



FRP POLE CROSSARM




SHANGHAI TUNGHSING COMPOSITES CO. LTD.

**FRP POLE SPECIALIST -
Your One-Stop Solution Provider**

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The Tunghsing Story

Start manufacturing of FRP lighting pole with self-innovated method to achieve high strength FRP poles. Our fabrication is different from the traditional methods of filament winding and centrifugal process

1975

Establishment of mother company Tung Hsing Technology Corporation in Taipei

1976

1994

Establishment of Shanghai Tung Hsing Technology Inc.

1998

Volume production of Shanghai Tung Hsing

2001

Qualified and received ISO9001:2000 certificate (Quality Management System)

2012

Received Malaysia SIRIM certification for FRP pole

2013

Qualified and received CE certificate (Europe, EN-40)

2015

We have been invited to draft the Chinese Roadway Lighting Pole – Fiberglass Pole Section; this industrial standard will be published and reinforced by end of 2017

2017

Relocated FRP pole manufacturing site to Jiangsu Province, China. Expanding production capacity using filament winding process. Main office remains in Shanghai

In the early days the overhead power cable mainly relied on wooden pole as the main material. As timber resources got scarce and difficult to obtain due to the protection by each country, concrete pole became an alternative. However, concrete pole is too heavy, not convenient to install and easy to be corroded by sandy wind, American and some European advanced countries pioneered using the FRP power pole as the replacement in attribute to its excellent properties of lightweight, good physical properties and anti-corrosion. Nowadays FRP power pole has been adopted as the choice of power transmission lines in most of the modern countries.



Advantages of FRP Poles

- Excellent mechanical properties
- Non-conductive and excellent insulation property
- Safe in accident cases
- Anti-corrosion and rust free – especially suitable to be used under extreme weather condition including high humidity coastal area, desert, oil field, high altitude and industrial area with acid and alkali condition
- Light weight, around 1/3 weight of the steel lighting pole. Easy installation and save on labor, time and equipment
- Maintenance free, long life span
- Aesthetics, smooth surface with good finishing. Also can be color matched to suit any environment



FRP Utility Pole

| Pole Class | Breaking Load (pounds) | Working Load (pounds) | Pole Height (ft) |
|------------|------------------------|-----------------------|----------------------|
| H6 | 7410 | 3705 | 35、40、45、50、55 |
| H5 | 6500 | 3250 | 35、40、45、50、55 |
| H4 | 5655 | 2828 | 35、40、45、50、55 |
| H3 | 4875 | 2438 | 35、40、45、50、55 |
| H2 | 4160 | 2080 | 30、35、40、45、50、55 |
| H1 | 3510 | 1755 | 20、30、35、40、45、50、55 |
| 1 | 2925 | 1463 | 20、30、35、40、45、50、55 |
| 2 | 2405 | 1203 | 20、30、35、40、45、50、55 |
| 3 | 1950 | 975 | 20、30、35、40、45、50、55 |
| 4 | 1560 | 780 | 20、30、35、40、45、50、55 |
| 5 | 1235 | 618 | 25、30 |
| 6 | 975 | 488 | 25、30 |

Strong / Reliable / Long Lasting



Originated from Taiwan, Shanghai Tunghsing Composites Co. Ltd. inherited the parent company for decades of FRP pole production experience, and later to carry forward and further advance in it's Shanghai factory. Shanghai Tunghsing Composites benefits from our core technical team with determination and devotion to offer the best quality, long lasting durability and top strength FRP pole at the most competitive and attractive price.

Reference:

1. ANSI O5.1.2008 Annex B
2. Tables 253-1 and 261-1A, NESC (2007 National Electric Safety Code)

CROSSARM

Tungshing FRP crossarms are made to last through all climates and to stand the test of time. We test our crossarms regularly based on products' Mechanical, UV Resistance, Flammability and Electrical Performance to ensure our crossarms are performing as designed. Extensive testing are done both internally and externally, reports are available upon request.

Features & Benefits

- Can be used on composite, concrete, metal, or wood poles
- UV protection enhanced with inhibitor-laden resins, polyester veil, and UV resistant urethane coatings
- Closed cell polyurethane foam core: This high density, closed cell, expandable foamcore is designed to prevent moisture contamination
- Normal and easy installation: no special equipment needed
- Field drillable or pre-drilled at factory
- Environmentally friendly - no chemicals or preservatives
- Free from splinters, and rust
- Impervious to insects, woodpeckers, and weather
- Extensive UV exposure testing, advanced Tangent Eccentric Load system testing, as well as industry-standard beam tests

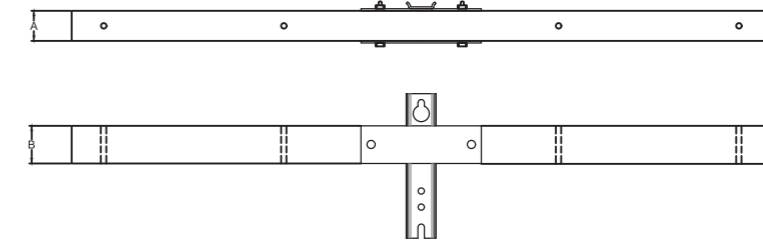


Center Mount

| Standard Tangent | | | | |
|------------------------------|--------------|-----------------|----------------|--|
| Dimensions (A*B) (in.) | Length (ft.) | Weight (lbs.) * | Phases per Arm | Ultimate Vertical Load Per Phase (lbs) |
| 2.95 x 3.93 (75 x 100mm) | 8 (2.44m) | 22 | 2 | 2600 |
| | 10 (3.05m) | 28 | 2 | 2600 |
| | 12 (3.66m) | 33 | 2 | 2200 |
| 3-5/8 x 4-5/8 (92 x 117.5mm) | 5 (1.52m) | 16 | 2 | 6500 |
| | 8 (2.44m) | 25 | 2 | 6400 |
| | 10 (3.05m) | 32 | 2 | 5400 |
| | 12 (3.66m) | 38 | 2 | 4200 |

* Weight excluding mounting bracket

Tangent Crossarms



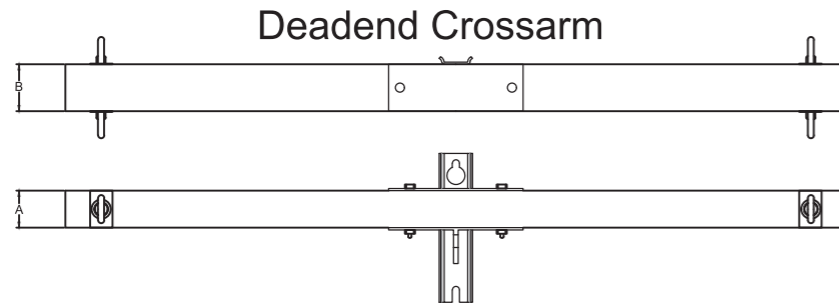
| Heavy Tangent | | | | |
|------------------------------|--------------|-----------------|----------------|--|
| Dimensions (A*B) (in.) | Length (ft.) | Weight (lbs.) * | Phases per Arm | Ultimate Vertical Load Per Phase (lbs) |
| 3-5/8 x 4-5/8 (92 x 117.5mm) | 8 (2.44m) | 33 | 2 | 10000 |
| | 10 (3.05m) | 41 | 2 | 9400 |
| | 12 (3.66m) | 50 | 2 | 8000 |

* Weight excluding mounting bracket

Center Mount

| Standard Deadend | | | | |
|------------------------------|--------------|-----------------|----------------|--|
| Dimensions (A*B) (in.) | Length (ft.) | Weight * (lbs.) | Phases per Arm | Ultimate Vertical Load Per Phase (lbs) |
| 3-5/8 x 4-5/8 (92 x 117.5mm) | 5 (1.52m) | 16 | 2 | 10000 |
| | 8 (2.44m) | 25 | 2 | 10000 |
| | 10 (3.05m) | 32 | 2 | 7500 |
| | 12 (3.66m) | 38 | 2 | 6000 |

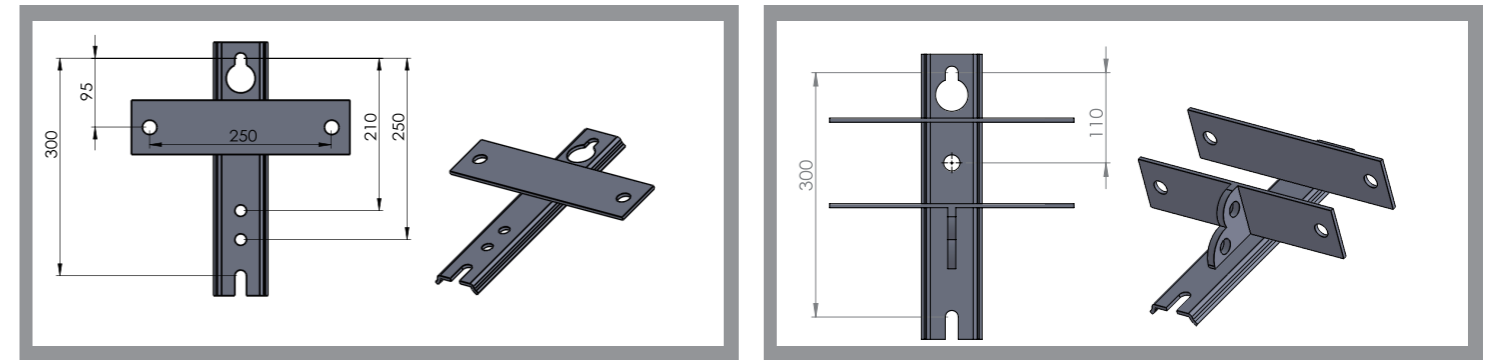
* Weight excluding mounting bracket



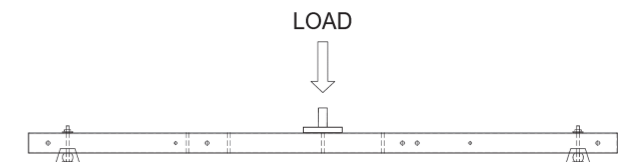
| Heavy Deadend | | | | |
|------------------------------|--------------|-----------------|----------------|--|
| Dimensions (A*B) (in.) | Length (ft.) | Weight * (lbs.) | Phases per Arm | Ultimate Vertical Load Per Phase (lbs) |
| 3-5/8 x 4-5/8 (92 x 117.5mm) | 5 (1.52m) | 21 | 2 | 14700 |
| | 8 (2.44m) | 33 | 2 | 14700 |
| | 10 (3.05m) | 41 | 2 | 13000 |
| | 12 (3.66m) | 50 | 2 | 10000 |
| 4x 6 101.6x 152.4mm | 8 (2.44m) | 45 | 2 | 12800 |
| | 10 (3.05m) | 56 | 2 | 13000 |
| | 12 (3.66m) | 67 | 2 | 13000 |

* Weight excluding mounting bracket

Mounting Bracket - Tangent & Deadend

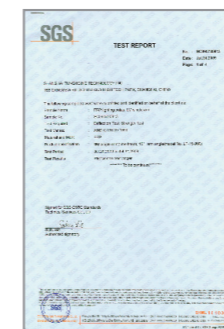


Quality Assurance Beam and Pin Torque Loading Test



Crossarm testing is based on ASTM D8019-15.

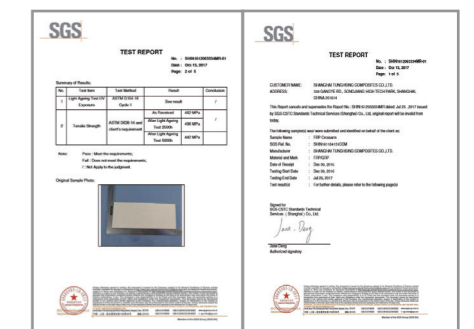
Test Report



FRP Pole
Deflection &
Strength Test:
2009



FRP Pole Dielectric Strength /
Flammability / Water Absorption:
2015



FRP Crossarm 5000 hours
Accelerated Aging and Weather
Test: 2017

Applications

- Taiwan Nuclear Power Plant II
Installation: Jun 1975
- Formosa Plastic Chemical Plant in Yi Lan
Installation: Jun 1976
- Penghu City
Installation: May 1981



- Penghu City
Installation: Jun 1981
- Hua Lian Industrial Area
Installation: Jun 1982
- Taiwan Power Company Penghu Power Plant
Installation: Feb 1979



- Guangzhou (2010)
- Shanghai (2010)
- Fujian (2011)



Overseas-USA/Australia



Overseas-South America

