通用测量方法

General Measure method

- Information's about acceptance conditions and standards on the relevant part drawings do have priority over these measuring instruction. 相应零件图纸上关于验收条件和标准的信息优先于这些测量说明。
- Only suitable measuring devices have to be used. 必须选用合适的测量设备。
- Measurement results have to be rounded to the decimal point given by the tolerance. For example:Dimension 4,0 - 0,01mm, 测量结果必须四舍五入到公差给定的小数点。例如：尺寸4.0-0.01mm，
  - measure result 4,0034mm, dimension in FAI 4,00mm 测量结果4,0034mm， FAI记录尺寸4,00mm
  - measure result 4,005mm, dimension in FAI 4,01mm 测量结果4,005mm， FAI记录尺寸4,01mm
  - measure result 3,995mm, dimension in FAI 4,00mm 测量结果3,995mm， FAI记录尺寸4,00mm
  - measure result 3,994mm, dimension in FAI 3,99mm 测量结果3,994mm， FAI记录尺寸3,99mm

Rev 02
6th of September 2022

1. 线性尺寸与角度的测量

Measurement for angulations

1.1 角度测量如下图 measurement for angulations as shown in figure

一般来说，如果从外部看不到，所有的角度必须是通过剖面来测量 的，否则只要通过轮毂投影测量。

定义一条线取点最少需要3点构成，而不是取两点开始到结束。

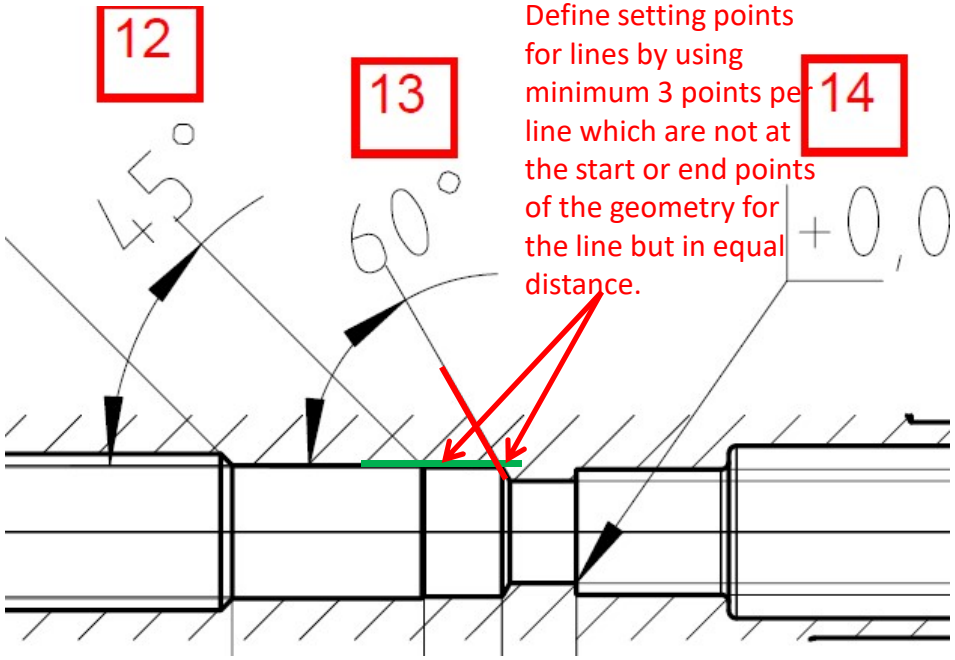
例如13号尺寸测量，先取一条直线边（绿色），再取一条斜边（红色），通过OGP或OMM测量仪器上的进行角度测量。

In generaly all angles have to be measured by cross sections, if not visible from outside. Otherwise as profile. The cross section has to be done in the central axis.

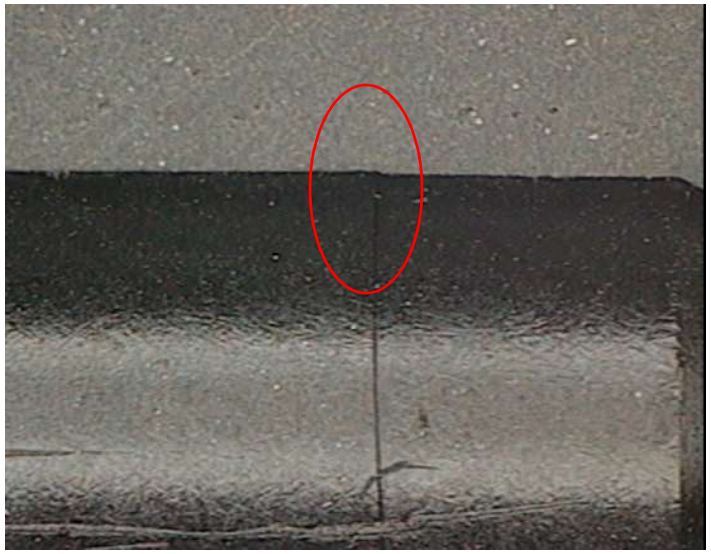
Define setting points for lines by using minimum 3 points per line which are not at the start or end points of the geometry for the line. (see below)

For example ,measure for 13# dimension , a line(red) and another line(green) is taken by OGP or OMM then using the angle tool to measure. 例如12号尺寸，实物中尺寸结构不明显的，则需要拍照注释

Such as 12# dimension, If the structure of the dimension is not visible , you need to take a picture and a comment

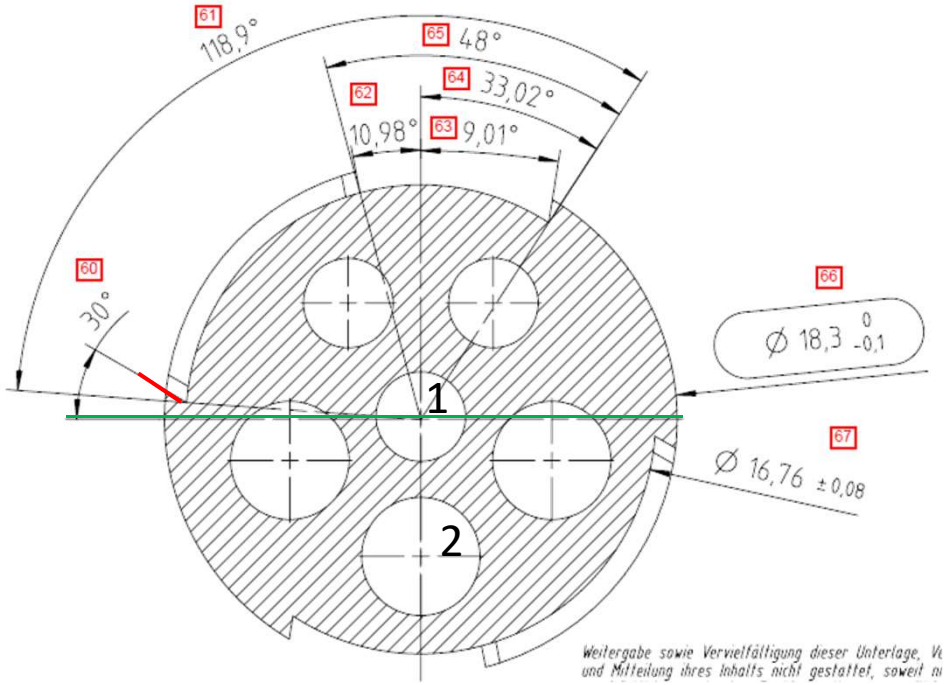


Example 12#



Measurement for angulatins related to circles

1.2 角度测量如下图 measurement for angulations as shown in figure
例如60#尺寸, 通过OGP或OMM先取外圆的圆心，再把圆1和圆2的圆心连线，然后建立xy坐标。然后通过角度测量工具取30度的斜边与X轴向虚拟线计算结果.
圆<=8mm:必须通过在圆形中设置最小8个均匀分布的设置点的圆形几何来定义每个圆，并且圆需要由测量系统自动定义。
圆>8mm:每个圆圈必须通过设置3个圆弧段来定义，每个圆弧 最少设3个点， 分段应均匀分布。圆可以手动定义测量。
For example 60# dimension, The center of the great circle 66# is taken by OGP or OMM, then the center of circle 1 and circle 2 are connected, then XY coordinates are established. A line(red) and X-axis virtual line(green) taken by OGP or OMM then using the angle tool to measure.
Circle <= 8mm: Each circle has to be defined by setting the circle geometry with minimum 8 uniformly distributed setting points at the circle geometry and the circle needs to be defined by the measure system automatically.
Circle > 8mm: Each circle has to be defined by setting of 3 circle segments set up by minimum 3 point per segment. The segments shall be uniformly distributed around the circumference. The circle can be defined manually.



Measurement for linear dimensions

1.3 长度测量如下图 measurement for distance as shown in figure

例如24#和28#尺寸，通过OGP或OMM取其圆心，测量两圆心距离。定义圆的取点依照幻灯片3内容。

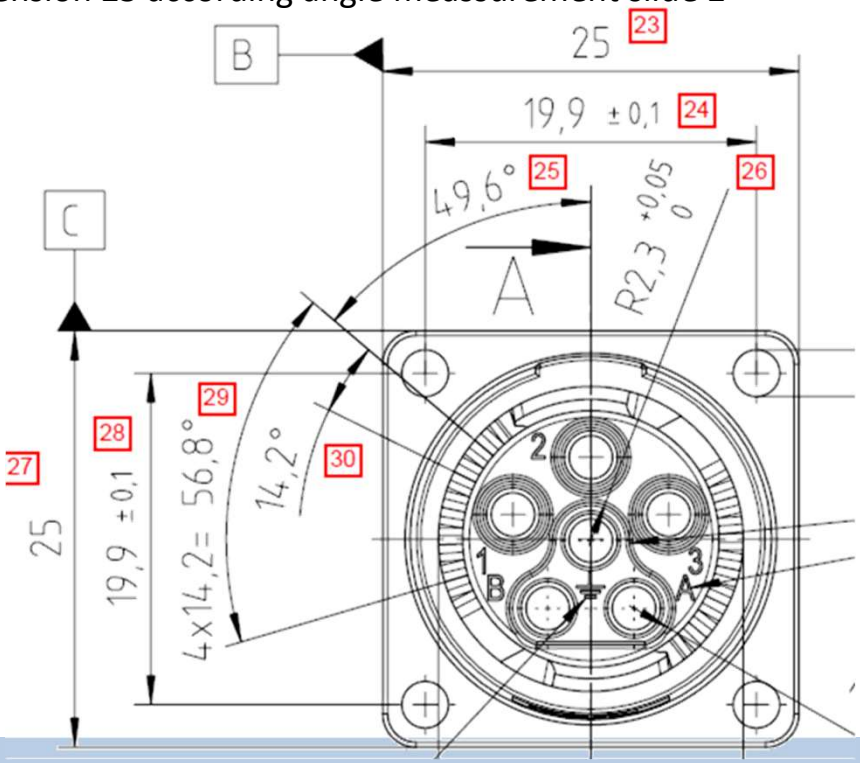
For example 24#&28# dimensions , the center of circle is taken by OGP or OMM, measure the distance between the two centers . Definition of circles according description on slide 3.

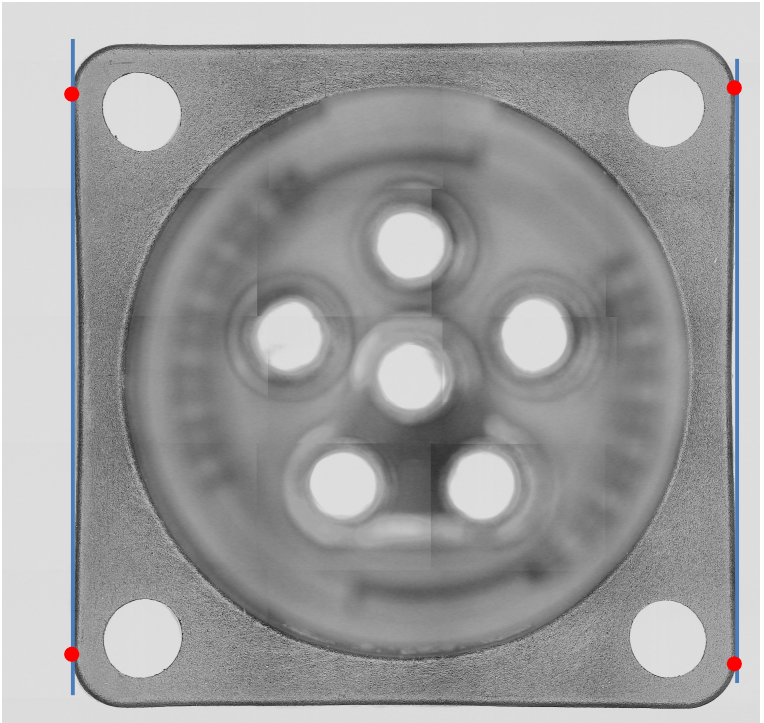
例如23#尺寸，由于产品4边有点变形，取点的时候需要取外形的最高点连接测量

For example 23# dimension, due to the 4 sides of the product a little inside deformation, it should be measure the top point of the sides. In case that the deformation will be to the outside add a comment and a picture to the dimensional report. If the part is with burrs and the burrs are within tolerance limits and they define the top points of the sides add a comment and a picture to the dimensional report.

例如25号尺寸请依照幻灯片2来测角度。

Dimension 25 according angle meassurement slide 2





Measurement for circles

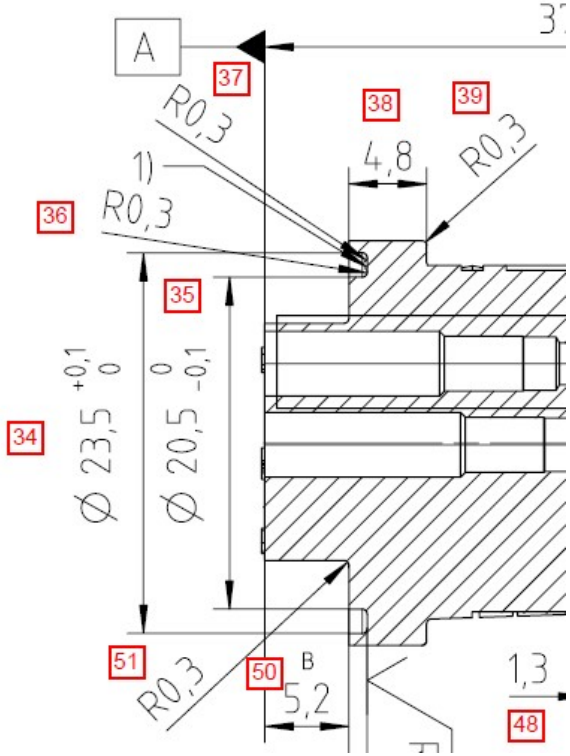
1.4 圆测量如下图 measurement for circle as shown in figure

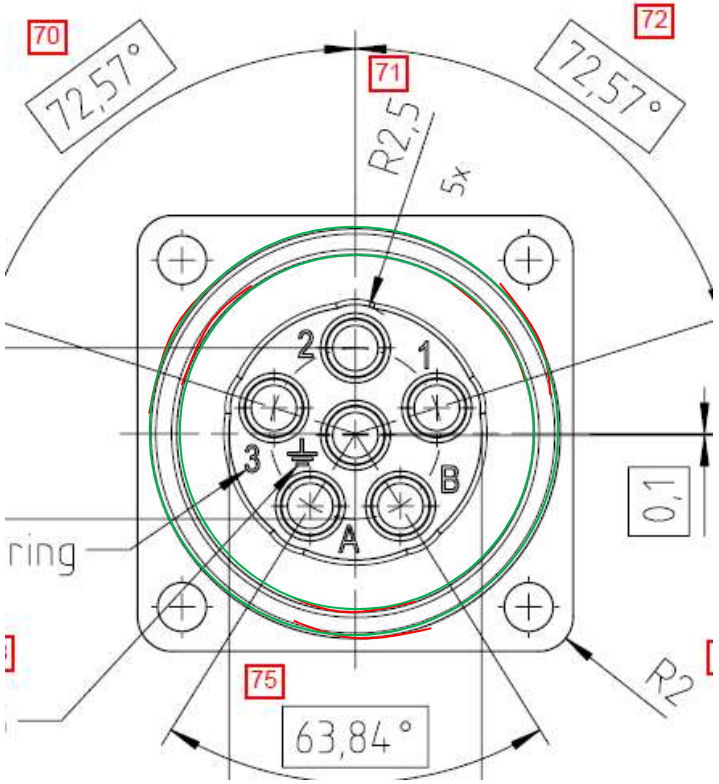
34#和35#尺寸，通过OGP或OMM大概等分三段圆弧并构造一个圆，参考幻灯片3的内容。

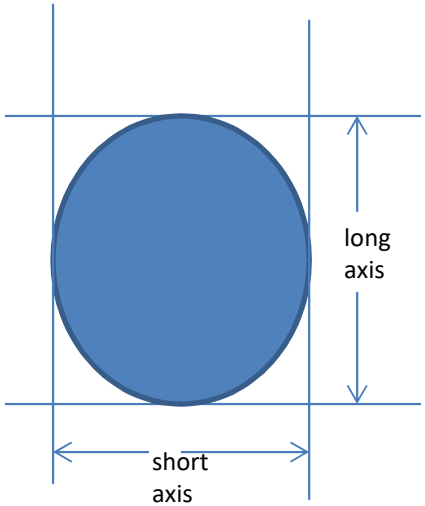
34#&35# dimensions , In the OGP or OMM software, take three arcs(red) and then construct a circle (green), Like described on slide number 3.

如果圆有点椭，需要测出其长轴与短轴,同时两个结果也在记录在FAI。

If the round is elliptically deformed, it is necessary to measure the long and short axis. Both results including a picture have to be stated in the dimensional report.







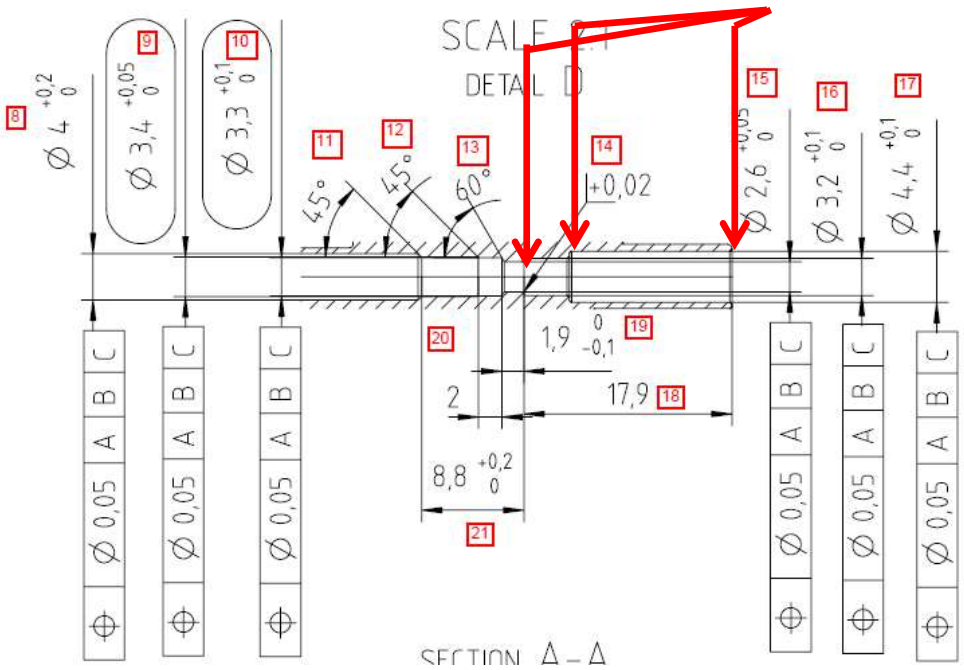
2.位置度测量

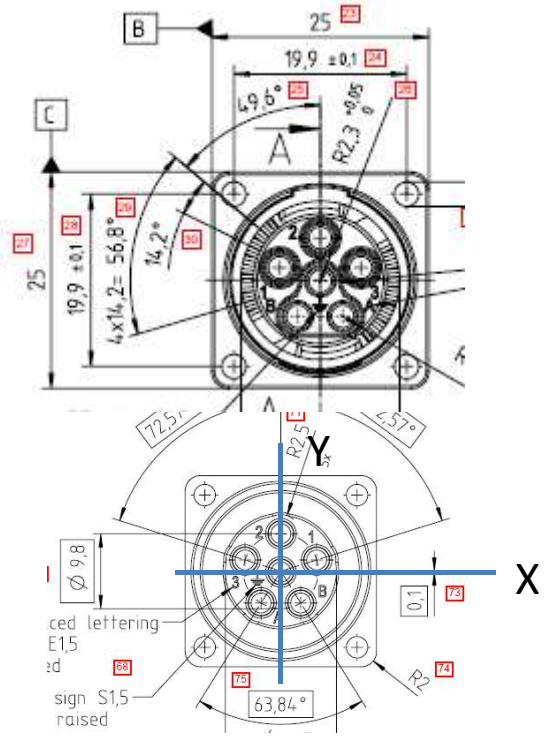
Measurement for position

如下位置度尺寸，如果理论值是角度，先转换坐标为极坐标。以图纸要求ABC位置摆放好产品，取B和C基准建立坐标，测量时通过OGP或OMM的软件输入对应的理论值，软件会计算出实际位置度。
这个测量仅是孔的位置度，不是测量孔的直径。孔的直径用针规检查依照幻灯片9.
As below position dimensions, If the theoretical value is an angle, you need to convert the coordinates to polar coordinates

- Place the product according to the drawing,
- Take the B and C datum to establish the coordinates XY
- The center of circle is taken by OGP or OMM always at the top of the edge.
- Calculates the position of the each circle
- This is only to measure the hole axis position, not to measure the hole diameter. The hole diameter has to be measured by pin gauges according slide 9.

Position for meassurement

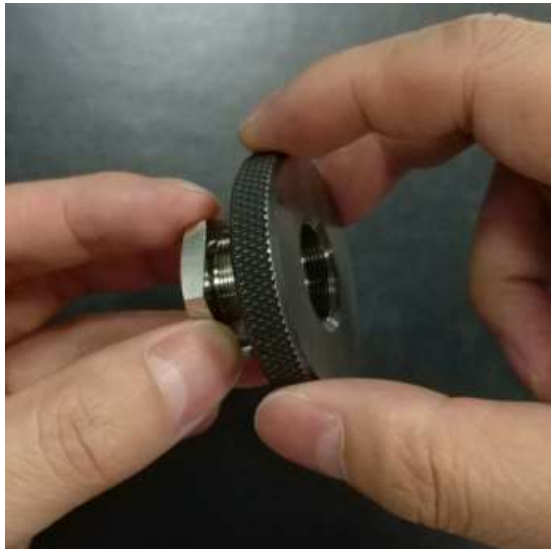


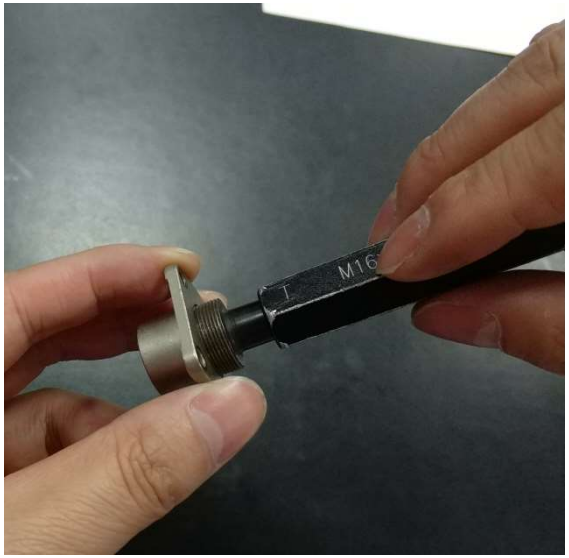


3. 螺纹规检查

screw thread gauge inspection

螺纹规的检查，测量时用大拇指、食指，中指拿住螺纹规进行测量。
通规需要从产品第一个螺纹通到最后一个螺纹； 内螺纹和外螺纹止规不借助工具，以正常手工拧动的方式拧进，不能超过2牙；如果产品小于3牙，止规不允许进入螺纹。
Screw thread gauge inspection, measurement with the thumb, index finger, middle finger hold the thread gauge for measurement.
The go gauge needs to pass through all threads.
The no go gauge is not allowed to go more than 2-3 threads. The gauge is screwed in with a normal hand force without the use of tools or other supporting equipments.
If the product is less than 3 thread, the no go gauge are not allowed to enter the thread.
This is valid for inner and outer threads.

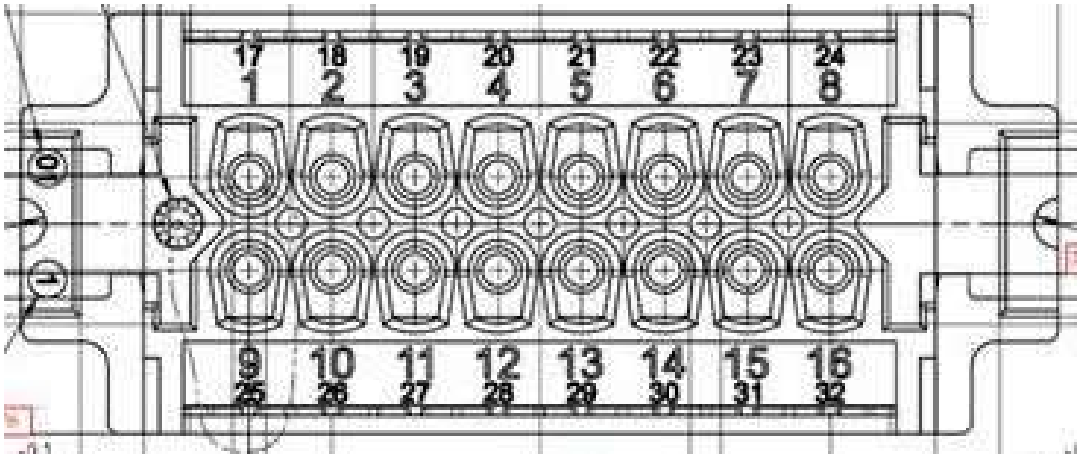




4. Pin gauge检查

Measurement holes by pin gauge inspenction

关于pin 孔直径的测量方法，统一使用pin gauge 进行通和止测试。
举例说明，一款产品的pin 孔直径的规格是2.32+0.05/-0mm，即使用2.32mm的pin gauge 可以插入，使用2.37mm 的gauge 无法插入。
The measure method for hole diameter is done by the use of pin gauges for go/no go test.
For example, the inspection of hole diameter is 2.32+0.05/-0mm, the 2.32mm pin gauge can be inserted, the 2.37mm gauge cannot be inserted. Before the pin gauge measurement a dimensional measurement of the holes according measurement of circles on slide 5 has to be done.
注：此种测量方式只适合图纸上的规则圆，如孔不规则，则还是测量具体数值。
Note: this kind of measure method is only suitable for the regular circle on the drawing, such as the hole is irregular, need to measure actual value.



5. 镀层测量

plating thickness measurement

针对送检样品，需要按照图纸用正确的程序测量其正确的位置，做好记号。
For sample, Select the correct programs and measuring point according to the drawing, make a mark at the measuring point.