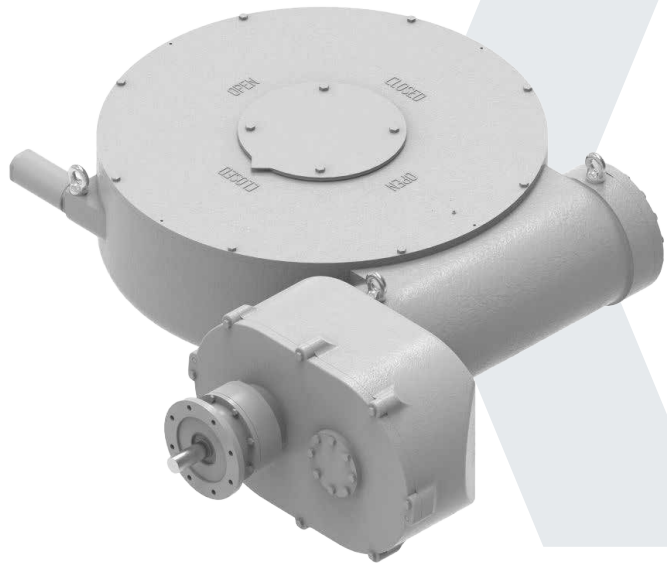




Keeping the World Flowing
for Future Generations

IW Sizes 14-17

Quarter-turn worm gearboxes



The IW14 and above large worm gearbox operators have been designed for very high torques in isolating duty motorized applications with low or no maintenance requirements.

The gearbox input can be from either the left or right side and caters for both clockwise and anti-clockwise valve operating directions. Gearbox input and output flanges are designed with reference to ISO 5211. MSS SP-101 and non-standard options are also available.

Application

The IW series gearboxes are quarter-turn operators intended for the operation of quarter-turn ball, butterfly and plug valves and any other quarter-turn device requiring a reduction for its operation. They are used mainly for motorized applications but can also be used manually or with power tools.

Features

- Heat treated and ground worm gear supported by taper roller bearings. Ground shims used to minimize backlash and improve accuracy in the gear system
- Ductile iron housing
- Grease filled for life and fully sealed with o-rings
- Comprehensive gear ratio with combination spur and planetary gear reducers
- Adjustable mechanical stops at 0° and 90° +/- 5°

Environmental specification

- IP67 enclosure
- -40 to 176 °F (-40 to +80 °C)

Options

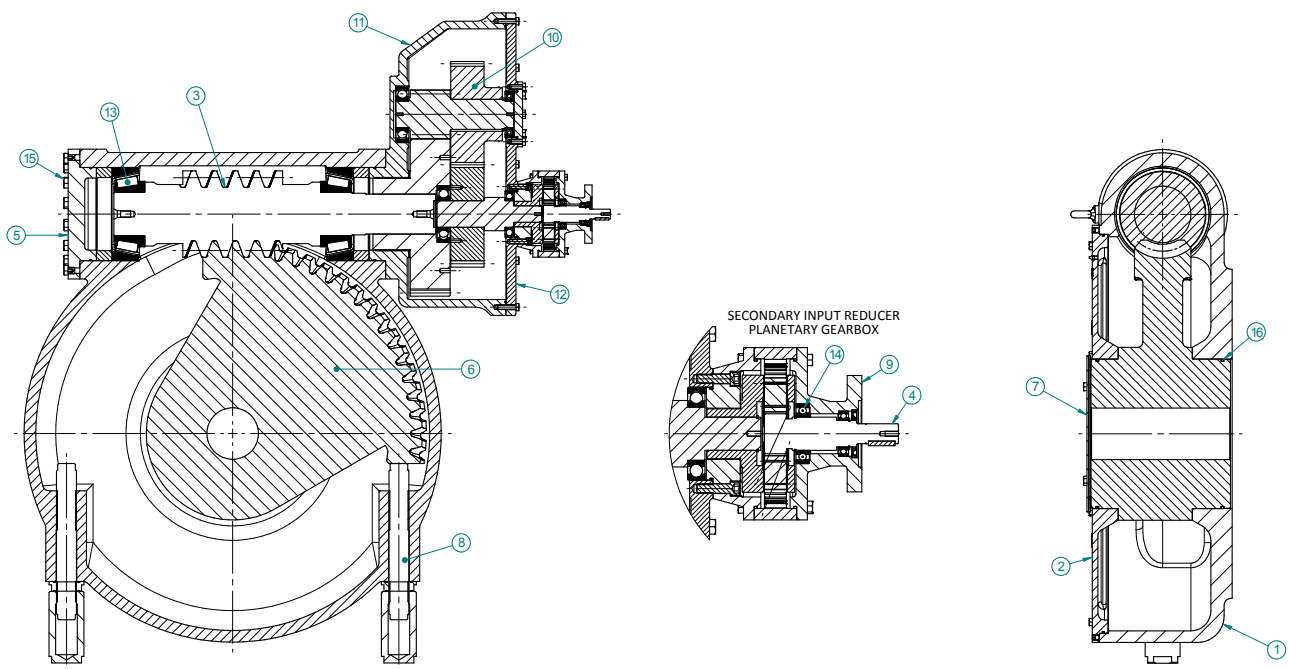
- IP68 enclosure (1.1 meters for 40 minutes)
- High and low temperature
- Padlockable kits
- Limit switches
- All types of environments
- Flexible extensions
- Stainless steel fasteners

IW Sizes 14 - 17 Quarter-turn Worm Gearboxes

Material Specification

No.	Component	Material	UK Standard	USA Standard	DIN Standard	ISO / EN Standard
1	Body	SG Iron	BS1563 EN-GJS-400-15	ASTM A536 65-45-12	GGG40	ISO 1083 JS 400-15
2	Cover Plate	SG Iron	BS1563 EN-GJS-400-15	ASTM A536 65-45-12	GGG40	ISO 1083 JS 400-15
3	Worm Shaft	Alloy Steel	BS970 815M17	AISI 4317	17CrNiMo6	EN10084 17NiCrMo6-4
4	Input Shaft	Alloy Steel	BS970 605M36T	AISI 9840	1.651	39NiCrMo3 (1.6510)
		Carbon Steel	BS970 080M46	AISI 1045	C45	ISO 683 C45 E4
5	End Cap	SG Iron	BS1563 EN-GJS-400-15	ASTM A536 65-45-12	GGG40	ISO 1083 JS 400-15
			BS1563 EN-GJS-500-7	ASTM A536 70-50-05	GGG50	ISO 1083 JS 500-7
6	Quadrant	SG Iron	BS1563 EN-GJS-600-3	ASTM A536 80-60-03	GGG60	ISO 1083 JS 600-3
7	Position Indicator	Mild Steel	BS4360 43A(B)	ASTM A529	ST44-2	EN 1.0044 S275JR
8	Stop Bolts	Carbon Steel	BS970 080M46	AISI 1045	C45	ISO 683 C45 E4
9	Input Flange	Carbon Steel	BS970 080M46	AISI 1045	C45	ISO 683 C45 E4
		SG Iron	BS1563 EN-GJS-450-10	ASTM A536 65-45-12	GGG40	ISO 1083 JS 450-10
			BS1563 EN-GJS-400-15	ASTM A536 65-45-12	GGG40	ISO 1083 JS 400-15
10	Reducer Gearing	Carbon Steel	BS970 080M46	AISI 1045	C45	ISO 683 C45 E4
		Alloy Steel	BS970 605M36T	AISI 9840	1.651	39NiCrMo3 (1.6510)
11	Reducer Gearcase	SG Iron	BS1563 EN-GJS-400-15	ASTM A536 65-45-12	GGG40	ISO 1083 JS 400-15
12	Reducer Cover	SG Iron	BS1563 EN-GJS-400-15	ASTM A536 65-45-12	GGG40	ISO 1083 JS 400-15
13	Tapered Roller Bearings	-	-	-	-	-
14	Radial Ball Bearings	-	-	-	-	-
15	Fasteners	Protected Steel				
16	Seals	Nitrile Rubber	-	-	-	-
17	Grease	Renolit CLX2	-	-	-	-

Gearbox IW Series Sizes 14 - 17



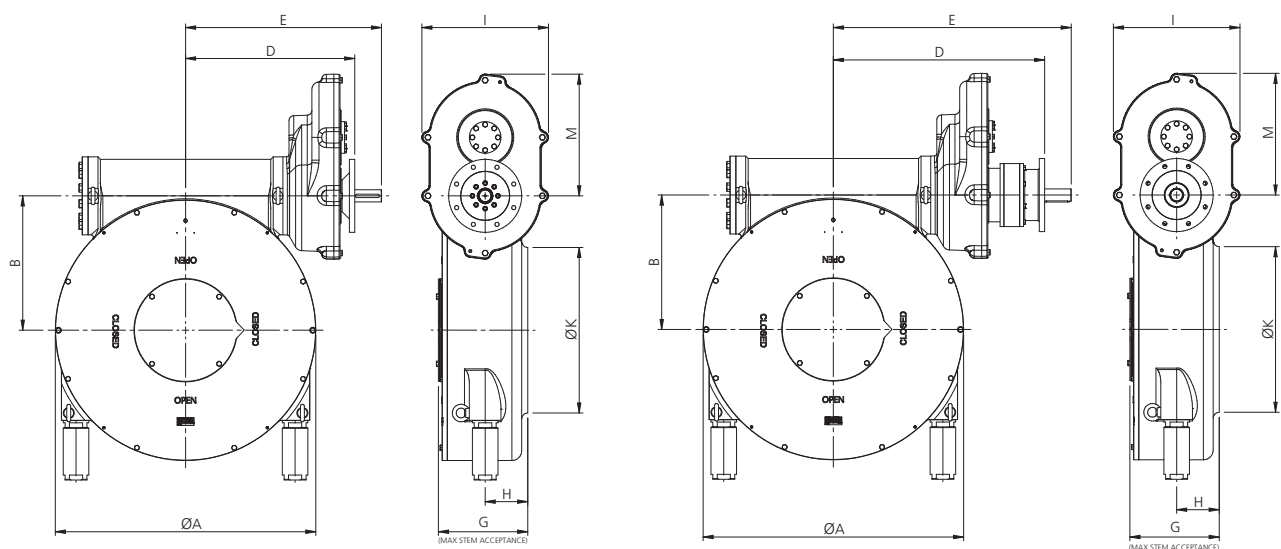
Standard Input/Output Options

Gearbox Model	Ratio :1	Input Mounting Details					Output Mounting Details					
		Shaft Diameter					Min Bore Rectangle key BS 4235	Max Bore Rectangle key BS 4235	Min Square Bore A/F	Max Square Bore A/F	ISO Flange Standard Baseplate	Max Thread Depth
		F10 / FA10	F14 / FA14	F16 / FA16	F25 / FA25	F30 / FA30						
IW14	320 to 1280	-	1.181	1.575	1.969	-	5.709	13.780	5.118	9.724	F/FA 48 - 60	2.126
IW14 R1	2400 to 9600	0.787	1.181	1.575	-	-						
IW14 R2	1536 to 6144	0.787	1.181	1.575	-	-						
IW14 R3	1600 to 6400	-	1.181	1.575	1.969	-						
IW15	272 to 1088	-	1.181	1.575	1.969	-	6.102	13.780	5.118	9.724	F/FA 48 - 60	2.126
IW15 R1	2040 to 8160	0.787	1.181	1.575	-	-						
IW15 R2	1306 to 5222	0.787	1.181	1.575	-	-						
IW15 R3	1360 to 5440	-	1.181	1.575	1.969	-						
IW16	248 to 992	-	-	-	1.969	2.362	7.283	14.961	6.299	10.551	F/FA60 or Larger	2.126 (F/FA60), 2.047 (F/FA80)
IW16 R1	1860 to 7440	0.787	1.181	1.575	-	-						
IW16 R2	1190 to 4762	0.787	1.181	1.575	-	-						
IW16 R3	1240 to 4960	-	1.181	1.575	1.969	-						
IW17	220 to 880	-	-	-	1.969	2.362	7.283	14.961	6.299	10.551	F/FA60 or Larger	2.126 (F/FA60), 2.047 (F/FA80)
IW17 R1	1650 to 6600	0.787	1.181	1.575	-	-						
IW17 R2	1056 to 4224	0.787	1.181	1.575	-	-						
IW17 R3	1100 to 4400	-	1.181	1.575	1.969	-						

Manual Input Options are also available

*All dimensions are in inches

Dimensional Drawings



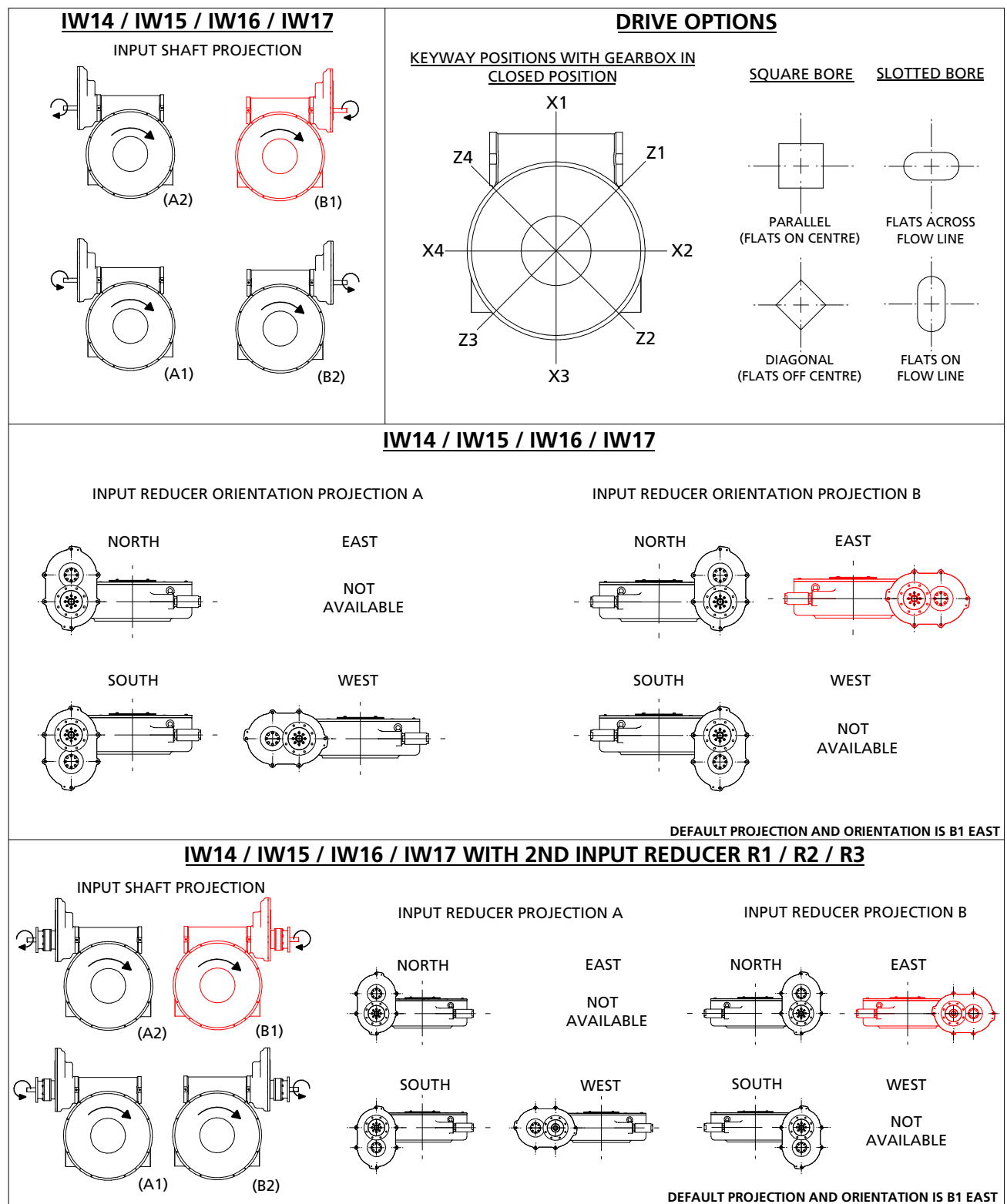
IW Sizes 14 - 17 Quarter-turn Worm Gearboxes

Dimension Table

Gearbox Model	Ratio :1	ØA	B	Input										G	H	I	ØK	M	Weight (lbs)
				F10 / FA10		F14 / FA14		F16 / FA16		F25 / FA25		F30 / FA30							
				D	E	D	E	D	E	D	E	D	E						
IW14	320, 480, 640, 809, 960, 1280	42.126	21.732	-	-	29.488	31.850	29.488	31.850	29.488	31.850	-	-	13.976	6.890	20.472	26.772	19.685	4233
	All other IW14 ratios			-	-	27.362	31.693	-	-										
IW14 R1	2400 to 9600			32.480	34.606	32.480	34.606	33.110	36.614	-	-	-	-						4277
IW14 R2	1536 to 6144			-	-	33.937	36.102	33.937	37.441	34.173	38.465	-	-						
IW14 R3	1600 to 6400			-	-	33.937	36.102	33.937	37.441	34.173	38.465	-	-						4299
IW15	272, 408, 544, 688, 816, 983, 1088	42.126	21.732	-	-	29.488	31.850	29.488	31.850	29.488	31.850	-	-	13.976	6.890	20.472	26.772	19.685	4233
	All other IW15 ratios			-	-	27.362	31.693	-	-										
IW15 R1	2040 to 8160			32.480	34.606	32.480	34.606	33.110	36.614	-	-	-	-						4277
IW15 R2	1306 to 5222			-	-	33.937	36.102	33.937	37.441	34.173	38.465	-	-						
IW15 R3	1360 to 5440			-	-	33.937	36.102	33.937	37.441	34.173	38.465	-	-						4299
IW16	248 to 992	49.409	25.984	-	-	-	-	-	-	36.811	41.102	39.449	44.291	16.732	8.228	24.016	29.528	23.819	6614
IW16 R1	1860 to 7440			42.559	44.685	42.559	44.685	43.228	46.693	-	-	-	-						7011
IW16 R2	1190 to 4762			-	-			42.559	46.063	42.756	47.047	-	-						
IW16 R3	1240 to 4960			-	-	-	-	42.559	46.063	42.756	47.047	-	-						7055
IW17	220 to 880	49.409	25.984	-	-	-	-	-	-	36.811	41.102	39.449	44.291	16.732	8.228	24.016	29.528	23.819	6614
IW17 R1	1650 to 6600			42.559	44.685	42.559	44.685	43.228	46.693	-	-	-	-						7011
IW17 R2	1056 to 4224			-	-			42.559	46.063	42.756	47.047	-	-						
IW17 R3	1100 to 4400			-	-	-	-	42.559	46.063	42.756	47.047	-	-						7055

*All dimensions are in inches

Drive and Orientation Options



A1 = Anticlockwise in, clockwise out A2 = Clockwise in, clockwise out B1= Clockwise in, clockwise out B2= Anticlockwise in, clockwise out

IW Sizes 14 - 17 Quarter-turn Worm Gearboxes

Sizing Chart - Ratios

Gearbox	Ratio :1																			Rated Output Torque	
																				7000 Cycles (lbf.ft)	1000 Cycles (lbf.ft)
IW14	320	342	366	391	418	448	480	515	553	594	640	691	747	809	880	960	1051	1157	1280	184,390	221,268
IW14 R1	2400	2566	2743	2933	3138	3360	3600	3861	4145	4457	4800	5179	5600	6071	6600	7200	7886	8677	9600	184,390	221,268
IW14 R2	1536	1642	1755	1877	2009	2150	2304	2471	2653	2853	3072	3315	3584	3885	4224	4608	5047	5553	6144	184,390	221,268
IW14 R3	1600	1710	1829	1956	2092	2240	2400	2574	2764	2971	3200	3453	3733	4047	4400	4800	5257	5785	6400	184,390	221,268
IW15	272	291	311	332	356	381	408	438	470	505	544	587	635	688	748	816	894	983	1088	221,268	265,522
IW15 R1	2040	2181	2331	2493	2668	2856	3060	3282	3524	3789	4080	4402	4760	5160	5610	6120	6703	7375	8160	221,268	265,522
IW15 R2	1306	1396	1492	1596	1707	1828	1958	2100	2255	2425	2611	2817	3046	3302	3590	3917	4290	4720	5222	221,268	265,522
IW15 R3	1360	1454	1554	1662	1778	1904	2040	2188	2349	2526	2720	2935	3173	3440	3740	4080	4469	4917	5440	221,268	265,522
IW16	248	265	283	303	324	347	372	399	428	461	496	535	579	627	682	744	815	897	992	368,780	442,536
IW16 R1	1860	1988	2126	2273	2432	2604	2790	2992	3213	3454	3720	4014	4340	4705	5115	5580	6111	6725	7440	368,780	442,536
IW16 R2	1190	1272	1360	1455	1557	1667	1786	1915	2056	2211	2381	2569	2778	3011	3274	3571	3911	4304	4762	368,780	442,536
IW16 R3	1240	1326	1417	1516	1622	1736	1860	1995	2142	2303	2480	2676	2893	3136	3410	3720	4074	4483	4960	368,780	442,536
IW17	220	235	251	269	288	308	330	354	380	409	440	475	513	556	605	660	723	795	880	553,170	626,926
IW17 R1	1650	1764	1886	2017	2158	2310	2475	2654	2850	3064	3300	3561	3850	4174	4538	4950	5421	5965	6600	553,170	626,926
IW17 R2	1056	1129	1207	1291	1381	1478	1584	1699	1824	1961	2112	2279	2464	2671	2904	3168	3470	3818	4224	553,170	626,926
IW17 R3	1100	1176	1257	1344	1438	1540	1650	1770	1900	2043	2200	2374	2567	2782	3025	3300	3614	3977	4400	553,170	626,926

Sizing Chart - Maximum Input Torques (7000 cycles)

Gearbox	Max. Input Torque (lbf.ft)																				Rated Output Torque (lbf.ft)
IW14	1726	1614	1510	1412	1320	1233	1150	1073	999	929	863	800	740	682	627	575	525	477	431	184,390	
IW14 R1	242	227	212	198	185	173	161	151	140	130	121	112	104	96	88	81	74	67	61	184,390	
IW14 R2	378	354	331	310	289	270	252	235	219	204	189	175	162	150	138	126	115	105	95	184,390	
IW14 R3	363	340	318	297	278	260	242	226	210	196	182	168	156	144	132	121	111	100	91	184,390	
IW15	2311	2162	2022	1891	1767	1651	1541	1437	1338	1244	1156	1071	991	914	840	770	703	639	578	221,268	
IW15 R1	324	303	284	265	248	232	216	202	188	175	162	150	139	128	118	108	99	90	81	221,268	
IW15 R2	507	474	443	415	388	362	338	315	293	273	253	235	217	200	184	169	154	140	127	221,268	
IW15 R3	486	455	426	398	372	347	324	302	282	262	243	225	208	192	177	162	148	135	122	221,268	
IW16	4119	3853	3604	3370	3150	2942	2746	2561	2385	2218	2060	1909	1765	1629	1498	1373	1254	1139	1030	368,780	
IW16 R1	578	541	506	473	442	413	385	359	335	311	289	268	248	229	210	193	176	160	145	368,780	
IW16 R2	903	845	790	739	691	645	602	561	523	486	452	419	387	357	328	301	275	250	226	368,780	
IW16 R3	867	811	759	709	663	619	578	539	502	467	434	402	372	343	315	289	264	240	217	368,780	
IW17	6795	6357	5946	5560	5196	4854	4530	4224	3934	3659	3398	3149	2912	2686	2471	2265	2068	1880	1699	553,170	
IW17 R1	949	888	831	777	726	678	633	590	550	511	475	440	407	375	345	316	289	263	237	553,170	
IW17 R2	1483	1387	1298	1214	1134	1059	989	922	859	799	742	687	636	586	539	494	451	410	371	553,170	
IW17 R3	1424	1332	1246	1165	1089	1017	949	885	824	767	712	660	610	563	518	475	433	394	356	553,170	

IW Sizes 14 - 17 Quarter-turn Worm Gearboxes

Sizing Chart - Maximum Input Torques (1000 cycles)

Gearbox	Max. Input Torque (lbf.ft)																				Rated Output Torque (lbf.ft)
IW14	2071	1937	1812	1694	1583	1479	1380	1287	1199	1115	1035	960	887	819	753	690	630	573	518	221,268	
IW14 R1	291	272	254	238	222	208	194	181	168	157	145	135	125	115	106	97	88	80	73	221,268	
IW14 R2	454	425	397	372	347	324	303	282	263	245	227	210	195	180	165	151	138	126	114	221,268	
IW14 R3	436	408	381	357	333	311	291	271	252	235	218	202	187	172	159	145	133	121	109	221,268	
IW15	2311	2162	2022	1891	1767	1651	1541	1437	1338	1244	1156	1071	991	914	840	770	703	639	578	265,522	
IW15 R1	389	364	341	318	298	278	259	242	225	210	195	180	167	154	142	130	118	108	97	265,522	
IW15 R2	608	569	532	498	465	434	405	378	352	327	304	282	261	240	221	203	185	168	152	265,522	
IW15 R3	584	546	511	478	446	417	389	363	338	314	292	271	250	231	212	195	178	161	146	265,522	
IW16	4943	4624	4325	4044	3780	3531	3295	3073	2862	2662	2471	2291	2118	1954	1797	1648	1504	1367	1236	442,536	
IW16 R1	694	649	607	568	530	495	462	431	402	373	347	321	297	274	252	231	211	192	173	442,536	
IW16 R2	1084	1014	948	887	829	774	723	674	627	584	542	502	464	428	394	361	330	300	271	442,536	
IW16 R3	1040	973	910	851	796	743	694	647	602	560	520	482	446	411	378	347	317	288	260	442,536	
IW17	7701	7204	6739	6301	5889	5501	5134	4787	4459	4147	3851	3569	3301	3045	2800	2567	2344	2130	1925	626,926	
IW17 R1	1076	1006	941	880	823	768	717	669	623	579	538	499	461	425	391	359	327	298	269	626,926	
IW17 R2	1681	1572	1471	1375	1285	1201	1121	1045	973	905	840	779	720	665	611	560	512	465	420	626,926	
IW17 R3	1614	1510	1412	1320	1234	1153	1076	1003	934	869	807	748	692	638	587	538	491	446	403	626,926	

Sizing Chart - Mechanical Advantages

Gearbox	Mechanical Advantage ±10%*																			
IW14	107	114	122	131	140	150	160	172	185	198	214	231	249	270	294	321	351	386	427	
IW14 R1	761	814	870	930	995	1066	1142	1225	1315	1414	1523	1643	1776	1926	2093	2284	2501	2752	3045	
IW14 R2	487	521	557	595	637	682	731	784	842	905	974	1051	1137	1232	1340	1462	1601	1761	1949	
IW14 R3	508	543	580	620	664	711	761	816	877	943	1015	1095	1184	1284	1396	1523	1667	1835	2030	
IW15	96	102	109	117	125	134	144	154	165	178	191	207	223	242	263	287	315	346	383	
IW15 R1	682	729	780	834	892	955	1023	1098	1178	1267	1365	1472	1592	1726	1876	2047	2242	2467	2729	
IW15 R2	437	467	499	534	571	611	655	702	754	811	873	942	1019	1104	1201	1310	1435	1579	1747	
IW15 R3	455	486	520	556	595	637	682	732	786	845	910	981	1061	1150	1251	1365	1494	1644	1819	
IW16	90	96	102	109	117	125	134	144	155	166	179	193	209	226	246	269	294	324	358	
IW16 R1	638	682	729	780	834	893	957	1026	1102	1185	1276	1377	1489	1614	1755	1914	2096	2307	2552	
IW16 R2	408	436	467	499	534	572	612	657	705	758	817	881	953	1033	1123	1225	1342	1476	1633	
IW16 R3	425	455	486	520	556	595	638	684	735	790	851	918	992	1076	1170	1276	1398	1538	1701	
IW17	81	87	93	99	106	114	122	131	141	151	163	176	190	206	224	244	267	294	326	
IW17 R1	583	623	666	712	762	816	874	937	1007	1082	1166	1258	1360	1474	1603	1748	1915	2107	2331	
IW17 R2	373	399	426	456	488	522	559	600	644	693	746	805	870	943	1026	1119	1225	1348	1492	
IW17 R3	389	415	444	475	508	544	583	625	671	722	777	838	907	983	1068	1166	1277	1405	1554	

* The Published M.A. is achieved after a few cycles.

IW Sizes 14-17

Quarter-turn worm gearboxes

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