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CKD

SM-276677-A

NSTRUCTION MANUAL

PARECT ELECTRO-PNEUMATIC REGULATOR

ER300

- Please read this instruction manual carefully before using this product, particularly the section describing safety.
- Retain this instruction manual with the product for further consultation whenever necessary.

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For Safety Use

To use this product safety, basic knowledge of pneumatic equipment, including materials, piping, electrical system and mechanism, is required (to the level pursuant to JIS B 8370 Pneumatic System Rules).

We do not bear any responsibility for accidents caused by any person without such knowledge or arising from improper operation.

Our customers use this product for a very wide range of applications, and we cannot keep track of all of them. Depending on operating conditions, the product may fail to operate to maximum performance, or cause an accident. Thus, before placing an order, examine whether the product meets your application, requirements, and how to use it.

This product incorporates many functions and mechanisms to ensure safety. However, improper operation could result in an accident. To prevent such accidents, **read this operation manual carefully for proper operation.**

Observe the cautions on handling described in this manual, as well as the following instructions:

⚠ DANGER : Failure to pay attention to DANGER notices may cause a situation that results in a fatality or serious injury and that requires urgent addressing.

⚠ WARNING : Failure to pay attention to WARNING notices may result in a fatality or serious injury.

⚠ CAUTION : Failure to pay attention to WARNING notices may result in injury or damage to equipment or facilities.

※1)IS0 4414 :Pneumatic fluid power・・・Recommendations for the application of equipment to transmission and control systems.

※2)JIS B 8370:General rule for pneumatic systems

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DESIGN AND SELECTION

⚠ CAUTION

1) Inferior quality air will deteriorate the product characteristics and affect its durability badly. Use an air dryer, filter and sub micron filter to eliminate solid material, moisture and tar and thus provide clean air from the pressure source.

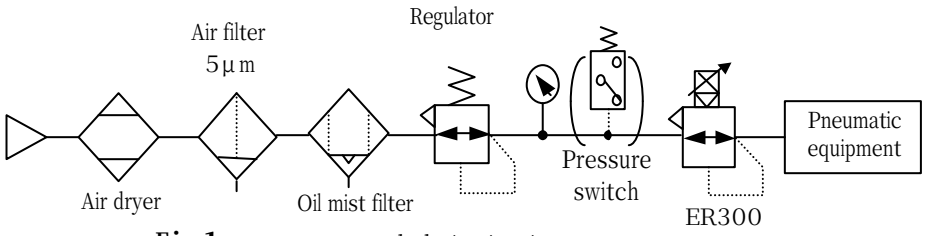

Fig 1 Recommended air circuit

In the case where the secondary side air pressure is reduced, the secondary side air flows through the model ER300 and will be discharged from the exhaust port. The inside of the secondary piping and that of the load side should be kept clean. Otherwise, similar conditions such as deteriorated product characteristics result.

2) The products response capability will be affected by the working pressure and load volume. When a stable response is required, regulate the working pressure.

3) When the product is used with the secondary side being opened to the atmosphere as in the case of air blowing, air pressure may vary depending on conditions of piping and air blowing. In such a case, be sure to test the product under actual using conditions or contact us in advance.

4) Select only the dryer, air filter, oil mist filter and regulator having the flow rate higher than that used for PARECT units.

MOUNTING, INSTALLATION AND ADJUSTMENT

⚠ CAUTION

1) Be sure to follow the instructions provided below. Failure to follow these instructions may hamper normal pressure control.
   * Never adjust the primary pressure to less than that of the secondary pressure +0.049MPa while the input signal is on.
   * Never send an input signal (this includes the power supply with the voltage input type) when the primary pressure is at atmospheric level.
   * Install a pressure switch capable of detecting the ER300 primary pressure and turning off input signals (this includes the power supply with the voltage input type) to the ER300 when pressure is reduced.
     Reference:
     The pressure switch setting must be the maximum set pressure +0.049MPa or more, at the ER300.
   * Never connect the power supply and input signal groundingline to the ER300 body.

2) The best measures against noise such as of solenoid valve etc. is through surge protection with CR, Diode (DC) etc.
   The following measures are also acceptable:
   * Separate the power line from the ER300 signal cable.
   * Connect the ER300 signal cable with the shield cable. *1
   * Install a line filter in the ER300 source power supply (for example, when using the DC power supply pack, install in the DC power supply pack AC side).
     Warning:
     When the above precautions are not provided, normal pressure control cannot be guaranteed.
     Important: * Connect the shield to the GND.
     * For the connection between the V, S, and M terminals, divide the shield cable.
     * When only the 2-core shield cable is available mate V-C, S-C, and M-C.

3) The monitor output signal voltage differs with the device type, and varies individually in the certain range among the products.
   When using the function, confirm the output voltage.
   Monitoring accuracy will not differ at either output voltage level.
   When connecting various types of detector devices to the monitor output, use those with an input impedance of over 1MΩ.

USAGE AND MAINTENANCE

⚠ WARNING

1) When the primary side pressure is applied to the unit, do not loosen the screw securing the orifice. Otherwise, the orifice will fly out.
2) Do not disassemble the unit because it will fail. Operations of the disassembled unit will not be guaranteed.

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ER300 Series

PARECT Electronic Regulator

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1.PRODUCTS

1.1 Specifications

Model / Item			ER310	ER350	ER380
Media (Refer to CAUTION)			Cleaned air		
Working pressure range			150kPa - 200kPa	0.54Mpa - 0.59MPa	0.83Mpa - 0.88MPa
Pressure control range			0kPa - 98kPa	0Mpa - 0.49MPa	0Mpa - 0.78MPa
Input Signal	Voltage	Input Voltage rate	0VDC - 10VDC . 0VDC - 5VDC		
	3-wire type	Input impedance	10kΩ		
	Current	Input current rate	4mA - 20mA (No power supply required)		
	2-wire type	Input impedance	500Ω or less		
Power supply voltage			DC11V - DC16V (Stadilized power supply with a ripple rate of 1%or less)		
Consumption current ※4			10mA or less (three wire type)		
Hysteresis			1%F.S. or less ※1		
Linearlity			±0.5%F.S. or less ※1		
Maximum flow rate ※2			700L/min(ANR)	2000L/min(ANR)	2500L/min(ANR)
Step response ※3			2sec or less (no load)		
Air comsumption rale (ANR)			3L/min or less		
Withstanding vibration			39m/s²(30Hz)		
Working temperature range			5℃ - 50℃		
Monitor output ※4			1±0.3V - 3.5±0.6V	1±0.3V - 3.5±0.6V	1±0.3V - 3.0±0.6V
Dimensions			See to 1.2 Dimensions		
Port size			Rc1/4、3/8		
Mass			0.9kg		

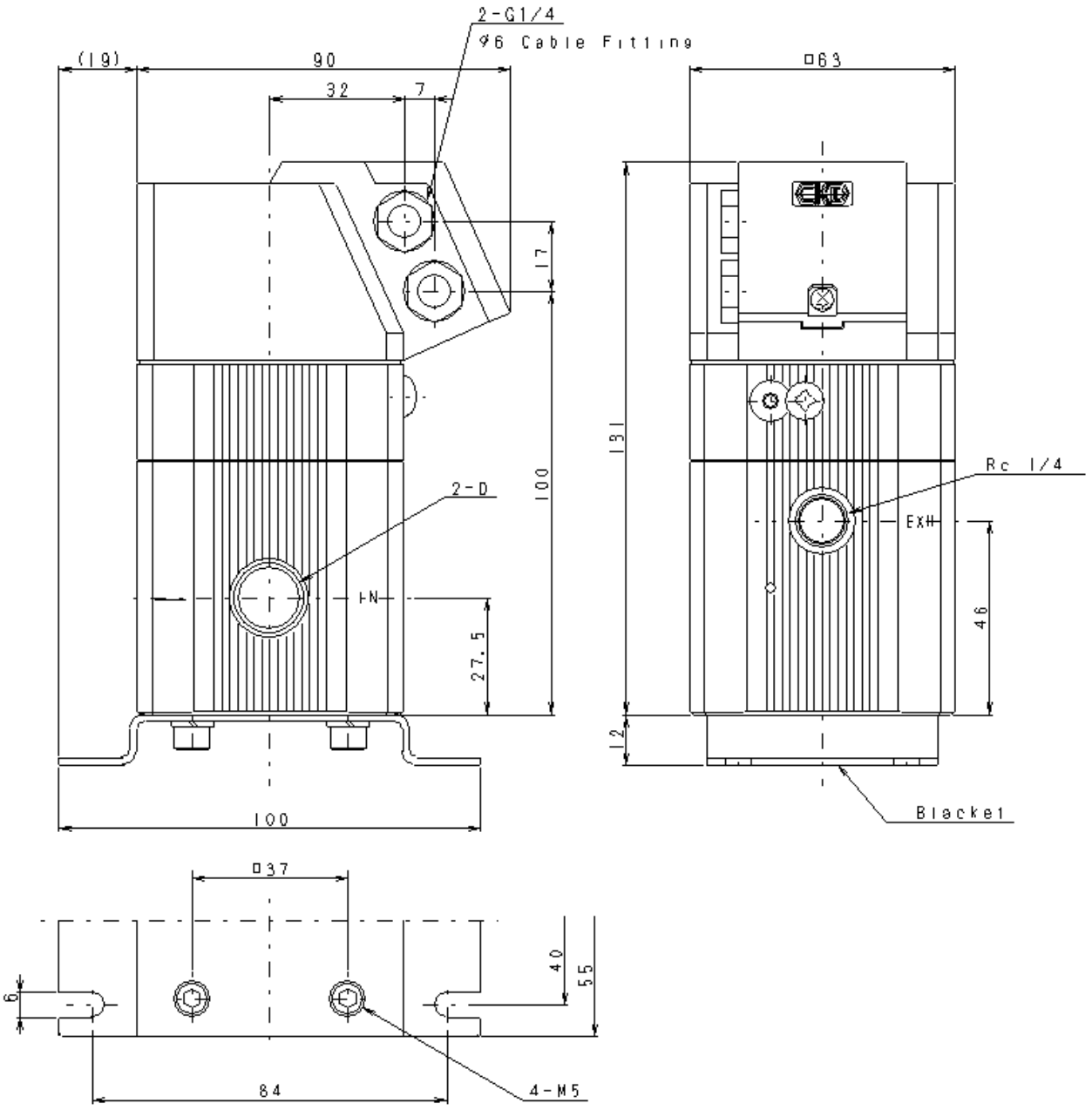
※1. This specification is when the conotrol pressure range is between 10%F.S. and 100%F.S.. It is also assumed that secondary side circuit constitute a closed circuit. If the product is used for such purposes as blowing, for example, a pressure fluctuation may occur.

※2. Working pressure : Max. working pressure.
Control pressure : Max. control pressure.

※3. Working pressure : Max. working pressure, step rate :0%F.S.→100%F.S.

※4. Voltage input signal type only.

1.2 Dimensions



Port size (D)
Rc 3/8
Rc 1/4

Fig2 Dimensions

2. WIRING

2.1 Terminal Box

To open the terminal box cap, ① remove the M3 pan head screw, ② pull the cap lower part until the lower claw disengages, and ③ push the entire cap diagonally upward (refer to Fig 3)

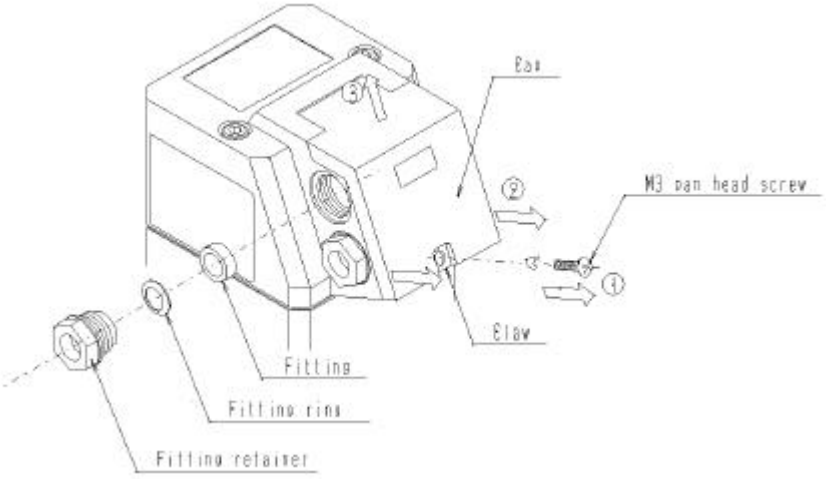


Fig3. Terminal Box

2. 2 Connection

The connections are for power supply, for the input signal line, and for the pressure monitor line output. The input connection differs in the voltage input type (3 line system) or the current input type (2 line system).

1). Voltage Input Type (3 line system) Connection.

Use the 6mm external diameter, 3-core shield cable 0.5 - 1.5mm^2 for a device controlled with input signal of 0VDC - 10VDC or 0VDC - 5VDC voltage.

To avoid a malfunction caused by noise, the shield cable must be connected to Ground (Common) at the operation side (Fig4). When used in an poor environment, power supply noise must be eliminated with the line filter and the serge killer.

As Figure4 indicates, connect to the respective terminals as indicated in Fig5.

For the power supply, 11VDC - 16VDC rated voltage (ripple rate less than 1%) can be used. However, we particularly recommend the 12VDC±0.5% stabilized power supply.

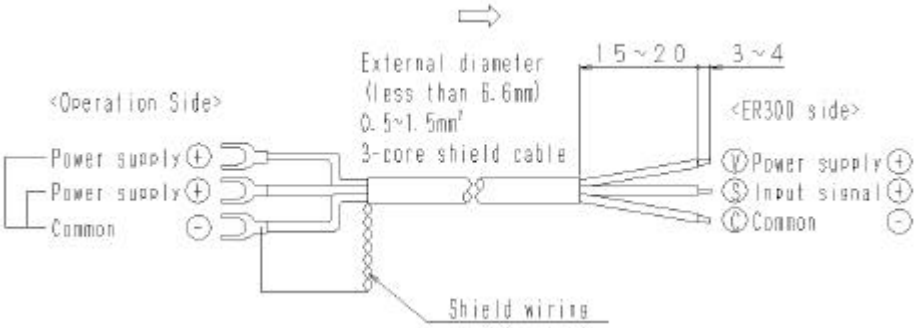


Fig4. 3-line Input Cable

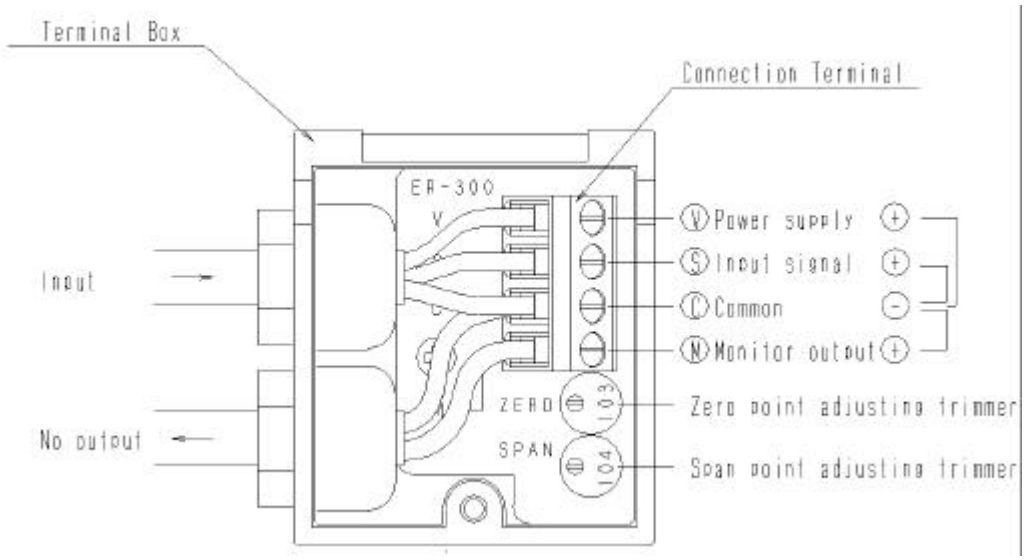


Fig5. Voltage Input(3-Line System)Connection Diagram

2) Current Input Type (2-Line System) Connection

Use the 6mm external diameter, 2-core shield cable 0.5-1 5mm^2 for a device controlled with input signal of 4mA -20mA current. To avoid connected to a malfunction caused by noise, the shield cable must be connected to Ground at the operation side as same as at the Voltage Input Type.

As Figure4 indicates, connect to the respective terminals as indicated in Fig7.

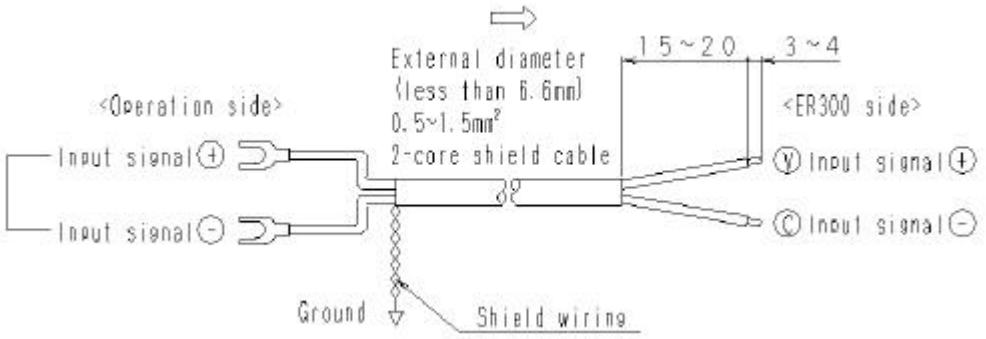


Fig 6. 2-line Input Cable

3) Pressure Monitor Output Connection

✳The pressure monitoring function which the output pressure status is output as an electric signal can be used only for the Voltage Input Type (3-Line System) device. It cannot be used for the Current Input Type (2-Line System).

✳Connect to the terminals as indicated in Figure5, with the 6mm external diameter, 0.5-1.5mm^2 2-core shield cable as indicated in Fig8

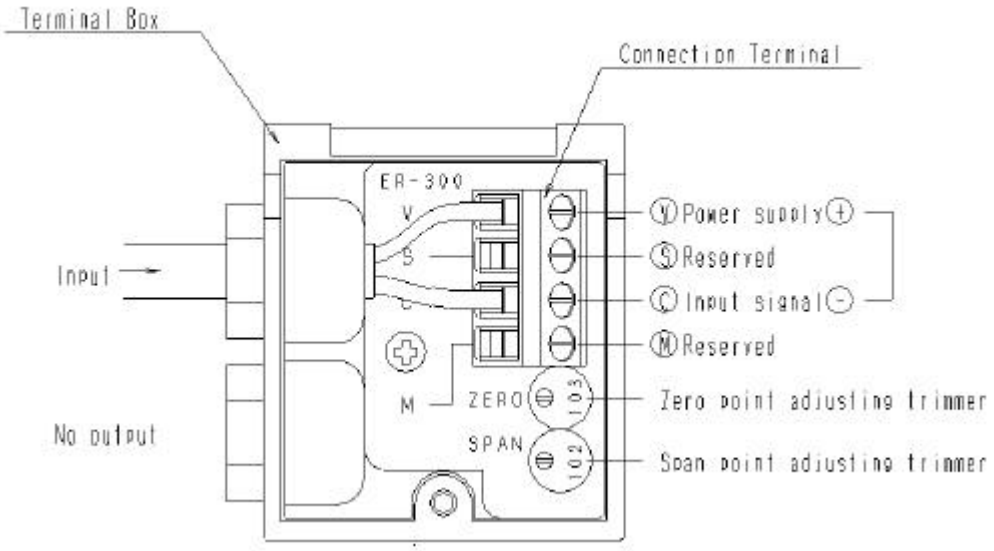


Fig 7. Current Input (2-line System) Connection Diagram

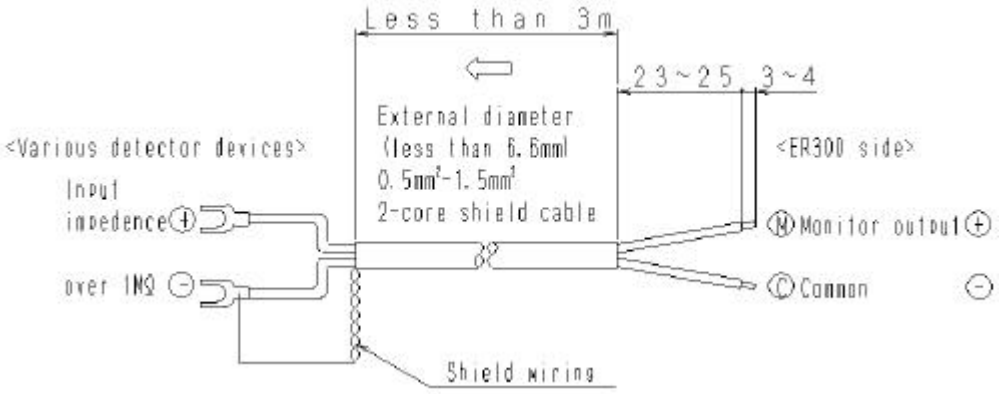


Fig 8. Monitor Output Cable

3. PRODUCT OPERATION

3.1 Adjustment

The Parect Electronic regulator's zero point and span point are factory adjusted at the time of shipment.

Zero and Span adjustment at factory

Model	Zero (MPa)	Span (MPa)
ER310	0	0.098
ER350	0	0.49
ER380	0	0.78

If necessary, in accordance with the following procedures after mounting a pressure gage of accuracy commensurating with the accuracy expected on the secondary side.

Procedure－1 Adjust operational pressure.(primary side).

Procedure－2 Zero point adjustment

First, turn on the power and set the signal to 0 V (4mA for the current input type). Then, set the pressure to 0MPa by turning the zero point adjustment trimmer either clockwise or counterclockwise. (Clockwise turn of the trimmer increases the pressure and counterclockwise turn of the trimmer decreases the pressure.)

Procedure－3 Span adjustment

First, turn on the power and apply the rated voltage or current (10 VDC, 5 VDC, or 20mADC (depending on the model)). Then, turn the span adjustment trimmer either clockwise or counterclockwise to obtain the rated output. (Clockwise turn of the trimmer increases the pressure and counterclockwise turn of the trimmer decreases the pressure.)

Note1. As zero point adjustment and span point adjustment affect the setting of each other, be sure to perform these adjustments alternately in order to effect the correct settings.

Note 2. Since adjustment trimmers are highly sensitive, output pressure will varies greatly with only a slight change in trimmer settings, and great care is required when making the adjustment.
Specially the zero point adjustment responds with a time lag, any adjustments must be mad slowly.

4. HOW TO ORDER

ER3Ⓐ 0 – Ⓑ Ⓒ – Ⓓ

Symbol	Optional blacket
No symbol	Nothing
B	Blacket attached

Symbol	Port size
08	Rc 1/4
10	Rc 3/8

Symbol	Input signal
0	0 VDC - 10 VDC
1	0 VDC – 5 VDC
2	4 mADC - 20 mADC

Symbol	Pressure control range
1	0kPa – 98kPa
5	0MPa - 0.49MPa
8	0MPa - 0.78MPa