

压力表说明书

Instruction Manual for Pressure Gauge



安徽徽宁电器仪表集团有限公司

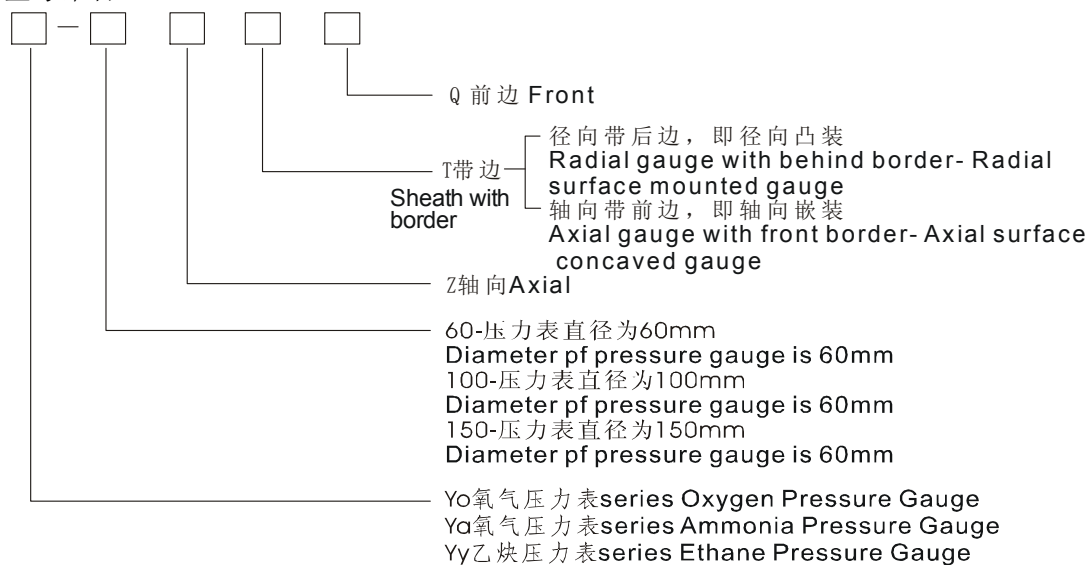
ANHUI HUINING ELECTRIC METER & APPLIANCE GROUP CO., LTD

1、结构原理 Structure Principle

仪表的测量系统由接头、弹簧管和传动机构组成，由于被测压力的变化使弹簧管自由产生位移，借连杆带动扇形传动齿轮端部的指针旋转，在刻度盘指示出相应的压力数值。为消除扇形齿轮转轴齿轮间的间隙活动，在转轴齿轮上装置了盘形游丝。

The system is made up of junction and spring tube, because the change of measured pressure effect the movement to free ends of spring tube, drives needle on turnable gear circling by the connection rod, then the dial will display the corresponding pressure value. In order to avoid the movement because of the clearance between the turnable gears, we fix a hairspring on the gears.

2、型号命名 Name



3、主要技术指标 Main Technic Indicator

产品型号 Model	Y-40	Y-60	Y-100	Y-150	Y-200	Y-250
公称直径 Nominal Diameter	φ60	φ60	φ100	φ150	φ200	φ250
接头螺纹 Connection Thread	M10X1 等	M14X1.5 等	M20X1.5、1/2NPT 等			
精度等级 Accuracy Class	2.5 级	1.6 级、2.5 级	1.0 级、1.6 级、2.5 级			
测量范围(MPa) Measuring Range (Mpa)	-0.1-0; 0-0.1; 0-0.16; 0-0.25; 0-0.4; 0-0.6; 0-1; 0-1.6; 0-2.5; 0-4; 0-6; 0-10; 0-16; 0-25; 0-40; 0-60; 0-100; 0-160; 0-250					
振动等级 Vibration Class	V.H.3 级					

3.1 回差 Return

压力表示值回差应不大于基本误差限的绝对值。

The return of pressure should not be bigger than the absolute value of basic variation.

3.2 指针偏转的平稳性 Stability of finger deflexion.

在测量过程中，仪表的指针不应有跳动和停滞现象。

During the measurement, the finger should not jump or stop.

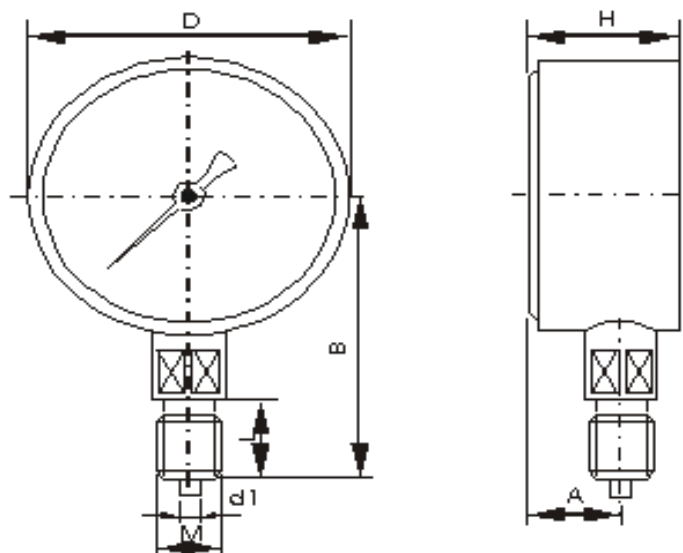
3.3 轻敲位移 Tapping and displacement

在测量范围内的任何位置上，用手指轻敲（使指针能自由摆动）仪表外壳时，指针指示值的变动量应不大于基本误差限绝对值的 1/2。

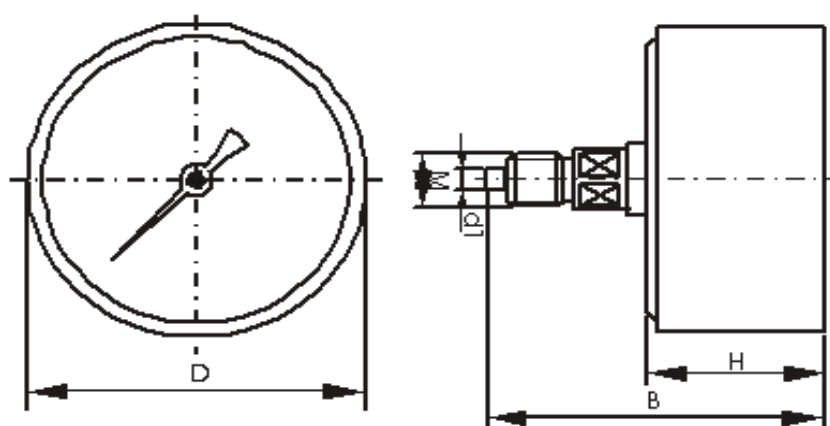
In any position of measurement range, tap the crust, the variation of finger should not be bigger than 1/2 of the absolute value of basic error.

4、安装形式 Installation

径向安装 Radial Installation



轴向安装 Axial Installation



5、外形尺寸 Outer Size

型号 Model	D	A	B	H	L	M
Y-40	$\Phi 40$	12	46	28	10	M10X1 等
Y-60	$\phi 60$	14	57	34	14	M14X1.5 等
Y-100	$\phi 100$	20	88	45	20	M20X1.5 等
Y-150	$\phi 150$	20	116	51	20	M20X1.5 等
Y-250	$\phi 250$	25	170	60	20	M20X1.5 等

6、压力表在运行中常见故障及处理方法 Failures and resolvent

故障现象 Failures	可能原因 Possible Causation	处理方法 Resolvent
压力表无指示 No display	导压管上的切断阀未打开 The trip valve is not open on the connecting pipe	打开切断阀 Open the trip valve.

	导压管堵塞 Connecting pipe is jammed	拆下导压管，用钢丝疏通，用压缩空气或蒸汽吹洗干净 Dredge the connecting pipe by steel wire and clean it by compressed air or steam.
	弹簧管接头内污物淤积过多而堵塞 There is too much dirt in spring tube connector.	取下指针和刻度盘，拆下机芯，将弹簧管清洗，并用钢丝疏通 Disassemble the finger and dial, clean the spring tube, and dredge it by steel wire.
	弹簧管裂开 Spring tube is broken.	更换新的弹簧管 Replace the spring tube
	中心齿轮与扇形齿轮牙齿磨损过多，以致不能啮合 The center gear and sector gear wear out and can't joggle.	更换齿轮 Replace the gears
指针抖动大 Finger waggles	被测介质压力波动大 The fluctuation of measured mediums is big.	关小阀门开关 Turn down the valve a bit
	压力计的安装震动大 Shaking of installed pressure gauge is big	固定压力计或在许可的情况下将其移到震动较小处，也可装减震器 In allowed range, adjust the gauge to a position with smaller shaking, or install a absorber.
压力表指针有跳动或吊滞现象 Finger is jumping or stopping	指针与表面玻璃或刻度盘相碰有摩擦 There is rub between the finger and the glass surface	矫正指针，加厚玻璃下面的垫圈或将指针轴孔较大些 Rectify the finger, and add the washer under the glass.
	中心齿轮轴弯曲 Central gear is bending	取下齿轮在铁墩上用木锤矫正敲直 Rectify the gear by wooden hammer.
	两齿轮啮合处有污物 There is dirt between gears	拆下两齿轮进行清洗 Clean the gears
	连杆与扇形齿轮间的活动螺丝不灵活 The traveling screw between the connecting pole and the sector gear is not flexible.	用锉刀锉薄连杆厚度 File the thickness of connecting pole.
压力去掉后，指针不能恢复到零点 After the pressure is removed, the finger can't return to the zero point	指针打弯 Finger is bending	用镊子矫直 Correct by forceps
	游丝力矩不足 Moment of hairspring is not enough	脱开中心齿轮与扇形齿轮的啮合，反时针旋动中心轴以增大游丝反力 Open the joggle of center gear and sector gear, circle the central axis in anticlockwise to enlarge the moment of hairspring.
	指针松动 Finger is loose.	校验后敲紧 Knock it tightly after verified
	传动齿轮有摩擦 There is rub between turnable gears	调整传动齿轮啮合间隙 Adjust the clearance between gears.
压力指示值误差均匀 Error of display value is asymmetric	弹簧管变形失效 Spring tube is out of work	更换弹簧管 Replace the spring tube
	弹簧管自由端与扇形齿轮、连杆传动比调整不当 The turning ratio between free end of spring tube, sector gear, and connecting pole is not suitable.	重新校验调整 Rectify again
指示偏高 Display value is higher.	传动比失调 The turning ratio is maladjusted.	重新调整 Adjust again
指示偏低 Display value is lower	传动比失调 The turning ratio is maladjusted.	重新调整 Adjust again
	弹簧管有渗漏 There is leakage of spring tube	补焊或更换新的弹簧管 Weld or replace the spring tube

	指针或传动机构有摩擦 There is rub between fingers and turnable implement.	找出摩擦部位并加以消除 Find out the rub place and remove the rub.
	导压管线有泄漏 There is leakage for connecting pipe	逐段检查管线，找出泄漏之处加以排除 Find out the leakage place and remove it.
指针不能指示到上限刻度 Finger can't be up to the upper limit	传动比小 The turning ratio is small	把活节螺丝向里移 Move the traveling screw inside a bit
	机芯固定在机座位置不当 The position of core is not suitable.	松开螺丝将机芯反时针方向转动一点 Adjust the position.
	弹簧管焊接位置不当 The welding place of spring tube is not right.	重新焊接 Re weld the spring tube

7、使用与维护 Operation and maintenance

1) 仪表必须垂直安装，搬运装接时，应避免振动和碰撞。

The gauge should be installed uprightly, and avoid the vibration and impact during the delivery.

2) 温度影响：不大于 0.4%/10℃（使用温度偏离 20±5℃）。

Temperature affection: no bigger than 0.4%/10℃ (the variation of operation temperature: 20±5℃)

3) 仪表应在周围环境温度为-40~+70℃，相对湿度不大于 85%。

Ambient Temperature: -40~+70℃, humidity≤85%

4) 仪表在测量稳定负荷时不得超过测量上限的 3/4，测量波动压力时，不应超过测量上限的 1/2；至于最低压力，在以上两种情况下，均不应低于测量上限的 1/3。

When measure the stable loading, it should not be larger than 3/4 of the upper limit, and when measure the waving pressure, it should not be larger than 1/2 of the upper limit, for lowest pressure, and above conditions, it should not be larger than 1/3 of upper limit.

5) 在测量腐蚀性介质，可能结晶的介质、粘度较大介质和剧变的波动压力时，应添加隔离装置和缓冲装置。

When measure the cauterized mediums, crystallizable mediums, mediums with larger stickness, and revulsion waving pressure, user should add isolating device and buffer device.

6) 仪表应按规定进行检定如发现故障，应及时修理。

The instruments should be repaired in time when failures are happened.

7) 对于氧压表，专用测量氧气，表盘印有“禁油”红色标记。用于特殊介质的仪表附加要求详见下图
For oxygen pressure gauge, the dial should be printed with “oil forbidden”.

A.1 测量氧、氢、乙炔等其他可燃性介质的仪表，应在标度盘上标示出测量介质的名称或测量介质的颜色警示标记。

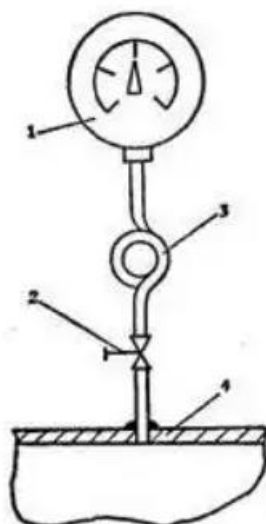
A.2 特殊测量介质的仪表在采用颜色警示标记时，应在标度盘上的仪表名称下面画一标示横线。标示横线的颜色见表 A.1。

表 A.1

测量介质	标示横线的颜色
氧	天蓝色
氢	绿色
乙炔	白色
其他可燃性气体	红色

8、安装注意事项 Installation precautions

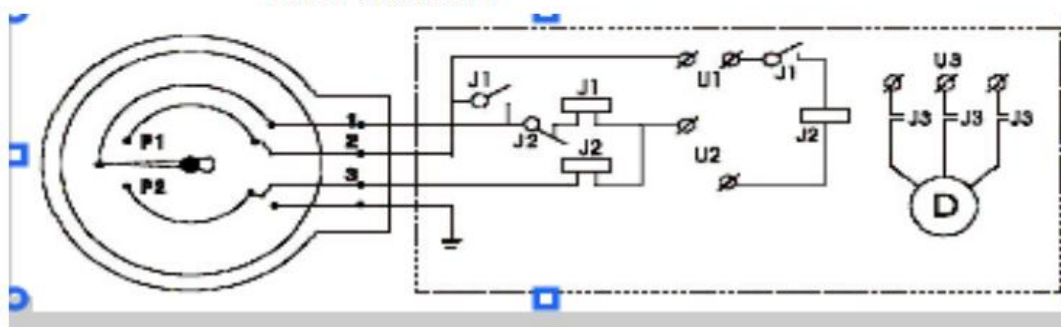
①优先选择便于直接目视读取数据的位置，避免高空或隐蔽安装，确保日常巡检与校验便利。安装时禁止强行扭转表壳，请垂直安装，表盘轴线与水平面垂直度偏差 $\leq 30^\circ$ ，避免倾斜导致测量误差或机械损伤。Priority should be given to selecting locations that are convenient for direct visual data reading, avoiding high-altitude or concealed installation, and ensuring convenient daily inspection and verification. During installation, it is forbidden to forcefully twist the watch case. Please install it vertically, with a vertical deviation of $\leq 30^\circ$ between the dial axis and the horizontal plane, to avoid measurement errors or mechanical damage caused by tilting.



压力表垂直安装示意图

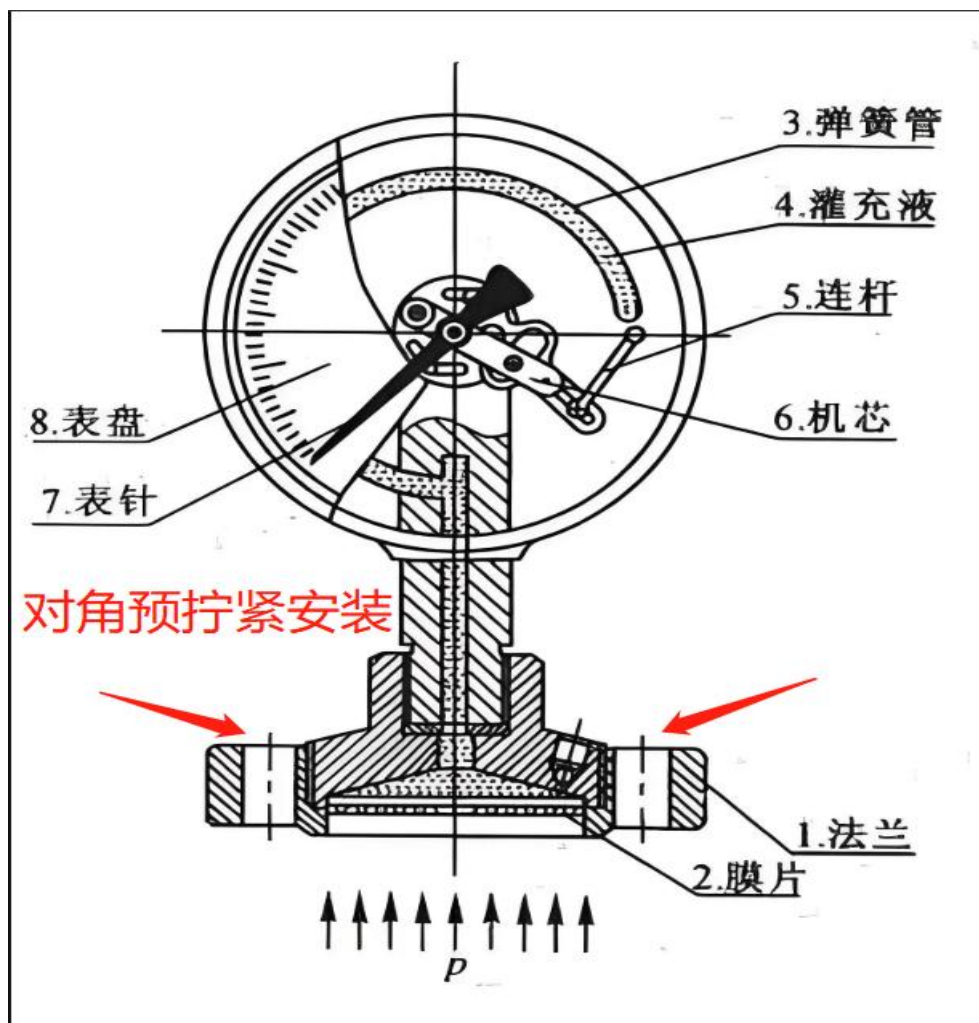
②电接点压力表用调节钥匙拨动限止钉设定上下限，禁止直接扳动指针；磁助式接点切换存在 $\pm 1\%$ 滞后，需预留安全裕度。注意接线方法，切勿错接造成事故。The upper and lower limits of the electric contact pressure gauge can be set by adjusting the limit pin with the key, and direct movement of the pointer is prohibited; Magnetic assisted contact switching has a delay of $\pm 1\%$, and a safety margin needs to be reserved. Pay attention to the wiring method and do not make mistakes that may cause accidents.

电接点压力表接线图



1.主线（红） 2.上线（黄） 3.下限（绿） 4.接地（黑）

③隔膜压力表禁止拆卸表头与隔膜装置的连接螺母（填充密封液会泄漏）。安装前检查膜片有无损伤，隔膜压力表法兰保证端面平行。对齐法兰密封面，放置好对应型号的金属缠绕垫片或四氟垫片，对角预紧螺栓防止偏压，螺栓按对角顺序分 3 次拧紧（30%→70%→100%扭矩）。It is forbidden to disassemble the connecting nut between the gauge head and the diaphragm device of the diaphragm pressure gauge (filling the sealing liquid will leak). Before installation, check for any damage to the diaphragm and ensure that the flange of the diaphragm pressure gauge is parallel to the end face. Align the flange sealing surface, place the corresponding model of metal wrapped gasket or PTFE gasket, pre tighten the diagonal bolts to prevent bias, and tighten the bolts in three diagonal steps (30% → 70% → 100% torque).



9、贮存 Storage

压力表应贮存于干燥通风的室内，室内空气应洁净并对压力表无腐蚀作用。

The pressure gauges should be stored in the aerationagitation room, and the air should be clean and no cauterization effect to the gauges.

10、订货需知 Ordering Notice

- 1) 型号 Model
- 2) 表盘直径 Dial Diameter
- 3) 精度等级 Accuracy Class
- 4) 测量范围 Measurement Range
- 5) 安装形式 Installation



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