

直线电机磁组件设计规范

Magnetic Stator of Linear Motor Design Specification

Original Date: 2015.03

Updated date: 2015.03

1. Parts

1.1 Magnet : NdFeB or SmCo

◇ Performance of Magnet refers to TS001001 sintering NdFeB Magnet Data Sheet and TS0010002 SmCo Magnet Data Sheet,

◇ Plating of Magnet: Zn/Ni-Ni/NiCuNi/Chem. Ni/Epoxy/Phosphate/Special Ni-alloy, HAST test refers to :

Plating	White	Zn	Color	Zn	NiCuNi	Epoxy
HAST	24H	48H	72H	120H	480H	N/A

◇ Adhesive of Coating : Pulling Force  $\geq 8\text{MPa}$ , Tearing Force :  $\geq 15\text{MPa}$  ;

◇ Appearance of Magnet refer to TS001007 (for rectangular)

◇ Tolerance of Magnetic Flux : in-one-batch  $\leq 3\%$ , 2-batches  $\leq 5\%$  ;

◇ Tolerance of Dimensions :

Along Magnetization Direction :  $\pm 0.05$ , Others :  $\pm 0.1$ , Chamfer : C0.2-0.4X45° or R0.2-0.5。

1.2 Steel Part: Carbon Steel or Stainless Steel

◇ Chemical and Physical Properties according to industry standard,

◇ Surface Roughness of gluing side Ra6.3, Non-gluing side Ra3.2,

◇ Plating with Zn/Ni/Oxidation/Epoxy/Special Ni-alloy

◇ Tolerance of Dimensions, Key:  $\pm 0.02$ , Others:  $\pm 0.05$

◇ For U-shape magnetic stator, the upper and lower steel plate has to be machined at the same time and matched in the assembly after coding each plate with laser marking

◇ For single plate stator, the machining reference plane must be marked and comply to magnets assembly reference plane

1.3 Glue: According to the type of magnets and the working environment

Glue type	Anaerobic glue	Structural glue	Instant glue	A+B epoxy	Single Componen glue	Special Type
Shearing force	10MPa	15Mpa	10MPa	18MPa	30MPa	20MPa
Working temperature	100°C	120°C	80°C	120°C	180°C	300°C
Note	Apply to steel+steel	Min. gluing layer thickness	Soluble in acetone	Mix and Compounds	Heat Curing	2 times of Heat Curing

2. Assembly

2.1 Process with gluing surface

◇ Cleaned by alcohol or acetone(ultra-sonic cleaning for solid attachment), gluing after min 0.5hrs' drying ;

◇ For smooth/Shining surface (Ni/Epoxy), Plasma Treatment will be adopted to increase roughness

2.2 Gluing

◇ Glue has to be placed in room temperature for min. 2hrs if it was preserved in refrigerator

◇ A+B epoxy glue can only be mixed by automatic gluing machine and spiral tubes

◇ Anaerobic glue must be used with accelerator to speed up the curing time

2.3 Magnet Assembly and Glue Curing

◇ Magnet must be assembled by fixtures which will be uploaded only after complete curing of glue

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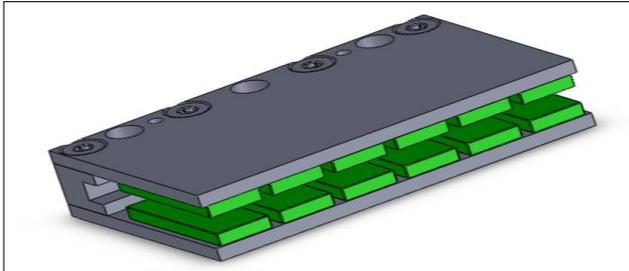
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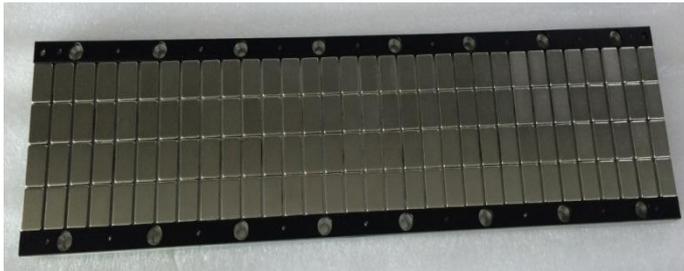
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- ◇ The reference plane of fixture and steel plate must be coincided to assure the Parallelism of magnets and steel plate
- ◇ For heat curing glue, the module must be heat with fixtures. During curing process, no vibration and re-movement are allowed
- ◇ Curing process according to Glue Intruction
- ◇ Positioning Tolerance of magnet assembly :  $\leq 0.1\text{mm}$ , Height Tolerance :  $\leq 0.1\text{mm}$ 。

3. Reference Pictures



U-shape magnetic stator



Plane-shape magnetic stator



Fixture