Intelligent valve positioner

1600/1860 User Manual

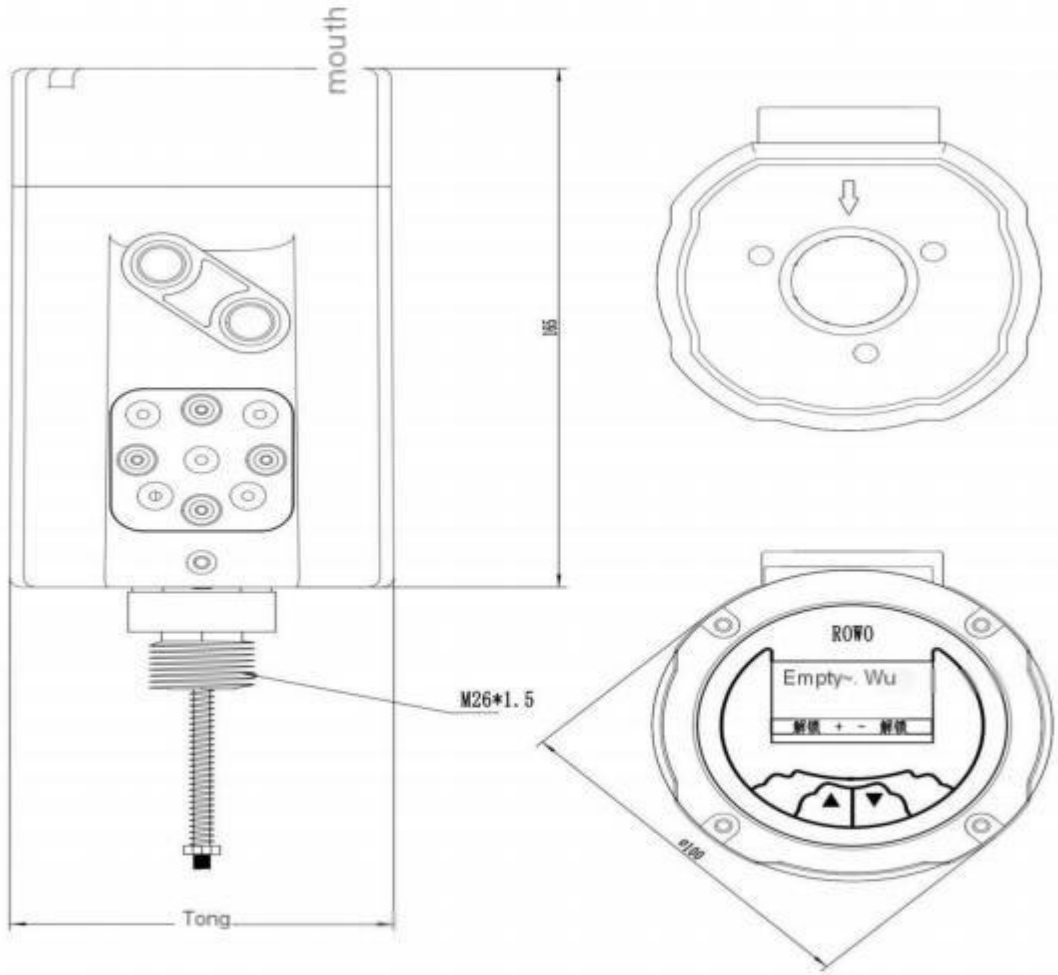
catalogue

1. Product characteristics

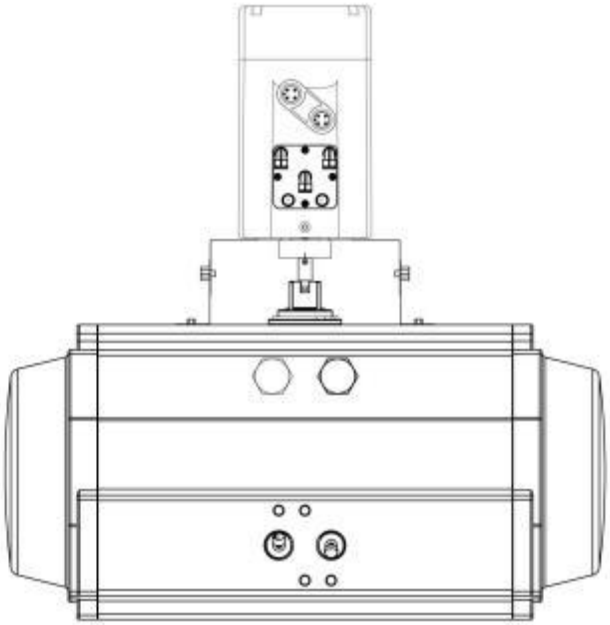
The intelligent valve positioner is a regulator based on microprocessor control, incorporating a displacement sensor and utilizing PWM combined with algorithms to automatically control the valve opening. The valve opening and closing can be set through external input signals, or the opening can be manually set. It accurately achieves adjustments in flow, pressure, and temperature.

2. Installation instructions

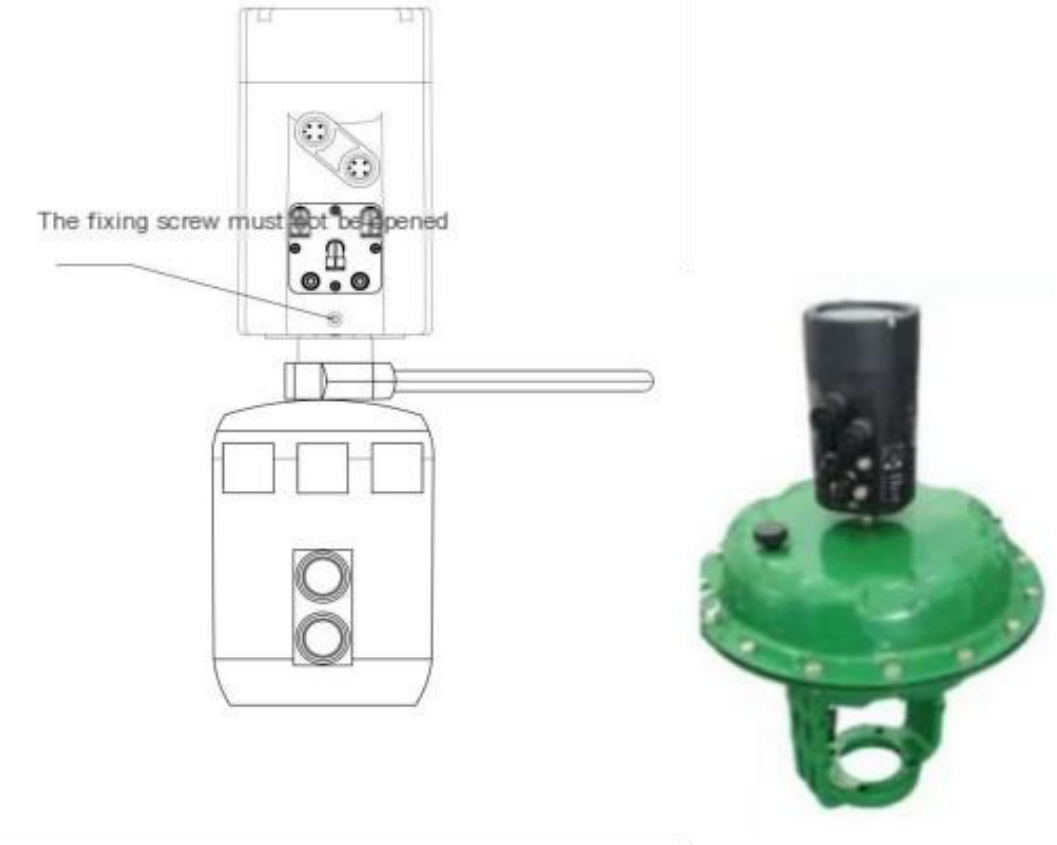
2.1. External dimensions



2.2 Assembly of quarter-turn cylinder



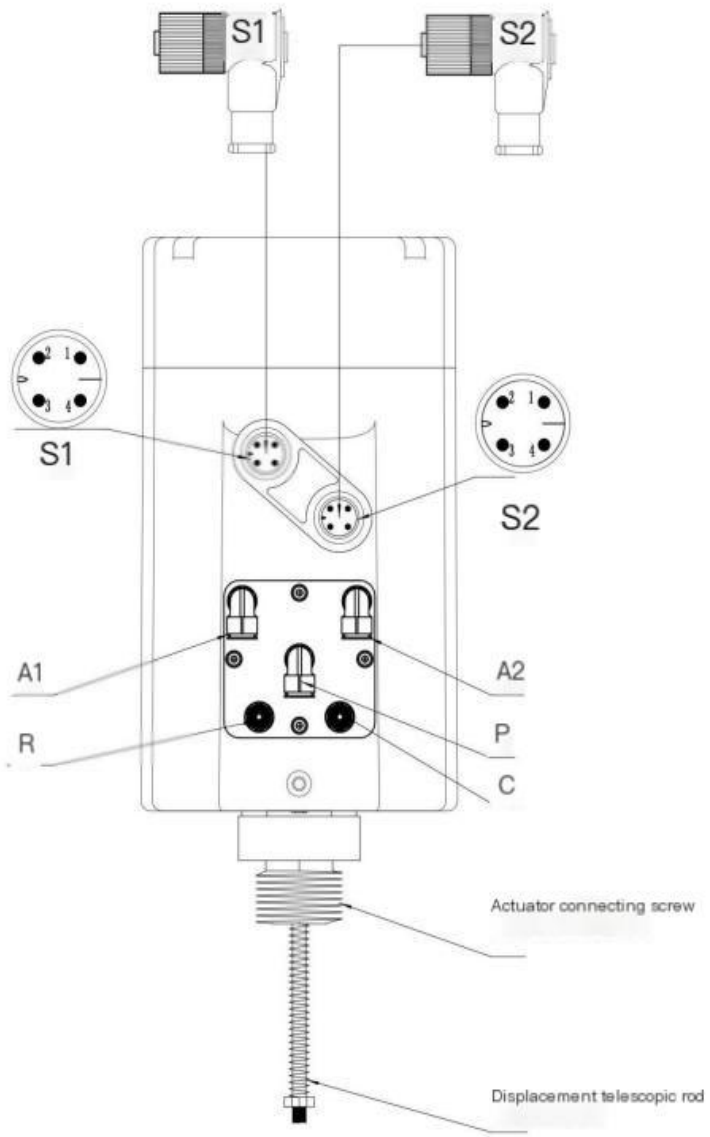
2.3. Linear travel installation



3. Electrical interface connection

Specification for the use of waterproof electrical connectors

The electrical interface features male and female protrusion and indentation designs. Please insert it into the waterproof pin male head according to the S1 and S2 marks. Forcing insertion without proper alignment may cause the pins to bend and break.



3.1 Connector terminal block

tagging	Terminal number	parameter	Signal category
S2	1	Analog signal output +	4 – 20 mA， 0-10V,0-5V
	2	Analog signal output -	-
	3	485 communication	A
	4	485 communication	B

S2 electrical terminal (optional)

tagging	Terminal number	parameter	Signal category
S1	1	Power supply+	+24 V
	2	Power supply-	-24 V
	3	Set signal input +	4 – 20 mA， 0-10V,0-5V
	4	Set signal input -	-

S1 electrical terminal

4. Technical parameters

4.1 Electrical parameters

Connecting device: Cable sealing joint

Power supply: 24 V DC ± 10%, ≥0.3A (for a single positioner).

Ambient temperature: 0~70℃

Protection level: IP66

Anti-vibration parameter: 100Hz

4.2. Inspection Issues

4.2.1. The display screen does not light up after the locator is powered on

Ensure the DC24V power supply is connected, and check if the positive and negative poles are properly connected.

2. The locator is unable to locate the opening and closing of the valve for an extended period of time

2.1 Check whether the air pressure meets the cylinder pressure requirements, whether there is any leakage in the air supply pipe, and whether there is any leakage in the cylinder.

4.2.2 Precautions for connecting to the gas source:

A filter regulator must be installed before connecting the air source to the positioner.

The operating pressure of the air source should not exceed 0.7 MPa and should be less than 0.3 MPa; otherwise, the cylinder cannot be opened.

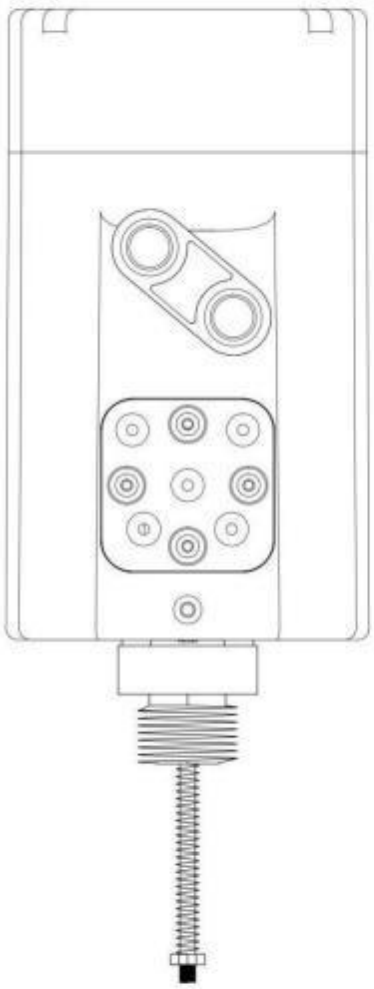
5. Operation

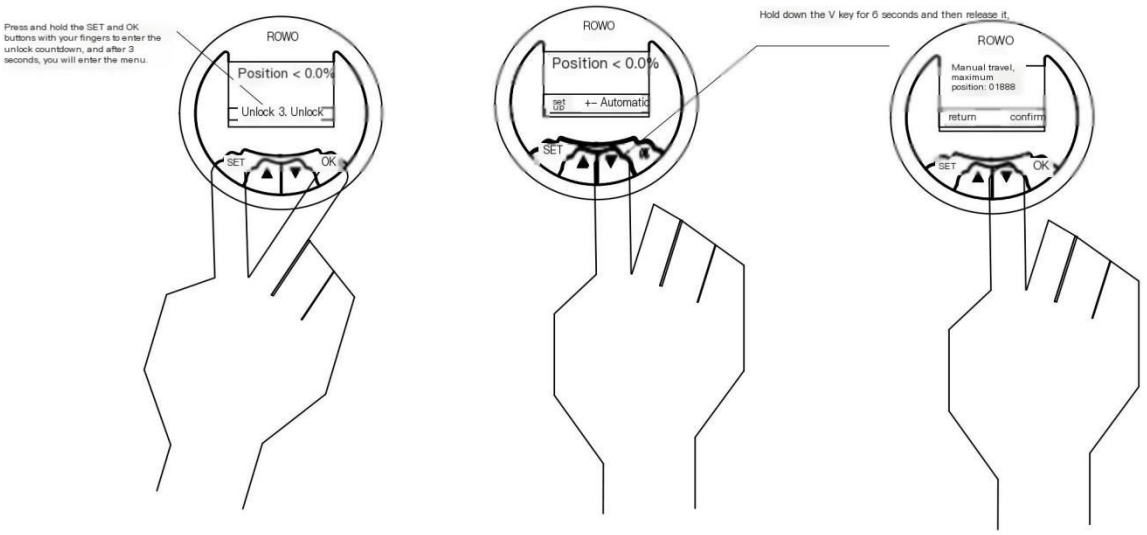
Interface description

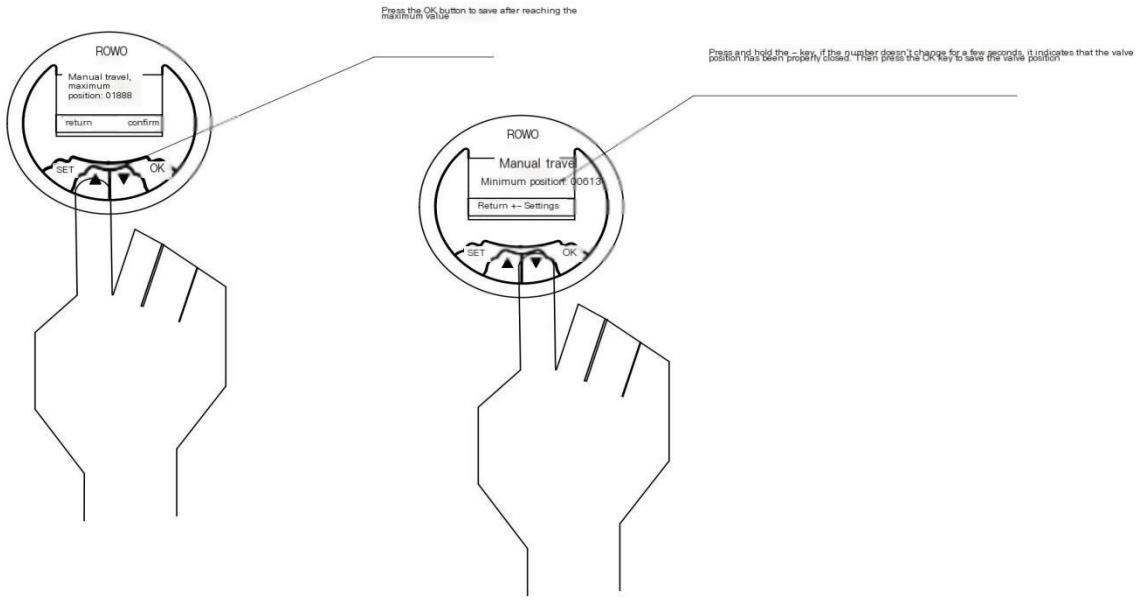
The positioner includes four touch buttons. Users can operate the relevant functions of the positioner through these four buttons. The display screen will show numerical indications to display the percentage range of the effective travel of the displacement sensor or the percentage range of the valve travel.

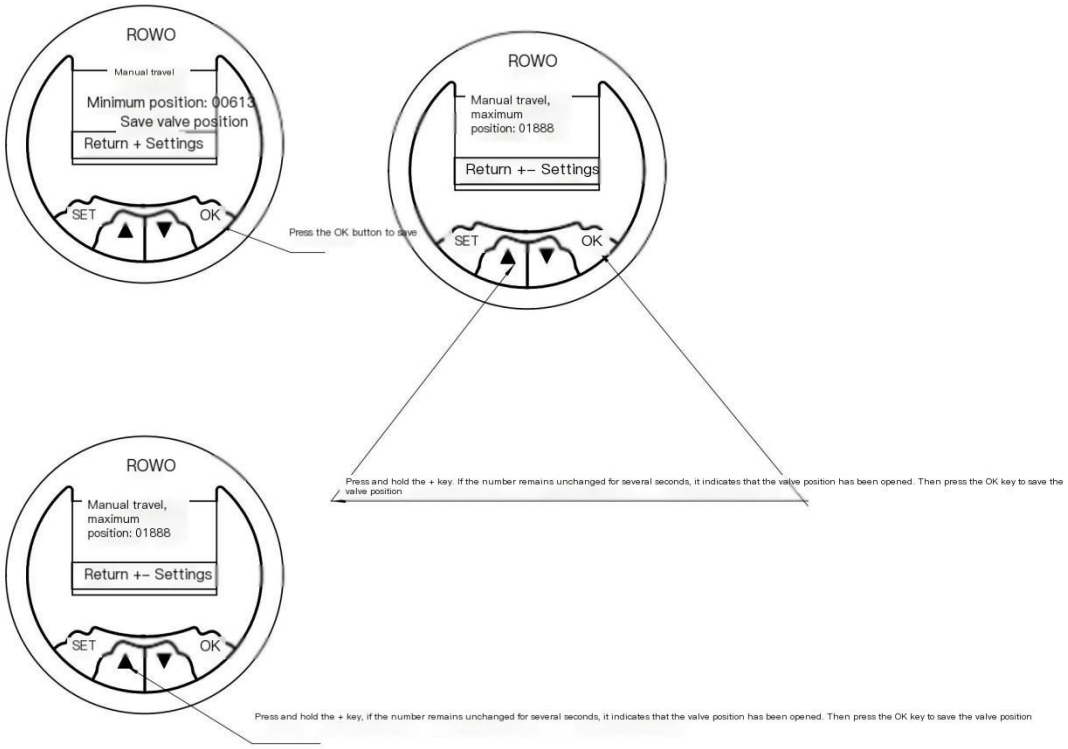
Figure 12. Operation interface

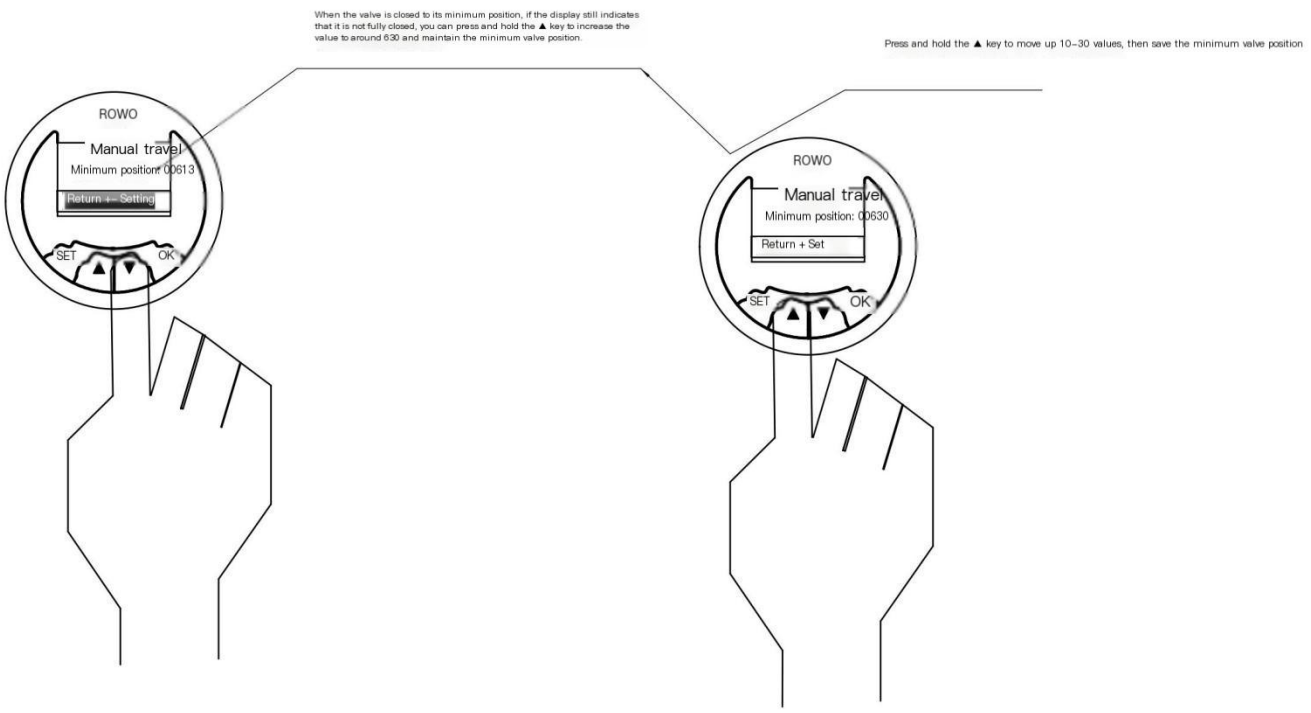
6. Operating mode

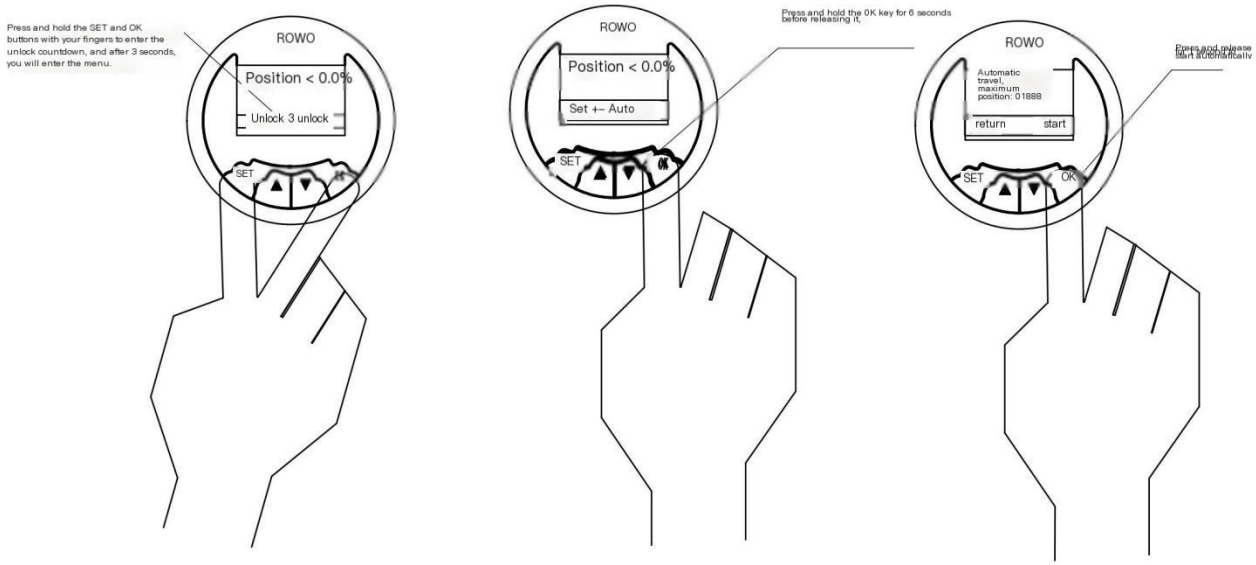


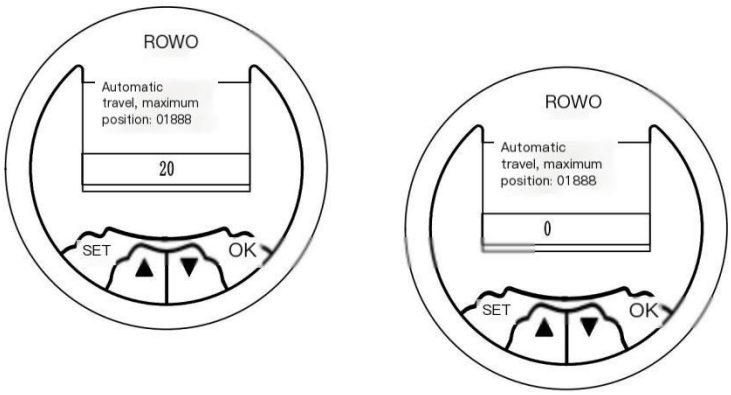

Press and hold the SET and OK buttons with your fingers to enter the unlock countdown, and after 3 seconds, you will enter the menu.
ROWO
Position < 0.0%
Unlock 3. Unlock
SET
OK
ROWO
Position < 0.0%
+– Automatic
SET
Hold down the V key for 6 seconds and then release it.
ROWO
Manual travel, maximum position: 01888
return
confirm
SET
OK

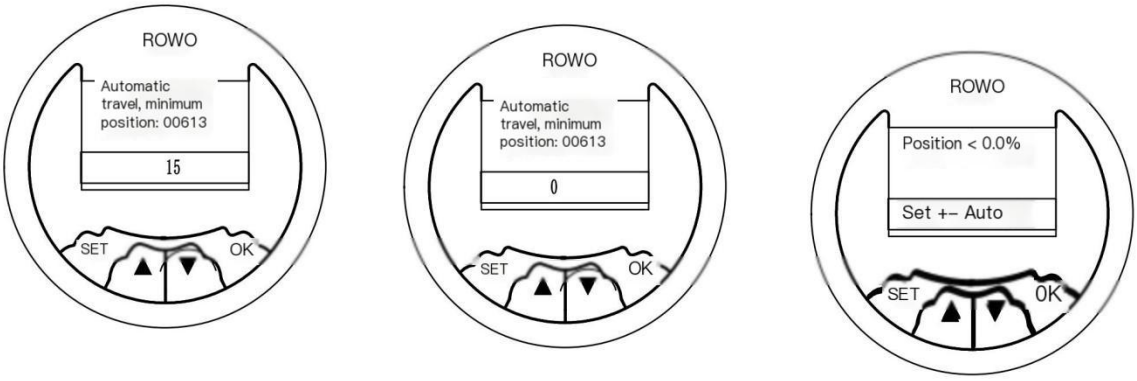

Press the OK button to save after reaching the maximum value
ROWO
Manual travel, maximum position: 01888
return
confirm
SET
OK
Press and hold the – key, if the number doesn't change for a few seconds, it indicates that the valve position has been properly closed. Then press the OK key to save the valve position
ROWO
Manual travel
Minimum position: 00613
Return +– Settings
SET
OK


ROWO
Manual travel
Minimum position: 00613
Save valve position
Return + Settings
SET
OK
Press the OK button to save
ROWO
Manual travel, maximum position: 01888
Return +– Settings
SET
OK
Press and hold the + key. If the number remains unchanged for several seconds, it indicates that the valve position has been opened. Then press the OK key to save the valve position
ROWO
Manual travel, maximum position: 01888
Return +– Settings
SET
OK
Press and hold the + key, if the number remains unchanged for several seconds, it indicates that the valve position has been opened. Then press the OK key to save the valve position


When the valve is closed to its minimum position, if the display still indicates that it is not fully closed, you can press and hold the ▲ key to increase the value to around 630 and maintain the minimum valve position.
Press and hold the ▲ key to move up 10–30 values, then save the minimum valve position
ROWO
Manual travel
Minimum position: 00613
Return + Setting
SET
OK
ROWO
Manual travel
Minimum position: 00630
Return + Set
SET
OK


Press and hold the SET and OK buttons with your fingers to enter the unlock countdown, and after 3 seconds, you will enter the menu.
ROWO
Position < 0.0%
Unlock 3 unlock
SET
OK
Press and hold the OK key for 6 seconds before releasing it.
ROWO
Position < 0.0%
Set +– Auto
SET
OK
ROWO
Automatic travel, maximum position: 01888
return
start
SET
OK


ROWO
Automatic travel, maximum position: 01888
20
SET
OK
ROWO
Automatic travel, maximum position: 01888
0
SET
OK


ROWO
Automatic travel, minimum position: 00613
15
SET
OK
ROWO
Automatic travel, minimum position: 00613
0
SET
OK
ROWO
Position < 0.0%
Set +– Auto
SET
OK

Administrator operation page: Press and hold the SET and Ok buttons simultaneously for 3 seconds to unlock. Press and hold the SET button for 16 seconds before releasing it. Then press the △ and ▽ buttons to select the following options:
1.1, Fine adjustment range: Select from 1-30% using the △ and ▽ keys, then press the 0k key to confirm. After confirmation, proceed to the next menu or press the SET key to return to the home page

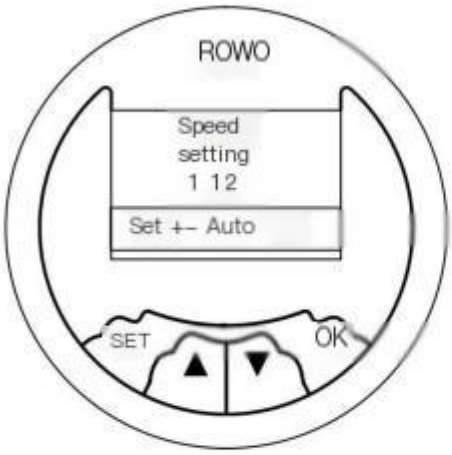
1.2, Speed setting: Press and hold the SET key and Ok key simultaneously for 3 seconds to unlock. Press and hold the SET key for 16 seconds before releasing it, then press the △ key to scroll to the speed setting menu. Enter the signal here, then press the OK key. Select normal and reverse by pressing the △ and ▽ keys, and press the 0k key to confirm. After confirmation, proceed to the next menu or press the SET key to return to the home page
1.3, Set the travel time for valve opening and closing; press the △ and ▽ keys to select, then press the 0k key to confirm. After confirmation, proceed to the next menu or press the SET key to return to the home page
1.4 Reset to factory settings. It is best not to choose this option as resetting to factory settings will return all existing settings to their initial state,
1.5, Feedback signal, select between electronic ruler and encoder by pressing the △ and ▽ buttons, then press the 0k button to confirm. After confirmation, proceed to the next menu or press the SET button to return to the homepage
1.6 Valve position setting: The general position is the default position and does not require setting. For setting, please contact the manufacturer.
1.7 Press and hold the SET and Ok buttons simultaneously for 3 seconds to unlock. Press and hold the SET button for 16 seconds before releasing it, then press the △ button to scroll to the speed setting menu. Enter the signal here, then press the OK button. Select normal and reverse by pressing the △ and ▽ buttons, and press the 0k button to confirm. After confirmation, proceed to the next menu or press the SET button to return to the home page

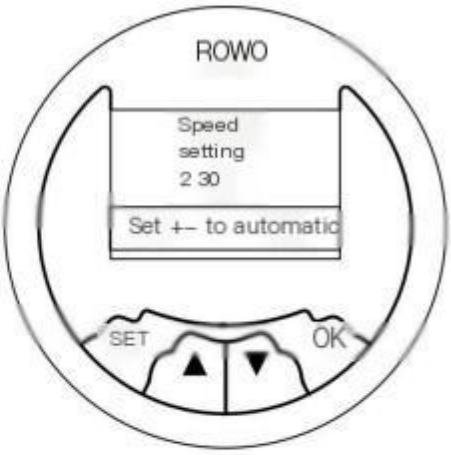
1.8 Screen settings, including adjusting brightness and clarity. Select by pressing the △ and ▽ keys, then press the 0k key to confirm. After confirmation, proceed to the next menu or press the SET key to return to the home screen
1.9 Valve closing signal dead zone selection: Selecting 1 means that when the valve position reaches 1% and the input signal reaches 4.1mA, the valve will close. Selecting 2 means that when the valve position reaches 2% and the signal reaches 4.2mA, the valve will close. Use the △ and ▽ keys to select, and then press the 0k key to confirm. After confirmation, proceed to the next menu or press the SET key to return to the home page
2.0 Communication selection: This protocol is the Modbus protocol for RS-485. You can select *the* corresponding protocol number *by* pressing the △ and ▽ keys, and then press the 0k key to confirm. After confirmation, proceed to the next menu or press the SET key to return to the home page

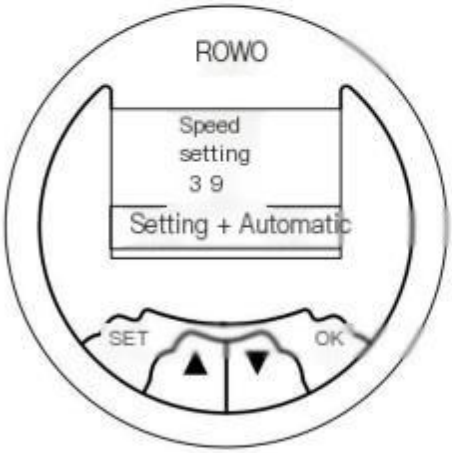
RTU address	project	Default value	Range	explain
40000				
40001				
40002	Start up and run	0	0-1	0: Automatic 1: Manual
40003	Analog input signal	0	0-4	0：0-5V 1：0-10V 2：0-20MA 3：4-20MA 4: Remote
40004	Analog output signal	0	0-3	0：0-5V 1：0-10V 2：0-20MA 3：4-20MA
40005	Analog signal selection	0	0-1	0: Position 1: Input
40006	Switch output function	0	0-4	0: Run/Stop 1: Valve position error 2: Position arrival 3: Minimum opening 4: Maximum opening
40007	Switch output type	0	0-1	0: Normally open 1: Normally closed
40008	Manual speed	1	1-999	X10Ms
40009	Dead zone setting	1.0%	0-100%	
40010	Safe location	10.0%	0-100%	
40011	Minimum opening degree	0	0-100%	
40012	Maximum opening degree	100.0%	0-100%	

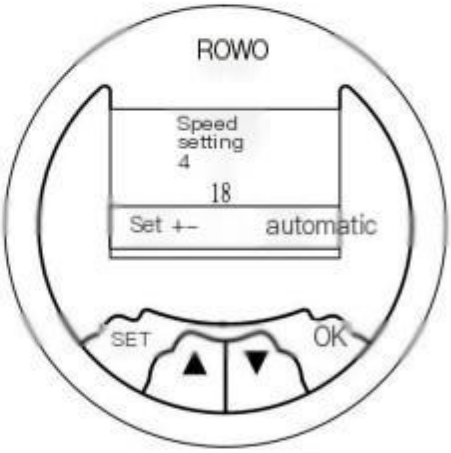
40013	Position correction	0	0-1	0: Manual correction 1: Automatic correction
40014	Local address	1	1-255	
40015	Remote valve position calibration			
40027	Valve position			
40028	given			
40029	Switch output			
40030	Switch input			
40031	Analog output			
40032	Analog input			
40033	PWM output value			
40034				
40035	Minimum valve position			
40036	Maximum valve position			
40050				
40051	Fine tuning deviation	5.0%	0-100%	
40052	1	100		Speed
40053	2	200		speed
40054	3	50		speed
40055	4	100		speed
40056	Automatic valve position open			Automatic valve position correction start time (seconds)
40057	Automatic valve position closed			Automatic correction closing time of valve position (seconds)
40058	Factory restoration			0: Invalid 1: Restore factory data
40059	Valve position feedback	0	0-1	0: Encoder 1: Electronic ruler
40060	Valve closing direction	0	0-1	0: Rising 1: Decrease
40061	Valve position output	0		0: Normal 1: Calibration
40062	Input signal	0		0: Normal 1: Inverted
40063	Screen contrast ratio	0		Adjust the clarity of characters on the screen
40064	The valve is fully closed	2	0-100%	If the given valve position is less than the specified position value, the valve will be closed

Then proceed to speed setting









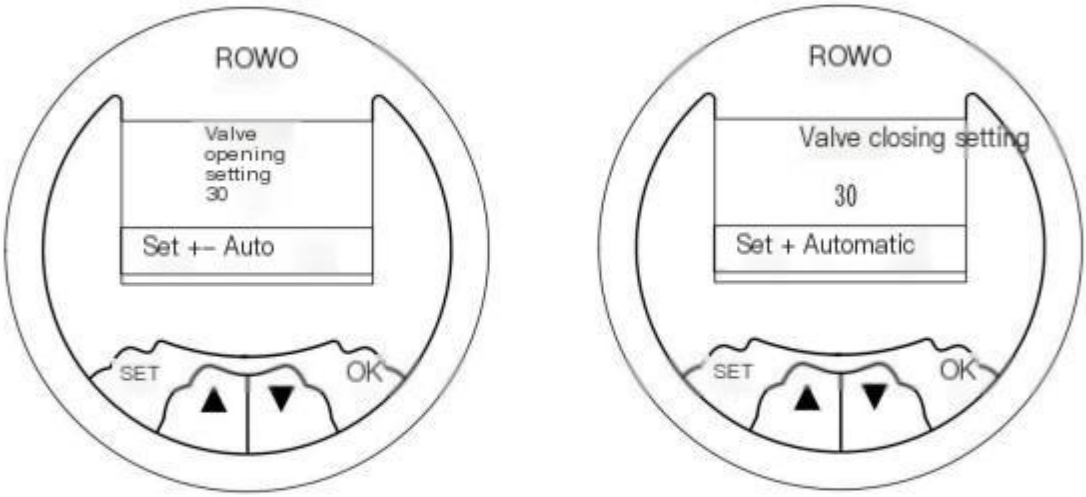
The speed is set to one of the four levels: 1, 2, 3, and 4.

Quick adjustment settings:

Numerical settings and methods: For the first gear, a higher numerical value, such as between 12 and 30, indicates a larger setting. For the second gear, a lower numerical value, such as between 10 and 40, indicates a smaller setting. For the third gear, a higher numerical value, such as between 9 and 20, indicates a larger setting. For the fourth gear, a lower numerical value, such as between 10 and 25, indicates a smaller setting. The above settings are for rapid speed adjustment.

Micro-adjustment valve and settings:

Numerical Settings and Methods: For the first gear, the smaller the numerical value, the greater the adjustment, typically ranging from 3 to 10. For the second gear, the numerical value is larger, typically ranging from 50 to 110. For the third gear, the numerical value is smaller, typically ranging from 3 to 9. For the fourth gear, the numerical value is larger, typically ranging from 30 to 80. The above settings are for slow speed adjustment with high precision.



Set the time for valve opening and closing for automatically scheduled trips

Set the valve opening and closing values based on the cylinder size: For cylinder diameters of 100 or less, set it to ≤20. For cylinder diameters greater than 100, it is better to set it to around 30.

7. Operation interface mode:

1	pattern			Automatic and manual
2	Analog input signal	0	0-4	0：0-5V 1：0-10V 2：0-20MA 3：4-20MA 4: Remote
3	Analog output signal	0	0-3	0：0-5V 1：0-10V 2：0-20MA 3：4-20MA
4	Analog signal selection	0	0-1	0: Position 1: Input
5	Switch output function	0	0-4	0: Run/Stop 1: Valve position error 2: Position arrival 3: Minimum opening 4: Maximum opening
6	Switch output type	0	0-1	0: Normally open 1: Normally closed
7	Manual speed	1	1-999	X10Ms
8	Dead zone setting	1.0%	0-100%	
9	Safe location	10.0%	0-100%	
10	Minimum opening degree	0	0-100%	
11	Maximum opening degree	100.0%	0-100%	
12	Local address	1	1-255	
13	Language selection			Chinese, English
14	Delayed closing time			0-100
Press and hold the SET button for 16 seconds before releasing it				
1	Fine tuning deviation	5.0%	0-100%	
2	1	100		Speed
3	2	200		speed
4	3	50		speed
5	4	100		speed
6	Automatic valve position open			Automatic valve position correction start time (seconds)
7	Automatic valve position closed			Automatic correction closing time of valve position (seconds)
8	Factory restoration			0: Invalid 1: Restore factory data
9	Valve position feedback	0	0-1	0: Encoder 1: Electronic ruler
10	Valve closing direction	0	0-1	0: Rising 1: Decrease
11	Valve position output	0		0: Normal 1: Calibration
12	Input signal	0		0: Normal 1: Inverted
13	Screen contrast ratio	0	0-30	Adjust screen character clarity
14	The valve is fully closed	2	0-100%	If the given valve position is less than the specified position value, the valve will be closed
15	communication			8N1/801/802/8N2
16	Baud rate			9600，19200,38400.