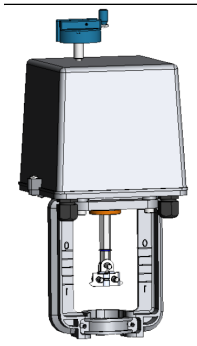
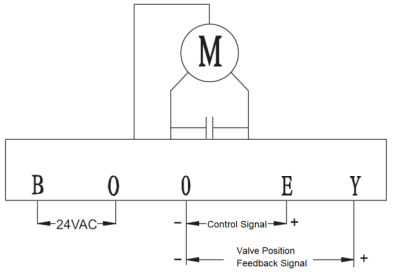


24VAC, proportion type
ML2524
ML3524

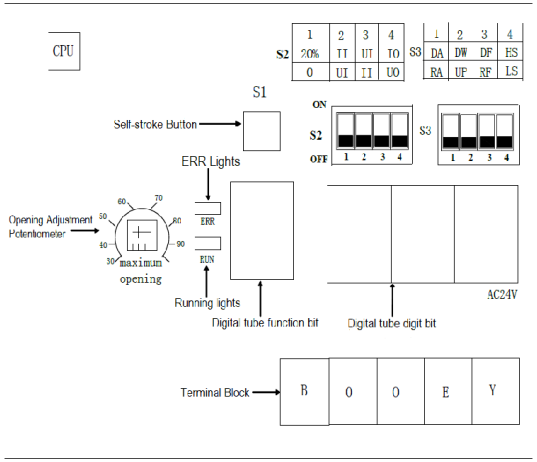
Norminal Force	2500N / 3500N	Protection Level	IP54
Power Consumption	18VA	Running mode	Straight Stroke
Electrical Machinery	AC permanent mag-netsynchronous motor	Operating Voltage	24VAC
Max. Stroke	44mm	Voltage Input Impedance	＞100kΩ
Running Speed	3.13s/ mm (50Hz)	Current Input Impedance	＜0.167kΩ
Ambient Temperature	-10~+55°C	Voltage Output load requirement	＞1kΩ
Ambient Humidity	≤95% RH(40°C)	Current Output load requirement	＜0.5kΩ
Valve Position feedback signal	0(2)~10VDC, 0(4) ~20mA	Dead Zone Range For Upper and Lower Limit	≤2.5%
Control Signal	0(2)~10VDC, 0(4)~20mA	Sensitivity	Low≤1.5%, High≤1%

Caution! The power for this actuator is AC24V! The circuit board would be burnt out if connected with AC220V,in severe case, it could be cause fire as well. Wiring strictly in accordance with wiring diagram, avoid mixed wiring between powerline and signal wire!

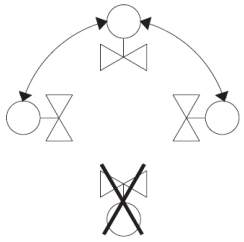
Wiring Diagram



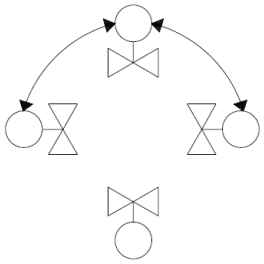
PCB



Mounting Orientation



Medium is chilled/hot water
Downward installation is forbidden



Medium is steam
Any installation position is OK.

Debugging Instructions

A. Connect actuator and valve body (See installation instructions for specific operation).

B. Power off the actuator (The power switch is located at the bottom left of actuator).

C. Wiring power and valve position signal wires.

D. Set DIP Switch to needed position. After the setting, turn on power of actuator, pre-setting function will come into effect. (DIP Switch can be set with power)

E. Power on the actuator.

F. Actuator Self-stroking: this step is for matching stroke of actuator and valve.

1) The Running indicating light will keep flashing (frequency is 1Hz) ,actuator shaft extends to lower limit position firstly and then, it retracts to upper limit position, actuator will not be controlled by signal by this time.

2) Running indicating light will stop flashing in about 150s, self-stroking stops and the matching of the valve and actuator is finished. By then, actuator running direction can be controlled by control signal.

G. Opening Adjustment: the maximum valve opening can be continuously adjusted within the range of 100% to 30% by adjusting the opening potentiometer. Flexibly adjust the relationship between the relative flow in the valve body and its opening; Both high and low sensitivities are found in the 100%~40% opening range, and low sensitivities are found in the 40%~30% opening range.

Setting method: Use a slotted screwdriver to adjust the opening potentiometer. The value indicated by the arrow is the current maximum opening value. The function bit of the nixie tube displays A, and the digital bit of the nixie tube displays the current opening value.

Note:

1. If self-stroking is needed in a power-on state, press down the Reset button over 3 seconds, and then the actuator start self-stroking. Self-stroking phenomenon are the same as step (1), (2) above.
2. If you don't need automatic self-stroking function, you can set the 7th switch to OFF, it will change into manual self-stroking (See the setting instruction of DIP switch).

S DIP Switch Setting

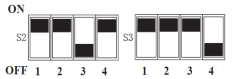
Correctly set DIP switch according to site situation!

DIP	Function	Description	
S2-1	Starting of control/ feedback signal	ON	20%: the starting control/feedback signal is 20%(namely 4~20mA or 2~10VDC)
		OFF	0: the starting control/feedback signal is 0(namely 0~20mA or 0~10VDC)
S2-2	Type of control signal	ON	II: current signal
		OFF	UI: voltage signal
S2-3	Impedance match of control signal	ON	UI: voltage signal
		OFF	II: current signal
S2-4	Type of feedback signal	ON	IO: current signal
		OFF	UO: voltage signal
S3-1	Operating mode	ON	DA:DA mode (when control signal increases, the actuator shaft extends)
		OFF	RA:RA mode (when control signal increases, the actuator shaft retracts)
S3-2	Losing control signal mode	ON	DW: When lose control signal (voltage type or current type), actuator will provide a min. control signal internally.
		OFF	UP: 1)When lose control signal (voltage type), actuator will provide a max. control signal internally. 2)When lose control signal (current type), actuator will provide a min. control signal internally.
S3-3	Self-stroking mode	ON	DF: Power on each time, self-stroking starts automatically.
		OFF	RF: Self-stroking starts only when press the self-stroking button manually.
S3-4	Sensitivity	ON	HS: Hight sensitivity of control signal⩽1% e(100%~40%); (40%~30%)
		OFF	LS: Standard sensitivity of control signal≤1.5% e(100%~30%)

Eg.1

Control signal: 0~10VDC
Valve position feedback signal: 0~10VDC
Operating mode: DA
Losing input signal mode: DW
Control signal sensitivity≤1.5%

Eg.2



Control signal: 4~20mA
Valve position feedback signal: 4~20mA
Operating mode: DA
Losing input signal mode: DW
Control signal sensitivity≤1.5%

Function Description

Standard function:

- Running Lights (RUN): there are red and green. When the actuator shaft is retracting (valve closed), the red light is on; when the actuator shaft is extending (valve opened), the green light is on. When self-stroke is performed, the red and green lights flash at the same time (The frequency is about 1Hz).
- ERR Lights (ERR): When the actuator failure occurs, ERR lights will be on.
- Digital tube: (Four digit nixie tube from left to right, 1 is the function digit, and 2, 3, 4 are the digits)

1) Digital Tube Description

Function Bit	Description	Digit Bit	Description
A	Opening percentage	Continuous change between 30~100	The current opening, the displayed value is percentage.
C	Digital bit display value is input signal	between 0~100	Input signal, the displayed value is percentage. E.g. when the input signal is 1V (0~10V), the displayed valve will be 1/10*100=10
F	Digital bit display value is feedback signal	between 0~100	Feedback signal, the displayed value is percentage. E.g. when the input signal is 1V (0~10V), the displayed valve will be 1/10*100=10

2) Digital tube digit bit includes 3-digit digital tube, the min. valve is 0, while the max. value is 100, the display accuracy is ±1.

3) When the actuator operates normally, the digital tube displays alternately between C and F, that is, the input signal and the feedback signal are displayed alternately.

ERR Alarming Function:

Self-stroke err alarm:

—The yellow light will be on.

—Running status of actuator: when control signal is more than 50% of total range, actuator shaft will extract to upper limit, when control signal is less than 50% of total range, actuator shaft will extend to lower limit. Valve position feedback signal always outputs 50% +1% of the total range.

—Digital tube display:

Function bit: alternating display C and F

Digit bit: alternately display the current control signal value, the valve position feedback signal display value 50 (always displayed as 50)

Unable to run specified position err alarm:

—The yellow light will be on.

—Running status of actuator: actuator stops.

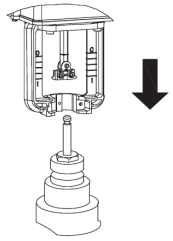
—Digit bit:

Function bit: alternating display C and F

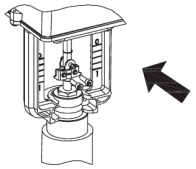
Digit bit: alternately display the current control signal value C and err occurred value F display.

Installation Instructions

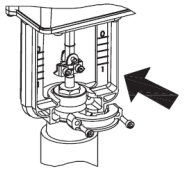
⚠ Please note that actuator force shall match valve caliber! ⚠ Installation should be conducted strictly according to installation instructions avoid the damage caused by insecure installation!



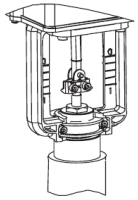
Prepare for assembling actuator, take down the fixed fitting, and disentangle the clip.



Make the actuator shaft concentric with the valve stem, and make these two connecting faces keep coinciding. Then clock the two screws on the clip.



Pulling the fixed fitting to the groove and locking by two screws.

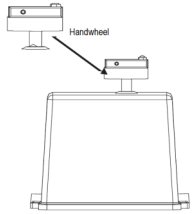


The status after assembled, face and back.

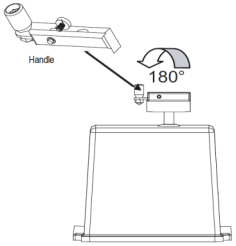
Manual Device Operation

⚠ Please cut off the power supply before manual operation!

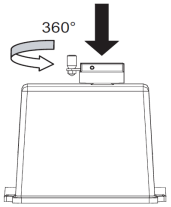
1. Shut off and prepare for manual operation.



2. Pull out the handle and rotate it 180 °

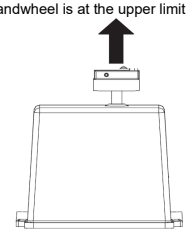


3. Press down the handwheel to the lower limit position, maintain the downward pressure, and start shaking the handwheel to realize the manual operation function.



Turn the handle counterclockwise, the actuator shaft is retracting, vice versa.

4. After the manual operation, release the handle, pull up the handwheel and ensure that the handwheel is at the upper limit position.



Dimension