vahn-tech®
international inc.

INTELLIGENT ELECTRIC ACTUATOR

License Number 6D-1724

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ISO 9001:2015 CERTIFICATION™

Intertek

VAHN-TECH International Inc., headquartered in Toronto, Canada is a unique company within the Flow Control Industry.

- 'vt' brand = high quality certified products (API, NSF, CSA, WRAS etc.)
- Valves, Actuators and Accessories – all 'vt' branded
- Width and Depth of Product Offerings
- Flexibility to customize products to customer needs
- Specialized user-friendly products including large sizes
- Quick Response
- Reduced Delivery times
- Efficient after sales service
- Competitive Pricing

VAHN-TECH International Inc. is a customer focused organization based on "Value-Add" and "Quality Service" principles. Achieving long term partnership with our customers and being their supplier of choice is our prime mission.

We develop, manufacture and market VAHN-TECH (vt) branded Valves, Actuators, Automatic Control Valves and Accessories for variety of Industrial Applications. Our product range includes:

Oil and Gas

Water and Sewage, Desalination

Chemicals

Paper and Pulp

Irrigation

Power Plants

Various Industrial Applications

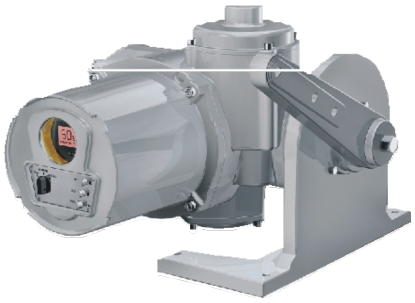
We can supply all types of valves with following materials of construction like:

Ductile Iron, Cast Iron, Carbon Steel, Stainless Steel – SS304, SS304L, SS316, SS316L, Duplex Stainless Steel, Super Duplex, Alloy, Monel and Inconel with variety of seating and stem configurations.

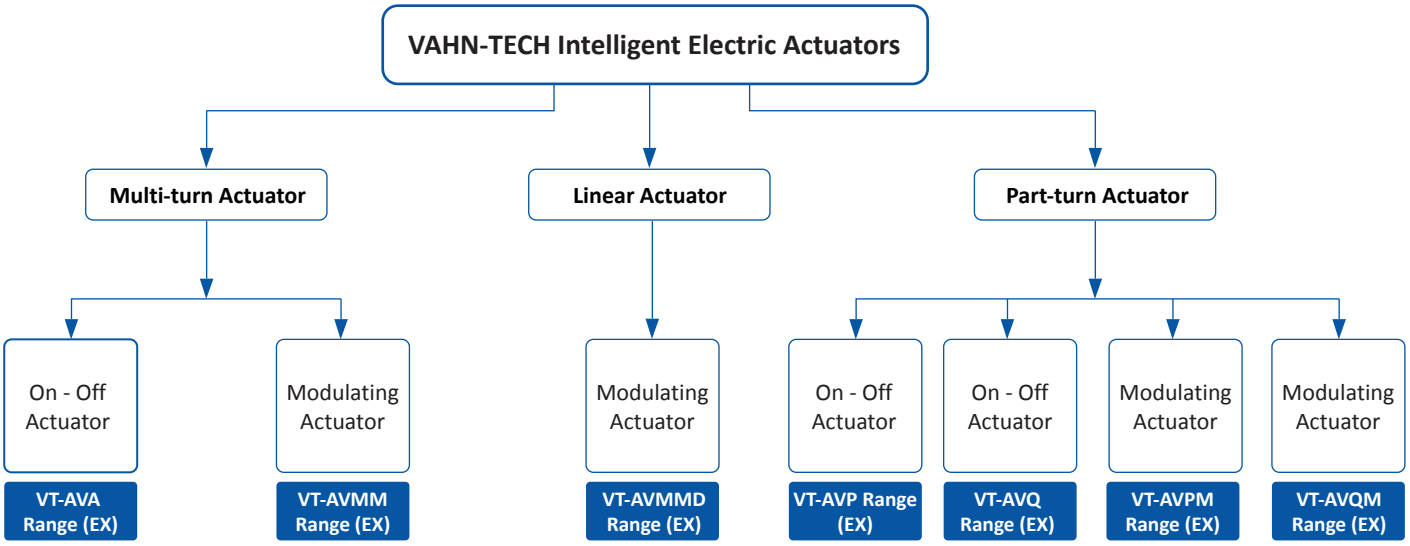
VAHN-TECH Intelligent Electric Actuator

VT-AVM (Multi-turn)

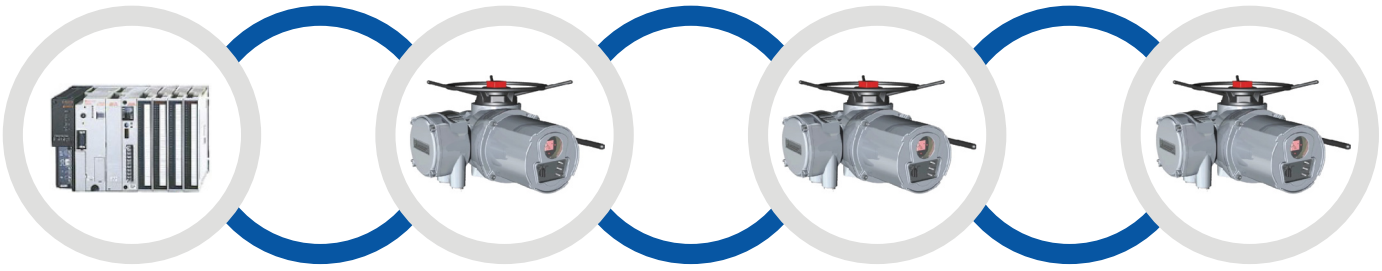
VT-AVQ (Economy part-turn)



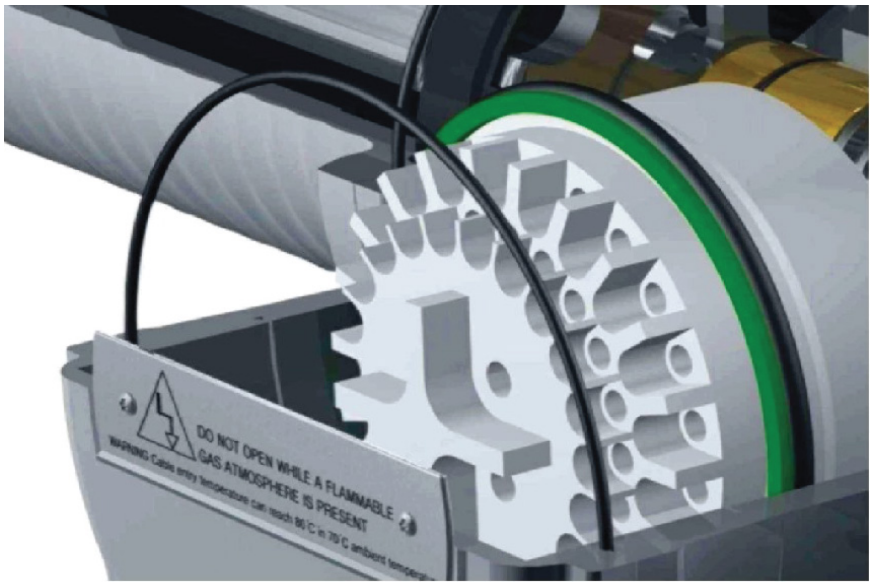
VT-AVP (Part-turn)



PLC Address



Product Introduction and Features



Double-sealed Structure

The VAHN-TECH VT-AVM/VT-AVP range actuator has double-sealed watertight metallic enclosure to IP68 standards (15 meters 90 hours). Explosion-proof BT4 and CT4 are optional. The terminal compartment and the internal electrical control part are entirely separate. The internal electrical control parts can be waterproof and dustproof even when the terminal compartment cover is removed for site wiring.

Accurate Torque Measurement

VAHN-TECH uses patented torque measurement system to ensure the overload protection of actuators and indicate the torque variation by LCD. The precise torque value is decided by the electronic signal converted from the reaction force of motor shaft's thrust transferred by pressure sensor, thus solves the problem of calculating the torque according to the changes of power frequency, voltage and temperature.

Precise Valve Position Measurement

VT-AVM/VT-AVP range actuator takes advanced hall-effect incremental absolute encoder to measure the valve position. The adoption of non-contact encoder design can avoid the disadvantages of traditional potentiometer, which wears easily and has short life. It increases the reliability and service life of the actuator. The setting range of the encoder is 2.5 to 150,000,000 circles. For VT-AVM multi-turn actuator, the output angle resolution of the central axis is 7.5°. For VT-AVP part-turn actuator, the output angle resolution of the central axis is 0.05 °.

VT-AVM/VT-AVP range actuator can take the 24-bit optical absolute encoder as option. This kind of encoder uses optical encoder disk to record valve position accurately without battery when the power is off. For VT-AVM multi-turn actuator, the output angle resolution of the central axis is 0.2°with maximum 1024 circles. For VT-AVP part-turn actuator, the output angle resolution of the central axis is 0.02°.

Non-intrusive Design

The VAHN-TECH VT-AVM/VT-AVP range actuator is constructed with a the non-intrusive design. The site setting operation can be accomplished by using an infrared setting tool without removing the electric cover. Consequently, the internal electrical control parts can be protected from the site pollution. The design for local operation discards the traditional moving shafts penetrating the control enclosure and uses the hall magnetic sensor technology to control the actuator.

Reliable Electronic System

VAHN-TECH actuator's electornic systems use an advanced 32-bit embedded SOC chip, which not only provides with a strong computing ablility. But also integrates multifunctional circuit. It packages all the necessary electronic circuits and parts of electronic components without complex elecric wiring, have a high reliability for electronic control.

High Definition LCD

VAHN-TECH actuators incorporate a unique high-definition liquid crystal display. Large display window with backlight enables user to see valve position, torque and functional status from a long distance.

Safe and Reliable Protection

VT-AVM/VT-AVP range actuator has powerful self-protection function. When there is any improper or wrong operation from user, the actuator will process self-protection and self-correcting.

Automatic Phase Correction and Adjustment

With phase sequence discrimination function for power supply, VAHN-TECH actuator will rotate correctly, regardless how the three- phase sequence is. It avoids the damaging of valve and actuator because of wrong wiring.

Phase Lost Protection

To prevent overheating of three-phase motor when losing phase, the phase lost protection circuit will monitor the three-phase power continuously. If one or more phases are lost, the actuator will block the control from control circuit to motor and trigger an alarm.

Intelligent Protection during Valve Jams

When actuators are rotating in one direction, such as opening, if the torque in this direction is larger than the set torque, the jam protection will be implemented. Jam protection has two modes. One is the general stop mode, that is when it jams, actuator stops working and displays alarm signals. At the meantime, the indication contacts movement may also be triggered. The other one is the intelligent jam protection, that is when it jams, the actuator will close the valve for a set distance, and then continue to implement the open valve order. If it still jams, the mentioned process will repeat until achieving set time. If the valve over torques all the same, the actuator will stop working and displays alarm signals. At the meantime, the indication contacts movement may also be triggered. Intelligent jam protection can open and close the sticky valves efficiently.

Motor Overheating Protection

VAHN-TECH actuator motors are designed with F class insulation, which can work in extreme environments. The thermal switches embedded in the motor windings of actuators will disconnect the relevant contacts, stop actuators and display alarm signals once the winding temperature is over presetting (132˚C). Motor overheating protection can be modified via setting program.

Instantaneous Reversal Protection

When actuators are rotating in one direction, such as opening, if the closing signal is commanded, the internal control circuit will stop for a while before executing closing. This technology decreases the over-current damage to the motor, prolongs the contactor's service life and prevents the mechanical driving devices, such as valve stem, gearboxes damaged by shock.

Indication and Monitoring Contacts

VAHN-TECH Actuator possesses four (which can be extended to eight) sets of indication contacts with dry contact output. (Nominal capacity is 5A 250VAC or 5A 30VDC). Every set of indication contacts can be set as normal open and normal close according to user's requirement. The user can select 27 kinds of the trigger conditions including full open, full close and protection alarm etc. All the functions of indication contacts can be set easily via software.

Apart from the four sets of indication contacts, the actuator also has a pair of monitoring contacts which can indicate the effectiveness of actuator electrical devices. (Nominal capacity is 8A-250VAC or 8A-30VDC). The monitoring contacts can be triggered at any of the following conditions: Losing phase power, control power failure, selecting local control, and selecting local stop.

Item	Trigger Conditions
1	In valve closing limit position
2	In valve opening limit position
3	Middle position
4	Torque protection is active when closing valve
5	Torque protection is active when opening valve
6	Torque protection is active during the stroke
7	Torque is active at any position
8	Actuator is closing
9	Actuator is opening
10	Actuator is output rotating
11	Motor stalled protection
12	Low battery
13	Manual operation of actuator
14	Effective valve opening interlocking signal

Item	Trigger Conditions
15	Effective valve closing interlocking signal
16	Effective interlocking signal
17	Effective ESD signal
18	Losing phase power
19	Selecting local stop
20	Selecting local control
21	Selecting remote control
22	Actuator alarm
23	24V power failure
24	Motor running
25	Valve alarm
26	Temperature protection is active
27	Control alarm

Trigger conditions of indication contacts which can be selected by software

Backup Battery

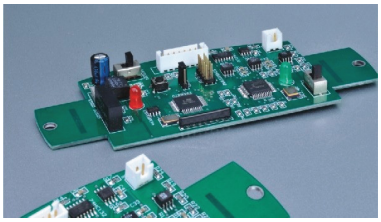
For an easy manual operation when power is off, a backup battery is installed to activate window displaying of valve status and record valve position. After finishing the manual operation, the window display will turn off to save power. Backup battery won't lose power when main power supply is connected or power is off but no manual operation is on-going. The backup battery has a long service life, typically over 5 years in normal use.

Analogue Folomatic Control (Option)

VAHN-TECH actuator Folomatic controller allows actuator to position valve automatically in proportion, according to analogue current or voltage signal. The input proportional signal comes to Folomatic controller through Linear Isolator. The controller converts the proportional signal into valve position signal and compares with current valve position to drive the actuator according the discrepancy. By adjusting the dead zone of Folomatic controller and forbidding running time, valve can avoid reciprocating oscillation.

Analogue Signals	Input Impedance
0-5mA	1K
0-10mA	500
0-20mA	250
4-20mA	250
0-5V	1M
0-10V	78K
0-20V	52K

Fieldbus Control Function (Option)



The interface offered by VAHN-TECH actuator has full compatibility with Fieldbus-Mastering control systems and communication protocol. Vahn-Tech actuator can add the Fieldbus module such as Modbus, Profibus and Foundation.

Remote Indication of Valve Position

VAHN-TECH actuator's current transmitter can convert the present valve position into 4-20mA current output signal. The smallest corresponding signals can be chosen for full open or full close. At rated voltage, the maximum external impedance is 500 Ω and the linearity of the whole stroke is less than 1%.

Designed Service Life

At the rated torque of on-off actuator, the minimum service life is 30,000 times open/close/open cycles with the assumption of maximum seating torque at stroke end and an average of 1/3 maximum seating torque during stroke.

Life Test

Standard VT-AVM/VT-AVP life test is based on 10,000 times open/close/open cycles (500,000 output turns) with maximum seating torque at stroke end and an average of 1/3 maximum seating torque during stroke. Actuator is stalled 25 times against a solid object to prove its durability.

Operating Temperature

Actuators are suitable for operating in -30˚C to +70˚C ambient temperature. For Hazardous area operation and certification, the temperature range indicated on the certificate shall be followed. For temperature outside this range, please contact us.

Duty Cycle

Duty cycle of motor covers S2 to S4.

Vibration

Standard VT-AVM/VT-AVPT range actuator is suitable for the environment where the vibration does not exceed the following standard.

Equipment induction: The cumulated vibration in 10-1000MHz frequency range must lower than 1g.

Impact: Maximum acceleration is 5g.

Seism: If the valve/actuator system shall be operational during and after the event, the frequency range is 150Hz and acceleration is 2g. If actuator is only required to maintain structural integrity, actuator is suitable for maximum acceleration of 5g. Isolation control should be used or the actuator should be mounted far away from valve and drive by an extension shaft with vibration absorbing couplings in the place where it is excessive equipment induced vibration.

Noise

Independent tests have shown that the noise did not exceed 61dB (A) within 1M distance.

Internal Sturcture of VT-AVM Actuator

1. Torque Measurement
   VAHN-TECH actuator which adopts precise pressure sensor can have fast and accurate detecting of output shaft torque.

2. Motor and Drive
   Our three-phase squirrel-cage asynchronous motor designed by advanced special software can work in extreme environments with F class insulation. The motor shaft and worm shaft are separate in order to facilitate rapid replacement. Worm and worm shaft are immerged in lubricant to fit temperature change.

3. Teminal Compartment
   Separately sealed terminal compartment can make sure of the integrity of the electrical control part even when the terminal compartment cover isremoved for site wiring.

4. Thrust Base
   Models below AVA06 are fitted with lubricated, removable type 'A' thrust base. Actuators can be removed without changing valve position. AVA07 andabove models' thrust bases are integrated with enclosure. Simple and removable drive bushing can be machined to fit valve stem.

5. Valve Position Control
   VAHN-TECH discards traditional potentiometer to measure valve position and introduce hall incremental encoder to improve the position accuracy. Optical absolute encoder as the option can record the valve position accurately without battery when the power is off.

6. Local Control
   Local control switch (Local/stop/Remote) and push buttons are magnetic switches without penetrating shafts and control the actuator by internal magnetic reed. It can meet the requirements of tight seal and damp-proof.

7. Infrared Setting
   Infrared setting tool can set and diagnose actuator through sealed indication window without removing the electric cover. The communication distances between setting tool and window is within 0.75 meter.

8. Manual Operation
   The handwheel (or independently geared handwheel on larger size) can be directly driven with low speed pad lockable hand/auto clutch to provide reliable emergency manual operation in the event of a power supply failure. Manual operation has lost motion “hammer blow” effect, which will facilitate easy valve operation.

Technical Performance

VT-AVM Multi-turn On-off Range Performance Data (380V 3Phase)

Model	RPM 50Hz	RPM 60Hz	Torque		Weight	
			Nm	Ft-lbf	KG	lbs
VT-AVM-01	18	21	45	35	32	71
	24	29	45	35	32	71
	36	43	35	25	32	71
	48	57	35	25	32	71
	72	86	35	25	32	71
	96	115	30	22	32	71
VT-AVM-02	18	21	80	60	32	71
	24	29	80	60	32	71
	36	43	80	60	32	71
	48	57	80	60	32	71
	72	86	45	35	32	71
	96	115	40	29	32	71
VT-AVM-03	18	21	110	80	32	71
	24	29	110	80	32	71
VT-AVM-04	18	21	250	185	52	115
	24	29	250	185	52	115
	36	43	205	150	52	115
	48	57	205	150	52	115
	72	86	160	118	52	115
	96	115	130	96	52	115
VT-AVM-05	18	21	450	330	52	115
	24	29	450	330	52	115
	36	43	300	220	52	115
	48	57	240	175	52	115
	72	86	180	132	52	115
	96	115	150	110	52	115

Model	RPM 50Hz	RPM 60Hz	Torque		Weight	
			Nm	Ft-lbf	KG	lbs
VT-AVM-06	18	21	600	440	75	166
	24	29	600	440	75	166
	36	43	500	368	75	166
	48	57	420	310	75	166
	72	86	350	258	75	166
	96	115	220	162	75	166
VT-AVM-07	18	21	1100	815	200	441
	24	29	1100	815	200	441
	36	43	780	575	200	441
	48	57	680	500	200	441
	72	86	550	405	200	441
	96	115	420	310	200	441
VT-AVM-08	18	21	1500	1105	230	507
	24	29	1500	1105	230	507
	36	43	1300	960	230	507
	48	57	1000	740	230	507
	72	86	800	520	230	507
	96	115	550	405	230	507
VT-AVM-09	18	21	2000	1475	230	507
	24	29	2000	1475	230	507
	36	43	1700	1255	230	507
	48	57	1350	995	230	507
	72	86	1100	810	230	507
	96	115	700	516	230	507
VT-AVM-10	24	21	2500	1843	230	507
	36	29	25001	1843	230	507

VT-AVM Multi-Turn On-off Range Performance Data (220V 1Phase)

Model	RPM 50Hz	RPM 60Hz	Torque		Weight	
			Nm	Ft-lbf	KG	lbs
VT-AVM-03	18	21	65	50	32	71
	24	29	60	45	32	71
VT-AVM-04	18	21	165	125	52	115
	24	29	140	105	52	115
	36	43	130	95	52	115
	48	57	125	92	52	115
	72	86	100	75	52	115
	96	115	70	51	52	115
VT-AVM-06	18	21	400	295	75	166
	24	29	350	260	75	166
	36	43	300	220	75	166
	48	57	270	200	75	166
	72	86	200	150	75	166
	96	115	170	125	75	166

VT-AVMM Multi-Turn Modulating Range Performance Data (380V 3Phase)

Model	RPM 50Hz	RPM 60Hz	Torque		Weight	
			Nm	Ft-lbf	KG	lbs
VT-AVMM-02	18	21	50	40	32	71
	24	29	50	40	32	71
	36	43	50	40	32	71
	48	57	40	30	32	71
	72	86	25	20	32	71
VT-AVMM-03	18	21	90	65	32	71
	24	29	90	65	32	71
VT-AVMM-04	18	21	180	132	52	115
	24	29	180	132	52	115
	36	43	125	95	52	115
	48	57	125	95	52	115
	72	86	80	60	52	115
VT-AVMM-05	18	21	360	265	52	115
	24	29	360	265	52	115
	36	43	240	177	52	115
	48	57	200	147	52	115
VT-AVMM-06	18	21	480	355	75	166
	24	29	480	355	75	166
	36	43	300	221	75	166
	48	57	260	192	75	166
	72	86	220	162	75	166

VT-AVMM Multi-Turn Modulating Range Performance Data (220V 1Phase)

Model	RPM 50Hz	RPM 60Hz	Torque		Weight	
			Nm	Ft-lbf	KG	lbs
VT-AVMM-03	18	21	40	30	32	71
	24	29	40	30	32	71
VT-AVMM-04	18	21	100	75	52	115
	24	29	85	65	52	115
	36	43	80	60	52	115
	48	57	80	60	52	115
	72	86	50	40	52	115
VT-AVMM-05	18	21	120	90	52	115
	24	29	120	90	52	115
	36	43	90	65	52	115
	48	57	80	60	52	115
	72	86	60	45	52	115
VT-AVMM-06	18	21	240	180	75	166
	24	29	210	155	75	166
	36	43	180	135	75	166
	48	57	160	120	75	166
	72	86	140	105	75	166

VT-AVM Actuator Mechanical Interface Size

Model			VT-AVM-01 VT-AVM-02 VT-AVM-03	VT-AVM-04 VT-AVM-05	VT-AVM-06	VT-AVM-07	VT-AVM-08	VT-AVM-09	VT-AVM-10
Flange	ISO5210		F10	F14	F16	F25	F30	F30	F30
	MSS SP-102		FA10	FA14	FA16	FA25	FA30	FA30	FA30
Stem acceptance diameter									
Type A (max) rising		mm	32	38	54	64	70	70	70
Non-rising		mm	26	32	45	51	57	57	57
Type Z (max) rising		mm	-	51	67	73	83	83	83
Non-rising		mm	-	38	51	57	73	73	73
Type Z3		mm	32	51	67	-	-	-	-
Type B1 (fixed bore)		mm	42	60	80	100	100	120	120
Type B3 (fixed bore)		mm	20+	30+	40+	50	50	50	50
Type B4 (maximum)		mm	20+	30+	44+	50	60	60	60

VT-AVMMD Linear Modulating Range Performance Data (380V/220V 50Hz/60Hz)

Model	VT-AVMMD-01			VT-AVMMD-03		
Flange	F10			F10		
Worm shaft diameter/thread	25/3			25/3		
Max. Linear stroke	115					
Speed (rpm)	Linear speed (mm/sec)	Modulating Thrust (KN)	Rating Seat Thrust (KN)	Linear speed (mm/sec)	Modulating Thrust (KN)	Rating Seat Thrust (KN)
18	0.9	8.1	16.1	0.9	15.9	28.59
24	1.2	8.1	16.1	1.2	15.9	25.42
36	1.8	7.9	15	1.8	14.3	25.42
48	2.4	7.7	14.7	2.4	12.7	22.26
72	/	/	/	/	/	/

Model	VT-AVMMD-04			VT-AVMMD-04		
Flange	F14			F14		
Worm shaft diameter/thread	33/7			38/5		
Max. Linear stroke	115					
Speed (rpm)	Linear speed (mm/sec)	Modulating Thrust (KN)	Rating Seat Thrust (KN)	Linear speed (mm/sec)	Modulating Thrust (KN)	Rating Seat Thrust (KN)
18	2.1	24.26	36.4	5.4	16.7	25.1
24	2.8	24.26	36.4	7.2	16.7	25.1
36	4.2	20.22	24.3	10.8	13.9	16.7
48	5.6	16.17	20.2	14.4	11.1	13.9
72	8.4	14.15	16.1	21.6	8.9	11.1

Model	VT-AVMMD-05					
Flange	F14					
Worm shaft diameter/thread	33/7			38/15		
Max. Linear stroke	115					
Speed (rpm)	Linear speed (mm/sec)	Modulating Thrust (KN)	Rating Seat Thrust (KN)	Linear speed (mm/sec)	Modulating Thrust (KN)	Rating Seat Thrust (KN)
18	2.5	45.5	60.7	5.4	31.3	41.7
24	3.4	45.5	60.7	7.3	31.3	41.7
36	5	38.4	48.5	10.8	26.4	33.3
48	6.8	30.3	40.4	14.4	20.85	27.8
72	10.1	30.3	40.4	21.6	20.85	27.8

VT-AVP Part-turn On-off Range Performance Data

Model	Flange	Stem Dia (mm)		Voltage (V)	Frequency (Hz)	90 ° Operating Time (S)	Torque		Weight	
		Key	Square				Nm	Ft-lbf	KG	lbs
VT-AVAP-01	F07	28	19	380	50/60	18-20	125	90	24	53
	F07	28	19	220	50/60	12--15	100	75	24	53
VT-AVAP-02	F07	28	19	380	50/60	18-20	250	185	24	53
	F10	42	27	220	50/60	16-18	200	150	24	53
VT-AVAP-03	F10	42	27	380	50/60	26-30	500	370	24	53
	F10	42	27	220	50/60	25-29	400	295	35	77
VT-AVAP-04	F12	50	32	380	50/60	38-40	1000	740	35	77
	F14	60	36	220	50/60	42-48	800	590	35	77
VT-AVAP-05	F12	50	32	380	50/60	46-50	1500	1105	35	77
	F14	60	36	220	50/60	46-52	1200	885	35	77
VT-AVAP-06	F14	60	36	380	50/60	58-60	2000	1475	35	77
	F14	60	36	220	50/60	58-62	1600	1180	35	77

VT-AVPM Part-turn Modulating Range Performance Data

Model	Flange	Stem Dia (mm)		Voltage (V)	Frequency (Hz)	90 ° Operating Time (S)	Torque		Weight	
		Key	Square				Nm	Ft-lbf	KG	lbs
VT-AVPM-01	F07	28	19	380	50/60	18-20	125	90	24	53
	F07	28	19	220	50/60	12--15	100	75	24	53
VT-AVPM-02	F07	28	19	380	50/60	18-20	215	160	24	53
	F07	42	27	220	50/60	16-18	150	110	24	53
VT-AVPM-03	F10	42	27	380	50/60	26-30	300	220	24	53
	F10	42	27	220	50/60	25-29	200	150	35	77
VT-AVPM-04	F12	50	32	380	50/60	38-40	700	515	35	77
	F14	60	36	220	50/60	42-48	600	440	35	77
VT-AVPM-05	F12	50	32	380	50/60	46-50	1100	810	35	77
	F14	60	36	220	50/60	46-52	1000	740	35	77
VT-AVPM-06	F14	60	36	380	50/60	58-60	1500	1110	35	77
	F14	60	36	220	50/60	58-62	1300	960	35	77

VT-AVQ Range Electric Actuator

In order to meet the needs of the market, VAHN-TECH has developed brand new VT-AVQ range part-turn electric actuator on the basis of VT-AVP range actuator. VT-AVQ actuator with the torque range from 50Nm to 1000Nm has the characteristics of smart, simple structure, complete function, reliable quality and competitive price.

Features and Functions of VT-AVQ Electric Actuator

VT-AVQ range actuator simplifies parts function of AVAT range without lowering its performance and introduces dot matrix LCD as well as absolute encoder to make it more personified.

VT-AVQ Reserved Functions of VT-AVP as Listed:

- Non-intrusive design
- Auto phase correction
- Instantaneous reversal protection
- Motor overheating protection
- 4 sets of indication contacts
- Analogue Folomatic control (option)
- Fieldbus (option)

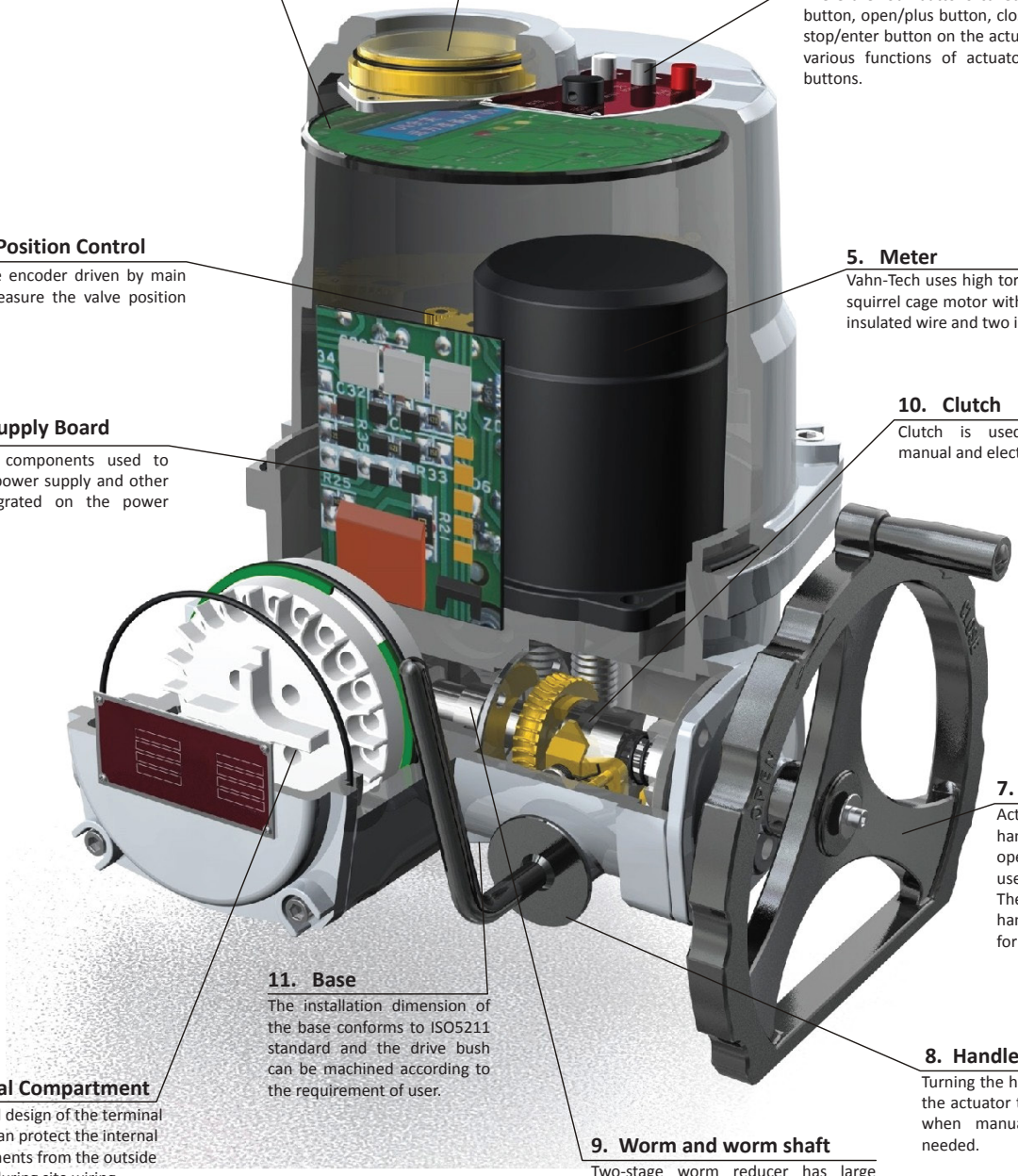
VT-AVQ Changed Functions of VT-AVP as Listed:

- Button setting of parameters
- VT-AVQ actuator changes the parameter setting mode and uses the pushbutton to set parameters instead of infrared setting tool which is used by VT-AVP.

High-brightness Industrial LCD Display

VT-AVQ series adopt high-brightness large-screen LCD display which can show Chinese or English menu clearly. Absolute Encoder Measurement of Valve Position VT-AVQ range actuator takes advanced 12-bit hall magnetic absolute encoder, which can record the valve position accurately without battery when the power is off. The accuracy of the valve position measurement can be 0.08°.

The Internal Structure of VT-AVQ Actuator



1. Liquid crystal Display

Dot Matrix LCD with blue backlight can clearly show English menu. Real-time valve position, torque value, actuator current status and fault information will also be shown. At the bottom of the screen, there are three high brightness diodes which can indicate open, close and middle position of valve.

2. Mainboard

The adoption of SOC chip and high integrated circuit design provide actuator with multiple functions such as fault detection, self-protection and alarm. Therefore, the reliability of actuator is improved.

3. Valve Position Control

Hall absolute encoder driven by main shaft can measure the valve position accurately.

4. Button

There are four buttons called local/remote/menu button, open/plus button, close/minus button and stop/enter button on the actuator. User can set up various functions of actuator easily with these buttons.

5. Meter

Vahn-Tech uses high torque, low inertia squirrel cage motor with F class enamel insulated wire and two internal thermal.

6. Power Supply Board

The electronic components used to control motor, power supply and other parts are integrated on the power supply board.

7. Handwheel

Actuator has a handwheel, which can operate the valve by user when power is off. The dimension of the handwheel is designed for labor saving.

8. Handle

Turning the handle can switch the actuator to manual status when manual operation is needed.

9. Worm and worm shaft

Two-stage worm reducer has large transmission ratio, low noise (50dB is the highest) and self-lock functions.

10. Clutch

Clutch is used to switch manual and electric operation.

11. Base

The installation dimension of the base conforms to ISO5211 standard and the drive bush can be machined according to the requirement of user.

12. Terminal Compartment

The double-seal design of the terminal compartment can protect the internal electric components from the outside hazardous gas during site wiring.

VT-AVQ Quarter-turn On-off Range Performance Data

Model	Specification	Voltage (V)	Frequency (Hz)	Time (S)	Torque		Weight	
					Nm	Ft-lbf	KG	lbs
VT-AVQ-200	VT-AVQ-5	380	50/60	20	50	40	14	31
	VT-AVQ-5	220	50/60	20	40	30	14	31
	VT-AVQ-10	380	50/60	20	100	75	14	31
	VT-AVQ-10	220	50/60	20	60	45	14	31
	VT-AVQ-15	380	50/60	20	150	110	14	31
	VT-AVQ-15	220	50/60	20	80	60	14	31
	VT-AVQ-20	380	50/60	20	200	150	14	31
	VT-AVQ-20	220	50/60	20	100	75	14	31
VT-AVQ-500	VT-AVQ-30	380	50/60	30	300	220	17	38
	VT-AVQ-30	220	50/60	30	150	110	17	38
	VT-AVQ-40	380	50/60	30	400	295	17	38
	VT-AVQ-40	220	50/60	30	175	130	17	38
	VT-AVQ-50	380	50/60	30	500	370	17	38
	VT-AVQ-50	220	50/60	30	220	160	17	38
VT-AVQ-1000	VT-AVQ-60	380	50/60	30	600	445	25	55
	VT-AVQ-60	220	50/60	30	300	220	25	55
	VT-AVQ-80	380	50/60	30	800	590	25	55
	VT-AVQ-80	220	50/60	30	400	295	25	55
	VT-AVQ-100	380	50/60	30	1000	740	25	55
	VT-AVQ-100	220	50/60	30	500	365	25	55

VT-AVQM Quarter-turn Modulating Range Performance Data

Model	Specification	Voltage (V)	Frequency (Hz)	Time (S)	Torque		Weight	
					Nm	Ft-lbf	KG	lbs
VT-AVQM-200	VT-AVQM-5	380	50/60	20	50	40	14	31
	VT-AVQM-5	220	50/60	20	40	30	14	31
	VT-AVQM-10	380	50/60	20	60	45	14	31
	VT-AVQM-10	220	50/60	20	40	30	14	31
	VT-AVQM-15	380	50/60	20	100	75	14	31
	VT-AVQM-15	220	50/60	20	55	40	14	31
	VT-AVQM-20	380	50/60	20	140	105	14	31
	VT-AVQM-20	220	50/60	20	70	50	14	31
VT-AVQM-500	VT-AVQM-30	380	50/60	30	180	130	17	38
	VT-AVQM-30	220	50/60	30	100	75	17	38
	VT-AVQM-40	380	50/60	30	240	175	17	38
	VT-AVQM-40	220	50/60	30	140	105	17	38
	VT-AVQM-50	380	50/60	30	300	220	17	38
	VT-AVQM-50	220	50/60	30	180	135	17	38
VT-AVQM-1000	VT-AVQM-60	380	50/60	30	360	265	25	55
	VT-AVQM-60	220	50/60	30	250	185	25	55
	VT-AVQM-80	380	50/60	30	480	355	25	55
	VT-AVQM-80	220	50/60	30	300	220	25	55
	VT-AVQM-100	380	50/60	30	600	445	25	55
	VT-AVQM-100	220	50/60	30	350	265	25	55

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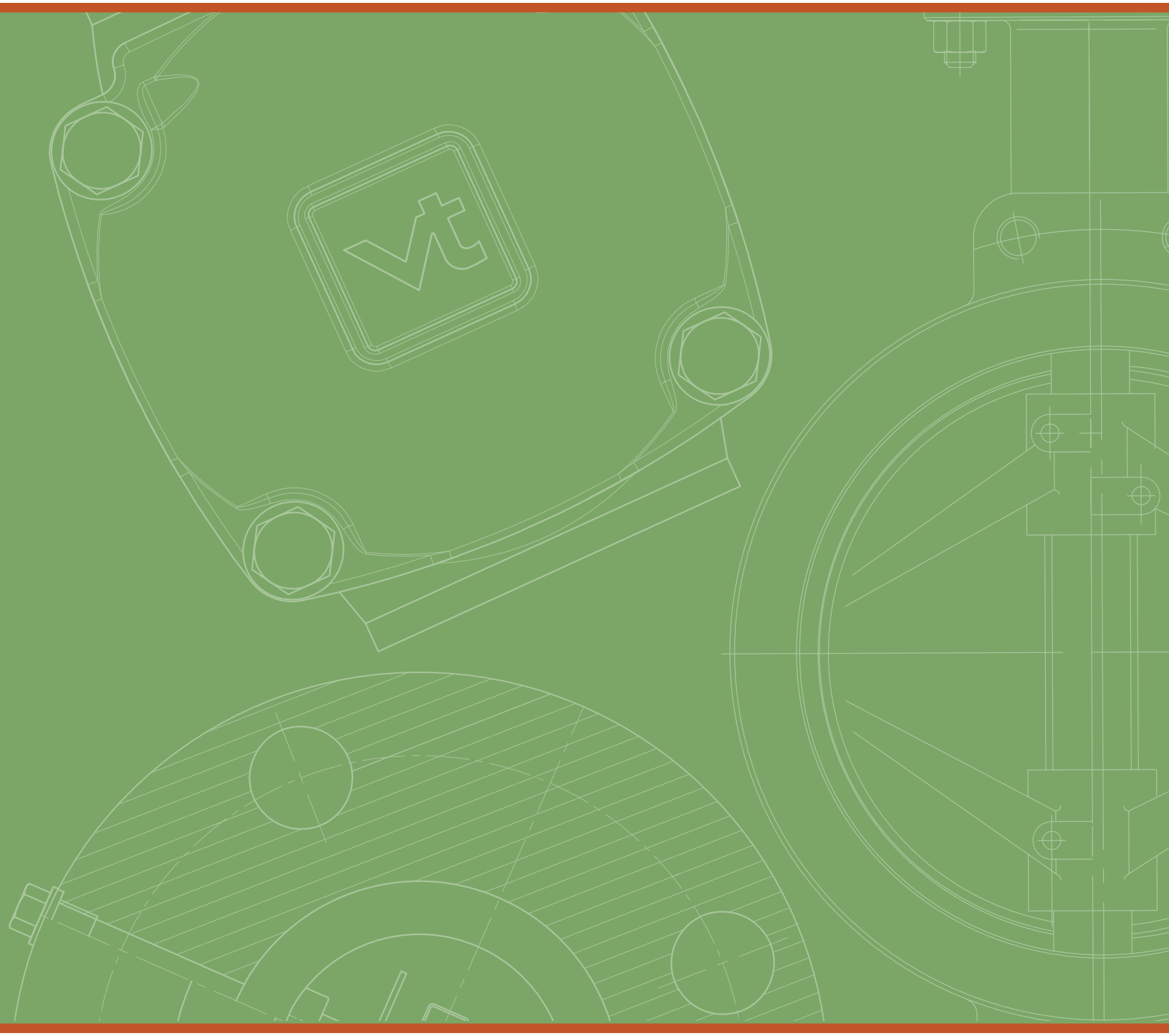

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