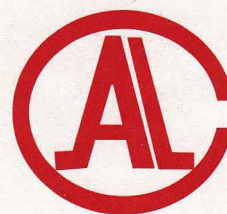




(2003)量认(国)字(V0708)号



(2003)国认监认字(134)号


Test Report

Report No. WT NET 13-20

Name of Product: Warning Yellow Nylon Elevator Pulleys
Model of Produce: $\phi 210$, $\phi 240$, $\phi 320$, $\phi 360$, $\phi 400$, $\phi 440$, $\phi 480$,
 $\phi 500$, $\phi 520$, $\phi 540$, $\phi 560$, $\phi 640$
Client: Yangzhou Saierdanilong Manufacture Co., Ltd
Manufacturer: Yangzhou Saierdanilong Manufacture Co., Ltd
Category of test Entrust



National Elevator Inspection and Testing Center

| | | | |
|-------------------------|---|--|--|
| Name of product | | Warning Yellow Nylon Elevator Pulleys | |
| Model and specification | | $\phi 210$, $\phi 240$, $\phi 320$, $\phi 360$, $\phi 400$, $\phi 440$, $\phi 480$, $\phi 500$, $\phi 520$, $\phi 560$, $\phi 640$ | |
| Client | Name | Yangzhou Saierda Nylon Manufacture Co., Ltd | |
| | Address | No.5 Baotai Road, Anyi Industry Area, Baoying, Jiangsu | |
| Manufacturer | Name | Yangzhou Saierda Nylon Manufacture Co., Ltd | |
| | Address | No.5 Baotai Road, Anyi Industry Area, Baoying, Jiangsu | |
| Receiving date | 2013-01-10 | Sample No. | Q2013-0102~0105 |
| Test date | 2013-01-10~03-17 | Sample state | Normal |
| Test place | NETEC | Sample amount | 4(2 nylon pulleys and 2 cast iron pulleys) |
| Test category | Entrust | Contact | Cheng Weibin |
| Test condition | Comply with requirements | Test item | All application items |
| Test basis | Test brief of warning yellow nylon elevator pulleys | | |
| Test conclusions | <p>By the test,</p> <p>1. After 1562 hours test, the maximum abrasion loss of nylon pulley test points is 0.02mm and the maximum abrasion loss of cast iron pulley test points is 0.08mm.</p> <p>2. When the force loaded on the nylon pulley reached 301.8kN, the deformation of the sample is 12.29mm and there is no break. When the force loaded on the cast iron pulley reached 183.0kN, the deformation of the sample is 5.12mm and the pulley is broken.</p> <p>See page 2 to 5 of the report for the details of test data and test results.</p> <p style="text-align: right;">  Issue date: Apr. 1, 2013 </p> | | |

Reported by: 周文明

Verified by: 李十莉

Issued by: 王衡

1 Abrasion test methods

Two testing nylon pulleys are installed top and lower, a looping rope around them and the test tensioning mass shall be suspended. The rope and the pulleys are installed on the rope fatigue testing machine. The testing machine has two separate sets. Either set can work independently at the same time. See Figure 3 for the installation. To compare with nylon pulleys, cast iron pulleys are tested at the same time. All installation and test conditions are all the same.

There are five grooves on the pulley, numbered ①, ②, ③, ④, ⑤ from left to right. The wire rope is suspended in the middle groove. Put $\phi 10\text{mm}$ roller measured in groove ①, ③ and ⑤ and press straight edge on the rollers. Use feeler knife to measure the gap whose minimum scale is 0.01mm and minimum indication is 0.02mm . Adjust roller in groove ensuring the initialization is 0. Record the sequence of rollers and put them in sequence in later tests.

There are three test points on each pulley marked ①, ②, ③, showing in Figure 4. In a test cycle, test point ① contacts with wire rope in half cycle, test point ② contacts with wire rope in the whole cycle and test point ③ contacts with wire rope in one third of cycle.

2 Abrasion test parameters

Material of nylon pulleys: MC nylon

Test tensioning mass: 600kg

Manufacturer of wire rope: Bridon Tianjin Rope L Co., td.

Provider of cast iron wheels: NETEC

Wire rope structure: $8 \times 19\text{S} + \text{FC}$

Wire rope diameter: 10mm

Pulleys bearing: HRB6312 \times 2RS

Running speed of the wire rope: 0.58m/s

Test running time: 1562h

Provider of cast iron pulleys: Yangzhou Saierda Nylon Manufacture Co., Ltd.

3 Abrasion test date**Table 1 Abrasion loss test record of nylon pulleys**

| No. | Test time (h) | Abrasion loss (mm) | | | | | |
|-----|---------------|--------------------|------|---|------------|------|---|
| | | Lower pulley | | | Top pulley | | |
| | | ① | ② | ③ | ① | ② | ③ |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | 156 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 | 312 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | 468 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5 | 624 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 780 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7 | 936 | 0 | 0 | 0 | 0 | 0.02 | 0 |
| 8 | 1092 | 0 | 0.02 | 0 | 0 | 0.02 | 0 |
| 9 | 1248 | 0 | 0.02 | 0 | 0 | 0.02 | 0 |
| 10 | 1404 | 0.02 | 0.02 | 0 | 0.02 | 0.02 | 0 |
| 11 | 1562 | 0.02 | 0.02 | 0 | 0.02 | 0.02 | 0 |

After test, there is no visible abrasion and breakage on the wire rope.

Table 2 Abrasion loss test record of cast iron pulleys

| No. | Test time (h) | Abrasion loss (mm) | | | | | |
|-----|---------------|--------------------|------|------|------------|------|------|
| | | Lower pulley | | | Top pulley | | |
| | | ① | ② | ③ | ① | ② | ③ |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | 156 | 0 | 0.02 | 0 | 0 | 0 | 0 |
| 3 | 312 | 0.02 | 0.02 | 0 | 0.02 | 0.02 | 0 |
| 4 | 468 | 0.02 | 0.03 | 0.02 | 0.02 | 0.03 | 0.02 |
| 5 | 624 | 0.03 | 0.04 | 0.02 | 0.03 | 0.03 | 0.02 |
| 6 | 780 | 0.03 | 0.05 | 0.03 | 0.03 | 0.04 | 0.03 |
| 7 | 936 | 0.04 | 0.06 | 0.03 | 0.04 | 0.05 | 0.03 |
| 8 | 1092 | 0.04 | 0.06 | 0.04 | 0.04 | 0.05 | 0.04 |
| 9 | 1248 | 0.05 | 0.07 | 0.04 | 0.05 | 0.06 | 0.04 |
| 10 | 1404 | 0.05 | 0.08 | 0.04 | 0.05 | 0.07 | 0.05 |
| 11 | 1562 | 0.06 | 0.08 | 0.05 | 0.06 | 0.08 | 0.05 |

After test, there is no visible abrasion and breakage on the wire rope.

4 Pressure test date

Pressure test is carried out after abrasion test. Installation and breakage are showing in Figure 6~8. Pressure test data is recorded in Table 3.

Table 3 Pressure test record of nylon and cast iron pulleys

| No. | Nylon pulley | | | Cast iron pulley | | |
|-----|----------------|------------------|----------|------------------|------------------|----------|
| | Test load (kN) | Deformation (mm) | Breakage | Test load (kN) | Deformation (mm) | Breakage |
| 1 | 31.5 | 1.88 | No | 30.1 | 1.02 | No |
| 2 | 61.0 | 2.90 | No | 61.8 | 1.54 | No |
| 3 | 90.2 | 3.76 | No | 88.6 | 1.88 | No |
| 4 | 120.0 | 4.78 | No | 124.4 | 2.39 | No |
| 5 | 149.6 | 5.64 | No | 152.6 | 3.25 | No |
| 6 | 180.3 | 6.66 | No | 183.0 | 5.12 | Broken |
| 7 | 208.5 | 7.69 | No | / | / | / |
| 8 | 238.0 | 8.88 | No | / | / | / |
| 9 | 269.6 | 10.25 | No | / | / | / |
| 10 | 301.8 | 12.29 | No | / | / | / |

- Note: 1. Deformation in above table means that the diameter of the sample gets smaller with pressure.
2. Tested after 24 hours of the ending pressure test, remaining deformation of the nylon pulley is 1.5mm.

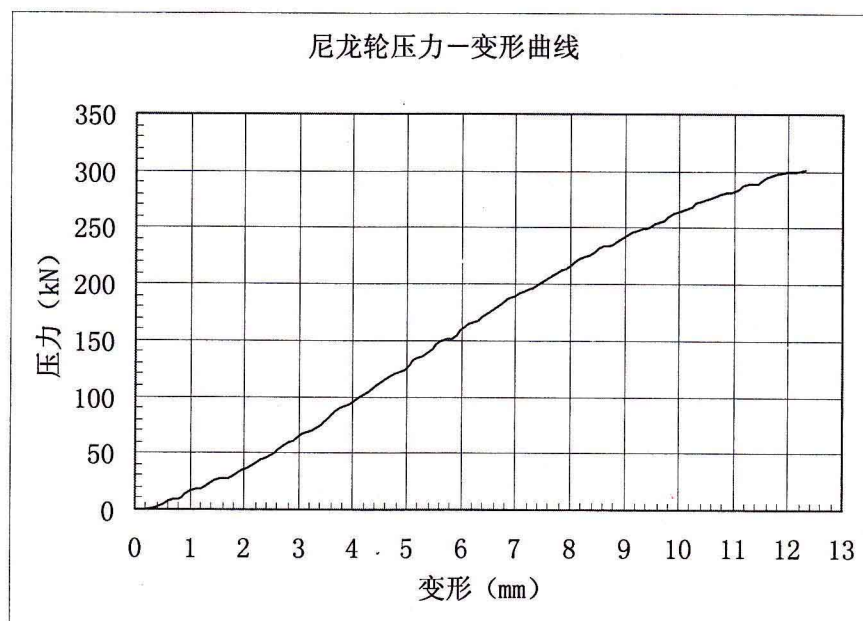


Figure 1 pressure-deformation curve of nylon pulley

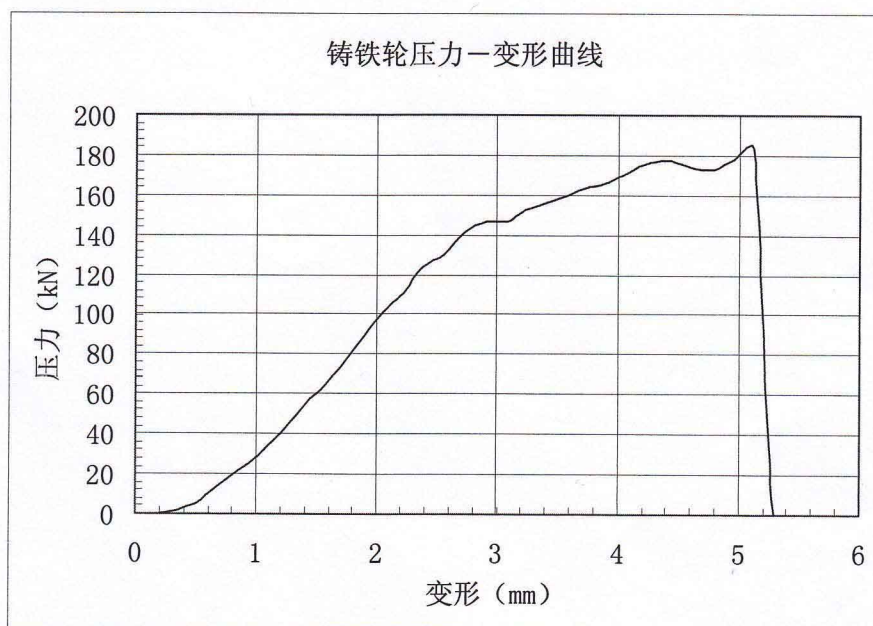


Figure 2 pressure-deformation curve of cast iron pulley

Appendix 1 Sample photo

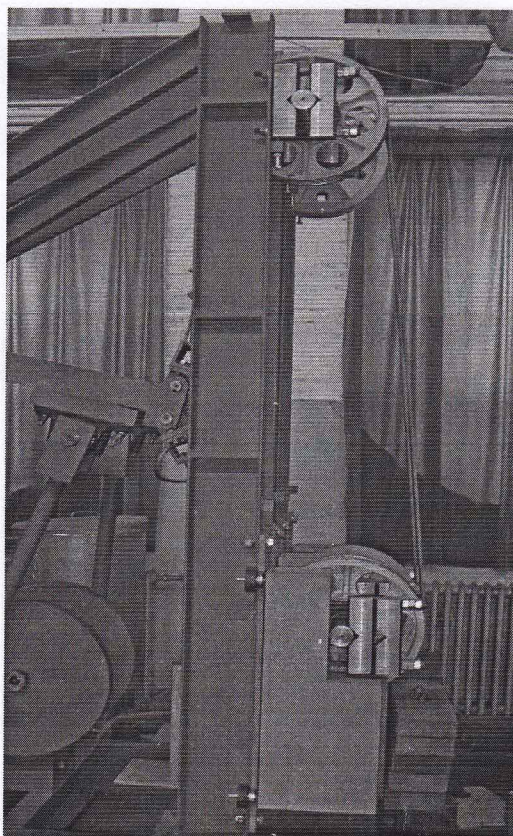


Figure 3 Installation of abrasion test

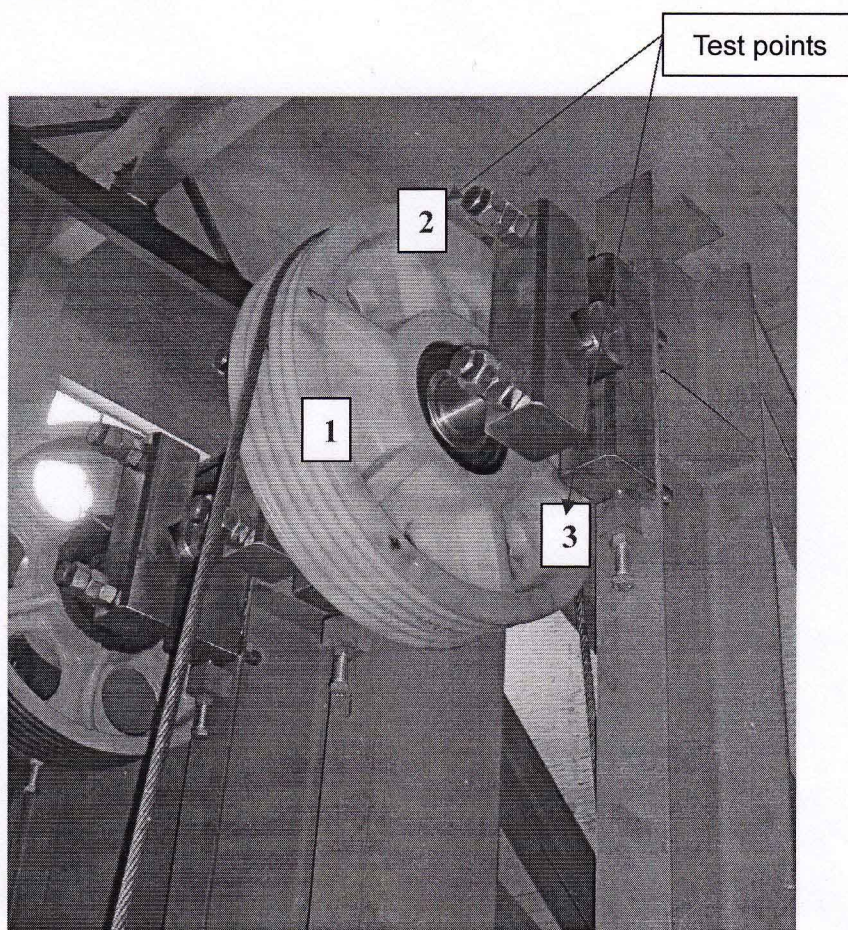


Figure 4 Test points of abrasion test



Figure 5 6×10^6 cycle showing on arithmometer ending 1562 hours abrasion test

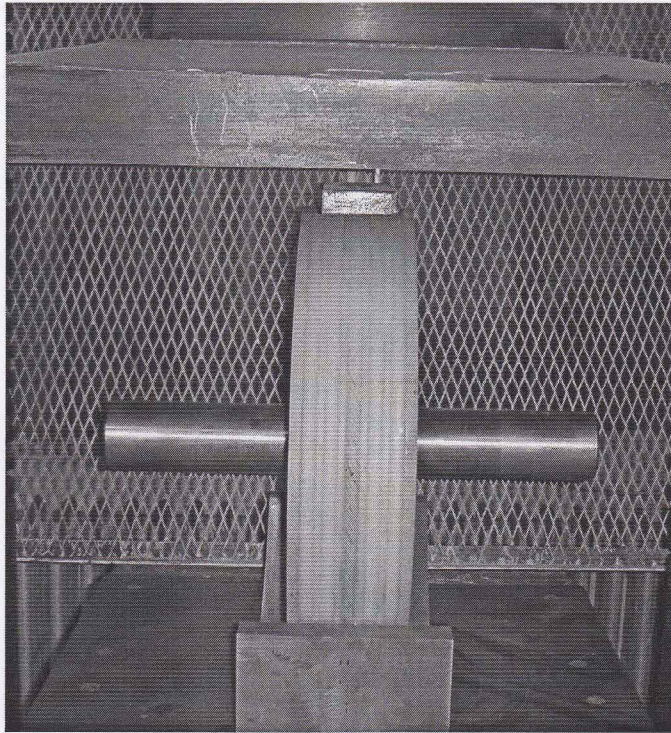


Figure 6 Installation of pressure test of nylon pulley

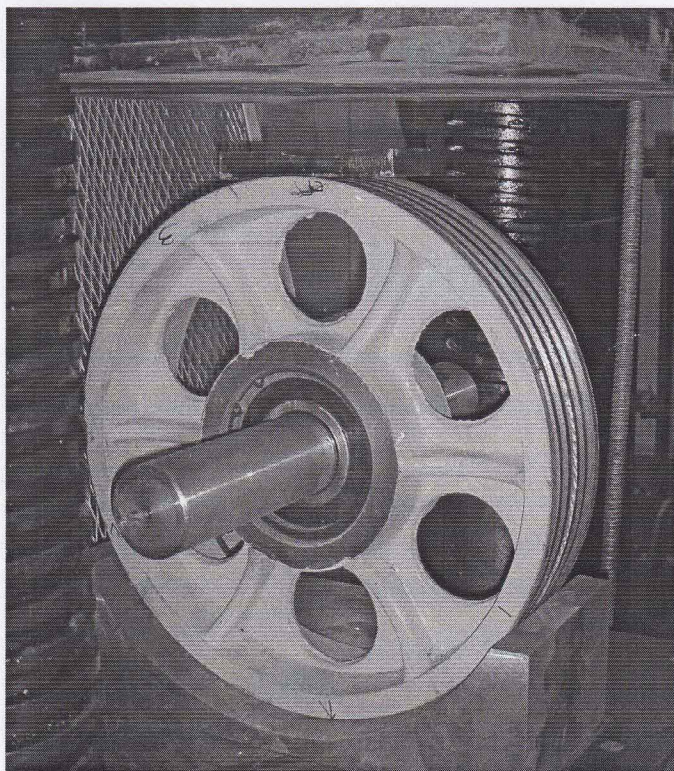


Figure 7 Installation of pressure test of cast iron pulley

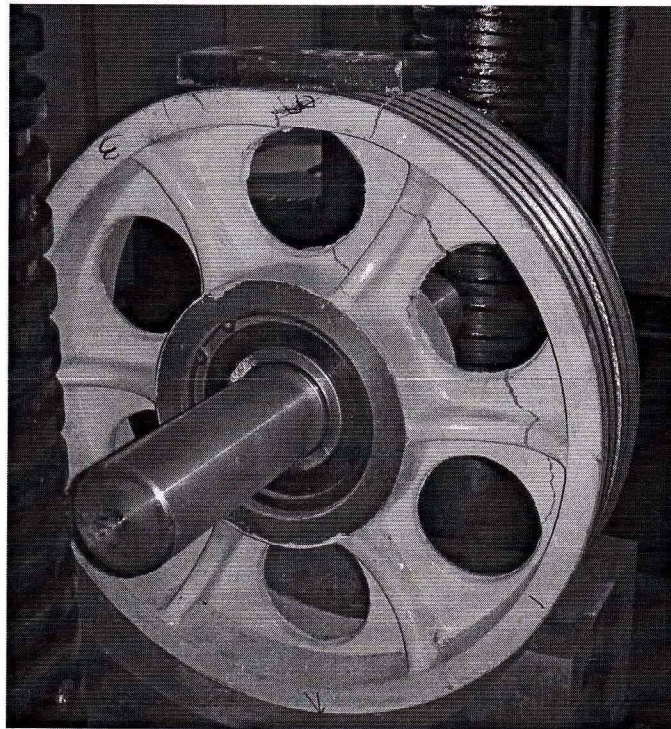


Figure 8 Broken in pressure test

Appendix 2 Main test instruments

| No. | Model | Name | Serial No. |
|-----|----------|---|--------------------------------|
| 1 | GS | Rope fatigue testing machine | 20061001 |
| 2 | 125mm | Straight edge | 93198 |
| 3 | 100mm | Feeler knife | 211 |
| 4 | Φ10 | Roller | 1 [#] ~5 [#] |
| 5 | 150mm | Vernier caliper | 122 |
| 6 | YE-2000A | Hydraulic test machine | Y ₁ -203 |
| 7 | ESP-1 | Mechanics test system of elevator safety components | 01 |
| 8 | 500mm | High vernier caliper | 00331 |