

# 压力比例阀 Proportional Pressure Regulator

QKL-B1T /QKL-B3-1/QKL-B3-A



## 产品特点 Features

- ◆ 体积小 Compact
- ◆ 精度高 High Precision
- ◆ 灵敏度高 High Sensitivity
- ◆ 广泛的压力范围 Wide Pressure Range

## 产业应用 Industrial application

- ◆ 雷射切割 Laser Cutter
- ◆ 泄漏测试 Leak Tester
- ◆ 张力控制 Tension Control
- ◆ 吹瓶机产品成型 PET bottle molding machine
- ◆ 多段压力控制 Multi-Stage Pressure Control

## 产品叙述 Product Description

此压力比例阀为一个闭回路设计，系由两个电磁阀、压力传感器以及电子回路控制所组成。根据模拟讯号的输入，由一端电磁阀用来控制进气量，与另一端电磁阀来控制排气量，再透过压力传感器测得压力并回馈于电子回路控制，以达到精确的压力控制。该比例阀适用于随时需要精准调控压力变化与随时监控压力值的产业。

我们的比例阀输入信号提供了 0-10VDC(电压) 与 4-20mA(电流) 及 RS485 ModBus 通讯选择；监控输出则有 1-5V、0-10V 及 4-20mA 的选择。B1T、B3-1、B3-A 系列为内部压力传感器；B2T、B3-2 系列则搭配外部压力传感器 (※适合用于远程造成压差的环境条件下)。该压力比例阀不仅能自行校正达到压力稳定外，还能有参数可回馈到机台上做监控，排除压力值不准或压差造成的震荡问题。

This series is a complete closed loop servo system consisting of two solenoid valves, an internal pressure transducer, and electronic controls. Based on analog signal, the pressure is controlled by two solenoid valves to maintain precise pressure; one valve functions as inlet control, the other as exhaust. The pressure output is measured by an internal or an external feedback pressure transducer that provides a feedback signal to the electronic controls. The regulator is suitable for industries that require precise pressure changes at any time and monitor pressure values. Available with 3 selections of input signal: 0-10VDC, 4-20mA, or RS485 Modbus. Monitor signal can be chosen from 1-5V, 0-10V, or 4-20mA. Internal pressure transducer comes with B1T, B3-1, and B3-A series, whereas B2T and B3-2 uses an external pressure transducer for feedback (ideal for when the vessel is distant away from the regulator). All our products have CE, SGS, RoHS certification with ISO13485 quality system.

# 压力比例阀 Proportional Pressure Regulator



## QKL-B1T /QKL-B3-1/QKL-B3-A

### 产品规格 Specifications

系列 Type	B1T			B3-1		B3-A(经济型)
输入讯号 Input Signal	0-10V / 4-20mA / RS485					0-10V / 4-20mA
输出压力 Output Range	0-2bar (29 psi)	0-4bar (58 psi)	0-8bar (116psi)	0-4bar (58 psi)	0-8bar (116psi)	0-8bar (116 psi)
*建议最大入气压力 *Suggesting Supply Pressure Max	3bar (43 psi)	5bar (73 psi)	9bar (131 psi)	5bar (73 psi)	9bar (131 psi)	9bar (131 psi)
监控信号 Monitor Output	1-5V / 0-10V / 4-20mA / RS485					0-10V / 4-20mA
工作电源 Power Supply	DC24V (≤4W)					
响应时间 Response	0.8S					
介质 Medium	洁净压缩空气或搭配 5μm 过滤器 Clean compressed air or with 5 μm filter					
重复精度 Repeatability	±0.1% F.S.			±0.25% F.S.		±0.5% F.S.
迟滞 Hysteresis	±0.2% F.S.			±0.25% F.S.		±0.5% F.S.
线性度 Linearity	±0.3% F.S.			±0.3% F.S.		±0.5% F.S.
综合精度 Accuracy	±0.3% F.S.			±0.3% F.S.		±0.5% F.S.
流量 Flow Rate	4L/min @2bar	7L/min @4bar	1050L/min @8bar	525L/min @4bar	1050L/min @8bar	1050L/min @8bar
使用温度范围 Temp. Range(Operating)	0-70°C ( 32-158 °F)					
牙口 Port Size	PT 1/8"			G1/4"		
底座材质 Manifold Material	铝合金 Aluminum					
接液材质 Wetted Materials	铝合金、不锈钢、丁晴橡胶 Aluminum, Stainless steel, NBR					
固定架材质 Mounting Bracket Material	镀锌钢板 Galvanized Steel					
电气连接 Electrical Connection	M12 电气端子(2m) M12 Connector(2m)					
防护等级 Ingress Protection	IP 65					
阀体操作次数 Life Cycle	10 亿次以上 Over 1 Billion Times					
重量 Weight	420 g			550 g		430 g

\*若入气源会大于建议最大入气压力，请与业务洽询，确认最合适的使用方式。

# 压力比例阀 Proportional Pressure Regulator



## QKL-B1T /QKL-B3-1/QKL-B3-A

### 型号选择 Ordering Code

QKL -  -  -  -  -  -

#### 系列Type

B1T	小流量/内部迴授 Low flow with internal feedback	PT 1/8"
	大流量/内部迴授 High flow with internal feedback	G 1/4"
*B3-A	大流量/内部迴授 High flow with internal feedback	G 1/4"

#### 监控讯号 Monitor Output

C	0 - 10 V
A	4 - 20 mA
D	1-5 V
R	RS485 Modbus

#### 输入讯号 Input Signal

**E	0 - 10 V
A	4 - 20 mA
R	RS485 Modbus

#### 固定架 Mounting Bracket

M	M type
L	L type

#### 压力&流量 Pressure and Flow

##### For B1T

P2	0 - 2 bar 4 LPM
P4	0 - 4 bar 7 LPM
P8	0 - 8 bar 13 LPM

##### For B3-1

P4	0 - 4 bar 525 LPM
P8	0 - 8 bar 1050 LPM

##### For B3A

P8	0 - 8 bar 1050 LPM
----	-----------------------

#### 显示单位 Display Unit

S	psi
U	bar

\*B3-A 为经济型，仅 8bar。该系列没有 RS485 modbus 通讯功能,也没有 1-5V 监控信号输出选项。  
B3-A is an economic type, only with 8 bar. B3-A does not have RS485 modbus interface and does not have 1-5V monitor output.

\*\*若控制讯号选择 0-10V，请留意最小的驱动电流为 3mA。  
For Command Signal type 0-10V, the minimum driving current is 3mA.

※ 如需订制特殊压力范围请洽询本公司。Please consult us for customized pressure range.

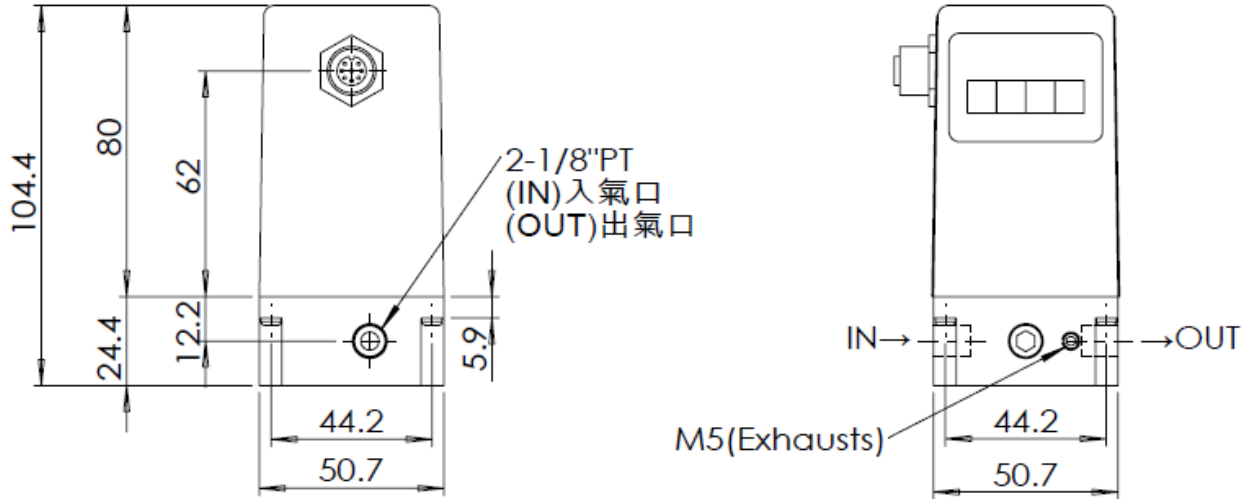
# 压力比例阀 Proportional Pressure Regulator

## QKL-B1T / QKL-B3-1 / QKL-B3-A

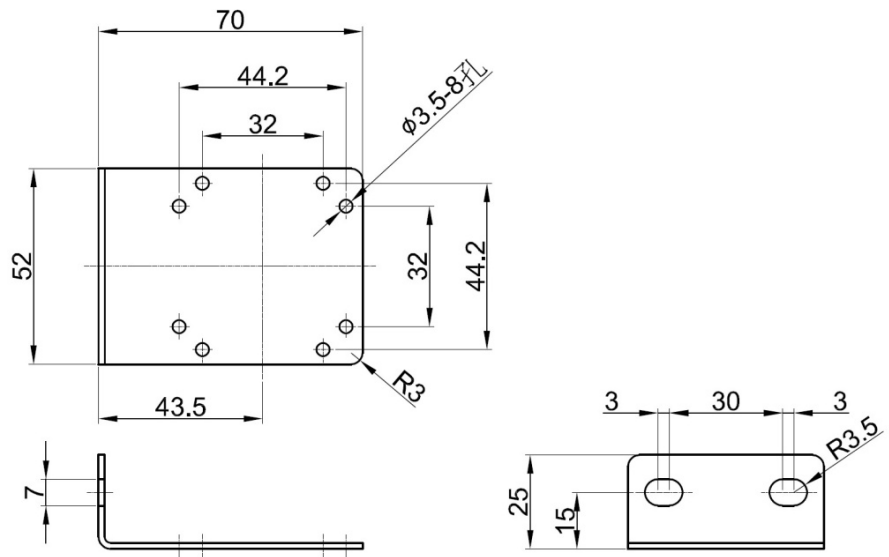


### 外观尺寸 Overall Dimension

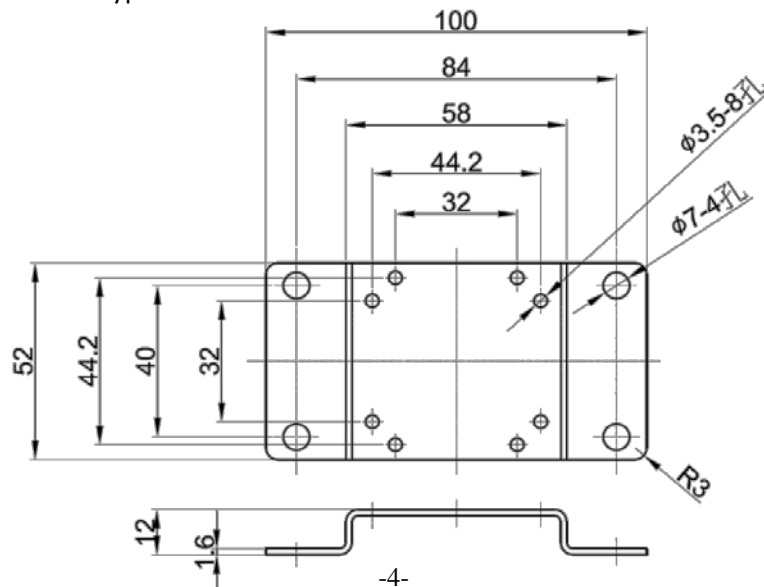
#### ◆ QKL-B1T



#### ◆ 固定架 L 型 Bracket L Type



#### ◆ 固定架 M 型 Bracket M Type



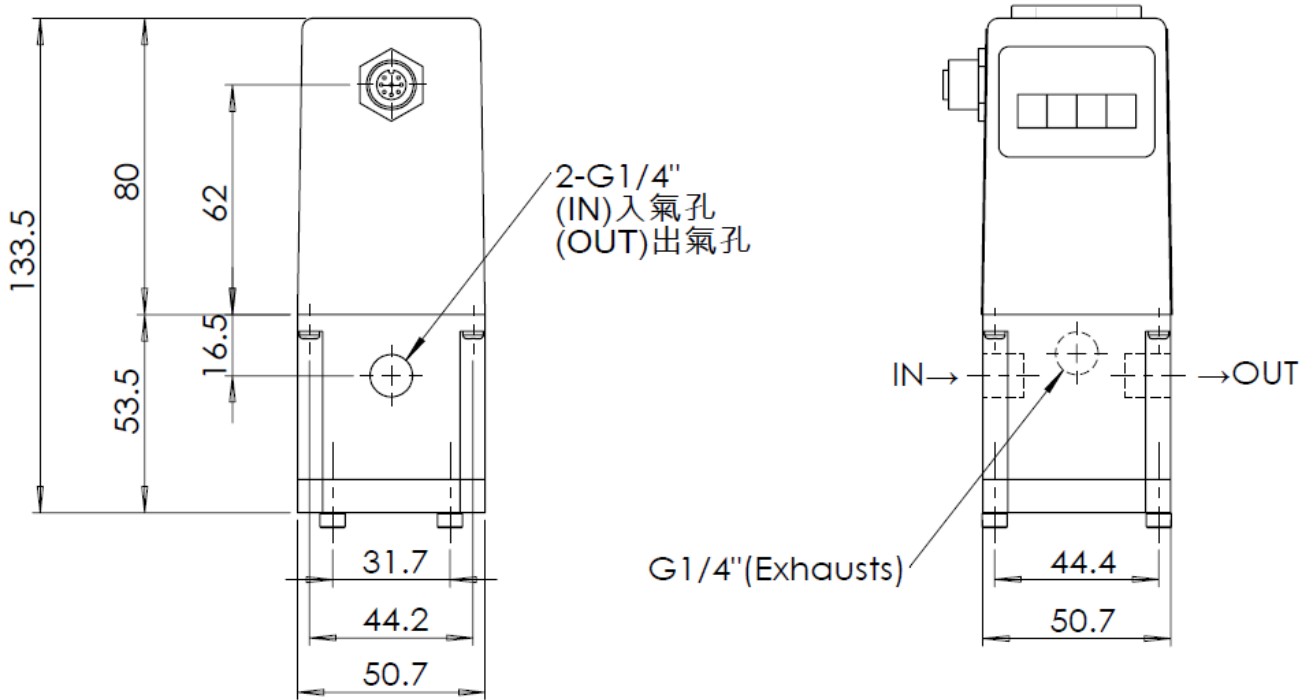
# 压力比例阀 Proportional Pressure Regulator



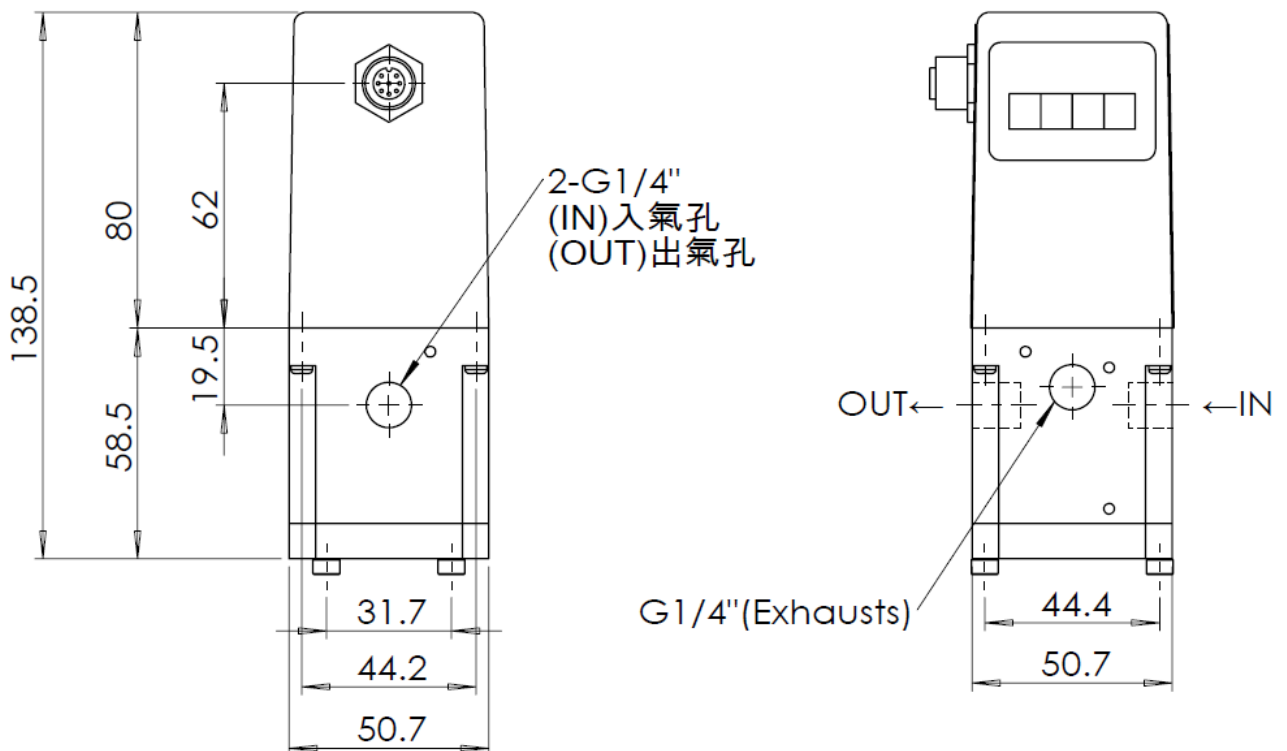
QKL-B1T / QKL-B3-1 / QKL-B3-A

## 外观尺寸 Overall Dimension

◆QKL-B3-1



◆QKL-B3-A

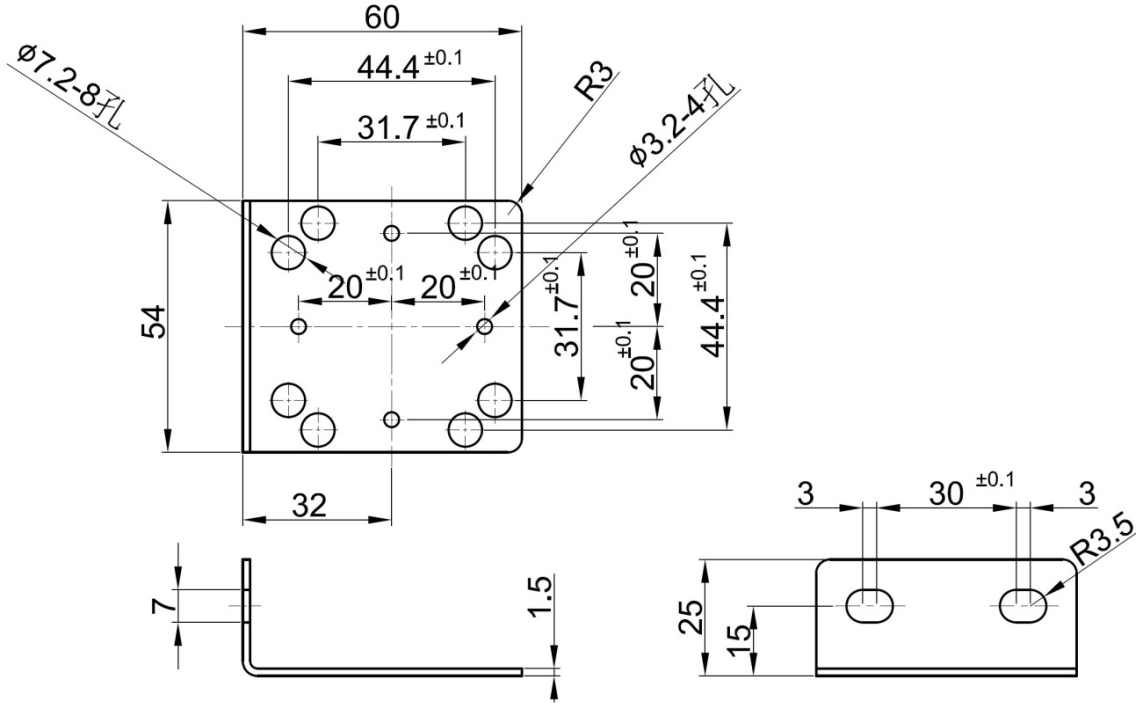


# 压力比例阀 Proportional Pressure Regulator

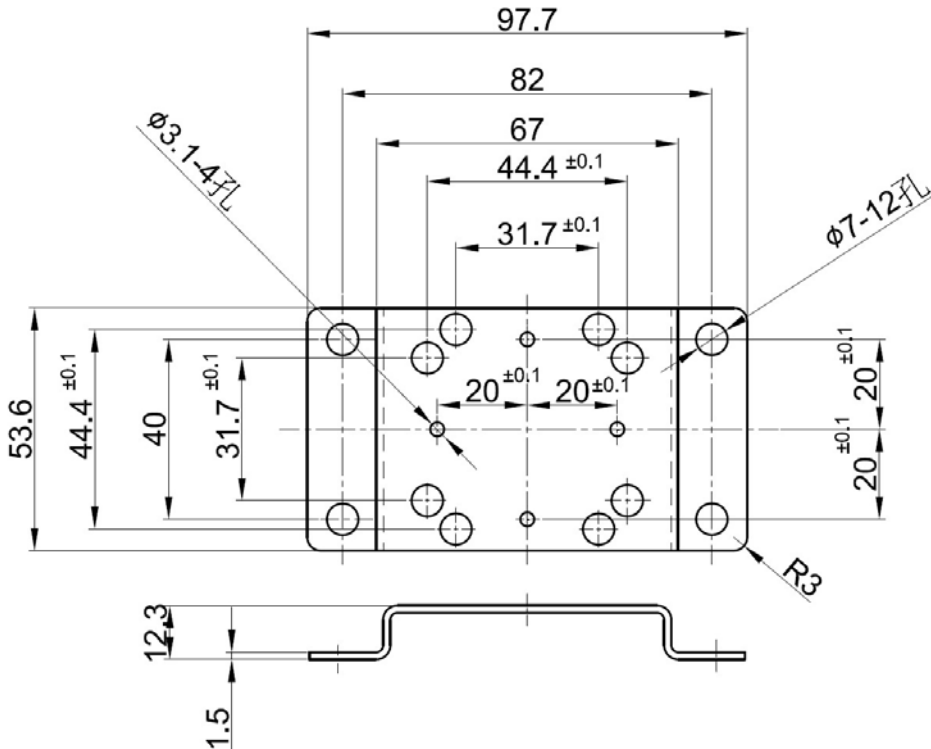


## QKL-B1T /QKL-B3-1/QKL-B3-A

### ◆固定架 L 型 Bracket L Type



### ◆固定架 M 型 Bracket M Type

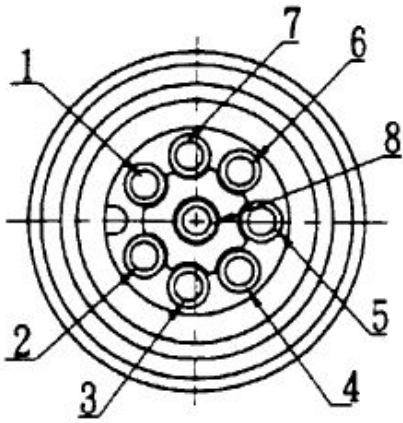


# 压力比例阀 Proportional Pressure Regulator



QKL-B1T /QKL-B3-1/QKL-B3-A

## 接线方式 Wiring Description



※此接线图为线材公座俯视图

The wiring diagram shows from top view

编号 No.	颜色 Color	功能 Function
1	蓝色 Blue	电源(-) 24V DC Power (-)
		模拟讯号(-) Command (-)
		监控输出(-) Output monitor (-)
2	棕色 Brown	电源(+) 24V DC Power (+)
3	黑色 Black	监控输出(+) Monitor output (+)
4	白色 White	0-5 V Command (+)
		模拟讯号(+) 0-10 V Command (+)
		4-20 mA Command (+)
5	灰色 Gray	RS485(D-)
6	-	-
7	-	-
8	红色 Red	RS485(D+)



警告: 当安置完成信号线后,切勿旋转拉扯插头,以避免内部传感器受到损害,造成产品功能异常或故障。

Warning: Do not rotate the connection socket when connected, to avoid damage to the internal sensor.

# 压力比例阀 Proportional Pressure Regulator

QKL-B1T /QKL-B3-1/QKL-B3-A



## 产品注意事项



### 安装

比例阀可安装任意方向，低压控制建议垂直安装。该阀后端需有至少40cc以上之容积，避免比例阀压力控制不稳定。



### 配管前的处置

配管前请进行空气吹拭(气流冲洗)或清洗，以去除管内的切削粉、切削油、杂物等。  
止泄带的缠法:配管及接头锁紧时，不要让配管螺牙的切削粉、止泄带进入阀内部。  
使用止泄带时，留下螺牙 1.5-2 牙距的位置进行缠绕。



### 使用环境注意事项

1. 请勿在腐蚀性气体、化学药品、海水环境或附着上述物质的场所使用。
2. 水、水蒸气、灰尘等会附着本体的场所，容易从排气孔、电磁阀排气孔、内藏调压阀的排气孔进入本体内部，水分与灰尘等进入，是造成故障的原因之一。
3. 日光照射的场合，请用保护罩等遮蔽。
4. 周围有热源的场合，请遮断辐射热。
5. 会附着水滴、油及焊渣的场所，请采取适当的保护对策。



### 使用流体供给源注意事项

1. 适用于压缩空气、氧气、氢气、氮气、氦气...等惰性气体。
2. 压缩空气中内含化学药品、有机溶剂的合成油、盐分、腐蚀性气体等时，是造成作动不良的原因，请避免使用。
3. 当流体为氧气时，就伴随着重大、通常情况下难以考虑到的危险性。但是，可以对故障灾害和经济损失进行风险管理和控制。因此，请接收具有安全资格的专家的支持，请由具备充足知识和经验的人员进行操作。
4. 氧气是可以助燃的气体。摩擦生热、静电释放等都可能造成起火，并使金属盒密封材料发生燃烧。因此，请安装合适的过滤器，以防止金属屑和尘埃的侵入。
5. 在靠近本产品的气源供给来源，请安装空气过滤器。过滤精度应选 5 μm 以下。
6. 含大量冷凝水的压缩空气是造成本产品或其他气动组件动作不良的原因。请设置后冷却器、空气干燥器、冷凝水收集器等进行对策。
7. 若空压机产生的碳粉多的话，会附着在本产品内部，成为动作不良的原因。
8. 对于可能会发生意外的场合，请考虑火灾、爆炸，设计终止氧气供应的回路，实施安全措施。
9. 本产品的排气通口，请根据氧气排放场所的具体情况做适当的排气配置。
10. 本产品不能用作紧急关闭装置。应在系统中安装冗余安全系统，以防止严重伤害或生命损失。



### 保固

自出厂起一年以内为保固期限，请务必遵守使用注意事项。因人为因素造成的产品不良，则本公司对本保修不承担任何责任。



# 压力比例阀 Proportional Pressure Regulator

QKL-B1T /QKL-B3-1/QKL-B3-A



## Product Precautions



### Installation

The valve can be mounted in any position. For very low pressure control, works best when mounted upright.

And Ensure a minimum closed end volume of 40c.c. to allow proper functioning.



### Preparation Before Piping

Before piping is connected, it should be thoroughly blown out with air (flushing) or washed to remove chips, cutting oil and other debris from inside the pipe.

### Wrapping of Sealant Tape

When screwing together pipes and fittings, etc., be certain that chips from the pipe threads and sealing material do not get inside the piping. When sealant tape is used, leave 1.5 to 2 thread ridges exposed at the end of the threads.



### Operating Environment

1. Do not operate in locations having an atmosphere of corrosive gases, chemicals, sea water, or where there will be contact with the same.
2. In locations where the body is exposed to water, steam, dust, etc., there is a possibility that moisture or dust could enter the body through the EXH port, solenoid valve EXH port and/or built-in regulator EXH port, thereby causing problems.
3. In locations which receive direct sunlight, provide a protective cover etc.
4. In locations near heat sources, block off any radiated heat.
5. Employ suitable protective measures in locations where there is contact with water droplets, oil or welding spatter, etc.



### Air Supply

1. Compressed air, nitrogen, oxygen or argon can be used as a fluid.
2. Do not use compressed air which includes chemicals, synthetic oils containing organic solvents, salt, or corrosive gases, etc., as this can cause damage or malfunction.
3. If oxygen is used as the fluid, it can lead to serious and unforeseen risks. However, it is possible to manage and control the risk of hazards and economic loss. In order to use the product safely, it should only be handled by personnel with appropriate knowledge, with support from a suitably qualified specialist.
4. Oxygen gas increases the susceptibility of substances to burning; Oxygen gas can be ignited by frictional heat and static electricity. If oxygen is ignited, the metal and seal materials burn. Therefore, flush the piping thoroughly and mount a suitable filter to prevent foreign matter such as metal powder and dust from entering the product.
5. Take safety measures by installing safety devices (e.g. a circuit that stops the supply of oxygen gas) to prevent fire and explosion in the event of failure, taking flameproof safety standards into consideration.
6. Since there are some exhaust ports on the product, connect the piping in order to exhaust oxygen. Do not block the exhaust port.



### Warranty

KaoLu Ent. Co. Ltd. products are warranted to the original purchaser only against defects in material or workmanship for 1year from the date of manufacture. The extent of KaoLu's liability under this warranty is limited to repair or replacement of the defective unit at KaoLu's option. KaoLu shall have no liability under this warranty where improper installation or filtration occurred.