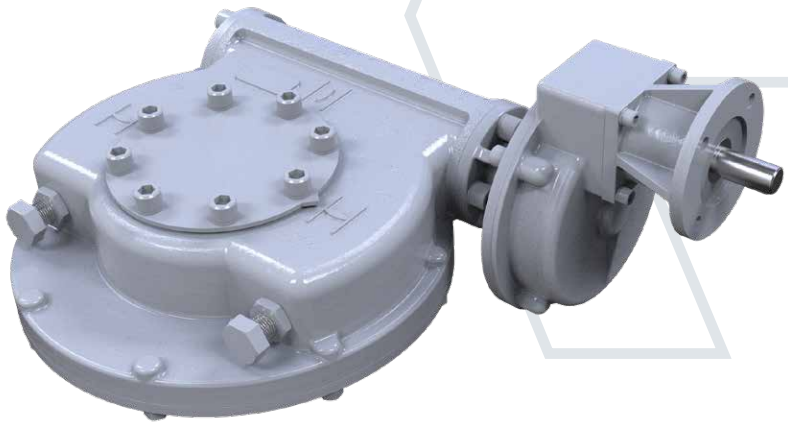
rotork®

Keeping the World Flowing
for Future Generations



IW Mk2

Quarter-Turn Worm Gearboxes

IW Mk2 quarter-turn worm gear operators have been designed to suit isolating duty motorised applications.

The gearboxes include low lead angle gearing designed to be inherently self-locking, and offer an increased torque output per size compared with the previous IW range. IW Mk2 gearboxes feature a removable output sleeve to facilitate bore and keyway machining, and an indexable baseplate to allow on-centre or off-centre mounting to the valve flange without special machining.

The standard operating temperature range is -40 to +120 °C (-40 to +250 °F), other temperature ranges are available on request. Gearbox input and output flanges are designed in accordance with ISO 5211. MSS SP-101 flanges are available as an alternative.

Application

Rotork IW Mk2 worm gear operators are quarter-turn devices intended for motorised operation of ball, plug and butterfly valves.

Features

- Totally enclosed gearing
- Grease filled for life and fully sealed to IP67 as standard
- Comprehensive gear ratios combined with a selection of auxiliary input spur gear reducers
- Angular contact bearings supporting worm shaft
- Removable and repositionable output sleeve
- Repositionable baseplate
- Adjustable mechanical stops (at 0° and 90° ±5°)
- Inherently self-locking gear componentry

Environmental Specification

- IP67 as standard:
  Suitable for submerged duty to a depth of 1 metre (3 feet) for 30 minutes
- Temperature as standard:
  -40 to +120 °C (-40 to +250 °F)

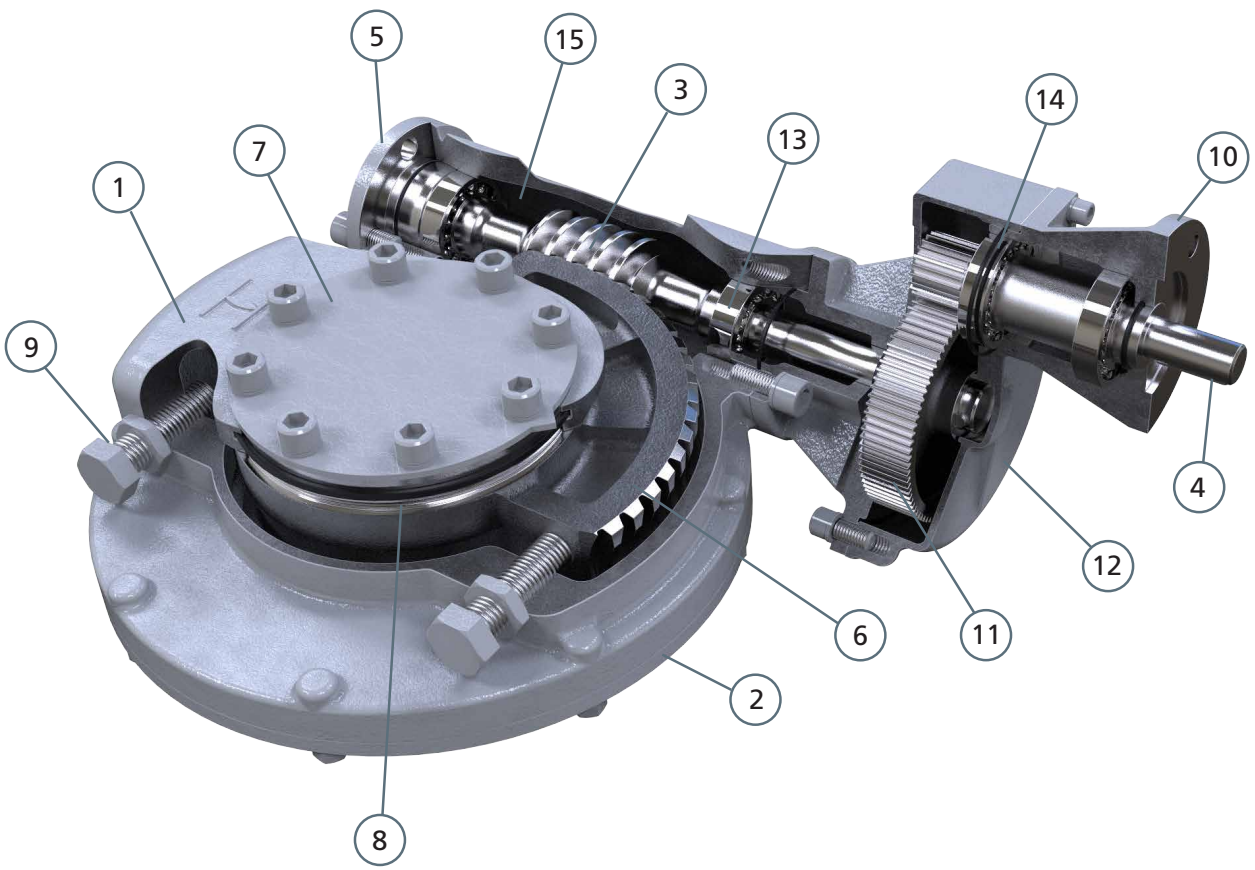
Options

- Flexible input extensions
- IP68: 15 metres (49 feet) for 72 hours
- ATEX
- Buried, marinised, continuous submersible environments
- Stainless steel fasteners
- Low temperature option:
  -60 to +120 °C (-76 to +250 °F)
- High temperature option:
  -20 to +200 °C (-4 to +392 °F)

Material Specification

No.	Component	Material	UK Standard	USA Standard	DIN Standard	ISO Standard
1	Gearcase	SG Iron	BS1563 EN-GJS-450-10 BS1563 EN-GJS-400-15	ASTM A536 65-45-12	GGG40	ISO 1083 JS 450-10 ISO 1083 JS 400-15
2	Baseplate	SG Iron	BS1563 EN-GJS-450-10 BS1563 EN-GJS-400-15	ASTM A536 65-45-12	GGG40	ISO 1083 JS 450-10 ISO 1083 JS 400-15
		Cast Iron	BS1561 EN-GJL-250	ASTM A48 35B/40B	GG25	ISO 185 JL/250
3	Worm Shaft	Protected Steel	BS970 708M40	AISI/SAE 4140	42 CrMo 4	ISO 683 42 CrMo 4
4	Input Shaft	Steel	BS970 605M36T	AISI/SAE 5140	41 Cr 4	ISO 683 41 Cr 4
5	End Cap	Steel	BS970 070M20 BS970 080M46	AISI/SAE 1023 AISI/SAE 1045	C22 C45	ISO 683 C 20 ISO 683 C 45 E4
		Cast Iron	BS1561 EN-GJL-250	ASTM A48 35B/40B	GG25	ISO 185 JL/250
		SG Iron	BS 1563 EN-GJS-400-15 BS 1563 EN-GJS-450-10	ASTM A536 65-45-12	GGG40	ISO 1083 JS 400-15 ISO 1083 JS 450-10
6	Quadrant	SG Iron	BS1563 EN-GJS-700-2	ASTM A536 100-70-03	GGG70	ISO 1083 JS 700-2
7	Position Indicator	Steel	BS970 070M20	AISI/SAE 1023	C 22	ISO 683 C 20
8	Output Sleeve	Steel	BS970 070M20 BS970 080M40 BS970 070M55	AISI/SAE 1023 AISI/SAE 1040 AISI/SAE 1055	C 22 C 40 C 55	ISO 683 C 20 ISO 683 C 40 E4 ISO 683 C 55 E4
9	Fasteners	Protected Steel	BS3692			
10	Input Flange	SG Iron	BS1563 EN-GJS-450-10 BS1563 EN-GJS-400-15	ASTM A536 65-45-12	GGG40	ISO 1083 JS 450-10 ISO 1083 JS 400-15
11	Reducer Gearing	Steel	BS970 817M40T	AISI/SAE 4340	34 CrNiMo 6	ISO 683 36 CrNiMo 6
12	Reducer Gearcase	SG Iron	BS1563 EN-GJS-450-10 BS1563 EN-GJS-400-15	ASTM A536 65-45-12	GGG40	ISO 1083 JS 450-10 ISO 1083 JS 400-15
13	Bearings	Angular Contact Ball Bearings				
14	Seals	Nitrile Rubber				
15	Grease	Renolit CLX2				

Note: Because of the company's policy of continuous improvement, Rotork reserves the right to change specification details without prior notice.



Standard Input and Output Options

Gearbox	Ratio:1	Input Mounting Details Shaft Diameter (mm)					Output Mounting Details				
		F10 FA10	F14 FA14	F16 FA16	F25 FA25	F30 FA30	Max Bore Rectangle Key BS4235	Max Square Bore A/F	ISO Flange Standard Baseplate	Standard Baseplate Max Thread Depth (mm)	ISO Flange Large Baseplate
IW3 / IW36	48	17*	-	-	-	-	45	36	F/FA 10 - 12	18	F/FA 14 - 16
IW4 / IW46	46	20	20	-	-	-	64	51	F/FA 10 - 14	16	F/FA 16
	92 to 276	20	20	-	-	-					
IW5 / IW52 / IW56	48	20	25	-	-	-	76	62	F/FA 14 - 16	20	F/FA 25
	96 to 288	20	20	-	-	-					
IW6 / IW66	76	20	30	30	-	-	102	83.3	F/FA 16 - 25	20 (F16), 16 (F25)	F/FA 30
	152 to 456	20	20	-	-	-					
IW7 / IW72 / IW76	64	20	30	30	30	-	136	108.8	F/FA 25 - 30	24	F/FA 35
	130 to 768	20	30	30	-	-					
IW8 / IW82 / IW86	64	-	-	40	40	-	157	122.9	F/FA 25 - 40	24 (F25), 30 (F30), 36 (F35 and F40)	F/FA 48
	130 to 768	20	30	40	50	-					
IW9 / IW96	58	-	-	40	50	-	178	132.1	F/FA 30 - 40	30 (F30), 36 (F35 and F40)	
	175 to 696	20	30	40	50	-					
	971 to 2900	20	30	40	50	-					
IW10 / IW106	74	-	-	-	50	50	203	152.6	F/FA 35 - 48	30 (F30), 36 (F35 and F40)	F/FA 60
	222 to 3700	20	30	40	50	-					
IW11	73	-	-	-	50	50			F/FA 40 - 48	36	
	219 to 3650	20	30	40	50	-					
IW116	73	-	-	-	50	50					
	439 to 1093	20	30	40	50	-					
	1440 to 6560	20	30	30	-	-					
IW126	70	-	-	-	75	75	272	180	F/FA 40 - 60	38	—
	280 to 1120	-	30	40	50	-					
	1779 to 6720	20	30	30	-	-					
IW13	70	-	-	-	75	75					
	280 to 1120	-	30	40	50	-					
	1416 to 6720	20	30	30	-	-					

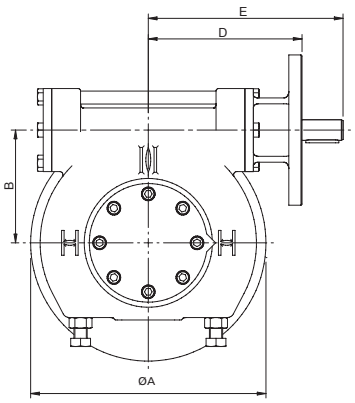
Note: Deeper thread depths are available on request using the Large Baseplate option.

Big Bore Input and Output Options

Gearbox	Ratio:1	Input Mounting Details Shaft Diameter (mm)					Output Mounting Details				
		F10 FA10	F14 FA14	F16 FA16	F25 FA25	F30 FA30	Max Bore Rectangle Key BS4235	Max Square Bore A/F	ISO Flange Standard Baseplate	Standard Baseplate Max Thread Depth (mm)	ISO Flange Large Baseplate
IW11BB	73	-	-	-	50	50	270	190	F/FA 40 - 48	36	F/FA 60
	219 to 3650	20	30	40	50	-					
IW116BB	73	-	-	-	50	50					
	439 to 1093	20	30	40	50	-					
	1440 to 6560	20	30	30	-	-					
IW126	70	-	-	-	75	75	305	229	F/FA 48-60	38	—
	280 to 1120	-	30	40	50	-					
	1779 to 6720	20	30	30	-	-					
IW13	70	-	-	-	75	75					
	280 to 1120	-	30	40	50	-					
	1416 to 6720	20	30	30	-	-					

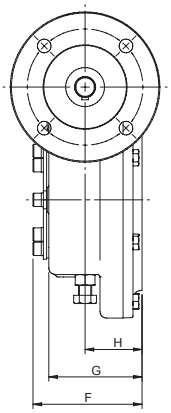
* 20 mm shaft adaptor available on request. Shaft tolerance -0.05 (-0.002")
Note: Deeper thread depths are available on request using the Large Baseplate option.

Dimensional Drawings

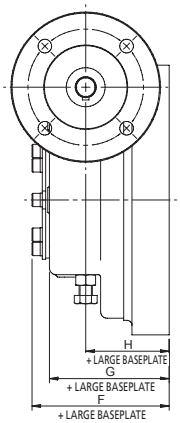


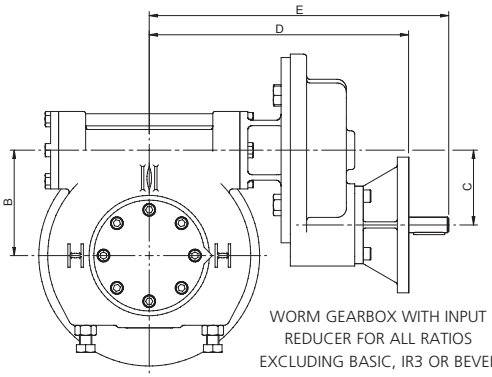
BASIC RATIOS: 46, 48, 58, 64,
70, 73, 74 & 76 :1

STANDARD BASEPLATE

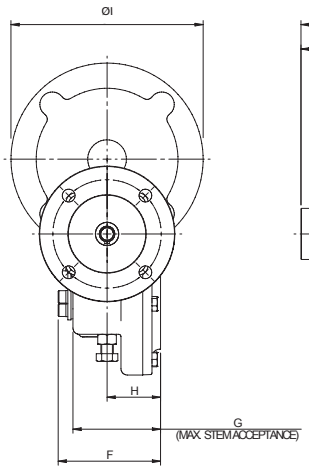


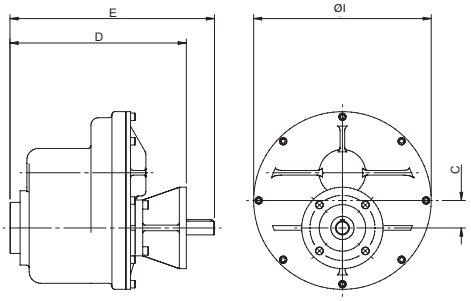
LARGE BASEPLATE



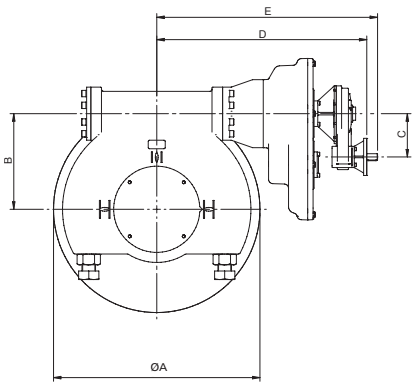


WORM GEARBOX WITH INPUT
REDUCER FOR ALL RATIOS
EXCLUDING BASIC, IR3 OR BEVEL

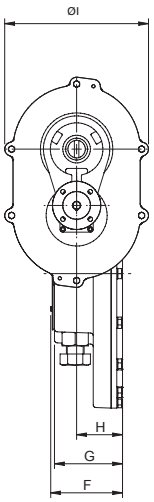




IR3, IR35 AND IR4 INPUT REDUCER FITTED TO:
IW9 971:1 TO 2900:1
IW10 222:1 TO 3700:1
IW11 219:1 TO 3650:1
IW116 439:1 TO 1093:1
IW126 & IW13 280:1 TO 1120:1



IW116, IW126 & IW13 WITH 2ND
SPUR AUXILIARY GEARBOX



Dimension Table

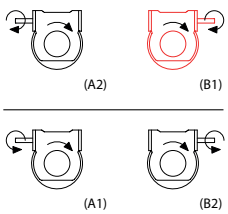
Gearbox	Ratio : 1	ØA	B	C	D	E	F	G	H	ØI	Large Baseplate Additional Thickness	Weight kg (lbs)
IW3 / IW36	48	172	76		118	158	91	74	49		22	11 (24)
IW4 / IW46	46	218	102		142	182	106	85	50		25	21 (46)
	92 - 184	218	102	64	269	320	106	85	50	190		33 (73)
	233 - 276	218	102	96	291	342	106	85	50	248		45 (99)
IW5 / IW52 / IW56	48	285	136		186	236	132	114	69		6	44 (97)
	96, 144, 192	285	136	64	313	364	132	114	69	190		55 (121)
	243, 288	285	136	96	335	386	132	114	69	248		68 (150)
IW6 / IW66	76	375	178		186 (196 for F/FA10)	236	139	113	70		–	68 (150)
	152 - 304	375	178	64	313	364	139	113	70	190		79 (174)
	385 - 456	375	178	96	342	393	139	113	70	248		90 (198)
IW7 / IW72 / IW76	64	450	210		270	329	171	140	86		31	129 (284)
	130 - 384	450	210	119	460	521	171	140	86	290		149 (328)
	505 - 768	450	210	179	469	530	171	140	86	408		181 (399)
IW8 / IW82 / IW86	64	520	246		306	365	192	160	99		38	186 (410)
	130 - 384	520	246	119	496	557	192	160	99	290		221 (487)
	505 - 768	520	246	179	505	566	192	160	99	408		247 (545)
IW9 / IW96	58	596	279		371	481	200	168	99		27	278 (613)
	175 - 696	596	279	179	568	631	200	168	99	408		335 (739)
	971 - 2,900	596	279	59	605	666	200	168	99	382		342 (754)
IW10 / IW106	74	735	343		397	507	216	180	110		32	392 (864)
	222 - 3,700	735	343	59	631	692	216	180	110	382		452 (996)
IW11 / IW11BB	73	795	381		414	524	247	200	120		–	485 (1,069)
	219 - 3,650	795	381	59	648	709	247	200	120	382		545 (1,202)
IW116 / IW116BB	73	795	381		414	524	247	200	120			485 (1,069)
	439 - 1,093	795	381	59	648	709	247	200	120	382		549 (1,210)
IW116 with 2nd spur auxiliary	1,440- 6,560	795	381	204	786	838	247	200	120	382		584 (1,287)
IW126 / IW13	70	972	450		460	610	260	251	166		–	898 (1,980)
	280 - 1,120	972	450	240	851	910	260	251	166	520		1,168 (2,575)
IW126 with 2nd spur auxiliary	1,779 - 6,720	972	450	204	989	1,039	260	251	166	520	–	1,203 (2,652)
IW13 with 2nd spur auxiliary	1,416 - 6,720	972	450	305	1,001	1,051	260	251	166	520	–	1,218 (2,685)

All dimensions in mm.

Customer Drive and Orientation Options

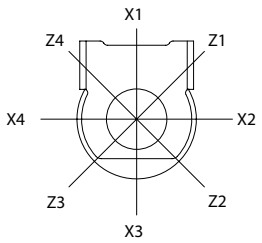
IW3 TO IW13 46:1 TO 76:1

INPUT SHAFT PROJECTION
WITHOUT INPUT REDUCER



DRIVE OPTIONS

KEYWAY POSITIONS WITH GEARBOX IN CLOSED POSITION



SQUARE BORE



PARALLEL
(FLATS ON CENTRE)

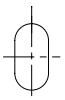


DIAGONAL
(FLATS OFF CENTRE)

SLOTTED BORE



FLATS ACROSS
FLOW LINE

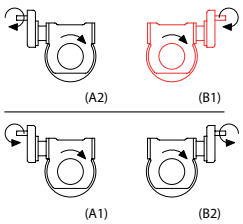


FLATS ON
FLOW LINE

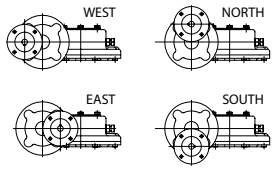
IW4 TO IW9 UP TO 696:1

IW126 & IW13 RATIOS 280:1 TO 1120:1

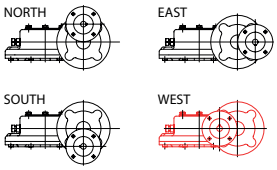
INPUT SHAFT PROJECTION



INPUT REDUCER ORIENTATION POS. A



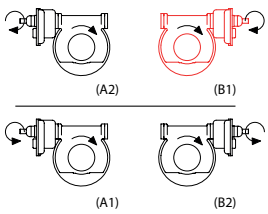
INPUT REDUCER ORIENTATION POS. B



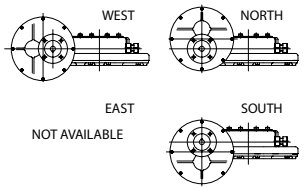
IW9 971:1 TO 2900:1
IW10 & IW11 219:1 TO 3700:1

IW116 439:1 TO 1093:1

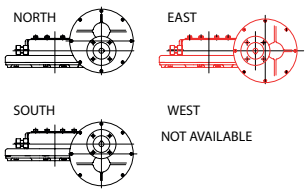
INPUT SHAFT PROJECTION



IR3 INPUT REDUCER ORIENTATION POS.A

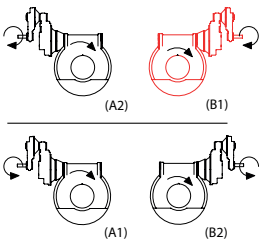


IR3 INPUT REDUCER ORIENTATION POS. B



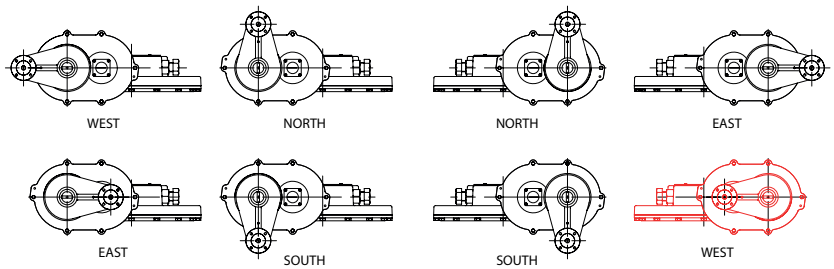
IW116*, IW126 & IW13 WITH 2ND SPUR AUXILIARY GEARBOX

INPUT SHAFT PROJECTION



2ND AUXILIARY GEARBOX ORIENTATION POS.A
WITH 1ST AUXILIARY SHOWN IN EAST
DEFAULT ORIENTATION EAST/EAST

2ND AUXILIARY GEARBOX ORIENTATION POS.B
WITH 1ST AUXILIARY SHOWN IN WEST
DEFAULT ORIENTATION WEST/WEST



*IW116 1ST AUXILIARY SPUR CANNOT BE MOUNTED EAST FOR POSITION A OR MOUNTED WEST FOR POSITION B, DEFAULT ORIENTATION POS.B EAST/WEST.

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

Sizing Chart

Gearbox	Ratio :1											Rated Output Torque Nm	Maximum Input Torque Nm										Average Static MA* ±10%										
IW3	48											1,085	73										15										
IW36	48											1,500	101										15										
IW4	46											2,440	153										16										
	92	138	184	233	276								81	54	40	32	27						30	45	61	77	91						
IW46	46											2,900	182										16										
	92	138	184	233	276								96	64	48	38	32						30	45	61	77	91						
IW5	48											4,447	278										16										
	96	144	192	243	288								146	97	73	58	49						30	46	61	77	91						
IW52	48											6,670	417										16										
	96	144	192	243	288								219	146	110	87	73						30	46	61	77	91						
IW56	48											8,000	500										16										
	96	144	192	243	288								263	175	132	104	88						30	46	61	77	91						
IW6	76											9,924	390										25										
	152	228	304	385	456								205	137	103	81	68						48	72	97	122	145						
IW66	76											12,000	472										25										
	152	228	304	385	456								248	166	124	98	83						48	72	97	122	145						
IW7	64											15,253	724										21										
	130	192	262	384	505	572	768						376	254	186	127	97	85	64				41	60	82	120	158	179	240				
IW72	64											20,000	950										21										
	130	192	262	384	505	572	768						493	333	244	167	127	112	83				41	60	82	120	158	179	240				
IW76	64											26,000	1,234										21										
	130	192	262	384	505	572	768						641	433	318	217	165	145	108				41	60	82	120	158	179	240				
IW8	64											32,000	1,566										20										
	130	192	262	384	505	572	768						813	549	403	275	209	184	137				39	58	79	117	153	174	233				
IW82	64											37,000	1,810										20										
	130	192	262	384	505	572	768						940	635	466	318	241	213	159				39	58	79	117	153	174	233				
IW86	64											44,500	2,177										20										
	130	192	262	384	505	572	768						1,131	764	560	382	290	256	191				39	58	79	117	153	174	233				
IW9	58											52,171	2,471										21										
	175	230	350	458	519	696							863	657	432	330	292	217					60	79	121	158	179	240					
	971	1,044	1,424	2,088	2,436	2,900							164	153	112	76	65	55					318	342	466	684	798	950					
IW96	58											63,500	3,008										21										
	175	230	350	458	519	696							1,050	800	526	402	355	265					60	79	121	158	179	240					
	971	1,044	1,424	2,088	2,436	2,900							200	186	136	93	80	67					318	342	466	684	798	950					
IW10	74											70,000	2,691										26										
	222	303	444	666	908	1,238	1,332	1,816	2,664	3,108	3,700		997	731	498	332	244	179	166	122	83	71	60	70	96	140	211	287	392	421	575	843	983	1,170
IW106	74											100,000	3,845										26										
	222	303	444	666	908	1,238	1,332	1,816	2,664	3,108	3,700		1,424	1,044	712	475	348	255	237	174	119	102	85	70	96	140	211	287	392	421	575	843	983	1,170
IW11	73											108,464	4,156										26										
	219	299	438	657	896	1,222	1,314	1,792	2,628	3,066	3,650		1,539	1,129	770	513	376	276	257	188	128	110	92	70	96	141	211	288	393	423	577	846	987	1,174
IW116	73											141,000	5,403										26										
	439	595	680	785	919	1,093							998	737	644	558	477	401					141	191	219	253	296	352					
	1,440	1,663	1,946	2,315	2,788	3,220	3,767	4,483	5,513	6,560			320	277	237	199	165	143	122	103	84	70		440	508	595	708	852	984	1,152	1,370	1,685	2,005	
IW126	70											180,000	6,561										27										
	280	420	560	708	840	1,120							1,822	1,215	911	720	607	456					99	148	198	250	296	395					
	1,779	2,372	3,360	4,592	5,040	6,720							302	226	160	117	107	80					596	795	1,126	1,539	1,689	2,252					
IW13	70											203,000	7,399										27										
	280	420	560	708	840	1,120							2,055	1,370	1,028	813	685	514					99	148	198	250	296	395					
	1,416	1,680	2,240	2,833	3,360	4,480	5,666	6,720					428	361	270	214	180	135	107	90				475	563	751	949	1,126	1,501	1,899	2,252			

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

IW Mk2

Quarter-Turn
Worm Gearboxes

A full listing of the Rotork sales and service network is available on our website.

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