

WedgeRock RW PRODUCT SHEET

700009 Rev-10

HIGH PERFORMANCE DOUBLE-ENVELOPING WORM GEARBOX



Features, Options & Configurability

- **Capable of reducing turns to cycle or time to close by almost 3X over conventional solutions due to increased efficiency and wide range of ratio options.**
- Standard and high efficiency configurations available
- Self-Locking
- Mechanical stops for quarter turn rotation, $\pm 5^\circ$ adjustment at each stop
- 90% filled, Greased for life, no maintenance
- Elastomer seals at all ingress points, designed and tested to IP68
- Input shaft projection Parallel or Perpendicular to output
- Input lockout
- Available Certifications:
 - Buy America Compliant
 - AWWA Compliant
 - ATEX Compliant
- Modular design accommodates;
 - Quarter-Turn
 - Multi-Turn
 - Rising Stem
 - Sandwich Style Override
 - Declutchable
 - Lost Motion
 - Subsea
 - Deep water
 - Shallow water
- 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/MSS SP102 & ISO 5211/ISO 5210
 - Infinite Custom Bolt Pattern Options

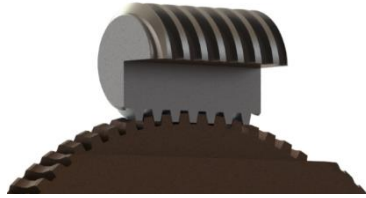
PURPOSE ENGINEERED - QUALITY MANUFACTURED - PERFORMANCE TESTED

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

WedgeRock RW SERIES

PERFORMANCE

Double enveloping design for **STRENGTH** – Superior shock load capacity



Cylindrical Conventional Wormgear



Double Enveloping WedgeRock Wormgear

Four Starts for more **EFFICIENCY** – Operate faster and with less effort



Single Start Standard Efficiency Wormgear, Inherently Self-Locking



Multi Start High Efficiency Wormgear Self-Locking Using Patented PolyLock Clutch

Motorized Application, Optimized **Power** Consumption

	Required Gearbox Rating	Gearbox Ratio	Gearbox Mechanical Advantage	Gearbox Efficiency	Turns to Close	Input Torque Required	Power Required
	<i>IN-LBS (NM)</i>					<i>IN-LBS (NM)</i>	<i>HP (KW)</i>
Standard Efficiency Wormgear	225,000 <i>(25,425)</i>	329	76	23%	82	2973 <i>(336)</i>	4.7 <i>(3.5)</i>
WedgeRock High Efficiency Wormgear	225,000 <i>(25,425)</i>	341	212	62%	85	1061 <i>(120)</i>	1.7 <i>(1.3)</i>

Motorized Application, Optimized **Time** to Operate

	Required Gearbox Rating	Gearbox Ratio	Gearbox Mechanical Advantage	Gearbox Efficiency	Turns to Close	Time to Operate 1/4 Turn @ 100 RPM
	<i>IN-LBS (NM)</i>					Seconds
Standard Efficiency Wormgear	225,000 <i>(25,425)</i>	768	177	23%	192	115
WedgeRock High Efficiency Wormgear	225,000 <i>(25,425)</i>	287	178	62%	72	43

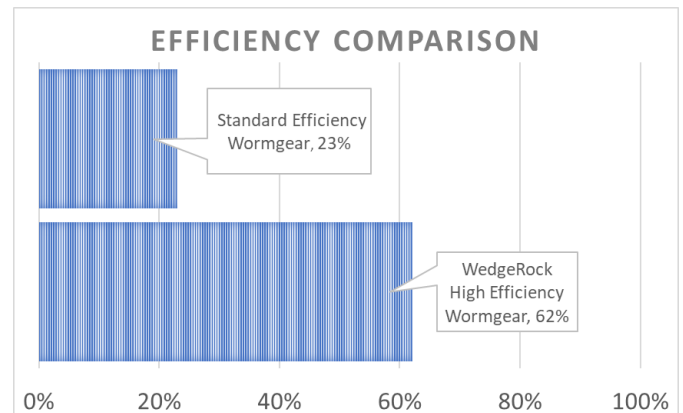
Manual Application, Optimized **Turns** to Operate

	Required Gearbox Rating	Gearbox Ratio	Gearbox Mechanical Advantage	Gearbox Efficiency	Handwheel Diameter	Turns to Operate
	<i>IN-LBS (NM)</i>				<i>IN (MM)</i>	
Standard Efficiency Wormgear	225,000 <i>(25,425)</i>	1024	234	23%	36 <i>(914)</i>	256
WedgeRock High Efficiency Wormgear	225,000 <i>(25,425)</i>	287	178	62%	36 <i>(914)</i>	72

Value Proposition

Conventional wormgears use inefficient gear design as self-locking feature. WedgeRock uses a patented mechanical bidirectional clutch called PolyLock™ making our high efficiency wormgears self-locking. The PolyLock clutch allows torque from input to act on drivetrain in clockwise or counterclockwise direction while providing mechanical brake force if backdriving torque is applied to the output by valve or other actuated device.

Motorized application can be optimized using WedgeRock wormgears, for faster close times, or reducing electric actuator frame size. Manual applications can be optimized to reduce number of turns to operate extending manually operated valve size, reducing installation and maintenance cost.



WedgeRock RW 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
	200 CYCLES 1.5X S.F. ²	1,000 CYCLES 2.0X S.F. ²	10,000 CYCLES 2.5X S.F. ²						
	IN-LBS (NM)	IN-LBS (NM)	IN-LBS (NM)						
RW8	50,667 (5,725)	38,000 (4,294)	30,400 (3,435)	2.75 (69.9)	2.75 (69.9)	3.53 (89.7)	5.8 (147)	F14 ¹ /FA14 ¹ F16/FA19	
RW10	100,000 (11,300)	75,000 (8,475)	60,000 (6,780)	3.50 (88.9)	3.75 (95.3)	4.56 (115.9)	6.7 (170)	F16 ¹ /FA16 ¹ F25/FA25	F35/FA35
RW12	180,000 (20,340)	135,000 (15,255)	108,000 (12,204)	4.25 (108.0)	4.50 (114.3)	5.28 (134.0)	7.8 (198)	F25/FA19 ¹ F35/FA36	F40/FA40
RW14	300,000 (33,900)	225,000 (25,425)	180,000 (20,340)	6.25 (158.8)	6.50 (165.1)	7.78 (197.5)	8.4 (213)	F25 ¹ /FA25 ¹ F40/FA40	F48/FA48
RW18	533,333 (60,267)	400,000 (45,200)	320,000 (36,160)	7.50 (190.5)	7.75 (196.9)	9.25 (235.0)	9.6 (244)	F30 ¹ /FA30 ¹ F48/FA48	F60/FA60
RW22	1,000,000 (113,000)	750,000 (84,750)	600,000 (67,800)	8.00 (203.2)	8.50 (215.9)	10.25 (260.4)	11.9 (302)	F35 ¹ /FA35 ¹ F60/FA60	
RW30	1,800,000 (203,400)	1,350,000 (152,550)	1,080,000 (122,040)	9.75 (247.7)	10.50 (266.7)	12.25 (311.2)	13.8 (351)	F48 ¹ /FA48 ¹ 36"/918mm OD	
RW34	3,000,000 (339,000)	2,250,000 (254,250)	1,800,000 (203,400)	10.00 (254.0)	10.50 (266.7)	12.48 (317.0)	16.0 (406)	F48 ¹ /FA48 ¹ 38"/965mm OD	
RW42	5,333,333 (602,667)	4,000,000 (452,000)	3,200,000 (361,600)	14.00 (355.6)	15.00 (381.0)	17.49 (444.1)	16.0 (406)	F60 ¹ /FA60 ¹ 60"/1524mm OD	
RW42H	10,000,000 (1,130,000)	7,500,000 (847,500)	6,000,000 (678,000)	14.00 (355.6)	15.00 (381.0)	17.49 (444.1)	16.0 (406)	F60 ¹ /FA60 ¹ 60"/1524mm OD	
RW52	16,666,667 (1,883,333)	12,500,000 (1,412,500)	10,000,000 (1,130,000)	20.00 (508.0)	21.00 (533.4)	24.00 (609.6)	22.0 (559)	28"/711mm ID 60"/1524mm OD	
RW52H	24,000,000 (2,712,000)	18,000,000 (2,034,000)	14,400,000 (1,627,200)	20.00 (508.0)	21.00 (533.4)	24.00 (609.6)	22.0 (559)	28"/711mm ID 60"/1524mm OD	

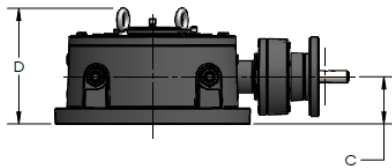
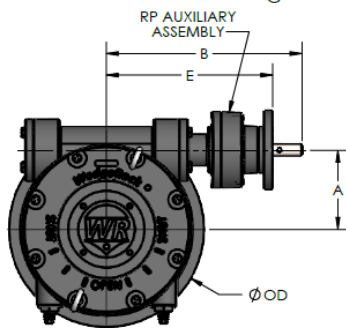
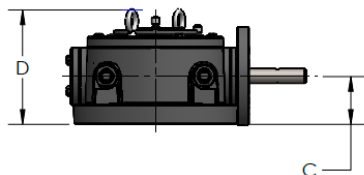
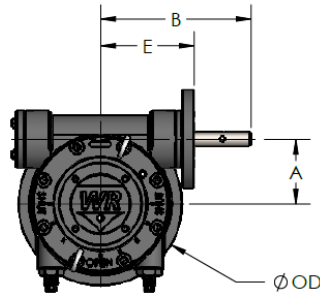
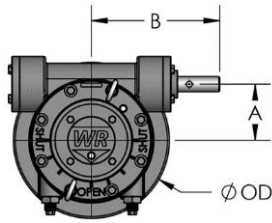
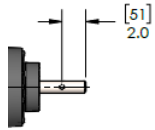
1) Spigot diameter does not fit on standard flange

2) Published safety factor for gearbox design. Application should be sized to published torque rating and include any application safety factor

WedgeRock RW

ENVELOPE DIMENSIONS

Dimension to cross hole for manually operated input



RW FLAREBASE DIMENSIONS AND WEIGHT			
MODEL	OD	+ C + D	+ WEIGHT
	IN (MM)	IN (MM)	LBS (KG)
RW10	18.3 (464)	1.38 (35)	51.60 (23)
RW12	19.4 (493)	0.30 (8)	44.82 (20)
RW14	22.0 (559)	0.63 (16)	84.80 (38)
RW18	27.0 (686)	0.63 (16)	127.00 (58)

RW ENVELOPE DIMENSIONS AND WEIGHT

MODEL	A	B	C	D	E	OD	WEIGHT
	IN (MM)	IN (MM)	IN (MM)	IN (MM)	IN (MM)	IN (MM)	LBS (KG)
RW8	3.7 (94)	8.4 (214)	2.4 (62)	6.6 (167)	6.7 (171)	10.2 (258)	73 (33)
RW8 + RP5	3.7 (94)	15.5 (393)	2.4 (62)	6.6 (167)	12.5 (318)	10.2 (258)	103 (47)
RW10	4.6 (116)	9.3 (236)	3.4 (86)	8.1 (205)	7.3 (185)	11.5 (292)	126 (57)
RW10 + RP5	4.6 (116)	16.0 (407)	3.4 (86)	8.1 (205)	13.5 (342)	11.5 (292)	157 (71)
RW12	6.9 (176)	13.6 (345)	4.1 (105)	10.1 (257)	10.1 (257)	17.1 (434)	262 (119)
RW12 + RP5	6.9 (176)	17.2 (436)	4.1 (105)	10.1 (257)	14.3 (362)	17.1 (434)	296 (134)
RW14	8.4 (213)	14.1 (358)	4.2 (107)	10.7 (272)	10.6 (269)	19.3 (489)	372 (169)
RW14 + RP6	8.4 (213)	20.4 (517)	4.2 (107)	10.7 (272)	17.8 (452)	19.3 (489)	437 (198)
RW14 + RP6 + RP5	8.4 (213)	21.1 (535)	4.2 (107)	10.7 (272)	18.5 (470)	19.3 (489)	440 (199)
RW18	10.3 (261)	16.5 (419)	5.0 (127)	12.6 (319)	13.0 (330)	24.4 (620)	696 (315)
RW18 + RP6	10.3 (261)	22.8 (578)	5.0 (127)	12.6 (319)	20.2 (513)	24.4 (620)	739 (335)
RW18 + RP6 + RP5	10.3 (261)	23.5 (596)	5.0 (127)	12.6 (319)	20.9 (531)	24.4 (620)	742 (336)
RW22	13.0 (329)	19.0 (483)	6.0 (152)	14.9 (378)	15.0 (381)	28.0 (711)	1193 (541)
RW22 + RP8	13.0 (329)	28.1 (713)	6.0 (152)	14.9 (378)	25.1 (637)	28.0 (711)	1299 (589)
RW22 + RP8 + RP6	13.0 (329)	29.2 (741)	6.0 (152)	14.9 (378)	26.6 (675)	28.0 (711)	1359 (616)
RW30	16.4 (415)	24.6 (625)	6.5 (165)	17.2 (437)	20.1 (511)	36.0 (915)	2093 (949)
RW30 + RP8	16.4 (415)	33.2 (842)	6.5 (165)	17.2 (437)	30.2 (766)	36.0 (915)	2199 (997)
RW30 + RP8 + RP6	16.4 (415)	34.3 (870)	6.5 (165)	17.2 (437)	31.7 (805)	36.0 (915)	2218 (1,006)
RW30 + RP8 + RP6 + RP5	16.4 (415)	35.0 (888)	6.5 (165)	17.2 (437)	32.4 (823)	36.0 (915)	2221 (1,007)
RW34	17.9 (455)	27.6 (701)	7.0 (178)	18.3 (465)	22.6 (574)	38.4 (975)	2590 (1,175)
RW34 + RP9	17.9 (455)	37.1 (942)	7.0 (178)	18.3 (465)	33.6 (853)	38.4 (975)	2696 (1,223)
RW34 + RP9 + RP6	17.9 (455)	40.1 (1,018)	7.0 (178)	18.3 (465)	36.2 (920)	38.4 (975)	2767 (1,255)
RW34 + RP9 + RP6 + RP5	17.9 (455)	39.5 (1,003)	7.0 (178)	18.3 (465)	36.9 (938)	38.4 (975)	2770 (1,256)
RW42/H	22.3 (566)	33.0 (838)	7.5 (191)	20.3 (516)	27.0 (686)	60.0 (1,524)	5925 (2,688)
RW42/H + RP12	22.3 (566)	44.5 (1,130)	7.5 (191)	20.3 (516)	40.0 (1,016)	60.0 (1,524)	6300 (2,858)
RW42/H + RP12 + RP8	22.3 (566)	48.3 (1,227)	7.5 (191)	20.3 (516)	45.3 (1,151)	60.0 (1,524)	6321 (2,867)
RW42/H + RP12 + RP8 + RP6	22.3 (566)	49.4 (1,255)	7.5 (191)	20.3 (516)	46.8 (1,190)	60.0 (1,524)	6340 (2,876)
RW52/H	29.9 (758)	36.0 (914)	10.9 (276)	28.4 (720)	28.0 (711)	60.0 (1,524)	9000 (4,082)
RW52/H + RP14	29.9 (758)	48.5 (1,232)	10.9 (276)	28.4 (720)	43.5 (1,105)	60.0 (1,524)	9500 (4,309)
RW52/H + RP14 + RP12	29.9 (758)	52.8 (1,340)	10.9 (276)	28.4 (720)	49.3 (1,251)	60.0 (1,524)	9575 (4,343)
RW52/H + RP14 + RP12 + RP6	29.9 (758)	54.4 (1,382)	10.9 (276)	28.4 (720)	51.9 (1,317)	60.0 (1,524)	9587 (4,348)

Dimensions represent most common configurations. Other dimensional configurations possible.

Weight may vary with final configuration.

WedgeRock RP SERIES

AUXILIARY PLANETARY GEAR ASSEMBLIES



RP SERIES PLANETARY REDUCTION GEAR			
MODEL	INPUT SHAFT DIAMETER (KEY PER ANSI B17.1)	MIN STANDARD INPUT FLANGE	MAX STANDARD INPUT FLANGE
	IN (MM)		
RP5	1.00 / 1.50 (25.4 / 38.1)	F/FA10	F/FA16
RP6	1.00 / 1.50 (25.4 / 38.1)	F/FA14	F/FA16
RP8	1.50 / 2.00 (38.1 / 50.8)	F/FA16	F/FA25
RP9	1.50 / 2.00 (38.1 / 50.8)	F/FA16	F/FA25
RP10	3.00 (76.2)	F25/FA19	F/FA35
RP12	3.50 (88.9)	F/FA25	F/FA40
RP14	4.00 (101.6)	F/FA30	F/FA48

COMMON RP RATIOS FOR RP5 AND RP6

RATIO ¹ [MOST COMMON]	2.50	[2.60]	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 ² [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]

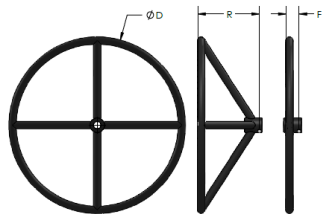
COMMON RP RATIOS FOR RP8 AND LARGER

RATIO ¹ [MOST COMMON]	[2.50]	2.60	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 ² [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

1) Additional ratios available upon request.

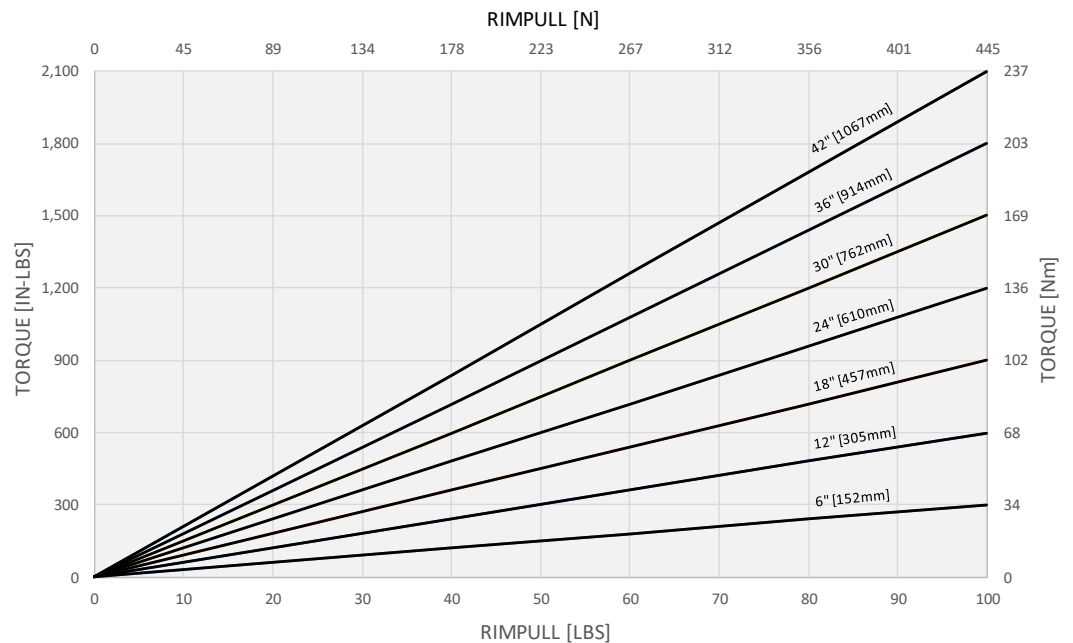
2) Mechanical advantage can fall short of published value by 10% until gearbox has worn in. Wear in should occur within 10 cycles.

WedgeRock HANDWHEELS



D	R	F
IN	IN	IN
(MM)	(MM)	(MM)
6	5.25	1.75
(152)	(133)	(44)
12	5.25	1.75
(305)	(133)	(44)
18	6.25	1.75
(457)	(159)	(44)
24	8.38	1.75
(610)	(213)	(44)
30	10.00	1.75
(762)	(254)	(44)
36	9.63	1.75
(914)	(244)	(44)
42	10.13	1.75
(1,067)	(257)	(44)

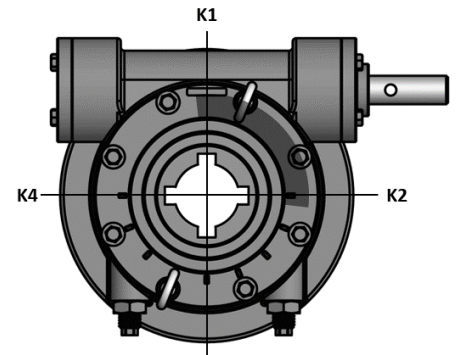
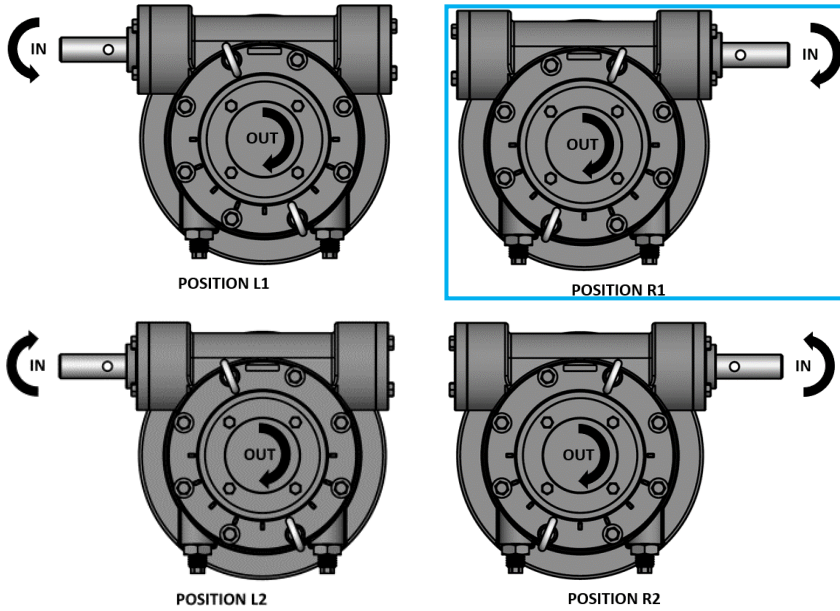
HANDWHEEL SIZE CHART



WedgeRock RW SERIES

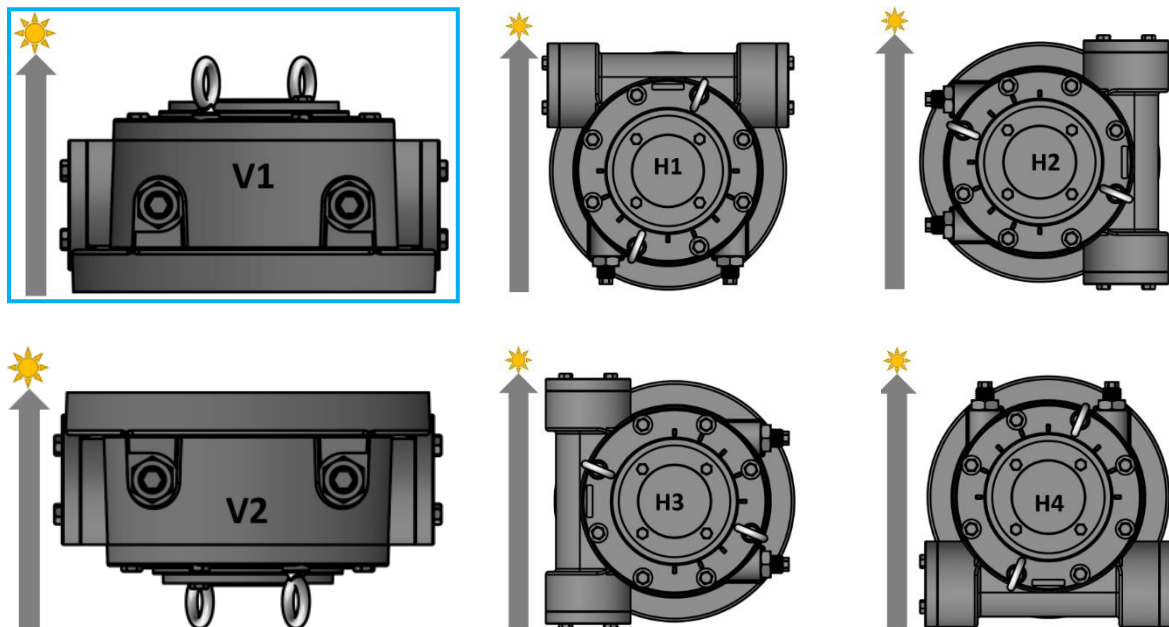
INPUT SHAFT PROJECTION [STANDARD]

KEYWAY POSITION



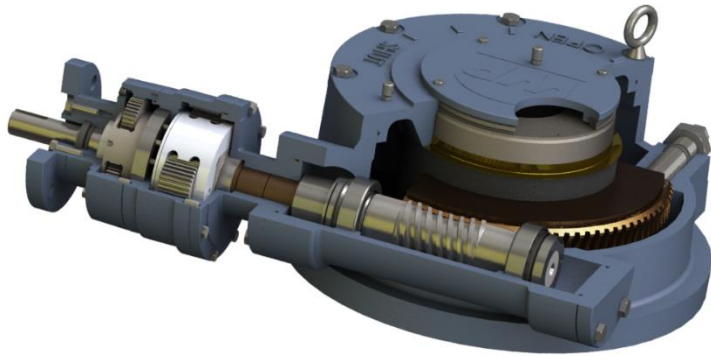
TOP VIEW, QUADRANT IN CLOSED POSITION AS SHOWN

GEAR OPERATOR ORIENTATION TO ALLOW FOR PROPER VENT CONFIGURATION [STANDARD]



WedgeRock RW SERIES

TEMPERATURE AND SERVICE CONDITIONS



TEMPERATURE SERVICE CONDITIONS				
SERVICE CONDITION	SEAL MATERIAL	LUBRICANT	MIN OPERATING TEMP	MAX OPERATING TEMP
			°F (°C)	°F (°C)
STANDARD SERVICE	BUNA	STANDARD GREASE	-40 (-40)	225 (107)
HIGH-TEMP SERVICE	VITON	HIGH-TEMP GREASE	-15 (-26)	400 (204)
LOW-TEMP SERVICE	LOW TEMP BUNA	LOW-TEMP GREASE	-60 (-51)	225 (107)
COMPENSATED SUBSEA SERVICE	PTFE/BUNA	COMPENSATION FLUID	-40 (-40)	225 (107)

STANDARD COMPONENT MATERIAL SELECTION FOR SPECIFIED ENVIRONMENTS

COMPONENT	SERVICE CONDITION					
	STANDARD PIPELINE		OFFSHORE	SUBSEA		DISTRICT HEATING
	TOPSIDE	BURIED	PLATFORM	SHALLOW	COMPENSATED	CORROSIVE
HOUSING/COVER ¹	DUCTILE IRON	DUCTILE IRON	DUCTILE IRON	DUCTILE IRON	DUCTILE IRON	BRONZE
OUTPUT HUB ¹	DUCTILE IRON	DUCTILE IRON	DUCTILE IRON	DUCTILE IRON	DUCTILE IRON	BRONZE
WORMGEAR QUADRANT	BRONZE	BRONZE	BRONZE	BRONZE	BRONZE	BRONZE
WORM	ALLOY STEEL	ALLOY STEEL	ALLOY STEEL	ALLOY STEEL	ALLOY STEEL	ALLOY STEEL
HUB BEARINGS	BRASS	BRASS	BRASS	BRASS	BRASS	BRONZE
INDICATOR ¹	DUCTILE IRON		DUCTILE IRON	SUPER DUPLEX STAINLESS STEEL	SUPER DUPLEX STAINLESS STEEL	BRONZE
INPUT SHAFT	STAINLESS STEEL	STAINLESS STEEL	SUPER DUPLEX STAINLESS STEEL	SUPER DUPLEX STAINLESS STEEL	SUPER DUPLEX STAINLESS STEEL	SUPER DUPLEX STAINLESS STEEL
STOPS	ALLOY STEEL	ALLOY STEEL	ALLOY STEEL	ALLOY STEEL	ALLOY STEEL	ALLOY STEEL
JAM NUT(S)	STEEL	SEALED STEEL	SEALED STEEL	SEALED STEEL	SEALED STEEL	SEALED BRONZE
FASTENERS ²	GRADE 5	GRADE 5	316SS	GRADE 5 / 316SS	GRADE 5 / 316SS	316SS
SEALS ³	BUNA	BUNA	BUNA	PTFE/BUNA	PTFE/BUNA	BUNA
LUBRICATION ⁴	GREASE	GREASE	GREASE	GREASE	OIL	GREASE
FINISH ⁵	EPOXY PRIMER	EPOXY PRIMER	EPOXY PRIMER	EPOXY PRIMER	EPOXY PRIMER	N/A

1) Models RW34 and larger may use carbon steel fabrications in place of ductile iron.

2) 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.

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

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

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

Other RW Configurations

RW Override

RW sandwich style override:

- Declutchable override for double acting actuators
- Lost Motion override for spring return actuators



RW Subsea



RW subsea wormgears:

- Shallow water manual subsea
- Deep water ROV operated, compensated subsea

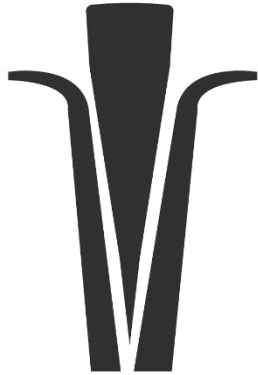
RW Multi-turn

RW multi-turn wormgears:

- Rising stem applications
- Dam gate hoists
- Specialty applications



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.

