

CONDITIONS OF ACCEPTABILITY

Conditions of Acceptability:

1. The entry point or branching point is higher than 60°C, the end user shall follow user manual and select the properly cable, cable gland or conductors in conduit.
2. The minimum yield strength and minimum tensile strength of special fastener are 450MPa and 700MPa.
3. The rated load allowed is 50Nm (VEE-005 series), 100Nm (VEE-010 series), 200Nm (VEE-020 series), 400Nm (VEE-040 series) and 600Nm (VEE-060 series).
4. The lens fixed plate cannot be loosed or removed any time.
5. When the products are intended to be installed in the hazardous locations classified according to division rules, the TSE3854DS-W potted compound cannot be used to an atmosphere containing Acetic Acid (Glacial) saturated vapors, and the WCC-87 potted compound cannot be used to an atmosphere containing saturated vapors as below: Acetic Acid (Glacial), Acetone, Ammonium Hydroxide (20% by weight), ASTM reference fuel C, Diethyl Ether, Ethyl Acetate, Ethylene Dichloride, Furfural, n-Hexane, Methyl Ethyl Ketone, Methanol, 2-Nitropropane and Toluene.
6. Temperature code depends on ambient temperature as follows:

Type	T-code	Ambient Temperature
VEE-005/010/020/040/060 explosion-proof actuator	T5	-13°F - +131°F (-25°C - +55°C)
	T6	-13°F - +122°F (-25°C - +50°C)

Warning:

- WARNING - TO PREVENT IGNITION OF FLAMMABLE GASES, VAPORS OR DUST, DO NOT REMOVE COVER WHILE CIRCUITS ARE LIVE
- AVERTISSEMENT - POUR ÉVITER L'INFLAMMATION DES GAZ INFLAMMABLES, DE VAPEURS OU DE POUSSIÈRE, NE PAS RETIRER LE COUVERCLE PENDANT QUE LE CIRCUIT EST SOUS TENSION
- WARNING - A SEAL SHALL BE INSTALLED WITHIN 500 MM OF THE ENCLOSURE
- AVERTISSEMENT - UN SCELLEMENT DOIT ÊTRE INSTALLÉ À MOINS DE 500 MM DU BOÎTIER
- WARNING - IF THE SERVICE ENVIRONMENT OF THE ELECTRIC ACTUATOR IS T6, PLEASE CONTACT THE MANUFACTURER FOR CONFIRMATION. ENSURE THAT THE TEMPERATURE RANGE ON THE NAMEPLATE IS -25 - +50 °C, AND THE IDENTIFICATION IS T6.
- WARNING - THE LENS FIXED PLATE CAN NOT BE LOOSED OR REMOVED ANY TIME.
- WARNING - THE CABLE ENTRY AND BRANCH TEMPERATURE AS BELOW:

Ta	Cable entry temperature	Cable branch temperature
+50°C	61°C	71.97°C
+55°C	66°C	76.97°C

Operation Manual Of Exp Proof VEE Series Electric Actuator

VEE-005 \ 010 \ 020 \ 040 \ 060 Series
Explosion proof enclosure type: Z\ S\ M Refer
to product name plate for duty cycle



Vtek Controls

420 H Wards Corner Rd
Lovland, OH 45140
Tel: 513.928.3630

Web site: <http://www.vtekcontrols.com>
E-mail: sales@vtekcontrols.com

CONTENTS

OVERVIEW	1
CONSTRUCTION DRAWINGS OF EXPLOSION-PROOF TYPE	2
OVERALL DIMENSIONS AND PERFORMANCE	3
PARAMETERS OF VEE-005 EXPLOSION-PROOF TYPE	
OVERALL DIMENSIONS AND PERFORMANCE	4
PARAMETERS OF VEE-010/020 EXPLOSION-PROOF TYPE	
OVERALL DIMENSIONS AND PERFORMANCE	5
PARAMETERS OF VEE-040/060 EXPLOSION-PROOF TYPE	
CONTROL CIRCUIT	6
APPLICATION REQUIREMENTS	7
INSTALLATION OF ANTI-EXPLOSION ELECTRIC	8
ACTUATOR ONTO VALVE	
OVERALL ADJUSTMENT OF ANTI-	9
EXPLOSION ELECTRIC VALVE	
ADJUSTMENT METHOD OF ANTI-EXPLOSION	11
AND ADJUSTING TYPE(EMT) ACTUATOR	
OPERATION AND MAINTENANCE	13
Conditions of Acceptability.....	14

OPERATION AND MAINTENANCE

1. Maintenance and service

- ① Since the high-grade molybdenum-base lubricant with long service life and good pressure resistance is employed, no lubrication and periodical maintenance are needed.
- ② If the operation of valve is rare, please drive the actuator regularly and check if there is any abnormal condition.
- ③ The product in use should abide by related provisions in GB3836.13-1997, GB3836.15-2000, GB3836.16-2006 and GB50257-1996. National Electrical Code®(NEC®)ANSI/NFPA 70 or in the canadian Electrical Code,Part I (CE Code,part I)CSA C22.1.

2. Trouble shooting

Problem	Cause	Remedy
Motor does not start	The power cord is not plugged in.	Plug in the power cord.
	Broken connection ,connector and cable is disengaged.	Connect the power line. Connect and fasten the terminal correctly.
	Voltage is not right or too low.	Check the voltage if it is normal.
	The overheat protection device is initiated. (The ambient temperature too high, or valve clogged)	Cool down the ambient temperature. Check the valve manually, see if it can be opened and closed normally.
	The micro-switch is not properly moving.	Replace the micro-switch.
	The capacitor is defective.	Contact the manufacturer and replace the capacitor.
Indicator lamp for open/close does not work	Indicator lamp damaged	replace the lamp
	The action of micro-switch is not proper	Replace the micro-switch
Motor could not stop running when reaching to the limit position	The action of micro-switch is not proper	Replace the micro-switch
	Phase order of 3-phase DC power is wrong connected.	Adjust the order of 3-phase.
	Misconnect the micro-switch with the control circuit	Adjust the connection.
	Mechanical limit actions look-ahead electric limit	Re-adjust the mechanical limit according to adjustment instruction of mechanical limit stopper.
	servo-controller is not debugged properly	Debug again according to the manual

ADJUSTMENT METHOD OF ANTI-EXPLOSION ADJUSTING TYPE (EMT) ACTUATOR

5. Setting Make the arrow of selective switch SA to “2”, that is the set condition. You can perform a demarcating stroke, mode selection in deal with input signal failure, dead band setting, manual operation and output current correcting, etc. in set condition.

① Stroke Standardization

● Full-close position standardization: Adjust the stroke of the actuator to Full-close position by means of pressing the buttons OPEN and (or) SHUT. Pressing SET at first and hold on it, then pressing SHUT and keeping 4s at the same time. Release SHUT and SET at the same time when indicator lamp L2 lights up. As L2 goes out, Full-close position standardization is completed.

● Full-open position standardization: The signal 20mADC must be input accurately on the terminal of input signal when Full-open position standardization is performed.

Adjust the stroke of the actuator to Full-open position by means of pressing the buttons OPEN and (or) SHUT. Pressing SET at first and hold on it, then pressing OPEN and keeping 4s at the same time. Release OPEN and SET at the same time when indicator lamp L2 lights up. As L2 goes out, Full-open position standardization is completed.

② Mode Selection In Deal With Input Signal Failure

Selective switch SB is used to select the process mode on input signal failure:

1—valve is in Full-open position 2—valve is in normal position 3—valve is in Full-close position

Note: The varying of selective switch SB is still effective in automatic operation condition.

③ Dead Band Value Setting

Turn the potentiometer of dead band value setting in a clockwise direction, dead band value will increase. Turn the Potentiometer of dead band value setting in a counter-clockwise direction, dead band value will reduce. There is scale on the right side of the potentiometer, the dead band value will vary 0.5% with turning one scale. The servo-controller will manage in accordance with 0.5% when the dead band value setting less than 0.5%.

④ In set condition, actuator will operate manually in opening direction and closing direction by means of pressing the button OPEN or SHUT.

6. Running Make the selective switch SA to “1” or “3” position, that is the automatic operation condition. The opening of actuator and output signal will change with input signal.

Input signal Item to be checked	4mA	8mA	12mA	16mA	20mA
Pointer position	CLOSE position “0”	2.5	5.0	7.5	OPEN position “0”
Valve position	0% opening	25% opening	50% opening	75% opening	100% opening
Output current	4mA	8mA	12mA	16mA	20mA

Note: ■ When selective switch SA points to “3” position (counteractive), input current 4mA is corresponding to the Valve position 100% opening, the output current is 4mA; input current 20mA is corresponding to the Valve position 0% opening, the output current is 20mA.

■ The accuracy grade of the servo-controller is grade 1, the basic allowance is not more than $\pm 1\%$, reciprocating allowance is less than 1% .

7. Output current correcting The output current of the servo-controller has been corrected at the ex-worSET, users no need to adjust. If output current is not 4mA with the valve Full-close or output current is not 20mA with the valve Full-open, and allowance is more than 1%, you can correct it in accordance with following process:

Connect a 20mADC ammeter to terminal of the input current, make the selective switch SA to “2” position, turn into setstate. Pressing the button SET at first and hold on it, then pressing buttons OPEN and SHUT at the same time. Release this three buttons at the same time when indicator lamp L2 lights up that is turning into 4mA correction. Observe the indication of the ammeter. The current will increase when button OPEN is pressed and it will reduce when button SHUT is pressed. Adjust output current to 4.00mA (± 0.02). Press the button SET and indicator lamp L2 goes out, and then release SET until L2 lights up again, the correction for 4mA is completed, turn into automatically the correction for 20mA. Observe the indication of the ammeter, adjust current to 20.00mA (± 0.02) by buttons OPEN and SHUT, Press the button SET and indicator lamp L2 goes out, and then release SET until L2 lights up again, the correction for output current is completed, L2 goes out.

8. Malfunction judgement and management The malfunction indicator lamps will light up when malfunction occurs, different indicator lamp lights up stand for different malfunction.

① L2 lights up: The input signal is considered disabled by servo-controller if input signal is less than 2.5mA or more than 22mA. Measure voltage between terminals of input signal wiring, the voltage should be 0.88-4.4V when input signal is 4-20mA (Resistance: 220 Ω). When input signal is less than 0.55V (Current: 2.5mA) or more than 4.84V (Current: 22mA), it will signify the lead of input signal is open, short, leakage of electricity or an incorrect signal of control system. If the voltage of terminals is normal and L2 is still come on, the trouble area may be servo-controller.

② L3 lights up: The trouble occurs in the circuit of position inspection. Check whether the lead of opening potentiometer is open and short or whether potentiometer itself is damaged. The voltage of potentiometer should be about 4V under normal circumstances, the centre line of potentiometer and the voltage of any terminal will vary with the opening of the potentiometer. If the inspections are normal and L3 is still come on, the trouble area may be servo-controller.

③ L4 lights up: The mechanical trouble occurs in the operation. Check whether the lead of electric motor is loose or open; whether electric motor itself is work normally; rotate the actuator separately in two directions by handle, check whether the actuator is stuck. If the inspections are normal and L4 is still come on, the trouble area may be servo-controller.

④ The opening of the actuator is not corresponding with the specified opening of the input signal or can not complete the Full stroke

● The signal is not added at calibration Full-open or 20mADC signal added is not accurate.

● The 20mADC signal added at calibration Full-open has difference with 20mADC signal at operation area when debugging is performed.

● Circuit malfunction occurs in the potentiometer of dead zone value setting on the servo-controller.

For first and second causes, you can recalibrate Full-open according to actual 20mADC signal of operation area. If the malfunction can not be solved, the trouble area may be servo-controller.

⑤ Output current is not corresponding with the valve opening

If the opening potentiometer is damaged or the lead of potentiometer is open and short, the malfunction that output current is not corresponding with the valve opening will occurs and L3 lights up. If the circuit trouble of potentiometer is troubleshooting and output current is still not corresponding with the valve opening after correcting output current, the trouble area should be servo-controller.

OVERVIEW

Before installing or using the products of VEE anti-explosion series, you must read this manual in detail.

1. Presentation of the Model

VEE-0a-bc-d

● JFE stands for the brand of electric actuator; ● E stands for explosion-proof type electric actuator;

● The code “0a” in model stands for torque(number $\times 10$ Nm), includes 05、10、20、40 and 60;

● Code “b” stands for Cycle speed ● Code “c” stands for motor Voltage

Code “d” stands for the type of control circuit, includes B, EMT, G and GMT.

● Please pay attention to the notes for security in Operation Manual.

For example: VEE-010-30V1-EMT stands for VEE series explosion-proof type electric actuator with 100Nm for torque, 30 seconds cycle speed, 110VAC motor voltage and modulating with transmitter type of control circuit.

2. Construction and Performance of Explosion-Proof

The construction for explosion-proof of VEE series anti-explosion products are match up to relevant regulations in CSA C22.2 No.60079-0-2019, CSA C22.2 NO.60079-1-2016, CSA C22.2 No.30-M1986(R2016), CSA C22.2 No.145-11(R2015), ANSI/UL60079-0:2020, ANSI/UL60079-1:2020, ANSI/UL1203-2013, ANSI/UL674 Fifth Edition. The casing composed by each anti-explosion part of the products can withstand explosive pressure generated by the explosive gas mixture interior explosion, and it can prevent explosion inside the casing from transmitting to explosive gas atmosphere around outside the casing. In other words, this product will not transmit interior explosion to outside the casing to ignite the explosive gas mixture.

3. Anti-explosion Grade

The anti-explosion grade of these series products is Class I, Division 1, Groups C and D T5/T6 Ex db IIC T5/T6 Gb, Class I, Zone 1, AEx db IIC T5/T6 Gb.

AEx, Ex—anti-explosion identification; Class I—Hazard class; Division 1, Zone 1—Area classification;

db—anti-explosion type stands for explosion-proof type;

II—equipment type stands for the electric equipment designed for other explosive gas atmosphere except for colliery;

C—magnitude of explosion, it determines the size(width and gap) of each flameproof joint of the actuator;

T5/T6—temperature group stands for the highest surface temperature allowed of actuator is 100 $^{\circ}$ C /85 $^{\circ}$ C.

Gb—Standards for protection grade.

The grades of combustible gas and steam and temperature group are listed in CSA C22.2 NO.60079-0-2019, CSA C22.2 NO.60079-1-2016, CSA C22.2 No.30-M1986(R2016), CSA C22.2 No.145-11(R2015), ANSI/UL60079-0:2020, ANSI/UL 60079-1:2020, ANSI/UL 1203-2013, ANSI/UL674 Fifth Edition so as to consult by user.

Special Hints: The type and group of explosive medium around workplace of this product must be accordant with explosion-proof medium allowed of this product; otherwise, it will lose explosion-proof function. MC:.....

4. Notice

● Please pay attention to the Hints on warning label. Don't open each cap with electrification (open anti-explosion cavity of the product) in the places with flammable and explosive gases.

● Exd lens is Explosion-Proof Construction. Don't allow to remove or impact with hard object in the use. Replace the part immediately when each Exd part is damaged. The product is not allowed to electrically operate before qualified parts are assembled.

● Don't tear up or lose nameplate and warning label of the product, keep the letters are clear.

● The flameproof joint should not be bumped and scratched as debug or repair actuator. Don't neglect to assemble the fastening screws connecting cover for Electric Elements, cover for Junction Box and cover for Motor with Box Body.

● The electric motor cavity of this product is an independent explosion-proof cavity; the fastening screws of motor cover and faying surface of viscose of outlet lead for motor are prohibited to remove by user.

● This product must be grounded inside and outside, each fastener is not allowed loose and you must check them regularly.

● Wiring entrance shall be selected by the explosion-proof inspection approval, comply with explosion-proof standards of this product, and cable explosion-proof rating of at least Exdb IIC T4Gb introduction device.

● The worker for installation and adjustment must possess relevant operating qualification.

CONSTRUCTION DRAWINGS OF EXPLOSION-PROOF TYPE

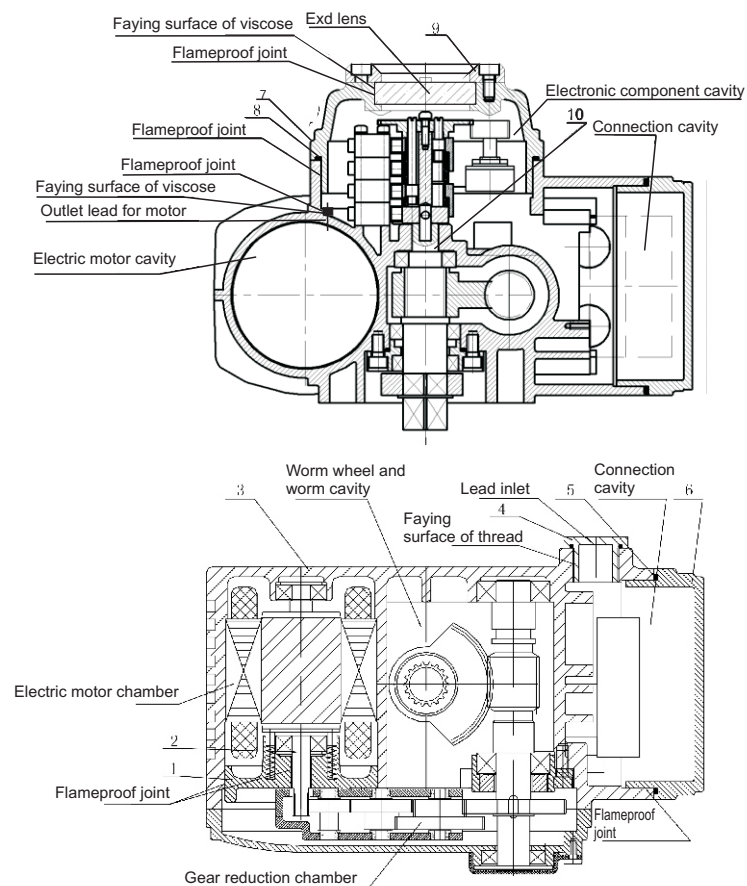


Fig.1

Detailed statement of explosion-proof components

Item Number	Name	Item Number	Name	Item Number	Name	Item Number	Name
1	Motor cover	4	Explosion-proof plug	7	Electric elements cover	10	Output shaft
2	Electric motor rotor shaft	5	"O" washer seal	8	"O" washer seal		
3	Box body	6	Junction Box cover	9	Exd lens		

ADJUSTMENT METHOD OF ADJUSTING TYPE (TYPE EMT) ACTUATOR

1. Install correctly the electric actuator on the body of valve according to the instruction of 《INSTALLATION OF ANTI-EXPLOSION ELECTRIC ACTUATOR ONTO VALVE》, make sure the operation is in normal condition by means of manual operation.
2. Drive the valve to Full-close position by a handle at first, and ensure that mechanical limiting stopper not hit adjustment screws or box, otherwise, please adjust mechanical limiting stopper according to the second point in the fourth step of 《OVERALL ADJUSTMENT OF ANTI-EXPLOSION ELECTRIC VALVE》. Then loosen the lock screw on scale plate and adjust the scale plate, making the pointer just to the "0" position on the scale plate (SHUT position), tighten the lock screw on scale plate.
3. Drive the valve to Full-open position by a handle again, ensure that mechanical limiting stopper not hit adjustment screws or box, otherwise, please adjust mechanical limiting stopper according to the third point in the fourth step of 《OVERALL ADJUSTMENT OF ANTI-EXPLOSION ELECTRIC VALVE》. When the stroke angle of the valve is 90°, the pointer must point to "0" position on the Scale plate (OPEN position).

Special Hints:

- ① If no special requirement, the stroke of actuator is set to 90° between Full-close position and Full-open position at the ex-factory debugging. After the valve is equipped by user, it is necessary to readjust the angle if the Full-close position and Full-open position of the valve are not same as the Full-close position and Full-open position of the Electric actuator. The mechanical limit must match up to the requirement of Fig.10 as you adjust it.
- ② User is not allowed to adjust the potentiometer and gear as the opening potentiometer of all adjusting type (Type EMT and GMT) has been considered that the possible changes of Full-open and Full-close positions will lead to the deviation of working area of potentiometer when the valve is adjusted.
- ③ Connect the wiring terminal correctly according to Fig.11 so as not to damage the servo-controller. Be sure to keep it in mind: It is not allow absolutely connecting the power lead with the terminals of input signal or output signal.
- ④ TO BE CONNECTED TO A CLASS 2 CIRCUIT ONLY and RACCORDER UNIQUEMENT à UN CIRCUIT DE CLASSE 2.

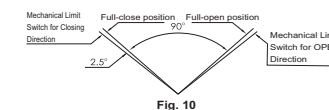


Fig. 10

4. Illustrate for serve-controller Board

① Button:

● OPEN: In set condition (the arrow of selective switch SA points to 2), actuator will operate in opening direction when the button is pressed and the motor will stop when the button is released. The actuator is in a demarcating Full-open position when buttons SET and OPEN are pressed at the same time.

● SHUT: In set condition, actuator will operate in closing direction when the button is pressed and the motor will stop when the button is released. The actuator is in a demarcating Full-close position when buttons SET and SHUT are pressed at the same time.

● SET: In set condition, actuator will perform specific function when the SET cooperates with OPEN and SHUT.

② Selective switch:

● SA: Select the modes for positive interaction and counteractive of input signal and setstate, the corresponding function with the direction of arrow is (SA points to 1 at ex-factory):

- 1—positive interaction 2—setstate 3—counteractive

● SB: Select the process mode when input signal lose efficacy, the corresponding function with the direction of arrow is (SA points to 2 at ex-factory):

- 1—valve is in Full-open position 2—valve is in normal position 3— valve is in Full-close position

③ Dead Band Value Setting Potentiometer: Potentiometer is used to set dead band value. The opening value of the potentiometer from 1-10, the corresponding dead band value is 0.5%-5.0%.

④ Indicator lamp:

● L1: Green indicator lamp shows power, the power indicator lamp lights up when connecting terminals N and L of serve-controller with power;

● L2: Red indicator lamp shows malfunction of input signal failure, this lamp lights up when input signal lose efficacy.

● L3: Red indicator lamp shows malfunction of position inspection circuit, this lamp lights up when the lead of opening potentiometer is open or short or damaged.

● L4: Red indicator lamp shows malfunction of stickiness, this lamp lights up when actuator is sticked.

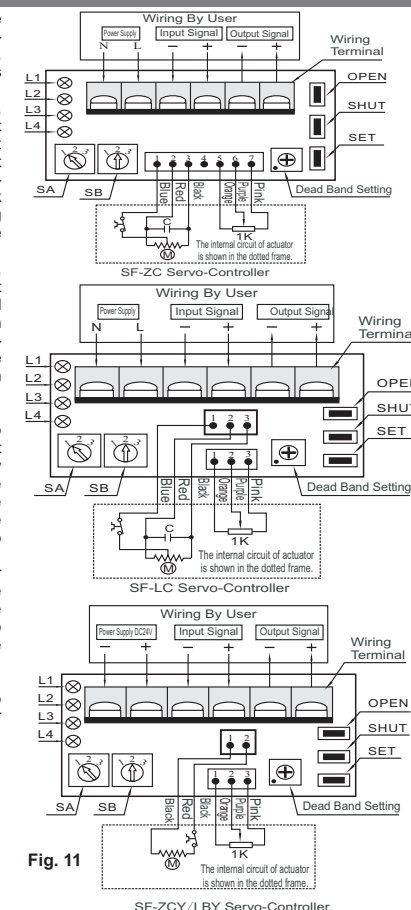


Fig. 11

SF-ZCY/LBY Servo-Controller

OVERALL ADJUSTMENT OF ANTI-EXPLOSION ELECTRIC VALVE

3.Adjustment of Mechanical Limiting Stopper (Fig. 8, 9)

①Drive the valve to the Full- Close Position by handle and make the Full-close position micro-switch (K1) move (When the limit switch moves, you can hear a sound of “click”).

②Loosen the lock nut on the right side and turn clockwise the adjusting screw for closing limit-switch by means of inner hexagon spanner and make the adjusting screw to contact with the mechanical stopper, and then turn back the adjusting screw anti-clockwise for half of ring, make the mechanical limit-switch at the Full-close position be delayed with 2.5° angle distance to the electric limit-switch and then fasten the lock nut.

③Use the same method to make the adjustment of Full-open position mechanical limit-switch (on left side).

Special Hints: After adjustment, you have to make the electric limit position and mechanical limit position of the actuator meet the requirements of Fig. 9. During the operation, if the mechanical limit-switch is leading or coincident with the electric limit-switch, the turning of motor would be blocked and the motor would have the danger of being burnt out or over-heated!

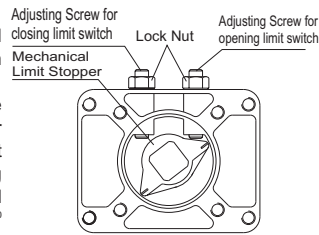


Fig.8

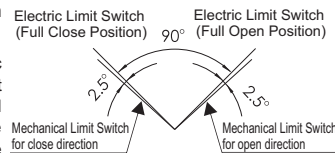


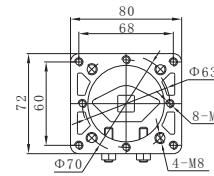
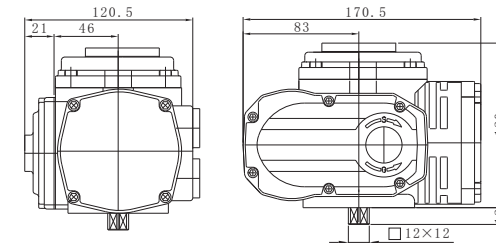
Fig. 9

4.Electric Test-run

- ①Connect the circuit correctly according to the control circuit diagram adhered inside the cover for Junction Box. After confirming, switch on the power supply.
- ②The switch is turned to CLOSE; the actuator drives the valve to close direction (clockwise direction) until Full-close micro-switch (K1) is actuated, the electric actuator will stop turning.
- ③The switch is turned to OPEN; the actuator drives the valve to the Full -open direction (counter-clockwise) until Full-open micro-switch(K3) (Fig.5.K3; Fig.6.K2) is actuated.
- ④After the adjustment mentioned above, if the indication status of opening indicator is not in conformity with the real position of the valve, loosen fixing screw at the center of scale plate, re-adjust the position of the scale plate till the indication of valve being correct.

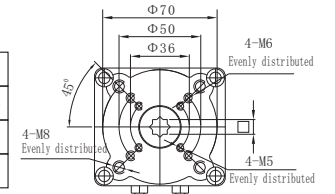
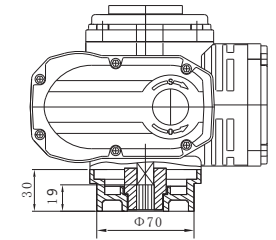
OVERALL DIMENSIONS AND PERFORMANCE PARAMETERS OF VEE-005 EXPLOSION-PROOF TYPE

Explosion-proof standard Type



Parameters for direct installation	
Square	□ 9×9 □ 11×11 □ 14×14
Flange	F03 F05 F07
Valve stem	Height≤19mm

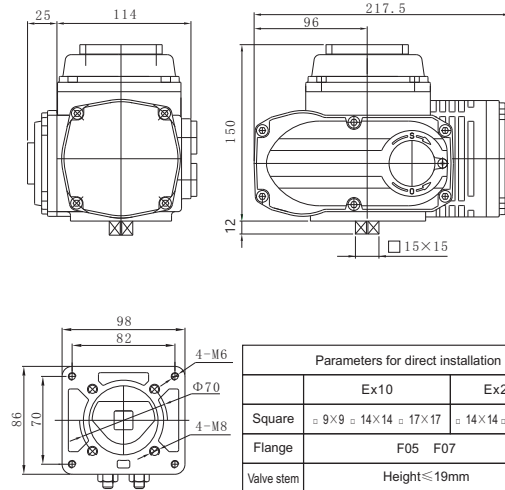
Explosion-proof Direct Installation Type



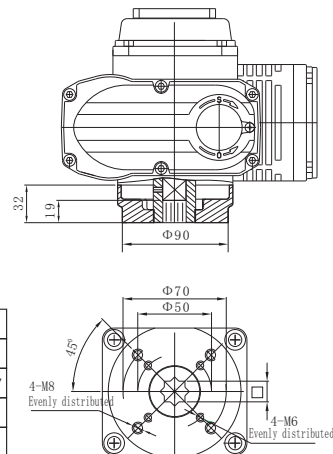
Performance Parameters	Type	VEE—005			
	Power	DC24V	AC24V	AC110V	AC220V
	Motor Power	13W	10W	10W	10W
	Rated Current	1.28A	1.56A	0.27A	0.19A
	Standard Time/Torque	20S/50Nm			
	Optional Time/Torque	4S/20Nm 10S/30Nm			4S/20Nm 10S/30Nm 60S/50Nm
	Turning Angle	0 ~ 360°Adjustable			
	Available Control Circuit	Types of B、EMT、G、GMT			
	Total Weight	3.0kg			
	Insulating Resistance	DC24V/AC24V: 100M Ω /250VDC AC110V/AC220V: 100 M Ω /500VDC			
	Withstand Voltage Class	DC24V/AC24V: 500VAC 1minutes、AC110V/AC220V:1500VAC 1minutes			
	Protection Class	Type 4X			
	Explosive-proof grade	Class I,Division 1,Groups C and D T5,Ex db IIC T5 Gb,Class I,ZONE 1,AEx db IIC T5 Gb			
	Installation Angle	360°at any angle			
	Electric Interface	2-M20×1.5 or NPT1/2 explosion-proof plug ,clients should install corresponding explosion-proof cable connector when using according to the cable selected.			
	Ambient Temperature	-25℃ ~ +55℃			
	Optional Function	◆Heater for eliminating moisture			

OVERALL DIMENSIONS AND PERFORMANCE PARAMETERS OF VEE-010/020 EXPLOSION-PROOF TYPE

Explosion-proof standard Type



Explosion-proof Direct Installation Type



Performance Parameters	Type	VEE-010				VEE-020		
	Power	DC24V	AC24V	AC110V	AC220V	DC24V	AC110V	AC220V
	Motor Power	25W	25W	25W	25W	25W	40W	40W
	Rated Current	2.03A	2.45A	0.64A	0.32A	3.12A	0.63A	0.40A
	Standard Time/Torque	30S/100Nm				30S/200Nm		
	Optional Time/Torque	15S/50Nm			15S/50Nm 60S/100Nm	30S/100Nm	15S/100Nm	15S/100Nm 60S/200Nm
	Turning Angle	0~90° Adjustable						
	Available Control Circuit	Types of B、EMT、G、GMT						
	Total Weight	5.0kg				5.5kg		
	Insulating Resistance	DC24V/AC24V: 100MΩ/250VDC AC110V/AC220V: 100 MΩ/500VDC						
	Withstand Voltage Class	DC24V/AC24V: 500VAC 1minutes、AC110V/AC220V:1500VAC 1minutes 1minutes						
	Protection Class	Type 4X						
	Explosive-proof grade	Class I,Division 1,Groups C and D T5,Ex db IIC T5 Gb,Class I,ZONE 1,AEx db IIC T5 Gb						
	Installation Angle	360°at any angle						
	Electric Interface	2-M20×1.5 or NPT1/2 explosion-proof plug、clients should install corresponding explosion-proof cable connector when using according to the cable selected.						
	Ambient Temperature	-25℃ ~ +55℃						
	Optional Function	◆Over-torque Protector ◆ Heater for eliminating moisture						

OVERALL ADJUSTMENT OF ANTI-EXPLOSION ELECTRIC VALVE

1. Adjustment of Electric limit for Micro Regulation type (Fig.5)

① Full-close position adjustment: Drive the valve to Full-close position by a handle at first, loosen the lock screw on scale plate, and adjust the scale plate, making the pointer just to the "0" position on the scale plate (SHUT direction), tighten lock screw on scale plate. Then adjust Shut-position regulation shaft "S" in a clockwise direction with 2mm inner hexagon spanner, make stroke dog D1 turning in a clockwise direction, in turn actuate K2, K1, then stop adjusting Shut-position regulation shaft "S" when K1 moves and make a noise.

② Full-open position adjustment: Drive the valve to Full-open position by a handle at first, making the pointer to the "0" position on the scale plate (OPEN direction), Then adjust Open-position regulation shaft "O" in a counter-clockwise direction with 2mm inner hexagon spanner, make stroke dog D2 turning in a counter-clockwise direction, in turn actuate K4, K3, then stop adjusting Open -position regulation shaft "O" when K3 moves and make a noise.

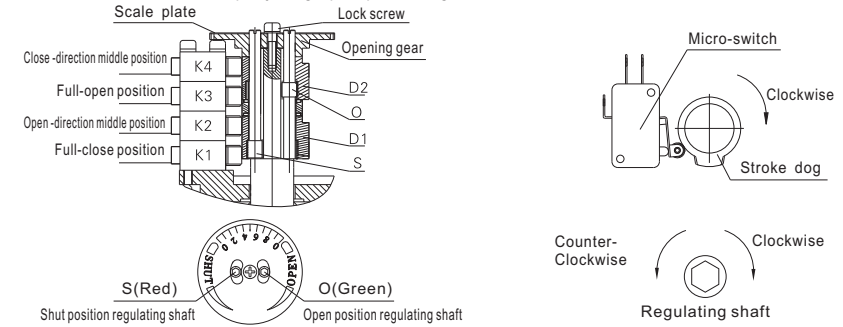


Fig. (5)

2. Adjustment of Electric limit for Middle position type (Fig.6)

① Adjustment D1: Drive the valve to Full-close position by a handle, loosen the lock screw on scale plate, and adjust the scale plate, making the pointer to the "0" position on the scale plate (SHUT direction), tighten lock screw on scale plate. Loosen fixed screw on the stroke dog D1, turn D1 in a clockwise direction, making the corresponding micro-switch K1 move, then stop turning D1 when you hear a sound of K1, fasten the screw on D1 and fix D1.

② Adjustment D2: Drive the valve to Full-open position by a handle, making the pointer to the "0" position on the scale plate (OPEN direction), Loosen fixed screw on the stroke dog D2, turn D2 in a counter-clockwise direction, making the corresponding micro-switch K2 move, then stop turning D2 when you hear a sound of K2, fasten the screw on D2 and fix D2.

③ Adjustment D3: After driving the valve to Full-open position by a handle, drive the valve in a clockwise direction operating 2° toward close-direction by a handle, then loosen fixed screw on the stroke dog D3, turn D3 in a counter-clockwise direction, making K3 move and create a sound, fix D3.

④ Adjustment D4: After driving the valve to Full-close position by a handle, drive the valve in a counter-clockwise direction operating 2° toward open-direction by a handle, then loosen fixed screw on the stroke dog D4, turn D4 in a clockwise direction, making K4 move and create a sound, fix D4.

Special Hints: ① After the valve is equipped by user, it is necessary to readjust the position if the Full-close position and Full-open position of valve are not same as the Full-close position and Full-open position of the electric actuator. You can adjust it according to the methods mentioned above in the 1 or 2.

② At the ex-factory debugging, the micro-switch of "Close-direction middle position" is adjusted advance 2° than the micro-switch of "Full-close position", the micro-switch of "Open-direction middle position" is adjusted advance 2° than the micro-switch of "Full-open position". In reality, you can adjust it according to the needs of control. The output of middle position micro-switch represents the signal of passive contact. The output of micro-switches of "Full-close position" and "Full-open position" controls the "Full-close position" and "Full-open position" of the valve. No middle position micro-switch and stroke dog for type A, C, E, F.

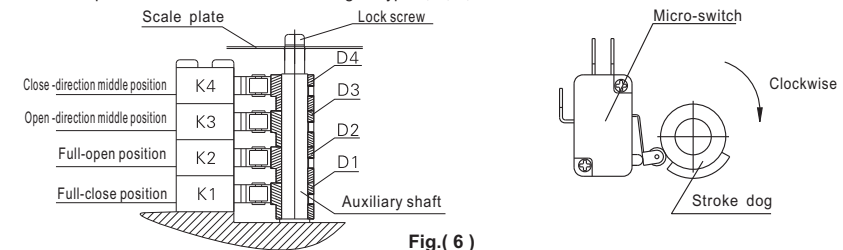


Fig. (6)

INSTALLATION OF ANTI-EXPLOSION ELECTRIC ACTUATOR ONTO VALVE

Installation of electric actuator onto valve (Fig. 3)

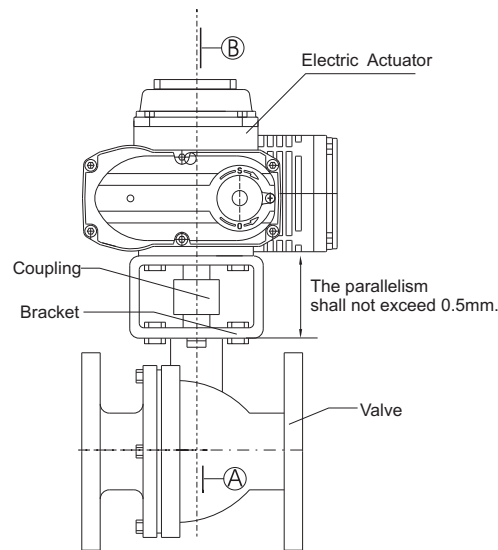
- ① Turn the valve to full close position manually and check if there is any abnormal condition.
- ② Fix the bracket on the valve.
- ③ Put one end of the coupling into the spindle of valve.
- ④ Drive the electric actuator to the full close position by crank (pointer is pointing at SHUT, which is at the starting position of scale), insert the output shaft into the square hole of coupling.
- ⑤ Fasten connecting bolts to connect bracket with electric actuator and the body of valve.
- ⑥ Drive the electric actuator by crank and confirm the operation is stable without eccentricity and distortion, check the valve, if full close and full open in the range of opening indication of the actuator.

Note: Too much force will lead to the electric actuator over-travel and being damaged.

Special Hints:

Please be noted to those customers who provide the bracket and coupling by their own:

- The bracket and coupling shall be designed and processed by the professional mechanical technicians and meet the requirements noted in Fig. 4
- The precision of square holes at two ends of coupling shall be guaranteed, try as much as possible to eliminate driving clearance, so as to avoid backlash (Reciprocating Error) during operation of valve.
- It is necessary to guarantee the positional precision of square holes at the two ends of coupling. Otherwise, it may exceed the working range designed for actuator, leading to that valve could not work normally due to the travel of actuator not able to be adjusted.



The coaxiality between axes (A) and (B) shall not exceed $\phi 0.2\text{mm}$.

Fig. 4

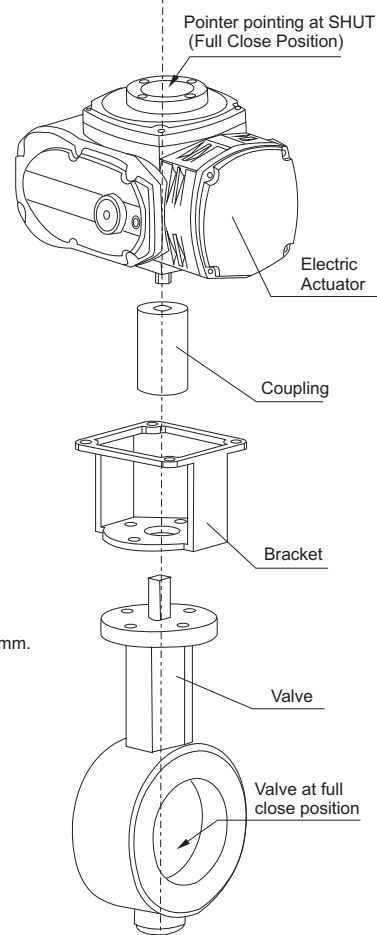
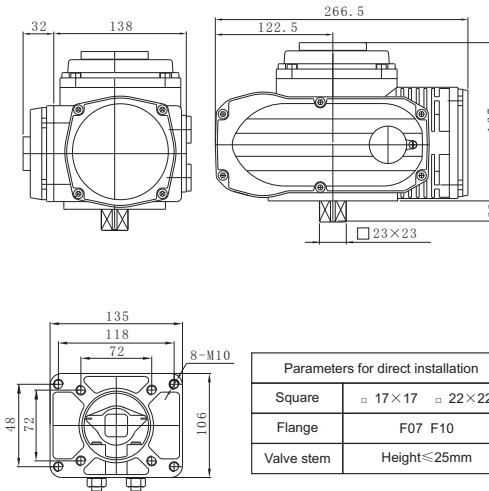


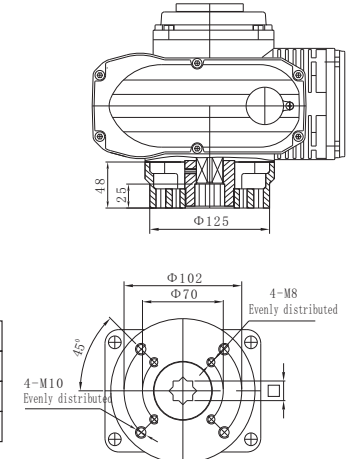
Fig. 3

OVERALL DIMENSIONS AND PERFORMANCE PARAMETERS OF VEE-040/060 EXPLOSION-PROOF TYPE

Explosion-proof standard Type

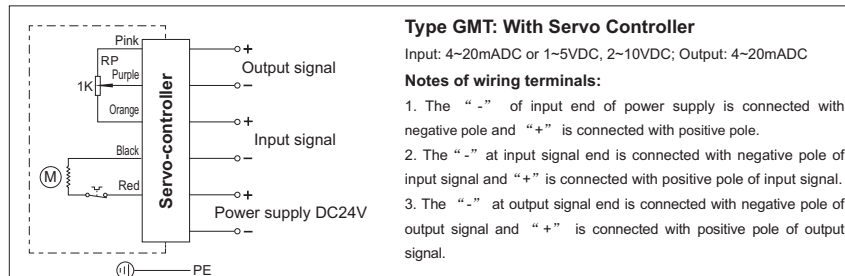
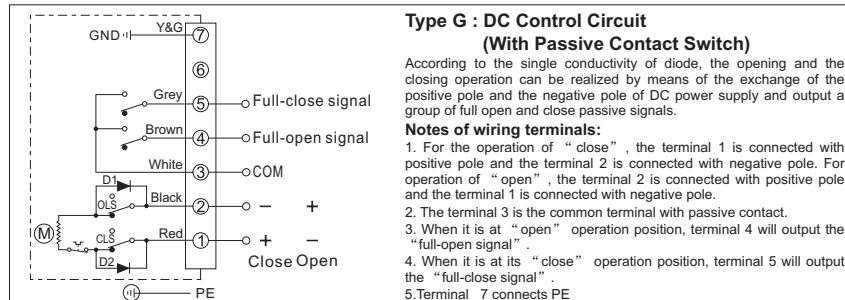
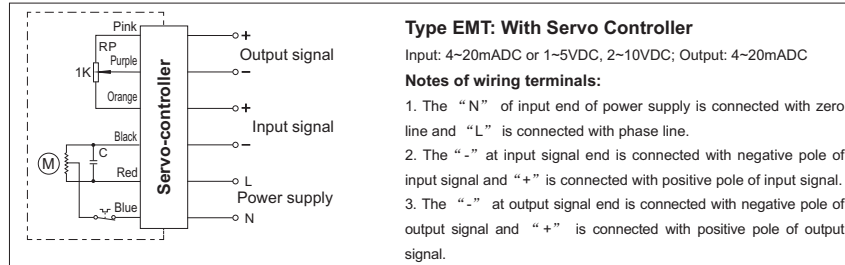
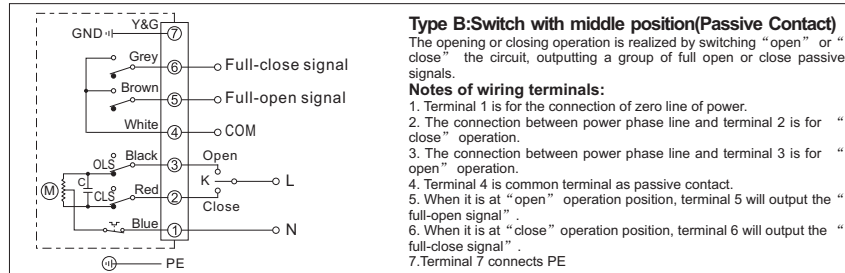


Explosion-proof Direct Installation Type



Performance Parameters	Type	VEE-040			VEE-060	
	Power	DC24V	AC110V	AC220V	AC110V	AC220V
Motor Power		70W	90W	90W	90W	90W
Rated Current		5.13A	1.22A	0.64A	1.27A	0.66A
Standard Time/Torque		30S/400Nm			45S/600Nm	
Optional Time/Torque		15S/200Nm		15S/200Nm 60S/400Nm		
Turning Angle		0~90° Adjustable				
Available Control Circuit		Types of B、EMT、G、GMT				
Total Weight		9.5kg			10.0kg	
Insulating Resistance		DC24V: 100M Ω /250VDC AC110V/AC220V: 100 M Ω /500VDC				
Withstand Voltage Class		DC24V: 500VAC 1minutes、AC110V/AC220V:1500VAC 1minutes				
Protection Class		Type 4X				
Explosive-proof grade		Class I,Division 1,Groups C and D T5,Ex db IIC T5 Gb,Class I,ZONE 1,AEx db IIC T5 Gb				
Installation Angle		360° at any angle				
Electric Interface		2-M20×1.5 or NPT1/2 explosion-proof plug ,clients should install corresponding explosion-proof cable connector when using according to the cable selected.				
Ambient Temperature		-25℃ ~ +55℃				
Optional Function		◆Over-torque Protector ◆Heater for eliminating moisture				

CONTROL CIRCUIT



Note: The internal circuit of actuator is shown in the dotted frame.

APPLICATION REQUIREMENTS

1. Requirement of Installation Conditions

- The product can be installed not only indoors, but also outdoors.
- The type and group of explosive medium around workplace of this product must be accordant with explosion-proof medium allowed of this product.
- It is necessary to have protective cover installed if it operates in such conditions of long time raining, directly receiving sunshine or spatter.
- Please reserve space for manual operation and maintenance.
- The ambient temperature shall be within the rang of -25~55℃.

2. Requirement of inlet lead

- There are two explosion-proof plugs in the lead inlet of connection cavity. The user shall disassemble one or two explosion-proof plugs according to the requirement for employ as you connect the lead, and install corresponding explosion-proof connector with inlet lead cable with diameter ≤ 14mm.
- Introduce the cables of power and signal from two explosion-proof fitting separately to the electric actuator, and ground the cables. In principle, the shielded cable shall be adopted as the signal cable.

3. Method of connection

- Remove the explosion-proof plug, install and tighten the corresponding explosion-proof connecting pipe together with the inlet lead cable.
- The explosion-proof sealing material shall be filled into the explosion-proof connecting pipe, and the distance from the filling position to the actuator shall not be greater than 500mm, as shown in Figure 2..
- Connect the leads according to control circuit drawing.
- In order to meet the explosion-proof requirements, the connectors and hole plugging materials related to the actuator need to meet the requirements of CSA explosion-proof standards and be installed correctly.
- The interior and exterior of the actuator must be grounded.
- The connection type mentioned in this manual is only the connection mode of explosion-proof pipe. Customers can choose and use other connection methods that meet explosion-proof requirements according to their needs.

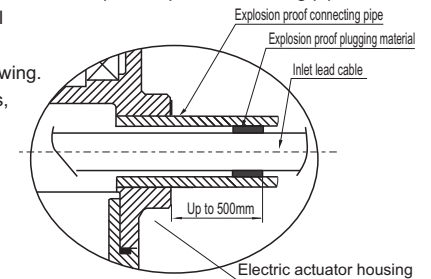


Fig.2

4. Requirement of Power Supply

- The power supply corresponding to that specified for the type of actuator ordered must be provided at the installation site.
- The Power supply and voltage shall be as following specified at the installation site:

AC220V 50/60Hz AC110V 50/60Hz
AC110V 50/60Hz AC24V 50/60Hz
DC24V

5. Selection of Fuses for Circuit Breaker

Ampere Type	DC24V	AC24V	AC110V	AC220V
VEE-050	5A	5A	3A	2A
VEE-010、020	7A	7A	5A	3A
VEE-040、060	15A	/	7A	5A