V-TORK USA

VTM Series Electric Actuator

(Failsafe Battery Backup Version)

- Part-Turn Electric Actuator
- Failsafe Battery Backup
- Wide Range Of Torque Outputs (310 to 20,355 in-lb)
- Configurable On-Off or Modulating Control
- Explosion-Proof Enclosure

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Introduction

The V-Tork VTM is a rugged, compact, failsafe battery backup part-turn electric actuator for on-off and modulating control of valves and dampers. The VTM electric actuator offers a high quality, reliable, solution for valve automation that is also cost-effective. Key functional parameters are easily configured via the onboard digital control board.

1. VTM series electric actuators offer a compact high-strength construction that is also lightweight.

2. Wide range of output torques for versatility in sizing. (310 to 20,355 in-lbs.)

3. Battery Backup with Lithium-Ion battery pack provides failsafe functionality driving actuator to preset fail position on loss of power.

4. Precision-machined worm gear ensures self-locking functionality and anti-reverse rotation.

5. Optional low temperature heater expands temperature rating to -40°F to +158°F.

6. Hard anodized aluminum alloy housing with polyester powder coating to achieve superior anti-corrosion characteristics.

7. Explosion-Proof Enclosure (ATEX Ex db IIC T6 Gb and Ex tb IIIC T80°C Db Certification)

8. Electronic torque protection which monitors motor current provides overload protection.

9. Mounting base conforms to ISO5211 standard for ease of mounting to valves.

10. Multiple sizes of drive bushings and insert for ease of mounting to most valves.

11. Clutchless manual override for ease of manual operation

12. Compact electric motor with high starting torque and high efficiency with integral thermal protection to prevent motor overheating.

13. Mechanical position indicator with easy to read dial.

14. Digital Control Board for configuring key parameters such as open and close positions, fail position, selection of on-off or modulating control method.

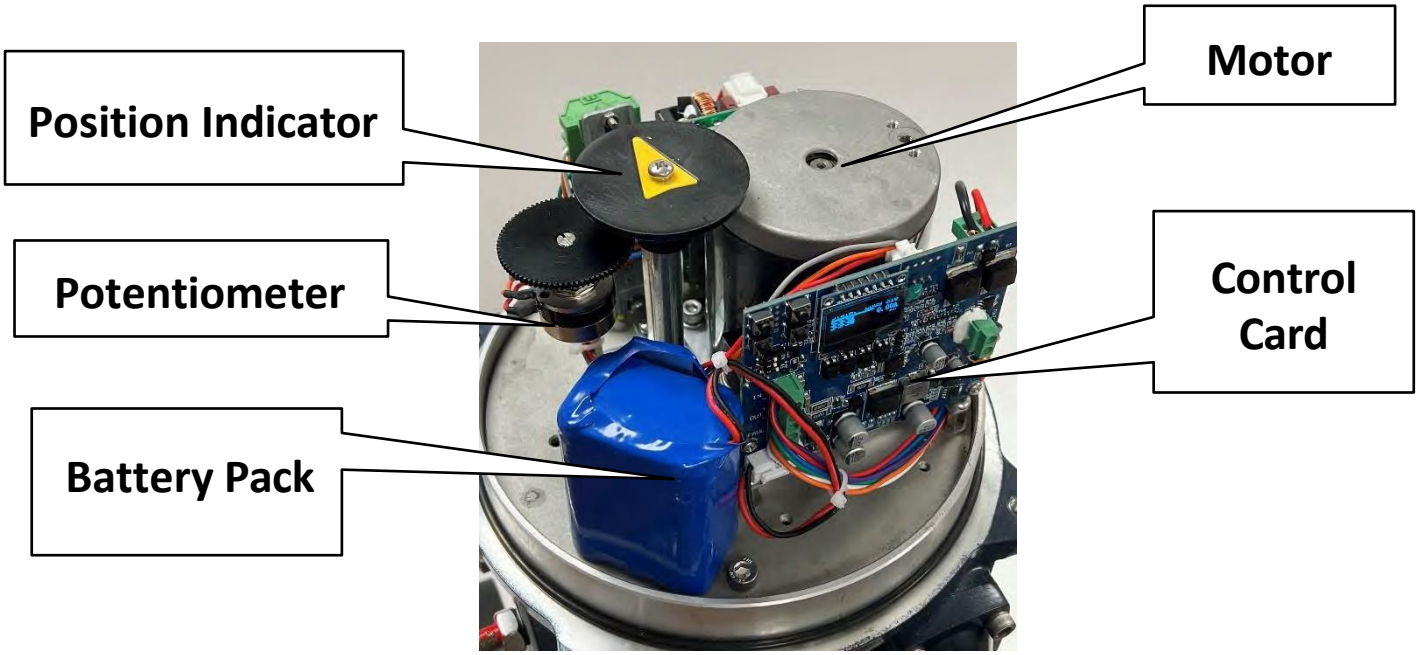
VTM Modulating Version

VTM Modulating electric actuators integrate a multi-functional servo amplifier and a position signal transmitter into the standard actuator to provide modulating control. All operations such as calibration, sensitivity setting, and automatic/manual switching are controlled by four buttons on the Control Card making it quick and easy to install and set up.

The Control Card is installed in the actuator enclosure and accepts the 4-20mA control signal from the control system or other control device. An integral potentiometer acts as the electronic valve positioner input to the Control Card.

Specifications

- Input Signal: 4-20mA DC, 0-5VDC, 0-10VDC
- Input Impedance: 250Ω（4–20mA）or 500Ω（0–10mA）
- Valve Position Sensor: Single-turn absolute value encoder.
- Valve Position Output Signal: 4–20mA DC
- Duty Cycle: 24VDC Motor - 100% (for all Battery Backup versions)
- Motor Blocking Protection Time: 1–25 S (default 6.4S)
- Power Consumption : ≤3VA
- Actuator Operating Sensitivity: 0.1%-12.5%
- Insulation Strength: power frequency 1500V,1min
- Insulation Resistance: above 50MΩ
- Temperature rating: -4°F to 158°F (-40°F to 158°F with optional low temperature heater)
- Maximum Humidity: 90%
- Power Voltage: 120VAC or 220VAC, 60Hz±10%; or 24VDC±10%;
- Signal loss, feedback loss, motor stalling failure protection function.
- Failure code warning function



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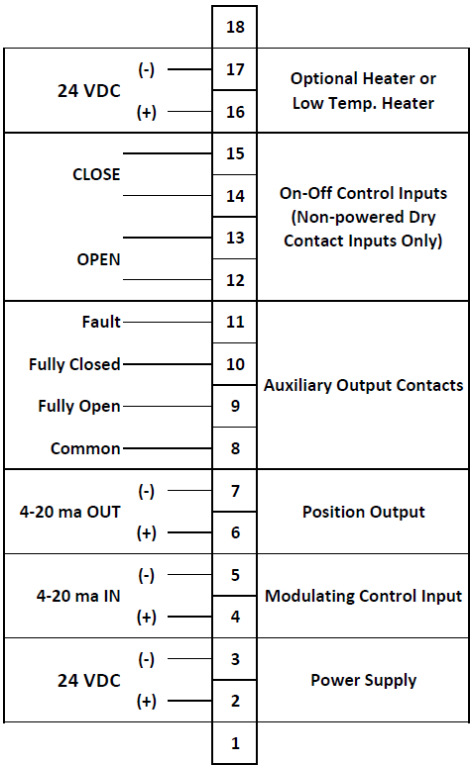
VTM Specifications

Model No	Torque		Cycle Time	Motor Power	ISO Mounting Base	Drive Shaft	Rated Current (amps)		Weight	Manual Override
	NM	in-lb	Sec/90°	Watts		inches	24VDC	120VAC	lbs	
VTM2H	35	310	8	10	F05/F07	0.67	1.3	0.7	24.2	Push Handwheel
VTM2H	70	620	8	60	F05/F07	0.67	1.5	0.7	24.2	Push Handwheel
VTM3	100	885	20	20	F07/F10	0.67 or 0.87	2.0	0.8	30.9	Clutchless Handwheel
VTM3	200	1770	30	20	F07/F10	0.67 or 0.87	3.5	0.8	30.9	Clutchless Handwheel
VTM3	300	2655	20	40	F07/F10	0.67 or 0.87	5.5	1.6	30.9	Clutchless Handwheel
VTM3	450	3983	30	60	F07/F10	0.67 or 0.87	7.2	1.9	30.9	Clutchless Handwheel
VTM4	600	5310	40	90	F10/F12 or F10/F14	0.87 or 1.06	7.1	1.8	48.5	Clutchless Handwheel
VTM4	800	7080	48	90	F10/F12 or F10/F14	0.87 or 1.06	8.0	1.8	48.5	Clutchless Handwheel
VTM5	1000	8850	48	90	F12/F14/F16	1.42	12.0	1.8	110.2	Clutchless Handwheel
VTM5	1500	13275	50	120	F12/F14/F16	1.42	10.0	4.8	110.2	Clutchless Handwheel
VTM5	2300	20355	50	120	F12/F14/F16	1.42	10.0	4.8	117.2	Clutchless Handwheel

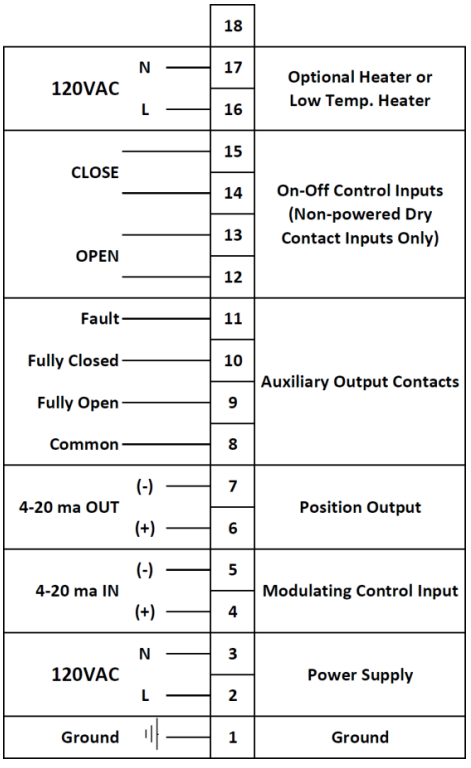
VTM Current Draw (amps)

Model	Maximum	At Maximum Load	While Charging Battery	Idle	Average time to charge battery
VTM2H-35	1.3	1.3	0.20	0.05	2 hours
VTM2H-70	1.5	1.5	0.20	0.05	2 hours
VTM3-100	2.0	2.0	0.65	0.05	2 hours 28mins
VTM3-200	3.5	3.5	0.65	0.05	2 hours 28mins
VTM3-300	5.5	5.5	0.65	0.05	2 hours 28mins
VTM3-450	7.2	7.2	0.65	0.05	3 hours 23mins
VTM4-600	7.1	7.1	0.65	0.05	3 hours 23mins
VTM4-800	8.0	8.0	0.65	0.05	3 hours 23mins
VTM4-600-10S	11.0	11.0	0.65	0.05	3 hours 23mins
VTM5-1000	12.0	12.0	0.65	0.05	3 hours 23mins
VTM5-1500	10.0	10.0	0.65	0.05	3 hours 23mins
VTM5-2300	13.0	13.0	0.65	0.05	3 hours 23mins

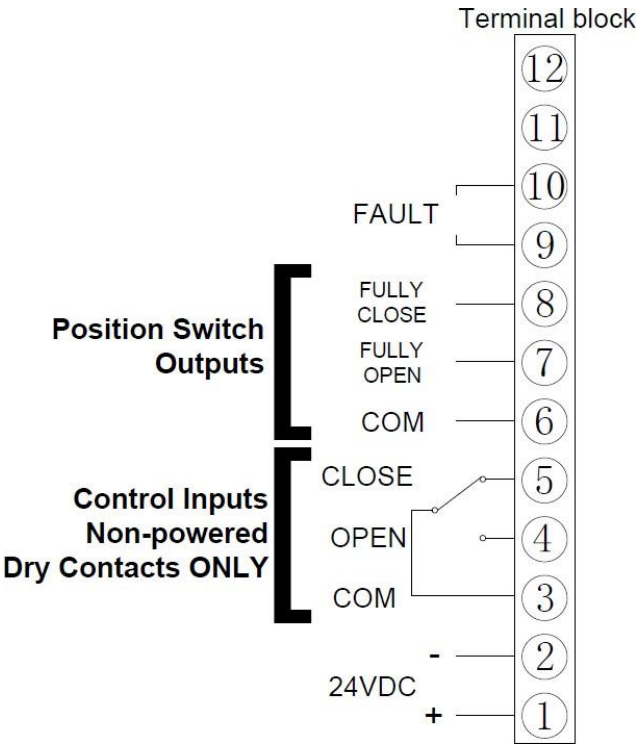
VTM Version 1.5 and 2.0 with Battery Backup Wiring Diagram (24VDC)



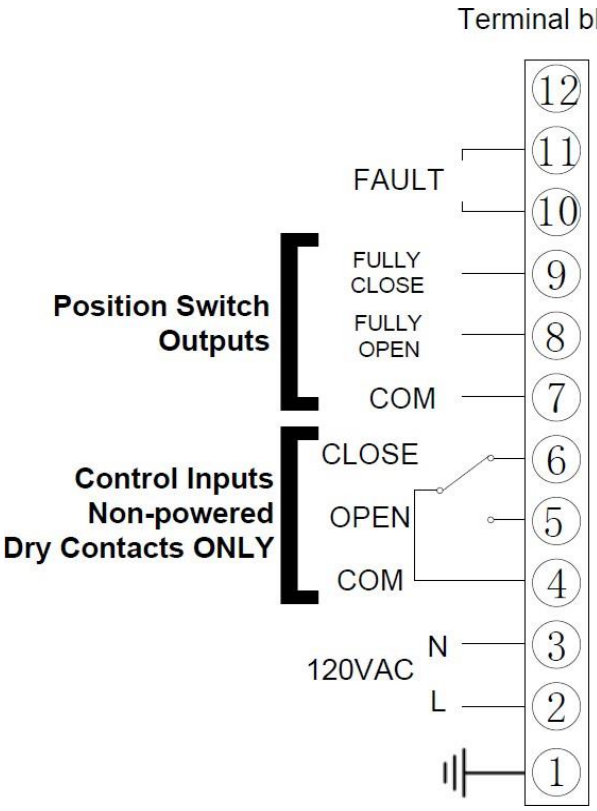
VTM Version 1.5 and 2.0 with Battery Backup Wiring Diagram (120VAC)



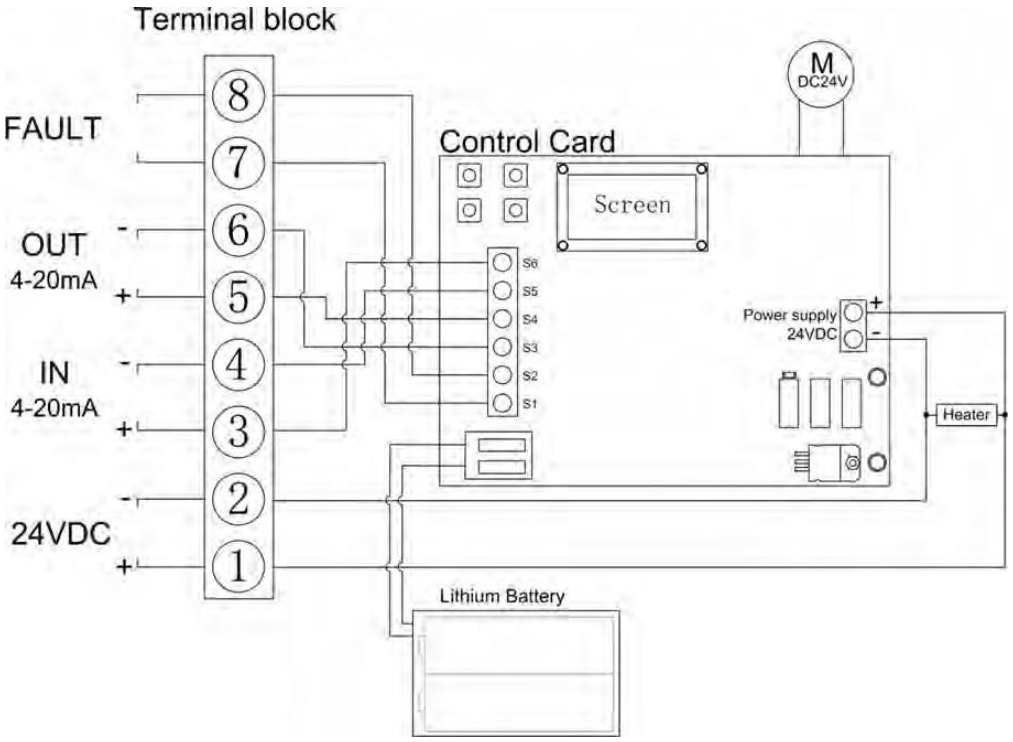
VTM On-Off Version 1.0 with Battery Backup Wiring Diagram (24VDC)



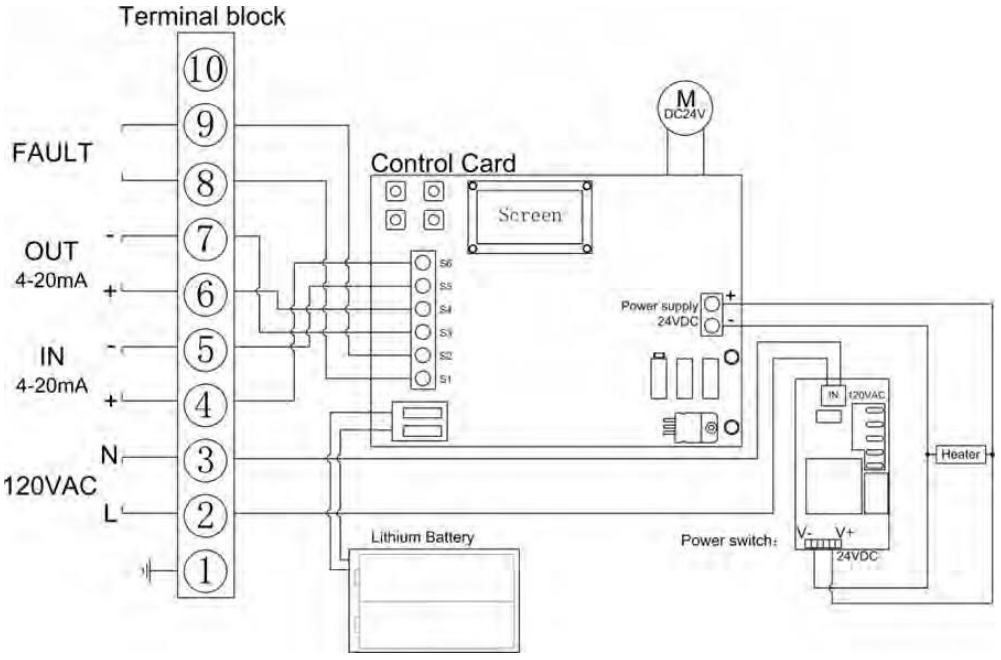
VTM On-Off Version 1.0 with Battery Backup Wiring Diagram (120VAC)



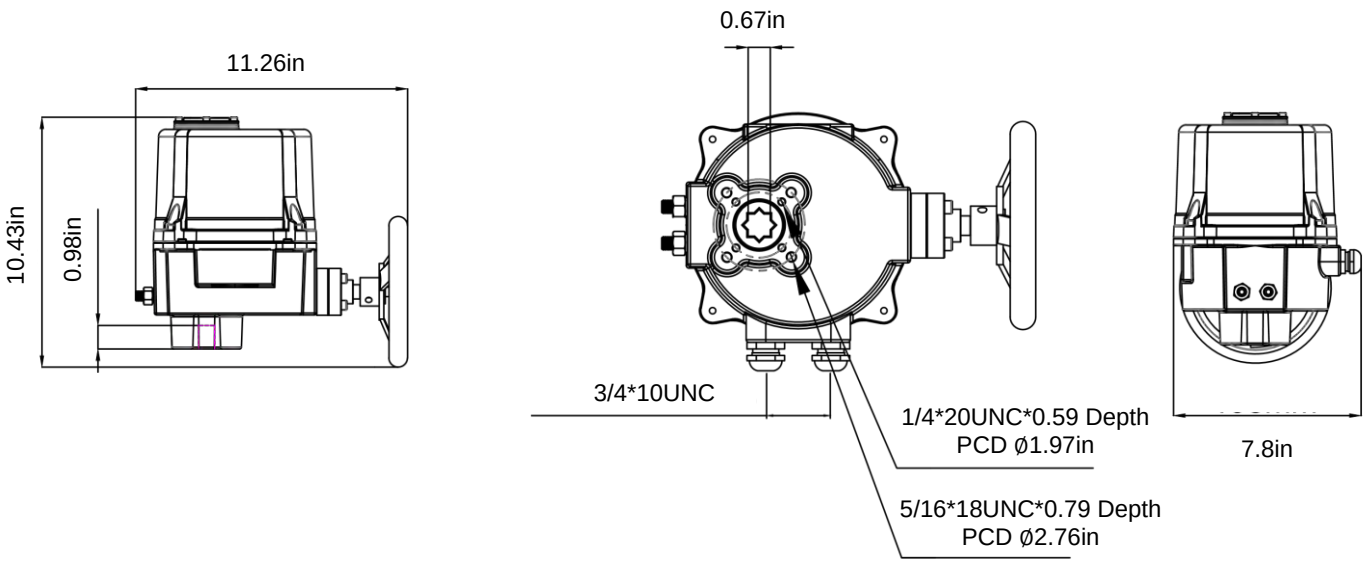
VTM Modulating Version 1.0 with Battery Backup Wiring Diagram (24VDC)



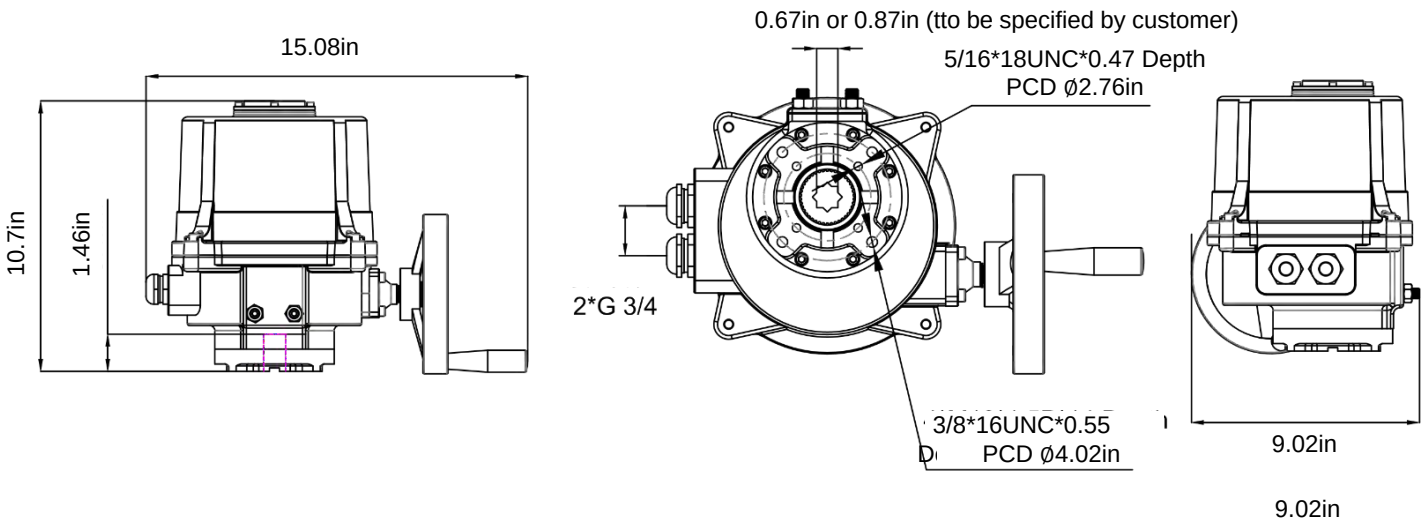
VTM Modulating Version 1.0 with Battery Backup Wiring Diagram (120VAC)



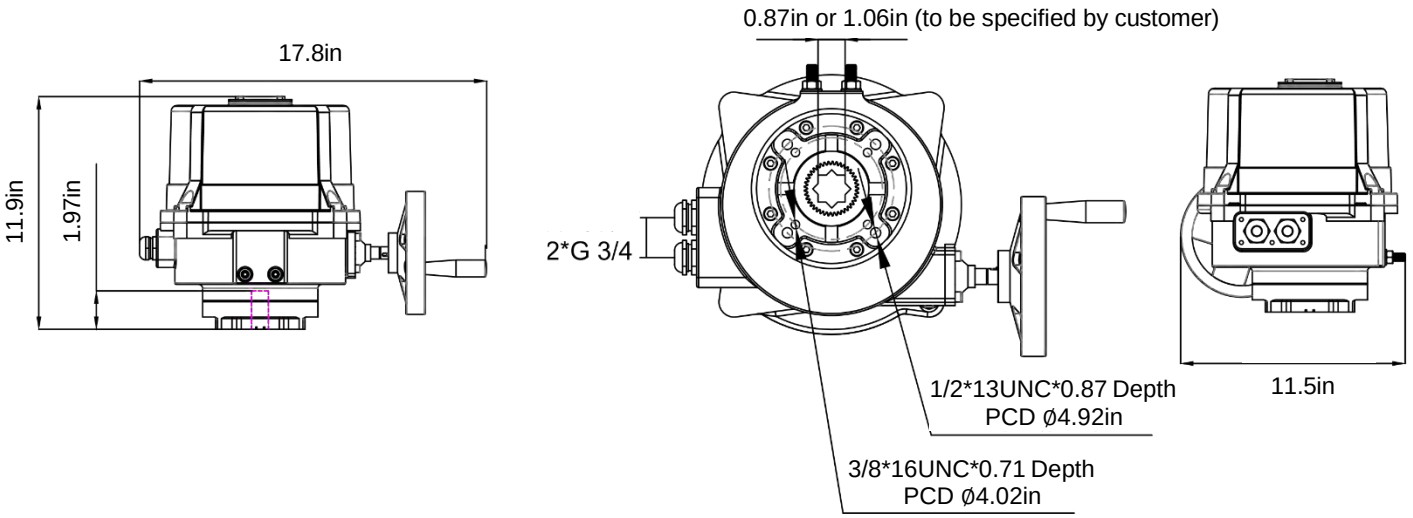
VTM2H Dimensions



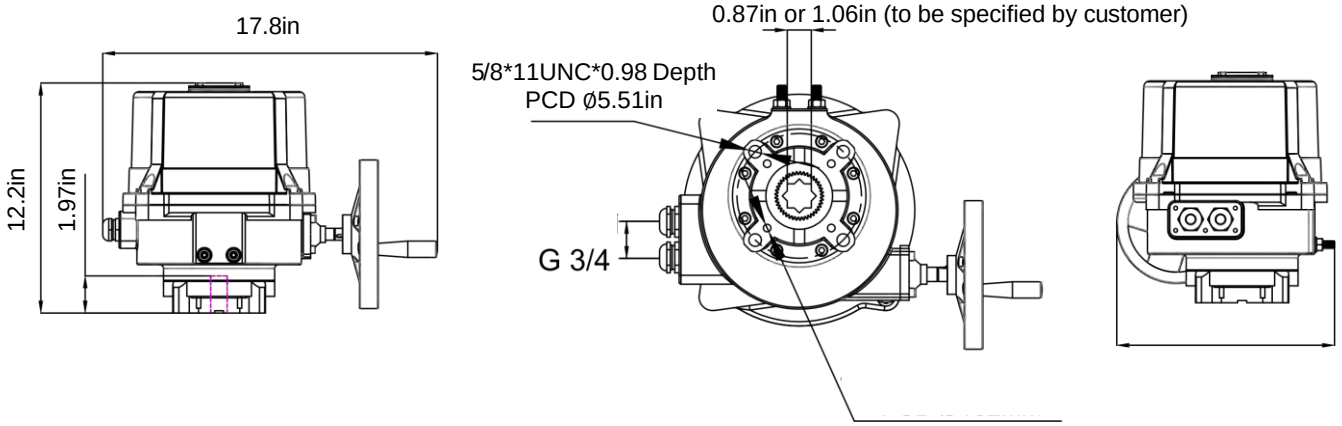
VTM3 Dimensions



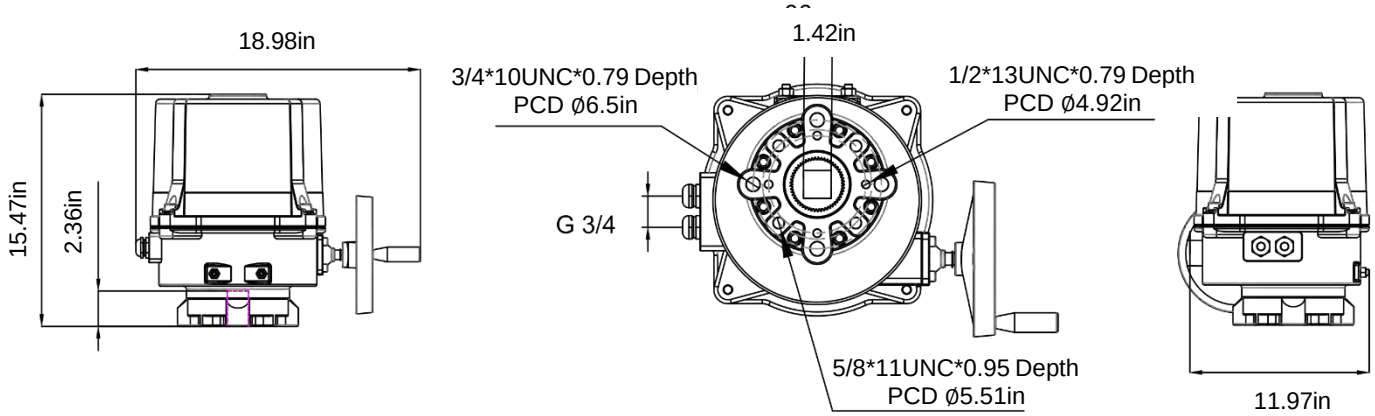
VTM4 Dimensions F10-F12



VTM4 Dimensions F14



VTM5 Dimensions



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VTM Model Numbering Configuration

VTM-	Size-	T-	C-	V-	O-
Model No.	Enclosure Size	Output Torque in NM	Control Method	Power Supply	Options

VTM	Size-		T-		C-	V-	O
	Enclosure Size	Manual Override	Output Torque (NM)	Output Torque (in-lb)	Control Method	Power Supply	Options
	2H	Push Handwheel	35	310	MO: Modulating or On-Off (configurable)	E: 120VAC	BB: Battery Backup
			70	620			
	3	Clutchless Handwheel	100	885		F: 24VDC	H: Std Internal Heater
			200	1770			
			300	2655		H: 220VAC	LT: Low Temp (-40°F to 158°F) Heater
			450	3983			
	4	Clutchless Handwheel	600	5310			XP: ATEX Explosion-Proof
			800	7080			
	5	Clutchless Handwheel	1000	8850			
			1500	13275			
			2300	20355			

Example: VTM3-300-MO-F-BB-XP would represent a VTM with 300 NM (2655 in-lb) torque output, with 24 volt dc power supply, and battery backup and ATEX explosion-proof enclosure.

Notice

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