



Keeping the World Flowing
for Future Generations

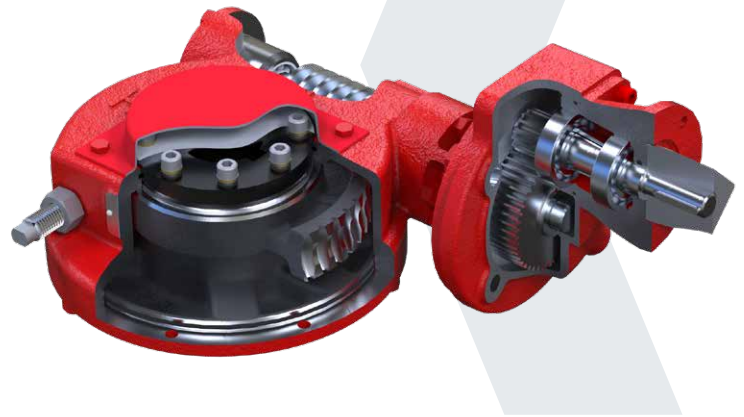
IW Range AWWA

C504 and C517 Quarter-Turn Worm Gear Operator

The IW AWWA worm gear operators are suitable for manual actuation of AWWA C504 butterfly and C517 plug valves.

The range has been designed and comprehensively tested to meet or exceed all aspects of the AWWA C504 and C517 specifications, and are manufactured from high quality and reliable materials.

The range includes a gear design for inherent self-locking capability. Test reports are available upon request. All Rotork actuators are made to ISO 9001 standards.



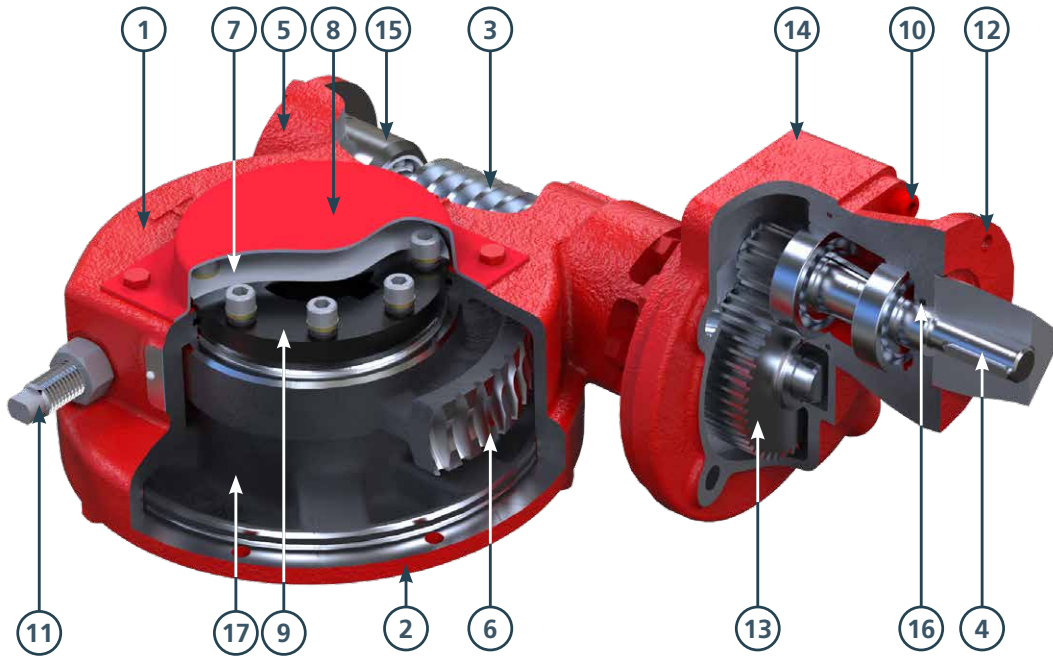
Features

- 90% grease filled for life and fully sealed
- Comprehensive gear ratios combined with a selection of input gear reducers
- Angular contact bearings supporting the worm shaft
- Removable and repositionable drive sleeve
- Self-lubricated drive sleeve
- -40 to 250 °F standard temperature range
- Adjustable travel stops +/- 5 degrees
- Maximum rated output torque - 1.45 million lbf.in
- Maximum stem acceptance diameter - 12" bored with ANSI B17.1 square key
- Above or buried service
- IP68 (15 m for 72 hours)

Options

- Stem extensions
- Padlock kit
- NAMUR and Westlock position indicator mounting kit
- High temperature to +392 °F
- Low temperature to -76 °F
- 2" square nut
- 450 lbf.ft service
- Mitre box (IB2 for FA10 mounting or IB4 for FA14 mounting) available for buried service applications

Material Specification



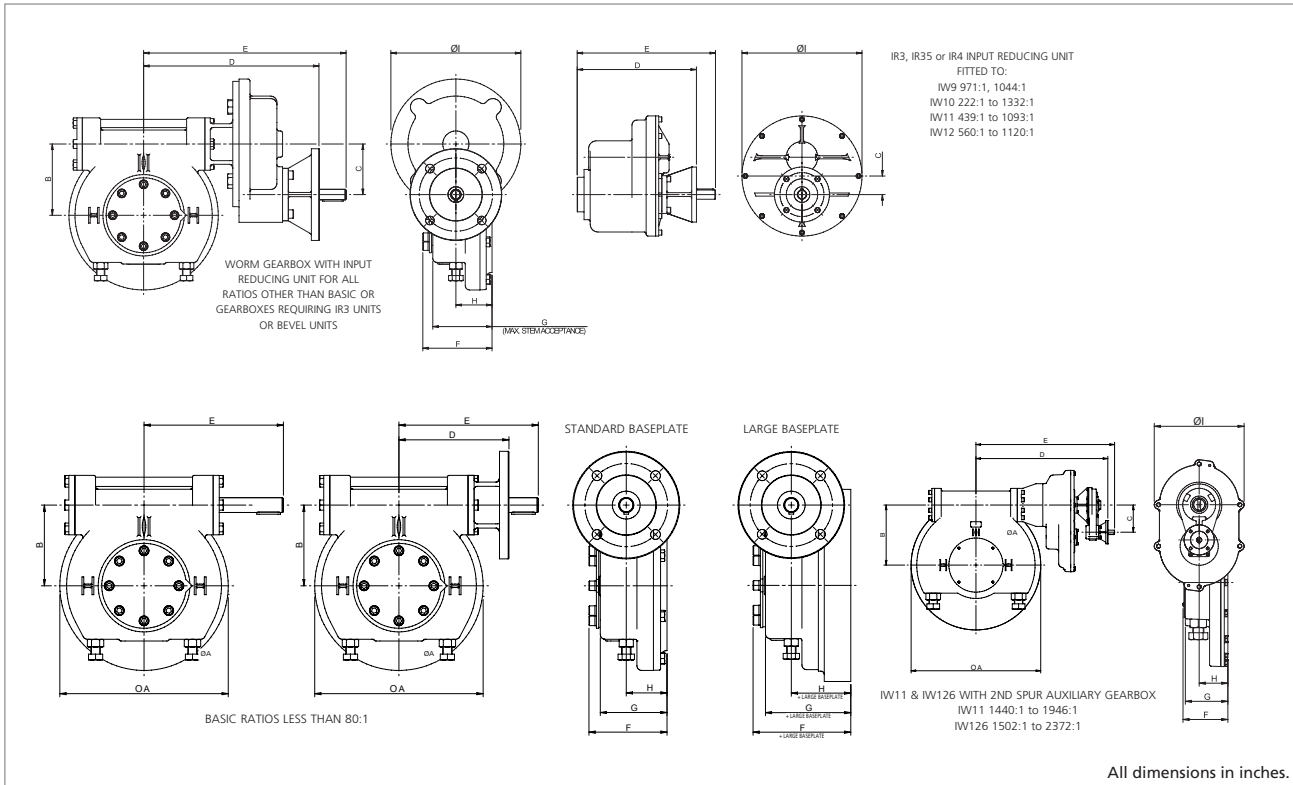
Item	Component	Material	Specification
1	Gearcase	SG Iron	ASTM A536 65-45-12
2	Baseplate	SG Iron	ASTM A536 65-45-12
3	Wormshaft	Protected Steel	ASTM A29 4140
4	Input Shaft	Steel	AISI/SAE 5140
		Stainless Steel	ASTM A276 316 ASTM A276 431
5	End Cap	Steel	AISI/SAE 1023
		SG Iron	ASTM A536 65-45-12
		Cast Iron	ASTM A48 35B/40B
6	Quadrant	SG Iron	ASTM A536 100-70-03
		Maganese Bronze	ASTM B584 UNS C86300
7	Poistion Indicator	Steel	AISI/SAE 1023
8	Buried Cover	Steel	AISI/SAE 1023
9	Output Sleeve	Steel with Self-lubricating Treatment	AISI 1040
			AISI 1055
10 & 11	Fasteners and Stop Bolts	Protected Steel	ASTM F568 Grade 8.8
			ASTM F568 Grade 12.9
		Stainless Steel	ASTM A276 316 AISI/SAE 630
12	Input Flange	SG Iron	ASTM A536 65-45-12
13	Reducer Gearing	Steel	AISI/SAE 4340
14	Reducer Gearcase	SG Iron	ASTM A536 65-45-12
15	Bearings	-	Angular Contact
16	Seals	Nitrile Rubber	-
17	Grease	Renolit CLX2	-

Mounting Options

Gearbox	Max Bore ANSI B17.1 Key		Max Square Bore A/F	Standard Baseplate Options	Max Thread Depth Standard Baseplate**	Large Baseplate Options
	Square Key	Rectangular Key				
IW5 / IW55	2.75	3	2.375	FA 14 - 16	0.79	FA25
IW6	3.75	3.875	3.25	FA 16 - 25	0.79(FA16), 0.63(FA25)	FA 30 - 35
IW7	4.875	5.25	4.25	FA 25 - 30	0.94	FA35
IW8	5.625	6	4.75	FA 25 - 40	0.94(FA25), 1.18(FA30), 1.42(FA35/40)	FA48
IW9	6.5	6.5	5.125	FA 30 - 40	1.18(FA30), 1.42(FA35/40)	FA48
IW10	7.375	7.625	6	FA 35 - 48	1.42	FA60
IW11	9.375	10.125	7.5	FA 40 - 48	1.42	FA60
IW126 (10" base)	9.5	10.25	7	FA 40 - 60	1.50	-
IW126 (12" base)	11.75	12.75	9	FA 48 - 60	1.50	-

All dimensions in inches. ** Deeper thread depths are available on request with the large baseplate options.

Dimension Data



Gearbox	Ratio :1	ØA	B	C	D	E	F	G	H	ØI	Large Baseplate Additional Thickness	Weight (lbs)
IW5	48	11.22	5.35	-	7.32	9.29	5.28	4.49	2.72	-	0.24	97
IW5 / IW55	96 - 144	11.22	5.35	2.52	12.32	14.33	5.28	4.49	2.72	7.48		121
IW6	76	14.76	7.01	-	7.32 (7.72 for FA10)	9.29	5.47	4.45	2.76	-	0(FA30), 2.17(FA35)	150
	152 - 228	14.76	7.01	2.52	12.32	14.33	5.47	4.45	2.76	7.48		174
IW7	64	17.72	8.27	-	10.63	12.95	6.69	5.51	3.39	-	1.22	284
	130 - 384	17.72	8.27	4.69	18.11	20.51	6.69	5.51	3.39	11.42		328
IW8	64	20.47	9.69	-	12.05	14.37	7.56	6.30	3.90	-	1.50	410
	130 - 384	20.47	9.69	4.69	19.57	21.93	7.56	6.30	3.90	11.42		487
	505 - 768	20.47	9.69	7.05	19.88	22.28	7.56	6.30	3.90	16.06		545
IW9	58	23.46	10.98	-	14.61	18.94	7.87	6.61	3.90	-	1.06	613
	175 - 696	23.46	10.98	7.05	22.36	24.84	7.87	6.61	3.90	16.06		739
	971 - 1044	23.46	10.98	2.32	23.82	26.22	7.87	6.61	3.90	15.04		754
IW10	74	28.94	13.50	-	15.63	19.96	8.50	7.09	4.33	-	1.26	864
	222 - 1332	28.94	13.50	2.32	24.84	27.24	8.50	7.09	4.33	15.04		996
IW11	73	31.30	15.00	-	16.30	20.63	9.72	7.87	4.72	-	-	1069
	439 - 1093	31.30	15.00	2.32	25.51	27.91	9.72	7.87	4.72	15.04	-	1210
IW126	1442 - 1948	31.30	15.00	8.03	30.94	32.95	9.72	7.87	4.72	15.04	-	1323
	70	38.27	17.72	-	18.11	24.02	10.24	9.88	6.54	-	-	1980
	280 - 1120	38.27	17.72	9.45	33.50	35.83	10.24	9.88	6.54	20.47	-	2575
	1502 - 2372	38.27	17.72	8.03	38.94	40.94	10.24	9.88	6.54	18.11	-	2690

Drive and Orientation Options

IW5 TO IW126 UP TO 70:1

INPUT SHAFT PROJECTION WITHOUT INPUT REDUCER

POSITION 'A' FIG.1	POSITION 'B' FIG.1
 FIG.2	 FIG.2

DRIVE OPTIONS

KEYWAY POSITIONS WITH GEARBOX IN CLOSED POSITION

<p><u>SQUARE BORE</u></p> PARALLEL (FLATS ON CENTRE) DIAGONAL (FLATS OFF CENTRE)	<p><u>SLOTTED BORE</u></p> FLATS ACROSS FLOW LINE FLATS ON FLOW LINE
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IW5 TO IW9 UP TO 696:1, IW126 RATIOS 560:1 TO 1120:1

POSITION 'A' FIG.1	POSITION 'B' FIG.1
 FIG.2	 FIG.2

<p><u>INPUT REDUCER ORIENTATION POS. A</u></p> <p>WEST NORTH </p> <p>EAST SOUTH </p>	<p><u>INPUT REDUCER ORIENTATION POS. B</u></p> <p>NORTH EAST </p> <p>SOUTH WEST </p>
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IW9 971:1 TO 1044:1, IW11 439:1 TO 1093:1

POSITION 'A' FIG.1	POSITION 'B' FIG.1
 FIG.2	 FIG.2

<p><u>INPUT REDUCER ORIENTATION POS. A</u></p> <p>WEST NORTH </p> <p>EAST SOUTH </p> <p>NOT AVAILABLE</p>	<p><u>INPUT REDUCER ORIENTATION POS. B</u></p> <p>NORTH EAST </p> <p>SOUTH WEST </p> <p>NOT AVAILABLE</p>
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IW11 1440:1 TO 1946:1 WITH 2ND SPUR AUXILIARY GEARBOX

POSITION 'A' FIG.1	POSITION 'B' FIG.1
 FIG.2	 FIG.2

<p><u>2ND AUXILIARY GEARBOX ORIENTATION POS. A WITH 1ST AUXILIARY SHOWN IN WEST</u></p> <p>WEST NORTH </p> <p>EAST SOUTH </p>	<p><u>2ND AUXILIARY GEARBOX ORIENTATION POS. B WITH 1ST AUXILIARY SHOWN IN EAST</u></p> <p>NORTH EAST </p> <p>SOUTH WEST </p>
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IW11 1ST AUXILIARY SPUR CANNOT BE MOUNTED EAST FOR POSITION A OR MOUNTED WEST FOR POSITION B.

IW126 1502:1 TO 2372:1 WITH 2ND SPUR AUXILIARY GEARBOX

POSITION 'A' FIG.1	POSITION 'B' FIG.1
 FIG.2	 FIG.2

<p><u>2ND AUXILIARY GEARBOX ORIENTATION POS. A WITH 1ST AUXILIARY SHOWN IN EAST</u></p> <p>WEST NORTH </p> <p>EAST SOUTH </p>	<p><u>2ND AUXILIARY GEARBOX ORIENTATION POS. B WITH 1ST AUXILIARY SHOWN IN WEST</u></p> <p>NORTH EAST </p> <p>SOUTH WEST </p>
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IW Range AWWA

300 lbf.ft sizing chart

Gearbox	Ratio:1							Rated Output Torque (lbf.ft)	Max Handwheel Output Torque (lbf.ft)								Average Static MA ±10% *								
IW5	48							3,762	2,520									16							
	96								3,762									30							
IW55	96	144						4,920	4,724	4,920							30	46							
IW6	76							8,895	3,937								25								
	152	228							7,559	8,504							48	72							
IW7	64							14,751	3,307								21								
	130	192	262	384					6,457	9,449	12,913	14,173					41	60	82	120					
IW8	64							25,077	3,150								20								
	130	192	262	384	505	572	768		6,142	9,134	12,441	18,425	24,094	25,077	25,077	39	58	79	117	153	174	233			
IW9	58							46,835	3,307								21								
	175	230	350	458	519	696			9,449	12,441	19,055	24,882	28,189	37,795		60	79	121	158	179	240				
IW10	74							55,738	4,094								26								
	222	303	444	666	908	1,238	1,332		11,024	15,118	22,047	33,228	45,197	51,444	49,724	70	96	140	211	287	392	421			
IW11	73							93,855	4,094								26								
	439	595	680	785	919	1,093			22,205	30,079	34,488	39,834	46,614	55,433		141	191	219	253	296	352				
IW126	1,440	1,663	1,946					120,960	69,291	80,000	93,701					440	508	595							
	70								4,252								27								
IW126	560	708	840	1,120				120,960	31,181	39,370	46,614	62,205				198	250	296	395						
	1,502	1,779	2,125	2,372					79,268	93,858	112,146	120,960				475	596	675	795						

Gearbox	Ratio:1							Rated Output Torque (lbf.ft)	Max Wrench Nut Output Torque (lbf.ft)								Average Static MA ±10% *							
IW5	48							3,762	2,396								16							
	96								3,762								30							
IW55	96	144						4,920	4,492	4,920						30	46							
IW6	76							8,895	3,743								25							
	152	228							7,187	8,895							48	72						
IW7	64							14,751	3,144								21							
	130	192	262	384					6,139	8,984	12,277	14,751					41	60	82	120				
IW8	64							25,077	2,995								20							
	130	192	262	384	505	572	768		5,839	8,684	11,828	17,518	22,908	25,077	25,077	39	58	79	117	153	174	233		
IW9	58							46,835	3,144								21							
	175	230	350	458	519	696			8,984	11,828	18,117	23,657	26,801	35,934		60	79	121	158	179	240			
IW10	74							55,738	4,094								26							
	222	303	444	666	908	1,238	1,332		10,481	14,374	20,962	31,592	42,971	55,738	55,738	70	96	140	211	287	392	421		
IW11	73							93,855	3,893								26							
	439	595	680	785	919	1,093			21,111	28,597	32,790	37,880	44,319	52,703		141	191	219	253	296	352			
IW126	1,440	1,663	1,946					120,960	65,879	76,060	89,086					440	508	595						
	70								4,043								27							
IW126	560	708	840	1,120				120,960	29,646	37,431	44,319	59,141				198	250	296	395					
	1,502	1,779	2,125	2,372					75,364	89,236	106,623	119,031				475	596	675	795					

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

450 lbf.ft sizing chart

Gearbox	Ratio:1						Rated Output Torque (lbf.ft)	Max Handwheel Output Torque (lbf.ft)						Average Static MA ±10% *					
IW5	48						3,762	2,520					16						
	96							3,762					30						
IW55	96	144					4,920	4,724	4,920				30	46					
	76							3,937					25						
IW6	152						8,895	7,559					48						
	64							3,307					21						
IW7	130	192	262				14,751	6,457	9,449	12,913			41	60	82				
	64							3,150					20						
IW8	130	192	262	384	505		25,077	6,142	9,134	12,441	18,425	24,094	39	58	79	117	153		
	58							3,307					21						
IW9	175	230	350	458	519	696	46,835	9,449	12,441	19,055	24,882	28,189	37,795	60	79	121	158	179	240
	74							4,094					26						
IW10	222	303	444	666	908		55,738	11,024	15,118	22,047	33,228	45,197	70	96	140	211	287		
	73							4,094					26						
IW11	439	595	680	785	919	1,093	93,855	22,205	30,079	34,488	39,834	46,614	55,433	141	191	219	253	296	352
	1,440	1,663						69,291	80,000				440	508					
IW126	70						120,960	4,252					27						
	560	708	840	1,120				31,181	39,370	46,614	62,205		198	250	296	395			
	1,502	1,779	2,125	2,372				79,268	93,858	112,146	120,960		475	596	675	795			

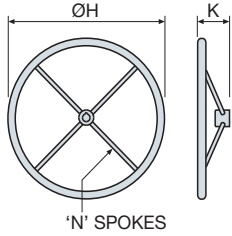
Gearbox	Ratio:1						Rated Output Torque (lbf.ft)	Max Wrench Nut Output Torque (lbf.ft)						Average Static MA ±10% *					
IW5	48						3,762	2,396					16						
	96							3,762					30						
IW55	96	144					4,920	4,492	4,920				30	46					
	76							3,743					25						
IW6	152						8,895	7,187					48						
	64							3,144					21						
IW7	130	192	262				14,751	6,139	8,984	12,277			41	60	82				
	64							2,995					20						
IW8	130	192	262	384	505		25,077	5,839	8,684	11,828	17,518	22,908	39	58	79	117	153		
	58							3,144					21						
IW9	175	230	350	458	519	696	46,835	8,984	11,828	18,117	23,657	26,801	35,934	60	79	121	158	179	240
	74							3,893					26						
IW10	222	303	444	666	908		55,738	10,481	14,374	20,962	31,592	42,971	70	96	140	211	287		
	73							3,893					26						
IW11	439	595	680	785	919	1,093	93,855	21,111	28,597	32,790	37,880	44,319	52,703	141	191	219	253	296	352
	1,440	1,663						65,879	76,060				440	508					
IW126	70						120,960	4,043					27						
	560	708	840	1,120				29,646	37,431	44,319	59,141		198	250	296	395			
	1,502	1,779	2,125	2,372				75,364	89,236	106,623	119,031		475	596	675	795			

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

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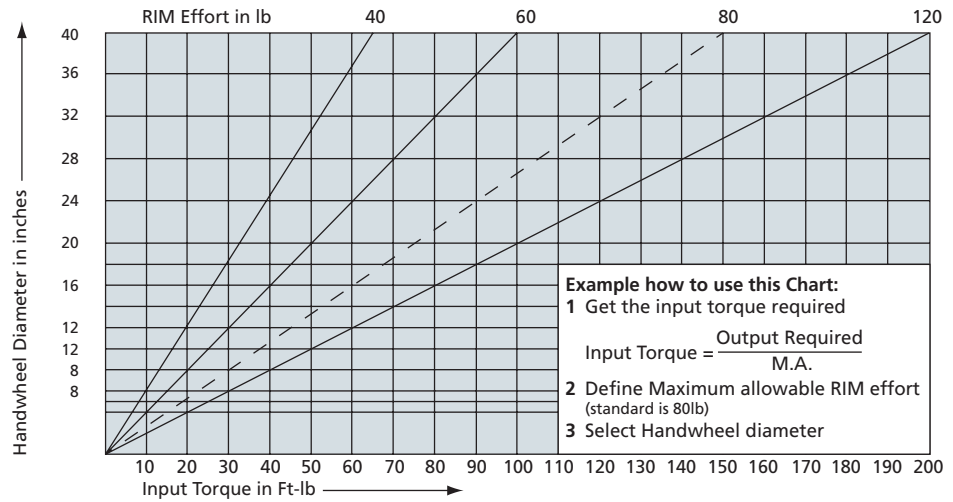
Handwheel Selection Chart



'F' Type handwheel

Dimensions

Type	ØH	K	N
F200	8	2.97	3
F300	12	3.96	3
F400	16	3.96	4
F500	20	3.96	4
F600	24	3.96	4
F700	28	3.96	6
F800	32	3.96	6
F900	36	3.96	6
F1000	40	3.96	6
F1100	44	3.96	6
F1200	48	3.96	8



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