

# radius



EW SERIES  
ELECTRIC  
ACTUATORS



# Radius EW series Electric Actuators



- Radius designs and produces high Quality actuators, accessories and Services related to valve automation.
- The sturdy construction of the Radius Electric actuator provides reliable Performance and the ability to fully Integrate into the most sophisticated Control systems.
- Compact and robust construction, light weight, high output torque (Max 79,500 in. lbs.).
- Wide range of torque variation (From min 880 in. lbs. ~ to max 79,500 in. lbs.).
- Hard anodized aluminum housing inside and outside with external powder coating to protect against severe industrial environment.
- Enclosure using radial seals & O-rings That provide protection to waterproof IP67: standard (NEMA 4, 4X & 6), IP68 (NEMA 4, 4X & 6P), and explosion proof Enclosures: optional
- Mounting base according to ISO 5211 standard.
- Removable drive bushing, factory machined. (Custom machining available)
- Self-locking double worm gearing (no brake required).
- Auto-declutchable manual override handwheel with padlockable auto / manual switchable lever.
- Reliable mechanical torque sensing system providing safe operation in overload condition.
- Large size window and indicator provides for better position indication from a distance.
- Various Local Position control options providing for easy commissioning and operation in field.



# CONSTRUCTION

**Housing-** Hard anodized aluminum casting and external epoxy powder coated for protection against severe industrial environment.

**Gearing-** Precisely machined double worm gear eliminates back-lash, and produces high output torque with little or low noise.

**Self locking-** Double worm gearing keeps valve position in place against reverse valve torque.

**Sealing-** IP67 (standard), Enclosure IP68 and Explosion Proof Enclosure. (optional)

**Handwheel-** Different sizes depending on actuator torque, standard knob on handwheel for easy operation.

**Motor-** Specially designed induction motor to generate high starting torque and high efficiency equipped with Thermal protector to prevent Damage from overheating.

- Insulation class F



**Manual override-** Auto / Manual switchable lever and handwheel engagement for emergency manual operation.

Drive force automatically enstated by motor Start, unless lever is padlocked to prevent this from occurring.



# Radius EW Series Specifications and Options



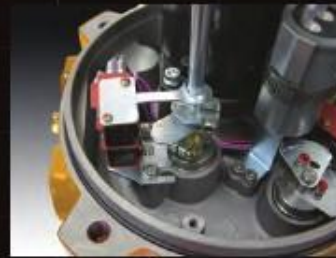
External mechanical travel stops- Prevents over run of travel angle when limit switch fails.



Torque switches - Protect actuator from damage caused by overload from the driven valve over the entire travel. 1 each for open / close



Removable drive bushing and ISO 5211 mounting base (F07-F16) for easy mounting on valve. Standard factory machined ISO output. Custom machining available.



Limit switches - Directly engaged with driving shaft to set accurate position of valve. 2 ea for each travel end. (open/close) Two auxiliary limit switches. (Standard with most models)



Captive cover bolts. All external bolts are stainless steel for rust prevention.



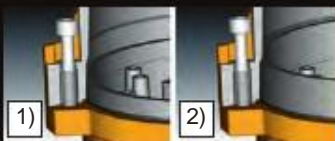
Terminal Strip - spring loaded push type terminal for tight wiring connection under severe vibration.



Tapered interface between cover and lower housing. Standard: Short interface for providing easier access to internal components. Explosion proof : Long interface for preventing external flame path.



Space Heater- Anti-condensation (Standard on all units)



1) Standard Cover  
2) Explosion Proof Cover



Indicator - Continuous mechanical position indicator window with dial.



## OPTIONAL MOTOR CONTROLS AVAILABLE

- Local/Remote Stations
- Battery Back Up Devices
- Reversing Electrical Contactors
- Transformers
- Phase Detectors
- Local Lamp Indication
- LCD Displays

\*Consult Separate Radius Motor Control Options Bulletins\*



## BASIC EW SERIES ACTUATOR OPTIONS

Model No.	1Ph (110VAC)	1Ph (220VAC)	3Ph (380-440VAC)	DC 24V Motor	24VAC (AC/DC converter)	WT (IP68)	EX	ATS	ALS	PK	CT	RPC
EW880	S	O	O	O	O	O	O		S	O	O	O
EW1400	S	O	O	O	O	O	O	S	S	O	O	O
EW2100	S	O	O	O	O	O	O	S	S	O	O	O
EW3100	S	O	O	O	O	O	O	S	S	O	O	O
EW4400	S	O	O	O	O	O	O	S	S	O	O	O
EW7000	S	O	O			O	O	S	S	O	O	O
EW9700	S	O	O			O	O	S	S	O	O	O
EW17000	S	O	O			O	O	S	S	O	O	O
EW26500	S	O	O			O	O	S	S	O	O	O
EW53000	S	O	O			O	O	S	S	O	O	O
EW79500	S	O	O			O	O	S	S	O	O	O

S - Standard O - Optional

EX – Explosion proof (Ex d II B T4) – Approved by KTL, ATEX (Optional)

WT – Watertight (IP68), Temporary submersible – 33 ft Head 100 hours (Optional)

ALS – Auxiliary limit switches (Max 2 for each travel end) – (1 set standard on all actuators)

ATS – Auxiliary torque switches (Max 2 for each travel end) – (1 set standard on all models excluding for EW880)

EXT – Extended travel angle (up to 120°, 135°, 180°, 270°) – Except for EW with Gear box (Optional)

### REMOTE MONITORING AND CONTROL

PK – Potentiometer (output signal: 0-1K ohm) High resolution potentiometer and precisely machined gearing are directly engaged with drive shaft to feedback continuous position of valve

CT – Current transmitter (output signal: 4-20mA) Zero/Span Adjustment

RPC – Factory standard remote position controller (by input and output signal) Input: 4-20mA, 0-10VDC, 2-10VDC, 1-5VDC,

0-5VDC – Output: 4-20mA, 0-10VDC, 2-10VDC, 1-5VDC, 0-5VDC – Auto-calibration – Reverse operating direction

\* Other Outboard Control Options Available - Consult Separate Controls Bulletin \*



### OPTIONAL

#### Digital High Resolution Controller (DHC-100) for models EW1400 and larger

The Radius DHC-100 is a high performance digital positioner intended to control AC actuators, providing 450 points of resolution with quarter turn actuators ranging from 2 sec to 120 sec and has many automatic advanced features.

The simple three button control is used to configure all parameters the unit needs for a wide variety of applications, and allows the open and closed positions to be easily set for direct or reversing acting without any rewiring. The unit can be configured for various command types (4-20mA, 1-5V, 0-5V, 0-10V, or a digital command) and its default operation upon loss of command. Various option modules are easily plugged into the unit, providing other features such as a position feedback signal (current or voltage), auxiliary switches, fault relay contact, or digital Communications. A wide range of data is accessible through a digital communications module, providing additional control or information.

\* Other Servo Control boards are available - please consult the factory. \*

Note: Radius reserves the right to make technical and/or dimensional changes without prior notice

▶ TECHNICAL INFORMATION											
MODEL	EW880	EW1400	EW2100	EW3100	EW4400	EW7000	EW9700	EW17000	EW26500	EW53000	EW79500
Rated torque (in. lbs.)	880	1400	2100	3100	4400	7000	9700	17000	26500	53000	79500
Operating time (seconds) (VAC)											
50 Hz	21	26	26	31	31	39	39	59	59	178	178
60 Hz	18	22	22	26	26	32	32	50	50	149	149
Max Bore Size (in)											
Key (Ø)	.87	.98	.98	1.57	1.57	1.89	1.89	2.95	2.95	4.72	4.72
Square (Ø)	.79	.91	.91	1.34	1.34	1.57	1.57	2.52	2.52	3.94	3.94
Rated Current (A) / Maximum (A)											
1 Phase / 110 V / 50 Hz	0.98/1.38	1.60/2.49	1.62/3.16	1.72/3.16	3.60/5.32	3.90/7.92	3.90/7.92	4.95 / 12.21	6.10 / 12.54	4.95 / 12.21	6.10 / 12.54
60 Hz	1.10/1.49	1.70/2.62	1.72/3.16	1.80/3.16	3.90/5.44	4.20/7.92	4.30/7.92	4.55 / 12.10	6.60 / 12.10	4.55 / 12.10	6.60 / 12.10
1 Phase / 220 V / 50 Hz	0.52/0.79	0.85/1.18	0.87/1.52	0.92/1.52	1.50/2.55	2.05/4.14	2.15/4.14	2.95 / 5.15	3.75 / 5.23	2.95 / 5.15	3.75 / 5.23
60 Hz	0.58/0.83	0.90/1.23	0.90/1.51	0.95/1.51	1.60/2.58	2.20/4.07	2.30/4.07	3.15 / 4.96	3.85 / 5.24	3.15 / 4.96	3.85 / 5.24
3 Phase / 380 V / 50 Hz	0.43/0.94	0.30/0.67	0.32/0.85	0.32/0.85	0.52/1.40	0.82/1.94	0.84/1.94	1.50 / 4.18	1.60 / 3.99	1.50 / 4.18	1.60 / 3.99
60 Hz	0.33/0.42	0.30/0.65	0.32/0.82	0.32/0.82	0.56/1.35	0.88/1.85	0.90/1.85	1.80 / 3.81	2.00 / 3.63	1.80 / 3.81	2.00 / 3.63
3 Phase / 440 V / 50 Hz	0.59/1.08	0.30/0.76	0.32/0.97	0.32/0.97	0.55/1.67	0.82/2.12	0.84/2.12	2.30 / 4.41	2.50 / 4.94	2.30 / 4.41	2.50 / 4.94
60 Hz	0.42/0.93	0.32/0.72	0.35/0.91	0.35/0.91	0.58/1.50	0.88/2.07	0.88/2.07	2.20 / 4.11	2.40 / 4.50	2.20 / 4.11	2.40 / 4.50
AC / DC 24 V	2.80 / 5.33	3.80 / 20	2.40 / 20	3.80 / 24	5.00 / 24	-	-	-	-	-	-
Motor Insulation Class	F	F	F	F	F	F	F	F	F	F	F
ISO 5211 Mounting Flange	F07	F07/F10	F07/F10	F10/F12	F10/F12	F12/F14	F12/F14	F16	F16	F25/F30	F25/F30
Weight (Lbs)	15.43	33.07	33.07	44.09	44.09	55.12	55.12	92.60	92.60	335.10	335.10
No of handwheel turns	10	12	12	14	14	17	17	13	13	39	39

For DC operating time please consult factory

▶ STANDARD SPECIFICATIONS	
Enclosure	Weatherproof IP67, NEMA4/4X and 6, O-ring sealed
Main Power supply	110/220VAC/1Ph/50/60Hz, 380/440/VAC/3Ph/50/60/Hz 10%, 24VDC
Control power supply	110/220VAC/1Ph/50/60Hz 10%
Duty cycle(on-off)	S2: 10Min~30Min
Duty cycle(modulating)	S4, 30~50%, 300~1200 start/Hour
Motor	Squirrel Cage induction motor
Limit switches	2 each for Open and Close (SPDT 250VAC/10A rating)
Torque switches	1 each for Open and Close (SPDT 250VAC/10A rating except for EW880)
Stall protection/ set temp.	Built in thermal protection, Open 302 °F±41 °F, Close 207 °F±59 °F
Travel angle	90 °±5 ° (0 °~ 100 °)
Position indicator	Continuous mechanical indicator with arrow
Manual override	De-clutchable
Self locking	Provided by double worm gearing (no brake)
Mechanical stopper	1 each for each travel end (Open and Close), external & adjustable
Space Heater	5W(110/220VAC) for anti-condensation
Cable entries	2 - PF 3/4" TAP
Lubrication	EP type grease
Terminal block	Screw and Lever Push type (spring loaded)
Ambient temperature	Basic actuator : -4F~+158 °F c/w control options : 14 °F~+140 °F
Ambient humidity	90%RH Max (Non-Condensing)
Anti vibration	XYZ 10g. 02~34Hz, 30 minutes
External coating	Dry powder (Polyester)

Note: Radius reserves the right to make technical and/or dimensional changes without prior notice

# BASIC ACTUATOR DIMENSIONS

Type	EW880	EW1400	EW2100	EW3100	EW4400	EW7000	EW9700	EW17000	EW26500
Flange	F07	F07	F07	F10	F10	F12	F12	F16	F16
ISO 5211		F10	F10	F12	F12	F14	F14		
C	ø 2.76	ø 2.76	ø 2.76	ø 4.02	ø 4.02	ø 4.92	ø 4.92	ø 6.50	ø 6.50
		ø 4.02	ø 4.02	ø 4.92	ø 4.92	ø 5.51	ø 5.51		
A	M8	M8/M10	M8/M10	M10/M12	M10/M12	M12/M16	M12/M16	M20	M20
B	0.55	.55/.67	.55/.67	.67/.83	.67/.83	.79/.98	.79/.98	1.26	1.26
D2	ø 0.87	ø 0.98	ø 0.98	ø 1.57	ø 1.57	ø 1.89	ø 1.89	ø 2.95	ø 2.95
D1	.67	.87	.87	1.06	1.06	1.42	1.42	1.81	2.17
E	ø 1.97	ø 2.30	ø 2.30	ø 3.15	ø 3.15	ø 3.74	ø 3.74	ø 5.31	ø 5.31
F	ø 3.46	ø 4.92	ø 4.92	ø 5.83	ø 5.83	ø 7.01	ø 7.01	ø 8.90	ø 8.90
G	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.20	0.20
H	1.46	2.24	2.24	2.44	2.44	2.64	2.64	3.54	3.54
S	4.92	5.51	5.51	6.69	6.69	7.68	7.68	8.86	8.86
X	10.16	13.31	13.31	14.06	14.06	14.96	14.96	17.32	17.32
Y	6.77	9.02	9.02	9.61	9.61	11.30	11.30	14.76	14.76
Z	9.65	11.81	11.81	12.32	12.32	13.31	13.31	15.16	15.16

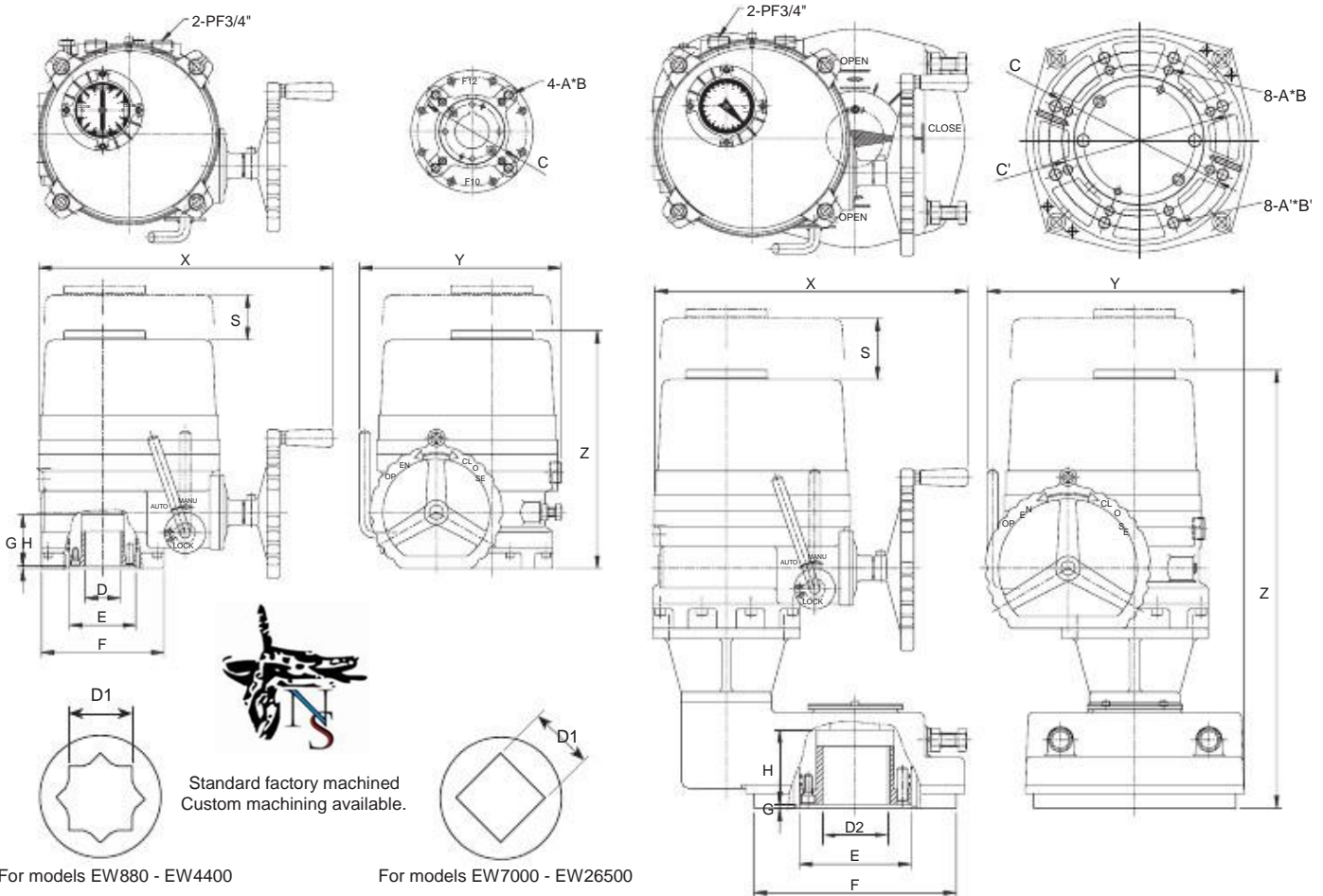
With Gear Box	
EW53000	EW79500
F25	F25
F30	F30
ø 10	ø 10
ø 11.73	ø 11.73
M16/M20	M16/20
1.18/1.38	1.18/1.38
ø 4.72	ø 4.72
CF	CF
ø 8.50	ø 8.50
ø 13.78	ø 13.78
0.20	0.20
4.49	4.49
8.86	8.86
20.31	20.31
16.42	16.42
26.30	26.30

**NOTES:**

- D1) Standard drilling for all models
- D2) Maximum permissible drilling diameters of custom blank drives

(in.)

(in.)



For models EW880 - EW4400

For models EW7000 - EW26500

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Radius offers a line of smaller actuators  
Including the EW180, EW350 & EW700

Please consult factory for individual bulletins



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