LEFT.

INPUT AND OUTPUT SHAFT MAY EXTEND ON EITHER SIDE OR MAY BE DOUBLE EXTENDED

RATINGS Size 20
heavyDRIVE "HvD" Series

Servo Worm Gearboxes
Ultra Quiet Cast Iron Housing

AGMA HORSEPOWER & OUTPUT TORQUE RATINGS FOR 1.0 SERVICE FACTOR									
		Worm RPM							
Ratio to 1		100	200	300	580	720	870	1150	1750
5	Me.HP	0.47	0.88	1.25	2.21	2.62	3.02	3.64	4.59
	Th.HP	0.40	0.73	1.04	1.84	2.18	2.52	3.03	3.43
	Efficiency	89	90	91	91	91	92	92	92
	O.T.	1,330	1,250	1,200	1,095	1,045	1,010	920	760
10	Me.HP	0.32	0.61	0.86	1.53	1.83	2.11	2.57	3.28
	Th.HP	0.25	0.47	0.66	1.18	1.40	1.63	1.98	2.53
	Efficiency	83	85	86	87	87	89	90	90
	O.T.	1,700	1,630	1,560	1,450	1,390	1,365	1,270	1,065
15	Me.HP	0.26	0.49	0.70	1.24	1.48	1.72	2.10	2.69
	Th.HP	0.18	0.33	0.47	0.83	0.99	1.15	1.40	1.79
	Efficiency	79	81	82	85	85	87	88	88
	O.T.	1,965	1,880	1,810	1,715	1,655	1,625	1,515	1,280
20	Me.HP	0.20	0.38	0.54	0.95	1.13	1.32	1.61	2.06
	Th.HP	0.13	0.25	0.36	0.63	0.76	0.88	1.07	1.38
	Efficiency	75	77	78	83	83	83	84	85
	O.T.	1,900	1,830	1,755	1,715	1,650	1,585	1,485	1,265
25	Me.HP	0.16	0.30	0.43	0.77	0.91	1.06	1.30	1.66
	Th.HP	0.11	0.20	0.29	0.51	0.61	0.71	0.87	1.11
	Efficiency	71	75	77	81	81	83	84	84
	O.T.	1,810	1,795	1,745	1,685	1,625	1,595	1,495	1,260
30	Me.HP	0.14	0.25	0.36	0.64	0.77	0.89	1.09	1.40
	Th.HP	0.09	0.17	0.24	0.43	0.51	0.59	0.73	0.93
	Efficiency	68	70	72	75	75	79	80	80
	O.T.	1,745	1,685	1,645	1,570	1,510	1,530	1,430	1,210
40	Me.HP	0.10	0.19	0.27	0.48	0.58	0.67	0.82	1.05
	Th.HP	0.07	0.13	0.18	0.32	0.38	0.45	0.55	0.70
	Efficiency	61	63	67	72	75	75	76	76
	O.T.	1,570	1,525	1,535	1,515	1,515	1,460	1,365	1,155
50	Me.HP	0.08	0.15	0.22	0.39	0.46	0.54	0.66	0.84
	Th.HP	0.05	0.10	0.15	0.26	0.31	0.36	0.44	0.56
	Efficiency	54	60	64	70	70	72	73	73
	O.T.	1,395	1,455	1,470	1,475	1,420	1,405	1,315	1,110
60	Me.HP	0.07	0.13	0.18	0.32	0.39	0.45	0.55	0.71
	Th.HP	0.05	0.09	0.12	0.22	0.26	0.30	0.37	0.47
	Efficiency	53	59	61	66	66	69	70	70
	O.T.	1,370	1,435	1,400	1,395	1,340	1,350	1,265	1,070

Key: Me.HP = Mech. Input Power (HP) Th.HP = Thermal Input Power - No Fan
O.T. = Output Torque (In. Lb.)

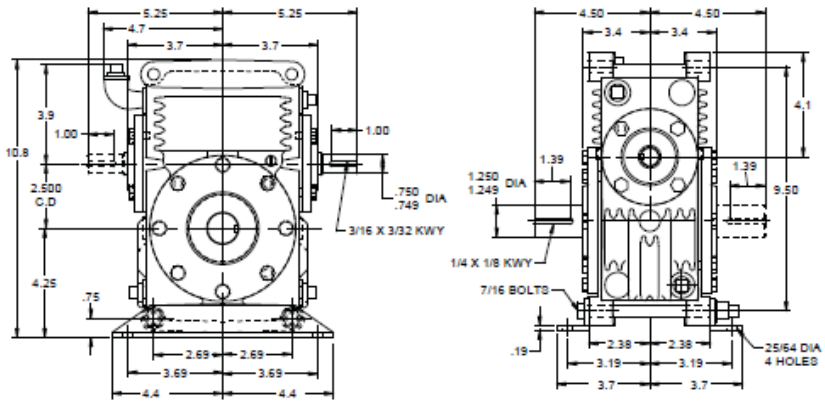
DIMENSIONS Size 25
heavyDRIVE "HvD" Series

BORE INCHES	GEARSHAFT NUMBER	KEYWAY SIZE
2.000*	25-S60-200	1/4 X 1/8
1.9375*	25-S60-115	1/4 X 1/8
1.6875*	25-S60-111	3/8 X 3/16
1.4375*	25-S60-107	3/8 X 3/16
1.250*	25-S60-104	1/4 X 1/8
1.1875*	25-S60-103	1/4 X 1/8

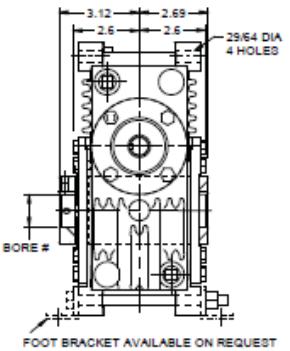
Size 25 Solid Shaft

Hollow Shaft

Model HvD025 – Worm Over Gear net wt. 45 lbs



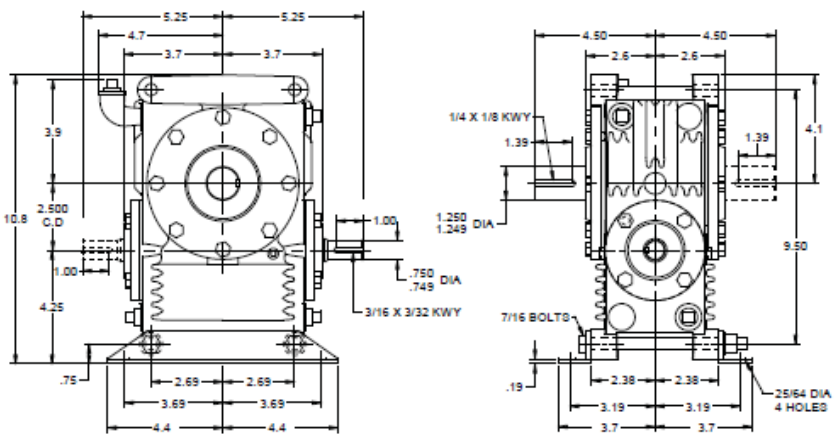
net wt. 46 lbs



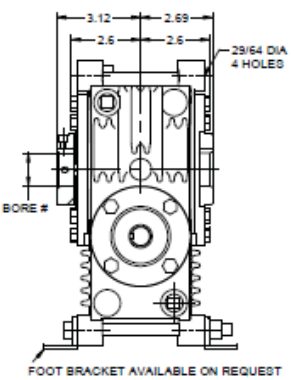
FOOT BRACKET AVAILABLE ON REQUEST

SEE GEAR SHAFT CHART
SET SCREW END OF SHAFT
MAY EXTEND ON EITHER SIDE

Model HvD025 – Worm Under Gear net wt. 45 lbs



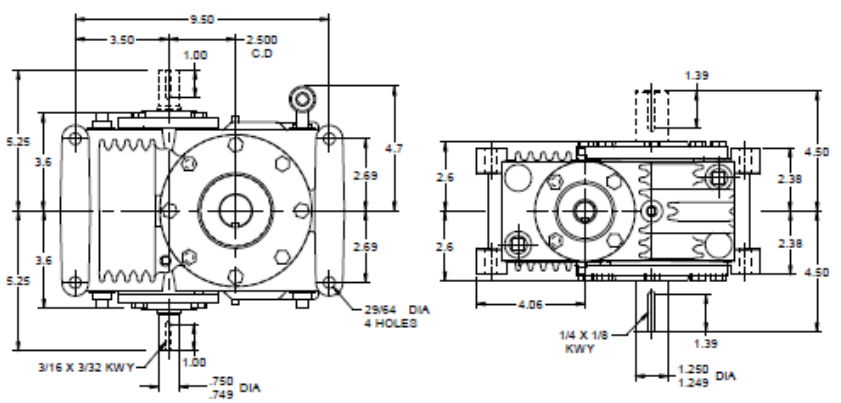
net wt. 46 lbs



FOOT BRACKET AVAILABLE ON REQUEST

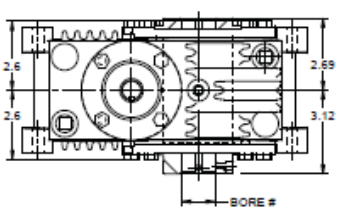
SEE GEAR SHAFT CHART
SET SCREW END OF SHAFT
MAY EXTEND ON EITHER SIDE

Model HvD025 – Vertical Gear Shaft net wt. 45 lbs



INPUT AND OUTPUT SHAFT MAY EXTEND ON EITHER SIDE OR MAY BE DOUBLE EXTENDED

net wt. 46 lbs



SEE GEAR SHAFT CHART
SET SCREW END OF SHAFT
MAY EXTEND ON EITHER SIDE

RATINGS Size 25
heavyDRIVE "HvD" Series

Servo Worm Gearboxes
Ultra Quiet Cast Iron Housing

AGMA Horsepower & Output Torque Ratings for 1.0 Service Factor									
		Worm RPM							
Ratio to 1		100	200	300	580	720	870	1150	1750
5	Me.HP	0.94	1.72	2.45	4.22	4.95	5.60	6.56	8.23
	Th.HP	0.78	1.43	2.04	3.52	4.02	4.20	4.54	5.00
	Efficiency	89	90	91	91	91	92	92	92
	O.T.	2,625	2,440	2,345	2,090	1,975	1,870	1,655	1,365
10	Me.HP	0.65	1.19	1.69	2.95	3.49	3.97	4.72	5.93
	Th.HP	0.50	0.91	1.30	2.27	2.68	3.06	3.63	4.01
	Efficiency	83	85	86	87	87	89	90	90
	O.T.	3,375	3,180	3,050	2,790	2,655	2,560	2,330	1,925
15	Me.HP	0.52	0.96	1.37	2.39	2.83	3.24	3.86	4.83
	Th.HP	0.35	0.64	0.91	1.60	1.89	2.16	2.57	3.22
	Efficiency	79	81	82	85	85	87	88	88
	O.T.	3,895	3,675	3,535	3,320	3,165	3,060	2,795	2,300
20	Me.HP	0.40	0.74	1.05	1.83	2.17	2.48	2.96	3.71
	Th.HP	0.27	0.49	0.70	1.22	1.45	1.66	1.98	2.47
	Efficiency	75	77	78	83	83	83	84	85
	O.T.	3,770	3,575	3,435	3,310	3,155	2,990	2,730	2,270
25	Me.HP	0.32	0.59	0.84	1.48	1.75	2.00	2.39	2.99
	Th.HP	0.21	0.40	0.56	0.98	1.17	1.33	1.59	2.00
	Efficiency	71	75	77	81	81	83	84	84
	O.T.	3,595	3,505	3,415	3,250	3,100	3,010	2,750	2,265
30	Me.HP	0.27	0.50	0.71	1.24	1.46	1.68	2.00	2.52
	Th.HP	0.18	0.33	0.47	0.82	0.98	1.12	1.34	1.68
	Efficiency	68	70	72	75	75	79	80	80
	O.T.	3,460	3,290	3,210	3,025	2,885	2,880	2,640	2,180
40	Me.HP	0.20	0.37	0.53	0.93	1.10	1.26	1.51	1.90
	Th.HP	0.13	0.25	0.35	0.62	0.74	0.84	1.01	1.26
	Efficiency	61	63	67	72	75	75	76	76
	O.T.	3,115	2,970	3,000	2,920	2,900	2,745	2,515	2,080
50	Me.HP	0.16	0.30	0.43	0.75	0.89	1.01	1.21	1.52
	Th.HP	0.11	0.20	0.28	0.50	0.59	0.68	0.81	1.01
	Efficiency	54	60	64	70	70	72	73	73
	O.T.	2,765	2,835	2,875	2,845	2,715	2,645	2,420	2,000
60	Me.HP	0.14	0.25	0.36	0.62	0.74	0.85	1.01	1.27
	Th.HP	0.09	0.17	0.24	0.42	0.49	0.56	0.67	0.85
	Efficiency	53	59	61	66	66	69	70	70
	O.T.	2,715	2,795	2,740	2,685	2,560	2,535	2,330	1,920

Key: Me.HP = Mech. Input Power (HP) Th.HP = Thermal Input Power - No Fan
O.T. = Output Torque (In. Lb.)

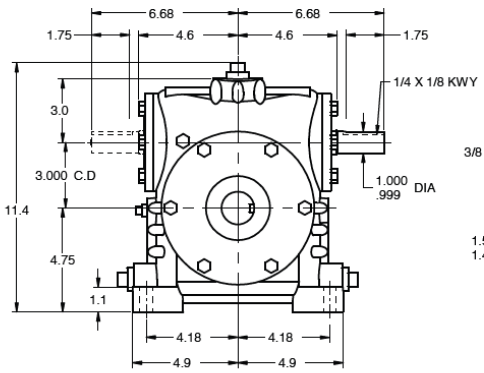
DIMENSIONS Size 30
heavyDRIVE "HvD" Series

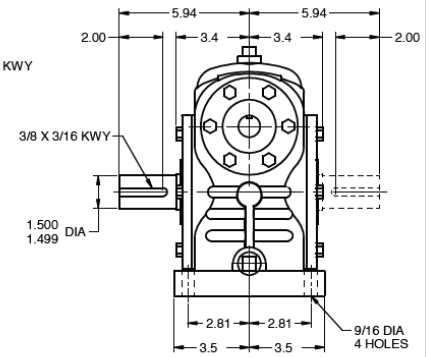
BORE INCHES	GEARSHAFT NUMBER	KEYWAY SIZE
2.500*	30-S60-208	3/8 X 3/16
2.4375*	30-S60-207	3/8 X 3/16
2.1875*	30-S60-203	1/2 X 1/4
1.9375*	30-S60-115	1/2 X 1/4
1.6875*	30-S60-111	3/8 X 3/16
1.500*	30-S60-108	3/8 X 3/16

Solid Shaft

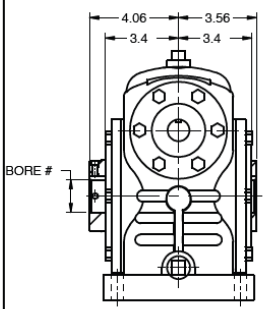
Hollow Shaft

Model HvD030 – Worm Over Gear net wt. 73 lbs



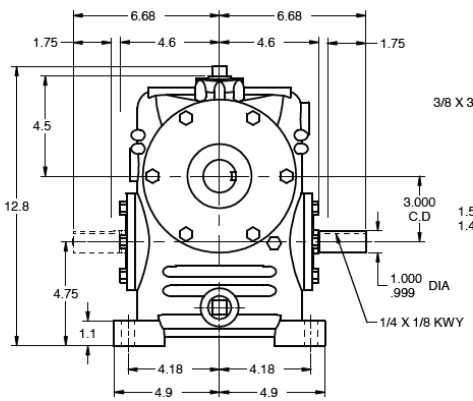


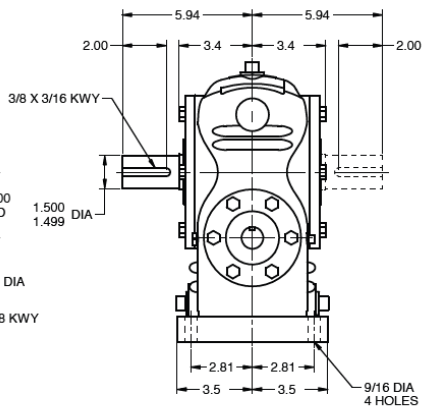
net wt. 92 lbs



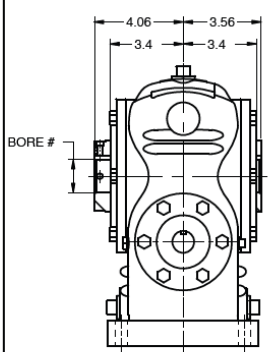
SEE GEAR SHAFT CHART
SET SCREW END OF SHAFT
MAY EXTEND ON EITHER SIDE

Model HvD030 – Worm Under Gear net wt. 83 lbs



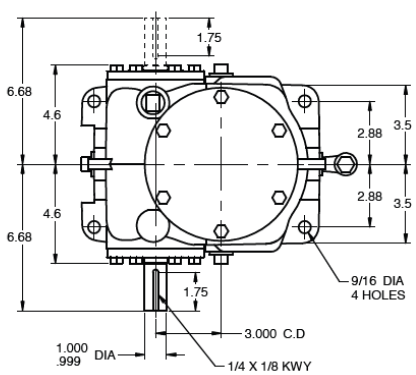


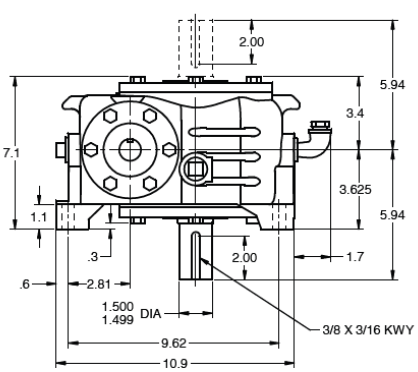
net wt. 90 lbs

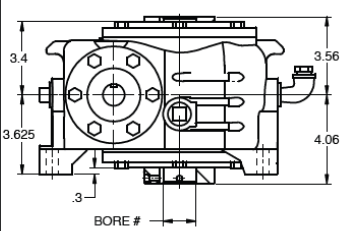


SEE GEAR SHAFT CHART
SET SCREW END OF SHAFT
MAY EXTEND ON EITHER SIDE

Model HvD030 – Vertical Gear Shaft net wt. 74 lbs net wt. 89 lbs







INPUT AND OUTPUT SHAFT MAY EXTEND ON EITHER SIDE OR MAY BE DOUBLE EXTENDED

SEE GEAR SHAFT CHART
SET SCREW END OF SHAFT
MAY EXTEND ON EITHER SIDE

RATINGS Size 30
heavyDRIVE "HvD" Series

Servo Worm Gearboxes
Ultra Quiet Cast Iron Housing

AGMA Horsepower & Output Torque Ratings for 1.0 Service Factor									
		Worm RPM							
Ratio to 1		100	200	300	580	720	870	1150	1750
5	Me.HP	1.66	3.03	4.32	7.26	8.37	9.34	10.80	13.58
	Th.HP	1.37	2.03	2.55	3.63	4.06	4.25	4.59	5.05
	Th.HP Fan								
	Efficiency	89	90	91	91	91	92	92	92
	O.T.	4,645	4,300	4,130	3,590	3,335	3,115	2,725	2,250
10	Me.HP	1.15	2.11	3.00	5.17	6.05	6.84	8.03	10.05
	Th.HP	0.88	1.62	2.31	3.19	3.38	3.61	3.80	4.05
	Th.HP Fan								
	Efficiency	83	85	86	87	87	89	90	90
	O.T.	6,005	5,650	5,425	4,890	4,610	4,415	3,965	3,255
15	Me.HP	0.93	1.71	2.43	4.20	4.93	5.59	6.57	8.22
	Th.HP	0.62	1.14	1.62	2.71	2.87	2.99	3.12	3.33
	Th.HP Fan								
	Efficiency	79	81	82	85	85	87	88	88
	O.T.	6,930	6,530	6,275	5,825	5,500	5,285	4,755	3,910
20	Me.HP	0.71	1.31	1.86	3.23	3.79	4.30	5.07	6.34
	Th.HP	0.47	0.87	1.24	2.15	2.53	2.73	2.81	2.90
	Th.HP Fan								
	Efficiency	75	77	78	83	83	83	84	85
	O.T.	6,730	6,350	6,105	5,820	5,505	5,175	4,670	3,880
25	Me.HP	0.57	1.06	1.50	2.60	3.05	3.46	4.09	5.11
	Th.HP	0.38	0.70	1.00	1.73	2.03	2.29	2.34	2.43
	Th.HP Fan								
	Efficiency	71	75	77	81	81	83	84	84
	O.T.	6,415	6,235	6,070	5,715	5,410	5,210	4,705	3,865
30	Me.HP	0.48	0.88	1.26	2.18	2.56	2.91	3.43	4.29
	Th.HP	0.32	0.59	0.84	1.45	1.70	1.94	2.11	2.17
	Th.HP Fan								
	Efficiency	68	70	72	75	75	79	80	80
	O.T.	6,175	5,850	5,705	5,335	5,035	4,995	4,515	3,710
40	Me.HP	0.36	0.67	0.95	1.64	1.93	2.19	2.58	3.23
	Th.HP	0.24	0.44	0.63	1.09	1.28	1.46	1.72	1.93
	Th.HP Fan								
	Efficiency	61	63	67	72	75	75	76	76
	O.T.	5,555	5,280	5,325	5,135	5,060	4,755	4,300	3,535
50	Me.HP	0.29	0.53	0.76	1.32	1.55	1.76	2.07	2.60
	Th.HP	0.19	0.36	0.51	0.88	1.03	1.17	1.38	1.73
	Th.HP Fan								
	Efficiency	54	60	64	70	70	72	73	73
	O.T.	4,930	5,045	5,100	5,015	4,745	4,585	4,140	3,415
60	Me.HP	0.24	0.45	0.63	1.10	1.29	1.47	1.73	2.17
	Th.HP	0.16	0.30	0.42	0.73	0.86	0.98	1.15	1.44
	Th.HP Fan								
	Efficiency	53	59	61	66	66	69	70	70
	O.T.	4,845	4,965	4,865	4,735	4,480	4,400	3,975	3,275

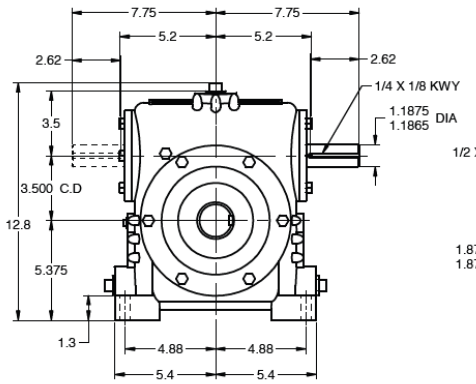
Key: Me.HP = Mech. Input Power (HP) Th.HP = Thermal Input Power - No Fan
O.T. = Output Torque (In. Lb.) Th.HP Fan = Thermal Input Power - Fan

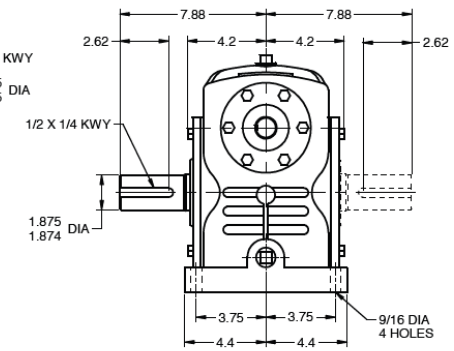
BORE INCHES	GEARSHAFT NUMBER	KEYWAY SIZE
2.750*	35-S60-212	3/8 X 3/16
2.6875*	35-S60-211	3/8 X 3/16
2.500*	35-S60-208	3/8 X 3/16
2.4375*	35-S60-207	5/8 X 5/16
2.1875*	35-S60-203	1/2 X 1/4
1.9375*	35-S60-115	1/2 X 1/4
1.6875*	35-S60-111	3/8 X 3/16

DIMENSIONS Size 35 heavyDRIVE "HvD" Series

Solid Shaft

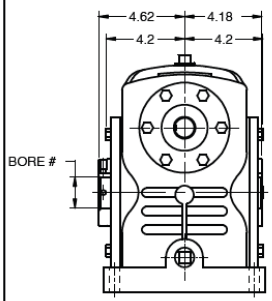
Model HvD035 – Worm Over Gear net wt. 122 lbs





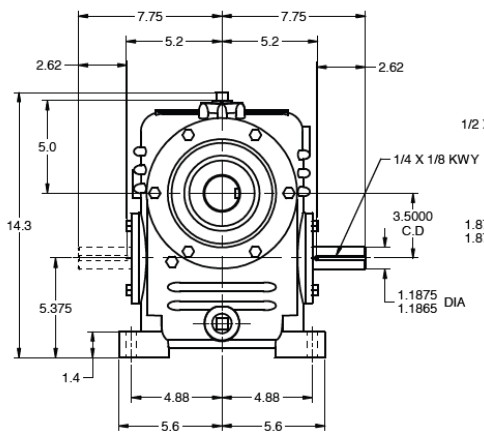
Hollow Shaft

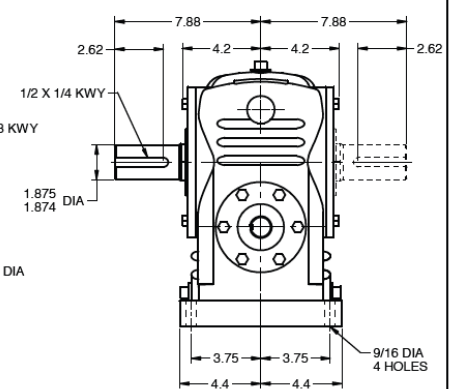
net wt. 126 lbs



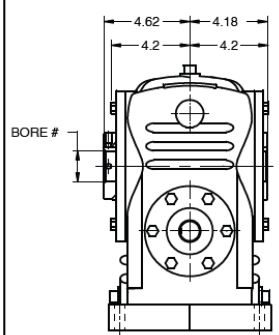
SEE GEAR SHAFT CHART
SET SCREW END OF SHAFT
MAY EXTEND ON EITHER SIDE

Model HvD035 – Worm Under Gear net wt. 134 lbs



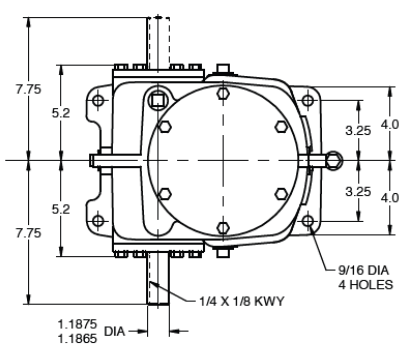


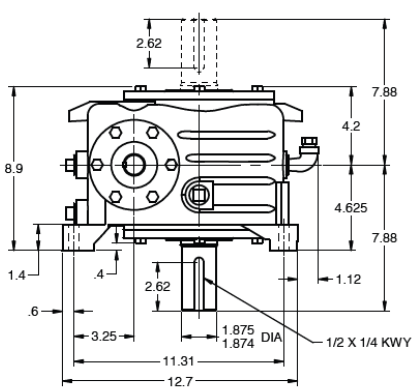
net wt. 140 lbs



SEE GEAR SHAFT CHART
SET SCREW END OF SHAFT
MAY EXTEND ON EITHER SIDE

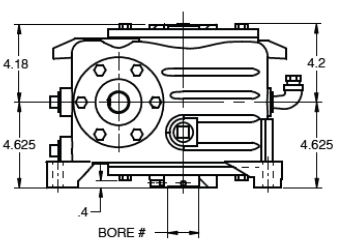
Model HvD035 – Vertical Gear Shaft net wt. 120 lbs





INPUT AND OUTPUT SHAFT MAY EXTEND ON EITHER SIDE OR MAY BE DOUBLE EXTENDED

net wt. 123 lbs



SEE GEAR SHAFT CHART
SET SCREW END OF SHAFT
MAY EXTEND ON EITHER SIDE

RATINGS Size 35
heavyDRIVE "HvD" Series

Servo Worm Gearboxes
Ultra Quiet Cast Iron Housing

AGMA Horsepower & Output Torque Ratings for 1.0 Service Factor									
		Worm RPM							
Ratio to 1		100	200	300	580	720	870	1150	1750
5	Me.HP	3.06	5.59	7.91	12.97	14.79	16.37	19.11	23.54
	Th.HP	2.55	4.41	5.68	8.09	9.06	9.77	10.55	11.61
	Th.HP Fan	3.06	5.59	7.91	12.97	14.79	16.37	19.11	23.21
	Efficiency	89	90	91	91	91	92	92	92
	O.T.	8,595	7,930	7,565	6,410	5,890	5,455	4,815	3,900
10	Me.HP	2.12	3.88	5.53	9.30	10.73	12.00	13.92	17.37
	Th.HP	1.63	2.98	4.26	6.57	7.19	7.67	8.25	8.80
	Th.HP Fan	2.12	3.88	5.53	9.30	10.73	12.00	13.92	17.37
	Efficiency	83	85	86	87	87	89	90	90
	O.T.	11,095	10,385	9,995	8,795	8,170	7,735	6,865	5,630
15	Me.HP	1.71	3.14	4.48	7.56	8.76	9.81	11.40	14.27
	Th.HP	1.14	2.09	2.98	5.04	5.84	6.54	7.60	6.95
	Th.HP Fan	1.71	3.14	4.48	7.56	8.76	9.81	11.40	13.91
	Efficiency	79	81	82	85	85	87	88	88
	O.T.	12,805	12,025	11,565	10,470	9,775	9,275	8,245	6,785
20	Me.HP	1.31	2.40	3.43	5.80	6.73	7.55	8.76	10.98
	Th.HP	0.88	1.60	2.29	3.87	4.48	5.03	5.58	5.82
	Th.HP Fan	1.31	2.40	3.43	5.80	6.73	7.55	8.76	10.98
	Efficiency	75	77	78	83	83	83	84	85
	O.T.	12,410	11,655	11,235	10,465	9,775	9,080	8,065	6,725
25	Me.HP	1.06	1.94	2.77	4.68	5.43	6.10	7.07	8.84
	Th.HP	0.71	1.29	1.84	3.12	3.62	4.06	4.64	4.82
	Th.HP Fan	1.06	1.94	2.77	4.68	5.43	6.10	7.07	8.84
	Efficiency	71	75	77	81	81	83	84	84
	O.T.	11,830	11,445	11,185	10,305	9,625	9,165	8,140	6,690
30	Me.HP	0.89	1.62	2.32	3.93	4.55	5.11	5.93	7.41
	Th.HP	0.59	1.08	1.54	2.62	3.03	3.41	3.95	4.17
	Th.HP Fan	0.89	1.62	2.32	3.93	4.55	5.11	5.93	7.41
	Efficiency	68	70	72	75	75	79	80	80
	O.T.	11,390	10,740	10,515	9,610	8,960	8,770	7,795	6,405
40	Me.HP	0.67	1.22	1.74	2.96	3.42	3.85	4.47	5.57
	Th.HP	0.44	0.81	1.16	1.97	2.28	2.57	2.98	3.64
	Th.HP Fan	0.67	1.22	1.74	2.96	3.42	3.85	4.47	5.57
	Efficiency	61	63	67	72	75	75	76	76
	O.T.	10,245	9,695	9,810	9,250	8,980	8,365	7,445	6,100
50	Me.HP	0.53	0.98	1.40	2.37	2.75	3.09	3.59	4.50
	Th.HP	0.36	0.65	0.93	1.58	1.83	2.06	2.39	3.00
	Th.HP Fan	0.53	0.98	1.40	2.37	2.75	3.09	3.59	4.50
	Efficiency	54	60	64	70	70	72	73	73
	O.T.	9,095	9,255	9,395	9,020	8,425	8,055	7,170	5,915
60	Me.HP	0.45	0.82	1.17	1.98	2.29	2.58	2.99	3.75
	Th.HP	0.30	0.54	0.78	1.32	1.53	1.72	1.99	2.50
	Th.HP Fan	0.45	0.82	1.17	1.98	2.29	2.58	2.99	3.75
	Efficiency	53	59	61	66	66	69	70	70
	O.T.	8,940	9,115	8,970	8,515	7,955	7,730	6,885	5,680

Key: Me.HP = Mech. Input Power (HP) Th.HP = Thermal Input Power - No Fan
O.T. = Output Torque (In. Lb.) Th.HP Fan = Thermal Input Power - Fan

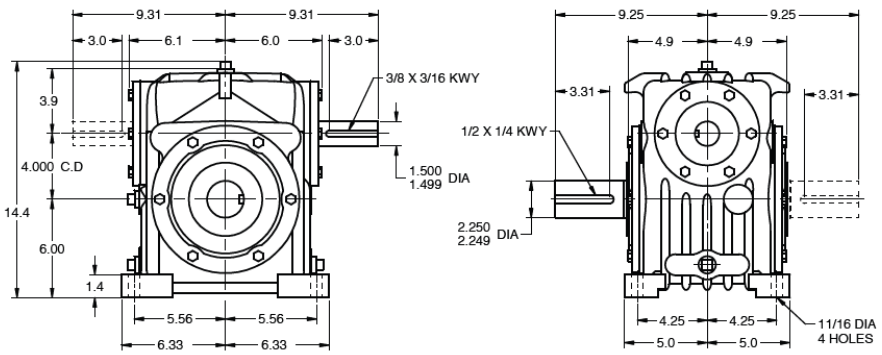
DIMENSIONS Size 40
heavyDRIVE "HvD" Series

BORE INCHES	GEARSHAFT NUMBER	KEYWAY SIZE
2.9375*	40-S60-215	5/8 X 5/16
2.6875*	40-S60-211	5/8 X 5/16
2.4375*	40-S60-207	5/8 X 5/16
2.1875*	40-S60-203	5/8 X 5/16

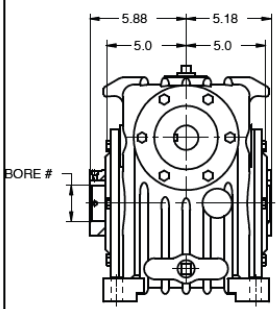
Solid Shaft

Hollow Shaft

Model HvD040 – Worm Over Gear net wt. 175 lbs

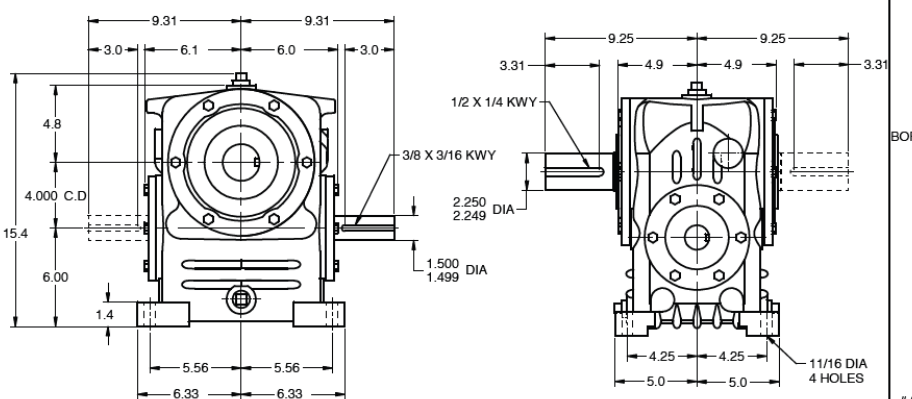


net wt. 185 lbs

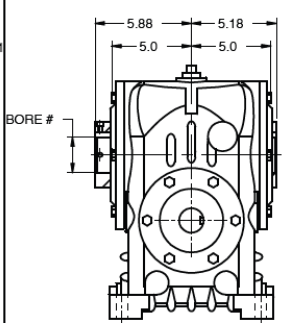


SEE GEAR SHAFT CHART
SET SCREW END OF SHAFT
MAY EXTEND ON EITHER SIDE

Model HvD040 – Worm Under Gear net wt. 187 lbs

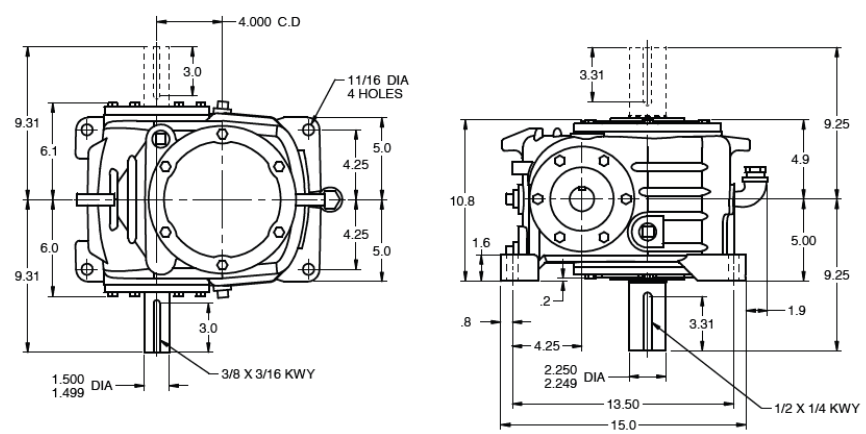


net wt. 197 lbs



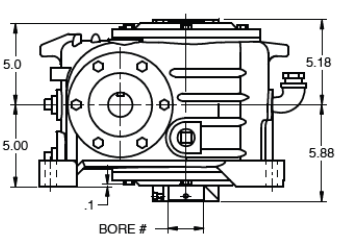
SEE GEAR SHAFT CHART
SET SCREW END OF SHAFT
MAY EXTEND ON EITHER SIDE

Model HvD040 – Vertical Gear Shaft net wt. 170 lbs



INPUT AND OUTPUT SHAFT MAY EXTEND ON EITHER SIDE OR MAY BE DOUBLE EXTENDED

net wt. 180 lbs



SEE GEAR SHAFT CHART
SET SCREW END OF SHAFT
MAY EXTEND ON EITHER SIDE

RATINGS Size 40
heavyDRIVE "HvD" Series

Servo Worm Gearboxes
Ultra Quiet Cast Iron Housing

AGMA HORSEPOWER & OUTPUT TORQUE RATINGS FOR 1.0 SERVICE FACTOR									
		Worm RPM							
Ratio to 1		100	200	300	580	720	870	1150	1750
5	Me.HP	4.39	8.03	11.27	17.98	20.30	22.40	25.99	31.84
	Th.HP	3.53	5.35	6.88	9.80	10.97	11.83	12.78	14.06
	Th.HP Fan	4.39	8.03	11.27	17.98	20.30	22.40	25.56	28.12
	Efficiency	92	93	94	94	94	95	95	95
	O.T.	12,715	11,770	11,130	9,180	8,350	7,710	6,765	5,445
10	Me.HP	3.06	5.58	7.92	13.07	14.96	16.59	19.30	23.88
	Th.HP	2.35	4.29	5.80	7.96	8.71	9.30	9.99	10.66
	Th.HP Fan	3.06	5.58	7.92	13.07	14.96	16.59	19.30	21.33
	Efficiency	86	88	89	90	90	92	93	93
	O.T.	16,570	15,475	14,800	12,780	11,785	11,055	9,835	8,000
15	Me.HP	2.47	4.51	6.42	10.65	12.22	13.57	15.73	19.58
	Th.HP	1.65	3.01	4.28	7.10	8.15	7.46	7.89	8.42
	Th.HP Fan	2.47	4.51	6.42	10.65	12.22	13.57	15.73	16.85
	Efficiency	82	84	85	88	89	90	91	91
	O.T.	19,160	17,920	17,180	15,270	14,280	13,270	11,770	9,625
20	Me.HP	1.90	3.46	4.91	8.17	9.39	10.45	12.10	15.08
	Th.HP	1.26	2.31	3.28	5.45	6.19	6.50	6.76	7.05
	Th.HP Fan	1.90	3.46	4.91	8.17	9.39	10.45	12.10	14.10
	Efficiency	78	80	81	86	86	86	87	88
	O.T.	18,635	17,430	16,720	15,275	14,130	13,020	11,535	9,555
25	Me.HP	1.53	2.79	3.96	6.60	7.58	8.44	9.80	12.14
	Th.HP	1.02	1.86	2.64	4.40	5.05	5.47	5.62	5.84
	Th.HP Fan	1.53	2.79	3.96	6.60	7.58	8.44	9.80	11.69
	Efficiency	74	78	80	84	84	86	87	87
	O.T.	17,800	17,135	16,655	15,050	13,930	13,140	11,675	9,510
30	Me.HP	1.28	2.34	3.32	5.54	6.36	7.07	8.23	10.21
	Th.HP	0.85	1.56	2.21	3.69	4.24	4.71	4.91	5.05
	Th.HP Fan	1.28	2.34	3.32	5.54	6.36	7.07	8.23	10.11
	Efficiency	71	73	75	78	81	82	83	83
	O.T.	17,170	16,125	15,700	14,080	13,535	12,595	11,230	9,155
40	Me.HP	0.96	1.76	2.50	4.17	4.79	5.33	6.19	7.68
	Th.HP	0.64	1.17	1.67	2.78	3.19	3.55	4.13	4.41
	Th.HP Fan	0.96	1.76	2.50	4.17	4.79	5.33	6.19	7.68
	Efficiency	64	66	70	75	76	78	79	79
	O.T.	15,540	14,620	14,715	13,575	12,730	12,045	10,720	8,735
50	Me.HP	0.77	1.41	2.01	3.34	3.84	4.28	4.97	6.16
	Th.HP	0.52	0.94	1.34	2.23	2.56	2.85	3.31	3.92
	Th.HP Fan	0.77	1.41	2.01	3.34	3.84	4.28	4.97	6.16
	Efficiency	57	63	67	73	74	75	76	76
	O.T.	13,880	13,990	14,125	13,250	12,430	11,610	10,340	8,425
60	Me.HP	0.64	1.18	1.68	2.79	3.20	3.57	4.14	5.14
	Th.HP	0.43	0.78	1.12	1.86	2.14	2.38	2.76	3.43
	Th.HP Fan	0.64	1.18	1.68	2.79	3.20	3.57	4.14	5.14
	Efficiency	56	62	64	69	71	72	73	73
	O.T.	13,655	13,790	13,510	12,540	11,940	11,160	9,945	8,105

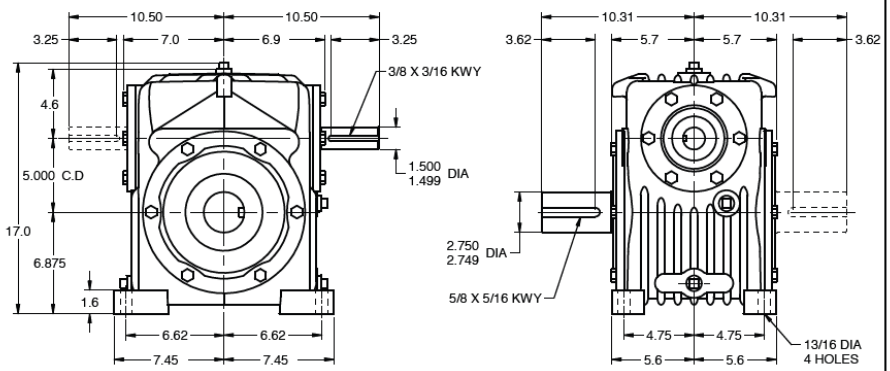
Key: Me.HP = Mech. Input Power (HP) Th.HP = Thermal Input Power - No Fan
O.T. = Output Torque (In. Lb.) Th.HP Fan = Thermal Input Power - Fan

DIMENSIONS Size 50
heavyDRIVE "HvD" Series

BORE INCHES	GEARSHAFT NUMBER	KEYWAY SIZE
3.4375*	50-S60-307	5/8 X 5/16
3.1875*	50-S60-303	5/8 X 5/16
2.750*	50-S60-212	5/8 X 5/16

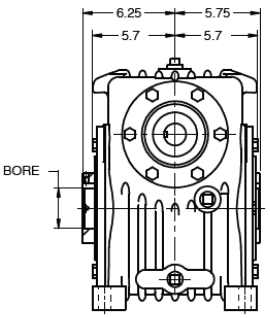
Solid Shaft

Model HvD050 – Worm Over Gear net wt. 290 lbs



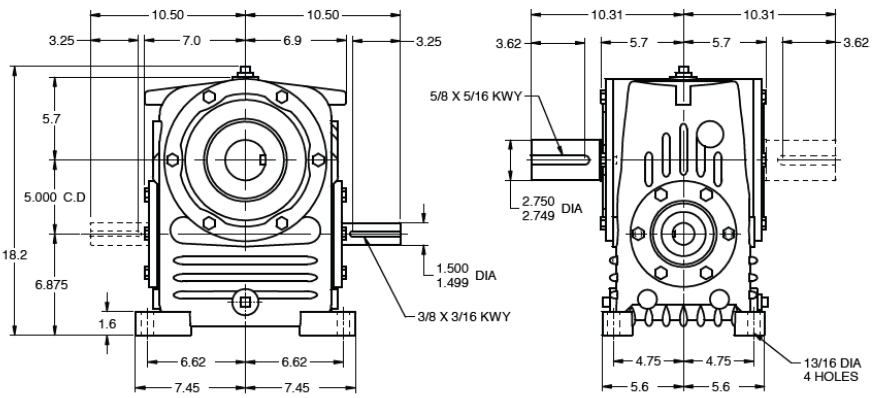
Hollow Shaft

net wt. 302 lbs

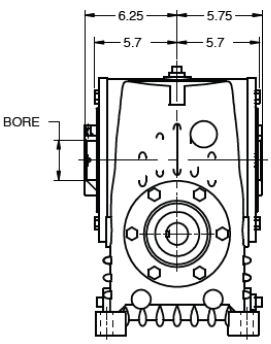


SEE GEAR SHAFT CHART
SET SCREW END OF SHAFT
MAY EXTEND ON EITHER SIDE

Model HvD050 – Worm Under Gear net wt. 305 lbs

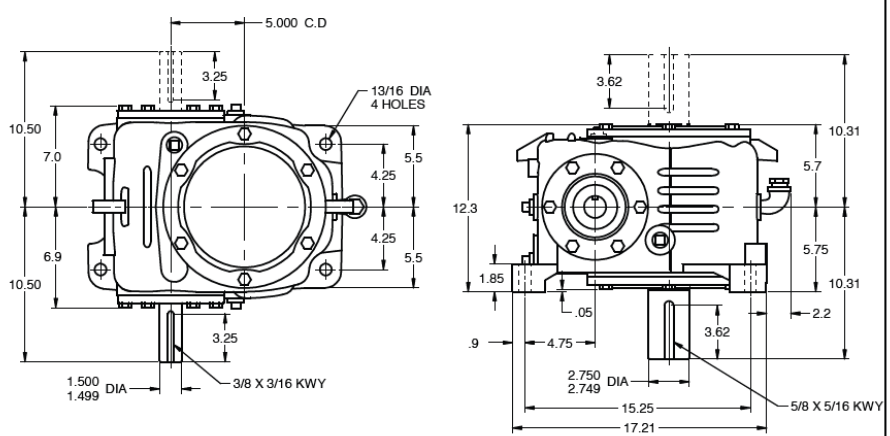


net wt. 317 lbs



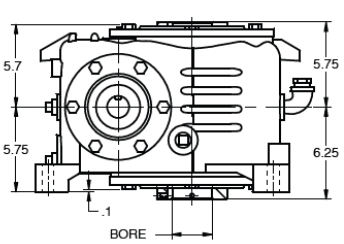
SEE GEAR SHAFT CHART
SET SCREW END OF SHAFT
MAY EXTEND ON EITHER SIDE

Model HvD050 – Vertical Gear Shaft net wt. 295 lbs



INPUT AND OUTPUT SHAFT MAY EXTEND ON EITHER SIDE OR MAY BE DOUBLE EXTENDED

net wt. 307 lbs



SEE GEAR SHAFT CHART
SET SCREW END OF SHAFT
MAY EXTEND ON EITHER SIDE

RATINGS Size 50
heavyDRIVE "HvD" Series

Servo Worm Gearboxes
Ultra Quiet Cast Iron Housing

AGMA HORSEPOWER & OUTPUT TORQUE RATINGS FOR 1.0 SERVICE FACTOR									
		Worm RPM							
Ratio to 1		100	200	300	580	720	870	1150	1750
5	Me.HP	8.72	15.91	22.03	33.96	37.97	42.19	48.26	58.80
	Th.HP	4.41	6.67	8.59	12.24	13.70	14.77	15.96	17.55
	Th.HP Fan	8.72	13.35	17.18	24.48	27.39	29.54	31.91	35.10
	Efficiency	92	93	94	94	94	95	95	95
	O.T.	25,270	23,305	21,750	17,340	15,620	14,515	12,560	10,060
10	Me.HP	6.02	11.02	15.43	24.48	27.54	30.43	35.34	43.33
	Th.HP	3.93	5.64	7.24	9.93	10.87	11.60	12.47	13.31
	Th.HP Fan	6.02	11.02	14.48	19.86	21.75	23.21	24.95	26.62
	Efficiency	86	88	89	90	90	92	93	93
	O.T.	32,630	30,555	28,850	23,930	21,690	20,275	18,010	14,510
15	Me.HP	4.87	8.93	12.51	20.00	22.53	24.86	28.85	35.33
	Th.HP	3.25	5.95	6.08	8.22	8.81	9.31	9.85	10.52
	Th.HP Fan	4.87	8.93	12.16	16.44	17.61	18.63	19.69	21.03
	Efficiency	82	84	85	88	89	90	91	91
	O.T.	37,735	35,450	33,500	28,675	26,325	24,310	21,575	17,365
20	Me.HP	3.72	6.83	9.58	15.36	17.27	19.06	22.19	27.33
	Th.HP	2.48	4.36	5.37	7.29	7.72	8.11	8.43	8.80
	Th.HP Fan	3.72	6.83	9.58	14.59	15.45	16.22	16.87	17.60
	Efficiency	78	80	81	86	86	86	87	88
	O.T.	36,590	34,415	32,600	28,695	25,995	23,740	21,155	17,315
25	Me.HP	3.00	5.51	7.73	12.40	13.98	15.43	17.93	22.09
	Th.HP	2.00	3.67	4.63	6.33	6.60	6.82	7.02	7.29
	Th.HP Fan	3.00	5.51	7.73	12.40	13.21	13.64	14.04	14.59
	Efficiency	74	78	80	84	84	86	87	87
	O.T.	35,005	33,840	32,480	28,280	25,690	24,030	21,365	17,300
30	Me.HP	2.52	4.62	6.49	10.41	11.74	12.97	15.07	18.51
	Th.HP	1.68	3.08	4.01	5.46	5.75	5.97	6.13	6.31
	Th.HP Fan	2.52	4.62	6.49	10.41	11.50	11.95	12.25	12.62
	Efficiency	71	73	75	78	81	82	83	83
	O.T.	33,765	31,840	30,670	26,460	24,965	23,100	20,555	16,595
40	Me.HP	1.89	3.48	4.88	7.83	8.83	9.75	11.33	13.92
	Th.HP	1.26	2.32	3.25	5.22	4.90	5.14	5.32	5.50
	Th.HP Fan	1.89	3.48	4.88	7.83	8.83	9.75	10.64	11.00
	Efficiency	64	66	70	75	76	78	79	79
	O.T.	30,520	28,915	28,700	25,515	23,485	22,035	19,615	15,835
50	Me.HP	1.52	2.79	3.92	6.28	7.10	7.82	9.12	11.17
	Th.HP	1.01	1.86	2.61	3.84	4.06	4.27	4.57	4.89
	Th.HP Fan	1.52	2.79	3.92	6.28	7.10	7.82	9.12	9.78
	Efficiency	57	63	67	73	74	75	76	76
	O.T.	27,255	27,675	27,545	24,900	22,985	21,240	18,980	15,275
60	Me.HP	1.27	2.33	3.27	5.25	5.92	6.53	7.61	9.32
	Th.HP	0.84	1.55	2.18	3.39	3.58	3.79	4.13	4.40
	Th.HP Fan	1.27	2.33	3.27	5.25	5.92	6.53	7.61	8.80
	Efficiency	56	62	64	69	71	72	73	73
	O.T.	26,810	27,270	26,345	23,620	22,085	20,420	18,255	14,695
70	Me.HP	1.09	2.00	2.80	4.51	5.08	5.60	6.53	8.00
	Th.HP	0.72	1.33	1.87	3.00	3.36	3.51	3.81	3.91
	Th.HP Fan	1.09	2.00	2.80	4.51	5.08	5.60	6.53	7.81
	Efficiency	55	61	63	68	70	71	72	72
	O.T.	26,365	26,870	25,970	23,310	21,800	20,165	18,030	14,510

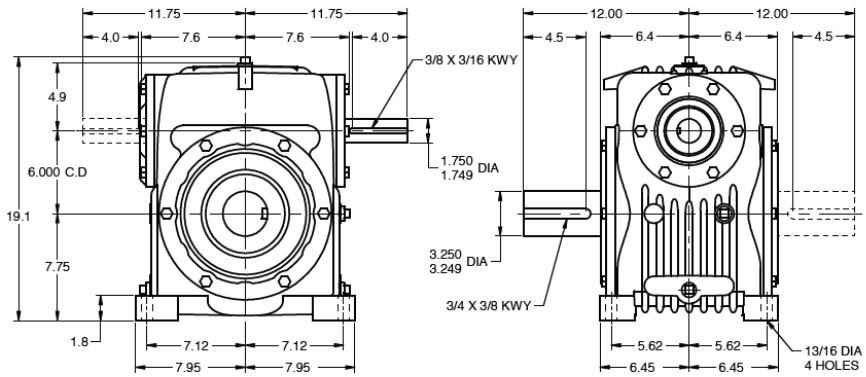
Key: Me.HP = Mech. Input Power (HP) Th.HP = Thermal Input Power - No Fan
O.T. = Output Torque (In. Lb.) Th.HP Fan = Thermal Input Power - Fan

DIMENSIONS Size 60 heavyDRIVE "HvD" Series

BORE INCHES	GEARSHAFT NUMBER	KEYWAY SIZE
3.9375*	60-S60-315	3/4 X 3/8
3.4375*	60-S60-307	3/4 X 3/8
2.9375*	60-S60-215	3/4 X 3/8

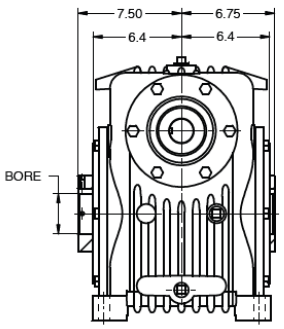
Solid Shaft

Model HvD060 – Worm Over Gear net wt. 388 lbs



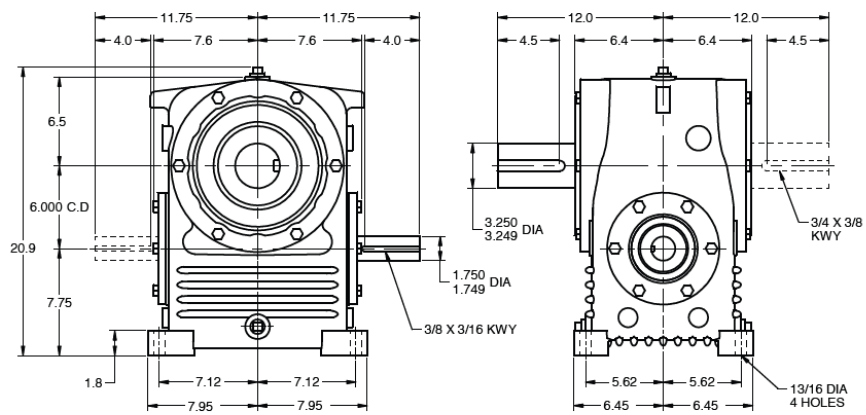
Hollow Shaft

net wt. 403 lbs

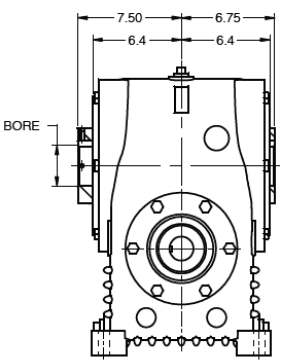


SEE GEAR SHAFT CHART
SET SCREW END OF SHAFT
MAY EXTEND ON EITHER SIDE

Model HvD060 – Worm Under Gear net wt. 396 lbs

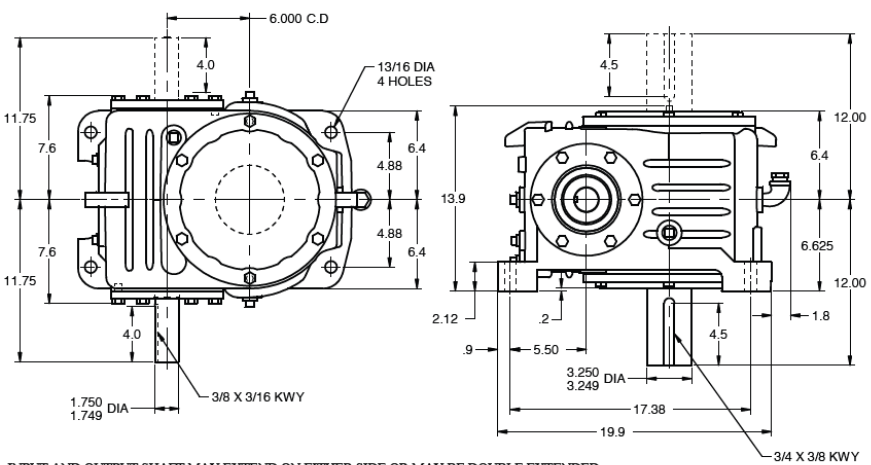


net wt. 411 lbs



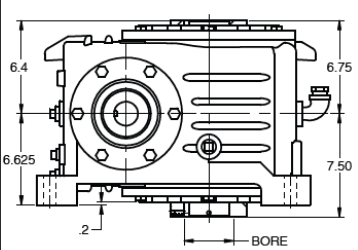
SEE GEAR SHAFT CHART
SET SCREW END OF SHAFT
MAY EXTEND ON EITHER SIDE

Model HvD060 – Vertical Gear Shaft net wt. 418 lbs



INPUT AND OUTPUT SHAFT MAY EXTEND ON EITHER SIDE OR MAY BE DOUBLE EXTENDED

net wt. 433 lbs



SEE GEAR SHAFT CHART
SET SCREW END OF SHAFT
MAY EXTEND ON EITHER SIDE

RATINGS Size 60
heavyDRIVE "HvD" Series

Servo Worm Gearboxes
Ultra Quiet Cast Iron Housing

AGMA HORSEPOWER & OUTPUT TORQUE RATINGS FOR 1.0 SERVICE FACTOR									
		Worm RPM							
Ratio to 1		100	200	300	580	720	870	1150	1750
5	Me.HP	13.31	24.04	32.79	48.28	54.33	59.84	68.35	79.85
	Th.HP	6.28	9.51	12.24	17.44	19.51	21.04	22.73	25.01
	Th.HP Fan	12.57	19.02	24.48	34.87	39.03	42.09	45.47	50.01
	Efficiency	92	93	94	94	94	95	95	95
	O.T.	38,575	35,215	32,365	24,650	22,345	20,585	17,785	13,660
10	Me.HP	9.23	16.82	23.23	35.27	39.53	43.82	50.62	60.62
	Th.HP	5.59	8.04	10.32	14.15	15.49	16.53	17.77	18.97
	Th.HP Fan	9.23	16.07	20.64	28.30	30.99	33.07	35.54	37.93
	Efficiency	86	88	89	90	90	92	93	93
	O.T.	49,995	46,630	43,425	34,480	31,135	29,195	25,790	20,295
15	Me.HP	7.46	13.63	18.87	28.85	32.30	35.75	41.22	49.71
	Th.HP	4.97	7.00	8.66	11.71	12.54	13.27	14.03	14.98
	Th.HP Fan	7.46	13.63	17.32	23.42	25.09	26.54	28.06	29.96
	Efficiency	82	84	85	88	89	90	91	91
	O.T.	57,820	54,100	50,535	41,370	37,735	34,945	30,825	24,430
20	Me.HP	5.72	10.44	14.46	22.17	24.76	27.57	31.62	38.50
	Th.HP	3.82	6.21	7.65	10.39	11.00	11.55	12.02	12.54
	Th.HP Fan	5.72	10.44	14.46	20.78	22.01	23.11	24.03	25.08
	Efficiency	78	80	81	86	86	86	87	88
	O.T.	56,250	52,615	49,185	41,415	37,270	34,345	30,145	24,395
25	Me.HP	4.61	8.42	11.67	17.94	20.05	22.27	25.55	31.01
	Th.HP	3.07	5.28	6.60	9.02	9.41	9.72	10.00	10.39
	Th.HP Fan	4.61	8.42	11.67	17.94	18.82	19.44	20.00	20.78
	Efficiency	74	78	80	84	84	86	87	87
	O.T.	53,725	51,740	49,000	40,925	36,850	34,680	30,450	24,280
30	Me.HP	3.87	7.06	9.77	15.03	16.85	18.66	21.41	26.09
	Th.HP	2.58	4.40	5.72	7.77	8.20	8.51	8.73	8.99
	Th.HP Fan	3.87	7.06	9.77	15.03	16.39	17.02	17.46	17.98
	Efficiency	71	73	75	78	81	82	83	83
	O.T.	51,910	48,685	46,185	38,205	35,825	33,245	29,210	23,385
40	Me.HP	2.91	5.31	7.35	11.33	12.67	14.07	16.10	19.62
	Th.HP	1.93	3.54	4.76	7.55	6.98	7.32	7.58	7.84
	Th.HP Fan	2.91	5.31	7.35	11.33	12.67	14.07	15.16	15.67
	Efficiency	64	66	70	75	76	78	79	79
	O.T.	46,920	44,135	43,225	36,925	33,700	31,800	27,875	22,320
50	Me.HP	2.33	4.26	5.90	9.09	10.16	11.29	12.92	15.74
	Th.HP	1.55	2.83	3.90	5.47	5.79	6.09	6.50	6.97
	Th.HP Fan	2.33	4.26	5.90	9.09	10.16	11.29	12.92	13.93
	Efficiency	57	63	67	73	74	75	76	76
	O.T.	41,900	42,245	41,480	36,035	32,905	30,660	26,890	21,530
60	Me.HP	1.95	3.55	4.92	7.58	8.48	9.42	10.78	13.13
	Th.HP	1.29	2.36	3.28	4.83	5.10	5.40	5.89	6.27
	Th.HP Fan	1.95	3.55	4.92	7.58	8.48	9.42	10.78	12.54
	Efficiency	56	62	64	69	71	72	73	73
	O.T.	41,220	41,630	39,675	34,105	31,610	29,470	25,860	20,705
70	Me.HP	1.67	3.05	4.22	6.51	7.28	8.09	9.25	11.27
	Th.HP	1.10	2.03	2.81	4.31	4.79	5.00	5.43	5.56
	Th.HP Fan	1.67	3.05	4.22	6.51	7.28	8.09	9.25	11.13
	Efficiency	55	61	63	68	70	71	72	72
	O.T.	40,535	41,010	39,110	33,655	31,205	29,100	25,540	20,450

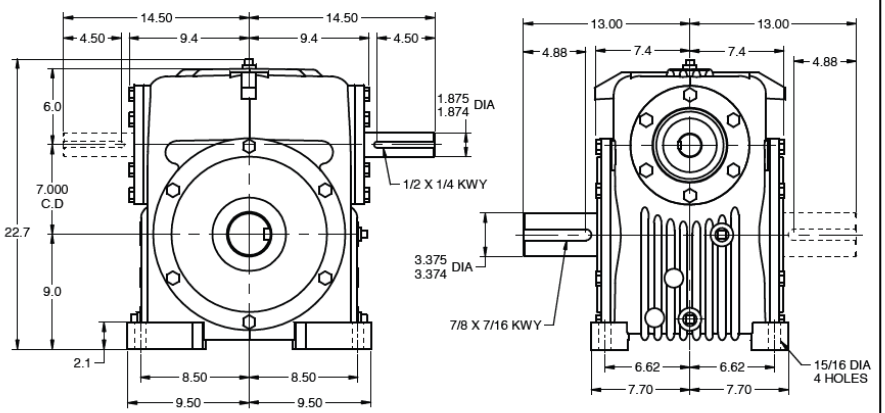
Key: Me.HP = Mech. Input Power (HP) Th.HP = Thermal Input Power - No Fan
O.T. = Output Torque (In. Lb.) Th.HP Fan = Thermal Input Power - Fan

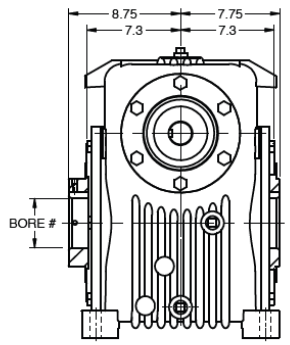
DIMENSIONS Size 70
heavyDRIVE "HvD" Series

BORE INCHES	GEARSHAFT NUMBER	KEYWAY SIZE
4.4375*	80-S60-407	1 X 1/2
3.9375*	80-S60-315	1 X 1/2

Solid Shaft | **Hollow Shaft**

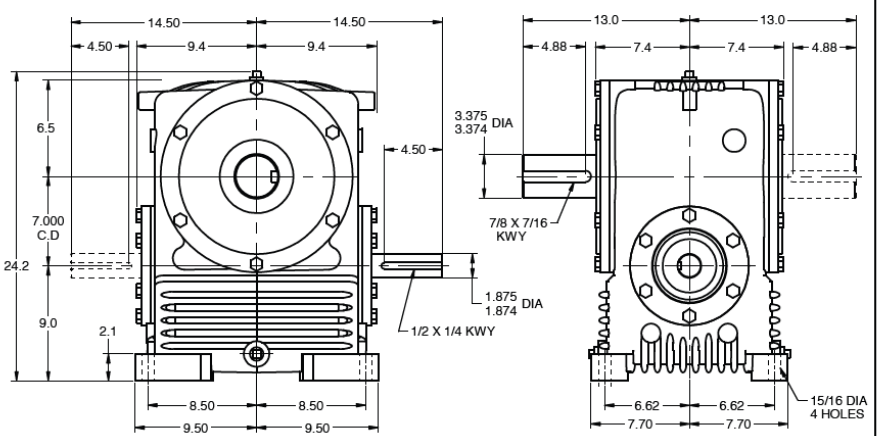
Model HvD070 – Worm Over Gear net wt. 535 lbs | net wt. 560 lbs

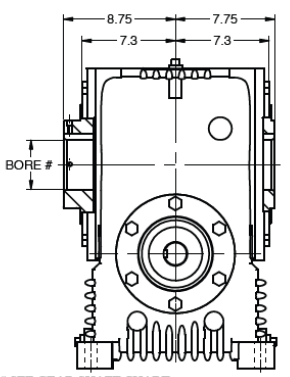




SEE GEAR SHAFT CHART
SET SCREW END OF SHAFT
MAY EXTEND ON EITHER SIDE

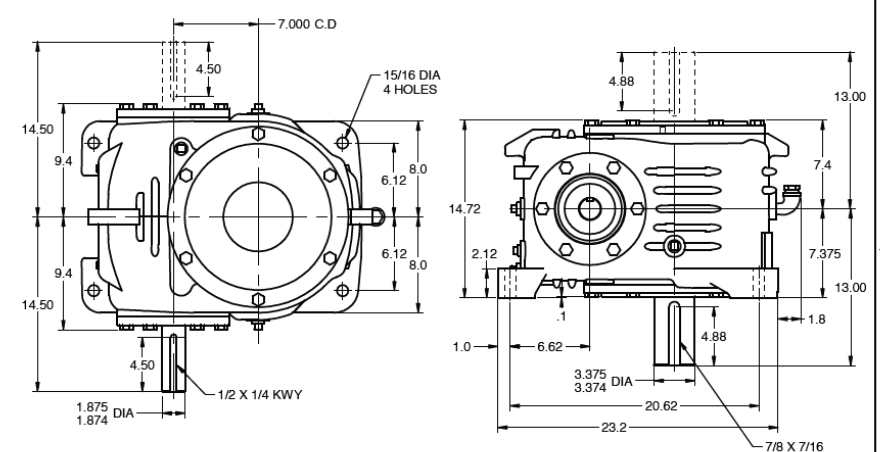
Model HvD070 – Worm Under Gear net wt. 605 lbs | net wt. 630 lbs

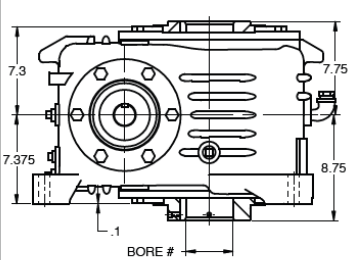




SEE GEAR SHAFT CHART
SET SCREW END OF SHAFT
MAY EXTEND ON EITHER SIDE

Model HvD070 – Vertical Gear Shaft net wt. 600 lbs | net wt. 625 lbs





INPUT AND OUTPUT SHAFT MAY EXTEND ON EITHER SIDE OR MAY BE DOUBLE EXTENDED

SEE GEAR SHAFT CHART
SET SCREW END OF SHAFT
MAY EXTEND ON EITHER SIDE

RATINGS Size 70
heavyDRIVE "HvD" Series

Servo Worm Gearboxes
Ultra Quiet Cast Iron Housing

AGMA HORSEPOWER & OUTPUT TORQUE RATINGS FOR 1.0 SERVICE FACTOR									
		Worm RPM							
Ratio to 1		100	200	300	580	720	870	1150	1750
5	Me.HP	20.90	37.29	49.72	72.10	80.50	88.26	100.23	115.65
	Th.HP	8.49	12.85	16.54	23.55	26.36	28.43	30.71	33.78
	Th.HP Fan	16.97	25.69	33.07	47.11	52.73	56.86	61.42	67.56
	Efficiency	92	93	94	94	94	95	95	95
	O.T.	60,560	54,625	49,080	36,810	33,110	30,360	26,085	19,780
10	Me.HP	14.56	26.41	36.12	53.50	60.30	66.52	76.21	88.78
	Th.HP	7.56	10.86	13.94	19.11	20.93	22.34	24.01	25.62
	Th.HP Fan	14.56	21.71	27.88	38.23	41.86	44.67	48.01	51.24
	Efficiency	86	88	89	90	90	92	93	93
	O.T.	78,910	73,210	67,510	52,305	47,485	44,320	38,830	29,725
15	Me.HP	11.80	21.44	29.41	43.92	49.45	54.64	62.55	73.96
	Th.HP	7.87	9.46	11.70	15.82	16.95	17.93	18.95	20.24
	Th.HP Fan	11.80	18.92	23.40	31.64	33.89	35.85	37.91	40.48
	Efficiency	82	84	85	88	89	90	91	91
	O.T.	91,425	85,110	78,740	62,970	57,760	53,415	46,775	36,345
20	Me.HP	9.03	16.42	22.57	33.75	38.02	41.77	47.99	56.80
	Th.HP	5.17	8.39	10.34	14.04	14.87	15.61	16.23	16.94
	Th.HP Fan	9.03	16.42	20.68	28.08	29.73	31.22	32.47	33.88
	Efficiency	78	80	81	86	86	86	87	88
	O.T.	88,795	82,780	76,790	63,055	57,220	52,030	45,750	35,995
25	Me.HP	7.28	13.25	18.18	27.32	30.71	33.85	38.93	45.96
	Th.HP	4.16	7.13	8.91	12.19	12.71	13.13	13.51	14.04
	Th.HP Fan	7.28	13.25	17.82	24.38	25.42	26.26	27.03	28.08
	Efficiency	74	78	80	84	84	86	87	87
	O.T.	84,815	81,405	76,360	62,325	56,425	52,710	46,390	35,990
30	Me.HP	6.10	11.10	15.26	22.89	25.73	28.36	32.62	38.68
	Th.HP	4.06	5.94	7.72	10.50	11.07	11.50	11.79	12.14
	Th.HP Fan	6.10	11.10	15.26	21.00	22.14	23.00	23.59	24.29
	Efficiency	71	73	75	78	81	82	83	83
	O.T.	81,815	76,600	72,115	58,185	54,705	50,530	44,495	34,680
40	Me.HP	4.58	8.36	11.48	17.21	19.35	21.33	24.62	29.09
	Th.HP	2.61	4.78	6.42	11.38	9.43	9.88	10.24	10.59
	Th.HP Fan	4.58	8.36	11.48	17.21	18.87	19.77	20.47	21.18
	Efficiency	64	66	70	75	76	78	79	79
	O.T.	73,945	69,565	67,485	56,095	51,465	48,195	42,615	33,095
50	Me.HP	3.68	6.71	9.21	13.84	15.52	17.11	19.75	23.34
	Th.HP	2.09	3.83	5.26	7.39	7.82	8.22	8.79	9.41
	Th.HP Fan	3.68	6.71	9.21	13.84	15.52	16.45	17.58	18.82
	Efficiency	57	63	67	73	74	75	76	76
	O.T.	66,035	66,580	64,770	54,885	50,245	46,465	41,110	31,925
60	Me.HP	3.07	5.60	7.68	11.55	12.95	14.28	16.48	19.56
	Th.HP	1.75	3.18	4.45	6.52	6.89	7.29	7.96	8.47
	Th.HP Fan	3.07	5.60	7.68	11.55	12.95	14.28	15.91	16.94
	Efficiency	56	62	64	69	71	72	73	73
	O.T.	64,960	65,610	61,950	51,950	48,275	44,665	39,540	30,845
70	Me.HP	2.63	4.81	6.59	9.91	11.11	12.25	14.14	16.79
	Th.HP	1.49	2.74	3.79	5.82	6.47	6.76	7.34	7.52
	Th.HP Fan	2.63	4.81	6.59	9.91	11.11	12.25	14.14	15.04
	Efficiency	55	61	63	68	70	71	72	72
	O.T.	63,885	64,640	61,065	51,265	47,655	44,105	39,050	30,465

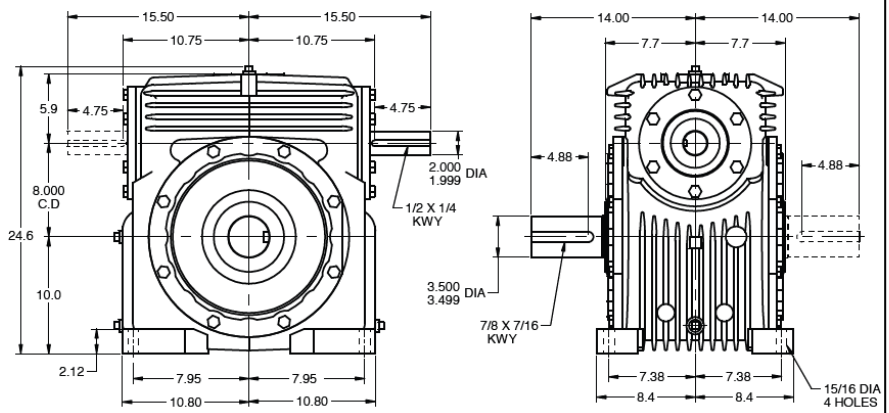
Key: Me.HP = Mech. Input Power (HP) Th.HP = Thermal Input Power - No Fan
O.T. = Output Torque (In. Lb.) Th.HP Fan = Thermal Input Power - Fan

DIMENSIONS Size 80 heavyDRIVE "HvD" Series

BORE INCHES	GEARSHAFT NUMBER	KEYWAY SIZE
4.4375*	80-S60-407	1 X 1/2
3.9375*	80-S60-315	1 X 1/2

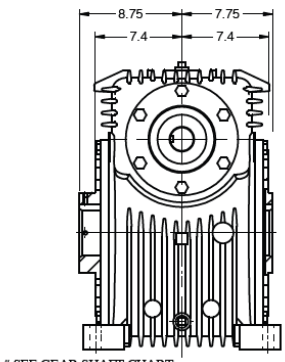
Solid Shaft

Model HvD080 – Worm Over Gear net wt. 690 lbs

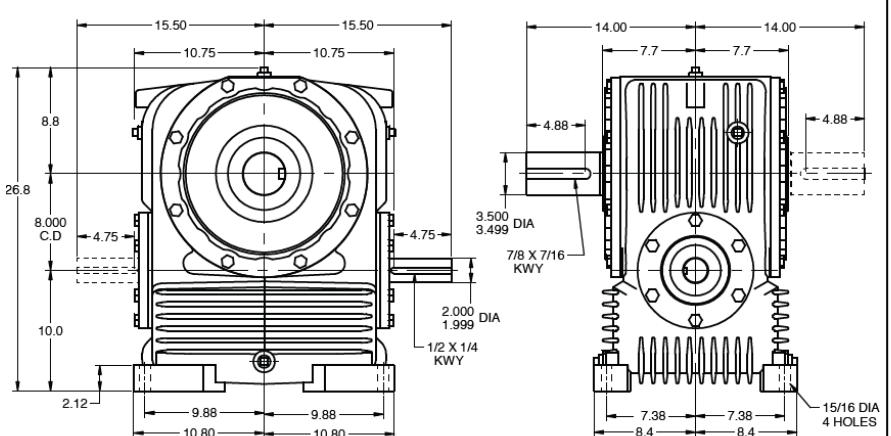


Hollow Shaft

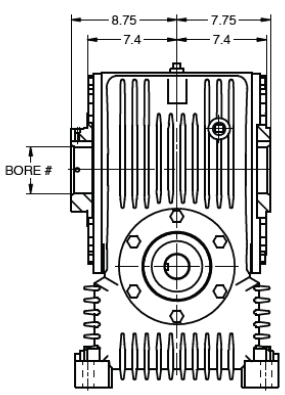
net wt. 720 lbs



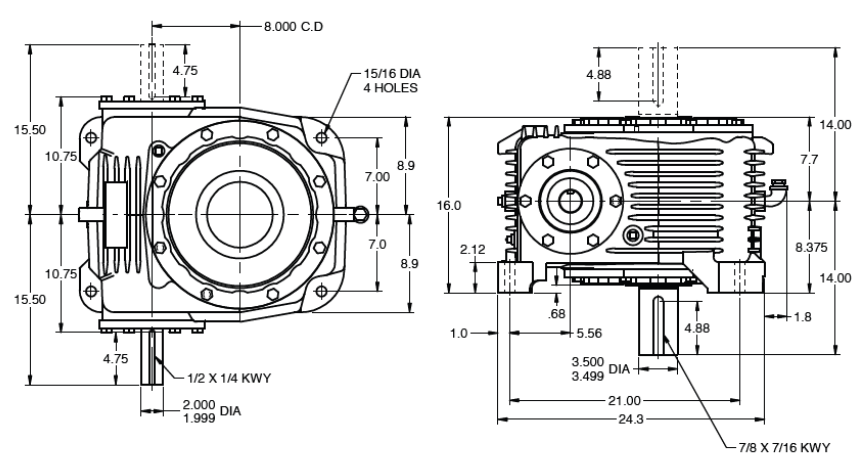
Model HvD080 – Worm Under Gear net wt. 880 lbs



net wt. 910 lbs

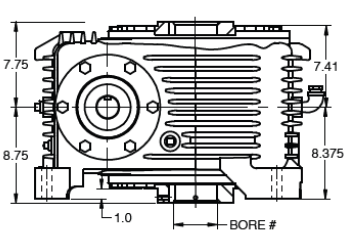


Model HvD080 – Vertical Gear Shaft net wt. 725 lbs



INPUT AND OUTPUT SHAFT MAY EXTEND ON EITHER SIDE OR MAY BE DOUBLE EXTENDED

net wt. 755 lbs



SEE GEAR SHAFT CHART
SET SCREW END OF SHAFT
MAY EXTEND ON EITHER SIDE

RATINGS Size 80
heavyDRIVE "HvD" Series

Servo Worm Gearboxes
Ultra Quiet Cast Iron Housing

AGMA HORSEPOWER & OUTPUT TORQUE RATINGS FOR 1.0 SERVICE FACTOR									
		Worm RPM							
Ratio to 1		100	200	300	580	720	870	1150	1750
5	Me.HP	31.03	54.63	71.62	102.29	114.21	124.91	139.75	161.85
	Th.HP	12.90	19.52	25.13	35.79	40.06	43.20	46.67	51.33
	Th.HP Fan	25.79	39.04	50.25	71.59	80.12	86.40	93.33	102.67
	Efficiency	92	93	94	94	94	95	95	95
	O.T.	89,915	80,025	70,695	52,225	46,970	42,965	36,370	27,680
10	Me.HP	21.74	39.24	53.17	77.78	87.61	96.01	110.52	128.53
	Th.HP	11.48	16.50	21.18	29.05	31.81	33.94	36.48	38.93
	Th.HP Fan	21.74	33.00	42.36	58.09	63.61	67.88	72.96	77.87
	Efficiency	86	88	89	90	90	92	93	93
	O.T.	117,795	108,785	99,370	76,040	68,995	63,960	56,310	43,035
15	Me.HP	17.64	31.93	43.47	64.06	72.10	79.69	91.11	105.66
	Th.HP	11.76	14.37	17.78	24.04	25.75	27.24	28.80	30.76
	Th.HP Fan	17.64	28.74	35.56	48.07	51.50	54.48	57.60	61.51
	Efficiency	82	84	85	88	89	90	91	91
	O.T.	136,710	126,715	116,395	91,850	84,225	77,905	68,135	51,925
20	Me.HP	13.49	24.45	33.37	49.37	55.45	61.32	69.91	81.57
	Th.HP	7.85	12.75	15.71	21.33	22.59	23.72	24.67	25.74
	Th.HP Fan	13.49	24.45	31.42	42.67	45.18	47.44	49.33	51.48
	Efficiency	78	80	81	86	86	86	87	88
	O.T.	132,560	123,245	113,525	92,230	83,445	76,370	66,645	51,685
25	Me.HP	10.88	19.70	26.93	39.97	44.92	49.38	56.73	66.01
	Th.HP	6.33	10.84	13.54	18.53	19.31	19.95	20.53	21.33
	Th.HP Fan	10.88	19.70	26.93	37.05	38.62	39.91	41.07	42.67
	Efficiency	74	78	80	84	84	86	87	87
	O.T.	126,825	120,980	113,115	91,175	82,540	76,890	67,595	51,690
30	Me.HP	9.12	16.53	22.61	33.49	37.74	41.64	47.70	55.57
	Th.HP	6.08	9.03	11.73	15.96	16.82	17.47	17.92	18.45
	Th.HP Fan	9.12	16.53	22.61	31.91	33.65	34.95	35.84	36.91
	Efficiency	71	73	75	78	81	82	83	83
	O.T.	122,340	114,045	106,830	85,120	80,255	74,180	65,075	49,820
40	Me.HP	6.86	12.43	17.00	25.25	28.38	31.31	35.87	41.99
	Th.HP	3.97	7.26	9.76	16.83	14.34	15.02	15.56	16.09
	Th.HP Fan	6.86	12.43	17.00	25.25	28.38	30.04	31.11	32.18
	Efficiency	64	66	70	75	76	78	79	79
	O.T.	110,575	103,385	99,975	82,285	75,500	70,750	62,105	47,775
50	Me.HP	5.50	9.97	13.64	20.25	22.77	25.12	28.78	33.68
	Th.HP	3.18	5.81	8.00	11.24	11.89	12.50	13.35	14.30
	Th.HP Fan	5.50	9.97	13.64	20.25	22.77	24.99	26.71	28.60
	Efficiency	57	63	67	73	74	75	76	76
	O.T.	98,745	98,950	95,950	80,305	73,710	68,210	59,905	46,080
60	Me.HP	4.59	8.32	11.38	16.90	19.00	20.96	24.01	28.11
	Th.HP	2.66	4.84	6.76	9.91	10.47	11.08	12.09	12.87
	Th.HP Fan	4.59	8.32	11.38	16.90	19.00	20.96	24.01	25.74
	Efficiency	56	62	64	69	71	72	73	73
	O.T.	97,140	97,510	91,775	76,005	70,820	65,570	57,615	44,320
70	Me.HP	3.94	7.14	9.77	14.51	16.31	17.99	20.61	24.12
	Th.HP	2.27	4.17	5.76	8.84	9.83	10.27	11.15	11.42
	Th.HP Fan	3.94	7.14	9.77	14.51	16.31	17.99	20.61	22.85
	Efficiency	55	61	63	68	70	71	72	72
	O.T.	95,535	96,065	90,460	75,000	69,915	64,745	56,905	43,775

DIMENSIONS Size 100
heavyDRIVE "HvD" Series

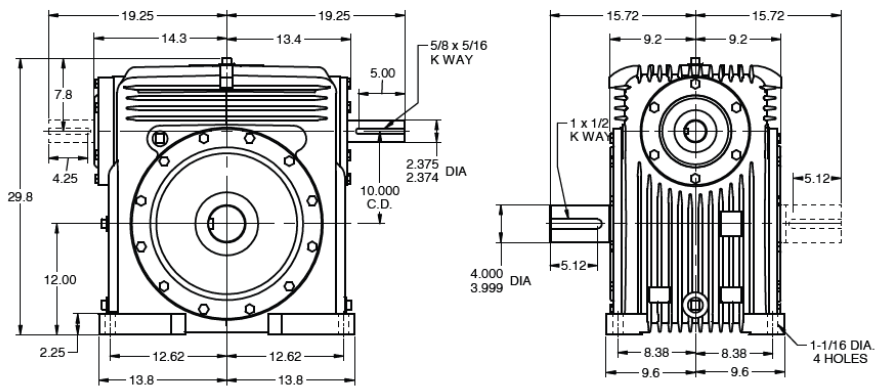
BORE INCHES	GEARSHAFT NUMBER	KEYWAY SIZE
5.9375	100-S61-515	1 1/4 X 7/16

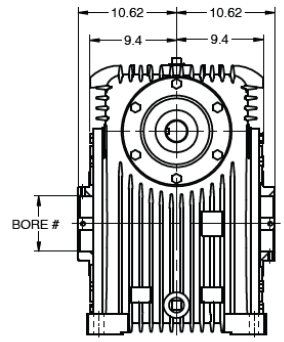
Solid Shaft

Hollow Shaft

Model HvD100 – Worm Over Gear net wt. 1360 lbs.

net wt. 1435 lbs.

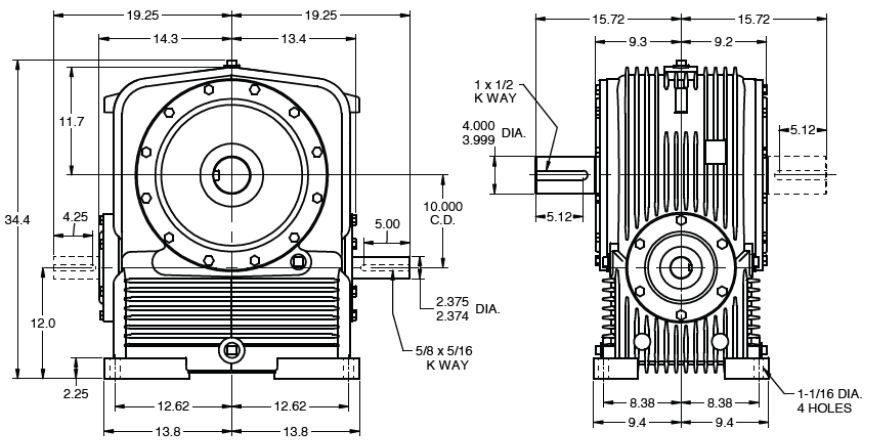


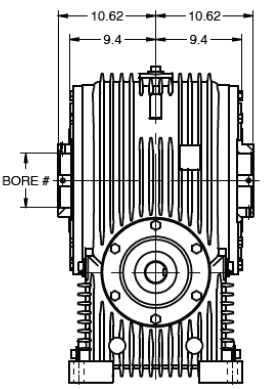


SEE GEAR SHAFT CHART

Model HvD100 – Worm Under Gear net wt. 1680 lbs.

net wt. 1755 lbs.

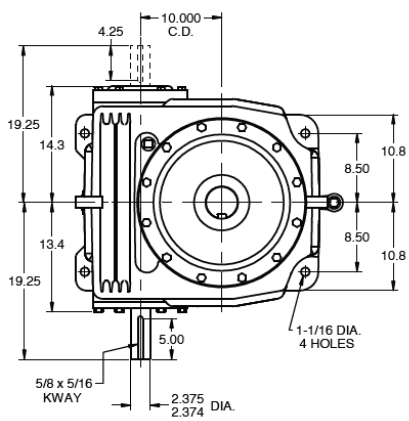


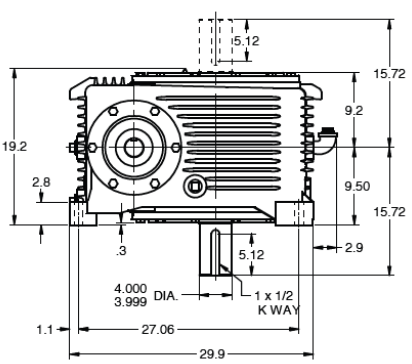


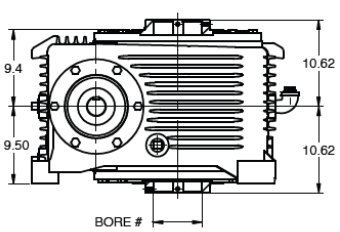
SEE GEAR SHAFT CHART

Model HvD100 – Vertical Gear Shaft net wt. 1550 lbs.

net wt. 1625 lbs.







SEE GEAR SHAFT CHART

RATINGS Size 100
heavyDRIVE "HvD" Series

Servo Worm Gearboxes
Ultra Quiet Cast Iron Housing

AGMA HORSEPOWER & OUTPUT TORQUE RATINGS FOR 1.0 SERVICE FACTOR									
		Worm RPM							
Ratio to 1		100	200	300	580	720	870	1150	1750
5	Me.HP	58.05	98.65	125.54	177.07	196.63	213.20	231.67	272.58
	Th.HP	23.59	36.51	48.34	68.86	77.07	86.19	93.10	102.42
	Th.HP Fan	47.17	73.02	96.68	137.72	154.14	172.38	186.21	204.83
	Efficiency	94	95	96	96	97	97	97	97
	O.T.	171,875	147,605	126,550	92,320	83,450	74,880	61,555	47,595
10	Me.HP	40.93	72.26	95.47	136.70	152.42	166.98	188.26	216.10
	Th.HP	19.47	28.48	36.98	51.36	58.17	62.07	68.23	72.82
	Th.HP Fan	38.94	56.97	73.95	102.73	116.34	124.14	136.46	145.64
	Efficiency	88	90	91	92	94	94	95	95
	O.T.	226,900	204,850	182,450	136,605	125,365	113,665	97,980	73,910
15	Me.HP	33.10	58.81	77.98	112.16	125.72	137.56	155.67	179.16
	Th.HP	16.13	24.04	29.93	41.50	44.96	48.17	51.71	55.22
	Th.HP Fan	32.26	48.07	59.85	83.00	89.91	96.35	103.43	110.45
	Efficiency	84	86	87	90	92	92	93	93
	O.T.	262,765	238,975	213,695	164,470	151,805	137,465	118,965	89,975
20	Me.HP	25.35	45.14	60.01	86.25	96.74	106.30	119.51	138.49
	Th.HP	12.77	20.90	25.86	36.18	38.31	40.22	42.18	44.44
	Th.HP Fan	25.35	41.80	51.71	72.36	76.61	80.44	84.36	88.89
	Efficiency	80	82	83	88	88	88	89	90
	O.T.	255,535	233,170	209,185	164,895	148,985	135,485	116,545	89,745
25	Me.HP	20.45	36.42	48.44	69.88	77.92	85.62	97.06	111.55
	Th.HP	10.17	17.63	22.19	30.98	32.30	33.84	35.11	36.48
	Th.HP Fan	20.34	35.25	44.39	61.97	64.59	67.67	70.23	72.96
	Efficiency	76	80	82	86	88	88	89	89
	O.T.	244,825	229,470	208,520	163,190	149,995	136,400	118,315	89,350
30	Me.HP	17.14	30.52	40.58	58.54	65.28	71.73	81.32	93.46
	Th.HP	11.12	14.48	18.91	25.95	27.69	28.90	29.79	30.68
	Th.HP Fan	17.14	28.96	37.81	51.91	55.38	57.79	59.59	61.36
	Efficiency	73	75	77	80	84	84	85	85
	O.T.	236,430	216,285	196,860	152,620	143,950	130,905	113,605	85,795
40	Me.HP	12.89	22.95	30.52	44.03	49.09	53.94	61.16	70.28
	Th.HP	6.25	11.49	15.55	28.98	23.32	24.43	25.39	26.26
	Th.HP Fan	12.51	22.95	30.52	44.03	46.63	48.85	50.78	52.53
	Efficiency	66	68	72	77	80	80	81	81
	O.T.	214,330	196,625	184,570	147,290	137,460	125,005	108,550	81,975
50	Me.HP	10.34	18.44	24.59	35.52	39.63	43.42	49.46	56.68
	Th.HP	4.97	9.16	12.67	18.01	19.15	20.14	21.58	23.11
	Th.HP Fan	9.94	18.31	24.59	35.52	38.31	40.27	43.16	46.22
	Efficiency	59	65	69	75	77	77	78	78
	O.T.	192,110	188,815	178,120	144,685	133,520	121,070	105,680	79,585
60	Me.HP	8.63	15.39	20.51	29.64	33.07	36.24	41.27	47.30
	Th.HP	4.15	7.61	10.65	15.76	16.71	17.72	19.38	20.64
	Th.HP Fan	8.30	15.22	20.51	29.64	33.07	35.44	38.76	41.27
	Efficiency	58	64	66	71	74	74	75	75
	O.T.	189,105	186,160	170,605	137,150	128,485	116,505	101,750	76,630
70	Me.HP	7.40	13.21	17.61	25.44	28.39	31.10	35.42	40.60
	Th.HP	3.54	6.54	9.07	14.03	15.65	16.39	17.83	18.27
	Th.HP Fan	7.08	13.09	17.61	25.44	28.39	31.10	35.42	36.54
	Efficiency	57	63	65	70	73	73	74	74
	O.T.	186,095	183,495	168,245	135,400	126,920	115,085	100,530	75,705

DIMENSIONS Size 120
heavyDRIVE "HvD" Series

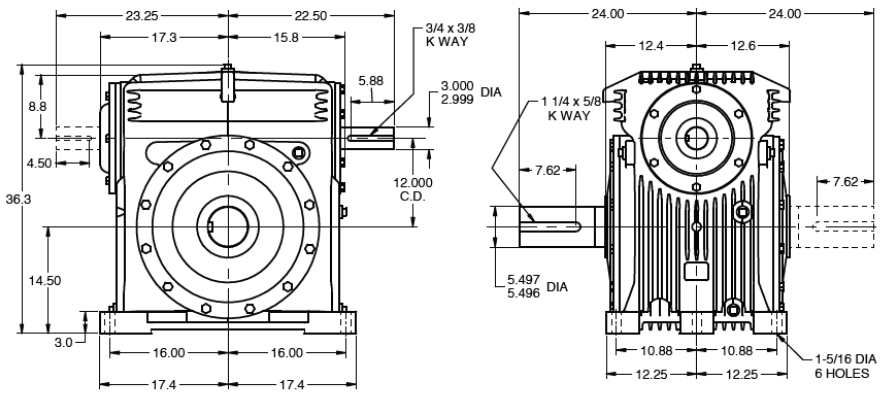
BORE INCHES	GEARSHAFT NUMBER	KEYWAY SIZE
7.9375	120-S61-715	1 1/2 X 1/2

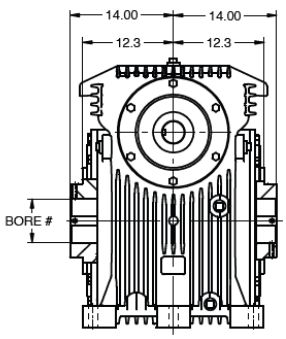
Solid Shaft

Hollow Shaft

Model HvD120 – Worm Over Gear net wt. 2635 lbs.

net wt. 2635 lbs.

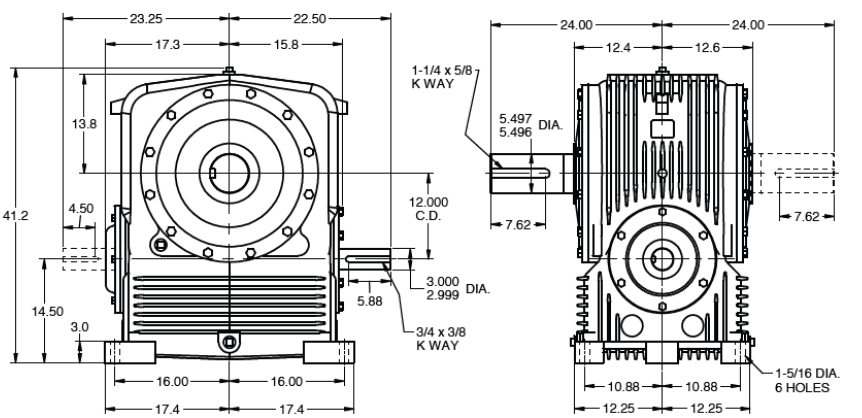


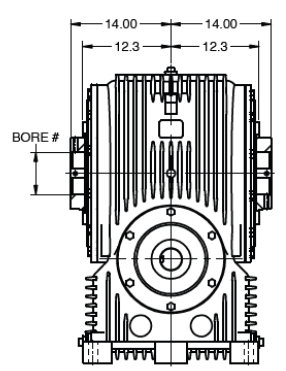


SEE GEAR SHAFT CHART

Model HvD120 – Worm Under Gear net wt. 2775 lbs.

net wt. 2775 lbs.

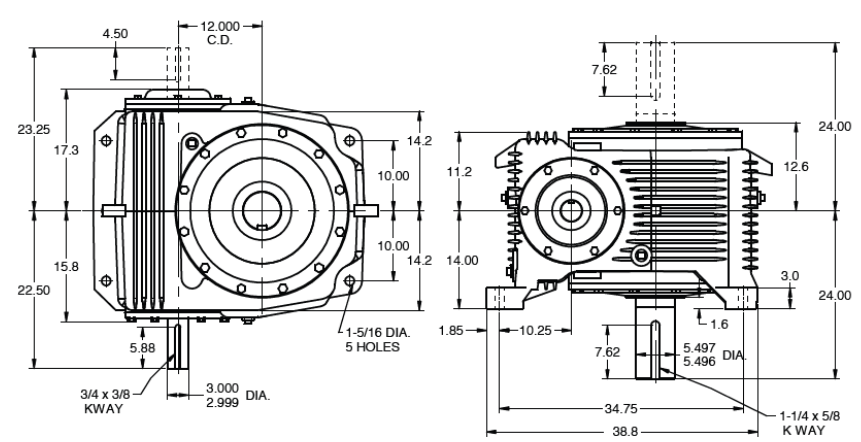


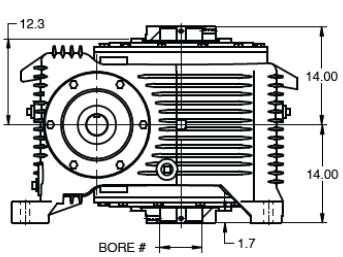


SEE GEAR SHAFT CHART

Model HvD120 – Vertical Gear Shaft net wt. 2995 lbs.

net wt. 2995 lbs.





SEE GEAR SHAFT CHART

INPUT AND OUTPUT SHAFT MAY EXTEND ON EITHER SIDE OR MAY BE DOUBLE EXTENDED

RATINGS Size 120
heavyDRIVE "HvD" Series

Servo Worm Gearboxes
Ultra Quiet Cast Iron Housing

AGMA HORSEPOWER & OUTPUT TORQUE RATINGS FOR 1.0 SERVICE FACTOR								
		Worm RPM						
Ratio to 1		100	200	300	580	720	870	1150
5	Me.HP	97.66	160.36	199.46	279.03	307.46	322.92	360.54
	Th.HP	32.97	51.04	67.58	96.27	107.74	120.49	130.16
	Th.HP Fan	65.95	102.09	135.16	192.54	215.49	240.99	260.33
	Efficiency	94	95	96	96	97	97	97
	O.T.	289,165	239,940	201,055	145,480	130,480	113,415	95,795
10	Me.HP	69.42	119.50	153.17	218.02	240.67	263.11	287.25
	Th.HP	27.22	39.82	51.69	71.81	81.32	86.78	95.39
	Th.HP Fan	54.45	79.64	103.39	143.62	162.64	173.55	190.78
	Efficiency	88	90	91	92	94	94	95
	O.T.	384,890	338,790	292,715	217,870	197,955	179,100	149,495
15	Me.HP	56.15	97.31	125.83	179.16	198.25	217.23	237.20
	Th.HP	22.55	33.60	41.84	58.02	62.85	67.35	72.30
	Th.HP Fan	45.10	67.20	83.68	116.03	125.70	134.69	144.59
	Efficiency	84	86	87	90	92	92	93
	O.T.	445,755	395,415	344,835	262,720	239,385	217,080	181,275
20	Me.HP	43.08	74.85	96.65	137.85	152.65	167.39	183.95
	Th.HP	17.85	29.22	36.15	50.58	53.55	56.23	58.97
	Th.HP Fan	35.70	58.44	72.30	101.16	107.11	112.46	117.94
	Efficiency	80	82	83	88	88	88	89
	O.T.	434,270	386,660	336,930	263,530	235,085	213,335	179,375
25	Me.HP	34.70	60.41	78.21	111.03	123.39	135.35	148.86
	Th.HP	14.21	24.64	31.03	43.31	45.15	47.31	49.09
	Th.HP Fan	28.43	49.28	62.05	86.63	90.30	94.61	98.18
	Efficiency	76	80	82	86	88	88	89
	O.T.	415,355	380,555	336,700	259,285	237,520	215,625	181,445
30	Me.HP	29.07	50.61	65.68	93.02	103.38	113.40	125.30
	Th.HP	15.55	20.24	26.43	36.28	38.71	40.40	41.65
	Th.HP Fan	29.07	40.48	52.87	72.57	77.43	80.80	83.30
	Efficiency	73	75	77	80	84	84	85
	O.T.	401,110	358,695	318,615	242,500	227,950	206,930	175,040
40	Me.HP	21.90	38.06	49.39	70.40	78.29	85.61	94.23
	Th.HP	8.74	16.07	21.74	40.52	32.60	34.15	35.50
	Th.HP Fan	17.49	32.13	43.48	70.40	65.19	68.30	71.00
	Efficiency	66	68	72	77	80	80	81
	O.T.	364,260	326,090	298,725	235,515	219,220	198,380	167,250
50	Me.HP	17.57	30.59	39.71	56.47	62.80	68.67	75.58
	Th.HP	6.95	12.80	17.72	25.18	26.78	28.15	30.17
	Th.HP Fan	13.90	25.60	35.44	50.37	53.55	56.30	60.34
	Efficiency	59	65	69	75	77	77	78
	O.T.	326,495	313,165	287,710	230,010	211,565	191,450	161,490
60	Me.HP	14.66	25.53	33.14	47.12	52.40	57.30	63.07
	Th.HP	5.80	10.64	14.90	22.03	23.36	24.78	27.10
	Th.HP Fan	11.60	21.28	29.79	44.07	46.71	49.55	54.19
	Efficiency	58	64	66	71	74	74	75
	O.T.	321,390	308,755	275,570	218,035	203,590	184,235	155,485
70	Me.HP	12.58	21.91	28.44	40.44	44.98	49.18	54.13
	Th.HP	4.95	9.15	12.68	19.61	21.88	22.91	24.93
	Th.HP Fan	9.90	18.30	25.37	39.22	43.76	45.82	49.86
	Efficiency	57	63	65	70	73	73	74
	O.T.	316,270	304,340	271,755	215,250	201,110	181,990	153,615

NEMA Worm* Gearboxes
Ultra Quiet Aluminum Housing

Aluminum Housing
CvK Gearing

Conveyor Killer "CvK" Series

With capabilities up to 20HP and output torque up to 8,000 lb. in. Series CvK can provide design flexibility with lasting performance.

AN ECONOMIC SOLUTION THAT PACKS A PUNCH. Fangtooth Series CvK gearboxes provide an economical, flexible, and compact solution to fulfill the low-to-medium power range requirements.

Easy motor removal with fret-free motor bushing

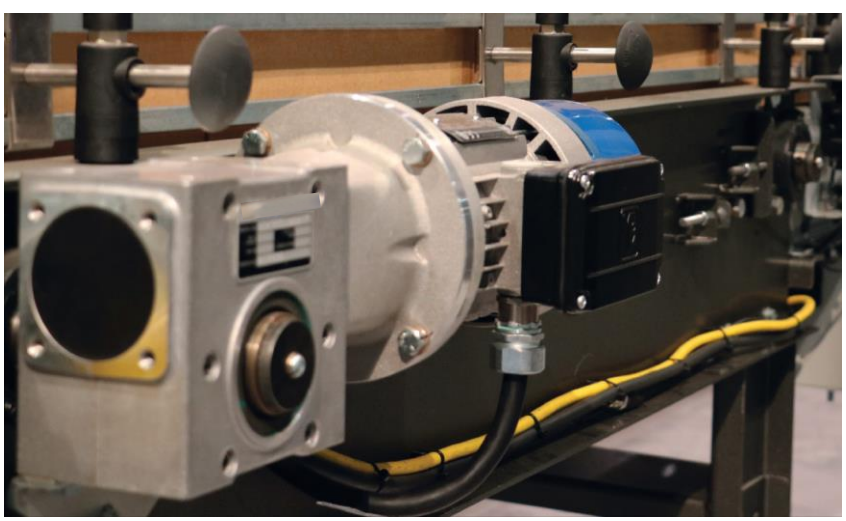
Interchanges with most competitors like

Boston Gear	Tigear
Grove	Omnibox
Raider	Ohio
Cobra	

*CvK Gearing has higher torque density than traditional worm gears and performs in a similar manner.

Sizes

CvK002NW
CvK003NW
CvK004NW
CvK005NW
CvK006NW
CvK008NW
CvK009NW
CvK011NW



ORDERING CODE
Conveyor Killer "CvK" Series

NEMA Worm* Gearboxes
Ultra Quiet Aluminum Housing

Model: CvK008NW-S010W-031HHK/NEMA54

Gearbox Series
CvK – Conveyor Killer

Gearbox Size
002 – 1.33 inch CD
003 – 1.54 inch CD
004 – 1.75 inch CD
005 – 1.97 inch CD
006 – 2.38 inch CD
008 – 2.62 inch CD
009 – 3.00 inch CD
010 – 3.25 inch CD
011 – 3.54 inch CD

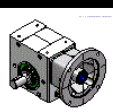
Gearbox Drive Type
NW – NEMA Worm

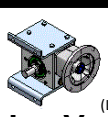
Gearbox Backlash
S – Standard

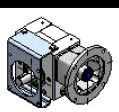
Gearbox Ratio

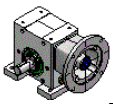
005 – 5:1	015 – 15:1	030 – 30:1	060 – 60:1
007 – 7.5:1	020 – 20:1	040 – 40:1	
010 – 10:1	025 – 25:1	050 – 50:1	

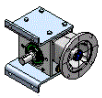
Gearbox Mounting

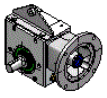

W – Standard


L – Vertical Base (Low Worm Under)


K – Output Bracket


B – Horizontal Base


H – High Vertical (High Worm Over)


T – Torque Arm Mount

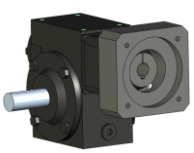
Gearbox Input
SIP – Single Input
DIP – Dual Input
Motor Model – Mounting Kit

Gearbox Output Type
K – Keyed

Gearbox Output Location
HH – Hollow Bore Through
ZZ – Solid Shaft, Double Ext
Z1 – Solid Shaft "1" side
Z2 – Solid Shaft "2" side

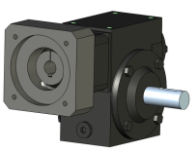
Gearbox Output Size
– size in 16th of an inch
##M – size in mm

Side "1" of gearbox



Z1K shown

Side "2" of gearbox



Z2K shown

RATINGS
Conveyor Killer "CvK" Series

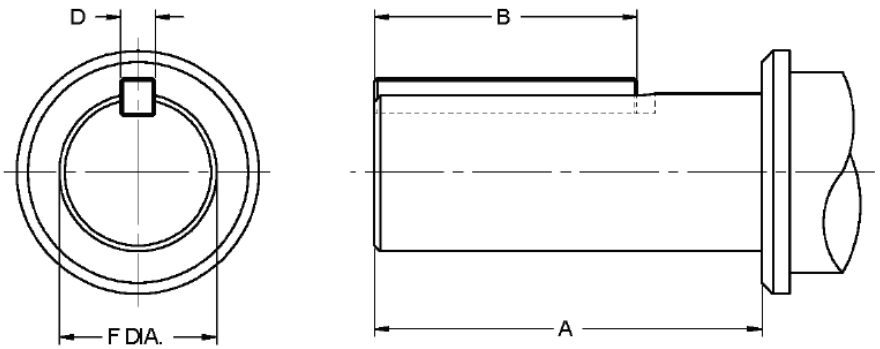
NEMA Worm* Gearboxes
Ultra Quiet Aluminum Housing

RATIO:1	OUTPUT SPEED RPM	CAPACITY	SIZE OF UNIT								
			02	03	04	05	06	08	09	10	11
5	350	Input Power, HP (mech)	1.76	2.51	3.45	4.62	7.47	9.62	13.6	16.6	20.6
		Input Power, HP (therm)	1.76	2.51	3.45	4.62	7.47	9.62	12.7	16.4	17.6
		Output Torque, lb-in (mech)	275	401	559	757	1240	1610	2280	2800	3500
		Efficiency, %	87	89	90	91	92	93	93	94	94
7.5	233	Input Power, HP (mech)	1.30	1.85	2.54	3.39	5.45	6.97	9.76	11.9	14.7
		Input Power, HP (therm)	1.30	1.85	2.54	3.39	5.45	6.97	9.76	11.9	14.2
		Output Torque, lb-in (mech)	296	433	603	818	1340	1720	2430	2970	3700
		Efficiency, %	84	86	88	89	91	92	92	93	93
10	175	Input Power, HP (mech)	1.05	1.47	1.84	2.63	4.17	4.98	6.99	8.93	11.0
		Input Power, HP (therm)	1.05	1.47	1.84	2.63	4.17	4.98	6.99	8.93	11.0
		Output Torque, lb-in (mech)	308	446	570	830	1340	1620	2290	2950	3660
		Efficiency, %	82	84	86	88	89	90	91	92	92
15	117	Input Power, HP (mech)	0.79	1.11	1.51	2.02	3.26	4.13	5.79	7.18	8.93
		Input Power, HP (therm)	0.79	1.11	1.51	2.02	3.26	4.13	5.79	7.18	8.93
		Output Torque, lb-in (mech)	325	479	674	919	1520	1950	2770	3460	4330
		Efficiency, %	76	80	82	84	87	88	89	89	90
20	88	Input Power, HP (mech)	0.62	0.88	1.20	1.60	2.59	3.34	4.70	5.74	7.15
		Input Power, HP (therm)	0.62	0.88	1.20	1.60	2.59	3.34	4.70	5.74	7.00
		Output Torque, lb-in (mech)	319	476	675	927	1550	2030	2900	3570	4480
		Efficiency, %	71	75	78	80	83	84	86	86	87
25	70	Input Power, HP (mech)	0.56	0.79	1.08	1.44	2.32	2.72	3.81	4.65	5.76
		Input Power, HP (therm)	0.56	0.79	1.08	1.44	2.32	2.72	3.81	4.65	5.71
		Output Torque, lb-in (mech)	340	510	726	1000	1680	1990	2840	3490	4370
		Efficiency, %	67	72	75	77	80	81	83	83	84
30	58	Input Power, HP (mech)	0.49	0.67	0.90	1.20	1.91	2.45	3.43	4.18	5.20
		Input Power, HP (therm)	0.49	0.67	0.90	1.20	1.91	2.45	3.43	4.18	5.20
		Output Torque, lb-in (mech)	332	494	700	961	1610	2100	3010	3700	4640
		Efficiency, %	63	68	72	74	78	79	81	82	83
40	44	Input Power, HP (mech)	0.38	0.51	0.68	0.89	1.41	1.79	2.49	3.03	3.75
		Input Power, HP (therm)	0.38	0.51	0.68	0.89	1.41	1.79	2.49	3.03	3.75
		Output Torque, lb-in (mech)	298	444	630	866	1450	1890	2710	3340	4180
		Efficiency, %	55	60	64	67	72	73	75	76	77
50	35	Input Power, HP (mech)	0.33	0.44	0.58	0.75	1.16	1.46	2.01	2.43	2.99
		Input Power, HP (therm)	0.33	0.44	0.58	0.75	1.16	1.46	2.01	2.43	2.99
		Output Torque, lb-in (mech)	291	434	610	832	1380	1790	2550	3140	3920
		Efficiency, %	49	54	58	62	66	68	70	72	73
60	29	Input Power, HP (mech)	0.29	0.38	0.50	0.64	0.98	1.24	1.70	2.05	2.52
		Input Power, HP (therm)	0.29	0.38	0.50	0.64	0.98	1.24	1.70	2.05	2.52
		Output Torque, lb-in (mech)	272	404	570	782	1300	1700	2430	2990	3740
		Efficiency, %	43	49	53	57	61	64	66	67	69

NOTE: Thermal rating for units driven by fan cooled motor
Ratings assumes units are fitted with standard output shafts

O/P SHAFT OPTIONS
Conveyor Killer "CvK" Series

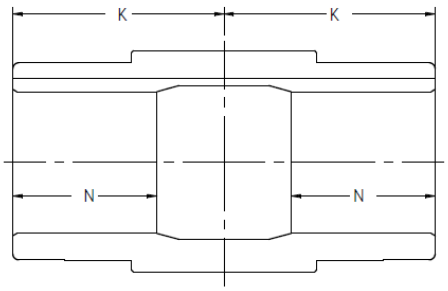
NEMA Worm* Gearboxes
Ultra Quiet Aluminum Housing

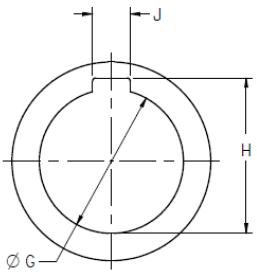


Unit Size	Type of Output Shaft	Column 11 Entry		A	B	D (Key)	F Dia.
		Single Extended	Double Extended				
02	Standard Inch (in)	N	P	1.88	1.00	3/16 X 3/16	0.7495 ± 0.0005
	Reduced Dia. (in)	Q	R	1.88	1.00	3/16 X 3/16	0.6245 ± 0.0005
03	Standard Inch (in)	N	P	1.99	1.13	3/16 X 3/16	0.7495 ± 0.0005
04	Standard Inch (in)	N	P	1.97	1.25	1/4 X 1/4	0.9995 ± 0.0005
	Reduced Dia. (in)	Q	R	1.97	1.25	3/16 X 3/16	0.8745 ± 0.0005
05	Standard Inch (in)	N	P	2.39	1.50	1/4 X 1/4	1.1245 ± 0.0005
	Reduced Dia. (in)	Q	R	2.39	1.50	1/4 X 1/4	0.9995 ± 0.0005
06	Standard Inch (in)	N	P	2.77	1.88	1/4 X 1/4	1.1245 ± 0.0005
08	Standard Inch (in)	N	P	2.68	1.94	3/8 X 3/8	1.4995 ± 0.0005
	Reduced Dia. (in)	Q	R	2.68	1.94	1/4 X 1/4	1.1245 ± 0.0005
09	Standard Inch (in)	N	P	3.80	2.00	3/8 X 3/8	1.4995 ± 0.0005
	Reduced Dia. (in)	Q	R	3.80	2.00	1/4 X 1/4	1.2495 ± 0.0005
10	Standard Inch (in)	N	P	3.83	2.25	3/8 X 3/8	1.4995 ± 0.0005
	Reduced Dia. (in)	Q	R	3.83	2.25	5/16 X 5/16	1.3745 ± 0.0005
11	Standard Inch (in)	N	P	4.15	2.63	1/2 X 1/2	1.8745 ± 0.0005
	Reduced Dia. (in)	Q	R	4.15	2.63	3/8 X 3/8	1.6245 ± 0.0005

O/P BORE OPTIONS
Conveyor Killer "CvK" Series

NEMA Worm* Gearboxes
Ultra Quiet Aluminum Housing





Output Bore

Standard Bore Sizes

Unit Size	Column 11 Entry	Ø G	J	H	K	N
Standard Inch (in)						
02	A	1.0005 ± 0.0005	0.251	1.089	1.93	1.1
03	A	1.0005 ± 0.0005	0.251	1.089	2.12	1.1
04	A	1.4380 ± 0.0005	0.376	1.550	2.15	1.4
05	A	1.4380 ± 0.0005	0.376	1.550	2.11	1.4
06	A	1.4385 ± 0.0005	0.376	1.550	2.13	1.4
08	A	1.9380 ± 0.0005	0.501	2.104	2.72	1.9
09	A	2.1880 ± 0.0005	0.501	2.359	2.72	2.2
10	A	2.1880 ± 0.0005	0.501	2.359	2.99	2.2
11	A	2.9380 ± 0.0005	0.751	3.151	3.33	2.9
Standard Metric (mm)						
02	M	20 + 0.021	6	22.84	49.0	29.0
03	M	25 + 0.021	8	28.41	54.0	29.0
04	M	35 + 0.025	10	38.41	54.5	36.5
05	M	35 + 0.025	10	38.41	53.5	36.5
06	M	35 + 0.025	10	38.41	54.0	36.5
08	M	50 + 0.025	14	53.90	69.0	49.0
09	M	55 + 0.030	16	59.40	69.0	55.6
10	M	55 + 0.030	16	59.40	76.0	55.6
11	M	75 + 0.030	20	80.00	84.5	74.6

Optional Bore Sizes

Ø G (in)	UNIT SIZE								
	B02	B03	B04	B05	B06	B08	B09	B10	B11
0.6255 ± 0.0005	E	E							
0.8755 ± 0.0005	—	F	E						
1.0005 ± 0.0005	A	A	F	E	E				
1.1255 ± 0.0005			G	F	F	E			
1.1880 ± 0.0005			—	G	G	—			
1.2505 ± 0.0005			J	J	J	—			
1.4385 ± 0.0005			A	A	A	J	E	E	E
1.7505 ± 0.0005						—	F	F	—
1.9380 ± 0.0005						A	G	G	—
2.1880 ± 0.0005							A	A	G
2.4380 ± 0.0005									J
2.9380 ± 0.0005									A

I/P MOTOR ADAPTERS
Conveyor Killer "CvK" Series

NEMA Worm* Gearboxes
Ultra Quiet Aluminum Housing

Single Stage Units

Motor Frame	UNIT SIZE								
	02	03	04	05	06	08	09	10	11
56C	U	T	T	T	T	Q	Q	Q	Q
143TC/145TC	W	V	V	V	V	R	R	R	R
182TC/184TC		X	X	X	X	T	T	T	T
213TC/215TC						V	V	V	V

GEAR UNIT FEATURES - COLUMN 15 ENTRY

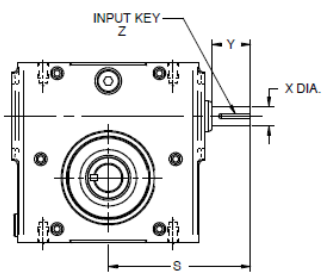
COLUMN 15 ENTRY	Double Extended Input*	Painted Option	Light Washdown Duty Option	Washdown Duty Option	Special Features
-					
G	●				
H	●	●			
P		●			
S				●	
U			●		
Z					●

* Solid shaft extension to standard proportions on non drive end of input

DIMENSIONS STANDARD
Conveyor Killer "CvK" Series

NEMA Worm* Gearboxes
Ultra Quiet Aluminum Housing

REDUCER



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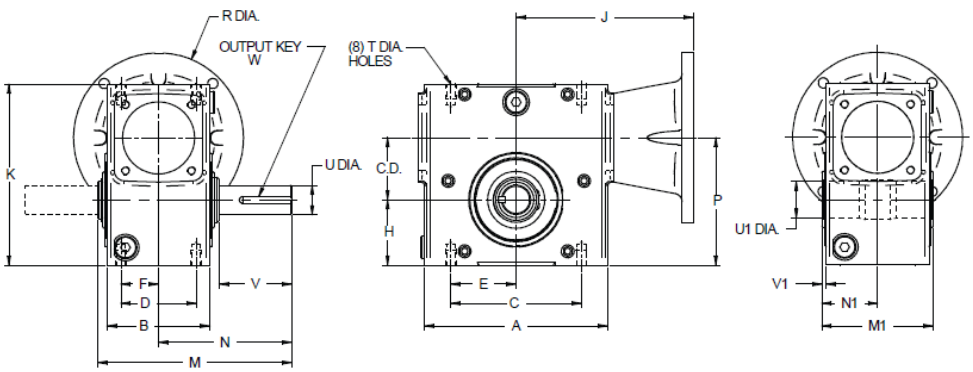


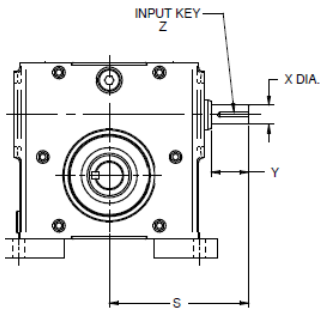
Case Size	C.D.	A	B	C	D	E	F	H	K	M	M1	N	N1	P	T Dia.
02	1.33	4.33	2.76	3.25	2.00	1.63	1.00	1.72	4.66	6.10	3.85	4.00	1.93	3.05	M8 x 0.47
03	1.54	5.23	3.94	4.19	2.75	2.10	1.38	1.91	5.35	6.61	4.25	4.31	2.12	3.45	M8 x 0.47
04	1.75	5.98	3.94	4.19	2.75	2.10	1.38	2.06	5.75	6.65	4.29	4.31	2.15	3.81	M8 x 0.47
05	1.97	6.00	3.94	5.00	2.88	2.50	1.44	2.28	6.38	7.00	4.21	4.69	2.11	4.25	M10 x 0.59
06	2.38	7.00	3.94	5.00	2.88	2.50	1.44	2.50	6.93	7.41	4.25	5.09	2.13	4.88	M10 x 0.59
08	2.62	7.50	5.12	6.38	3.38	3.19	1.69	2.94	7.99	8.58	5.43	5.63	2.72	5.57	M10 x 0.59
09	3.00	9.00	5.12	7.00	4.00	3.50	2.00	3.25	8.88	9.70	5.43	6.75	2.72	6.25	M12 x 0.71
10	3.25	9.05	5.67	7.50	4.00	3.75	2.00	3.50	9.38	10.28	5.98	7.06	2.99	6.75	M12 x 0.71
11	3.54	9.50	5.12	7.50	4.00	3.75	2.00	3.39	9.84	11.34	6.65	7.75	3.33	6.93	M16 x 0.87

		REDUCER					MOTORIZED												
		INPUT SHAFT		Z-KEY			56C/ 143/145TC		182/184TC		213/215TC		OUTPUT SHAFT				W-KEY		
Case Size	C.D.	X Dia.	Y	SQ.	LG	S	J	R Dia.	J	R Dia.	J	R Dia.	U Dia.	U1 Dia.	V	V1	SQ.	LG	WT (LBS)
02	1.33	0.625	1.31	3/16	1.00	4.22	4.74	6.50	NA	NA	NA	NA	0.750	1.000	1.88	0.12	3/16	1.00	9
03	1.54	0.750	1.48	3/16	1.13	4.87	5.92	6.50	6.16	9.00	NA	NA	0.750	1.000	1.99	0.08	3/16	1.13	14
04	1.75	0.750	1.48	3/16	1.13	5.13	6.18	6.50	6.42	9.00	NA	NA	1.000	1.438	1.97	0.08	1/4	1.25	16
05	1.97	0.750	1.48	3/16	1.13	5.20	6.34	6.50	6.58	9.00	NA	NA	1.125	1.438	2.39	0.08	1/4	1.50	18
06	2.38	0.750	1.48	3/16	1.13	5.47	6.77	6.50	7.01	9.00	NA	NA	1.125	1.438	2.77	0.08	1/4	1.88	23
08	2.62	1.188	2.69	1/4	2.25	7.23	7.24	6.50	7.59	9.00	7.59	9.00	1.500	1.938	2.68	0.08	3/8	1.97	40
09	3.00	1.188	2.69	1/4	2.25	7.63	7.64	6.50	7.98	9.00	7.98	9.00	1.500	2.188	3.80	0.08	3/8	2.00	47
10	3.25	1.188	2.69	1/4	2.25	7.64	7.72	6.50	8.06	9.00	8.06	9.00	1.500	2.188	3.83	0.08	3/8	2.25	50
11	3.54	1.188	2.95	1/4	2.62	8.39	8.15	6.50	8.50	9.00	8.50	9.00	1.875	2.938	4.15	0.10	1/2	2.63	70

DIMENSIONS BASE
Conveyor Killer "CvK" Series

NEMA Worm* Gearboxes
Ultra Quiet Aluminum Housing

REDUCER



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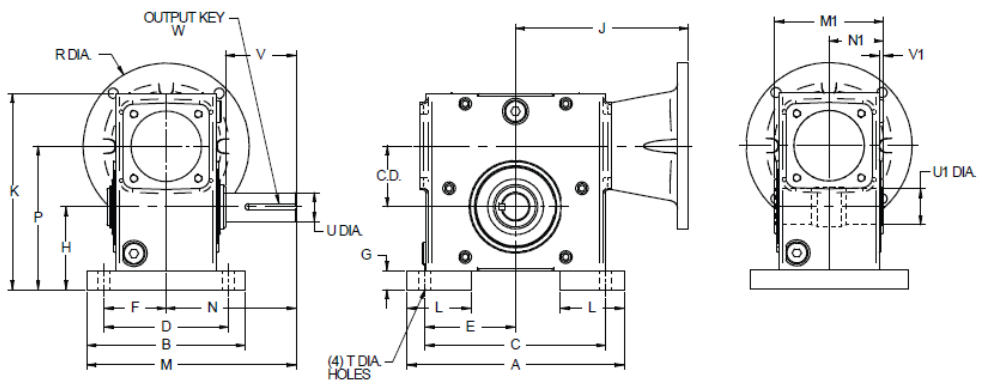


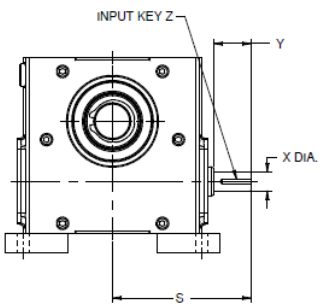
Case Size	C.D	A	B	C	D	E	F	G	H	K	L	M	M1	N	N1	P	T Dia.
02	1.33	5.38	4.19	4.380	3.310	2.190	1.655	0.53	2.25	5.19	1.50	6.09	3.85	4.00	1.93	3.58	11/32
03	1.54	6.44	5.44	5.250	4.312	2.625	2.156	0.59	2.50	5.94	1.50	7.03	4.25	4.31	2.12	4.04	13/32
04	1.75	7.00	5.69	5.750	4.500	2.875	2.250	0.69	2.75	6.44	2.00	7.16	4.29	4.31	2.15	4.50	13/32
05	1.97	7.75	5.94	6.380	4.690	3.190	2.345	0.72	3.00	7.10	2.00	7.66	4.21	4.69	2.11	4.97	15/32
06	2.38	8.50	6.19	7.063	4.875	3.532	2.438	0.75	3.25	7.68	2.50	8.19	4.25	5.09	2.13	5.63	15/32
08	2.62	9.63	6.66	8.000	5.250	4.000	2.625	0.75	3.69	8.74	2.50	8.96	5.43	5.63	2.72	6.31	17/32
09	3.00	10.00	7.50	8.440	5.880	4.220	2.940	0.75	4.00	9.63	2.00	10.50	5.43	6.75	2.72	7.00	17/32
10	3.25	11.19	7.66	9.500	6.125	4.750	3.063	0.88	4.38	10.25	2.50	10.89	5.98	7.06	2.99	7.63	17/32
11	3.54	11.08	7.71	9.500	6.120	4.750	3.060	1.61	5.00	11.45	2.50	11.61	6.65	7.75	3.33	8.54	9/16

		REDUCER					MOTORIZED											
		INPUT SHAFT		Z-KEY			56C/ 143/145TC		182/184TC		213/215TC		OUTPUT SHAFT				W-KEY	
Case Size	C.D.	X Dia.	Y	SQ.	LG	S	J	R Dia.	J	R Dia.	J	R Dia.	U Dia.	U1 Dia.	V	V1	SQ.	LG	WT (LBS)
02	1.33	0.625	1.31	3/16	1.00	4.22	4.74	6.50	NA	NA	NA	NA	0.750	1.000	1.88	0.12	3/16	1.00	10
03	1.54	0.750	1.48	3/16	1.13	4.87	5.92	6.50	6.16	9.00	NA	NA	0.750	1.000	1.99	0.08	3/16	1.13	15
04	1.75	0.750	1.48	3/16	1.13	5.13	6.18	6.50	6.42	9.00	NA	NA	1.000	1.438	1.97	0.08	1/4	1.25	18
05	1.97	0.750	1.48	3/16	1.13	5.20	6.34	6.50	6.58	9.00	NA	NA	1.125	1.438	2.39	0.08	1/4	1.50	20
06	2.38	0.750	1.48	3/16	1.13	5.47	6.77	6.50	7.01	9.00	NA	NA	1.125	1.438	2.77	0.08	1/4	1.88	25
08	2.62	1.188	2.69	1/4	2.25	7.23	7.24	6.50	7.59	9.00	7.59	9.00	1.500	1.938	2.68	0.08	3/8	1.97	43
09	3.00	1.188	2.69	1/4	2.25	7.63	7.64	6.50	7.98	9.00	7.98	9.00	1.500	2.188	3.80	0.08	3/8	2.00	50
10	3.25	1.188	2.69	1/4	2.25	7.64	7.72	6.50	8.06	9.00	8.06	9.00	1.500	2.188	3.83	0.08	3/8	2.25	54
11	3.54	1.188	2.95	1/4	2.62	8.39	8.15	6.50	8.50	9.00	8.50	9.00	1.875	2.938	4.15	0.10	1/2	2.63	75

DIM BASE REVERSE
Conveyor Killer "CvK" Series

NEMA Worm* Gearboxes
Ultra Quiet Aluminum Housing

REDUCER



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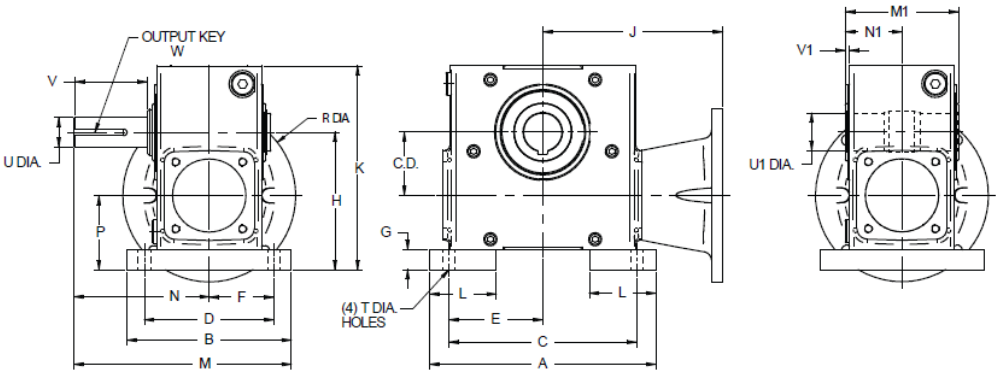


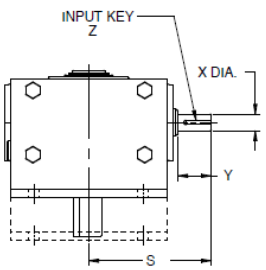
Case Size	C.D.	A	B	C	D	E	F	G	H	K	L	M	M1	N	N1	P	T Dia.
02	1.33	5.38	4.19	4.380	3.310	2.190	1.655	0.53	3.47	5.19	1.50	6.09	3.85	4.00	1.93	2.14	11/32
03	1.54	6.44	5.44	5.250	4.312	2.625	2.156	0.59	4.03	5.94	1.50	7.03	4.25	4.31	2.12	2.49	13/32
04	1.75	7.00	5.69	5.750	4.500	2.875	2.250	0.69	4.38	6.44	2.00	7.16	4.29	4.31	2.15	2.63	13/32
05	1.97	7.75	5.94	6.380	4.690	3.190	2.345	0.72	4.82	7.10	2.00	7.66	4.21	4.69	2.11	2.85	15/32
06	2.38	8.50	6.19	7.063	4.875	3.532	2.438	0.75	5.18	7.68	2.50	8.19	4.25	5.09	2.13	2.80	15/32
08	2.62	9.63	6.66	8.000	5.250	4.000	2.625	0.75	5.80	8.74	2.50	8.96	5.43	5.63	2.72	3.18	17/32
09	3.00	10.00	7.50	8.440	5.880	4.220	2.940	0.75	6.38	9.63	2.00	10.50	5.43	6.75	2.72	3.38	17/32
10	3.25	11.19	7.66	9.500	6.125	4.750	3.063	0.88	6.75	10.25	2.50	10.89	5.98	7.06	2.99	3.50	17/32
11	3.54	11.08	7.71	9.500	6.120	4.750	3.060	1.61	8.07	11.45	2.50	11.61	6.65	7.75	3.33	4.53	9/16

		REDUCER					MOTORIZED												
		INPUT SHAFT		Z-KEY			56C/ 143/145TC		182/184TC		213/215TC		OUTPUT SHAFT				W-KEY		
Case Size	C.D.	X Dia.	Y	SQ.	LG	S	J	R Dia.	J	R Dia.	J	R Dia.	U Dia.	U1 Dia.	V	V1	SQ.	LG	WT (lbs)
02	1.33	0.625	1.31	3/16	1.00	4.22	4.74	6.50	NA	NA	NA	NA	0.750	1.000	1.88	0.12	3/16	1.00	10
03	1.54	0.750	1.48	3/16	1.13	4.87	5.92	6.50	6.16	9.00	NA	NA	0.750	1.000	1.99	0.08	3/16	1.13	15
04	1.75	0.750	1.48	3/16	1.13	5.13	6.18	6.50	6.42	9.00	NA	NA	1.000	1.438	1.97	0.08	1/4	1.25	18
05	1.97	0.750	1.48	3/16	1.13	5.20	6.34	6.50	6.58	9.00	NA	NA	1.125	1.438	2.39	0.08	1/4	1.50	20
06	2.38	0.750	1.48	3/16	1.13	5.47	6.77	6.50	7.01	9.00	NA	NA	1.125	1.438	2.77	0.08	1/4	1.88	25
08	2.62	1.188	2.69	1/4	2.25	7.23	7.24	6.50	7.59	9.00	7.59	9.00	1.500	1.938	2.68	0.08	3/8	1.97	43
09	3.00	1.188	2.69	1/4	2.25	7.63	7.64	6.50	7.98	9.00	7.98	9.00	1.500	2.188	3.80	0.08	3/8	2.00	50
10	3.25	1.188	2.69	1/4	2.25	7.64	7.72	6.50	8.06	9.00	8.06	9.00	1.500	2.188	3.83	0.08	3/8	2.25	54
11	3.54	1.188	2.95	1/4	2.62	8.39	8.15	6.50	8.50	9.00	8.50	9.00	1.875	2.938	4.15	0.10	1/2	2.63	75

DIM VERT HIGH & LOW
Conveyor Killer "CvK" Series

NEMA Worm* Gearboxes
Ultra Quiet Aluminum Housing

REDUCER



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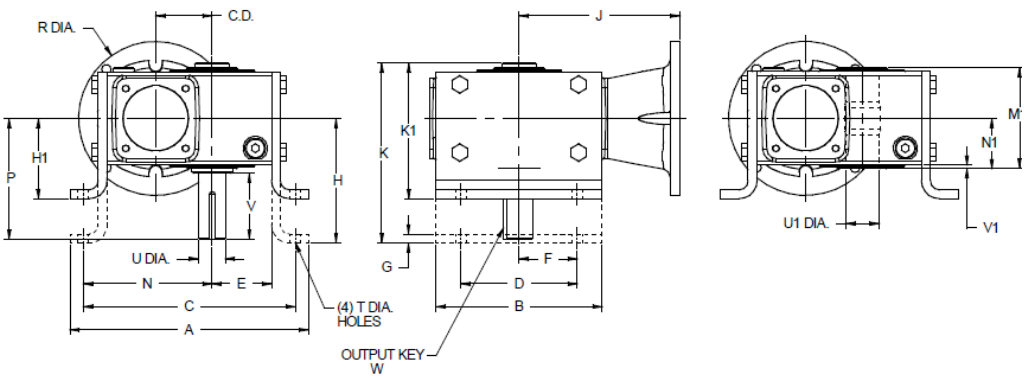


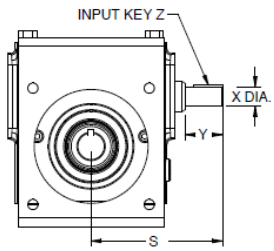
Case Size	C.D.	A	B	C	D	E	F	G	H	H1	K	K1	M1	N	N1	P	T Dia.
02	1.33	7.09	4.33	6.15	3.25	1.72	1.63	0.25	3.56	2.31	5.66	4.41	3.85	3.69	1.93	4.00	**11/32**
03	1.54	8.04	5.23	6.98	4.00	1.91	2.00	0.25	4.38	3.00	6.68	5.30	4.25	4.26	2.12	4.31	**13/32**
04	1.75	8.44	5.98	7.38	4.00	2.06	2.00	0.31	4.38	3.00	6.72	5.34	4.29	4.51	2.15	4.31	**13/32**
05	1.97	9.50	6.00	8.38	4.88	2.28	2.44	0.38	4.88	3.13	7.19	5.44	4.21	5.10	2.11	4.69	**15/32**
06	2.38	10.06	7.00	8.95	4.88	2.50	2.44	0.38	5.25	3.38	7.57	5.70	4.25	5.44	2.13	5.09	**15/32**
08	2.62	11.69	7.50	10.13	5.75	2.94	2.88	0.38	5.59	3.63	8.54	6.58	5.43	6.14	2.72	5.63	**17/32**
09	3.00	13.25	9.00	11.14	6.00	3.25	3.00	0.38	5.88	3.94	8.83	6.89	5.43	6.76	2.72	6.75	**17/32**
10	3.25	13.37	9.05	11.87	6.13	3.50	3.07	0.50	6.25	4.69	9.47	7.91	5.98	7.12	2.99	7.06	**17/32**
11	3.54	16.84	9.50	14.88	7.88	3.39	3.94	0.50	7.50	5.00	11.09	8.59	6.65	8.99	3.33	7.75	**9/16**

		REDUCER					MOTORIZED												
		INPUT SHAFT		Z-KEY			56C/ 143/145TC		182/184TC		213/215TC		OUTPUT SHAFT				W-KEY		
Case Size	C.D.	X Dia.	Y	SQ.	LG	S	J	R Dia.	J	R Dia.	J	R Dia.	U Dia.	U1 Dia.	V	V1	SQ.	LG	WT (lbs)
02	1.33	0.625	1.31	3/16	1.00	4.22	4.74	6.50	NA	NA	NA	NA	0.750	1.000	1.88	0.12	3/16	1.00	10
03	1.54	0.750	1.48	3/16	1.13	4.87	5.92	6.50	6.16	9.00	NA	NA	0.750	1.000	1.99	0.08	3/16	1.13	15
04	1.75	0.750	1.48	3/16	1.13	5.13	6.18	6.50	6.42	9.00	NA	NA	1.000	1.438	1.97	0.08	1/4	1.25	18
05	1.97	0.750	1.48	3/16	1.13	5.20	6.34	6.50	6.58	9.00	NA	NA	1.125	1.438	2.39	0.08	1/4	1.50	20
06	2.38	0.750	1.48	3/16	1.13	5.47	6.77	6.50	7.01	9.00	NA	NA	1.125	1.438	2.77	0.08	1/4	1.88	25
08	2.62	1.188	2.69	1/4	2.25	7.23	7.24	6.50	7.59	9.00	7.59	9.00	1.500	1.938	2.68	0.08	3/8	1.97	44
09	3.00	1.188	2.69	1/4	2.25	7.63	7.64	6.50	7.98	9.00	7.98	9.00	1.500	2.188	3.80	0.08	3/8	2.00	51
10	3.25	1.188	2.69	1/4	2.25	7.64	7.72	6.50	8.06	9.00	8.06	9.00	1.500	2.188	3.83	0.08	3/8	2.25	55
11	3.54	1.188	2.95	1/4	2.62	8.39	8.15	6.50	8.50	9.00	8.50	9.00	1.875	2.938	4.15	0.10	1/2	2.63	76

DIM OUTPUT BRACKET
Conveyor Killer "CvK" Series

NEMA Worm* Gearboxes
Ultra Quiet Aluminum Housing

REDUCER



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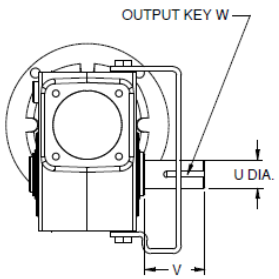
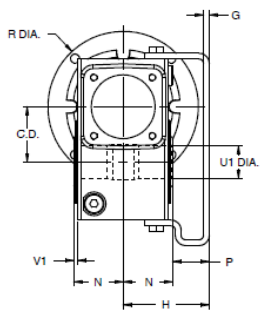
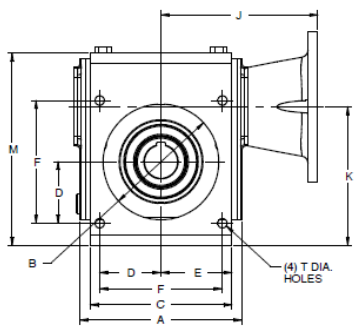






Case Size	C.D.	A	B	C	D	E	F	G	H	K	M	N	P	T Dia.
02	1.33	4.33	3.62	4.25	1.77	2.13	3.54	0.19	3.00	3.75	5.55	1.93	1.07	11/32
03	1.54	5.23	3.62	4.75	1.77	2.38	3.54	0.19	3.56	4.07	6.16	2.12	1.44	11/32
04	1.75	5.98	4.06	4.81	2.08	2.41	4.16	0.19	3.50	4.53	6.66	2.15	1.35	11/32
05	1.97	6.00	4.50	5.75	2.30	2.88	4.60	0.19	3.75	5.15	7.47	2.11	1.64	13/32
06	2.38	7.00	5.00	6.13	2.65	3.07	5.30	0.25	3.72	6.00	8.30	2.13	1.59	13/32
08	2.62	7.50	6.00	7.18	2.83	3.59	5.66	0.25	4.06	6.57	9.25	2.72	1.34	13/32
09	3.00	9.00	7.00	8.50	3.18	4.25	6.36	0.25	4.50	7.14	10.02	2.72	1.78	13/32
10	3.25	9.05	7.00	8.50	3.54	4.25	7.07	0.25	5.25	8.04	10.91	2.99	2.26	9/16
11	3.54	9.50	8.56	9.50	3.54	4.75	7.07	0.25	5.25	9.19	12.35	3.33	1.92	9/16

		REDUCER					MOTORIZED											
		INPUT SHAFT		Z-KEY			56C/ 143/145TC		182/184TC		213/215TC		OUTPUT SHAFT				W-KEY	
Case Size	C.D.	X Dia.	Y	SQ.	LG	S	J	R Dia.	J	R Dia.	J	R Dia.	U Dia.	U1 Dia.	V	V1	SQ.	LG	WT (lbs)
02	1.33	0.625	1.31	3/16	1.00	4.22	4.74	6.50	NA	NA	NA	NA	0.750	1.000	1.88	0.12	3/16	1.00	9
03	1.54	0.750	1.48	3/16	1.13	4.87	5.92	6.50	6.16	9.00	NA	NA	0.750	1.000	1.99	0.08	3/16	1.13	14
04	1.75	0.750	1.48	3/16	1.13	5.13	6.18	6.50	6.42	9.00	NA	NA	1.000	1.438	1.97	0.08	1/4	1.25	16
05	1.97	0.750	1.48	3/16	1.13	5.20	6.34	6.50	6.58	9.00	NA	NA	1.125	1.438	2.39	0.08	1/4	1.50	18
06	2.38	0.750	1.48	3/16	1.13	5.47	6.77	6.50	7.01	9.00	NA	NA	1.125	1.438	2.77	0.08	1/4	1.88	23
08	2.62	1.188	2.69	1/4	2.25	7.23	7.24	6.50	7.59	9.00	7.59	9.00	1.500	1.938	2.68	0.08	3/8	1.97	40
09	3.00	1.188	2.69	1/4	2.25	7.63	7.64	6.50	7.98	9.00	7.98	9.00	1.500	2.188	3.80	0.08	3/8	2.00	47
10	3.25	1.188	2.69	1/4	2.25	7.64	7.72	6.50	8.06	9.00	8.06	9.00	1.500	2.188	3.83	0.08	3/8	2.25	50
11	3.54	1.188	2.95	1/4	2.62	8.39	8.15	6.50	8.50	9.00	8.50	9.00	1.875	2.938	4.15	0.10	1/2	2.63	70

Worm Gearmotor/Brakemotor Aluminum Housing

SideCAR gearboxes are made as standard with input hub for various motor adapters and either side covers allow feet, output flanges and torque arm easy fitting.

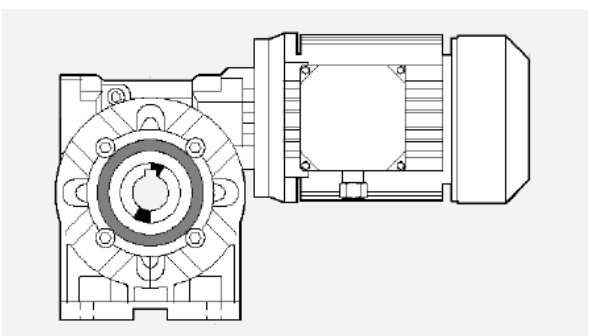
On demand, input Viton oil seals allow trouble-free operation with 2-pole standard AC, DC and servo motors, and Silicone oil seals for low temperature running.

SideCAR Gearboxes are delivered filled with synthetic long-life oil (ISO VG 320 Grade) as standard, for ambient temperature +4 /+131 °F (-20/+55 °C), oil quantities as recommended on page 21, valid for all mounting positions.

No vent plug style and lubrication-for-life is factory filled. Selection data are intended for service factor SF1.0, i.e. 8-10 running hours per day, uniform load, 10,000 working hours, less than 6 start/stops per hour and room temperature ranging from 60 to 95 °F (15 to 35 °C).

Sizes

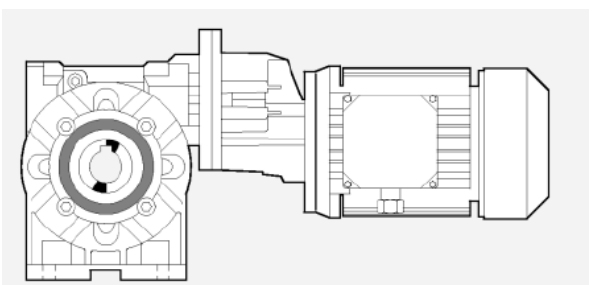
CaR028
CaR040
CaR050
CaR060
CaR070
CaR085
CaR110
CaR130
CaR150



Single Phase Motors Up to 10 HP

3 Phase Motors & Brake Motors Up to 10 HP

Helical Ratio Boosters Standard



ORDERING CODES
SideCaR "CaR" Series

Euro Standard
Worm Gearboxes/Gearmotor
Low Cost & Ultra Light

Model: CaR040NW-S010Q-012Z2K/56C

Gearbox Series
CaR – SideCAR

Gearbox Size
028 – 28mm CD
040 – 40mm CD
050 – 50mm CD
060 – 63mm CD
070 – 70mm CD
085 – 85mm CD
110 – 110mm CD
130 – 130mm CD
150 – 150mm CD

Gearbox Drive Type
NW – Nema Worm
SW – Servo Worm
GM – Gearmotor
BM – Brakemotor

Gearbox Backlash
S – Standard

Gearbox Ratio

005 – 5:1	17H - 17.5:1	32H - 31.5:1	40H - 40:1
007 – 7:1	24H - 24.5:1	44H - 44.1:1	56H - 56:1
010 – 10:1	35H - 35:1	63H - 63:1	80H - 80:1
015 – 15:1	52H - 52.5:1	95H - 94.5:1	120H - 120:1
020 – 20:1	70H - 70:1	126H - 126:1	160H - 160:1
028 – 28:1	98H - 98:1	176H - 176.4:1	224H - 224:1
040 – 40:1	140H - 140:1	252H - 252:1	320H - 320:1
049 – 49:1	172H – 171.5:1	309H – 308.7:1	392H – 392:1
056 – 56:1	196H - 196:1	353H - 352.8:1	448H - 448:1
070 – 70:1	245H - 245:1	441H - 441:1	560H - 560:1
080 – 80:1	280H - 280:1	504H - 504:1	640H - 640:1
100 – 100:1	350H - 350:1	630H - 630:1	800H - 800:1
	*note: 3.5:1 "Hx"	**note: 6.3:1 "Hx"	***note: 8:1 "Hx"

***"H" Using Helical Ratio Mulitplier

Gearbox Mounting
Q – Standard

Gearbox Output Size
– size in 16th of an inch
##M – size in mm

Gearbox Output Location
See Page X

Gearbox Output Type
K – Keyed

Gearbox Input
See Page X

fangTOOTH

INPUT CODES
SideCaR "CaR" Series

Euro Standard
Worm Gearboxes/Gearmotor
Low Cost & Ultra Light

Model: CaR040NW-S010Q-012Z2K/56C

Gearbox Input
SIP – Single Input
DIP – Dual Input

With Motor Adapter ONLY:

56C	IEC63B14
143TC	IEC71B14
145TC	IEC80B14
182TC	IEC90B14
184TC	IEC100B14
213TC	IEC112B14

With Motor/Brakemotor 460VAC/60Hz/3ph/1750rpm

Motor SIze	Without Brake	With Brake
0016-56C - 0.16 hp	[Code 0016]	[Code 0016BR]
0025-56C - 0.25 hp	[Code 0025]	[Code 0025BR]
0033-56C - 0.33 hp	[Code 0033]	[Code 0033BR]
0050-56C - 0.50	[Code 0050]	[Code 0050BR]
0075-56C - 0.75 hp	[Code 0016]	[Code 0016BR]
A100-56C - 1.00 hp	[Code A100]	[Code A100BR]
B100-143TC - 1.00	[Code B100]	[Code B100BR]
0150-145TC - 1.50 hp	[Code 0150]	[Code 0150BR]
0200-145TC - 2.00 hp	[Code 0200]	[Code 0200BR]
0300-182TC - 3.00 hp	[Code 0300]	[Code 0300BR]
0500-184TC - 5.00 hp	[Code 0500]	[Code 0500BR]
0750-213TC - 7.50 hp	[Code 0750]	[Code 0750BR]

SINGLE PHASE - With Motor/Brakemotor 115/208-230 VAC

Motor SIze	Without Brake
0016-56C - 0.16 hp	[Code S016]
0025-56C - 0.25 hp	[Code S025]
0033-56C - 0.33 hp	[Code S033]
0050-56C - 0.50	[Code S050]
0075-56C - 0.75 hp	[Code S016]
A100-56C - 1.00 hp	[Code S100]
B100-143TC - 1.00	[Code T100]
0150-145TC - 1.50 hp	[Code S150]
0200-145TC - 2.00 hp	[Code S200]
0300-182TC - 3.00 hp	[Code S300]
0500-184TC - 5.00 hp	[Code S500]
0750-213TC - 7.50 hp	[Code S750]

OUTPUT CODES
SideCaR “CaR” Series

Euro Standard
Worm Gearboxes/Gearmotor
Low Cost & Ultra Light

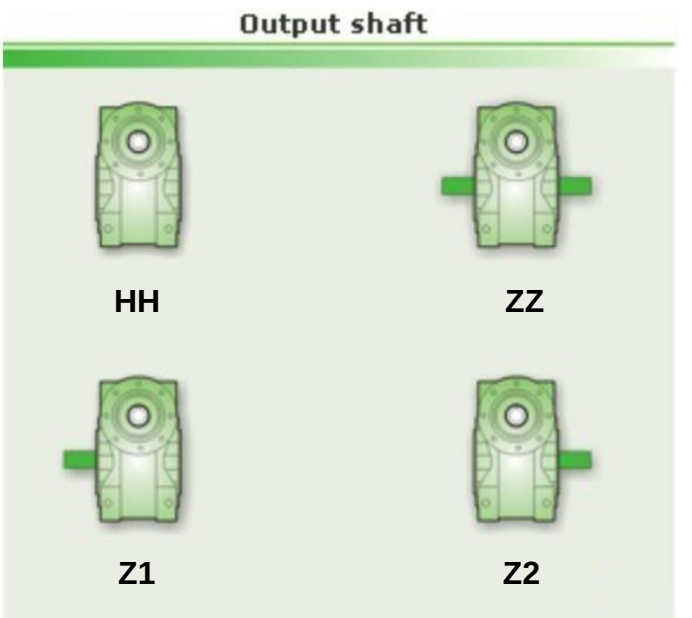
Model: CaR040NW-S010Q-012Z2K/56C

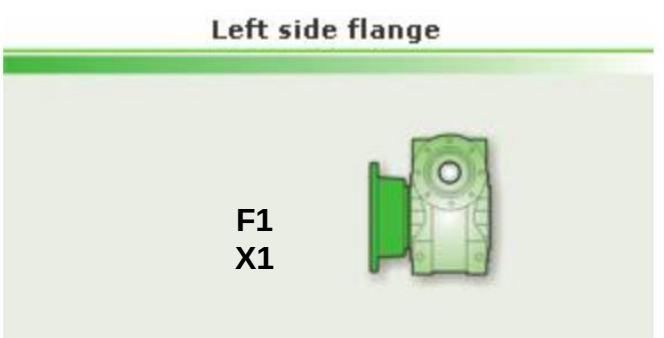
Gearbox Output Location

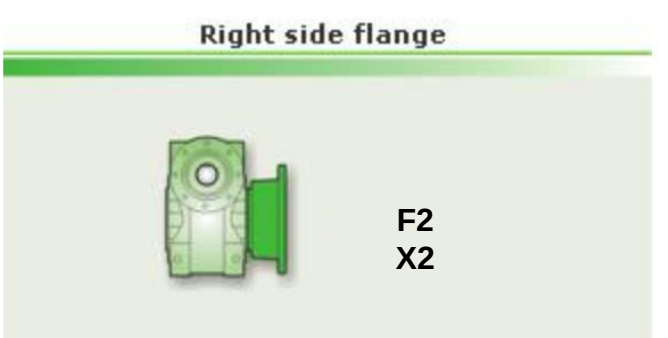
HH – Hollow Bore Through
F1 – Flange Hollow Bore “1” side
X1 – Flange Solid Shaft “1” side
F2 – Flange Hollow Bore “2” side
X2 – Flange Solid Shaft “2” side
ZZ – Solid Shaft, Double Ext
Z1 – Solid Shaft “1” side
Z2 – Solid Shaft “2” side

Gearbox Output Type

K – Keyed







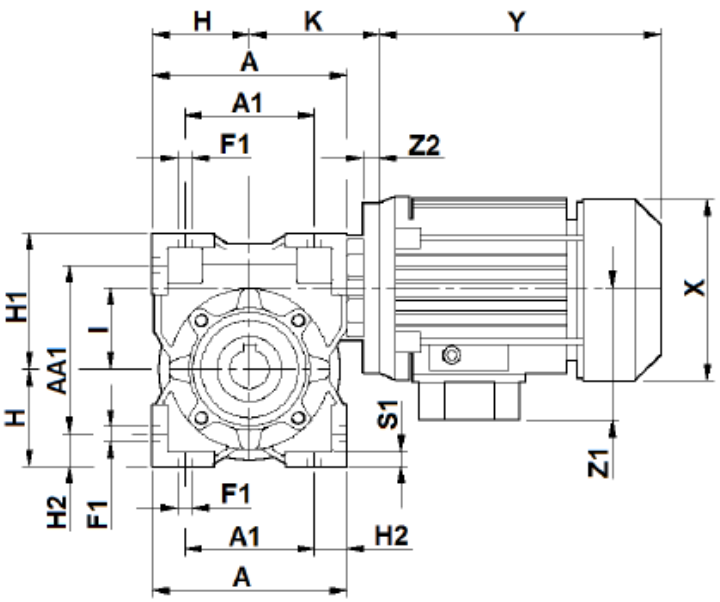
RATINGS
SideCaR "CaR" Series

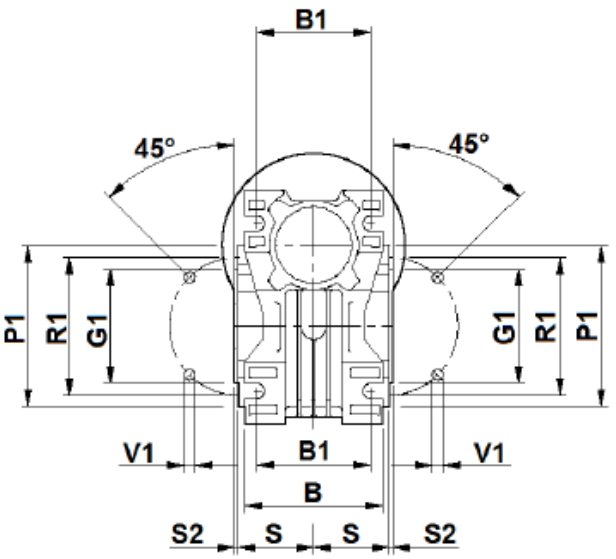
Euro Standard
Worm Gearboxes/Gearmotor
Low Cost & Ultra Light

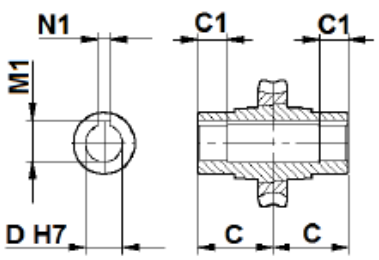
1800 rpm	Ratio	5	7	10	15	20	28	40	49	56	70	80	100
	output rpm	360	257	180	120	90	64	45	37	32	26	23	18
SIZE 28 1.10" CD	HP	1.09	0.75	0.55	0.39	0.27	0.27	0.17	0.15	0.13	0.10	0.08	0.05
	in-lb	159	159	159	159	142	177	150	150	133	106	106	71
	eff.	0.84	0.84	0.81	0.77	0.74	0.66	0.62	0.57	0.51	0.45	0.45	0.43
SIZE 40 1.57" CD	HP	1.87	1.84	1.36	0.92	0.64	0.62	0.42	0.35	0.30	0.23	0.20	0.15
	in-lb	398	398	407	389	345	425	372	363	336	319	283	257
	eff.	0.87	0.85	0.83	0.78	0.75	0.68	0.61	0.58	0.56	0.52	0.50	0.46
SIZE 50 1.97" CD	HP	4.53	3.02	2.18	1.56	1.06	1.06	0.69	0.62	0.52	0.42	0.34	0.22
	in-lb	717	664	664	655	575	752	637	673	628	558	513	381
	eff.	0.88	0.86	0.84	0.78	0.76	0.71	0.64	0.62	0.60	0.53	0.52	0.47
SIZE 60 2.36" CD	HP	6.87	4.69	3.86	2.68	2.01	1.68	1.26	1.04	0.91	0.77	0.62	0.42
	in-lb	1106	1000	1177	1151	1080	1230	1195	1133	1089	1080	938	735
	eff.	0.89	0.86	0.84	0.81	0.77	0.71	0.66	0.62	0.60	0.55	0.53	0.49
SIZE 70 2.76" CD	HP	9.55	6.71	5.20	3.69	3.02	2.51	2.01	1.41	1.24	0.97	0.84	0.62
	in-lb	1558	1469	1593	1664	1717	1912	2106	1673	1593	1443	1363	1151
	eff.	0.89	0.88	0.86	0.83	0.81	0.75	0.71	0.67	0.64	0.59	0.56	0.52
SIZE 85 3.35" CD	HP	15.25	10.39	7.71	5.70	4.86	3.69	2.68	2.35	2.01	1.61	1.44	0.92
	in-lb	2469	2292	2372	2558	2850	2823	2876	2797	2699	2567	2478	1859
	eff.	0.90	0.88	0.86	0.83	0.82	0.76	0.72	0.67	0.68	0.63	0.60	0.56
SIZE 110 4.33" CD	HP	---	20.95	15.09	10.90	9.55	7.38	5.87	4.53	3.69	3.35	2.51	1.84
	in-lb	---	4646	4708	4956	5726	5682	6115	5584	5266	5620	4646	4151
	eff.	---	0.88	0.87	0.84	0.83	0.76	0.73	0.71	0.70	0.67	0.66	0.61
SIZE 130 5.12" CD	HP	---	31.85	25.14	18.44	14.25	12.57	9.22	6.54	6.20	4.53	4.02	3.02
	in-lb	---	7142	7877	8496	8629	9735	10089	8408	8894	7655	7169	6638
	eff.	---	0.89	0.87	0.85	0.84	0.77	0.76	0.72	0.71	0.67	0.63	0.61
SIZE 150 5.91" CD	HP	---	41.74	35.20	26.82	20.95	15.92	13.41	9.89	8.55	6.37	5.53	4.36
	in-lb	---	9381	11151	12479	12656	12700	14868	12744	12567	10886	10355	9912
	eff.	---	0.89	0.88	0.86	0.84	0.79	0.77	0.73	0.73	0.68	0.65	0.63

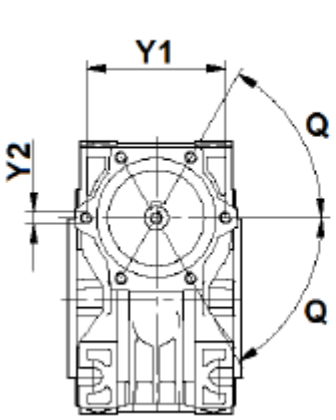
DIMENSIONS
SideCaR “CaR” Series

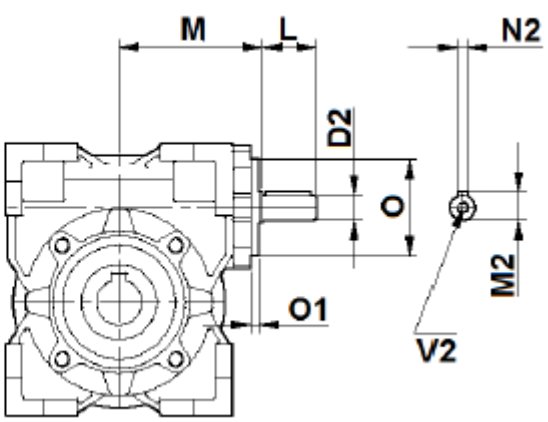
Euro Standard
Worm Gearboxes/Gearmotor
Low Cost & Ultra Light











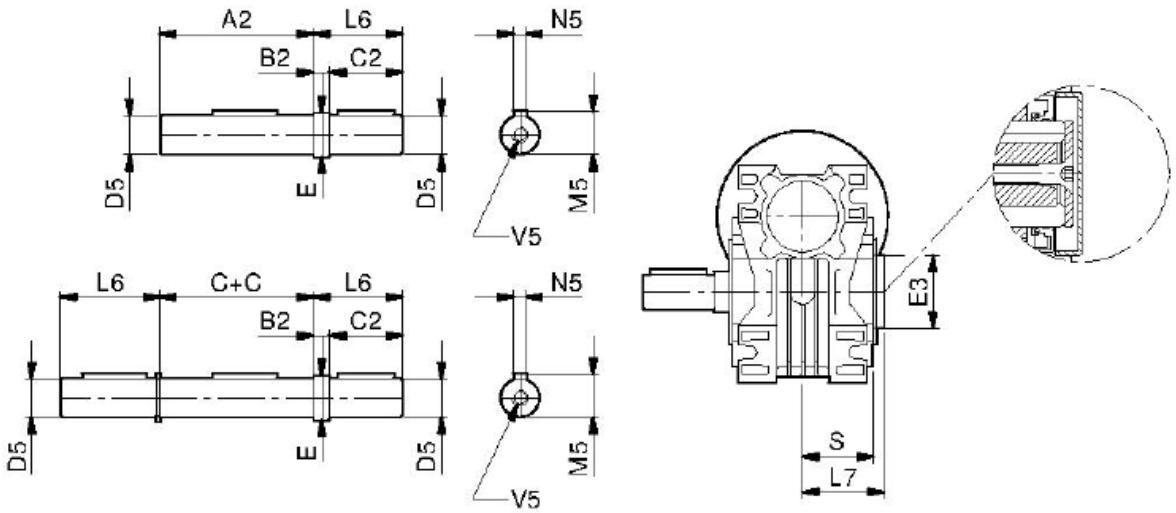
DIMENSIONS
SideCaR "CaR" Series

Euro Standard
Worm Gearboxes/Gearmotor
Low Cost & Ultra Light

(CD)	28 (1.10)	40 (1.57)	50 (1.97)	60 (2.36)	70 (2.76)	85 (3.35)	110 (4.33)
A	3.15	3.94	4.72	5.67	6.77	8.11	10.04
A_1	2.13	2.76	3.15	3.94	4.72	5.51	6.69
AA	3.82	4.78	5.67	6.85	8.07	9.37	11.61
AA_1	2.80	3.60	4.09	5.12	6.02	6.77	8.27
B	2.09	2.80	3.35	3.94	4.41	5.12	5.67
B_1	1.73	2.36	2.76	3.35	3.54	3.94	4.53
C	1.18	1.61	1.93	2.36	2.36	2.40	3.05
D	0.625	0.75	1.0	1.125	1.25	1.375	1.625
	14	18 19 20	24 25	25	25 28 30	32 35	42
D_2	9	11	14	19	19	24	28
F	3.15	4.33	4.92	7.09	7.87	8.27	10.63
F_1	0.28	0.28	0.35	0.35	0.43	0.51	0.59
G	1.97	2.36	2.76	4.53	5.12	5.98	6.69
G_1	2.17	2.36	2.76	3.15	3.74	4.33	5.12
H	1.57	1.97	2.36	2.83	3.39	4.06	5.02
H_1	2.24	2.81	3.31	4.02	4.69	5.31	6.59
H_2	0.51	0.59	0.79	0.87	1.02	1.30	1.67
I	1.10	1.57	1.97	2.36	2.76	3.35	4.33
K	2.60	3.27	3.82	4.06	4.96	6.30	5.94
L	0.79	0.91	1.18	1.57	1.57	1.97	2.36
M	1.97	2.56	2.95	3.43	4.33	4.86	5.75
M_1	0.71	0.84	1.12	1.25	1.37	1.52	1.80
M_2	0.40	0.49	0.63	0.89	0.89	1.06	1.22
N_1	0.19	0.19	0.25	0.25	0.25	0.31	0.38
N_2	0.12	0.16	0.20	0.24	0.24	0.31	0.31
O	1.45	2.04	2.36	2.75	2.75	3.14	3.54
O_1	0.09	0.13	0.13	0.18	0.18	0.19	0.23
P	2.09	2.72	3.66	3.39	4.37	4.37	5.16
P_1	2.95	3.39	3.94	4.33	5.12	6.30	7.87
P_2	0.91	1.10	1.73	0.98	2.01	1.97	2.11
Q	30°	60°	55°	60°	60°	60°	60°
R	2.68	3.43	3.54	5.93	6.50	6.89	9.06
R_1	2.56	2.95	3.35	3.74	4.53	5.12	6.50
S	1.08	1.52	1.83	2.24	2.24	2.64	2.91
S_1	0.24	0.28	0.31	0.39	0.43	0.55	0.51
S_2	0.10	0.10	0.12	0.12	0.12	0.12	0.14
U	0.39	0.16	0.20	0.26	0.47	0.24	0.20
V	0.28	0.35	0.43	0.43	0.51	0.51	0.55
V_1	M6x10 (4x)	M6x8.5 (4x)	M8x10 (4x)	M8x16 (8x)	M8x16 (8x)	M10x18 (8x)	M10x21 (8x)
V_2	M4x10	M4x10	M6x15	M8x20	M8x20	M8x20	M8x20
Y_1	1.85	2.40	2.75	3.14	3.34	3.93	4.17
Y_2	M5x8.5 (6x)	M5x10 (6x)	M6x10 (6x)	M6x12 (6x)	M8x16 (6x)	M8x15 (6x)	M8x15.5 (6x)
Z	0.28	0.23	0.39	0.39	0.55	0.63	0.71
Z_2	0.51	0.51	0.52 - 0.73	0.55 - 0.59	0.61 - 0.69	0.61 - 0.73	0.71-0.79

DIMENSIONS
SideCaR “CaR” Series

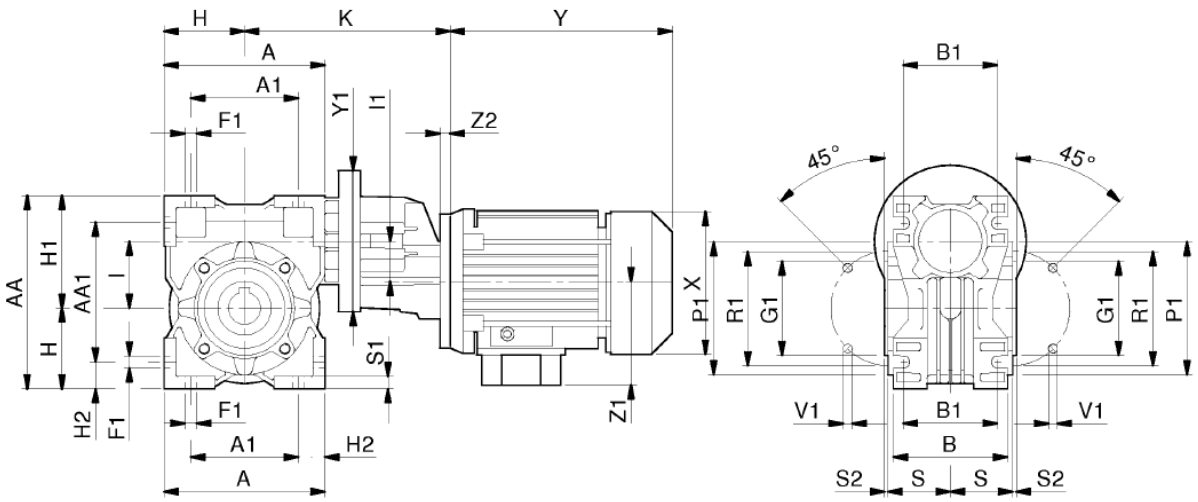
Euro Standard
Worm Gearboxes/Gearmotor
Low Cost & Ultra Light

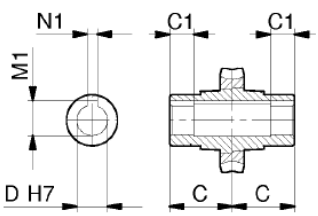


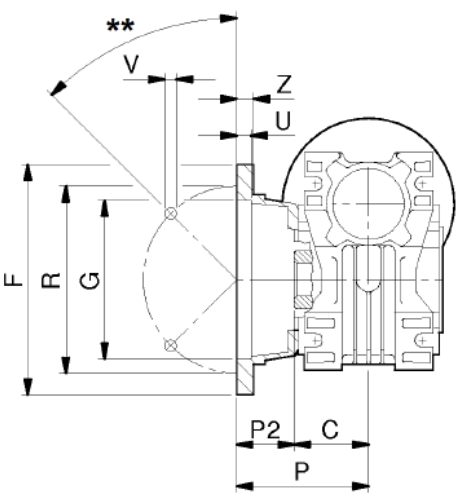
(CD)	28 (1.10)	40 (1.57)	50 (1.97)	60 (2.36)	70 (2.76)	85 (3.35)	110 (4.33)
A_2	2.28	3.16	3.74	4.61	4.61	4.69	6.02
B_2	0.08	0.39	0.39	0.39	0.39	0.39	0.39
C	1.18	1.61	1.93	2.36	2.36	2.40	3.05
C_2	1.375	1.57	1.97	2.36	2.36	2.76	3.15
D_5	0.625	0.75	1.0	1.125	1.25	1.375	1.625
	14	**19 18**	**24 25**	**25**	**28 30**	**32 35**	**42**
E	0.82	0.98	1.25	1.37	1.49	1.69	1.95
L_6	1.42	1.97	2.37	2.76	2.76	3.15	3.54
M_5	0..70	0.83	1.10	1.23	1.36	1.51	1.79
N_5	3/16	3/16	1/4	1/4	1/4	5/16	3/8
V_5	1/4”-20	1/4”-20	3/8”-16	3/8”-16	1/2”-13	1/2”-13	5/8”-11

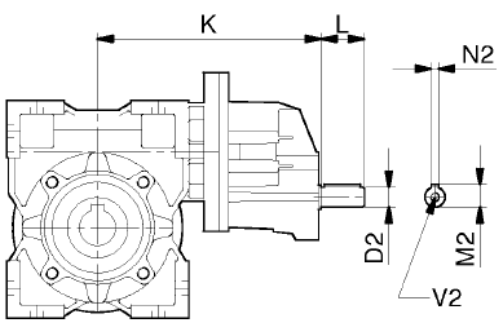
DIMENSIONS
Helical Boost - 2 stage
"CaR" Series

Euro Standard
Worm Gearboxes/Gearmotor
Low Cost & Ultra Light









DIMENSIONS
Helical Boost - 2 stage
"CaR" Series

Euro Standard
Worm Gearboxes/Gearmotor
Low Cost & Ultra Light

	63 (IEC input only)			71 (IEC input only)				80 (IEC input only)				100 *
(CD)	40 (1.57)	50 (1.97)	60 (2.36)	50 (1.97)	60 (2.36)	70 (2.76)	85 (3.35)	60 (2.36)	70 (2.76)	85 (3.35)	110 (4.33)	110 (4.33)
A	3.94	4.72	5.67	4.72	5.67	6.77	8.11	5.67	6.77	8.11	10.04	10.04
A_1	2.76	3.15	3.94	3.15	3.94	4.72	5.51	3.94	4.72	5.51	6.69	6.69
AA	4.78	5.67	6.85	5.67	6.85	8.07	9.37	6.85	8.07	9.37	11.61	11.61
AA_1	3.60	4.09	5.12	4.09	5.12	6.02	6.77	5.12	6.02	6.77	8.27	8.27
B	2.80	3.35	3.94	3.35	3.94	4.41	5.12	3.94	4.41	5.12	5.67	5.67
B_1	2.36	2.76	3.35	2.76	3.35	3.54	3.94	3.35	3.54	3.94	4.53	4.53
C	1.61	1.93	2.36	1.93	2.36	2.36	2.40	2.36	2.36	2.40	3.05	3.05
D	0.625	1.0	1.125	1.0	1.125	1.25	1.375	1.125	1.25	1.375	1.625	1.625
	18 19 20	24 25	25	24 25	25	25 28 30	32 35	25	25 28 30	32 35	42	42
D_2	11	11	11	14	14	14	14	19	19	19	19	24
F	4.33	4.92	7.09	4.92	7.09	7.87	8.27	7.09	7.87	8.27	10.63	10.63
F_1	0.28	0.35	0.35	0.35	0.35	0.43	0.51	0.35	0.43	0.51	0.59	0.59
G	2.36	2.76	4.53	2.76	4.53	5.12	5.98	4.53	5.12	5.98	6.69	6.69
G_1	2.36	2.76	3.15	2.76	3.15	3.74	4.33	3.15	3.74	4.33	5.12	5.12
H	1.97	2.36	2.83	2.36	2.83	3.39	4.06	2.83	3.39	4.06	5.02	5.02
H_1	2.81	3.31	4.02	3.31	4.02	4.69	5.31	4.02	4.69	5.31	6.59	6.59
H_2	0.59	0.79	0.87	0.79	0.87	1.02	1.30	0.87	1.02	1.30	1.67	1.67
I	1.57	1.97	2.36	1.97	2.36	2.76	3.35	2.36	2.76	3.35	4.33	4.33
I_1	1.26	1.26	1.26	1.57	1.57	1.57	1.57	1.97	1.97	1.97	1.97	1.97
K	6.04	6.73	6.97	6.81	7.20	8.23	8.82	8.15	9.15	9.86	10.41	12.91
L	0.91	0.91	0.91	1.18	1.18	1.18	1.18	1.57	1.57	1.57	1.57	1.97
M_1	0.71	1.12	1.25	1.12	1.25	1.37	1.52	1.25	1.37	1.52	1.80	1.80
M_2	0.49	0.49	0.49	0.63	0.63	0.63	0.63	0.89	0.89	0.89	0.89	1.06
N_1	0.19	0.25	0.25	0.25	0.25	0.25	0.31	0.25	0.25	0.31	0.38	0.38
N_2	0.16	0.16	0.16	0.20	0.20	0.20	0.20	0.24	0.24	0.24	0.24	0.31
P	2.72	3.66	3.39	3.66	3.39	4.37	4.37	3.39	4.37	4.37	5.16	5.16
P_1	3.39	3.94	4.33	3.94	4.33	5.12	6.30	4.33	5.12	6.30	7.87	7.87
P_2	1.10	1.73	0.98	1.73	0.98	2.01	1.97	0.98	2.01	1.97	2.11	2.11
R	3.43	3.54	5.93	3.54	5.93	6.50	6.89	5.93	6.50	6.89	9.06	9.06
R_1	2.95	3.35	3.74	3.35	3.74	4.53	5.12	3.74	4.53	5.12	6.50	6.50
S	1.52	1.83	2.24	1.83	2.24	2.24	2.64	2.24	2.24	2.64	2.91	2.91
S_1	0.28	0.31	0.39	0.31	0.39	0.43	0.55	0.39	0.43	0.55	0.51	0.51
S_2	0.10	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.14	0.14
U	0.16	0.20	0.26	0.20	0.26	0.47	0.24	0.26	0.47	0.24	0.20	0.20
V	0.35	0.43	0.43	0.43	0.43	0.51	0.51	0.43	0.51	0.51	0.55	0.55
V_1	M6x8 (4)	M8x10 (4)	M8x16 (8)	M8x10 (4)	M8x16 (8)	M8x16 (8)	M10x18 (8)	M8x16 (8)	M8x16 (8)	M10x18 (8)	M10x21 (8)	M10x21 (8)
V_3	M4 x 10	M4 x 10	M4 x 10	M6 x 15	M6 x 15	M6 x 15	M6 x 15	M8 x 20	M8 x 20	M8 x 20	M8 x 20	M8 x 20
Y_1	4.13	4.13	4.13	4.72	4.72	4.72	4.72	5.51	5.51	5.51	5.51	5.51
Z	0.24	0.39	0.39	0.39	0.39	0.55	0.63	0.39	0.55	0.63	0.71	0.71
Z_2	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.55	0.55	0.55	0.55	0.55

High Precision Right Angle Gearboxes

Spiral Bevel "SpB" Series

Spiral Bevel Gearing Steel Housing

Various housing design

Stainless – Available as an option

Carbon Steel

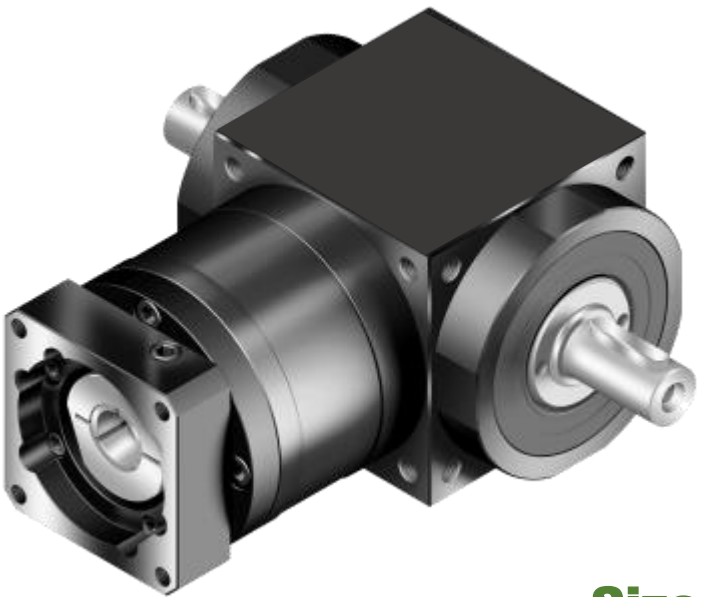
Various output options

High torque, High efficiency
Long service life

Reduced backlash

Maintenance free

Flexible mounting dimensions



Sizes

SpB065T
SpB075T
SpB090T
SpB110T
SpB140T
SpB170T
SpB210T
SpB240T
SpB280T

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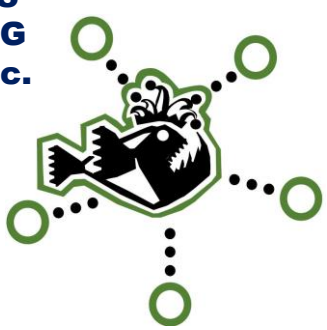

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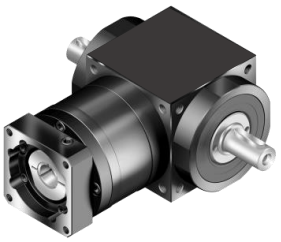


ORDERING CODES
Spiral Bevel "SpB" Series

High Precision
Right Angle Gearboxes

Model: SpB090SB-S1.5Q-18MHHK/MS2N04

Gearbox Series
SpB – Spiral Bevel

Gearbox Size
065 – 65 mm Housing
075 – 75 mm Housing
090 – 90 mm Housing
110 – 110 mm Housing
140 – 140 mm Housing
170 – 170 mm Housing
210 – 210 mm Housing
240 – 240 mm Housing
280 – 280 mm Housing

Gearbox Drive Type
SB – Spiral Bevel

Gearbox Backlash
S – Standard

Gearbox Ratio
1.0 – 1:1
1.5 – 1.5:1
2.0 – 2:1
3.0 – 3:1
4.0 – 4:1
5.0 – 5:1

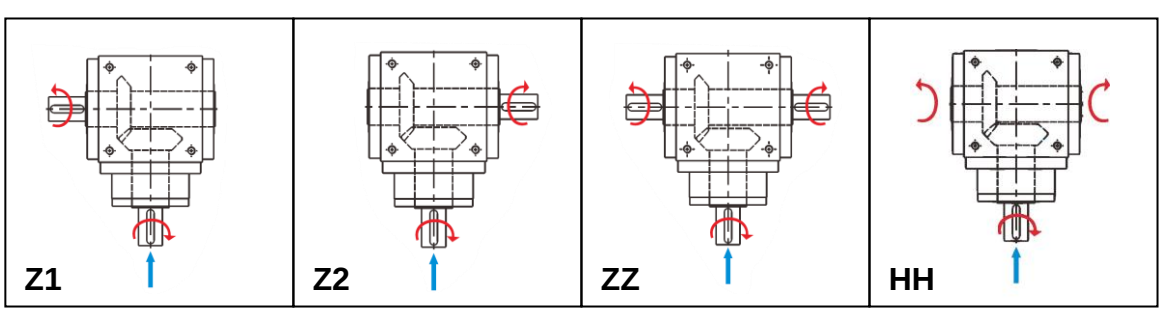
Gearbox Input
SIP – Single Input
DIP – Dual Input
Motor Model – Mounting Kit

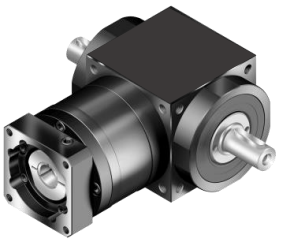
Gearbox Output Type
K – Keyed
S – Smooth
D – Shrink Disc

Gearbox Output Location
HH – Hollow Bore Through
H1 – Hollow Bore "1" side
H2 – Hollow Bore "2" side
ZZ – Solid Shaft, Double Ext
Z1 – Solid Shaft "1" side
Z2 – Solid Shaft "2" side

Gearbox Output Size
##M – size in mm

Gearbox Mounting
Q – Standard





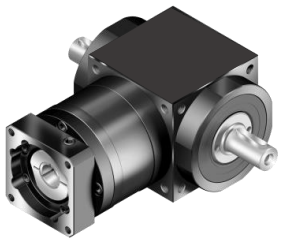
RATINGS
Spiral Bevel "SpB" Series

High Precision
Right Angle Gearboxes

			SpB Size								
		Ratio	065	075	090	110	140	170	210	240	280
Nominal Output Torque T_{2N}	Nm	1	25	45	78	150	360	585	1,300	2,150	3,200
		1.5	25	45	78	150	360	585	1,300	2,150	3.200
		2	24	42	68	150	330	544	1,220	2,010	3,050
		3	18	33	54	120	270	450	1,020	1,650	2,850
		4	13	28	48	100	224	376	860	1,410	2,300
		5	12	25	40	85	196	320	740	1,210	2,000
Max. Acceleration Torque T_{2B}	Nm	1~5	1.5 times of Nominal Output Torque								
Max. Acceleration Input Speed n_{1B}	rpm	1~5	7,500	6,500	5,500	4,500	3,500	3,000	2,200	2,000	1,700
Standard Backlash[B]	arcmin	1~5	≤6	≤6	≤6	≤6	≤6	≤6	≤6	≤6	≤6
Max. Radial Load F_{1rB}[C] Input d1	N	1~5	700	950	1,450	2,100	2,700	3,800	7,800	9,600	10,500
Max. Radial Load F_{2rB}[D] Output d2	N	1~5	900	1,100	1,700	2,700	4,800	6,600	11,500	16,000	18,000
Max. Axial Load F_{1aB}[C] Input d1	N	1~5	350	425	725	1,050	1,350	1,900	3,900	4,800	5,250
Max. Axial Load F_{2aB}[D] Output d2	N	1~5	450	550	850	1,350	2,400	3,300	5,750	8,500	9,000
Efficiency η	%	1~5	≥98%								
Operating Temp	°C	1~5	-10°C ~ 90°C								
Lubrication			Synthetic lubrication oils								
Noise Level[E]	dB (A)	1~5	≤68	≤70	≤74	≤76	≤77	≤78	≤80	≤82	≤83
Mass Moments of Inertia J_1	kg • cm^2	1	0.51	1.30	3.16	7.70	23.57	58.99	195.40	369.34	799.12
		1.5	0.64	1.16	2.82	6.74	19.37	49.28	155.45	283.58	595.78
		2	0.44	1.11	2.70	6.31	17.75	45.35	140.24	249.74	511.76
		3	0.43	1.09	2.66	6.17	17.18	44.01	134.95	237.71	483.06
		4	0.43	1.09	2.65	6.13	17.06	43.70	133.58	234.72	476.26
		5	0.43	1.09	2.65	6.12	17.02	43.60	133.14	233.67	473.58

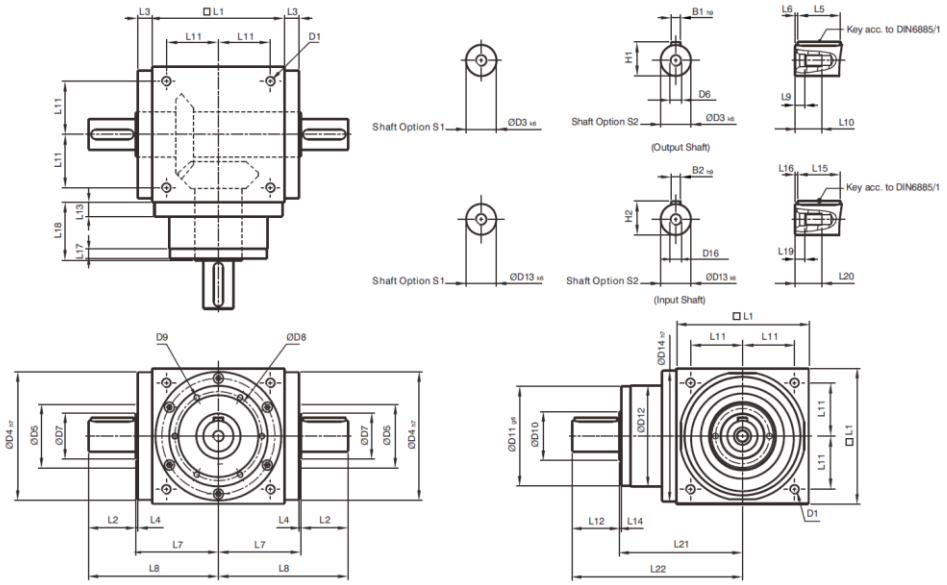
Approx Weights (kg)

SpB Size 065 – 2.6 kg
SpB Size 075 – 4.1 kg
SpB Size 090 – 6.7 kg
SpB Size 110 – 11.5 kg
SpB Size 140 – 19.5 kg
SpB Size 170 – 34.2 kg
SpB Size 210 – 65.1 kg
SpB Size 240 – 96.6 kg
SpB Size 280 – 153.4 kg



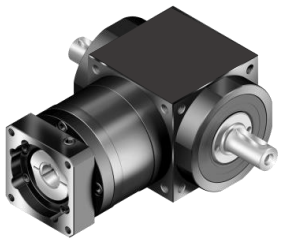
DIMENSIONS 3-WAY
Spiral Bevel "SpB" Series

High Precision
Right Angle Gearboxes

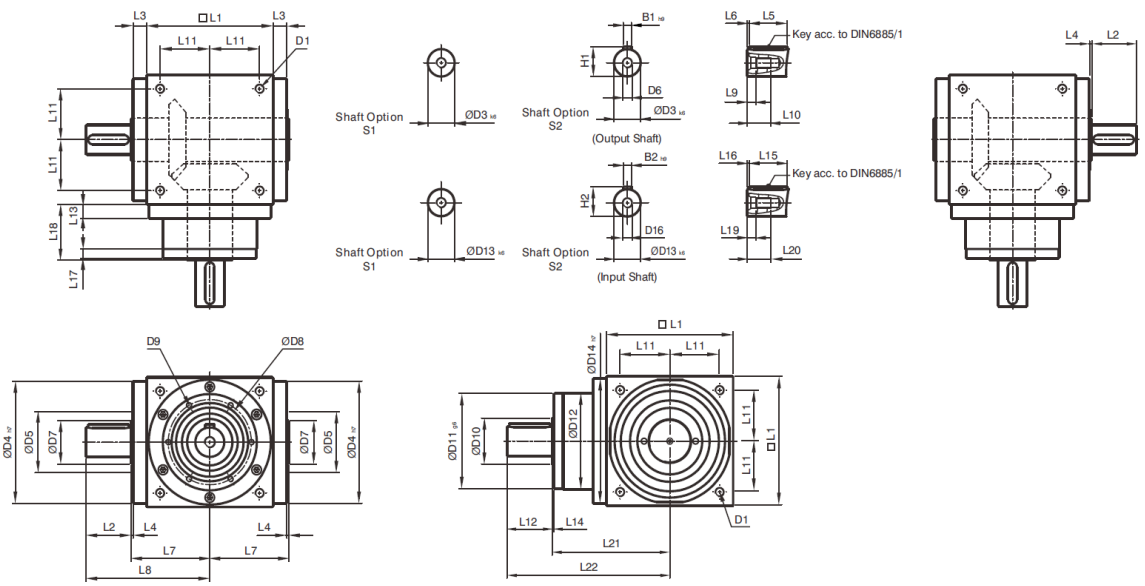


Dimension	065	075	090	110	140	170	210	240	280
D1	M4	M6	M6	M8	M10	M12	M16	M16	M16
D3 k6	13	16	18	22	32	40	50	55	60
D4 h7	63	73	88	108	135	165	205	235	275
D5	31	35	43	53	68	83	104	124	144
D6	M4	M5	M5	M8	M12	M16	M16	M16	M20
D7	21	22	28	33	47	55	75	85	110
D8	53	62	76	95	92	114	142	160	176
D9	4xM4xL7	4xM5xL8	4xM5xL8	6xM6xL10	6xM6xL10	6xM8xL12.5	6xM8xL12.5	6xM8xL12.5	6xM10xL15
D10	15.4	20.4	25.8	35.8	49.8	59.3	79.3	92.3	102.3
D11 g6	62.9	72.9	87	107	103	127	158	178	198
D12	62	72	86	106	104	128	160	180	200
D13 k6	13	16	18	22	32	40	50	55	60
D14 h7	63	73	88	108	135	165	205	235	275
D16	M4	M5	M5	M8	M12	M16	M16	M16	M20
L1	65	75	90	110	140	170	210	240	280
L2	19.5	30	35	40	50	60	75	85	110
L3	13	14.5	15	15	15	15	20	25	25
L4	2	2	2	2	2	2	2	2	2
L5	16	25	28	32	45	50	70	80	100
L6	2	2.5	3.5	4	2.5	5	2.5	2.5	5
L7	47.5	54	62	72	87	102	127	147	167
L8	67	84	97	112	137	162	202	232	277
L9	4.5	4.8	4.8	7.2	10	12	12	12	15
L10	10	12.5	12.5	19	28	36	36	36	42
L11	27	30	36	44	55	67	85	95	110
L12	19.5	30	35	40	50	60	75	85	110
L13	13	15	15	15	15	15	20	25	25
L14	2	2	2	2	2	2	2	2	2
L15	16	25	28	32	45	50	70	80	100
L16	2	2.5	3.5	4	2.5	5	2.5	2.5	5
L17	6	8	8	8	10	10	10	10	10
L18	43	52.5	55	60	60	70	90	105	120
L19	4.5	4.8	4.8	7.2	10	12	12	12	15
L20	10	12.5	12.5	19	28	36	36	36	42
L21	75.5	90	100	115	130	155	195	225	260
L22	95	120	135	155	180	215	270	310	370
B1 h9	5	5	6	6	10	12	14	16	18
B2 h9	5	5	6	6	10	12	14	16	18
H1	15	18	20.5	24.5	35	43	53.5	59	64
H2	15	18	20.5	24.5	35	43	53.5	59	64

DIMENSIONS 2-WAY
Spiral Bevel "SpB" Series

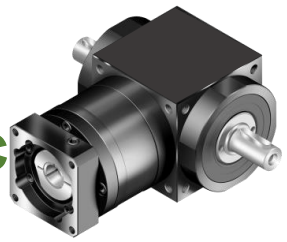


High Precision
Right Angle Gearboxes

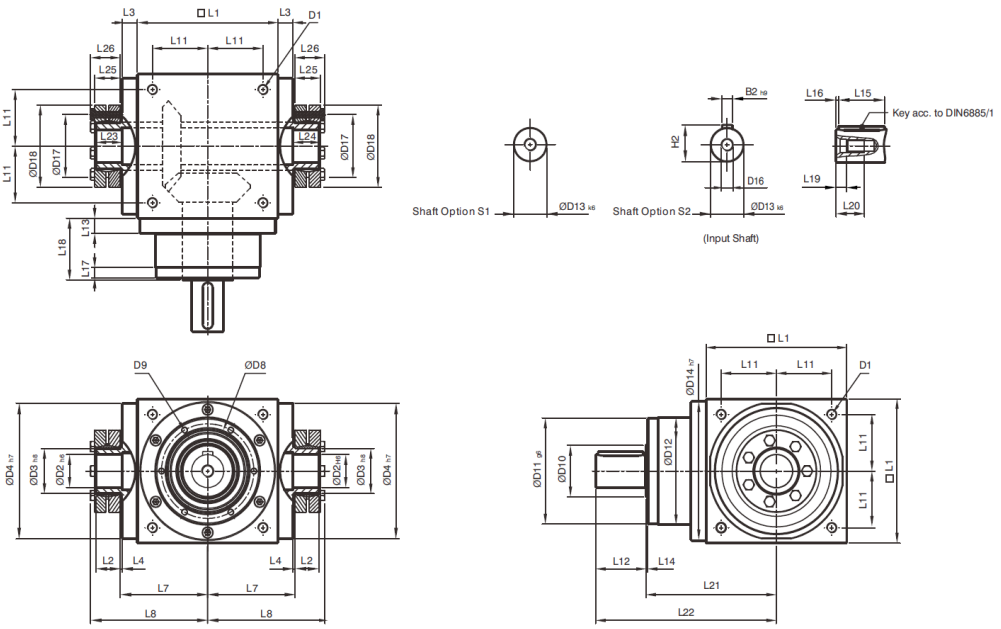


Dimension	065	075	090	110	140	170	210	240	280
D1	M4	M6	M6	M8	M10	M12	M16	M16	M16
D3 k6	13	16	18	22	32	40	50	55	60
D4 h7	63	73	88	108	135	165	205	235	275
D5	31	35	43	53	68	83	104	124	144
D6	M4	M5	M5	M8	M12	M16	M16	M16	M20
D7	21	22	28	33	47	55	75	85	110
D8	53	62	76	95	92	114	142	160	176
D9	4xM4xL7	4xM5xL8	4xM5xL8	6xM6xL10	6xM6xL10	6xM8xL12.5	6xM8xL12.5	6xM8xL12.5	6xM10xL15
D10	15.4	20.4	25.8	35.8	49.8	59.3	79.3	92.3	102.3
D11 g6	62.9	72.9	87	107	103	127	158	178	198
D12	62	72	86	106	104	128	160	180	200
D13 k6	13	16	18	22	32	40	50	55	60
D14 h7	63	73	88	108	135	165	205	235	275
D16	M4	M5	M5	M8	M12	M16	M16	M16	M20
L1	65	75	90	110	140	170	210	240	280
L2	19.5	30	35	40	50	60	75	85	110
L3	13	14.5	15	15	15	15	20	25	25
L4	2	2	2	2	2	2	2	2	2
L5	16	25	28	32	45	50	70	80	100
L6	2	2.5	3.5	4	2.5	5	2.5	2.5	5
L7	47.5	54	62	72	87	102	127	147	167
L8	67	84	97	112	137	162	202	232	277
L9	4.5	4.8	4.8	7.2	10	12	12	12	15
L10	10	12.5	12.5	19	28	36	36	36	42
L11	27	30	36	44	55	67	85	95	110
L12	19.5	30	35	40	50	60	75	85	110
L13	13	15	15	15	15	15	20	25	25
L14	2	2	2	2	2	2	2	2	2
L15	16	25	28	32	45	50	70	80	100
L16	2	2.5	3.5	4	2.5	5	2.5	2.5	5
L17	6	8	8	8	10	10	10	10	10
L18	43	52.5	55	60	60	70	90	105	120
L19	4.5	4.8	4.8	7.2	10	12	12	12	15
L20	10	12.5	12.5	19	28	36	36	36	42
L21	75.5	90	100	115	130	155	195	225	260
L22	95	120	135	155	180	215	270	310	370
B1 h9	5	5	6	6	10	12	14	16	18
B2 h9	5	5	6	6	10	12	14	16	18
H1	15	18	20.5	24.5	35	43	53.5	59	64
H2	15	18	20.5	24.5	35	43	53.5	59	64

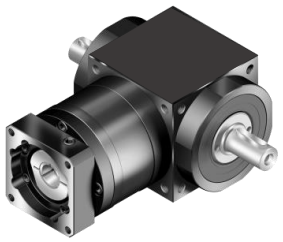
DIMENSIONS SHRINK DISC
Spiral Bevel "SpB" Series



High Precision
Right Angle Gearboxes

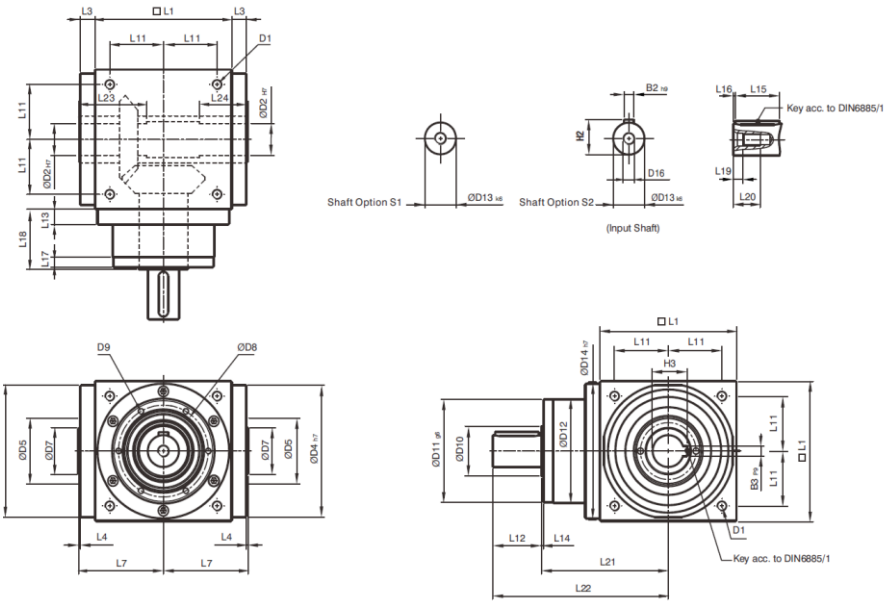


Dimension	065	075	090	110	140	170	210	240	280
D1	M4	M6	M6	M8	M10	M12	M16	M16	M16
D2 H6	13	14	18	22	32	40	50	55	60
D3 h8	16	16	22	25	44	50	62	68	75
D4 h7	63	73	88	108	135	165	205	235	275
D8	53	62	76	95	92	114	142	160	176
D9	4xM4xL7	4xM5xL8	4xM5xL8	6xM6xL10	6xM6xL10	6xM8xL12.5	6xM8xL12.5	6xM8xL12.5	6xM10xL15
D10	15.4	20.4	25.8	35.8	49.8	59.3	79.3	92.3	102.3
D11 g6	62.9	72.9	87	107	103	127	158	178	198
D12	62	72	86	106	104	128	160	180	200
D13 k6	13	16	18	22	32	40	50	55	60
D14 h7	63	73	88	108	135	165	205	235	275
D16	M4	M5	M5	M8	M12	M16	M16	M16	M20
D17	26	26	36	38	61	70	86	86	100
D18	41	41	50	50	80	90	110	115	138
L1	65	75	90	110	140	170	210	240	280
L2	14	14	18	18	24	26	29	29	30.5
L3	13	14.5	15	15	15	15	20	25	25
L4	2	2	2	2	2	2	2	2	2
L7	47.5	54	62	72	87	102	127	147	167
L8	66	72.5	85	95	116.5	133.5	161.5	181.5	205
L11	27	30	36	44	55	67	85	95	110
L12	19.5	30	35	40	50	60	75	85	110
L13	13	15	15	15	15	15	20	25	25
L14	2	2	2	2	2	2	2	2	2
L15	16	25	28	32	45	50	70	80	100
L16	2	2.5	3.5	4	2.5	5	2.5	2.5	5
L17	6	8	8	8	10	10	10	10	10
L18	43	52.5	55	60	60	70	90	105	120
L19	4.5	4.8	4.8	7.2	10	12	12	12	15
L20	10	12.5	12.5	19	28	36	36	36	42
L21	75.5	90	100	115	130	155	195	225	260
L22	95	120	135	155	180	215	270	310	370
L23	15	15	20	20	26	28	31	31	32.5
L24	15	15	20	20	26	28	31	31	32.5
L25	15	15	19.5	19.5	25.5	27.5	30.5	30.5	32.5
L26	18.5	18.5	23	23	29.5	31.5	34.5	34.5	38
B2 h9	5	5	6	6	10	12	14	16	18
H2	15	18	20.5	24.5	35	43	53.5	59	64



DIMENSIONS HOLLOW
Spiral Bevel "SpB" Series

High Precision
Right Angle Gearboxes



Dimension	065	075	090	110	140	170	210	240	280
D1	M4	M6	M6	M8	M10	M12	M16	M16	M16
D2 H7	13	14	18	22	32	40	50	55	60
D4 h7	63	73	88	108	135	165	205	235	275
D5	31	35	43	53	68	83	104	124	144
D7	21	22	28	33	47	55	75	85	110
D8	53	62	76	95	92	114	142	160	176
D9	4xM4xL7	4xM5xL8	4xM5xL8	6xM6xL10	6xM6xL10	6xM8xL12.5	6xM8xL12.5	6xM8xL12.5	6xM10xL15
D10	15.4	20.4	25.8	35.8	49.8	59.3	79.3	92.3	102.3
D11 g6	62.9	72.9	87	107	103	127	158	178	198
D12	62	72	86	106	104	128	160	180	200
D13 k6	13	16	18	22	32	40	50	55	60
D14 h7	63	73	88	108	135	165	205	235	275
D16	M4	M5	M5	M8	M12	M16	M16	M16	M20
L1	65	75	90	110	140	170	210	240	280
L3	13	14.5	15	15	15	15	20	25	25
L4	2	2	2	2	2	2	2	2	2
L7	47.5	54	62	72	87	102	127	147	167
L11	27	30	36	44	55	67	85	95	110
L12	19.5	30	35	40	50	60	75	85	110
L13	13	15	15	15	15	15	20	25	25
L14	2	2	2	2	2	2	2	2	2
L15	16	25	28	32	45	50	70	80	100
L16	2	2.5	3.5	4	2.5	5	2.5	2.5	5
L17	6	8	8	8	10	10	10	10	10
L18	43	52.5	55	60	60	70	90	105	120
L19	4.5	4.8	4.8	7.2	10	12	12	12	15
L20	10	12.5	12.5	19	28	36	36	36	42
L21	75.5	90	100	115	130	155	195	225	260
L22	95	120	135	155	180	215	270	310	370
L23	40	47	52	53	70	80	95	115	115
L24	30	32	35	35	50	55	65	80	80
B2 h9	5	5	6	6	10	12	14	16	18
B3 P9	5	5	6	6	10	12	14	16	18
H2	15	18	20.5	24.5	35	43	53.5	59	64
H3	15.3	16.3	20.8	24.8	35.3	43.3	53.8	59.3	64.4

IP69K Stainless Right Angle Worm

IP69K Stainless "69K" Series

Spiral Bevel Gearing Steel Housing

Various housing design

Stainless – Available as an option

Carbon Steel

Various output options

High torque, High efficiency
Long service life

Reduced backlash

Maintenance free

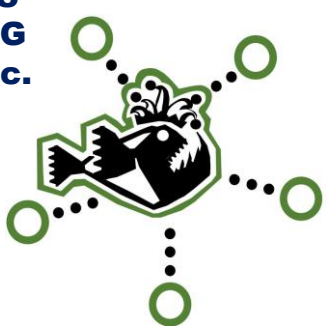
Flexible mounting dimensions

Sizes

SpB065T
SpB075T
SpB090T
SpB110T
SpB140T
SpB170T
SpB210T
SpB240T
SpB280T

- CUSTOM RATIOS
- CUSTOM BORES
- CUSTOM ADAPTERS
- CUSTOM MOUNTING
- CUSTOM SEALS, etc.

Fangtooth will tackle any solution by making a custom to fit your exact requirement



CALL TODAY

ORDERING CODES
IP69K "69K" Series

IP69K Stainless Right Angle Worm

Model: 69K039SW-S010Q-012Z2K/MS2N04

Gearbox Series
69K – IP69K Stainless

Gearbox Size
039 – 39.1mm CD
044 – 44.5mm CD
050 – 50.0mm CD
060 – 60.3mm CD
079 – 76.2mm CD

Gearbox Drive Type
SW – Servo / NW - Nema

Gearbox Backlash
S – Standard
L – Low

Gearbox Ratio

005 – 5:1	030 – 30:1
007 – 7.5:1	040 – 40:1
010 – 10:1	050 – 50:1
015 – 15:1	060 – 60:1
020 – 20:1	075 – 75:1
025 – 25:1	080 – 80:1

Gearbox Input
SIP – Single Input
DIP – Dual Input
Motor Model – Mounting Kit

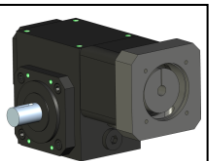
Gearbox Output Type
K – Keyed
S – Smooth
D – Shrink Disc
E – End Mount

Gearbox Output Location
HH – Hollow Bore Through
H1 – Hollow Bore "1" side
H2 – Hollow Bore "2" side
ZZ – Solid Shaft, Double Ext
Z1 – Solid Shaft "1" side
Z2 – Solid Shaft "2" side

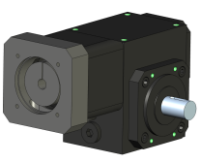
Gearbox Output Size
– size in 16th of an inch
##M – size in mm

Gearbox Mounting
Q – Standard

Side "1" of gearbox
Z1K shown



Side "2" of gearbox
Z2K shown



RATINGS
IP69K "69K" Series

IP69K Stainless Right Angle Worm

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

RATINGS
IP69K "69K" Series

IP69K Stainless Right Angle Worm

	RATIO	UNITS	SIZE				
			Size 39	Size 44	Size 50	Size 60	Size 76
Moment of Inertia[1]	5	lb.in. s^2 10^{-4}	10.87	13.94	23.42	35.61	173.14
		kg cm^2	1.23	1.57	2.64	4.02	19.54
	7.5	lb.in. s^2 10^{-4}	9.75	11.86	19.11	28.71	140.70
		kg cm^2	1.10	1.34	2.16	3.24	15.88
	10	lb.in. s^2 10^{-4}	9.36	11.13	17.60	26.30	129.35
		kg cm^2	1.06	1.26	1.99	2.97	14.60
	15	lb.in. s^2 10^{-4}	9.08	10.61	16.53	24.57	121.24
		kg cm^2	1.03	1.20	1.87	2.77	13.68
	20	lb.in. S^2 10^{-4}	8.99	10.43	16.15	23.97	118.40
		kg cm^2	1.01	1.18	1.82	2.71	13.36
	25	lb.in. s^2 10^{-4}	8.94	10.35	15.98	23.69	117.08
		kg cm^2	1.01	1.17	1.80	2.67	13.21
	30	lb.in. s^2 10^{-4}	8.92	10.30	15.88	23.54	116.37
		kg cm^2	1.01	1.16	1.79	2.66	13.13
	40	lb.in. s^2 10^{-4}	8.89	10.26	15.79	23.39	115.66
		kg cm^2	1.00	1.16	1.78	2.64	13.05
	50	lb.in. s^2 10^{-4}	8.88	10.24	15.74	23.32	115.33
		kg cm^2	1.00	1.16	1.78	2.63	13.02
	60	lb.in. s^2 10^{-4}	8.88	10.22	15.72	23.28	115.15
		kg cm^2	1.00	1.15	1.77	2.63	13.00

SIZE 39 RATINGS
IP69K "69K" Series

IP69K Stainless Right Angle Worm

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

SIZE 39 RATINGS
IP69K "69K" Series

IP69K Stainless Right Angle Worm

$i:1$	Ratings	Units	Servo				NEMA						$T_{2\,MAX}$	
			$N_{1\,NOM}$ (rpm)											
			500	1,000	2,000	3,000	580	720	870	1,150	1,450	1,750	lb-in	Nm
25	$P_{1\,ME}$	hp	0.36	0.64	1.00	1.24	0.41	0.49	0.57	0.71	0.83	0.93	1,920	217
		kW	0.27	0.48	0.74	0.93	0.31	0.37	0.43	0.53	0.62	0.69		
	$P_{1\,TH}$	hp	0.36	0.64	1.00	1.16	0.41	0.49	0.57	0.71	0.83	0.93		
		kW	0.27	0.48	0.74	0.86	0.31	0.37	0.43	0.53	0.62	0.69		
	$T_{2\,ME}$	lb-in	918	838	659	539	901	871	862	816	758	703		
		Nm	104	95	75	61	102	98	97	92	86	79		
	$T_{2\,ACC}$	lb-in	936	918	838	748	925	924	911	902	872	862		
		Nm	106	104	95	85	105	104	103	102	99	97		
	η	%	81	83	84	83	81	81	83	84	84	84		
30	$P_{1\,ME}$	hp	0.30	0.53	0.84	1.04	0.34	0.41	0.48	0.59	0.69	0.78	1,840	208
		kW	0.22	0.40	0.62	0.78	0.26	0.31	0.36	0.44	0.52	0.58		
	$P_{1\,TH}$	hp	0.30	0.53	0.84	0.94	0.34	0.41	0.48	0.59	0.69	0.78		
		kW	0.22	0.40	0.62	0.70	0.26	0.31	0.36	0.44	0.52	0.58		
	$T_{2\,ME}$	lb-in	844	801	631	515	837	843	823	780	724	673		
		Nm	95	91	71	58	95	95	93	88	82	76		
	$T_{2\,ACC}$	lb-in	889	844	801	715	878	864	856	838	841	823		
		Nm	100	95	91	81	99	98	97	95	95	93		
	η	%	74	79	80	79	75	78	79	80	80	80		
40	$P_{1\,ME}$	hp	0.23	0.40	0.63	0.78	0.26	0.31	0.36	0.45	0.52	0.59	1,660	188
		kW	0.17	0.30	0.47	0.58	0.19	0.23	0.27	0.33	0.39	0.44		
	$P_{1\,TH}$	hp	0.23	0.40	0.63	0.78	0.26	0.31	0.36	0.45	0.52	0.59		
		kW	0.17	0.30	0.47	0.58	0.19	0.23	0.27	0.33	0.39	0.44		
	$T_{2\,ME}$	lb-in	804	764	603	491	807	814	785	746	692	643		
		Nm	91	86	68	56	91	92	89	84	78	73		
	$T_{2\,ACC}$	lb-in	809	804	764	685	810	814	812	807	813	785		
		Nm	92	91	86	77	92	92	92	91	92	89		
	η	%	70	75	76	75	72	75	75	76	76	76		
50	$P_{1\,ME}$	hp	0.18	0.32	0.51	0.63	0.21	0.25	0.29	0.36	0.42	0.47	1,470	167
		kW	0.14	0.24	0.38	0.47	0.15	0.19	0.22	0.27	0.31	0.35		
	$P_{1\,TH}$	hp	0.18	0.32	0.51	0.63	0.21	0.25	0.29	0.36	0.42	0.47		
		kW	0.14	0.24	0.38	0.47	0.15	0.19	0.22	0.27	0.31	0.35		
	$T_{2\,ME}$	lb-in	783	735	580	472	787	784	757	718	667	619		
		Nm	89	83	66	53	89	89	86	81	75	70		
	$T_{2\,ACC}$	lb-in	783	783	735	660	787	784	780	787	782	755		
		Nm	89	89	83	75	89	89	88	89	88	85		
	η	%	68	72	73	72	70	72	72	73	73	73		
60	$P_{1\,ME}$	hp	0.15	0.27	0.42	0.52	0.17	0.21	0.24	0.30	0.35	0.39	1,450	164
		kW	0.11	0.20	0.31	0.39	0.13	0.15	0.18	0.22	0.26	0.29		
	$P_{1\,TH}$	hp	0.15	0.27	0.42	0.52	0.17	0.21	0.24	0.30	0.35	0.39		
		kW	0.11	0.20	0.31	0.39	0.13	0.15	0.18	0.22	0.26	0.29		
	$T_{2\,ME}$	lb-in	738	707	557	453	743	741	726	690	641	594		
		Nm	83	80	63	51	84	84	82	78	72	67		
	$T_{2\,ACC}$	lb-in	746	738	707	634	743	744	746	744	740	725		
			84	83	80	72	84	84	84	84	84	82		
	η	%	64	69	70	69	66	68	69	70	70	70		

SIZE 44 RATINGS
IP69K "69K" Series

IP69K Stainless Right Angle Worm

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

SIZE 44 RATINGS
IP69K "69K" Series

IP69K Stainless Right Angle Worm

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

SIZE 50 RATINGS
IP69K "69K" Series

IP69K Stainless Right Angle Worm

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

SIZE 50 RATINGS
IP69K "69K" Series

IP69K Stainless Right Angle Worm

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

SIZE 60 RATINGS
IP69K "69K" Series

IP69K Stainless Right Angle Worm

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

SIZE 60 RATINGS
IP69K "69K" Series

IP69K Stainless Right Angle Worm

i : 1	Ratings	Units	Servo				NEMA						$T_{2\,MAX}$	
			$N_{1\,NOM}$ (rpm)											
			500	1,000	2,000	3,000	580	720	870	1,150	1,450	1,750	lb-in	Nm
25	$P_{1\,ME}$	hp	1.09	1.80	2.62	3.20	1.23	1.45	1.65	1.95	2.20	2.45	6,050	684
		kW	0.82	1.34	1.96	2.39	0.92	1.08	1.23	1.45	1.64	1.83		
	$P_{1\,TH}$	hp	1.09	1.45	1.51	1.39	1.23	1.28	1.43	1.52	1.52	1.52		
		kW	0.82	1.08	1.12	1.04	0.92	0.95	1.07	1.13	1.13	1.13		
	$T_{2\,ME}$	lb-in	2,790	2,360	1,730	1,390	2,710	2,570	2,480	2,240	2,010	1,850		
		Nm	315	267	196	157	306	290	280	254	227	209		
	$T_{2\,ACC}$	lb-in	2,870	2,790	2,360	1,970	2,840	2,850	2,790	2,710	2,570	2,480		
		Nm	324	315	267	223	321	322	316	307	290	280		
	η	%	81	83	84	83	81	81	83	84	84	84		
30	$P_{1\,ME}$	hp	0.91	1.51	2.19	2.67	1.03	1.21	1.38	1.63	1.84	2.05	5,820	657
		kW	0.68	1.12	1.64	2.00	0.77	0.91	1.03	1.22	1.38	1.53		
	$P_{1\,TH}$	hp	0.91	1.17	1.21	1.13	0.97	1.10	1.16	1.22	1.22	1.22		
		kW	0.68	0.87	0.90	0.85	0.73	0.82	0.86	0.91	0.91	0.91		
	$T_{2\,ME}$	lb-in	2,570	2,260	1,660	1,320	2,520	2,480	2,370	2,140	1,920	1,770		
		Nm	290	255	187	150	284	281	268	242	217	200		
	$T_{2\,ACC}$	lb-in	2,730	2,570	2,260	1,890	2,700	2,660	2,630	2,520	2,480	2,360		
		Nm	308	290	255	213	305	301	297	285	280	267		
	η	%	74	79	80	79	75	78	79	80	80	80		
40	$P_{1\,ME}$	hp	0.69	1.14	1.65	2.02	0.78	0.91	1.04	1.23	1.39	1.54	5,240	592
		kW	0.52	0.85	1.23	1.50	0.58	0.68	0.78	0.92	1.04	1.15		
	$P_{1\,TH}$	hp	0.69	0.98	1.01	0.96	0.78	0.91	0.97	1.01	1.01	1.01		
		kW	0.52	0.73	0.75	0.71	0.58	0.68	0.73	0.76	0.76	0.76		
	$T_{2\,ME}$	lb-in	2,450	2,160	1,580	1,260	2,430	2,400	2,260	2,050	1,840	1,690		
		Nm	277	244	179	143	275	271	255	231	208	191		
	$T_{2\,ACC}$	lb-in	2,480	2,450	2,160	1,810	2,490	2,500	2,490	2,430	2,390	2,250		
		Nm	280	277	244	204	281	283	282	274	271	255		
	η	%	70	75	76	75	72	75	75	76	76	76		
50	$P_{1\,ME}$	hp	0.55	0.91	1.33	1.62	0.62	0.73	0.83	0.99	1.11	1.24	4,650	526
		kW	0.41	0.68	0.99	1.21	0.47	0.55	0.62	0.74	0.83	0.92		
	$P_{1\,TH}$	hp	0.55	0.88	0.90	0.85	0.62	0.73	0.83	0.90	0.90	0.90		
		kW	0.41	0.65	0.67	0.64	0.47	0.55	0.62	0.67	0.67	0.67		
	$T_{2\,ME}$	lb-in	2,390	2,080	1,520	1,220	2,370	2,310	2,180	1,970	1,770	1,630		
		Nm	270	235	172	137	268	261	246	223	200	184		
	$T_{2\,ACC}$	lb-in	2,400	2,390	2,080	1,740	2,380	2,400	2,390	2,370	2,300	2,170		
		Nm	271	270	235	196	269	271	270	268	260	245		
	η	%	68	72	73	72	70	72	72	73	73	73		
60	$P_{1\,ME}$	hp	0.46	0.76	1.11	1.35	0.52	0.61	0.70	0.82	0.93	1.03	4,570	517
		kW	0.34	0.57	0.83	1.01	0.39	0.46	0.52	0.61	0.70	0.77		
	$P_{1\,TH}$	hp	0.46	0.76	0.81	0.77	0.52	0.61	0.70	0.81	0.81	0.81		
		kW	0.34	0.57	0.60	0.58	0.39	0.46	0.52	0.60	0.60	0.60		
	$T_{2\,ME}$	lb-in	2,250	1,990	1,460	1,170	2,240	2,180	2,090	1,900	1,700	1,560		
		Nm	254	225	165	132	253	247	236	214	192	177		
	$T_{2\,ACC}$	lb-in	2,290	2,250	1,990	1,670	2,270	2,300	2,290	2,240	2,180	2,080		
			259	254	225	189	257	260	259	253	246	235		
	η	%	64	69	70	69	66	68	69	70	70	70		

SIZE 76 RATINGS
IP69K "69K" Series

IP69K Stainless Right Angle Worm

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

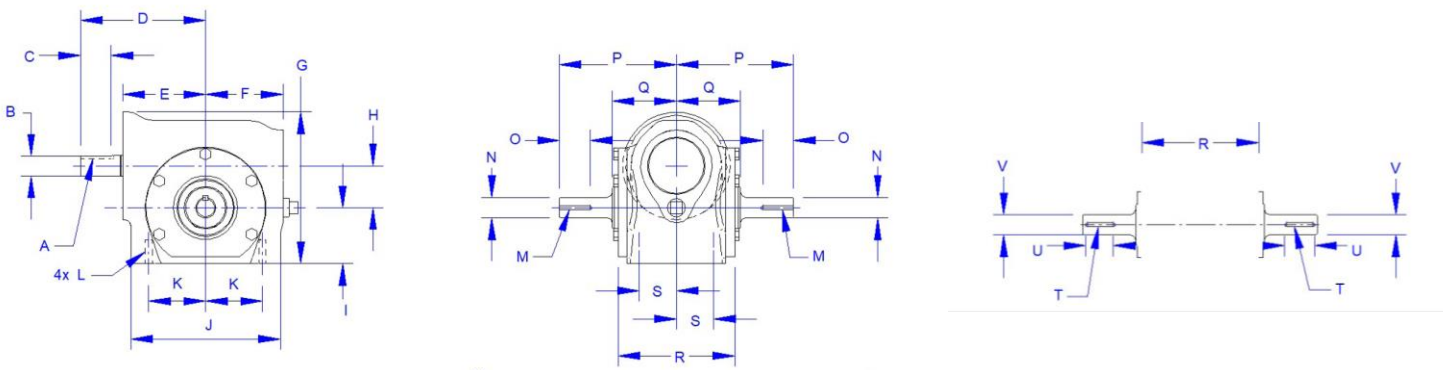
SIZE 76 RATINGS
IP69K "69K" Series

IP69K Stainless Right Angle Worm

$i:1$	Ratings	Units	Servo				NEMA						$T_{2\,MAX}$	
			$N_{1\,NOM}$ (rpm)											
			500	1,000	2,000	3,000	580	720	870	1,150	1,450	1,750	lb-in	Nm
25	$P_{1\,ME}$	hp	2.31	3.78	5.50	6.68	2.60	3.05	3.47	4.09	4.60	5.12	12,800	1,450
		kW	1.73	2.82	4.10	4.99	1.94	2.28	2.59	3.05	3.43	3.82		
	$P_{1\,TH}$	hp	1.46	1.66	1.72	1.60	1.46	1.46	1.64	1.74	1.74	1.74		
		kW	1.09	1.24	1.29	1.19	1.09	1.09	1.22	1.30	1.30	1.30		
	$T_{2\,ME}$	lb-in	5,910	4,960	3,630	2,900	5,720	5,410	5,210	4,700	4,200	3,870		
		Nm	667	560	410	327	646	612	589	532	474	437		
	$T_{2\,ACC}$	lb-in	6,080	5,910	4,960	4,140	6,030	6,040	5,910	5,740	5,410	5,200		
		Nm	687	667	560	468	681	682	668	649	611	587		
	η	%	81	83	84	83	81	81	83	84	84	84		
30	$P_{1\,ME}$	hp	1.94	3.16	4.60	5.59	2.18	2.55	2.90	3.42	3.85	4.28	12,300	1,390
		kW	1.44	2.36	3.44	4.17	1.63	1.91	2.17	2.55	2.87	3.20		
	$P_{1\,TH}$	hp	1.08	1.34	1.38	1.30	1.11	1.26	1.32	1.39	1.39	1.39		
		kW	0.80	1.00	1.03	0.97	0.83	0.94	0.99	1.04	1.04	1.04		
	$T_{2\,ME}$	lb-in	5,430	4,740	3,480	2,770	5,330	5,230	4,990	4,500	4,020	3,700		
		Nm	613	536	393	313	602	591	564	509	454	418		
	$T_{2\,ACC}$	lb-in	5,780	5,430	4,740	3,960	5,720	5,650	5,560	5,330	5,220	4,980		
		Nm	653	613	536	448	646	638	628	602	590	562		
	η	%	74	79	80	79	75	78	79	80	80	80		
40	$P_{1\,ME}$	hp	1.46	2.39	3.47	4.22	1.64	1.93	2.19	2.58	2.91	3.23	11,100	1,260
		kW	1.09	1.78	2.59	3.15	1.22	1.44	1.63	1.93	2.17	2.41		
	$P_{1\,TH}$	hp	0.94	1.12	1.15	1.09	0.99	1.11	1.11	1.16	1.16	1.16		
		kW	0.70	0.84	0.86	0.82	0.74	0.83	0.83	0.86	0.86	0.86		
	$T_{2\,ME}$	lb-in	5,170	4,530	3,320	2,640	5,130	5,060	4,760	4,300	3,840	3,530		
		Nm	584	511	375	299	580	572	537	486	434	399		
	$T_{2\,ACC}$	lb-in	5,260	5,170	4,530	3,790	5,290	5,310	5,270	5,140	5,050	4,750		
		Nm	595	584	511	429	597	600	596	580	571	536		
	η	%	70	75	76	75	72	75	75	76	76	76		
50	$P_{1\,ME}$	hp	1.17	1.92	2.79	3.39	1.32	1.55	1.76	2.07	2.34	2.59	9,860	1,110
		kW	0.87	1.43	2.08	2.53	0.98	1.15	1.31	1.55	1.74	1.93		
	$P_{1\,TH}$	hp	0.88	1.00	1.02	0.98	0.93	0.99	0.99	1.03	1.03	1.03		
		kW	0.66	0.75	0.76	0.73	0.69	0.74	0.74	0.77	0.77	0.77		
	$T_{2\,ME}$	lb-in	5,040	4,360	3,200	2,550	5,010	4,870	4,580	4,140	3,710	3,410		
		Nm	569	493	362	288	567	551	517	468	419	385		
	$T_{2\,ACC}$	lb-in	5,090	5,040	4,360	3,650	5,060	5,100	5,070	5,010	4,860	4,570		
		Nm	575	569	493	413	572	576	573	566	549	516		
	η	%	68	72	73	72	70	72	72	73	73	73		
60	$P_{1\,ME}$	hp	0.98	1.60	2.33	2.83	1.10	1.29	1.47	1.73	1.95	2.16	9,700	1,100
		kW	0.73	1.19	1.74	2.11	0.82	0.96	1.09	1.29	1.46	1.62		
	$P_{1\,TH}$	hp	0.78	0.90	0.92	0.88	0.82	0.87	0.90	0.93	0.93	0.93		
		kW	0.58	0.67	0.69	0.66	0.61	0.65	0.67	0.69	0.69	0.69		
	$T_{2\,ME}$	lb-in	4,750	4,190	3,080	2,440	4,740	4,610	4,390	3,980	3,560	3,270		
		Nm	537	473	347	276	535	521	497	450	402	370		
	$T_{2\,ACC}$	lb-in	4,850	4,750	4,190	3,510	4,830	4,870	4,850	4,730	4,600	4,390		
			548	537	473	396	546	551	548	534	520	497		
	η	%	64	69	70	69	66	68	69	70	70	70		

Dimensions
IP69K "69K" Series

IP69K Stainless Right Angle Worm



	Inch Shaft Option			Metric Shaft Option		
SIZE	O	M	N	U	T	V
	in	Keyway	in	mm	Keyway	mm
039	1.13	3/16 x 3/32	0.749-0.750	28.0	6.0 x 3.5	18-18.02
044	1.26	3/16 x 3/32	0.874-0.875	28.0	6.0 x 3.5	20.00-20.02
		1/4 x 1/8	0.999-1.000			
050	1.26	1/4 x 1/8	0.999-1.000	36.0	8.0 x 4.0	25.00-25.02
		1/4 x 1/8	1.124-1.125			
060	1.75	1/4 x 1/8	1.124-1.125	40.0	8.0 x 4.0	28.00-28.02
076	2.01	1/4 x 1/8	1.249-1.250	50.0	10.0 x 5.0	35.00-35.02
		3/8 x 3/16	1.499-1.500			

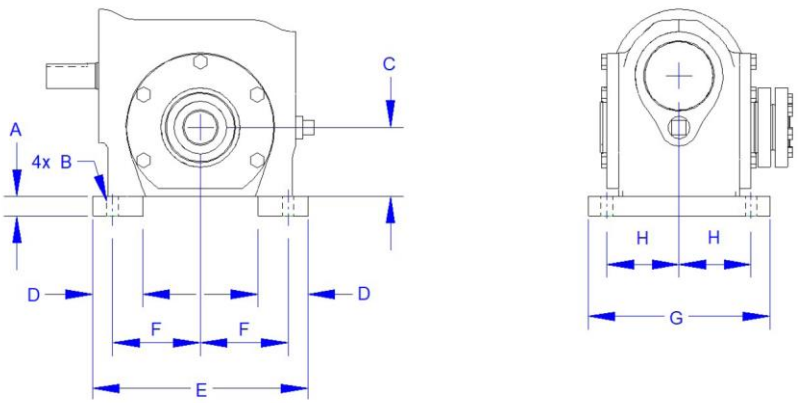
SIZE	A	B		C		D		E	
	Keyway - in	in	mm	in	mm	in	mm	in	mm
039	3/16 x 3/32	0.750	19.1	1.13	28.6	4.61	117.0	3.05	77.5
044	3/16 x 3/32	0.750	19.1	1.13	28.6	4.86	123.5	3.29	83.5
050	3/16 x 3/32	0.750	19.1	1.13	28.6	4.98	126.5	3.41	86.5
060	3/16 x 3/32	0.750	19.1	1.13	28.6	5.28	134.0	3.70	94.1
076	1/4 x 1/8	1.1875	30.2	2.24	56.9	7.63	193.7	4.70	119.3

SIZE	F		G		H		I		J	
	in	mm	in	mm	in	mm	in	mm	in	mm
039	2.85	72.5	5.59	142.0	1.54	39.1	1.91	48.4	5.51	140.0
044	3.07	78.0	5.79	147.0	1.75	44.5	2.06	52.3	5.98	152.0
050	3.13	79.5	6.22	158.0	1.97	50.0	2.28	58.0	5.98	152.0
060	3.44	87.4	6.85	174.0	2.37	60.3	2.50	63.4	6.14	156.0
076	4.55	115.5	8.50	216.0	3.00	76.2	3.25	82.5	8.27	210.0

SIZE	K		L	P		Q		R		S	
	in	mm	in	in	mm	in	mm	in	mm	in	mm
039	2.10	53.2	M8 x 1.25 x 16	4.31	109.5	2.36	60.0	4.30	109.2	1.37	34.9
044	2.10	53.2	M8 x 1.25 x 16	4.31	109.5	2.36	60.0	4.30	109.2	1.37	34.9
050	2.50	63.5	M10 x 1.5 x 20	4.69	119.0	2.76	70.0	5.00	127.0	1.44	36.5
060	2.50	63.5	M10 x 1.5 x 20	5.08	129.0	2.83	72.0	5.24	133.0	1.44	36.5
076	3.50	88.9	M12 x 1.75 x 24	6.75	171.5	3.84	97.5	6.22	158.0	2.00	50.8

Base Dimensions
IP69K "69K" Series

IP69K Stainless Right Angle Worm

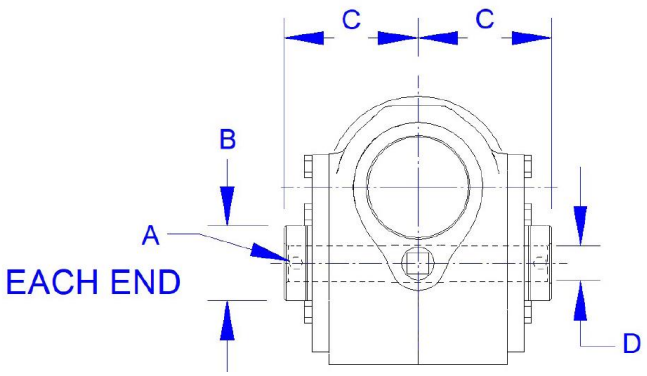


SIZE	A		B		C		D	
	in	mm	in	mm	in	mm	in	mm
039	0.59	15.0	0.34	8.7	1.91	48.4	1.50	38.1
044	0.69	17.5	0.34	8.7	2.06	52.3	2.00	50.8
050	0.72	18.4	0.42	10.7	2.28	57.8	2.00	50.8
060	0.75	19.0	0.42	10.7	2.50	63.4	2.50	63.5
076	0.75	19.0	0.53	13.5	3.25	82.5	2.00	50.8

SIZE	E		F		G		H	
	in	mm	in	mm	in	mm	in	mm
039	6.44	163.6	2.63	66.7	5.44	138.2	2.16	54.8
044	7.00	177.8	2.88	73.2	5.68	144.3	2.25	57.2
050	7.75	196.8	3.19	80.9	5.94	150.9	2.34	59.5
060	8.50	215.9	3.53	89.7	6.18	157.0	2.44	61.9
076	10.00	254.0	4.22	107.2	7.50	190.5	2.94	74.6

Hollow O/P Dimensions
IP69K "69K" Series

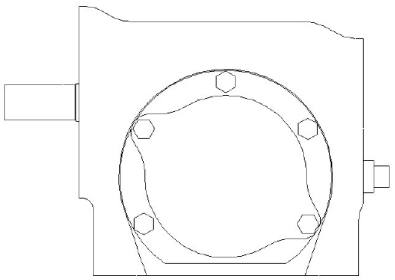
IP69K Stainless Right Angle Worm

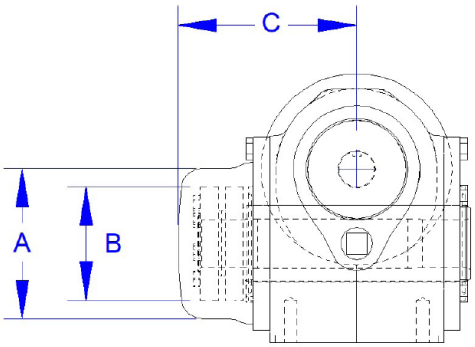


SIZE	A	B		C		D			
		Inch Shaft Option				Inch Shaft Option		Metric Shaft Option	
	in	in	mm	in	mm	Shaft Dia. - in	Keyway - in	Shaft Dia. - mm	Keyway - mm
039	5/16 - 24	1.57	39.9	2.72	69.0	0.625-0.627	3/16 x 3/32	19-19.02	6.0 x 2.8
						0.750-0.752	3/16 x 3/32		
						0.875-0.877	3/16 x 3/32		
						1.000-1.002	1/4 x 1/8		
044	5/16 - 24	1.77	44.9	2.72	69.0	0.750-0.752	3/16 x 3/32	20.00-20.02	6.0 x 2.8
						0.875-0.877	3/16 x 3/32		
						1.000-1.002	1/4 x 1/8		
						1.125-1.127	1/4 x 1/8		
						1.250-1.252	1/4 x 1/8		
050	5/16 - 24	1.96	49.9	3.14	79.8	1.000-1.002	1/4 x 1/8	25.00-25.02	8.0 x 3.3
						1.125-1.127	1/4 x 1/8		
						1.1875-1.1895	1/4 x 1/8		
						1.250-1.252	1/4 x 1/8		
						1.4375-1.4395	1/4 x 1/8		
060	5/16 - 24	2.16	54.9	3.23	82.0	1.000-1.002	1/4 x 1/8	28.00-28.02	8.0 x 3.3
						1.125-1.127	1/4 x 1/8		
						1.1875-1.1895	1/4 x 1/8		
						1.250-1.252	1/4 x 1/8		
						1.4375-1.4395	1/4 x 1/8		
076	5/16 - 24	2.95	74.9	4.21	107.0	1.250-1.252	1/4 x 1/8	35.00-35.02	10.0 x 3.3
						1.4375-1.4395	3/8 x 3/16		
						1.750-1.752	3/8 x 3/16		
						1.9375-1.9395	1/2 x 1/4		
						2.1875-2.1895	1/2 x 3/16 FLAT		

Shrink Disc Dimensions
IP69K "69K" Series

IP69K Stainless Right Angle Worm



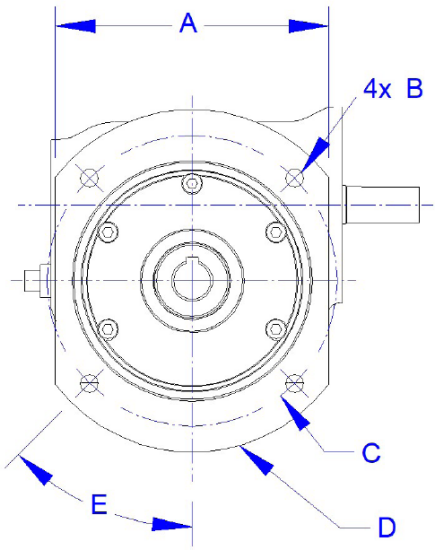


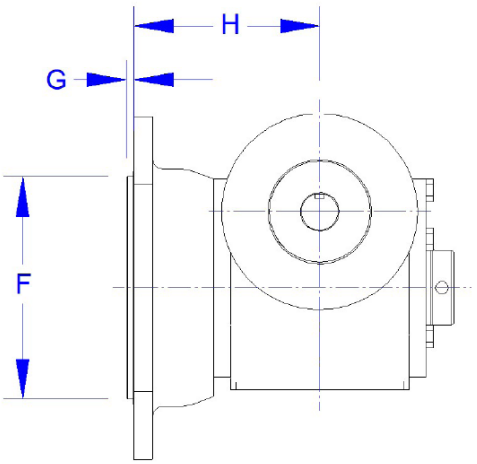
Inch Bore — Metric Bore

SIZE	A		Bore	B	Bore	B	C	
	in	mm	in	in	mm	mm	in	mm
039	3.13	79.5	1.0000-1.0003	2.360	25-25.008	59.94	3.70	94.0
044	3.13	79.5	1.0000-1.0003	2.360	25-25.008	59.94	3.37	94.0
050	3.13	79.5	1.0000-1.0003	2.360	25-25.008	59.94	4.06	103.0
060	3.40	86.3	1.2500-1.2506	2.835	30-30.008	72.01	3.37	111.0
076	4.96	126.0	1.4375-1.4380	3.150	35-35.016	72.01	5.55	141.0

Flange Dimensions
IP69K "69K" Series

IP69K Stainless Right Angle Worm



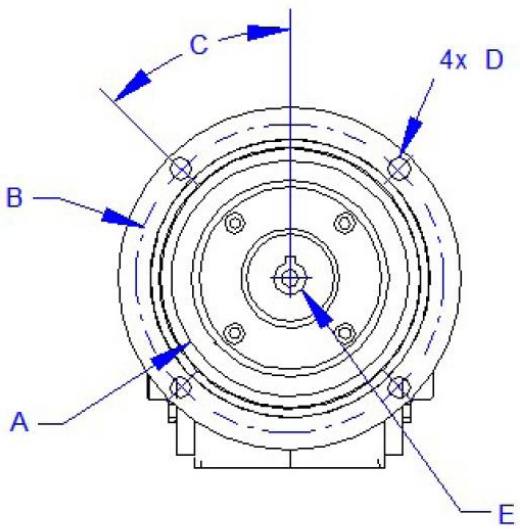


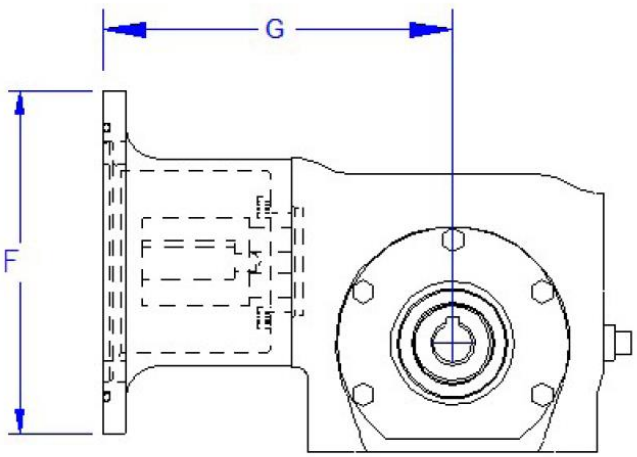
SIZE	A		B		C		D	
	in	mm	in	mm	in	mm	in	mm
039	5.53	140.5	0.36	9.2	5.88	149.4	6.9	176
044	5.53	140.5	0.36	9.2	5.88	149.4	6.9	176
050	6.03	153.2	0.42	10.7	6.50	165.1	7.6	192
060	7.29	185.2	0.42	10.7	8.00	203.2	9.1	231
076	8.79	223.3	0.54	13.6	10.00	254.0	11.3	287

SIZE	E	F		G		H	
	deg	in	mm	in	mm	in	mm
039	45	4.50	114.3	0.15	3.8	3.43	87.0
044	45	4.50	114.3	0.15	3.8	3.43	87.0
050	45	5.25	133.3	0.15	3.8	4.00	101.6
060	45	6.50	165.1	0.15	3.8	4.51	114.5
076	45	8.00	203.2	0.15	3.8	5.70	144.7

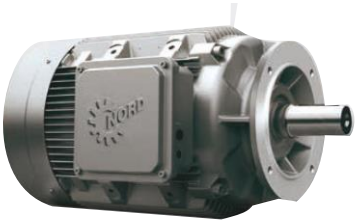
Nema Motor Adapter
IP69K "69K" Series

IP69K Stainless Right Angle Worm



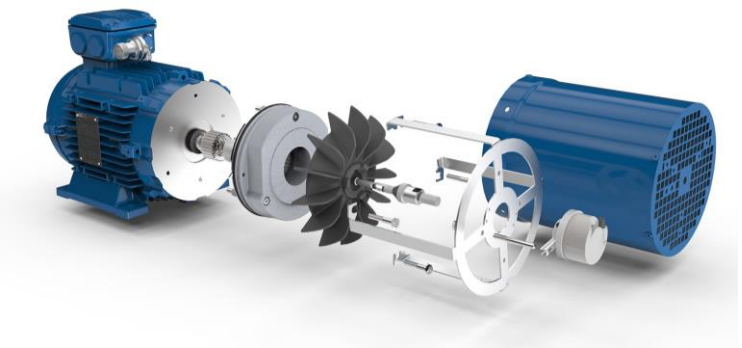


SIZE	FRAME	A		B		C	D		E		F		G	
		in	mm	in	mm	deg	in	mm	in	mm	in	mm	in	mm
039	56C	4.50	114.3	5.88	149.2	45	13/32	10.3	0.63	15.9	6.50	165.1	6.64	168.7
	143TC/145TC	4.50	114.3	5.88	149.2	45	13/32	10.3	0.88	22.2	6.50	165.1	6.64	168.7
	182TC/184TC	8.50	215.9	7.25	184.2	45	17/32	13.5	1.13	28.6	8.92	226.6	7.44	189.1
044	56C	4.50	114.3	5.88	149.2	45	13/32	10.3	0.63	15.9	6.50	165.1	6.88	174.7
	143TC/145TC	4.50	114.3	5.88	149.2	45	13/32	10.3	0.88	22.2	6.50	165.1	6.88	174.7
	182TC/184TC	8.50	215.9	7.25	184.2	45	17/32	13.5	1.13	28.6	8.92	226.6	7.68	195.1
050	56C	4.50	114.3	5.88	149.2	45	13/32	10.3	0.63	15.9	6.50	165.1	7.00	177.7
	143TC/145TC	4.50	114.3	5.88	149.2	45	13/32	10.3	0.88	22.2	6.50	165.1	7.00	177.7
	182TC/184TC	8.50	215.9	7.25	184.2	45	17/32	13.5	1.13	28.6	8.92	226.6	7.80	198.1
060	56C	4.50	114.3	5.88	149.2	45	13/32	10.3	0.63	15.9	6.50	165.1	7.30	185.3
	143TC/145TC	4.50	114.3	5.88	149.2	45	13/32	10.3	0.88	22.2	6.50	165.1	7.30	185.3
	182TC/184TC	8.50	215.9	7.25	184.2	45	17/32	13.5	1.13	28.6	8.92	226.6	8.10	205.7
076	56C	4.50	114.3	5.88	149.2	45	13/32	10.3	0.63	15.9	6.50	165.1	8.29	210.5
	143TC/145TC	4.50	114.3	5.88	149.2	45	13/32	10.3	0.88	22.2	6.50	165.1	8.29	210.5
	182TC/184TC	8.50	215.9	7.25	184.2	45	17/32	13.5	1.13	28.6	8.92	226.6	9.09	230.9



MOTORS
& BRAKEMOTORS

Standard Sizes
1/6 HP to 30 HP
230/460V/60Hz/3ph



This catalog contains standard NORD & WEG/Watt manufactured induction motors and brakemotors from 0.16 to 30hp. Included are motor standard NEMA and mounting dimensions. For motors with higher powers, hazardous location, and other enclosures please contact us.

They can be well suited for constant torque applications and will safely operate over a frequency range of 0Hz to 120Hz. Each motor can be supplied with a wide range of options to customize the motor for a wide range of applications and operating demands.

Features and Benefits
- Threaded cable entry holes
- Lip seals on both shaft ends
- Sealed and gasketed terminal boxes.
- Continuous Duty (S1) / Premium Efficient (IE3)
- Non-ventilated (TENV).
- Common 50 Hz and 60 Hz voltages.
- Inverter/vector duty wiring and insulation.
- Rated for voltage spikes per NEMA MG1, section 31.4.4.2
- Moisture resistant varnished dipped windings.

- BRAKES
- FANS
- ENCODERS
- POWER CONNECTOS

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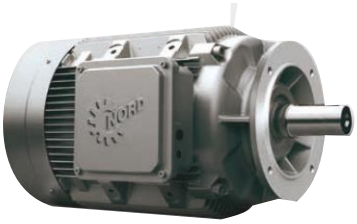
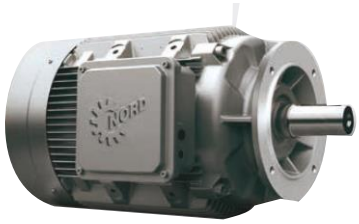


ORDERING CODES
Motors “MtR” Series

Motor SIze	Without Brake	With Brake
0016-56C - 0.16 hp	[Code 0016]	[Code 0016BR]
0025-56C - 0.25 hp	[Code 0025]	[Code 0025BR]
0033-56C - 0.33 hp	[Code 0033]	[Code 0033BR]
0050-56C - 0.50	[Code 0050]	[Code 0050BR]
0075-56C - 0.75 hp	[Code 0016]	[Code 0016BR]
A100-56C - 1.00 hp	[Code A100]	[Code A100BR]
B100-143TC - 1.00	[Code B100]	[Code B100BR]
0150-145TC - 1.50 hp	[Code 0150]	[Code 0150BR]
0200-145TC - 2.00 hp	[Code 0200]	[Code 0200BR]
0300-182TC - 3.00 hp	[Code 0300]	[Code 0300BR]
0500-184TC - 5.00 hp	[Code 0500]	[Code 0500BR]
0750-213TC - 7.50 hp	[Code 0750]	[Code 0750BR]
1000-215TC - 10.00 hp	[Code 1000]	[Code 1000BR]
1500-254TC - 15.00 hp	[Code 1500]	[Code 1500BR]
2000-256TC - 20.00 hp	[Code 2000]	[Code 2000BR]
2500-286TC - 25.00 hp	[Code 2500]	[Code 2500BR]
3000-286TC - 30.00 hp	[Code 3000]	[Code 3000BR]



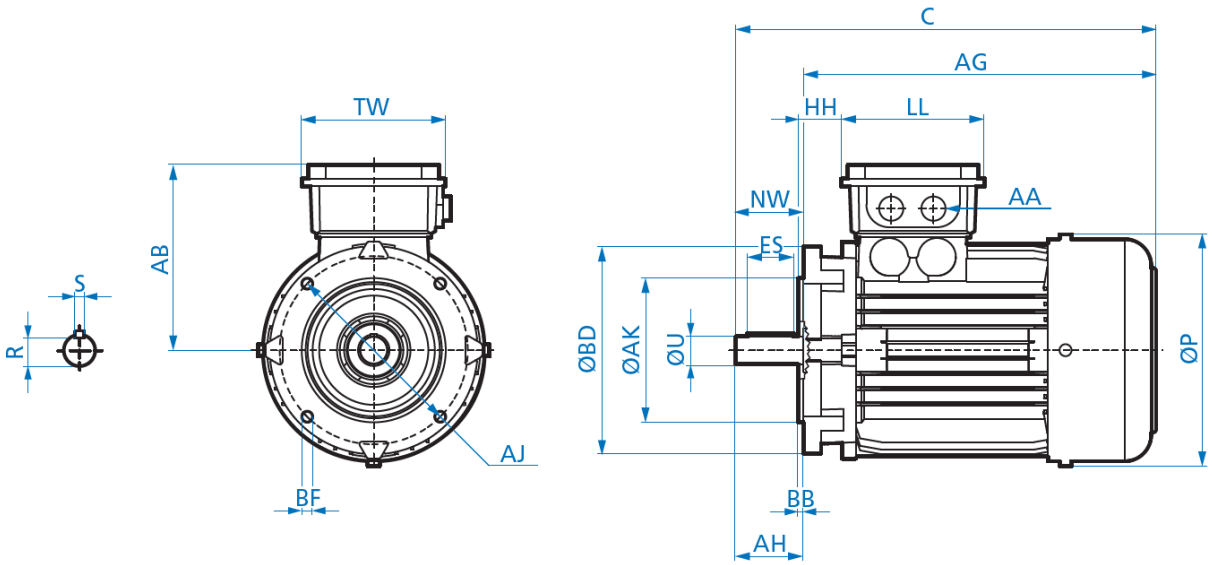
RATINGS
Motors "MtR" Series

Motors & Brakemotors

P_n Full Load Power		Eff. Class	n_N Full-Load Speed	I_n Full-Load Current		I_a/I_n Locked Rotor Current Ratio	NEMA Code Letter	T_n Full-Load Torque	T_a/T_n Locked Rotor Torque Ratio	T_k/T_n Break Down Torque Ratio	pf Power Factor	η Full Load Efficiency	J_m Rotor Inertia	Wt. Weight
				230V	460V									
[hp]	[kW]		[rpm]	[A]	[A]	[%]		[lb-in]				[%]	[lb-ft²]	[lb]
0.16	0.12	-	1700	0.88	0.44	250%	F	5.93	2.7	3.5	0.66	52.0%	0.0050	7.9
0.25	0.18	-	1680	1.12	0.56	270%	E	9.38	2.3	2.5	0.71	57.0%	0.0066	9.3
0.33	0.25	-	1710	1.56	0.78	310%	G	12.2	2.4	2.7	0.64	63.0%	0.017	12
0.5	0.37	-	1720	1.90	0.95	350%	F	18.3	2.3	2.7	0.69	71.0%	0.020	14
0.75	0.55	-	1710	2.70	1.35	350%	F	27.6	2.2	2.3	0.71	72.0%	0.026	18
1	0.75	pe	1730	3.14	1.57	650	K	36.4	3.5	3.8	0.70	86.1	0.045	22
1.5	1.1	pe	1740	4.20	2.10	840	L	54.3	4.2	4.9	0.76	86.9	0.081	33
2	1.5	pe	1730	5.60	2.80	760	K	72.9	3.9	4.3	0.78	87.0	0.093	37
3	2.2	pe	1770	7.68	3.84	920	L	107	3.0	4.5	0.79	90.0	0.192	62
5	3.7	pe	1755	13.0	6.50	950	L	180	4.1	4.6	0.80	90.3	0.332	78
7.5	5.5	pe	1770	19.5	9.75	1020	M	267	4.7	5.0	0.77	91.7	0.759	121
10	7.5	pe	1765	26.7	13.4	960	M	357	4.7	5.0	0.77	91.7	0.831	137
15	11	pe	1770	35.6	17.8	880	K	534	3.2	3.8	0.84	92.5	1.59	205
20	15	pe	1775	47.6	23.8	1080	M	710	4.3	4.7	0.85	93.0	2.18	269
25	18.5	pe	1780	60.6	30.3	1010	L	885	3.9	4.0	0.82	93.6	3.80	342
30	22	pe	1780	69.6	34.8	880	K	1062	3.3	3.4	0.85	93.6	3.80	342

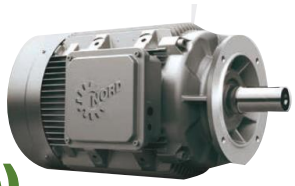
Dim up to 2.0hp (No Brake) Motors “MtR” Series

Motors & Brakemotors

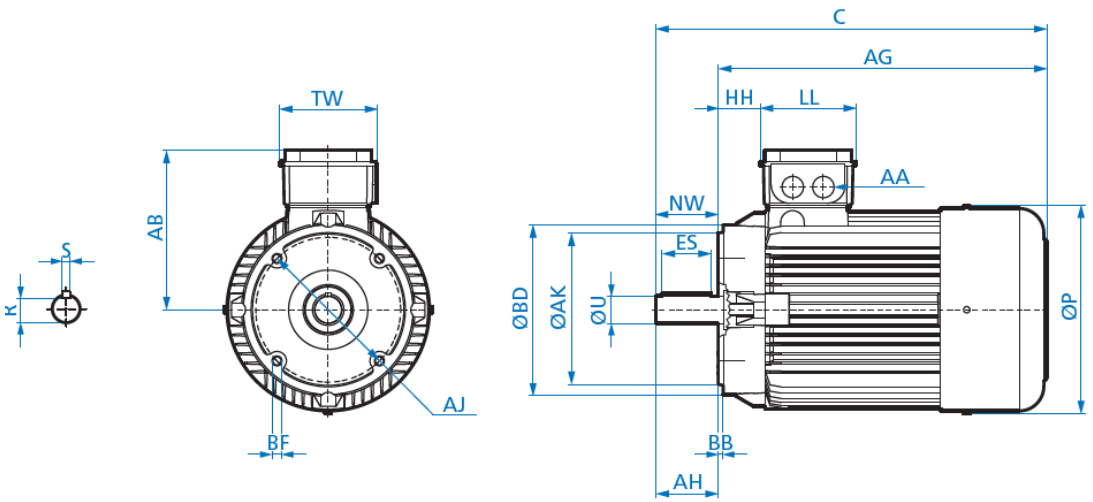


NEMA Frame	Efficiency SE	Efficiency PE	NEMA Frame	Overall C	Overall AG	Overall P	Flange AJ	Flange AK	Flange BD	Flange BB	Flange BF
56C	S/L	-	56C	9.62	7.56	5.08	5.875	4.500 +0.000 -0.003	6.50	0.16	3/8-16 x 0.71
56C	S/L	-	56C	10.49	8.43	5.75	5.875	4.500 +0.000 -0.003	6.50	0.16	3/8-16 x 0.71
56C	S/L	LP	56C	11.51	9.45	6.46	5.875	4.500 +0.000 -0.003	6.50	0.16	3/8-16 x 0.87
56C	L	-	56C	11.51	9.45	6.46	5.875	4.500 +0.000 -0.003	6.50	0.16	3/8-16 x 0.87
143TC	-	LP	143TC	11.57	9.45	6.46	5.875	4.500 +0.000 -0.003	6.50	0.16	3/8-16 x 0.87
145TC	S/L	SP/LP	145TC	13.15	11.02	7.20	5.875	4.500 +0.000 -0.003	6.50	0.16	3/8-16 x 0.71

NEMA Frame	Efficiency SE	Efficiency PE	NEMA Frame	Shaft U	Shaft NW	Shaft AH	Shaft ES	Shaft R	Shaft S	Terminal Box AB	Terminal Box HH	Terminal Box LL	Terminal Box TW	Terminal Box AA (NPT)	Terminal Box AA (METRIC)
56C	S/L	-	56C	0.625 +0.000 -0.0005	1.88	2.06	1.69	0.517	0.188	4.53	0.47	3.94	3.94	1/2"	M20 x1.5
56C	S/L	-	56C	0.625 +0.000 -0.0005	1.88	2.06	1.69	0.517	0.188	4.88	0.79	3.94	3.94	1/2"	M20 x1.5
56C	S/L	LP	56C	0.625 +0.000 -0.0005	1.88	2.06	1.69	0.517	0.188	5.59	1.02	4.49	4.49	3/4"	M25x1.5
56C	L	-	56C	0.625 +0.000 -0.0005	1.88	2.06	1.69	0.517	0.188	5.59	1.02	4.49	4.49	3/4"	M25x1.5
143TC	-	LP	143TC	0.875 +0.000 -0.0005	2.25	2.12	1.81	0.771	0.188	5.59	1.02	4.49	4.49	3/4"	M25x1.5
145TC	S/L	SP/LP	145TC	0.875 +0.000 -0.0005	2.25	2.12	1.81	0.771	0.188	5.79	1.18	4.49	4.49	3/4"	M25x1.5



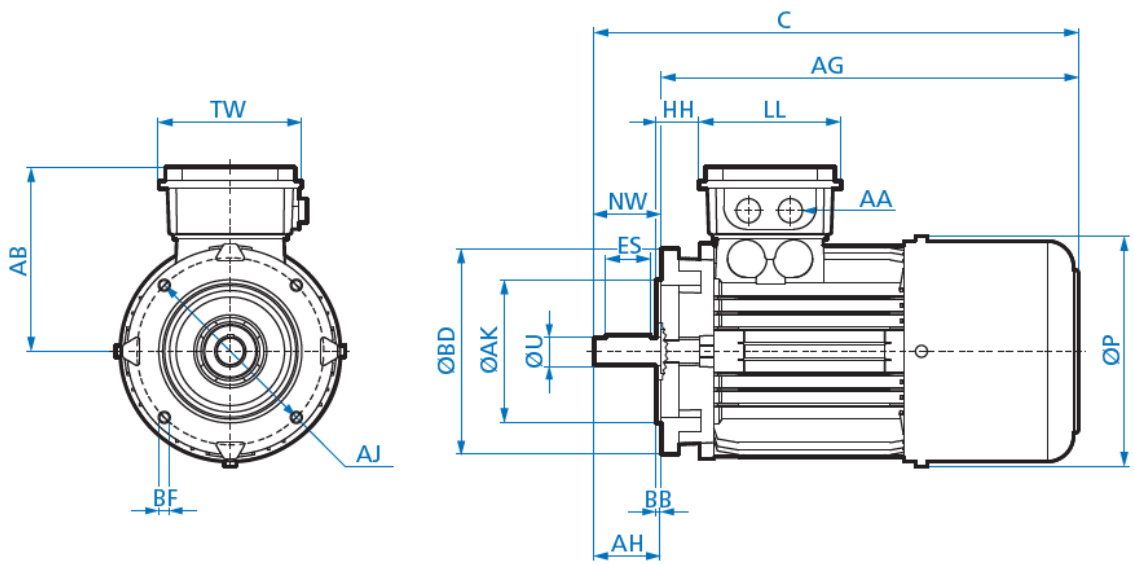
Dim up to 3 - 30hp (No Brake) Motors “MtR” Series



NEMA Frame	Motor Frame	Efficiency SE	Efficiency PE	NEMA Frame	Overall C	Overall AG	Overall P	Flange AJ	Flange AK	Flange BD	Flange BB	Flange BF
182TC	100	L	LP	182TC	14.83	12.20	7.91	7.250	8.500 +0.000 -0.003	9.00	0.25	1/2-13x1.10
184TC	100	LA	AP	184TC	14.83	12.20	7.91	7.250	8.500 +0.000 -0.003	9.00	0.25	1/2-13x1.10
184TC	112	M	-	184TC	15.46	12.83	8.90	7.250	8.500 +0.000 -0.003	9.00	0.25	1/2-13x0.98
184TC	112	-	MP	184TC	16.44	13.82	8.90	7.250	8.500 +0.000 -0.003	9.00	0.25	1/2-13x0.98
213TC	132	S	SP	213TC	19.58	16.46	10.47	7.250	8.500 +0.000 -0.003	8.69	0.25	1/2-13x1.18
215TC	132	M	MP	215TC	19.58	16.46	10.47	7.250	8.500 +0.000 -0.003	8.69	0.25	1/2-13x1.18
254TC	160	M	MP	254TC	23.12	19.37	12.56	7.250	8.500 +0.000 -0.003	10.00	0.25	1/2-13x0.87
256TC	160	L	-	256TC	23.12	19.37	12.56	7.250	8.500 +0.000 -0.003	10.00	0.25	1/2-13x0.87
256TC	160	-	LP	256TC	24.85	21.10	12.56	7.250	8.500 +0.000 -0.003	10.00	0.25	1/2-13x0.87
284TC	180	MX	-	284TC	23.12	19.37	12.56	9.000	10.500 +0.000 -0.003	11.26	0.25	1/2-13x0.87
284TC	180	-	MP	284TC	28.79	24.42	14.25	9.000	10.500 +0.000 -0.003	11.26	0.25	1/2-13x0.87
286TC	180	LX	-	286TC	24.85	21.10	12.56	9.000	10.500 +0.000 -0.003	11.26	0.25	1/2-13x0.87
286TC	180	-	LP	286TC	28.79	24.42	14.25	9.000	10.500 +0.000 -0.003	11.26	0.25	1/2-13x0.87

NEMA Frame	Motor Frame	Efficiency SE	Efficiency PE	NEMA Frame	Shaft U	Shaft NW	Shaft AH	Shaft ES	Shaft R	Shaft S	Terminal Box AB	Terminal Box HH	Terminal Box LL	Terminal Box TW	Terminal Box AA (NPT)	Terminal Box AA (METRIC)
182TC	100	L	LP	182TC	1.125 +0.000 -0.0005	2.75	2.62	2.25	0.986	0.250	6.65	1.42	4.49	4.49	1"	M32x1.5
184TC	100	LA	AP	184TC	1.125 +0.000 -0.0005	2.75	2.62	2.25	0.986	0.250	6.65	1.42	4.49	4.49	1"	M32x1.5
184TC	112	M	-	184TC	1.125 +0.000 -0.0005	2.75	2.62	2.25	0.986	0.250	7.05	1.38	4.49	4.49	1"	M32x1.5
184TC	112	-	MP	184TC	1.125 +0.000 -0.0005	2.75	2.62	2.25	0.986	0.250	7.05	1.38	4.49	4.49	1"	M32x1.5
213TC	132	S	SP	213TC	1.375 +0.000 -0.0005	3.38	3.12	3.06	1.201	0.312	8.03	2.13	4.80	4.80	1"	M32x1.5
215TC	132	M	MP	215TC	1.375 +0.000 -0.0005	3.38	3.12	3.06	1.201	0.312	8.03	2.13	4.80	4.80	1"	M32x1.5
254TC	160	M	MP	254TC	1.625 +0.000 -0.001	4.00	3.75	3.13	1.416	0.375	9.53	2.05	7.32	7.32	1"	M40x1.5
256TC	160	L	-	256TC	1.625 +0.000 -0.001	4.00	3.75	3.13	1.416	0.375	9.53	2.05	7.32	7.32	1"	M40x1.5
256TC	160	-	LP	256TC	1.625 +0.000 -0.001	4.00	3.75	3.13	1.416	0.375	9.53	2.05	7.32	7.32	1"	M40x1.5
284TC	180	MX	-	284TC	1.875 +0.000 -0.001	4.62	4.38	4.00	1.591	0.500	10.20	2.29	7.32	7.32	1"	M40x1.5
284TC	180	-	MP	284TC	1.875 +0.000 -0.001	4.62	4.38	4.00	1.591	0.500	10.20	2.37	7.32	7.32	1"	M40x1.5
286TC	180	LX	-	286TC	1.875 +0.000 -0.001	4.62	4.38	4.00	1.591	0.500	10.20	2.29	7.32	7.32	1"	M40x1.5
286TC	180	-	LP	286TC	1.875 +0.000 -0.001	4.62	4.38	4.00	1.591	0.500	10.20	2.37	7.32	7.32	1"	M40x1.5

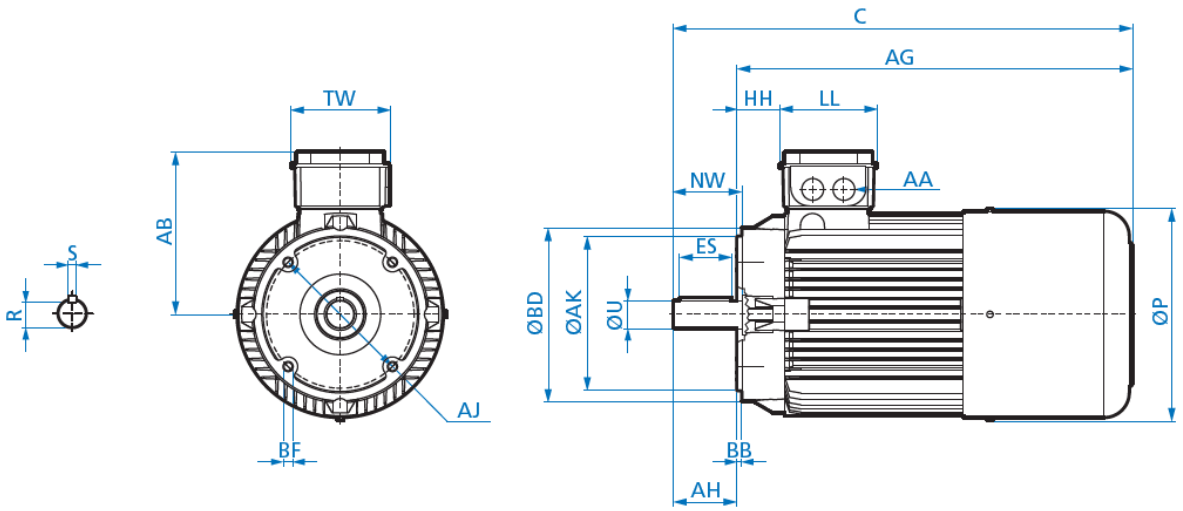
Dim up to 2.0hp (With Brake) Motors “MtR” Series



NEMA Frame	Efficiency SE	Efficiency PE	NEMA Frame	BRE	Overall C	Overall AG	Overall P	Flange AJ	Flange AK	Flange BD	Flange BB	Flange BF
56C	S/L	-	56C	5	11.83	9.76	5.08	5.875	4.500 +0.000 -0.003	6.50	0.16	3/8-16x0.71
56C	S/L	-	56C	5	12.77	10.71	5.75	5.875	4.500 +0.000 -0.003	6.50	0.16	3/8-16x0.71
56C	S/L	LP	56C	5	14.03	11.97	6.46	5.875	4.500 +0.000 -0.003	6.50	0.16	3/8-16x0.87
56C	L	-	56C	10	14.03	11.97	6.46	5.875	4.500 +0.000 -0.003	6.50	0.16	3/8-16x0.87
143TC	-	LP	143TC	10	14.53	12.40	6.46	5.875	4.500 +0.000 -0.003	6.50	0.16	3/8-16x0.87
145TC	S/L	SP/LP	145TC	20	16.73	14.61	7.20	5.875	4.500 +0.000 -0.003	6.50	0.16	3/8-16x0.71

NEMA Frame	Efficiency SE	Efficiency PE	NEMA Frame	BRE	Shaft U	Shaft NW	Shaft AH	Shaft ES	Shaft R	Shaft S	Terminal Box AB	Terminal Box HH	Terminal Box LL	Terminal Box TW	Terminal Box AA (NPT)	Terminal Box AA (METRIC)
56C	S/L	-	56C	5	0.625 +0.000 -0.0005	1.88	2.06	1.69	0.517	0.188	4.84	0.75	5.28	3.50	1/2"	M20 x1.5
56C	S/L	-	56C	5	0.625 +0.000 -0.0005	1.88	2.06	1.69	0.517	0.188	5.20	1.06	5.28	3.50	1/2"	M20 x1.5
56C	S/L	LP	56C	5	0.625 +0.000 -0.0005	1.88	2.06	1.69	0.517	0.188	5.59	1.18	6.02	4.25	3/4"	M25x1.5
56C	L	-	56C	10	0.625 +0.000 -0.0005	1.88	2.06	1.69	0.517	0.188	5.59	1.18	6.02	4.25	3/4"	M25x1.5
143TC	-	LP	143TC	10	0.875 +0.000 -0.0005	2.25	2.12	1.81	0.771	0.188	5.59	1.18	6.02	4.25	3/4"	M25x1.5
145TC	S/L	SP/LP	145TC	20	0.875 +0.000 -0.0005	2.25	2.12	1.81	0.771	0.188	5.79	1.34	6.02	4.25	3/4"	M25x1.5

Dim up to 3 - 30hp (With Brak
Motors “MtR” Series



NEMA Frame	Motor Frame	Efficiency SE	Efficiency PE	NEMA Frame	BRE	Overall C	Overall AG	Overall P	Flange AJ	Flange AK	Flange BD	Flange BB	Flange BF
182TC	100	L	LP	182TC	20	18.41	15.79	7.91	7.250	8.500 +0.000 -0.003	9.00	0.25	1/2-13x1.10
184TC	100	LA	AP	184TC	40	18.53	15.91	7.91	7.250	8.500 +0.000 -0.003	9.00	0.25	1/2-13x1.10
184TC	112	M	-	184TC	60	19.16	16.54	8.90	7.250	8.500 +0.000 -0.003	9.00	0.25	1/2-13x0.98
184TC	112	-	MP	184TC	60	20.66	18.03	8.90	7.250	8.500 +0.000 -0.003	9.00	0.25	1/2-13x0.98
213TC	132	S	SP	213TC	60	23.79	20.67	10.47	7.250	8.500 +0.000 -0.003	8.69	0.25	1/2-13x1.18
215TC	132	M	MP	215TC	100	23.79	20.67	10.47	7.250	8.500 +0.000 -0.003	8.69	0.25	1/2-13x1.18
254TC	160	M	MP	254TC	150	28.44	24.69	12.56	7.250	8.500 +0.000 -0.003	10.00	0.25	1/2-13x0.87
256TC	160	L	-	256TC	250	28.44	24.69	12.56	7.250	8.500 +0.000 -0.003	10.00	0.25	1/2-13x0.87
256TC	160	-	LP	256TC	250	30.17	26.42	12.56	7.250	8.500 +0.000 -0.003	10.00	0.25	1/2-13x0.87
284TC	180	MX	-	284TC	250	28.44	24.69	12.56	9.000	10.500 +0.000 -0.003	11.26	0.25	1/2-13x0.87
284TC	180	-	MP	284TC	250	34.11	29.73	14.25	9.000	10.500 +0.000 -0.003	11.26	0.25	1/2-13x0.87
286TC	180	LX	-	286TC	250	29.85	26.10	12.56	9.000	10.500 +0.000 -0.003	11.26	0.25	1/2-13x0.87
286TC	180	-	LP	286TC	250	33.79	29.42	14.25	9.000	10.500 +0.000 -0.003	11.26	0.25	1/2-13x0.87

NEMA Frame	Motor Frame	Efficiency SE	Efficiency PE	NEMA Frame	BRE	Shaft U	Shaft NW	Shaft AH	Shaft ES	Shaft R	Shaft S	Terminal Box AB	Terminal Box HH	Terminal Box LL	Terminal Box TW	Terminal Box AA (NPT)	Terminal Box AA (METRIC)
182TC	100	L	LP	182TC	20	1.125 +0.000 -0.0005	2.75	2.62	2.25	0.986	0.250	6.77	1.57	6.02	4.25	1"	M32x1.5
184TC	100	LA	AP	184TC	40	1.125 +0.000 -0.0005	2.75	2.62	2.25	0.986	0.250	6.77	1.57	6.02	4.25	1"	M32x1.5
184TC	112	M	-	184TC	60	1.125 +0.000 -0.0005	2.75	2.62	2.25	0.986	0.250	7.17	1.54	6.02	4.25	1"	M32x1.5
184TC	112	-	MP	184TC	60	1.125 +0.000 -0.0005	2.75	2.62	2.25	0.986	0.250	7.17	1.54	6.02	4.25	1"	M32x1.5
213TC	132	S	SP	213TC	60	1.375 +0.000 -0.0005	3.38	3.12	3.06	1.201	0.312	7.91	1.85	7.28	5.47	1"	M32x1.5
215TC	132	M	MP	215TC	100	1.375 +0.000 -0.0005	3.38	3.12	3.06	1.201	0.312	7.91	1.85	7.28	5.47	1"	M32x1.5
254TC	160	M	MP	254TC	150	1.625 +0.000 -0.001	4.00	3.75	3.13	1.416	0.375	9.53	2.05	7.32	7.32	1"	M40x1.5
256TC	160	L	-	256TC	250	1.625 +0.000 -0.001	4.00	3.75	3.13	1.416	0.375	9.53	2.05	7.32	7.32	1"	M40x1.5
256TC	160	-	LP	256TC	250	1.625 +0.000 -0.001	4.00	3.75	3.13	1.416	0.375	9.53	2.05	7.32	7.32	1"	M40x1.5
284TC	180	MX	-	284TC	250	1.875 +0.000 -0.001	4.62	4.38	4.00	1.591	0.500	9.53	2.29	7.32	7.32	1"	M40x1.5
284TC	180	-	MP	284TC	250	1.875 +0.000 -0.001	4.62	4.38	4.00	1.591	0.500	9.53	2.37	7.32	7.32	1"	M40x1.5
286TC	180	LX	-	286TC	250	1.875 +0.000 -0.001	4.62	4.38	4.00	1.591	0.500	9.53	2.29	7.32	7.32	1"	M40x1.5
286TC	180	-	LP	286TC	250	1.875 +0.000 -0.001	4.62	4.38	4.00	1.591	0.500	10.20	2.37	7.32	7.32	1"	M40x1.5

Fangtooth Inc. Terms & Conditions for Sale
11970 Mayfield St. Livonia, MI 48150

SECTION 1: APPLICABILITY

1.1 These terms & conditions (the "Terms and Conditions") of sale are applicable to all quotations for the sale or orders for the purchase of all equipment or goods (the "Products") made by or for Fangtooth Inc 11970 Mayfield St. Livonia MI 48150 ("Company".)

1.2 Unless otherwise agreed, written quotations are valid for 30 days from the date of quotation. All price lists and discounts are subject to change without notice.

1.3 All orders placed by the Buyer are subject to written acceptance by the Company. No contract between Buyer and Company shall exist prior to the time of such acceptance by the Company.

1.4 These Terms & Conditions supersede all prior written terms, understandings, purchase orders, assurances and offers. Company shall not be deemed to have waived these Terms & Conditions if it fails to object to the conditions appearing in or attached to a purchase order issued by Buyer. Buyer's acceptance of the Products or services furnished by the Company shall constitute its acceptance of these Terms & Conditions.

SECTION 2: PRICE & SHIPPING DATES

2.1 All orders must be bona fide commitments showing a complete description of equipment, quantity, price & shipping dates required by the Buyer.

2.2 Timely performance by Company is contingent upon Buyer supplying to Company, when applicable, all required technical information and data, including drawing approvals, and all required commercial documentation. Shipping dates are subject to final confirmation or change by Company and are based on prompt receipt of all necessary information regarding the order. Unless otherwise indicated, all delivery dates specified by the Company are estimated time frames and time is not of the essence in Company's performance of the sale of the Products.

2.3 If shipment is delayed for thirty (30) days or more from the delivery date accepted by the Company for reasons attributable to the Buyer and provided that the Buyer shall have no other liability to the Company in respect of such delay, the reasonable direct costs of putting the Products into storage at a facility off-site of Company's premises until such times as they are shipped (or delivered) shall be the to the Buyer's account and at Buyer's sole risk.

SECITON 3: PAYMENT

Terms of payment are net 30 days from the date of invoice unless otherwise agreed in writing. Late payments may be subject to interest on the unpaid balance at the greater of 2% per month or the maximum rate permitted by law. No deductions or set-offs are to be made by Buyer from amounts due unless specifically authorized by the Company in writing. If in the judgment of the Company, the financial condition of Buyer at any time does not justify continuance of production or shipment on the terms of payment specified, the Company may require full or partial payment in advance.

SECTION 4: TAXES

The Company's prices do not include sales, use, excise taxes, tariffs, duties or value added or similar taxes or fees. The Company will add such taxes or fees to the invoice unless the Buyer provides Company with tax-exempt certificate acceptable to the applicable taxing authorities or arranges payment of such taxes or fees directly by the Buyer.

SECTION 5: WARRANTY

5.1 NEW PRODUCT – Company warrants the Products shall be free of defects in material and workmanship and meet the Product specifications for a period from the date of shipment as specified below.

5.1.a FANGTOOTH MAX straddle mounted pinion systems – 3 years.

5.1.b FANGTOOTH OPEN cantilevered pinion systems – 2 years.

5.1.c FANGTOOTH Any products not specified as standard including any units with non-standard coatings for corrosion claims – 1 year.

5.1.d FANGBOT integrated systems – FANGTOOTH MAX integrated into larger systems will carry the full 3 year warranty. FANGTOOTH OPEN integrated into larger systems will carry the full 2 year warranty. Custom (non-standard) engineered products within the larger systems or any other non-standard FANGTOOTH products will be warranties for 18 months.

5.2 Notwithstanding the warranty periods listed above, the warranty on normal wear items such as oil seals is limited to one year. The warranties of gearboxes, motors, brakes, couplings, linear rail, linear bearings, gear rack and pinion and all other add on items shall be the warranties provided by, and shall be the responsibility of, the original equipment manufacturer. The Company is not responsible for and does not warrant (a) equipment, components and/or material furnished by the Buyer; (b) the sufficiency of functionality of any design specifications furnished by the Buyer; nor shall Company be liable for defects or damages arising from the foregoing. Notwithstanding any other provision in these Terms and Conditions, none of the warranties given by the Company shall apply to products manufactured by others and sold by the Company. Buyer will at its own expense arrange for any dismantling and reassembly of any goods and equipment and the provision of all equipment (including without limitation lifting equipment and crane-age) to the extent that this is necessary to remedy the defect or facilitate re-performance of service.

Unless otherwise agreed, necessary transport of the Products and/or parts therefo to and from Company in connection with the remedying of defects will be at the risk and expense of the Buyer. Buyer will follow Company's instructions regarding such transport.

Unless otherwise agreed, Buyer will bear any additional costs which Company incurs as a result of the Products being located in a place other than the place of delivery.

Defective parts which have been replaced will be made available to Company and will be its property.

5.3 Any claims under this warranty must be made in writing to the Company at the address set forth above (or by email) within thirty (30) days of the discovery thereof. The Company's obligation under this warranty shall be limited to the repair or replacement, at the Company's option, of the Product, or any part thereof, when the Company has determined the Product is not warranted; any Product or parts repaired or replaced pursuant to the warranty will by warranted for the remainder of the original warranty period. The Company shall not be responsible for any claims which the Company determines are due to improper installation, operation above rated capacity, exceeds L10 life cycles, operation at extreme conditions, normal wear and tear, accident, or because the Product has been used, adjusted, altered, handled, maintained, repaired or stored other than as directed by the Company.

5.4 This warranty shall not apply in the event of defects caused by: (i) physical abuse of the Products or any component, or acts of vandalism by any persons other than Company; (ii) alterations, modifications, additions, or repairs made during the applicable warranty period by anyone other than Company, and its authorized employees, agents or subcontractors; (iii) accidents or damage resulting from fire, water, wind, hail, lightning, electrical surge or failure, earthquake, theft or similar causes not caused by the sole negligence of Company; (iv) damage as a result of corrosion or other damage caused by Buyer's failure to protect and maintain the Products in accordance with Company's written instructions and warnings; or (v) design specifications furnished by Buyer.

5.5 Buyer shall not rely upon Company's skill or judgement or furnish Products for any particular purpose beyond the specific express warranties provided herein. Buyer has the responsibility to determine whether the Products and specifications are fit for buyer's intended purpose. Company does not warrant the Products will comply with the requirements or any safety code or regulations, or with any environmental or other law or regulation. Buyer is responsible for the safe and lawful operation and use of the Products.

5.9 THE FOREGOING WARRANTIES ARE THE SOLE WARRANTIES PROVIDED BY COMPANY FOR THE PRODUCTS AND ARE IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, ALL OF WHICH ARE HEREBY DISCLAIMED AND EXCLUDED BY MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE. BUYER AGREES THAT ITS SOLE AND EXCLUSIVE REMEDY AGAINST COMPANY WILL BE LIMITED TO THE REPAIR AND REPLACEMENT OF NONCONFORMING OR DEFECTIVE PRODUCTS PROVIDED COMPANY IS PROMPTLY NOTIFIED IN WRITING OF ANY DEFECT. THIS EXLUSIVE REMEDY WILL NOT BE DEEMED TO HAVE FAILED OF ITS ESSENTAIL PURPOSE SO LONG AS COMPANY IS WILLING TO REPAIR OR REPLACE THE NONCONFORMING OR DEFECTIVE PRODUCTS.

SECTION 6: OWNERSHIP OF INTELLECTUAL PROPERTY

Company retains ownership and all rights to its intellectual property. Buyer shall have no rights to Company's intellectual property. Any intellectual property developed by Company and arising in connection with the supply of Products hereunder shall be deemed property of Company, and Company shall have exclusive rights to the use and ownership of such intellectual property.

SECTION 7: THIRD PARTY INTELLECTUAL PROPERTY CLAIMS

Company shall pay costs and damages finally awarded in any suit against Buyer by a third party to the extent based upon a finding that the design or construction of the Products as furnished infringes a patent or other third party intellectual property rights (except infringement occurring as a result of incorporating a design or modification at Buyer's request), provided that Buyer promptly notifies Company of any charge of infringement, and Company is given the right at its expense to settle such charge and to defend or control the defense of any suit based upon such charge. Company shall have no obligation hereunder with respect to claims, suits or proceedings, resulting from or related to, in whole or in part, (i) the use of software or software documentation, (ii) compliance with Buyer's specifications, (iii) the combination with other products, or modification of, the Products after delivery by Company, or (iv) the use of the Products, or any part thereof, in the practice of a process. THIS SECTION SETS FORTH COMPANY'S ENTIRE LIABILITY WITH RESPECT TO PATENTS OR OTHER INFRIGEMENTS OF INTELLECTUAL PROPERTY.

SECTION 8: RETURN OF PRODUCTS

In the event that the Buyer does not accept the Products, the Buyer must apply for authorization from the Company before returning the Products to the Company for credit. The Company will advise the Buyer of the credit to be allowed and necessary restocking charges on the unused material, subject to the Company's inspection and acceptance when received. No material should be returned to the Company except upon receipt of written authorization. In addition to the usual restocking charges, the Buyer must pay the actual transportation expense of the Company, plus all return transportation costs. Motors and specially designed parts will not be accepted for return or credit.

SECTION 9: DELIVERY, TITLE AND RISK OF LOSS

The Products will be delivered Ex Works – Fangtooth Inc's facility (in accordance with Incoterms 2010) unless otherwise agreed in writing by Company. The Buyer will be responsible for making all shipping arrangements, and Buyer will provide sufficient notice and details of such arrangements to allow Company to prepare the Products for delivery. Title and risk of loss will remain with Company and not pass to Buyer until delivery to the Incoterm delivery point.

SECTION 10: FORCE MAJEURE

Company will not be deemed to be in default or otherwise responsible for delays or failures in performance resulting from acts of God: acts or war, or civil disturbance, terrorism, epidemics, governmental action or inaction, fires, floods, earthquakes, tornadoes, or other events beyond Company's reasonable control (a "Force majeure Event"). A Force Majeure Event affecting Company's vendors shall also be deemed as a Force Majeure Event for the Company, provided that the Company shall use commercially reasonable efforts to mitigate any delays caused by its vendor's Force Majeure situation. Company shall in such instances give notice of the non-performance (including its anticipated duration) to the Customer promptly after becoming aware that it has occurred or will occur. In no event shall lack of finances or ability to pay as a result of the financial condition of either party be considered a Force Majeure Event.

SECTION 11: CANCELLATION

Upon written acceptance of an order by the Company, Buyer may not cancel or terminate for convenience, or direct suspension of manufacture, except with Company's written consent and then only upon terms that will compensate Company for its engineering, fabrication and purchasing charges and any other costs relating to such cancellation, termination, or suspension, plus a reasonable amount for profit and overhead.

SECTION 12: ETHICAL BUSINESS PRACTICES

Company requires manufacturing and business practices that are compliant with all applicable laws and regulations, including, the need to conduct all transactions in compliance with ethical business practices. Both the Company and the Buyer agree that neither of them nor their employees, agents, representatives, or other intermediaries will engage in any activity that may be construed to be in violation of their respective codes of ethical business practices or applicable law. Buyer acknowledges and agrees that it shall not, in regards to the sale or resale of the Company's products, make any payment or transfer of value to any third party (including through any or multiple intermediaries) that would cause either the Buyer, Company or any of Company's affiliates to violate either the U.S. Foreign Corrupt Practices Act or any other applicable anti-corruption laws. Buyer shall indemnify and hold Company and Company's affiliates harmless in the even of any breach of this paragraph by buyer or any of its intermediaries.

SECTION 13: LIMITATION OF LIABILITY

NEITHER COMPANY AND ITS AFFILIATES AND THEIR RESPECTIVE OFFICERS, DIRECTORS, EMPLOYEES, AGENTS, INSURERS AND ATTORNEYS SHALL BE LIABLE, WHETHER IN CONTRACT, WARRANTY, FAILURE OF A REMEDY TO ACHIEVE ITS INTENDED OR ESSENTIAL PURPOSES, TORT (INCLUDING LOSS OF USE, REVENUE OR PROFIT, OR FOR COSTS OF CAPITAL OR OF SUBSTITURE USE OR PERFORMANCE, OR FOR INDIRECT, SPECIAL, LIQUIDATED, INCIDENTAL OR CONSEQUENTIAL DAMAGES, OR FOR ANY OTHER LOSS OR COST OF SIMILAR TYPE, OR FOR OTHER CLAIMS BY BUYER FOR ANY DAMAGES OR LOSSES. COMPANY'S MAXIMUM LIABILITY FOR ALL CLAIMS AND LOSSES ARISING OUT OF THE MANUFACTURE OR SALE OF THE PRODUCTS SHALL BE THE PRICE CONFIRMED BY THE COMPANY RELATING TO THE INDIVIDUAL SALE TRANSACTION WITH THE BUYER. BUYER AND COMPANY AGREE THAT THE EXCLUSIONS AND LIMITATIONS SET FORTH IN THIS SECTION ARE SEPARATE AND INDEPENDENT FROM ANY REMEDIES WHICH BUYER MAY HAVE HEREUNDER AND SHALL BE GIVEN FULL FORCE AND EFFECT WHETHER OR NOT ANY OR ALL SUCH REMEDIES SHALL BE DEEMED TO HAVE FAILED OF THEIR ESSENTIAL PURPOSE.

SECTION 14: GOVERNING LAW

The terms of the sales of the Products shall be governed and controlled in all respects by the laws of the State of Michigan and all disputes, including interpretation, enforceability, validity, and construction, shall be determined under the law of the State of Michigan without regard to any conflict of law provisions. Any dispute arising between the parties will be finally resolved in the state or federal courts of Michigan. Each party consents to personal jurisdiction in the state and federal courts of the State of Michigan for any all matters related to or arising out of the sale, attempted sale, delivery, warranty, maintenance or use of the Products, and agrees that personal jurisdiction in any such court will be deemed proper. Buyer shall be liable to Company for any attorney fees and costs incurred by Company in enforcing any of its rights hereunder.

SECTION 15: STATUTE OF LIMITATIONS

To the extent permitted by applicable law, any lawsuit for breach of contract, including breach of warranty, arising out of the transactions covered by this Purchase Order, must be commenced not later than twelve (12) months from the date the cause of action accrued.

SECTION 16: CHANGES IN LAWS AND REGULATIONS

Company's prices and timely performance are based on all applicable laws, rules, regulations, orders, codes, standards or requirements of governmental authorities effective on the date of Company's proposal. Any applicable change to the forgoing shall entitle Company to an equitable adjustment in the prices and time of performance.

SECTION 17: COMPLIANCE WITH EXPORT LAWS AND REGULATIONS

Certain Products manufactured by Company, as well as technical data related thereto, may be subject to export licensing controls under the U.S. Export Administration Regulations and/or the U.S. International Traffic in Arms Regulations, which require licensing for and/or prohibit the export or diversion of the Company's products to certain countries. If Buyer is responsible for obtaining export approvals. Buyer warrants that it will no assist or participate in any export of the Company's products or related technical data without first obtaining the required export license and will not knowingly assist or participate in any such diversion or other violation of applicable U.S. laws and regulations. If Company is responsible for obtaining export approvals, Buyer shall assist the Company, as necessary, in obtaining such approvals. Buyer shall indemnify and hold the Company and its affiliates harmless from any losses or claims arising out of or related to Buyer's failure to comply with applicable export control laws and regulations.

SECTION 18: COMPLIANCE WITH LAWS

Buyer agrees to comply with all applicable local, state, Federal and Foreign laws, orders, directives, and regulations at any time in effect, including, but not limited to, those found in 41 CFR 60 requiring equal opportunity and affirmative action without regard to race, color, religion, sex, national origin, presence of disability or status as a special disabled veteran or Vietnam era veteran, which specifically incorporated herein by reference. If Buyer fails to comply with the provisions of this paragraph, Company may, by written notice to Buyer, terminate any Order for Buyer's default in addition to exercising any other rights or remedies provided by law.

SECTION 19: RELATIONSHIP OF THE PARTIES

Buyer and Company are independent contractors, and nothing in the contract makes either party the agent or legal representative of the other party for any purpose. Neither party has authority to assume or to create any obligation on behalf of the other party.

SECTION 20: WAIVER

The failure of Company to enforce any right or remedy provided in contract or by law on a particular occasion will not be deemed a waiver of that right or remedy on a subsequent occasion or a waiver of any other right or remedy.

SECTION 21: SEVERABILITY

A finding that any provision in these Terms & Conditions or an accepted purchase order is invalid or unenforceable in any jurisdiction will not affect the validity or enforceability of any other provision of these Terms & Conditions or an accepted purchase order or the validity or enforceability of that provision in any other jurisdiction.

SECTION 22: ASSIGNMENT and DELEGATION

No right or interest in the sale of Products hereunder shall be assigned by the Buyer without written permission of the Company. No delegation of any obligation owed, or the performance of any obligation by the Buyer, shall be made without the written permission of the Company. Any attempted assignment of delegation shall be wholly void and totally ineffective for all purposes unless made in conformity with this section. Company shall have the right to assign its obligations to any affiliate of the Company or any successor to substantially all the business or assets of the Company.

SECTION 23: THIRD PARTY RIGHTS

Notwithstanding any provision of law, no third party (including Buyer's customer) shall have the right to enforce these Terms & Conditions or any other contractual rights against Company or its affiliates.

SECTION 24: HEADINGS

The headings of the various paragraphs of these Terms & Conditions have been inserted for convenient reference only and shall not to any extent have the effect of modifying, amending, or changing the expressed terms and provisions hereof.

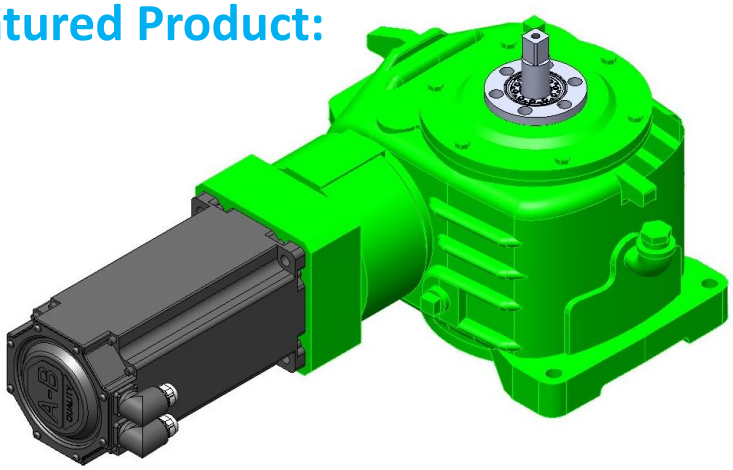
SECTION 25: ENTIRE AGREEMENT

These Terms & Conditions, including any attachments hereto, constitutes the entire understanding and agreement between the parties and supersedes any prior oral or written agreements with respect to the subject matter hereof. No course of prior dealings between the and the Buyer, and no usage of the trade shall be relevant to supplement or explain and term used herein. Acceptance or acquiescence in a course of performance rendered hereunder shall not be relevant to determine the meaning of these Terms & Conditions even though the accepting or acquiescing party has knowledge of the performance and opportunity for objection. Whenever a term defined by the Uniform Commercial Code is used herein, the definition contained in the Uniform Commercial Code shall control

Neptune/Triton Jack

fang TOOTH

Featured Product:



16,681 Pound Max Lifting Capacity

MADE IN USA LIVONIA MI

Fangtooth Inc.
11790 Mayfield St
Livonia, MI 48150
Ph 248-798-4877

fang TOOTH

AUTOMATION IDEAS WITH TEETH

ACTUATORS

GEAR BOXES

ROLLED BALLSCREWS

HIGH FORCE LIFTING JACKS & GUIDED RACK

MULTI AXIS SYSTEMS

CUSTOM ENGINEERED PRODUCTS