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Parallel Wire Stay Cable System



DESIGN, MANUFACTURE, INSTALLATION, MAINTENANCE

LIUZHOU OVM MACHINERY CO.,LTD.

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Nanning Bridge, China

Supply and installation of 104
hangers and 243tons replaceable
tled cables



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Brief Introduction

OVM parallel wire cable system consists of hot-extruding HDPE protection high-strength wire cable and cold casting heading anchorage. It is mainly applied to structural engineering such as arch bridge, cable-stayed bridge, roof space structure as well as suspension bridge.

Features of Wire Cable System

1. Being prefabricated on production line in factory
2. Being packed in reel to transport
3. Integral tension; tensile tonnage accurate; cable force uniform; cable adjustment convenience and accurately tested by sensor.
4. Extension products are complete with external damper and load cell can be applied to the system for special requirements.

Stay Cable Structure

1. PE Sheath

The stay cable system usually adopts two types of double-layer PE structures.



1.Double-layer PE



2.Double-layer PE and Double helix

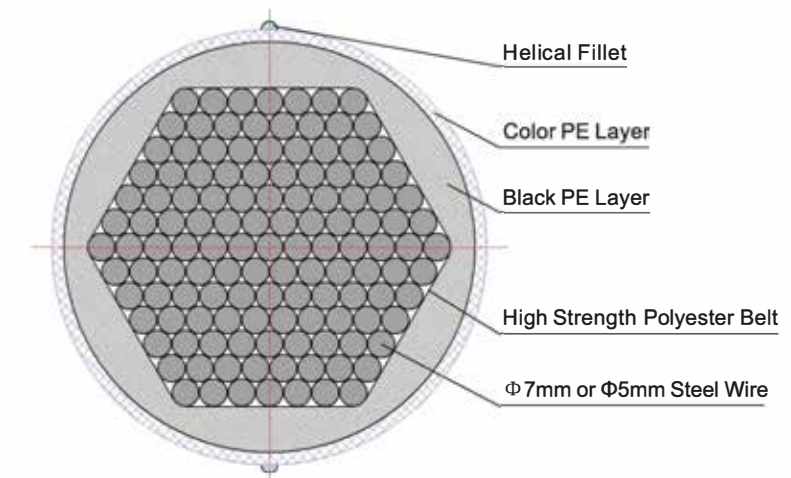


Fig.1 Sectional View of Stay Cable System

2. Steel Wire

(1) Galvanized Steel Wire

Galvanized steel wires are made parallel together into a bundle by cable production equipment. Then twist concentrically 2~ 4°to the right. Wrapping up the cable by high strength polyester and then hot extruded with HDPE sheath. Finally, cut and mark the cable according to confirmed unstressed length of cable (usually under 20°C).

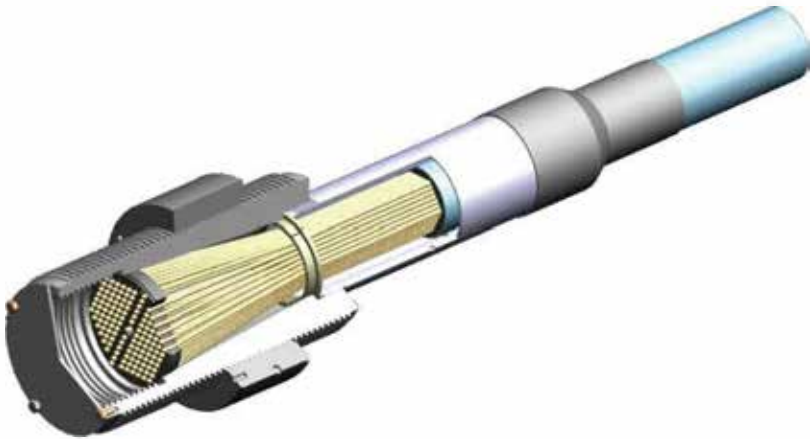


Fig.2 Schematic Diagram of Galvanized Wire Stay Cable

Table 1 Main Data of Galvanized Wire Stay Cable (Φ7mm and σb=1670MPa)

Type	Nom. sectional area of wire bundle cm²	Theoretical Mass of wire bundle kg/m	Black inner layer and color outer layer Double layer structure type (C)		Breaking load kN	Spec. of matching anchorage	Stressing jack
			O.D. mm	Unit weight of cable Kg/m			
PES7-37	14.24	11.2	φ 65	12.8	2378	1670LZM7-37	YCW100B
PES7-55	21.17	16.6	φ 72	18.3	3535	1670LZM7-55	YCW150B
PES7-61	23.48	18.4	φ 77	20.5	3920	1670LZM7-61	YCW200B
PES7-73	28.09	22.1	φ 82	24.2	4692	1670LZM7-73	
PES7-85	32.71	25.7	φ 87	28.0	5463	1670LZM7-85	YCW250B
PES7-91	35.02	27.5	φ 93	30.4	5848	1670LZM7-91	
PES7-109	41.95	32.9	φ 97	35.7	7005	1670LZM7-109	YCW300B
PES7-121	46.57	36.6	φ 103	39.7	7777	1670LZM7-121	YCW350B
PES7-127	48.88	38.4	φ 109	42.2	8162	1670LZM7-127	
PES7-139	53.49	42.0	φ 111	45.7	8933	1670LZM7-139	YCW400B
PES7-151	58.11	45.6	φ 113	49.2	9705	1670LZM7-151	
PES7-163	62.73	49.2	φ 118	53.2	10476	1670LZM7-163	YCW500B
PES7-187	71.97	56.5	φ 125	60.8	12018	1670LZM7-187	

Type	Nom. sectional area of wire bundle cm²	Theoretical Mass of wire bundle kg/m	Black inner layer and color outer layer Double layer structure type (C)		Breaking load kN	Spec. of matching anchorage	Stressing jack
			O.D. mm	Unit weight of cable Kg/m			
PES7-199	76.58	60.1	φ 128	64.5	12790	1670LZM7-199	YCW650B
PES7-211	81.20	63.7	φ 133	68.6	13561	1670LZM7-211	
PES7-223	85.82	67.4	φ 137	72.6	14332	1670LZM7-223	YCW900A
PES7-241	92.75	72.8	φ 139	77.7	15489	1670LZM7-241	
PES7-253	97.37	76.4	φ 143	81.7	16260	1670LZM7-253	
PES7-265	101.98	80.1	φ 148	85.9	17031	1670LZM7-265	
PES7-283	108.91	85.5	φ 151	91.3	18188	1670LZM7-283	
PES7-301	115.84	90.9	φ 155	96.9	19345	1670LZM7-301	
PES7-313	120.46	94.6	φ 158	100.8	20116	1670LZM7-313	
PES7-337	129.69	101.8	φ 164	108.5	21659	1670LZM7-337	
PES7-349	134.31	105.4	φ 166	112.2	22430	1670LZM7-349	
PES7-367	141.24	110.9	φ 171	118.1	23587	1670LZM7-367	
PES7-379	145.86	114.5	φ 174	122.0	24358	1670LZM7-379	YCW1200A
PES7-409	157.40	123.6	φ 180	131.5	26286	1670LZM7-409	
PES7-421	162.02	127.2	φ 181	134.9	27057	1670LZM7-421	
PES7-439	168.95	132.6	φ 187	141.3	28214	1670LZM7-439	
PES7-451	173.57	136.2	φ 189	145.0	28985	1670LZM7-451	
PES7-475	182.80	143.5	φ 194	152.7	30528	1670LZM7-475	

Table 2 Main Data of Galvanized Wire Stay Cable (Φ7mm and σb=1770MPa)

Type	Nom. sectional area of wire bundle cm²	Theoretical Mass of wire bundle kg/m	Black inner layer and color outer layer Double layer structure type (C)		Breaking load kN	Spec. of matching anchorage	Stressing jack
			O.D. mm	Unit weight of cable Kg/m			
PES()7-37	14.24	11.2	φ 65	12.8	2520	1770LZM7-37	YCW150B
PES()7-55	21.17	16.6	φ 72	18.3	3746	1770LZM7-55	YCW200B
PES()7-61	23.48	18.4	φ 77	20.5	4155	1770LZM7-61	
PES()7-73	28.09	22.1	φ 82	24.2	4973	1770LZM7-73	YCW250B
PES()7-85	32.71	25.7	φ 87	28.0	5790	1770LZM7-85	YCW300B
PES()7-91	35.02	27.5	φ 93	30.4	6199	1770LZM7-91	
PES()7-109	41.95	32.9	φ 97	35.7	7425	1770LZM7-109	YCW350B
PES()7-121	46.57	36.6	φ 103	39.7	8242	1770LZM7-121	YCW400B
PES()7-127	48.88	38.4	φ 109	42.2	8651	1770LZM7-127	
PES()7-139	53.49	42.0	φ 111	45.7	9468	1770LZM7-139	YCW500B
PES()7-151	58.11	45.6	φ 113	49.2	10286	1770LZM7-151	

Type	Nom. sectional area of wire bundle cm ²	Theoretical Mass of wire bundle kg/m	Black inner layer and color outer layer Double layer structure type (C)		Breaking load kN	Spec. of matching anchorage	Stressing jack
			O.D. mm	Unit weight of cable Kg/m			
PES()7-163	62.73	49.2	φ 118	53.2	11103	1770LZM7-163	YCW650A
PES()7-187	71.97	56.5	φ 125	60.8	12738	1770LZM7-187	
PES()7-199	76.58	60.1	φ 128	64.5	13555	1770LZM7-199	
PES()7-211	81.20	63.7	φ 133	68.6	14373	1770LZM7-211	YCW900A
PES()7-223	85.82	67.4	φ 137	72.6	15190	1770LZM7-223	
PES()7-241	92.75	72.8	φ 139	77.7	16416	1770LZM7-241	
PES()7-253	97.37	76.4	φ 143	81.7	17234	1770LZM7-253	
PES()7-265	101.98	80.1	φ 148	85.9	18051	1770LZM7-265	
PES()7-283	108.91	85.5	φ 151	91.3	19277	1770LZM7-283	YCW1200A
PES()7-301	115.84	90.9	φ 155	96.9	20503	1770LZM7-301	
PES()7-313	120.46	94.6	φ 158	100.8	21321	1770LZM7-313	
PES()7-337	129.69	101.8	φ 164	108.5	22956	1770LZM7-337	
PES()7-349	134.31	105.4	φ 166	112.2	23773	1770LZM7-349	
PES()7-367	141.24	110.9	φ 171	118.1	24999	1770LZM7-367	YCW1500
PES()7-379	145.86	114.5	φ 174	122.0	25817	1770LZM7-379	
PES()7-409	157.40	123.6	φ 180	131.5	27860	1770LZM7-409	
PES()7-421	162.02	127.2	φ 181	134.9	28678	1770LZM7-421	
PES()7-439	168.95	132.6	φ 187	141.3	29904	1770LZM7-439	
PES()7-451	173.57	136.2	φ 189	145.0	30721	1770LZM7-451	YCW1500
PES()7-475	182.80	143.5	φ 194	152.7	32356	1770LZM7-475	

Table 3 Main Data of Galvanized Wire Stay Cable (Φ7mm and σ_b=1860MPa)

Type	Nom. sectional area of wire bundle cm ²	Theoretical Mass of wire bundle kg/m	Black inner layer and color outer layer Double layer structure type (C)		Breaking load kN	Spec. of matching anchorage	Stressing jack
			O.D. mm	Unit weight of cable Kg/m			
PES()7-37	14.24	11.2	φ 65	12.8	2649	1860LZM7-37	YCW150B
PES()7-55	21.17	16.6	φ 72	18.3	3937	1860LZM7-55	YCW200B
PES()7-61	23.48	18.4	φ 77	20.5	4366	1860LZM7-61	
PES()7-73	28.09	22.1	φ 82	24.2	5225	1860LZM7-73	YCW250B
PES()7-85	32.71	25.7	φ 87	28.0	6084	1860LZM7-85	YCW300B
PES()7-91	35.02	27.5	φ 93	30.4	6514	1860LZM7-91	YCW350B
PES()7-109	41.95	32.9	φ 97	35.7	7802	1860LZM7-109	
PES()7-121	46.57	36.6	φ 103	39.7	8661	1860LZM7-121	YCW400B
PES()7-127	48.88	38.4	φ 109	42.2	9091	1860LZM7-127	YCW500B
PES()7-139	53.49	42.0	φ 111	45.7	9950	1860LZM7-139	
PES()7-151	58.11	45.6	φ 113	49.2	10809	1860LZM7-151	YCW650A
PES()7-163	62.73	49.2	φ 118	53.2	11668	1860LZM7-163	
PES()7-187	71.97	56.5	φ 125	60.8	13386	1860LZM7-187	
PES()7-199	76.58	60.1	φ 128	64.5	14245	1860LZM7-199	

Type	Nom. sectional area of wire bundle cm ²	Theoretical Mass of wire bundle kg/m	Black inner layer and color outer layer Double layer structure type (C)		Breaking load kN	Spec. of matching anchorage	Stressing jack
			O.D. mm	Unit weight of cable Kg/m			
PES()7-211	81.20	63.7	φ 133	68.6	15104	1860LZM7-211	YCW900A
PES()7-223	85.82	67.4	φ 137	72.6	15963	1860LZM7-223	
PES()7-241	92.75	72.8	φ 139	77.7	17251	1860LZM7-241	
PES()7-253	97.37	76.4	φ 143	81.7	18110	1860LZM7-253	
PES()7-265	101.98	80.1	φ 148	85.9	18969	1860LZM7-265	
PES()7-283	108.91	85.5	φ 151	91.3	20257	1860LZM7-283	YCW1200A
PES()7-301	115.84	90.9	φ 155	96.9	21546	1860LZM7-301	
PES()7-313	120.46	94.6	φ 158	100.8	22405	1860LZM7-313	
PES()7-337	129.69	101.8	φ 164	108.5	24123	1860LZM7-337	
PES()7-349	134.31	105.4	φ 166	112.2	24982	1860LZM7-349	
PES()7-367	141.24	110.9	φ 171	118.1	26270	1860LZM7-367	YCW1500
PES()7-379	145.86	114.5	φ 174	122.0	27129	1860LZM7-379	
PES()7-409	157.40	123.6	φ 180	131.5	29277	1860LZM7-409	
PES()7-421	162.02	127.2	φ 181	134.9	30136	1860LZM7-421	
PES()7-439	168.95	132.6	φ 187	141.3	31424	1860LZM7-439	
PES()7-451	173.57	136.2	φ 189	145.0	32283	1860LZM7-451	YCW1500
PES()7-475	182.80	143.5	φ 194	152.7	34001	1860LZM7-475	

Table 4 Main Data of Galvanized Wire Cable (Φ5mm and σ_b=1670MPa)

Type	Nom. sectional area of wire bundle cm ²	Theoretical Mass of wire bundle kg/m	Black inner layer and color outer layer Double layer structure type (C)		Breaking load kN	Spec. of matching anchorage	Stressing jack
			O.D. mm	Unit weight of cable Kg/m			
PES5-19	3.73	2.9	φ 39	3.7	623	1670LZM5-19	YCW60B
PES5-37	7.26	5.7	φ 49	6.7	1213	1670LZM5-37	
PES5-55	10.80	8.5	φ 55	9.6	1803	1670LZM5-55	YCW100B
PES5-61	11.98	9.4	φ 59	10.8	2000	1670LZM5-61	
PES5-73	14.33	11.3	φ 63	12.8	2394	1670LZM5-73	YCW150B
PES5-85	16.69	13.1	φ 65	14.6	2787	1670LZM5-85	
PES5-91	17.87	14.0	φ 69	15.8	2984	1670LZM5-91	
PES5-109	21.40	16.8	φ 72	18.5	3574	1670LZM5-109	YCW200B
PES5-121	23.76	18.7	φ 75	20.4	3968	1670LZM5-121	
PES5-127	24.94	19.6	φ 79	21.7	4164	1670LZM5-127	
PES5-139	27.29	21.4	φ 82	23.7	4558	1670LZM5-139	
PES5-151	29.65	23.3	φ 83	25.4	4951	1670LZM5-151	

(2) Epoxy steel wire

Epoxy coated steel wire adopts electrostatic spraying technology; spraying special epoxy powder on the surface of the wire to create a protective coating with good anti-corrosion property.

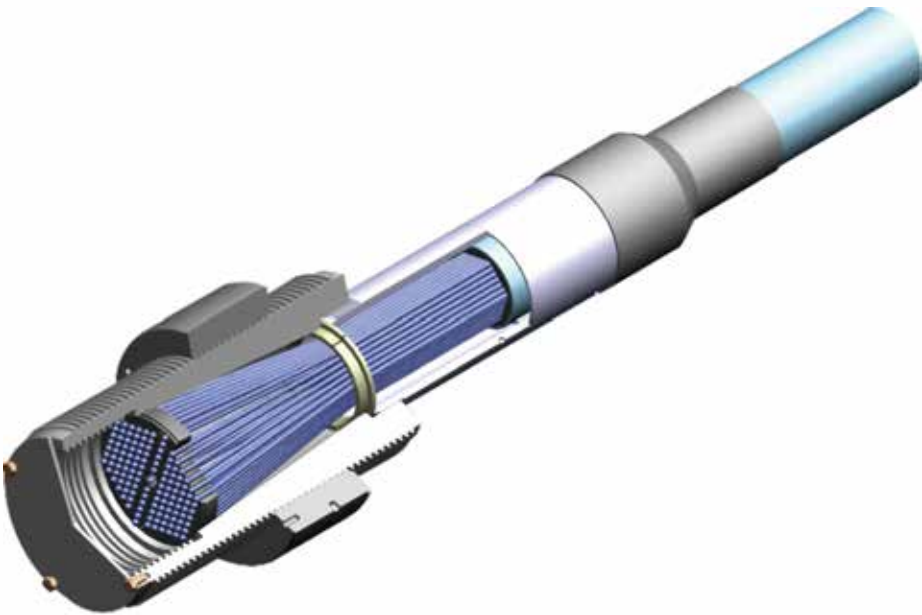


Fig.3 Schematic Diagram of Epoxy Coated Wire Cable

Table 5 Main Data of Epoxy Coated Wire Cable (Φ7mm and σ_b=1670MPa)

Type	Nom. sectional area of wire bundle cm ²	Theoretical Mass of wire bundle kg/m	Black inner layer and color outer layer Double layer structure type (C)		Breaking load kN	Spec. of matching anchorage	Stressing jack
			O.D. mm	Unit weight of cable Kg/m			
PES7-37	14.24	11.2	φ 66	12.8	2378	1670LZM7-37	YCW150B
PES7-55	21.17	16.6	φ 75	18.4	3535	1670LZM7-55	YCW200B
PES7-61	23.48	18.4	φ 81	20.6	3920	1670LZM7-61	
PES7-73	28.09	22.1	φ 88	24.6	4692	1670LZM7-73	YCW250B
PES7-85	32.71	25.7	φ 91	28.2	5463	1670LZM7-85	YCW300B
PES7-91	35.02	27.5	φ 97	30.5	5848	1670LZM7-91	
PES7-109	41.95	32.9	φ 104	36.2	7005	1670LZM7-109	YCW350B
PES7-121	46.57	36.6	φ 108	39.9	7777	1670LZM7-121	YCW400B
PES7-127	48.88	38.4	φ 116	42.9	8162	1670LZM7-127	
PES7-139	53.49	42.0	φ 117	46.3	8933	1670LZM7-139	YCW500B
PES7-151	58.11	45.6	φ 120	49.8	9705	1670LZM7-151	
PES7-163	62.73	49.2	φ 124	53.5	10476	1670LZM7-163	
PES7-187	71.97	56.5	φ 131	61.0	12018	1670LZM7-187	YCW650B

Type	Nom. sectional area of wire bundle cm ²	Theoretical Mass of wire bundle kg/m	Black inner layer and color outer layer Double layer structure type (C)		Breaking load kN	Spec. of matching anchorage	Stressing jack
			O.D. mm	Unit weight of cable Kg/m			
PES.ECW7-199	76.58	60.1	φ 134	64.7	12790	1670LZM7-199	YCW650B
PES.ECW7-211	81.20	63.7	φ 139	68.9	13561	1670LZM7-211	
PES.ECW7-223	85.82	67.4	φ 145	73.3	14332	1670LZM7-223	YCW900A
PES.ECW7-241	92.75	72.8	φ 148	78.5	15489	1670LZM7-241	
PES.ECW7-253	97.37	76.4	φ 151	82.0	16260	1670LZM7-253	
PES.ECW7-265	101.98	80.1	φ 156	86.3	17031	1670LZM7-265	
PES.ECW7-283	108.91	85.5	φ 158	91.7	18188	1670LZM7-283	
PES.ECW7-301	115.84	90.9	φ 165	97.9	19345	1670LZM7-301	
PES.ECW7-313	120.46	94.6	φ 167	101.6	20116	1670LZM7-313	YCW1200A
PES.ECW7-337	129.69	101.8	φ 175	109.5	21659	1670LZM7-337	
PES.ECW7-349	134.31	105.4	φ 176	113.2	22430	1670LZM7-349	
PES.ECW7-367	141.24	110.9	φ 181	119.1	23587	1670LZM7-367	
PES.ECW7-379	145.86	114.5	φ 184	122.6	24358	1670LZM7-379	
PES.ECW7-409	157.40	123.6	φ 189	132.0	26286	1670LZM7-409	
PES.ECW7-421	162.02	127.2	φ 190	135.4	27057	1670LZM7-421	YCW1500A
PES.ECW7-439	168.95	132.6	φ 198	142.5	28214	1670LZM7-439	
PES.ECW7-451	173.57	136.2	φ 200	146.2	28985	1670LZM7-451	
PES.ECW7-475	182.80	143.5	φ 203	153.3	30528	1670LZM7-475	

Table 6 Main Data of Epoxy Coated Wire Cable (Φ5mm and σ_b=1670MPa)

Type	Nom. sectional area of wire bundle cm ²	Theoretical Mass of wire bundle kg/m	Black inner layer and color outer layer Double layer structure type (C)		Breaking load kN	Spec. of matching anchorage	Stressing jack
			O.D. mm	Unit weight of cable Kg/m			
PES.ECW5-19	3.73	2.9	φ 42	3.7	623	1670LZM5-19	YCW60B
PES.ECW5-37	7.26	5.7	φ 53	6.8	1213	1670LZM5-37	
PES.ECW5-55	10.80	8.5	φ 59	9.7	1803	1670LZM5-55	YCW100B
PES.ECW5-61	11.98	9.4	φ 64	10.9	2000	1670LZM5-61	
PES.ECW5-73	14.33	11.3	φ 67	12.9	2394	1670LZM5-73	YCW150B
PES.ECW5-85	16.69	13.1	φ 70	14.7	2787	1670LZM5-85	
PES.ECW5-91	17.87	14.0	φ 75	16.0	2984	1670LZM5-91	
PES.ECW5-109	21.40	16.8	φ 78	18.7	3574	1670LZM5-109	YCW200B
PES.ECW5-121	23.76	18.7	φ 81	20.6	3968	1670LZM5-121	
PES.ECW5-127	24.94	19.6	φ 88	22.2	4164	1670LZM5-127	
PES.ECW5-139	27.29	21.4	φ 88	23.9	4558	1670LZM5-139	YCW250B
PES.ECW5-151	29.65	23.3	φ 90	25.6	4951	1670LZM5-151	

Anchorage Structure of Arch Bridge Hangers

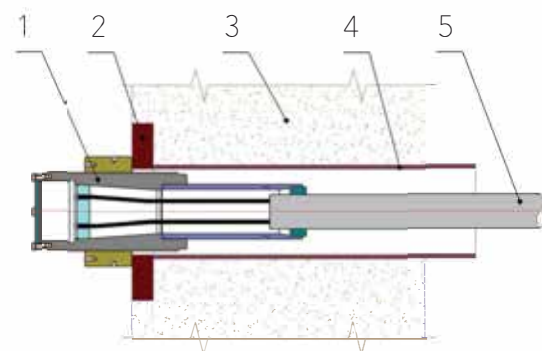
Suggestions for designing the hanger

- (1) Hanger safety factor: $n=2.5\sim3$.
- (2) The shortest free length of hanger not less than 2 meters.
- (3) The lower embedded pipe must be stretched out of the deck structure to 100mm to 150mm length to ensure water-proof performance at bottom.

Anchorage Structure of Hanger

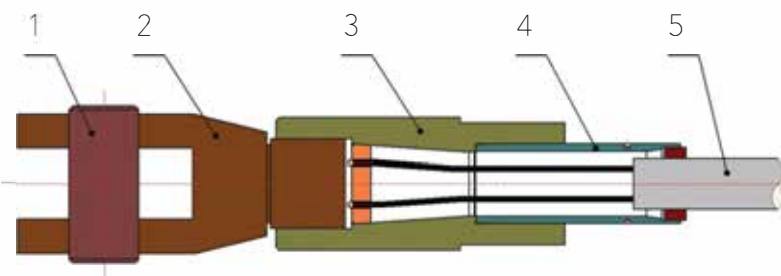
The following 3 types of anchorage can be selected according to the requirements of arch bridge design.

Type I Anchorage with Nut (Used in Arch end & Beam end)



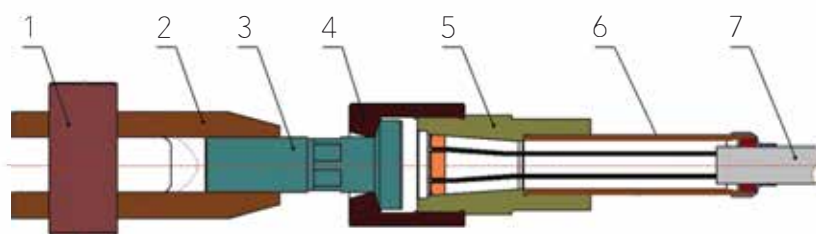
1. Adjustable-end or Fixed-end anchorage
2. Bearing Plate
3. Arch Rib or Beam
4. Guide Pipe
5. Cable

Type II Fixed-end Anchorage with Fork (Used in Arch end & Beam end)



1. Pin
2. Fork
3. Connecting Socket
4. Sealed chamber
5. Cable

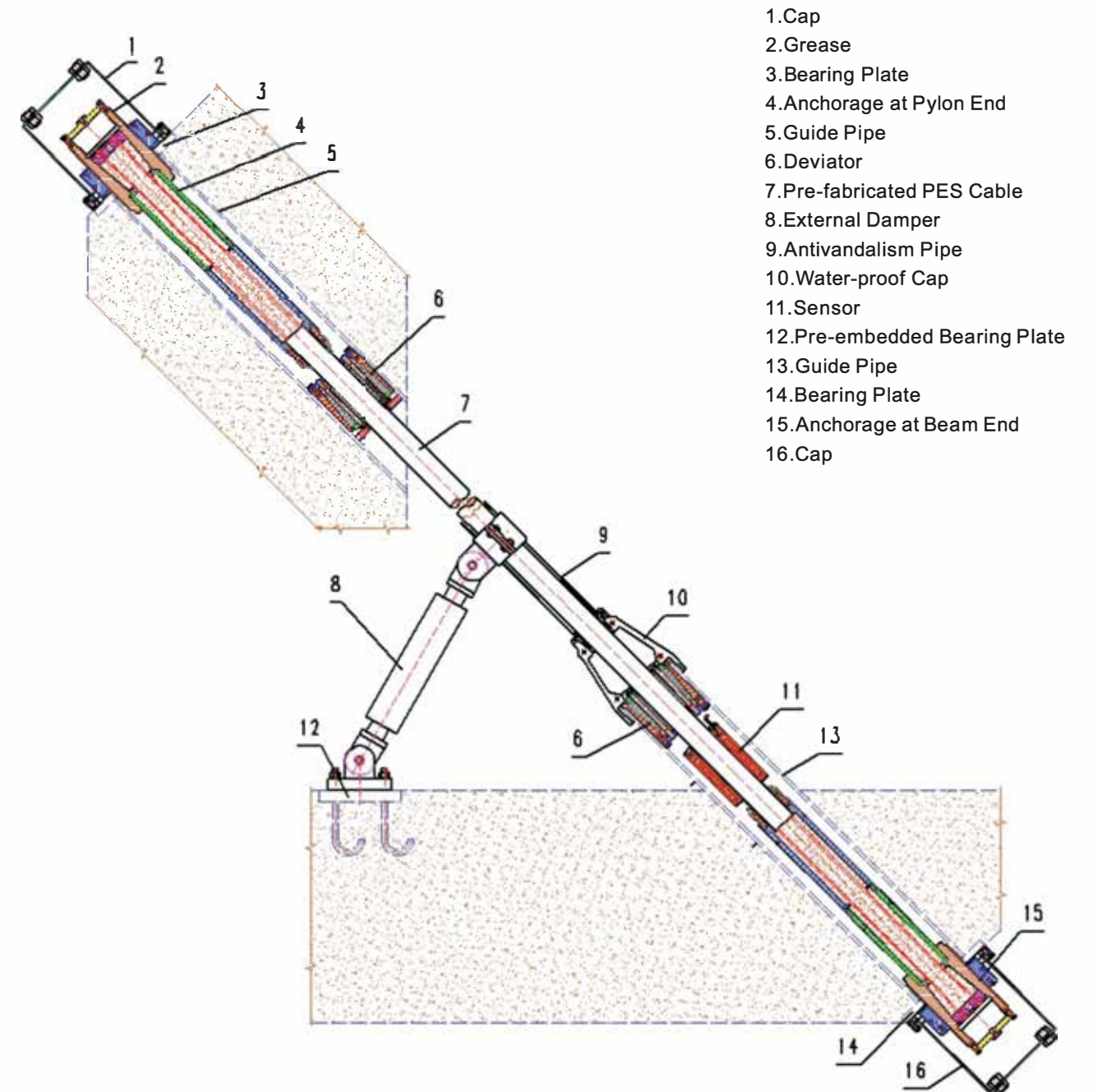
Type III Adjustable-end Anchorage with Fork (Mainly Used for Deck end)



1. Pin
2. Adjusting Fork
3. Adjusting Rod
4. Connecting Sleeve
5. Connecting Socket
6. Sealed chamber
7. Cable

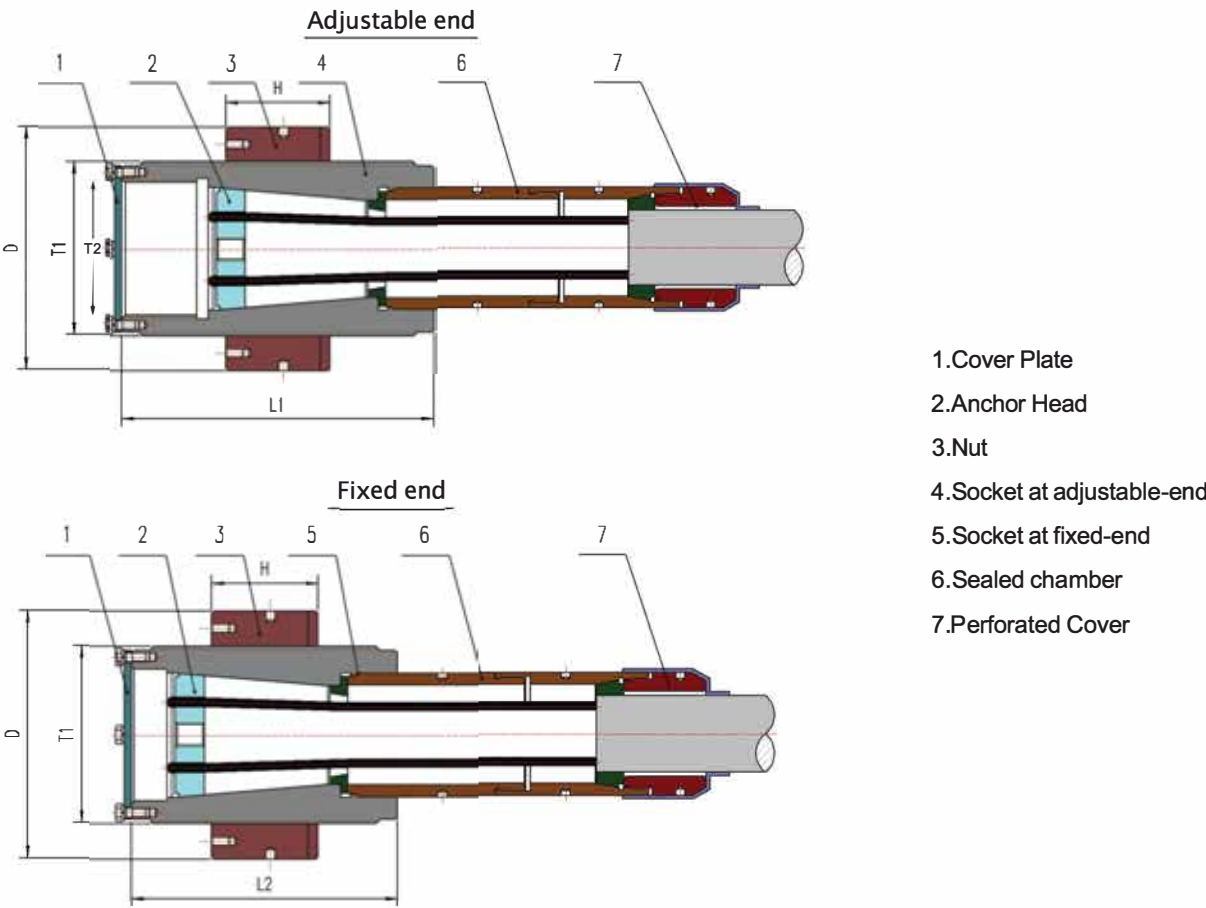
Anchorage Structure of Cable-Stayed Bridge

The anchorage with nut is usually used in both ends of the parallel wire stay cable applied to cable-stayed bridge.



1. Cap
2. Grease
3. Bearing Plate
4. Anchorage at Pylon End
5. Guide Pipe
6. Deviator
7. Pre-fabricated PES Cable
8. External Damper
9. Antivandalism Pipe
10. Water-proof Cap
11. Sensor
12. Pre-embedded Bearing Plate
13. Guide Pipe
14. Bearing Plate
15. Anchorage at Beam End
16. Cap

Structure of Cool casting Anchorage with Nut



Main data of cool casting anchorage with nut refer to Table 5 and 6.

Table 7 Main Data of 1670LZM7 Anchorage with Nut (in mm)

Type	O.D. of Socket T1	T2	Dia. of nut D	Len. of Socket		Height of nut H
				Adjustable-end L1	Fixed-end L2	
1670LZM7-37	Tr150×6	Tr120×6	215	360	320	80
1670LZM7-55	Tr170×6	Tr140×6	230	385	340	80
1670LZM7-61	Tr170×6	Tr140×6	230	385	340	80
1670LZM7-73	Tr190×8	Tr155×6	250	410	360	100
1670LZM7-85	Tr190×8	Tr155×6	250	410	360	100
1670LZM7-91	Tr200×8	Tr165×8	275	440	370	100
1670LZM7-109	Tr220×10	Tr180×8	290	460	390	120
1670LZM7-121	Tr230×10	Tr185×10	300	510	415	120
1670LZM7-127	Tr240×10	Tr195×10	320	520	425	120
1670LZM7-139	Tr240×10	Tr195×10	320	520	425	120

Type	O.D. of Socket T1	T2	Dia. of nut D	Len. of Socket		Height of nut H
				Adjustable-end L1	Fixed-end L2	
1670LZM7-151	Tr250×10	Tr195×10	335	530	435	120
1670LZM7-163	Tr260×10	Tr205×10	340	550	455	120
1670LZM7-187	Tr270×12	Tr215×10	350	580	485	150
1670LZM7-199	Tr280×12	Tr220×10	370	620	515	150
1670LZM7-211	Tr290×12	Tr230×10	385	630	525	150
1670LZM7-223	Tr300×12	Tr235×10	390	640	535	150
1670LZM7-241	Tr310×14	Tr240×12	400	665	545	170
1670LZM7-253	Tr320×14	Tr250×12	420	700	570	170
1670LZM7-265	Tr320×14	Tr260×12	420	700	570	170
1670LZM7-283	Tr330×14	Tr265×14	440	730	590	170
1670LZM7-301	Tr340×16	Tr270×14	445	750	610	190
1670LZM7-313	Tr360×16	Tr285×16	470	795	630	190
1670LZM7-337	Tr360×16	Tr285×16	470	795	630	190
1670LZM7-349	Tr365×16	Tr295×16	480	815	650	190
1670LZM7-367	Tr370×18	Tr295×16	485	815	650	200
1670LZM7-379	Tr390×18	Tr310×16	510	865	690	220
1670LZM7-409	Tr400×18	Tr320×16	520	895	720	220
1670LZM7-421	Tr400×18	Tr320×16	520	895	720	220
1670LZM7-439	Tr410×20	Tr330×18	550	950	750	230
1670LZM7-451	Tr410×20	Tr330×18	550	950	750	230
1670LZM7-475	Tr430×20	Tr340×18	580	1000	800	240

Table 8 Main Data of 1770LZM7 Anchorage with Nut (in mm)

Type	O.D. of Socket T1	T2	Dia. of nut D	Len. of Socket		Height of nut H
				Adjustable-end L1	Fixed-end L2	
1770LZM7-37	Tr150×6	Tr120×6	220	360	320	80
1770LZM7-55	Tr170×6	Tr140×6	230	385	340	80
1770LZM7-61	Tr170×6	Tr140×6	230	385	340	90
1770LZM7-73	Tr190×8	Tr155×6	250	410	360	100
1770LZM7-85	Tr200×8	Tr155×6	275	410	360	100
1770LZM7-91	Tr210×10	Tr165×8	280	440	370	110
1770LZM7-109	Tr220×10	Tr180×8	290	460	390	120
1770LZM7-121	Tr230×10	Tr185×10	300	510	415	130
1770LZM7-127	Tr240×10	Tr195×10	330	520	425	130
1770LZM7-139	Tr250×10	Tr195×10	335	520	425	140
1770LZM7-151	Tr260×12	Tr200×10	340	540	435	140
1770LZM7-163	Tr270×12	Tr215×10	350	550	455	140

Type	O.D. of Socket T1	T2	Dia. of nut D	Len. of Socket		Height of nut H
				Adjustable-end L1	Fixed-end L2	
1770LZM7-187	Tr285×12	Tr220×10	370	580	485	160
1770LZM7-199	Tr290×12	Tr225×10	380	620	515	160
1770LZM7-211	Tr300×12	Tr230×10	395	630	525	160
1770LZM7-223	Tr310×14	Tr240×10	400	645	535	180
1770LZM7-241	Tr320×14	Tr240×12	420	680	545	180
1770LZM7-253	Tr335×16	Tr250×12	440	700	570	180
1770LZM7-265	Tr345×16	Tr260×12	445	700	570	180
1770LZM7-283	Tr345×16	Tr265×14	450	730	590	200
1770LZM7-301	Tr360×18	Tr270×14	470	750	610	200
1770LZM7-313	Tr365×18	Tr285×16	470	795	630	200
1770LZM7-337	Tr385×18	Tr285×16	500	800	630	200
1770LZM7-349	Tr385×18	Tr295×16	510	815	650	220
1770LZM7-367	Tr390×18	Tr295×16	520	825	650	220
1770LZM7-379	Tr410×20	Tr310×16	530	865	690	220
1770LZM7-409	Tr420×20	Tr320×16	545	895	720	220
1770LZM7-421	Tr420×20	Tr320×16	550	895	720	230
1770LZM7-439	Tr430×20	Tr330×18	560	950	750	230
1770LZM7-451	Tr430×20	Tr330×18	560	950	750	240
1770LZM7-475	Tr450×22	Tr340×18	580	1000	800	240

Table 9 Main Data of 1860LZM7 Anchorage with Nut (in mm)

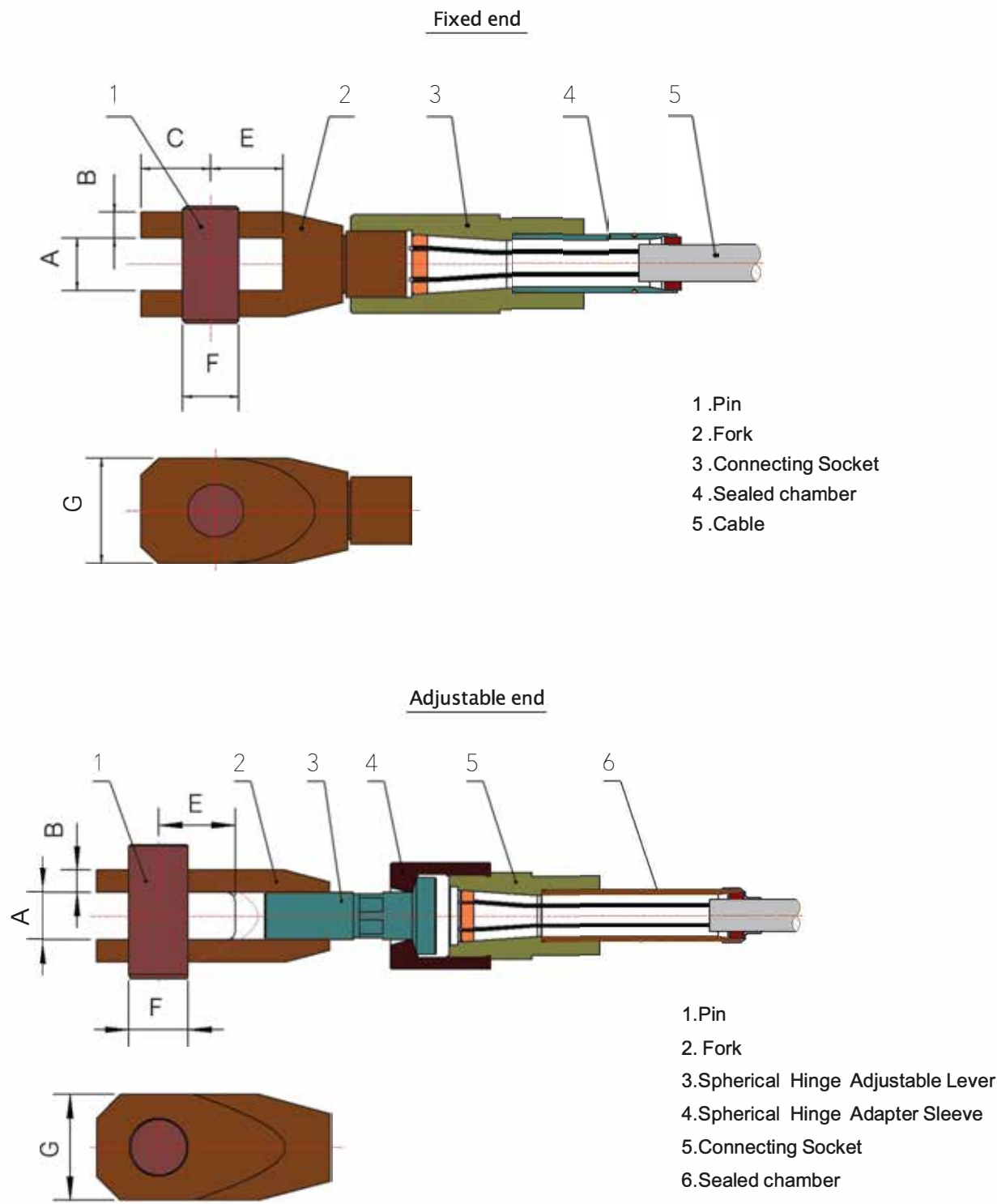
Type	O.D. of Socket T1	T2	Dia. of nut D	Len. of Socket		Height of nut H
				Adjustable-end L1	Fixed-end L2	
1860LZM7-37	Tr160×8	Tr125×6	220	380	320	80
1860LZM7-55	Tr175×8	Tr140×6	235	400	340	90
1860LZM7-61	Tr190×8	Tr150×6	240	420	350	90
1860LZM7-73	Tr200×10	Tr155×6	270	430	360	100
1860LZM7-85	Tr205×10	Tr160×8	275	440	360	110
1860LZM7-91	Tr215×10	Tr170×8	285	450	370	110
1860LZM7-109	Tr230×10	Tr180×8	300	520	420	120
1860LZM7-121	Tr240×12	Tr190×10	310	550	435	135
1860LZM7-127	Tr250×12	Tr200×10	335	560	445	135
1860LZM7-139	Tr255×12	Tr205×10	350	570	455	155
1860LZM7-151	Tr265×14	Tr210×10	360	605	490	155
1860LZM7-163	Tr275×14	Tr215×10	370	610	490	155

Type	O.D. of Socket T1	T2	Dia. of nut D	Len. of Socket		Height of nut H
				Adjustable-end L1	Fixed-end L2	
1860LZM7-187	Tr290×14	Tr230×10	380	650	530	180
1860LZM7-199	Tr300×14	Tr240×10	395	680	560	180
1860LZM7-211	Tr315×16	Tr250×12	410	710	565	180
1860LZM7-223	Tr320×16	Tr250×12	420	720	580	200
1860LZM7-241	Tr330×18	Tr250×12	445	730	580	200
1860LZM7-253	Tr335×18	Tr260×12	460	765	610	200
1860LZM7-265	Tr350×18	Tr275×14	465	775	615	200
1860LZM7-283	Tr355×18	Tr280×14	470	780	615	220
1860LZM7-301	Tr370×20	Tr290×16	480	800	615	220
1860LZM7-313	Tr375×20	Tr290×16	485	810	630	220
1860LZM7-337	Tr385×20	Tr300×16	510	820	635	245
1860LZM7-349	Tr390×20	Tr305×16	520	850	665	245
1860LZM7-367	Tr405×22	Tr315×16	530	890	705	245
1860LZM7-379	Tr410×22	Tr325×16	540	930	750	245
1860LZM7-409	Tr425×22	Tr335×16	550	950	755	265
1860LZM7-421	Tr430×24	Tr335×16	560	950	755	265
1860LZM7-439	Tr440×24	Tr345×18	570	990	770	265
1860LZM7-451	Tr445×24	Tr345×18	575	1000	770	265
1860LZM7-475	Tr460×26	Tr355×18	600	1025	800	295

Table 10 Main Data of 1670LZM5 Anchorage with Nut (in mm)

Type	O.D. of Socket T1	T2	Dia. of nut D	Len. of Socket		Height of nut H
				Adjustable-end L1	Fixed-end L2	
1670LZM5-19	M111×6	M72×4	160	170	160	50
1670LZM5-37	Tr130×6	Tr90×4	180	245	210	60
1670LZM5-55	Tr140×6	Tr110×6	190	260	220	80
1670LZM5-61	Tr140×6	Tr110×6	190	260	220	80
1670LZM5-73	Tr160×8	Tr120×8	210	290	230	100
1670LZM5-85	Tr170×8	Tr120×8	220	305	245	100
1670LZM5-91	Tr170×8	Tr130×8	220	320	260	100
1670LZM5-109	Tr175×8	Tr135×6	225	340	290	100
1670LZM5-121	Tr185×8	Tr140×8	235	355	300	110
1670LZM5-127	Tr185×8	Tr140×8	235	365	300	110
1670LZM5-139	Tr195×8	Tr145×8	265	365	300	110
1670LZM5-151	Tr200×8	Tr150×8	270	380	310	110

Structure of Cool casting Anchorage with Fork



Main data of Cool casting anchorage with fork refer to Table 7 and 8.

Table 11 Main Data of 1670LZM7 Anchorage with Fork (in mm)

Type	B	C	F(min)	G
1670LZM7-37	40	100	Φ85	180
1670LZM7-55	50	115	Φ100	210
1670LZM7-61	50	125	Φ105	225
1670LZM7-73	55	140	Φ115	250
1670LZM7-85	60	150	Φ125	270
1670LZM7-91	60	155	Φ130	280
1670LZM7-109	65	170	Φ140	305
1670LZM7-121	70	180	Φ150	325
1670LZM7-127	70	185	Φ155	335
1670LZM7-139	75	190	Φ160	345
1670LZM7-151	75	205	Φ170	370
1670LZM7-163	80	210	Φ175	375
1670LZM7-187	85	225	Φ185	405
1670LZM7-199	90	230	Φ190	410

Table 12 Main Data of 1670LZM5 Anchorage with Fork (in mm)

Type	B	C	F(min)	G
1670LZM5-19	20	55	Φ45	100
1670LZM5-37	30	70	Φ60	125
1670LZM5-55	35	85	Φ70	155
1670LZM5-61	40	85	Φ75	155
1670LZM5-73	40	100	Φ85	180
1670LZM5-85	50	100	Φ90	190
1670LZM5-91	50	105	Φ95	190
1670LZM5-109	50	120	Φ100	215
1670LZM5-121	50	130	Φ105	230
1670LZM5-127	55	125	Φ105	225
1670LZM5-139	55	135	Φ110	240
1670LZM5-151	60	135	Φ115	245

Note:

1. The data of A and E are not provided in the manual, which are related to the structures of the connecting parts.

Stressing Equipment and Space

Stressing Jack and Reserved Space

Stressing Jack	Nom. force (kN)	Overall Size (mm)	Cavity aperture (mm)	Stroke (mm)	A(min) (mm)	B(min) (mm)
YCW60B	600	345×φ170	φ 60	200	400	1500
YCW100B	973	370×φ214	φ 78	200	450	1900
YCW150B	1492	370×φ285	φ 120	200	550	1900
YCW200B	1998	382×φ310	φ 120	200	600	2000
YCW250B	2480	380×φ344	φ 140	200	600	2000
YCW300B	3004	401×φ385	φ 160	200	670	2000
YCW350B	3497	404×φ410	φ 175	200	670	2050
YCW400B	3956	400×φ432	φ 175	200	680	2050
YCW500B	4924	564×φ490	φ 196	200	750	2100
YCW650A	6500	640×φ610	φ 240	200	800	2100
YCW900A	8952	600×φ670	φ 280	200	1000	2200
YCW1200A	11790	600×φ790	φ 275	200	1100	2300

Note: data B in the above for reference only. The actual length shall be subject to by the length of stay cable and load-carrying conditions in order to meet the requirements of Stress in construction.

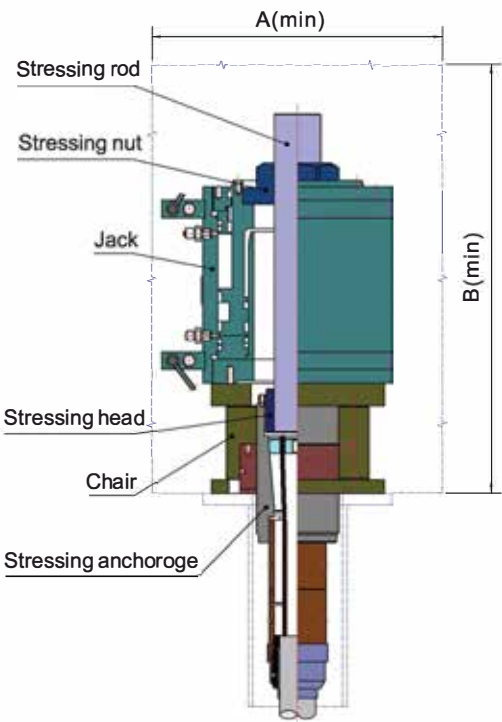


Fig. 5-1 Stressing Schematic Diagram of Hanger Installation

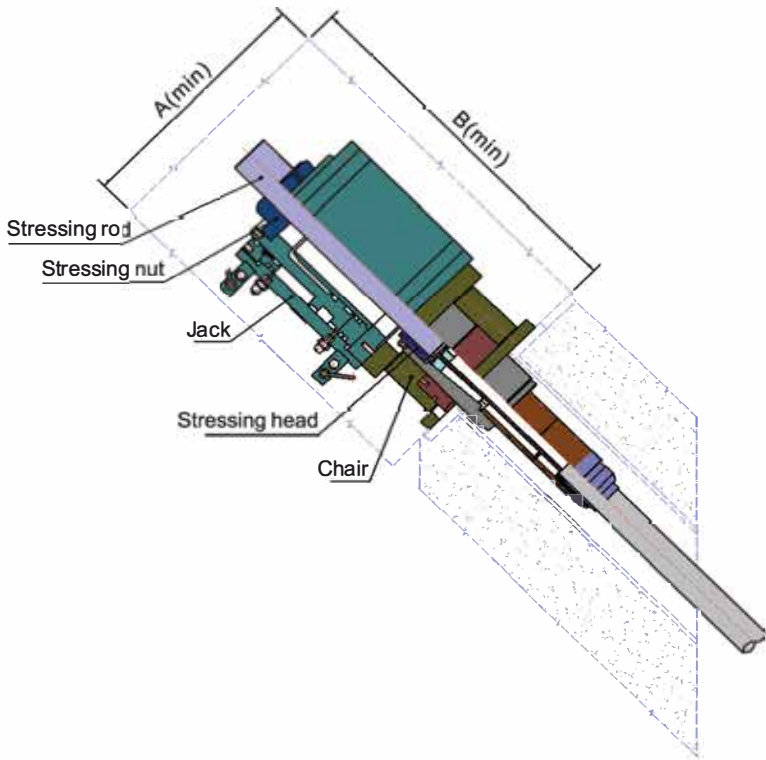


Fig. 5-2 Stressing Schematic Diagram of stay cable Installation

Tests

1. Dynamic/Static Load Test of Parallel Wire Stay Cable System

OVM Parallel Wire Stay Cable System has been consistently improved based on numerous of tests in independent laboratories both at home and aboard, which prove its reliable mechanical property. The range of test is from 1670LZM7-37 to 1670LZM7-283, according to standards and specifications of GB/T18365, PTI etc.

Typical Fatigue Tests on Assembly of 1670LZM7 Parallel Wire Stay Cable System

S/N	Specification	Location	Upper limit of stress	Stress amplitude Mpa	Time
1	1670LZM7-163	CTL, USA	0.45fptk	200	2013
2	1670LZM7-211	EMPA, Switzerland	0.45fptk	200	2011
3	1670LZM 7-55	Test Center of Wuhan Bridge Science Research Institute Co., Ltd.	0.40fptk	212	2011
4	1670LZM7-283	Chongqing Highway Engineering Test Center	0.40fptk	200	2010
5	1670LZM7-109	China Ship building Industry Metal Structure Test Center	0.40fptk	200	2007

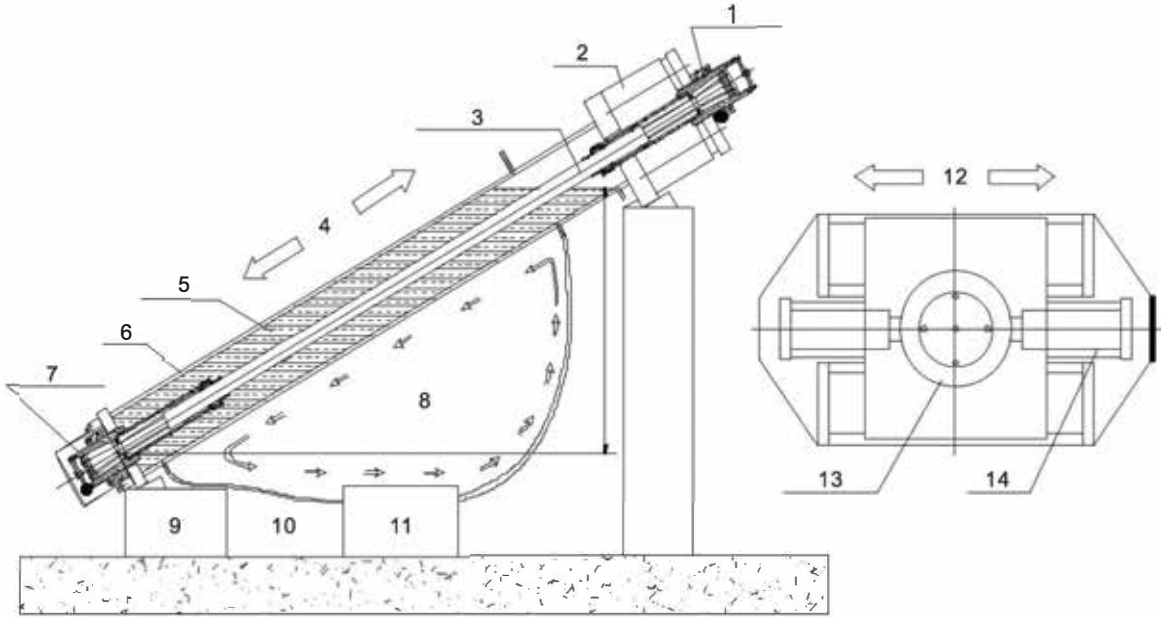
OVM fatigue tests according to GB/T18365 and PTI



Fatigue and Static Load Test of Type 1670LZM7-211



2. Water Tightness Test



Fatigue and Static Load Test on Type 1670LZM7-283



Fatigue Test of 1670LZM7-283 Fork



Static Load Test of 1670LZM7-283 Fork



Fatigue Test of Type 1670LZM7-109



Static Load Test of Type 1670LZM7-109



Water tightness test of stay cable (CIP)

Projects Reference

Yavuz Sultan Selim Bridge, Turkey



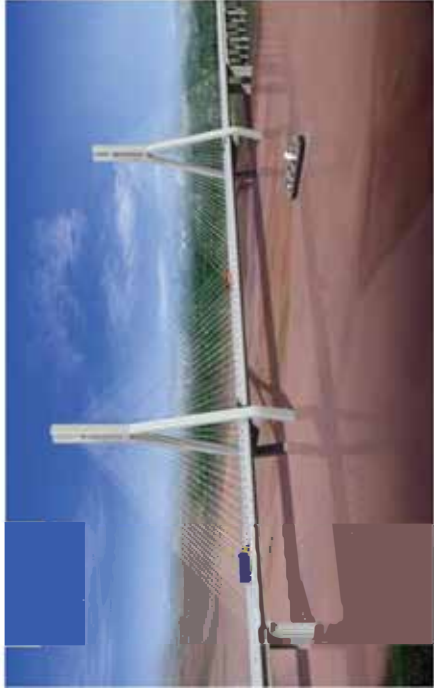
Hau Shinui Bridge, Korea





Jiaozhou Bay Bridge, China

Dongsha Bridge, China



Yongning Yellow River Bridge, China



Lingfeng Bridge,China



Jiqi Yellow River Bridge,China



Tongzilin Bridge, China



Peiling Yangtze river bridge,China



Saryang sangdo-hado Bridge, Kyungsangnam-do, Korea



Qingyin Bridge, China



Nanning Bridge, China