



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 44,250 in-lb)
- Configurable On-Off or Modulating Control
- Explosion-Proof Enclosure



VTM Series Electric Actuator (Failsafe Battery Backup Version)

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 extends 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 drive bushing sizes and inserts 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.



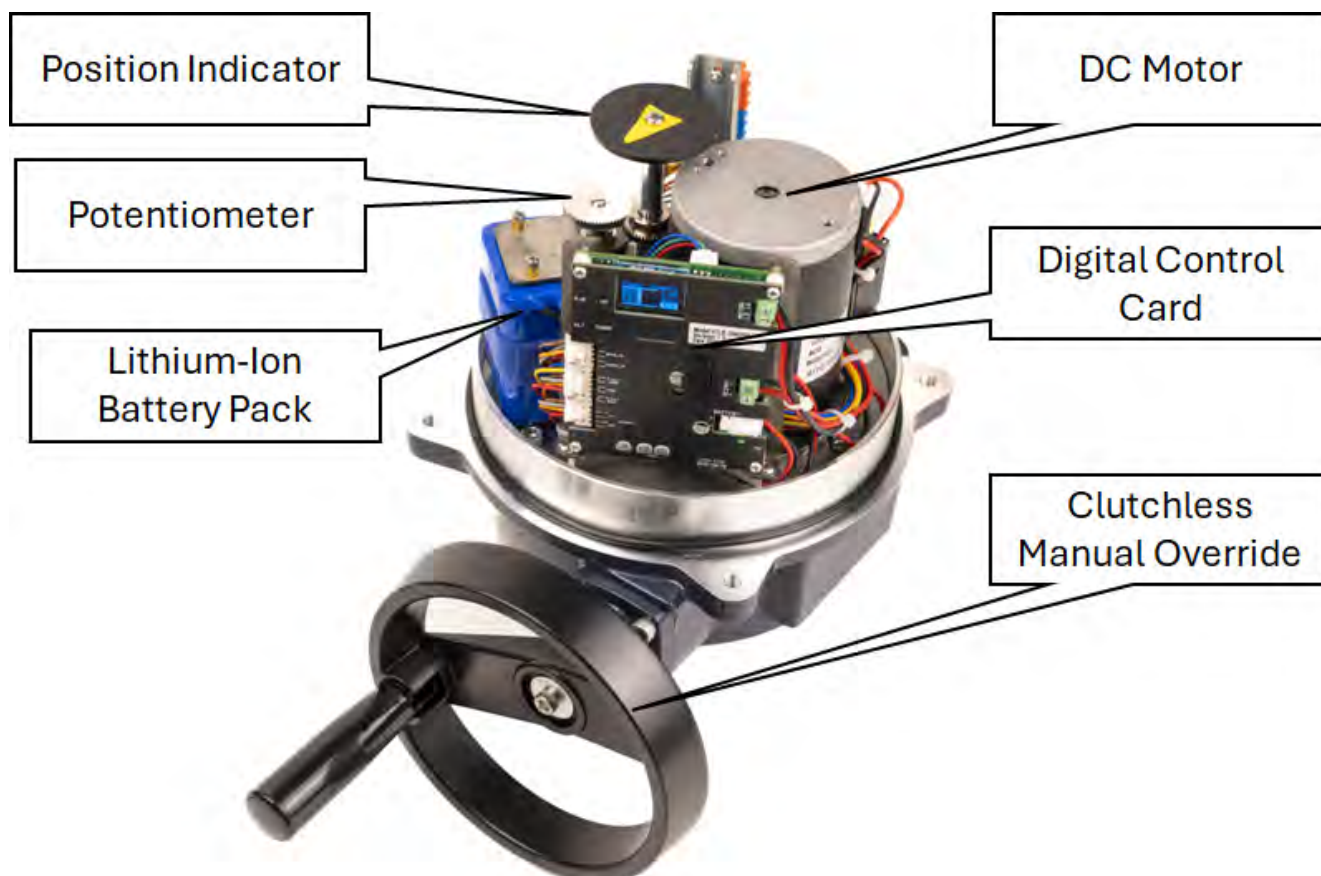
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VTM Modulating Function

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 Digital Control Card making it quick and easy to install and set up. The Digital 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 Digital 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



V1.6 Control Card – specify “V16” option in model number



Same as v1.5 plus:

1. ESD Control Mode – On-Off Control with fail closed/open on signal loss
2. Torque Close - Close on torque value
3. Bluetooth - Configure and local control via Bluetooth

1. ESD – On-off control that requires that the input discrete signal be continuous. Any loss of this discrete input signal results in loss of signal status and will drive actuator to preconfigured Signal Loss position (Open, Closed, or Last)
2. Torque Close function allows the user to configure the VTM to close on TORQUE – instead of position. Can be used on torque-seated Control Valves and Triple Offset Butterfly Valves.
3. Bluetooth - User can operate and configure the VTM-BB via iPhone Bluetooth App. Transforms the “Intrusive” VTM-BB into a Non-Intrusive Actuator.

**V-TORK USA****VTM Series Electric Actuator (Failsafe Battery Backup Version)****VTM Specifications**

Model No	Torque		Cycle Time Sec/90°	Motor Power Watts	ISO Mounting Base	Drive Shaft inches	Rated Current (amps)		Weight lbs	Manual Override
	NM	in-lb					24VDC	120VAC		
VTM2H	35	310	8	10	F05/F07	0.67	1.3	0.7	24	Push Handwheel
VTM2H	70	620	8	60	F05/F07	0.67	1.5	0.7	24	Push Handwheel
VTM2H	140	1239	6	80	F05/F07	0.67	4.0	0.7	24	Push Handwheel
VTM3	100	885	20	20	F07/F10	0.67 or 0.87	2.0	0.8	31	Clutchless Handwheel
VTM3	200	1770	30	20	F07/F10	0.67 or 0.87	3.5	0.8	31	Clutchless Handwheel
VTM3	300	2655	20	40	F07/F10	0.67 or 0.87	5.5	1.6	31	Clutchless Handwheel
VTM3	450	3983	30	60	F07/F10	0.67 or 0.87	7.2	1.9	31	Clutchless Handwheel
VTM4	600	5310	40	90	F10/F12 or F10/F14	0.87 or 1.06	7.1	1.8	49	Clutchless Handwheel
VTM4	600-10S	5310	10	120	F10/F12	0.87 or 1.07	14.0	NA	53	Clutchless Handwheel
VTM4	800	7080	48	90	F10/F12 or F10/F14	0.87 or 1.06	8.0	1.8	49	Clutchless Handwheel
VTM5	1000	8850	48	90	F12/F14/F16	1.42	12.0	1.8	110	Clutchless Handwheel
VTM5	1500	13275	50	50	F12/F14/F16	1.42	14.0	4.8	110	Clutchless Handwheel
VTM5	2300	20355	50	60	F12/F14/F16	1.42	14.0	4.8	117	Clutchless Handwheel
VTM5+G	4000	35400	50	120	F14	1.42	12.0	4.8	178	Clutchless Handwheel
VTM5+G	5000	44250	50	120	F14	1.42	14.0	4.8	178	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
VTM2H-140	4.0	4.0	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
VTM4-600-10S	14.0	14.0	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
VTM5+G-4000	13.0	13.0	0.65	0.05	3 hours 23mins
VTM5+G-5000	13.0	13.0	0.65	0.05	5 hours 23mins

VTM Series Electric Actuator (Failsafe Battery Backup Version)

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

		18	
24 VDC	(-) —	17	Optional Heater or Low Temp. Heater
	(+) —	16	
CLOSE	—	15	On-Off Control Inputs (Non-powered Dry Contact Inputs Only)
	—	14	
	—	13	
	—	12	
OPEN	—	11	Auxiliary Output Contacts
	—	10	
	—	9	
	—	8	
4-20 ma OUT	(-) —	7	Position Output
	(+) —	6	
4-20 ma IN	(-) —	5	Modulating Control Input
	(+) —	4	
24 VDC	(-) —	3	Power Supply
	(+) —	2	
		1	

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

		18	
120VAC	N —	17	Optional Heater or Low Temp. Heater
	L —	16	
CLOSE	—	15	On-Off Control Inputs (Non-powered Dry Contact Inputs Only)
	—	14	
	—	13	
	—	12	
OPEN	—	11	Auxiliary Output Contacts
	—	10	
	—	9	
	—	8	
4-20 ma OUT	(-) —	7	Position Output
	(+) —	6	
4-20 ma IN	(-) —	5	Modulating Control Input
	(+) —	4	
120VAC	N —	3	Power Supply
	L —	2	
Ground	—	1	Ground

VTM Series Electric Actuator (Failsafe Battery Backup Version)

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

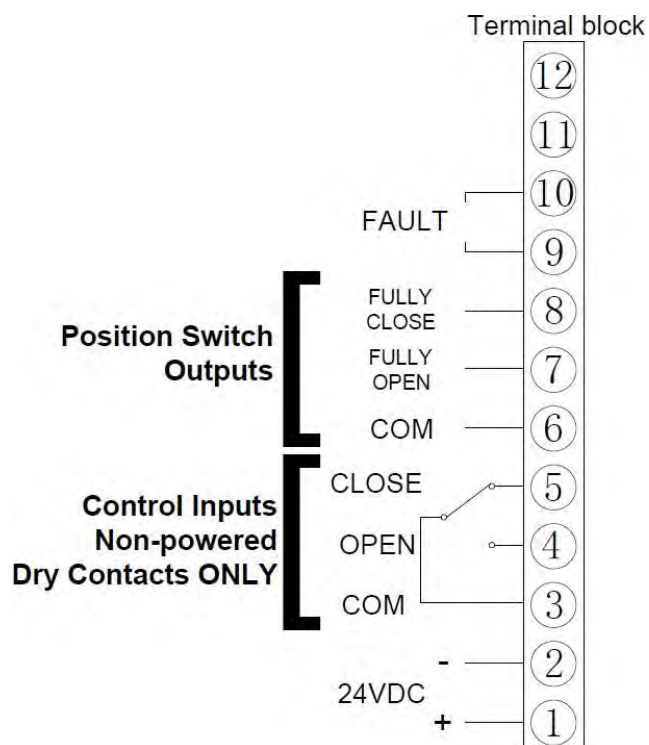
	18	
24 VDC (-)	17	Optional Heater or Low Temp. Heater
24 VDC (+)	16	
CLOSE	15	On-Off Control Inputs (Non-powered Dry Contact Inputs Only)
OPEN	14	
	13	
COMMON	12	
Fault	11	Auxiliary Switch Outputs
Fully Closed	10	
Fully Open	9	
COMMON	8	
4-20 ma OUT (-)	7	Position Output
4-20 ma OUT (+)	6	
4-20 ma IN (-)	5	Modulating Control Input
4-20 ma IN (+)	4	
24 VDC (-)	3	Power Supply
24 VDC (+)	2	
	1	

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

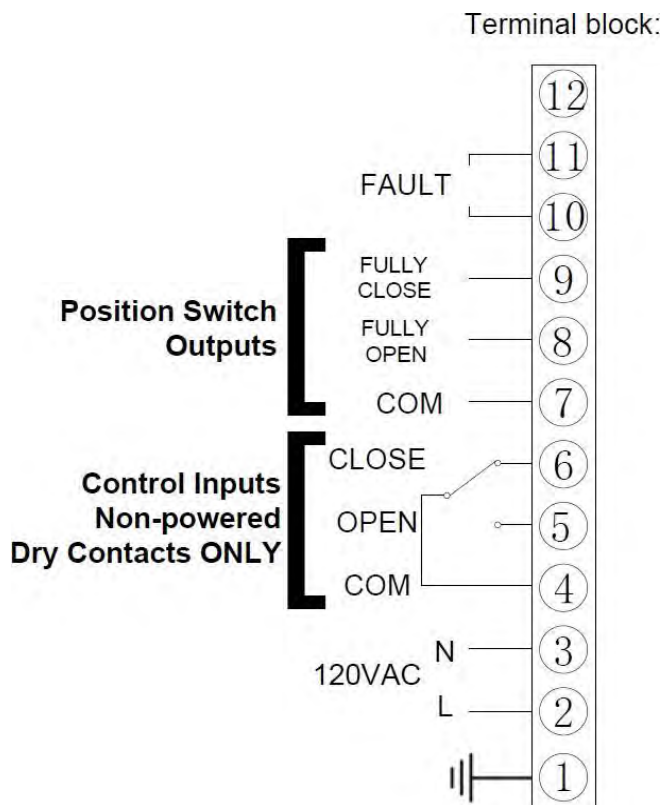
	18	
120VAC N	17	Optional Heater or Low Temp. Heater
120VAC L	16	
CLOSE	15	On-Off Control Inputs (Non-powered Dry Contact Inputs Only)
OPEN	14	
	13	
COMMON	12	
Fault	11	Auxiliary Switch Outputs
Fully Closed	10	
Fully Open	9	
COMMON	8	
4-20 ma OUT (-)	7	Position Output
4-20 ma OUT (+)	6	
4-20 ma IN (-)	5	Modulating Control Input
4-20 ma IN (+)	4	
120VAC N	3	Power Supply
120VAC L	2	
Ground	1	Ground

VTM Series Electric Actuator (Failsafe Battery Backup Version)

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

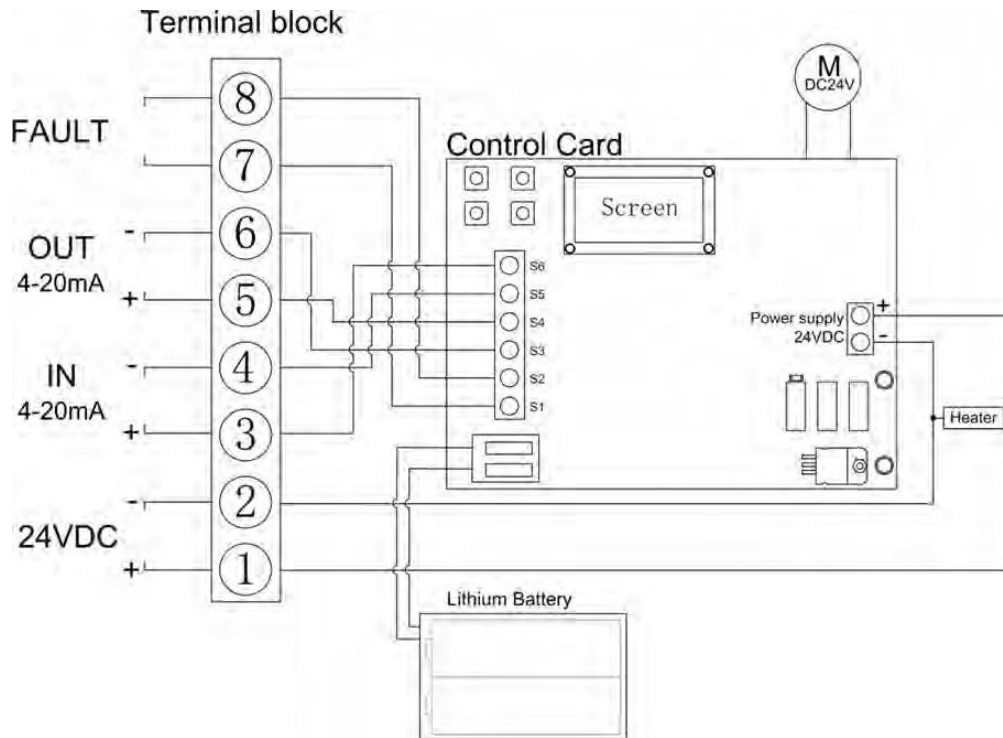


VTM On-Off Version 1.0 with Battery Backup Wiring Diagram (120VAC)

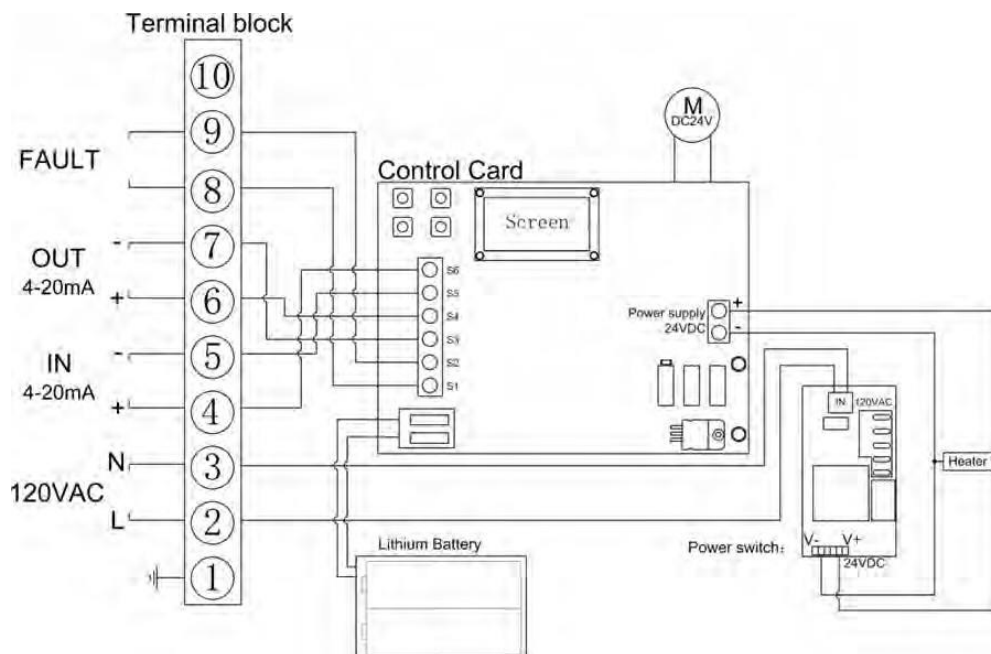


VTM Series Electric Actuator (Failsafe Battery Backup Version)

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

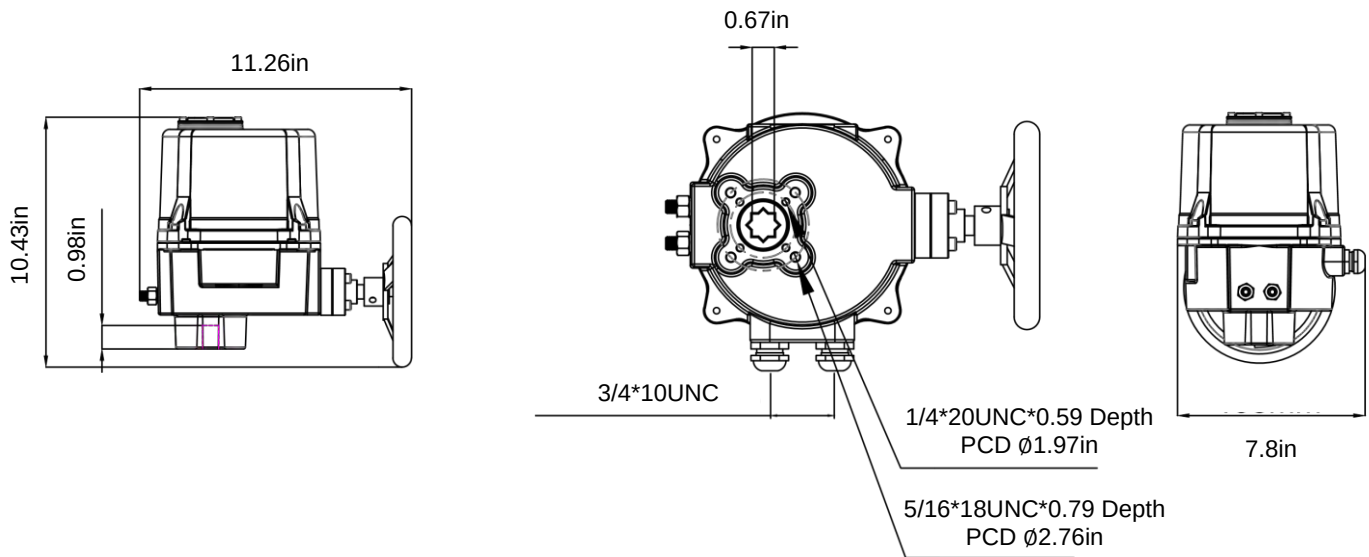


VTM Modulating Version 1.0 with Battery Backup Wiring Diagram (120VAC)

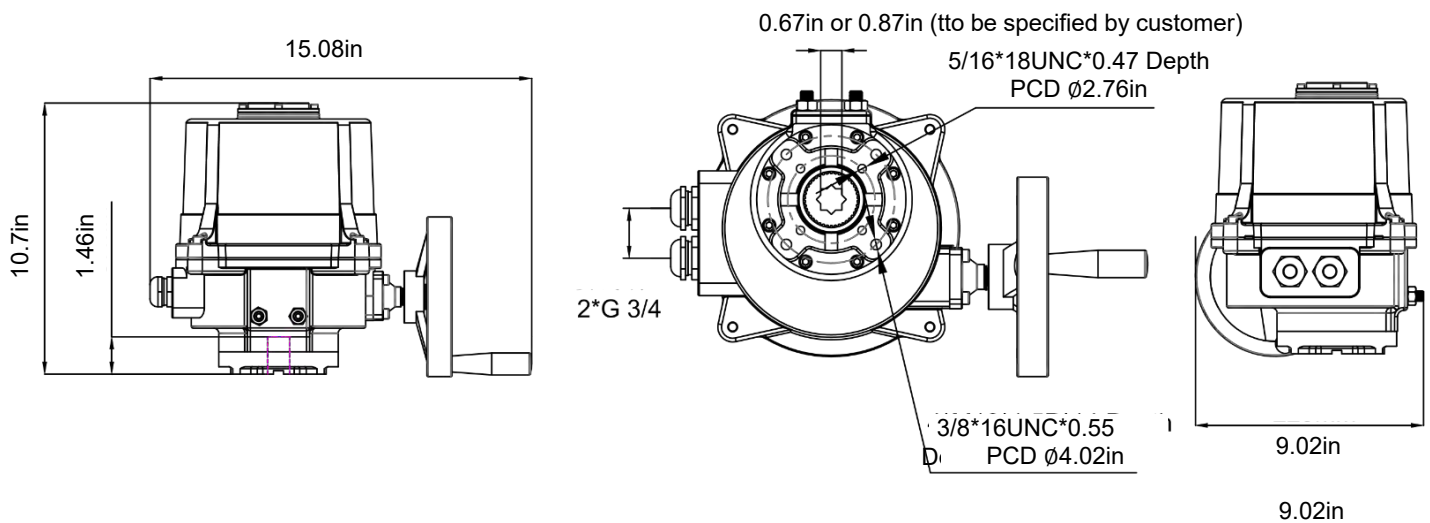


VTM Series Electric Actuator (Failsafe Battery Backup Version)

VTM2H Dimensions

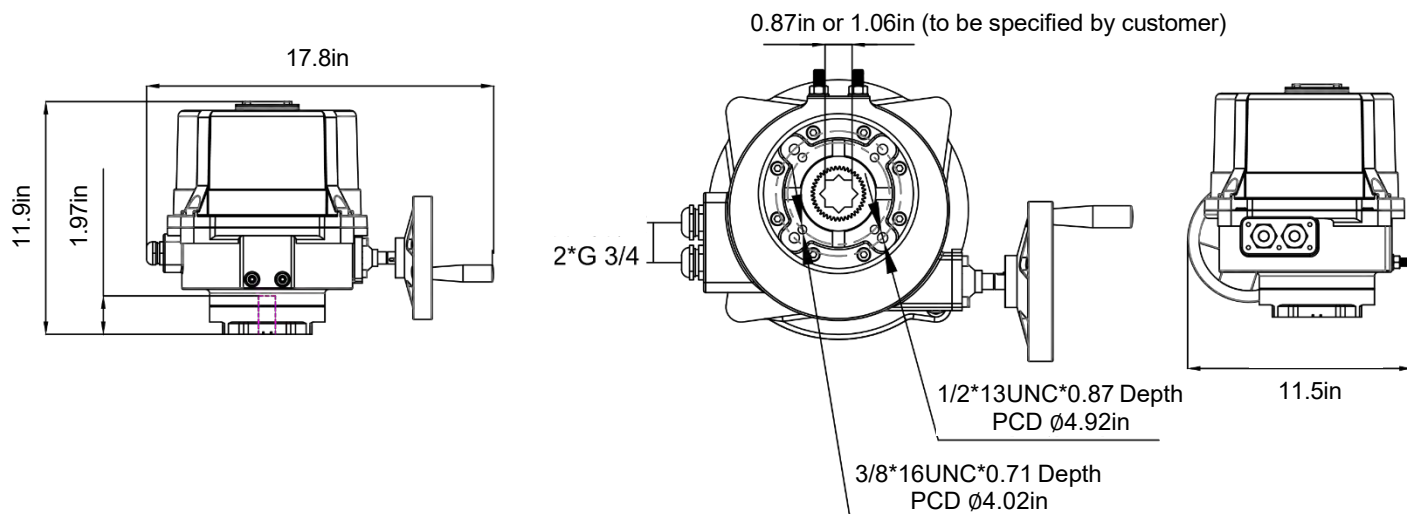


VTM3 Dimensions

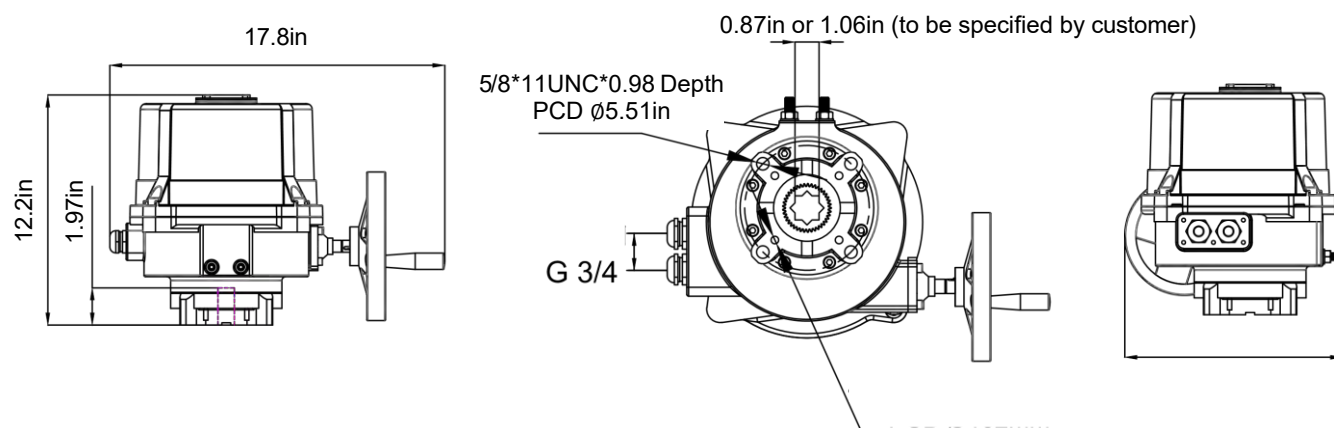


VTM Series Electric Actuator (Failsafe Battery Backup Version)

VTM4 Dimensions F10-F12

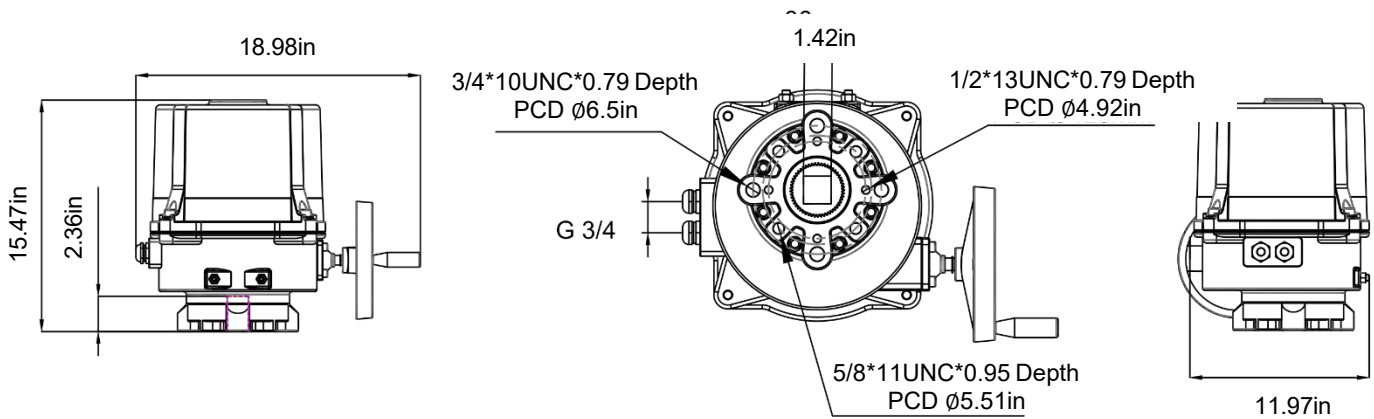


VTM4 Dimensions F14

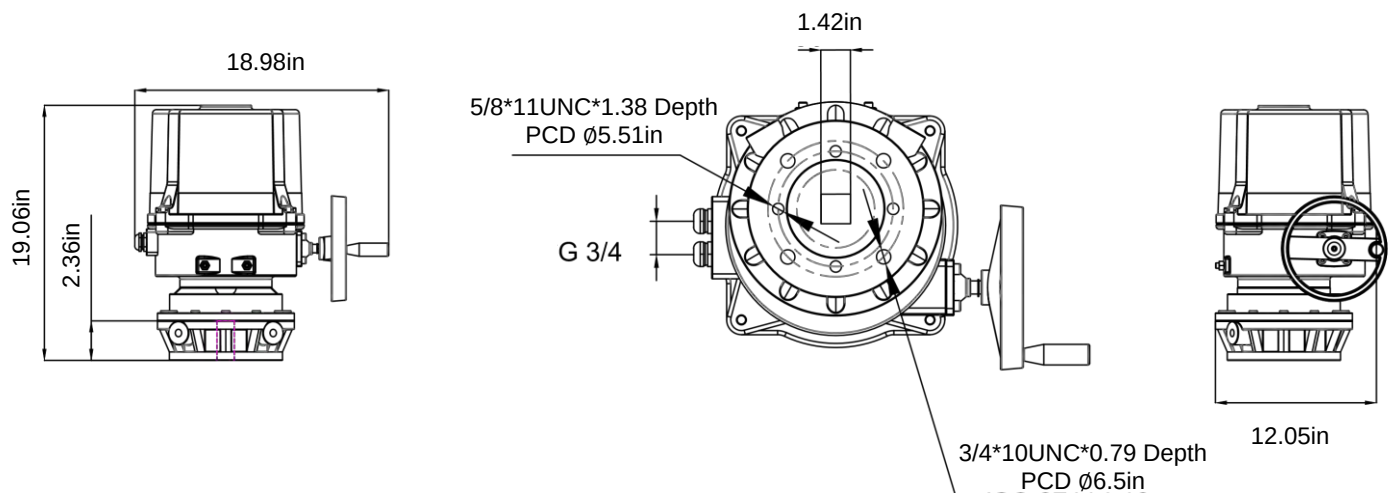


VTM Series Electric Actuator (Failsafe Battery Backup Version)

VTM5 Dimensions



VTM5+G Dimensions



VTM Series Electric Actuator (Failsafe Battery Backup Version)

VTM Model Numbering Configuration

Product Model Numbering

VTM	Size-	T-	C-	V-	O
	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 F: 24VDC H: 220VAC	BB: Battery Backup H: Std Internal Heater LT: Low Temp (-40°F to 158°F) Heater 10S: Fast Cycle (VTM4-600 only) V16: V1.6 Control Card XP: ATEX Explosion-Proof (std.)
			70	620			
			140	1239			
	3	Clutchless Handwheel	100	885			
			200	1770			
			300	2655			
			450	3983			
	4	Clutchless Handwheel	600	5310			
			800	7080			
	5	Clutchless Handwheel	1000	8850			
			1500	13275			
			2300	20355			
	5+G	Clutchless Handwheel	4000	35400			
			5000	44250			

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

Pressure-temperature ratings and other performance data published in this catalog have been developed from our design calculations, in-house testing, field reports provided by our customers and/or published official standards or specifications. They are good only to cover typical applications as a general guideline to users of VTORK products introduced in this catalog. For any specific application, users are kindly requested to contact VTORK for technical advice, or to carry out their own study and evaluation for proving suitability of these products to such an application. Failure to follow this request could result in property damage and/or personal injury, for which we shall not be liable. While this catalog has been compiled with the utmost care, we assume no responsibility for errors, impropriety or inadequacy. Any information provided in this catalog is subject to change without notice for error rectification, product discontinuation, design modification, new product introduction or any other cause that VTORK considers necessary. This edition cancels all previous issues. The final interpretation right of this sample belongs to VTORK.



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