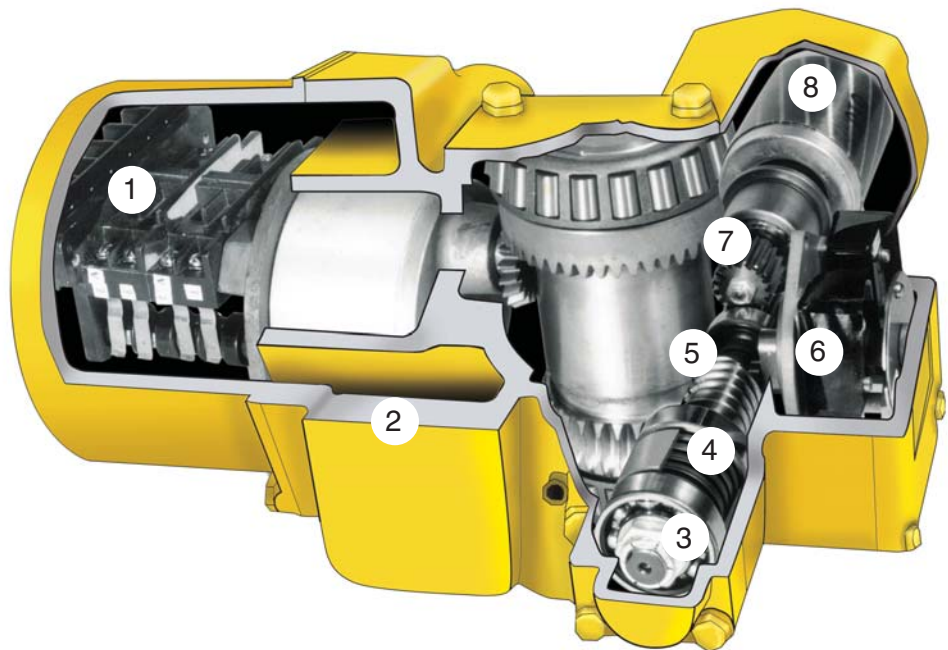


## ELECTRIC ROTARY ACTUATORS

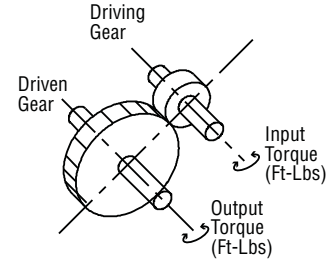
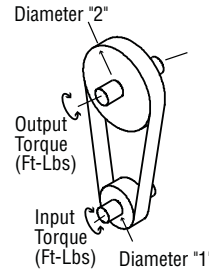
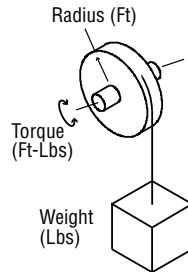
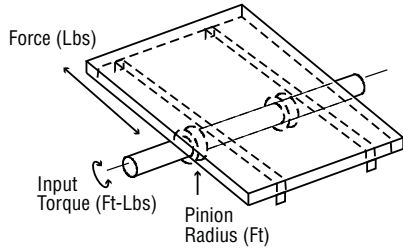
The QR Series Posi-Tork® Rotary Actuators are completely self-contained, electric mechanical devices. Designed and fabricated for dependable, long-life operation, these actuators are used for positioning, automation of material handling or flow control equipment. Series QR Posi-Tork® Actuators are driven by a high-starting torque, low inertia motor. The motor rotates the output drive sleeve through a worm gear set and single reduction spur gearing.

Upon completion of travel, the gear driven position limit switch interrupts power to the motor. If during actuator travel, some external obstacle prevents movement, the torque limit switch will interrupt power to the motor.



1. Adjustable Position Limit Switch. A two position gear driven limit switch for end of travel actuator shut-off is included as standard. Each position is independently adjustable and can be set anywhere within the full actuator travel. The heavy duty rotary drum, double break switch with wiping contacts, features a patented mechanism that ensures internal gear engagement after adjustment.
  2. Weatherproof and/or Dust-ignition proof (Class II, Division 1 & 2, Groups E, F and G).
  3. Anti-friction bearings throughout, including the output drive sleeve.
  4. Torque limit disc springs and spring limit sleeve to prevent total spring deflection.
  5. Non-backdriving high strength worm gear set.
  6. Adjustable Torque Limit Switch. An adjustable torque switch for each direction of travel is provided as standard. The switch assembly will automatically shut-off the actuator if the set torque is exceeded. The switch protects driven equipment from damage due to excessive torque and can also be used as a mechanism for positive seating.
  7. High strength alloy steel cut gears.
  8. Heavy duty motor, TENV, NEMA D design, high-starting torque, low-inertia motor provides high breakaway torque and good positioning characteristics. Class F insulation is standard.
- Other features:**
- Plated external hardware.
  - Permanently lubricated.
  - Electrical components prewired and terminated inside actuator.

## GENERAL APPLICATIONS



$$\text{Linear Velocity (In/Sec)} = \left( \frac{\text{Input RPM}}{60} \right) \times \left( \frac{\text{Pinion Dia.}}{\text{In.}} \times 3.14 \right)$$

$$\text{Force} = \frac{\text{Input Torque} \times (0.9 \text{ Efficiency})}{\text{Pinion Radius}}$$

$$\text{Input Torque} = \text{Force} \times (\text{Pinion Radius} / 0.9 \text{ Efficiency})$$

Torque (Running) = Radius x Weight  
(Actuator selection must be based on running torque for constant load applications)

$$\text{Output Torque} = \text{Input Torque} \times \left( \frac{\text{Dia. "2"}}{\text{Dia. "1"}} \right)$$

$$\text{Output RPM} = \text{Input RPM} \times \left( \frac{\text{Dia. "1"}}{\text{Dia. "2"}} \right)$$

$$\text{Output Torque} = \text{Input Torque} \times \left( \frac{\text{N.G.}}{\text{N.P.}} \right)$$

N.G. = No. of Teeth on Driven Gear  
N.P. = No. of Teeth on Driving Pinion

The above formulas are intended as a guide. They neglect any effects of friction of bearings, belts, chains, or gears. For specific application assistance or for our application brochure, contact Andco Actuators.

## RACK AND PINION FORCE — TORQUE CONVERSIONS

Force (lbs.)	Approximate Torque Required (ft.-lbs.)					
	2.0 Inch Dia Pinion	2.5 Inch Dia Pinion	3.0 Inch Dia Pinion	3.5 Inch Dia Pinion	4.0 Inch Dia Pinion	4.5 Inch Dia Pinion
50	5	6	7	8	10	11
100	10	12	14	16	19	21
250	23	29	35	41	47	53
500	46	58	70	81	93	105
1000	93	116	140	162	186	209
1500	139	174	208	243	278	313
2000	185	232	278	325	371	417
2500	—	290	348	405	463	521
3000	—	—	417	487	556	625
3500	—	—	—	568	649	730
4000	—	—	—	—	741	834
4500	—	—	—	—	834	—

Above torques are calculated assuming a 10% friction loss between the rack and pinion.

## LINEAR SPEEDS FOR RACK AND PINION GATES

Actuator Output RPM	Gate Velocity (Inches/ Second)					
	2.0 Inch Dia Pinion	2.5 Inch Dia Pinion	3.0 Inch Dia Pinion	3.5 Inch Dia Pinion	4.0 Inch Dia Pinion	4.5 Inch Dia Pinion
2.2	—	—	0.35	0.40	0.46	0.52
3.4	—	0.45	0.53	0.62	0.71	0.80
4.8	0.50	0.63	0.76	0.88	1.01	1.13
6.5	0.68	0.85	1.02	1.19	1.36	1.53
10.5	—	—	—	1.92	2.20	2.47
11	1.15	1.44	1.73	2.02	2.30	2.59
17	1.78	2.23	2.67	3.12	3.56	4.00
18	—	—	—	3.30	3.77	4.24
24	2.51	3.14	3.77	4.40	5.03	5.66
34	3.56	4.45	5.34	6.23	—	—
54	5.66	—	—	—	—	—

**SERIES QR2 ROTARY ACTUATORS (MAXIMUM BORE 1-1/4" DIA. X 1/4" KEYWAY)**

Output Speed (RPM)	Max* Output Rev.	Actuator Output Torque Rating (ft.-lbs.)									
		Model QR2-25S		Model QR2-05T		Model QR2-10T		Model QR2-17T		Model QR2-24T	
		B.A.	Run	B.A.	Run	B.A.	Run	B.A.	Run	B.A.	Run
11	80	80	38	—	—	—	—	—	—	—	—
17	80	55	26	—	—	—	—	—	—	—	—
24	80	40	19	110	48	225	67	—	—	—	—
34	80	30	15	80	36	160	62	225	62	—	—
54	80	17	10	50	24	95	44	—	—	—	—
58	80	—	—	—	—	—	—	160	50	225	50

B.A.— Breakaway Torque; Run — Running (Constant Load) Torque.

**SERIES QRG2 ROTARY ACTUATORS (MAXIMUM BORE 1-3/4" DIA. X 3/8" KEYWAY)**

Output Speed (RPM)	Max* Output Rev.	Actuator Output Torque Rating (ft.-lbs.)									
		Model QRG2-25S		Model QRG2-05T		Model QRG2-10T		Model QRG2-17T		Model QRG2-24T	
		B.A.	Run	B.A.	Run	B.A.	Run	B.A.	Run	B.A.	Run
2.2	15	350	175	—	—	—	—	—	—	—	—
3.4	15	240	120	—	—	—	—	—	—	—	—
4.8	15	175	85	475	220	850	305	—	—	—	—
6.5	15	—	—	345	165	690	280	850	280	—	—
10.5	25	—	—	—	—	430	175	600	175	—	—
18.0	25	—	—	—	—	—	—	—	—	600	144

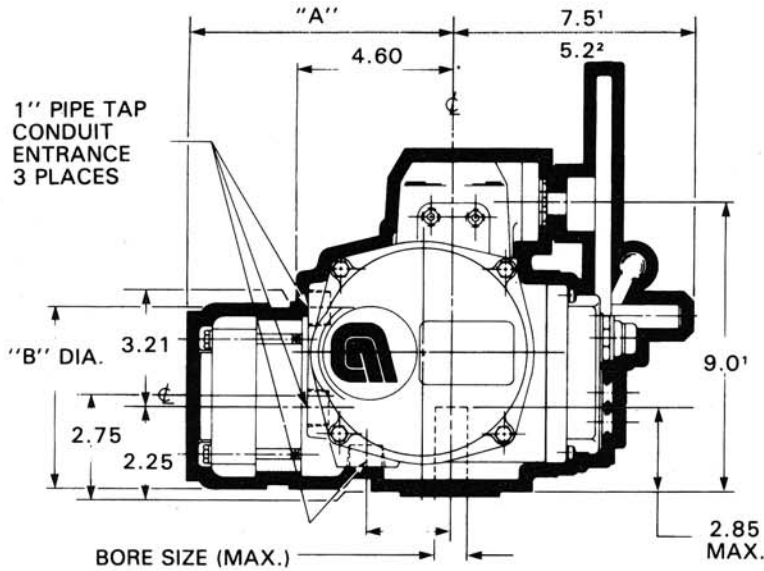
B.A.— Breakaway Torque; Run — Running (Constant Load) Torque.

\*Consult factory for applications exceeding maximum output revolutions listed.

**NOTES**

- Actuator Weight Ranges (approximately):  
Series QR2: 75-90 lbs.  
Series QRG2: 95-115 lbs.
- Actuator Models QR2-25S and QRG2-25S are 115 VAC, 60 Hz, 1 Ph.  
All other models are 230/460 or 575 VAC, 60 Hz, 3 Ph. For 50 Hz applications consult factory.
- Running torque is listed at 25% maximum duty.

## QR2 SERIES STANDARD WITH OPTIONAL HANDWHEEL

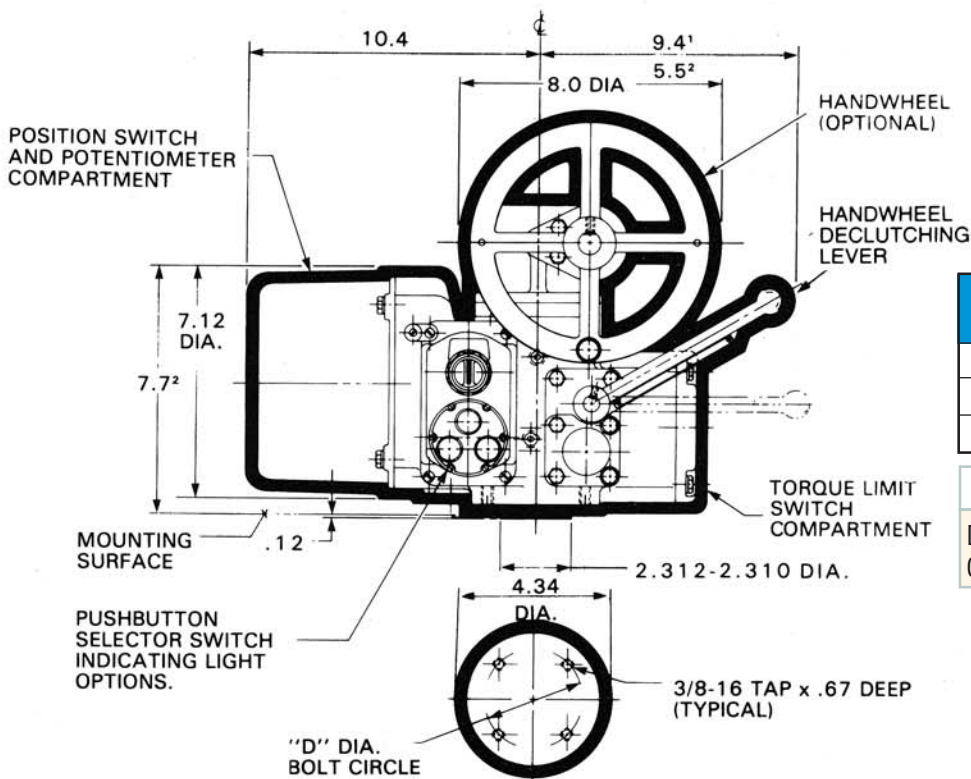


Model No.	"A"	"B"	"D"
QR2-25S	11.06	6.00	3.50
QR2-05T	10.06	6.00	3.50

QR 2 MODELS—1-1/4" DIA. x 1/4" KEYWAY

<sup>1</sup>DIMENSIONS APPLY TO ACTUATORS WITH HANDWHEELS

<sup>2</sup>DIMENSIONS APPLY TO ACTUATORS WITHOUT HANDWHEELS

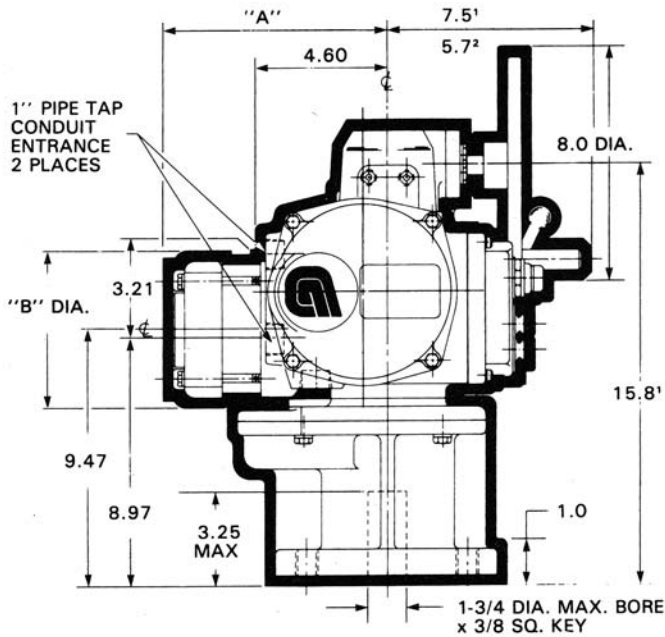


Model No.	"A"	"B"	"D"
QR2-10T	11.06	6.00	3.50
QR2-17T	12.70	6.86	3.50
QR2-24T	13.63	6.86	3.50

### NOTES

Dimensions are for reference only.  
Contact Andco for certified drawings.

## ORG2 SERIES STANDARD WITH OPTIONAL HANDWHEEL

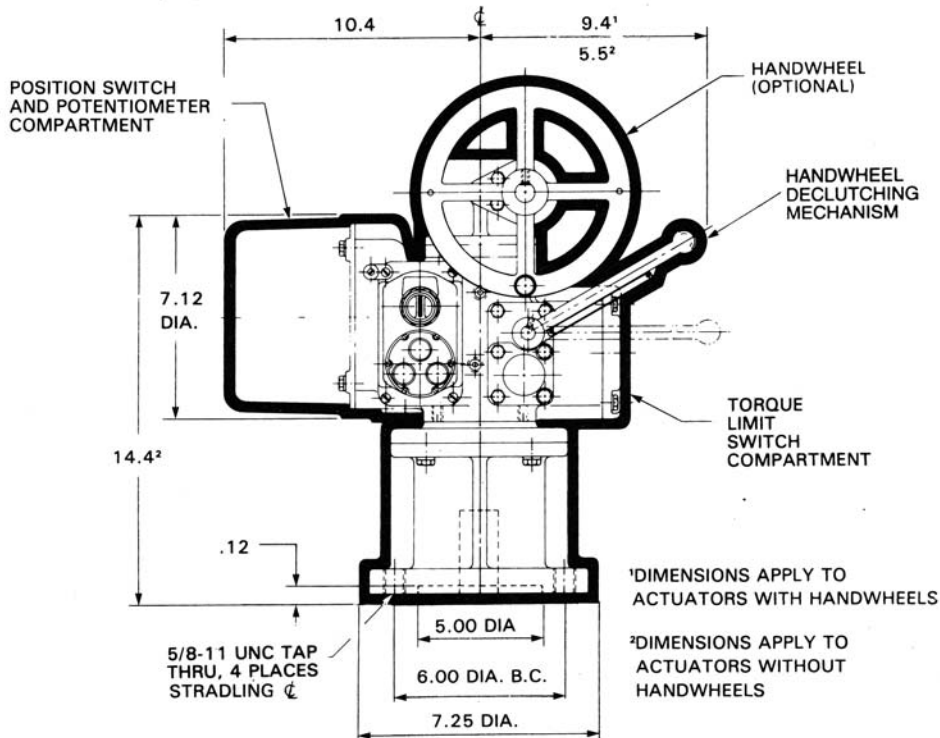


Model No.	"A"	"B"
QR2-25S	11.06	6.00
QR2-05T	10.06	6.00

Model No.	"A"	"B"
QR2-10T	11.06	6.00
QR2-17T	12.70	6.86
QR2-24T	13.63	6.86

### NOTES

Dimensions are for reference only.  
Contact Andco for certified drawings.



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