

**HLGJT 型
MODEL HLGJT**

**机翼式测风装置
安装使用说明书**

**INSTALLATION AND OPERATION INSTRUCTIONS
FOR AEROFOIL TYPE VOLUME MEASURING DEVICE**

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一、用途：

本装置是用来测量锅炉空气流量的专用装置，可以直接安装在送风机入口和送风机与燃烧器之间的冷热风道上。该装置能产生 0~100mmH₂O 或更大的压差信号，经差压变送器转换成标准电信号 (0~10mA 或 4~20mA)，实现锅炉的安全经济运行。

I. USAGE

THIS DEVICE IS USED FOR THE SPECIAL PURPOSE OF MEASURING AIRBLAST VALUME. IT CAN BE INSTALLED ON THE ENTRANCE OF FORCED DRAFT FAN OR THE HOT/COLD AIR DUCT BETWEEN FORCED DRAFT FAN AND BURNER DIRECTLY, IT MAY PRODUCE DIFFERENTIAL PRESSURE SIGNAL SUCH AS 0—100mmH₂O OR MORE LARGE, THAT CAN BE TRANSFORMED INTO STANDARD CURRENT SIGNAL (0—10mA OR 4—20mA) BY DIFFERENTIAL PRESSURE TRANSMITTER, SO THE BOILER WILL WORK SAFELY AND ECONOMICALLY.

二、特点：

- 1、装置具有独特的机翼线型，能产生较大的差压信号，测量稳定可靠；精度较高。
- 2、采用双机翼或多机翼结构，装置本身长度短，对前后直管段长度的要求不高。
- 3、压损较小，产生的压力损失不超过差压值的 14%；在最大流量 (30%~100%) 范围内，其测量误差小于最大流量的 2%。
- 4、安装维护方便简单。

II. FEATURES

1. THIS DEVICE HAS UNIQUE AIRFOIL. IT MAY PRODUCE A LARGER DIFFERENTIAL PRESSURE SIGNAL. IT HAS STEADY AND CALCULABLE MEASURING, ALSO HAS HIGHER MEASURING PRECISION.
2. THIS DEVICE ADOPTS DOUBLE-AIRFOIL OR MULTI-AIRFOIL STRUCTURES. ITS LENGTH IS SHORTER. THE LENGTH OF STRAIGHT PORTION OF DUCT IS NOT STRICT.
3. THE PRESSURE LOSS OF THIS DEVICE IS LESS THAN 14% OF THE MAXIMUM DIFFERENTIAL PRESSURE. WITHIN THE MAXIMUM VALUME OF FLOW (30%—100%), THE MEASURING ERROR IS LESS THAN 2% OF THE MAXIMUM VALUME OF FLOW.
4. IT IS EASY TO INSTALLED AND MAINTENANCE.

三、结构与原理：

本装置由安装在矩形或圆形风道中的机翼、差压取压管及一段风道构成。机翼的线型每侧分为四段，其中三段为各具曲率半径的弧形板，第四段为直形板。

根据流体力学原理，风道内气流流经机翼测量装置时，如图 1，在机翼表面产生绕流，并在驻点 A 和弦点 B(B') 之间产生压差。驻点 A 处的压力为全压，弦点 B(B') 处的压力为静压。而由于 B(B') 处通流截面收缩，静压下降，因此 A 和 B(B') 之间的压差是比较大的。该压差 ΔP 与气流流速 V(或流量 Q) 之间呈一定的函数关系： $V=f(\Delta P \cdot R)$ V—流速， ΔP —压差，R—通流截面收缩比

III. STRUCTURE AND PRINCIPLES

THIS DEVICE IS MADE UP BY AIRFOIL, THE DIFFERENCIAL PRESSURE INTAKING TUBES AS WELL AS A SECTION OF AIR DUCT, WHICH ARE MOUNTED IN THE RECTANGLE OR CIRCLE AIR DUCT. EVERY SIDE OF AIR FOIL FIGURE IS DIVIDED INTO FOUR SECTIONS, THREE OF THEM ARE ARC PLATE WITH DIFFERENT CURVATURE RADIUS, THE FOURTH IS STRAIGHT PLATE.

BASED ON THE HYDROMECHANICS PRINCIPLES, IN THE AIR DUCT, IT WILL PRODUCE CIRCULATION ON THE SURFACE OF AIR FOIL WHEN AIR FLOW PASSES THOUGH THE AIR FOIL MEASURING DEVICE AND PRODUCE DIFFERENTIAL PRESSURE BETWEEN STANDING POINT A AND CHORD POINT B(B') (SEE FIGURE 1). THE PRESSURE ON THE STANDING POINT A IS FULL PRESSURE WHILE THE PRESSURE ON THE CHORD POINT B(B') WILL SHRINK AND STATIC PRESSURE WILL DROP, SO THAT THE DIFFERENTIAL PRESSURE BETWEEN A AND B(B') WILL BE LARGER. THERE IS A FUNCTIONAL RELATIONSHIP BETWEEN DIFFERENTIAL PRESSURE ΔP AND FLOW SPEAD V (VALUME FLOW Q) OF AIR FLOW, THAT IS $V=f(\Delta P \cdot R)$ V—FLOW SPEAD, ΔP —DIFFERENTIAL PRESSURE, R—RATIO OF THROAT AREA TO DUCT AREA)

四、安装及注意事项

1、在安装前要检查测量装置及正、负取压孔不得有异物堵塞，并要把翼形元件的顶端 A(正取压孔)对着介质流向。将机翼装置与截面相同的风道对接(一般采用对焊或法兰连接)，不得有漏气现象(如图 2)；

2、安装前应考虑测量装置前后的直管段长度，应满足装置前直管段 $L_1 \geq 0.6D_n$ ，装置后直管段 $L_2 \geq 0.2D_n$ (如图 3)； $(D_n = \frac{2W * H}{W + H})$ W—风道宽度 H—风道高度)

3、与工艺管道的联接为法兰联接(型号：HLGJT-A)时，应使用密封垫圈，夹紧后不得突入风道内，

且不得泄漏，同时应保证与工艺管道中心线一致；

4、与工艺管道的联接为焊接(型号：HLGJT-B)时，应保证与工艺管道中心线一致；

5、引压管上标有“+”的应与差压变送器的“+”端联接，标有“-”的应与差压变送器的“-”端联接，取压管的所有联接均应保证严密无泄漏；

6、在装置投运前，要用高压空气吹扫管路。

IV. INSTALLATION AND POINT FOR ATTENTION

1. BEFORE INSTALLATION, YOU MUST CHECK UP ON MEASURING DEVICE, FULL PRESSURE TUBE AND STATIC PRESSURE TUBE, WHICH CAN NOT BE PLUGGED BY ANY RARITY, YOU MUST PUT THE TOP OF A OF AIR FOIL (FULL PRESSURE) TO DIRECT TO THE FLOWING DIRECTION OF MEDIUM. YOU MUST BUTT AIR FOIL TOGETHER WITH AIR DUCT WHICH HAS HE SAME PROFILE (ORDINARILY ADOPT BUTT-WELDING OR FLANGE COUPLING CONNECT). AIR LEAKAGE IS NOT ALLOWED(SEE FIGURE 2).

2. BEFORE INSTALLATION, YOU MUST CONSIDER THAT THE LENGTH OF UPSTREAM STRAIGHT DUCT MUST BE LONGER THAN 0.6D_n, THE LENGTH OF DOWNSTREAM STRAIGHT DUCT MUST BE LONGER THAN 0.2D_n(SEE FIGURE 3). RECTANGLE AIR DUCT:

$$D_n = \frac{2W * H}{W + H} \quad W\text{---WIDTH OF DUCT PROFILE} \quad H\text{---HEIGHT OF DUCT PROFILE}$$

3. WHEN ADOPTING FLANGE COUPLINA CONNECT(HLGJT-A), YOU MUST USE GASKETS THAT THEY DON' T PROTRUDE AT ANY POINT INSIDE THE AIR FOIL DUCT. AIR LEAKAGE IS NOT ALLOWED.

4. WHEN ADOPTING BUTT-WELDING CONNECT(HLGJT-B), YOU MUST ENSURE THAT THE DEVICE SHALL BE COAXIAL WITH THE CENTER LINE OF AIR DUCT.

5. PRESSURE TUBE MARKED WITH “+” IS TO BE CONNECTED WITH “+” PRESSURE SIDE OF DIFFERENTIAL PRESSURE TRANSMITTER WHILE “-” IS TO BE CONNECTED WITH “-”. ALL LEAKAGE IS NOT ALLOWED.

6. AFTER CLEANING AND PURGING OF AIR DUCT, THE DEVICE WILL RUN.

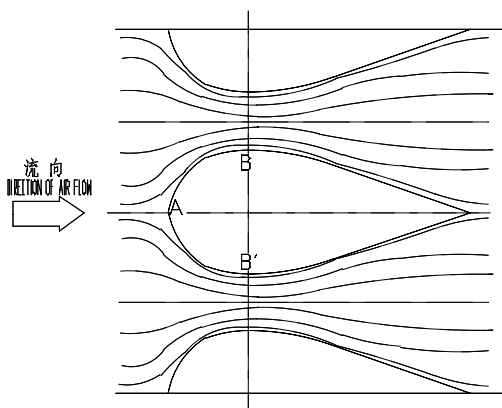


图1 机翼装置原理图
FIGURE 1: PRINCIPLE FIGURE OF AIR FOIL DEVICE

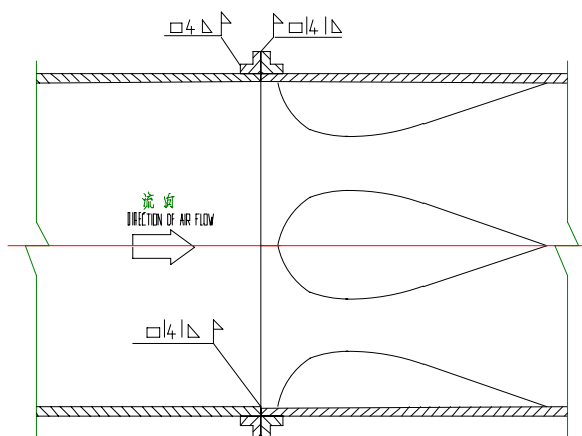


图2 装置与风道连接图
FIGURE 2: FIGURE OF LINKING DEVICE AND AIR DUCT

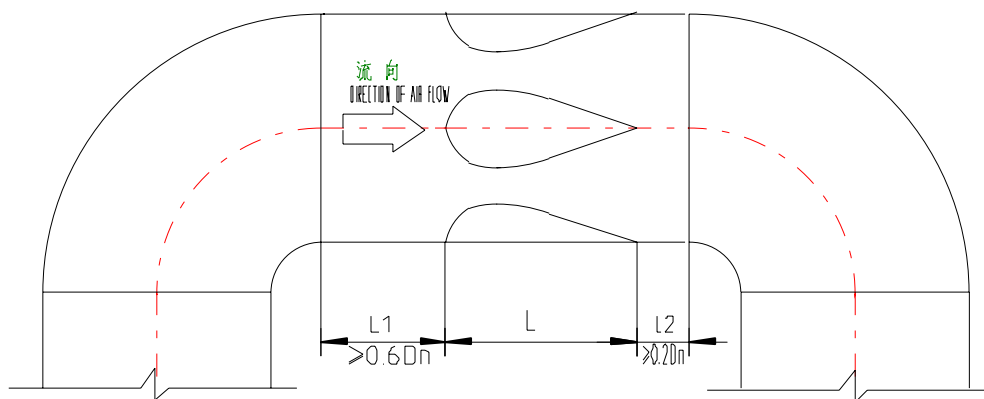


图3 装置安装示意图
FIGURE 3: DIAGRAM OF INSTALLATION

五、检修与维护

- 1、当发现测量装置差压信号异常时，应检查传压管与差压变送器之间是否有漏气或堵塞，应予以处理。
- 2、为保证差压信号准确，需定期打开测量装置排尘帽，排除管内灰尘，保证取压管畅通(如图4)。

V. OVERHAUL AND MAINTENANCE

1. IF THE DIFFERENTIAL PRESSURE SIGNAL OF MEASURING DEVICE IS ABNORMAL, YOU SHOULD CHECK UP IF THERE IS LEAKAGE OR BLOCK BETWEEN THE PRESSURE TUBES AND DIFFERENTIAL PRESSURE TRANSMITTER.

2. IN ORDER TO ENSURE THE EXACT OF DIFFERENTIAL PRESSURE SIGNAL, YOU SHOULD OPEN THE BLOW OFF DUST CAP REGULARLY TO CLEAN THE DUST IN TUBES TO GUARANTEE UNBLOCKED STATE OF INTAKING PRESSURE TUBE. (SEE FIGURE 4)

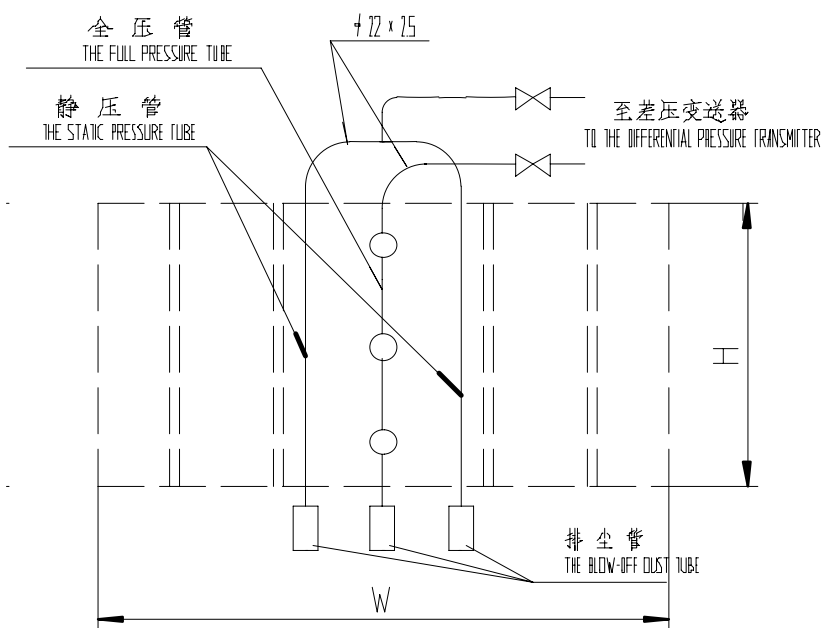


图4 取压管路连接示意图
FIGURE 4: FIGURE OF LINKING PRESSURE TUBES



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