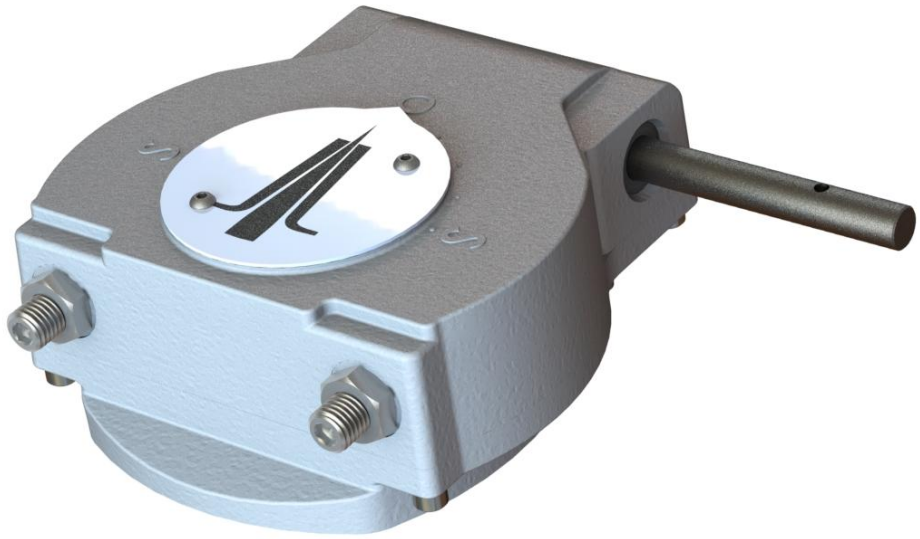
WedgeRock RC PRODUCT SHEET

700078 Rev-04

COMMERCIAL QUARTER-TURN GEAR SOLUTIONS



Features, Options & Configurability

- Self-Locking
- Mechanical stops for quarter turn rotation, ±5˚ adjustment at each stop
- 90% filled, Greased for life, no maintenance
- Designed and tested to IP68
- Input shaft projection Parallel or Perpendicular to output
- Available Certifications:
  - Buy America Compliant
  - AWWA Compliant
  - ATEX Compliant
- Input lockout
- Motorized and Manual input options
- Buried Service prep
- Risers and Adaptors
- Temperature range and materials configured per application
- Machined for direct mount
  - Standard Flanges to MSS SP101 & ISO 5211
  - Infinite Custom Bolt Pattern Options

PURPOSE ENGINEERED - QUALITY MANUFACTURED - PERFORMANCE TESTED

The information in this document is subject to change without notice. Updated documents can be requested or obtained from our website.

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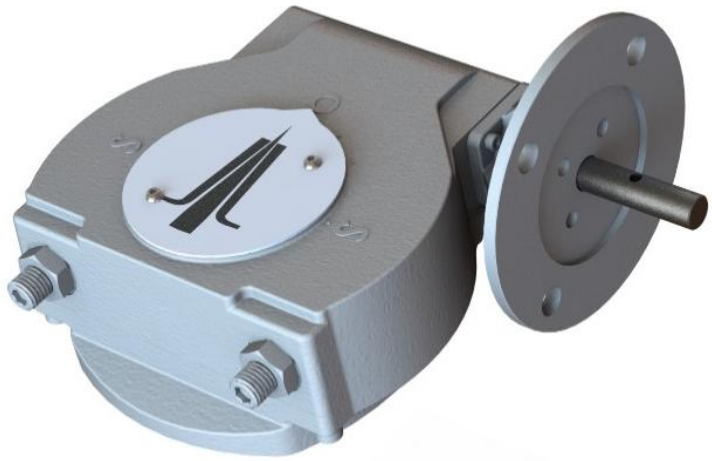
WedgeRock RC SERIES

GENERAL OVERVIEW



MANUAL AND MOTORIZED OPERATION

MODEL	TORQUE RATING			MAX BORE W/ SQUARE KEY PER ANSI B17.1	MAX BORE W/ RECTANGULAR KEY PER ANSI B17.1	MAX CIRCUMSCRIBED DIAMETER OF DRIVE FEATURE	MAX STEM ENGAGEMENT	STANDARD FLANGE	FLARED FLANGE
	MANUAL[1]	MOTORIZED[2]	AWWA[3]						
	IN-LBS (NM)	*IN-LBS (NM)*	*IN-LBS (NM)*	*IN (MM)*	*IN (MM)*	*IN (MM)*	*IN (MM)*	*MIN MAX*	*MAX*
RC 2.5	4,167 (471)	3,125 (353)	2,500 (283)	1.38 (34.9)	1.38 (34.9)	1.71 (43.4)	2.38 (60.3)	F07/FA07 F07/FA07	F10/FA10
RC 5	8,333 (942)	6,250 (706)	5,000 (565)	1.75 (44.5)	1.75 (44.5)	2.15 (54.6)	2.75 (69.9)	F08/FA08[4] F10/FA10	F14/FA14
RC 10	16,667 (1,883)	12,500 (1,413)	10,000 (1,130)	2.00 (50.8)	2.00 (50.8)	2.52 (63.9)	3.47 (88.1)	F10/FA10 F12/FA12	F16/FA16
RC 16	26,667 (3,013)	20,000 (2,260)	16,000 (1,808)	2.38 (60.3)	2.50 (63.5)	3.01 (76.5)	3.72 (94.5)	F12/FA12 F14/FA14	F20/FA19
RC 24	40,000 (4,520)	30,000 (3,390)	24,000 (2,712)	2.75 (69.9)	2.75 (69.9)	3.39 (86.2)	3.91 (99.3)	F14/FA14 F16/FA16	F20/FA19
RC 36	60,000 (6,780)	45,000 (5,085)	36,000 (4,068)	3.25 (82.6)	3.25 (82.6)	4.01 (101.9)	3.72 (94.5)	F16/FA16 F20/FA19	F25/FA25
RC 48	80,000 (9,040)	60,000 (6,780)	48,000 (5,424)	3.63 (92.1)	3.63 (92.1)	4.52 (114.8)	3.91 (99.3)	F16/FA16 F25/FA25	F30/FA30

1) Ratings for cycles per ISO/DIS 22109, On-Off for Manual Service

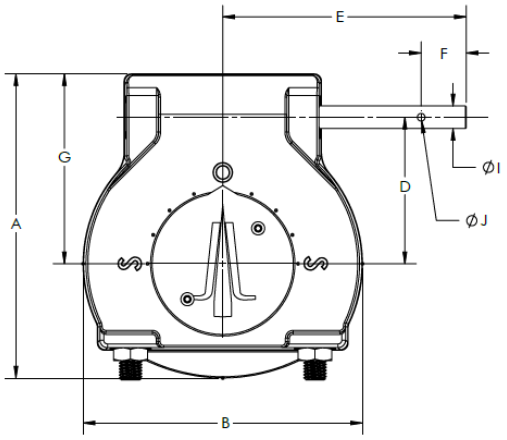
2) Ratings for cycles per ISO/DIS 22109, On-Off & Inching Automated Service

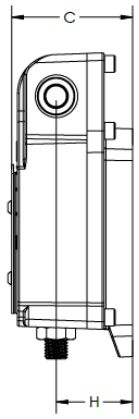
3) Ratings for cycles per AWWA C504-15 and C517-1; Models RC10 and above suitable for use with a 2" nut.

4) Spigot diameter does not fit on standard flange

WedgeRock RC

ENVELOPE DIMENSIONS



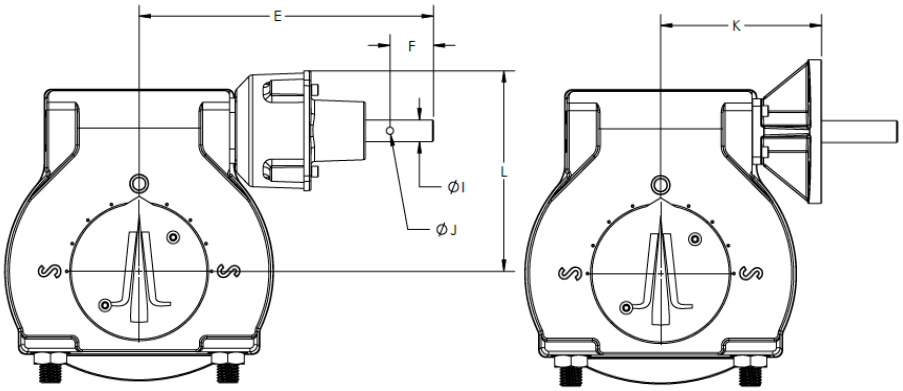


RC ENVELOPE DIMENSIONS AND WEIGHT

MODEL	A	B	C	D	E	F	G	H	I	J	K	L	WEIGHT
	IN (MM)	*IN (MM)*	*IN (MM)*	*IN (MM)*	*IN (MM)*	*IN (MM)*	*IN (MM)*	*IN (MM)*	*IN (MM)*	*IN (MM)*	*IN (MM)*	*IN (MM)*	LBS *(KG)*
RC2.5	5.3 *(136)*	4.3 *(110)*	2.5 *(63)*	2.1 *(53)*	5.4 *(138)*	1.5 *(38)*	3.0 *(77)*	1.4 *(35)*	0.44 *(11.2)*	0.13 *(3.3)*	*N/A*	*N/A*	9 *(4)*
RC5	6.2 *(156)*	5.1 *(129)*	2.9 *(75)*	2.6 *(65)*	6.0 *(152)*	1.5 *(38)*	4.1 *(105)*	1.6 *(41)*	0.56 *(14.2)*	0.19 *(4.8)*	*N/A*	*N/A*	12 *(5)*
RC10	7.6 *(194)*	5.8 *(146)*	3.6 *(92)*	3.3 *(84)*	5.6 *(143)*	1.5 *(38)*	4.6 *(118)*	2.1 *(54)*	0.75 *(19.1)*	0.25 *(6.4)*	5.0 *(127)*	*N/A*	26 *(12)*
RC10 + SPUR	7.6 *(194)*	5.8 *(146)*	3.6 *(92)*	3.3 *(84)*	9.69 *(246)*	1.5 *(38)*	4.6 *(118)*	2.1 *(54)*	0.75 *(19.1)*	0.25 *(6.4)*	*N/A*	5.4 *(137)*	34 *(16)*
RC16	8.8 *(224)*	7.2 *(182)*	3.9 *(99)*	3.9 *(98)*	6.4 *(162)*	1.5 *(38)*	5.2 *(132)*	2.3 *(58)*	0.75 *(19.1)*	0.25 *(6.4)*	5.3 *(134)*	*N/A*	39 *(18)*
RC16 + SPUR	8.8 *(224)*	7.2 *(182)*	3.9 *(99)*	3.9 *(98)*	9.93 *(252)*	1.5 *(38)*	5.2 *(132)*	2.3 *(58)*	0.75 *(19.1)*	0.25 *(6.4)*	*N/A*	5.9 *(151)*	47 *(21)*
RC24	11.2 *(283)*	9.6 *(244)*	4.1 *(104)*	4.9 *(124)*	8.1 *(206)*	1.5 *(38)*	6.4 *(161)*	2.4 *(62)*	0.75 *(19.1)*	0.25 *(6.4)*	5.5 *(140)*	*N/A*	56 *(25)*
RC24 + SPUR	11.2 *(283)*	9.6 *(244)*	4.1 *(104)*	4.9 *(124)*	10.17 *(258)*	1.5 *(38)*	6.4 *(161)*	2.4 *(62)*	0.75 *(19.1)*	0.25 *(6.4)*	*N/A*	6.9 *(176)*	64 *(29)*
RC36	12.3 *(311)*	14.6 *(370)*	4.1 *(104)*	7.0 *(178)*	10.0 *(253)*	1.5 *(38)*	8.3 *(212)*	2.4 *(62)*	0.75 *(19.1)*	0.25 *(6.4)*	6.3 *(161)*	*N/A*	90 *(41)*
RC36 + SPUR	12.3 *(311)*	14.6 *(370)*	4.1 *(104)*	7.0 *(178)*	11.0 *(280)*	1.5 *(38)*	8.3 *(212)*	2.4 *(62)*	0.75 *(19.1)*	0.25 *(6.4)*	*N/A*	9.1 *(230)*	98 *(45)*
RC48	14.4 *(365)*	12.6 *(320)*	4.5 *(115)*	6.7 *(169)*	11.7 *(298)*	1.5 *(38)*	8.7 *(220)*	3.4 *(86)*	0.75 *(19.1)*	0.25 *(6.4)*	7.0 *(179)*	*N/A*	103 *(47)*
RC48 + SPUR	14.4 *(365)*	12.6 *(320)*	4.5 *(115)*	6.7 *(169)*	11.7 *(298)*	1.5 *(38)*	8.7 *(220)*	3.4 *(86)*	0.75 *(19.1)*	0.25 *(6.4)*	*N/A*	8.7 *(222)*	111 *(50)*
RC48 + RP5	14.4 *(365)*	12.6 *(320)*	4.5 *(115)*	6.7 *(169)*	12.4 *(316)*	2.0 *(51)*	8.7 *(220)*	3.4 *(86)*	1.00 *(25.4)*	0.39 *(9.9)*	*N/A*	10.0 *(253.0)*	124 *(56)*

Dimensions represent most common configurations. Other dimensional configurations possible.

Weight may vary with final configuration.



RC FLAREBASE DIMENSIONS AND WEIGHT

MODEL	A	B	+ C + D	+ WEIGHT
	IN (MM)	*IN (MM)*	*IN (MM)*	*LBS (KG)*
RC2.5	5.6 *(142)*	4.92 *(125)*	*N/A*	0.80 *(0)*
RC5	7.0 *(179)*	6.89 *(175)*	*N/A*	3.70 *(2)*
RC10	8.9 *(226)*	8.38 *(213)*	0.1 *(3)*	14.70 *(7)*
RC16	9.7 *(245)*	8.75 *(222)*	0.4 *(10)*	10.00 *(5)*
RC24	11.4 *(289)*	10.18 *(259)*	*N/A*	16.30 *(7)*
RC36	14.9 *(378)*	12.94 *(329)*	0.03 *(1)*	21.10 *(10)*
RC48	15.3 *(389)*	13.50 *(343)*	*N/A*	15.30 *(7)*

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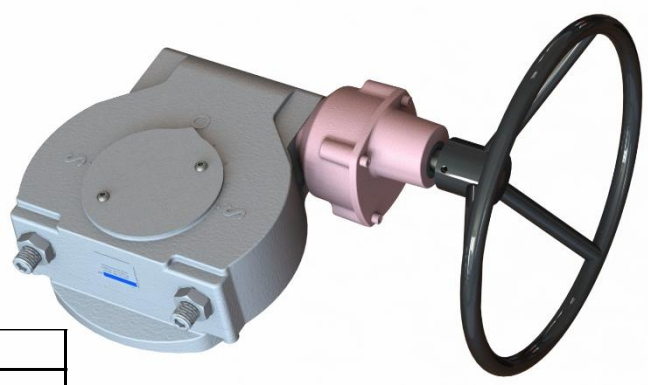
WedgeRock RP & SPUR SERIES

AUXILIARY GEAR ASSEMBLIES



REDUCTION GEARS FOR RC			
MODEL	INPUT SHAFT DIAMETER (KEY PER ANSI B17.1) *IN (MM)*	MIN STANDARD INPUT FLANGE	MAX STANDARD INPUT FLANGE
RC Spur	0.75 *(19.1)*	F/FA07	F/FA14
RP5	1.00 / 1.50 *(25.4 / 38.1)*	F/FA10	F/FA16

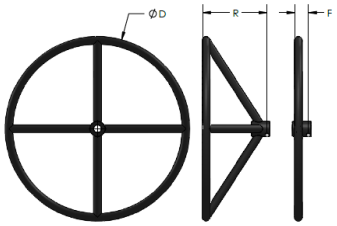
RC SPUR RATIOS		
RATIO	2.20	3.30
MECHANICAL ADVANTAGE**	2.0	3.0

COMMON RP RATIOS FOR ALL FRAME SIZES																	
RATIO* **[MOST COMMON]**	2.50	**[2.6]**	2.71	2.78	2.85	**[3.00]**	3.18	**[3.29]**	3.40	3.67	4.00	**[4.20]**	4.43	**[5.00]**	5.80	**[6.33]**	**[9.00]**
MECHANICAL ADVANTAGE** **[MOST COMMON]**	2.4	**[2.5]**	2.6	2.7	2.8	**[2.9]**	3.1	**[3.2]**	3.3	3.6	3.9	**[4.1]**	4.3	**[4.9]**	5.6	**[6.1]**	**[8.7]**

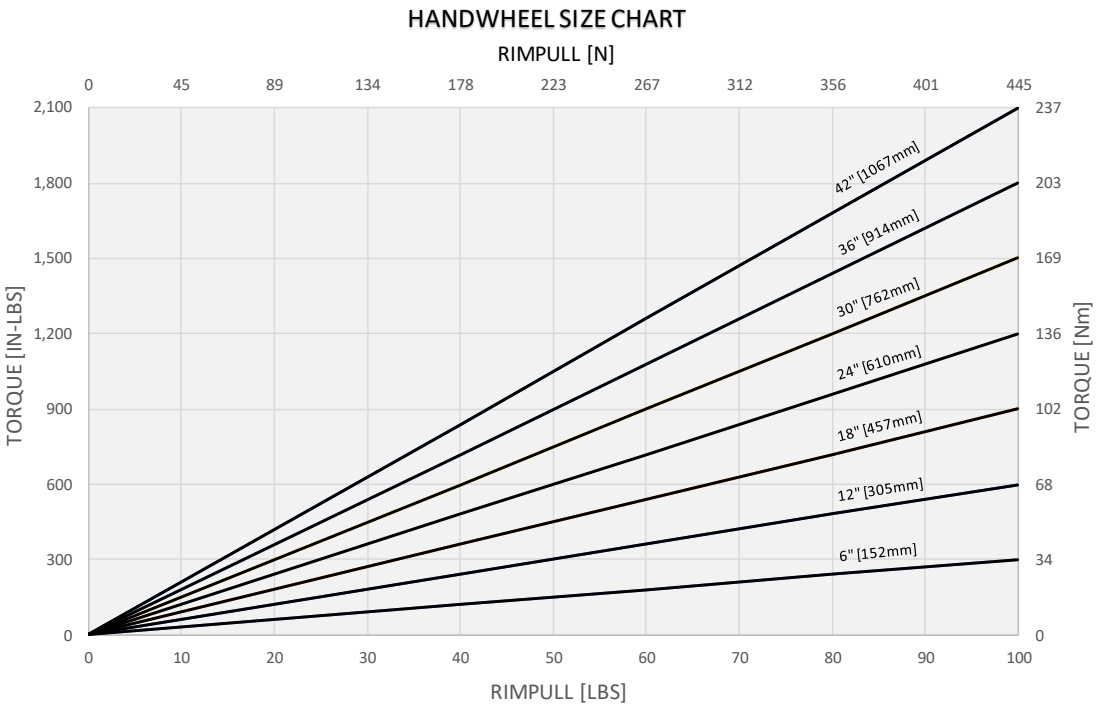
** Additional ratios available upon request.*

***Mechanical advantage can fall short of published value by 10% until gearbox has worn in. Wear in should occur within 10 cycles.*

WedgeRock HANDWHEELS

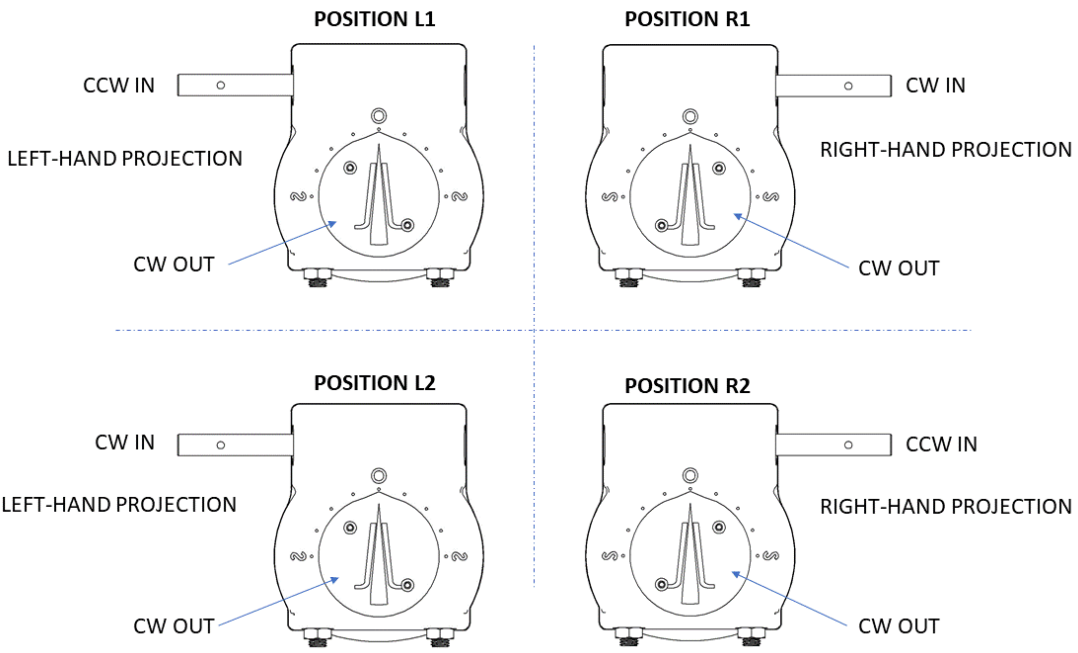


D *IN (MM)*	R *IN (MM)*	F *IN (MM)*
6 *(152)*	2.91 *(74)*	1.75 *(44)*
12 *(305)*	3.88 *(98)*	1.75 *(44)*
18 *(457)*	4.56 *(116)*	1.75 *(44)*
24 *(610)*	5.81 *(148)*	1.75 *(44)*
30 *(762)*	7.19 *(183)*	1.75 *(44)*
36 *(914)*	8.19 *(208)*	1.75 *(44)*
42 *(1,067)*	10.13 *(257)*	1.75 *(44)*

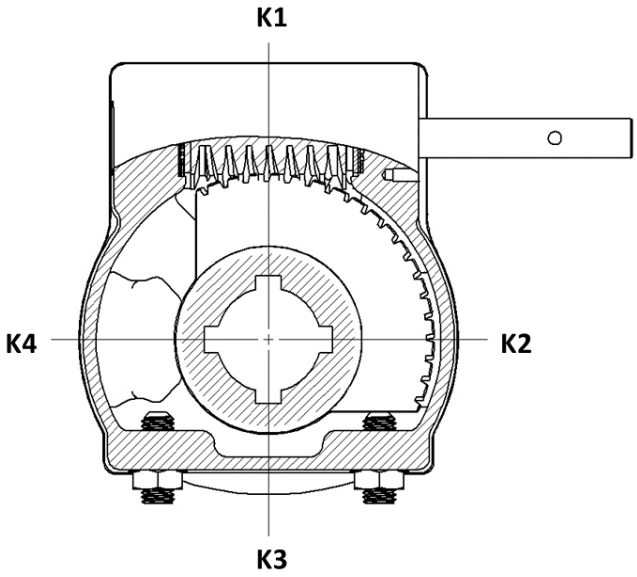


WedgeRock RC SERIES

INPUT SHAFT PROJECTION



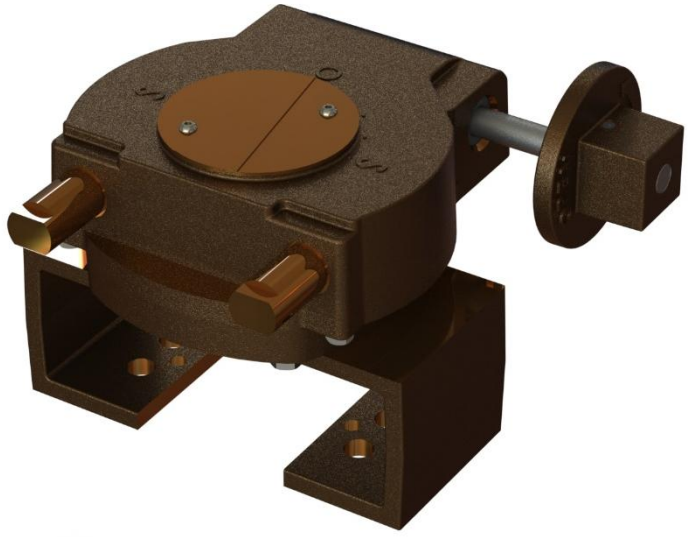
KEYWAY POSITION



TOP VIEW WITH QUADRANT IN CLOSED POSITION

WedgeRock RC SERIES

SERVICE CONDITIONS



STANDARD COMPONENT MATERIAL SELECTION FOR SPECIFIED ENVIRONMENTS

COMPONENT	SERVICE CONDITION						
	STANDARD PIPELINE		OFFSHORE	NAVY			DISTRICT HEATING
	TOPSIDE	BURIED	PLATFORM	STANDARD	CORROSIVE - AL	CORROSIVE - BZ	CORROSIVE
HOUSING/BASEPLATE	DUCTILE IRON	DUCTILE IRON	DUCTILE IRON	DUCTILE IRON	ALUMINUM	BRONZE	BRONZE
WORMGEAR QUADRANT	DUCTILE IRON	DUCTILE IRON	DUCTILE IRON	DUCTILE IRON	BRONZE	BRONZE	BRONZE
WORM	ALLOY STEEL	ALLOY STEEL	ALLOY STEEL	ALLOY STEEL	ALLOY STEEL	ALLOY STEEL	ALLOY STEEL
INDICATOR	316SS	DUCTILE IRON COVER	316SS	316SS	ALUMINUM	BRONZE	BRONZE
INPUT SHAFT	QPQ COATED STEEL	QPQ COATED STEEL	QPQ COATED STEEL	17-4PH	QPQ COATED STEEL	MONEL	SUPER DUPLEX STAINLESS STEEL
STOPS	ALLOY STEEL	ALLOY STEEL	ALLOY STEEL	ALLOY STEEL	ALLOY STEEL	ALLOY STEEL	ALLOY STEEL
JAM NUT(S)	STEEL	SEALED STEEL	SEALED STEEL	STEEL	SEALED BRONZE	SEALED BRONZE	SEALED BRONZE
FASTENERS[1]	STEEL	STEEL	316SS	316SS	316SS	MONEL	316SS
SEALS[2]	BUNA / SEALENT	BUNA / SEALENT	BUNA / SEALENT	BUNA / SEALENT	BUNA / SEALENT	BUNA / SEALENT	BUNA / SEALENT
LUBRICATION[3]	GREASE	GREASE	GREASE	GREASE	GREASE	GREASE	GREASE
FINISH[4]	EPOXY PRIMER	EPOXY PRIMER	EPOXY PRIMER	EPOXY PRIMER	N/A	N/A	N/A

1) Standard fasteners for application. Option to use Grade 5, 316SS, B7(M), L7(M), Monel, or other materials per project specification. Grade 5 is zinc plated.

2) Standard seals for application unless otherwise specified. Refer to temperature service condition table.

3) Lubrication per temperature condition. Refer to temperature service condition table.

4) Standard finish unless otherwise specified. Standard epoxy 7-10 mils dft.

WedgeRock RC SERIES

TEMPERATURE AND SERVICE CONDITIONS

Explosion Protection

Available explosion protection configuration conforms to ATEX requirements for T3 or T4. The following is the standard ATEX rating:

II 2 G Ex h IIB T4 Gb
II 2 D Ex h IIIC T135˚C Db

Enclosure Protection

The standard RP has been verified to meet IP68 requirements, ensuring sealing integrity when submerged in water at depths greater than 1 m.

Ambient Temperature Rating

TEMPERATURE SERVICE CONDITIONS		
SERVICE CONDITION	**MIN OPERATING TEMP**	**MAX OPERATING TEMP**
	°F *(°C)*	°F *(°C)*
STANDARD SERVICE	-40 *(-40)*	225 *(107)*
HIGH TEMPERATURE SERVICE	-15 *(-26)*	400 *(204)*
LOW TEMPERATURE SERVICE	-60 *(-51)*	225 *(107)*
ATEX T4 STANDARD	-31 *(-35)*	160 *(70)*
ATEX T4 EXTENDED	-60 *(-51)*	160 *(70)*
Wider operating temperature ranges are available. Consult with factory.		

MANUAL RATING

MODEL	Torque Rating In-Lbs/(Nm)	Gear Ratio						Mechanical Advantage +/- 10%						Input Torque In-Lbs/(Nm)					
RC2.5	4,167 *(471)*	40						14						309 *(35)*					
RC5	8,333 *(942)*	40						13						661 *(75)*					
RC10	16,667 *(1883)*	48						11						1475 *(167)*					
RC10 + SPUR	16,667 *(1883)*	106	158					22	34					745 *(84)*	497 *(56)*				
RC16	26,667 *(3013)*	48						13						2005 *(227)*					
RC16 + SPUR	26,667 *(3013)*	106	158					26	40					1013 *(114)*	675 *(76)*				
RP24	40,000 *(4520)*	64						18						2247 *(254)*					
RC24 + SPUR	40,000 *(4520)*	141	211					35	53					1135 *(128)*	757 *(85)*				
RC36	60,000 *(6780)*	74						25						2381 *(269)*					
RC36 + SPUR	60,000 *(6780)*	163	244					50	75					1203 *(136)*	802 *(91)*				
RC48	80,000 *(9040)*	66						18						4348 *(491)*					
RC48 + SPUR	80,000 *(9040)*	145	218					39	59					2037 *(230)*	1358 *(153)*				
RC48 + RP5	80,000 *(9040)*	172	198	277	330	418	594	46	54	75	89	113	161	1724 *(195)*	1494 *(169)*	1067 *(121)*	896 *(101)*	708 *(80)*	498 *(56)*

MOTORIZED RATING

MODEL	Torque Rating In-Lbs/(Nm)	Gear Ratio						Mechanical Advantage +/- 10%						Input Torque In-Lbs/(Nm)					
RC2.5	3,125 *(353)*	40						14						231 *(26)*					
RC5	6,250 *(706)*	40						13						496 *(56)*					
RC10	12,500 *(1412)*	48						11						1106 *(125)*					
RC10 + SPUR	12,500 *(1412)*	106						22						559 *(63)*					
RC16	20,000 *(2260)*	48						13						1504 *(170)*					
RC16 + SPUR	20,000 *(2260)*	106						26						759 *(86)*					
RP24	30,000 *(3390)*	64						18						1685 *(190)*					
RC24 + SPUR	30,000 *(3390)*	141						35						851 *(96)*					
RC36	45,000 *(5085)*	74						25						1786 *(202)*					
RC36 + SPUR	45,000 *(5085)*	163						50						902 *(102)*					
RC48	60,000 *(6780)*	66						18						3261 *(368)*					
RC48 + SPUR	80,000 *(9040)*	145	218					39	59					2037 *(230)*	1358 *(153)*				
RC48 + RP5	80,000 *(9040)*	172	198	277	330	418	594	46	54	75	89	113	161	1724 *(195)*	1494 *(169)*	1067 *(121)*	896 *(101)*	708 *(80)*	498 *(56)*

AWWA RATING

MODEL	Torque Rating In-Lbs/(Nm)	Gear Ratio	Mechanical Advantage +/- 10%	Input Torque In-Lbs/(Nm)
RC2.5	2,500 *(282)*	40	14	185 *(21)*
RC5	5,000 *(565)*	40	13	397 *(45)*
RC10	10,000 *(1130)*	48	11	885 *(100)*
RC10 + SPUR	10,000 *(1130)*	106	22	447 *(51)*
RC16	16,000 *(1808)*	48	13	1203 *(136)*
RC16 + SPUR	16,000 *(1808)*	106	26	608 *(69)*
RP24	24,000 *(2712)*	64	18	1348 *(152)*
RC24 + SPUR	24,000 *(2712)*	141	35	681 *(77)*
RC36	36,000 *(4068)*	74	25	1429 *(161)*
RC36 + SPUR	36,000 *(4068)*	163	50	722 *(82)*
RC48	48,000 *(5424)*	66	18	2609 *(295)*
RC48 + SPUR	48,000 *(5424)*	145	36	1318 *(149)*

Useful Equations

$\#_{in}$ = *Input Turns to Operate ¼ Turn*

D_{hw} = *Handwheel Diameter*

MA = *Mechanical Advantage*

N = *Gear Ratio*

F_{rp} = *Rimpull*

RPM = *Input RPM*

$T_{1/4}$ = Time to Operate ¼ Turn (Sec)

T_{in} = Input Torque

T_{out} = Output Torque

Input turns to operate ¼ turn

$$\#_{in} = \frac{N}{4}$$

Time to operate ¼ turn (Seconds)

$$T_{1/4} = \frac{15 \times N}{RPM}$$

Mechanical Advantage

$$MA = \frac{T_{out}}{T_{in}}$$

Required Input Torque

$$T_{in} = \frac{T_{out}}{MA}$$

Required Rimpull

$$F_{rp} = \frac{2 \times T_{in}}{D_{hw}}$$

Required Handwheel Diameter

$$D_{hw} = \frac{2 \times T_{in}}{F_{rp}}$$

Mechanical advantage can fall short of published value by 10% until gearbox has worn in. Wear in should occur within 10 cycles.

ABOUT WEDGEROCK

The WedgeRock name and logo symbolize the elegance of a simple and effective design and the grit, focus, and determination required to make things happen – the work required to get big things moving. Pragmatism and hard work are central to our culture and reflected in everything we do.

Don't let our dirty hands and old school approach fool you. WedgeRock brings industry leading innovation to your engineered projects in standard lead times.

With a focused approach, WedgeRock provides solutions for the most demanding torque and thrust application. Whether you need to operate valves thousands of meters below the ocean surface, or a purpose designed gear operator for your valve line, give us a call or send an email to get the partnership started.

OUR MISSION

WedgeRock provides performance engineered actuation solutions for demanding applications.