



ANYANG LONGTENG HEAT TREATMENT
MATERIAL CO.,LTD

WIND TURBINE FOUNDATION ANCHOR BOLT
CAGE ASSEMBLIES

PRODUCT MODEL

PRODUCT MODEL FOR WTG FOUNDATION ANCHOR CAGE

1. In order to give clients a better understanding of foundation anchor cage, we make a anchor cage model in our factory. Positive responses were received after customer seeing the model by themselves. So we made this article. If more questions, welcome to contact infor@aylttg.com, our colleagues will reply you within one work day.

2. Anchor bolt cage model show

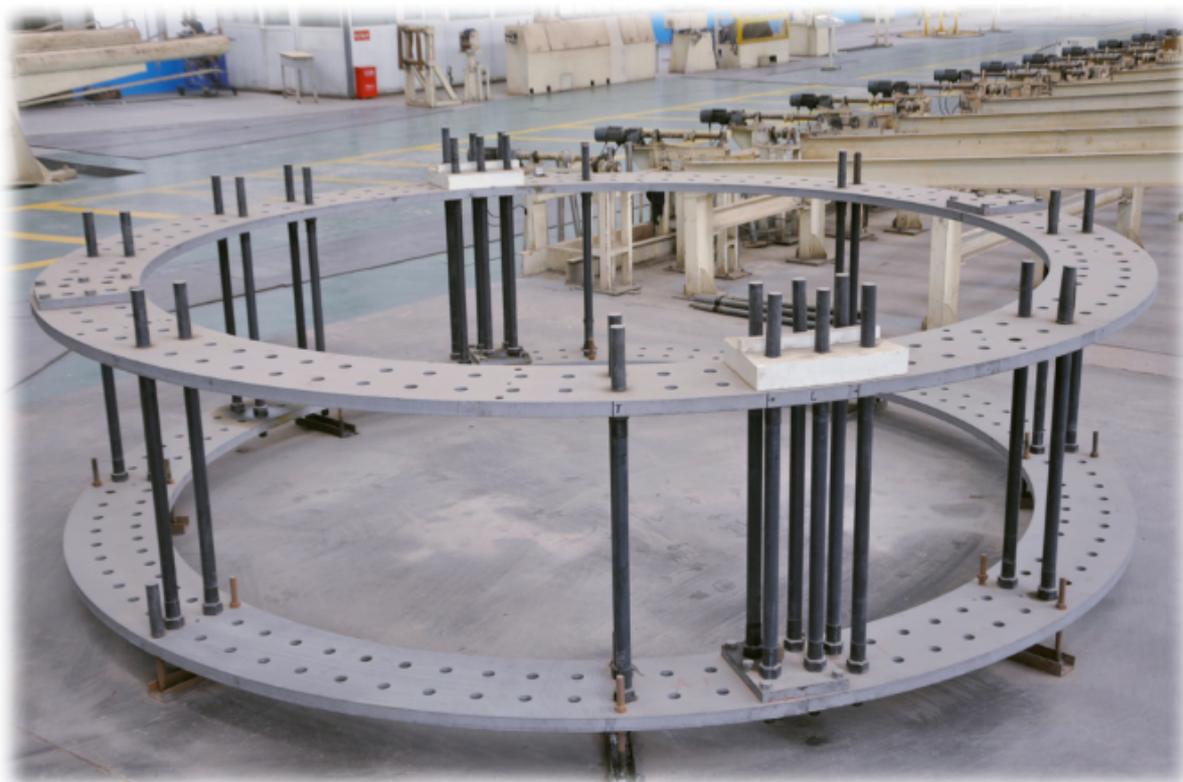


Figure 1

one anchor bolt cage is often consist of anchor bolts, upper ring, lower ring, splice plates, nuts, washers, PVC sleeves, protective caps, heat-shrink tubes, support stand bolt assemblies, etc. (See Figure 1). According to different drawings and technical requirements, there will be different quantities, dimensions, properties, payment terms, shipment, etc. In some cases, the upper ring, (which is also called alignment ring) will be removed after the lower ring (which is also called embedment ring) and anchor bolts were installed and grouted. Then the tower bottom T Flange will be fastened with those anchor bolts. Although the install methods are different between full cage or no upper ring cage, but the products are the same.

3. Foundation anchor bolt

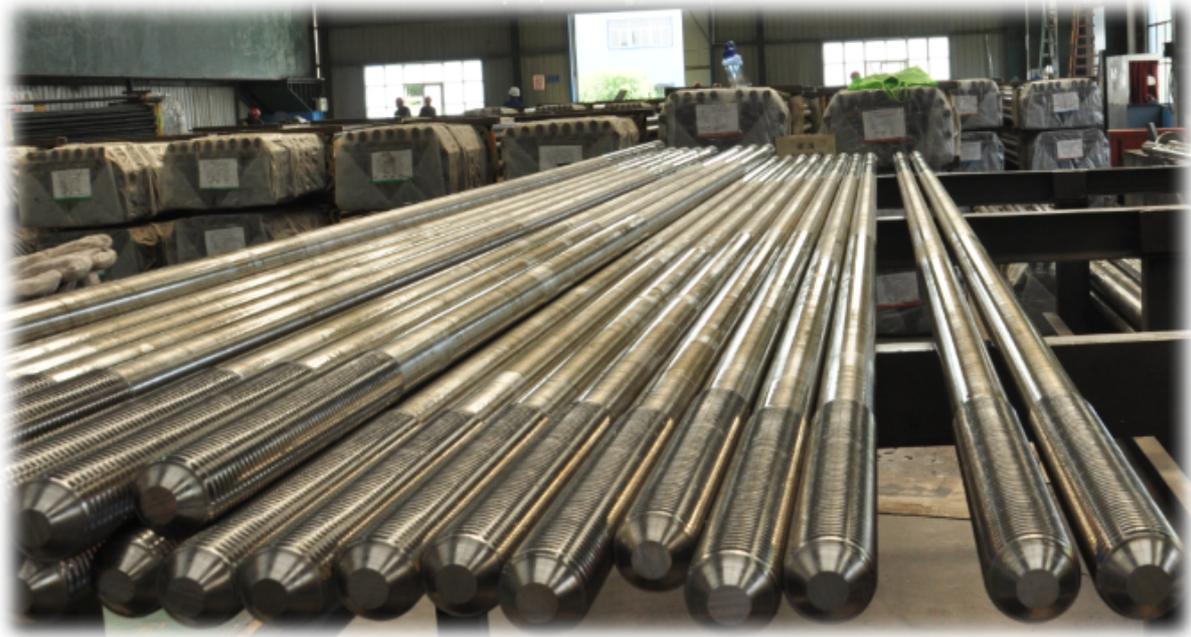


Figure 2

3.1 Foundation anchor bolt material

We mostly choose steel grade 42CrMoA, EN 10083-3-2006 42CrMo4ASTM A193/A193M
Please contact us for raw material original mill test certificate.

3.2 Properties

Table. 1 Mechanical properties

Grade	Dia	Tensile Strength Rm/MPa	2% Elongation Limit RP 0.2/MPa	Stress Under Proof Load SPf/MPa	Elongation after fracture A/%	Reduction of Area after Fracture Z/%	Rockwell Hardness /HRC		Bolt Length mm	-40 °C Impact Absorb Energy K/J
							min	max		
8.8	M16 ~M56	830	660	600	12	52	23	34	12000	27
9.8		900	720	650	10	48	28	37		
10.9		1040	940	830	9	48	32	39		
12.9		1220	1100	970	8	44	39	44		

Our anchor bolt products have super high yield strength(up to 1100 MPa) and tensile strength(up to 1220 MPa). Regarding impact energy, our grade 8.8 anchor bolt averages 60J , grade 10.9 averages 35J which means our products performance much higher than standard requirements.

3.3 Production procedures

We will not talk about production flow here, please refer to "Anyang Longteng Heat Treatment Material Co.,Ltd - Pre-tensioning anchor bolt production procedures"

4. Ring

Upper ring (alignment ring) and lower ring(embedment ring) are split in to sector segments. They will be connected by a splice plate and fastened by bolt assemblies. Please see Figure 3 and Figure 4.



Figure 3



Figure 4

Thread length and PCV sleeve length are different while on these positions. (see figure 4)

5. Nut and washer

According to customers' different requirements, there are some different types of nuts in this system. But washers are only placed at bottom of lower ring, and upper of T-Flange (see Figure 5), in order to fasten the bolt and ring. In figure 5, nut and washers are dacromet coated. HDG also provided.



Figure 5

6. Nylon Nut

Nylon nut (see figure 6) will be placed at the lower of upper ring (alignment ring). The main purpose of nylon nut is to level upper ring. (see figure 7)



Figure 6



Figure 7

7. Corrosion protection

We wrap anchor bolt with corrosion protective oil/ grease + fabric, then cover them by black PVC sleeve. Threaded portion is not included.

8. Heat shrink black tube

The main purpose is to protect exposed nut, washer and partial threads.



Figure 8

8. Support stand bolt assemblies

These assemblies will be welded with embedded steels to support stand of the lower ring(embedment ring), and at the same time, level the lower ring. One assembly includes one washer and two nuts.



Figure 9

9. Site photos

