



IEC[®] Porcelain Post Insulators

Insulators for AC and DC Applications



Overview

For more than a century, utilities have relied on GE to deliver electrical products and services to meet their reliability and operational performance needs. GE is a leading provider of transmission and distribution solutions as well as grid automation systems that maximize a utilities operational efficiencies and provides their customers' with reliable power.

Through an alliance with XD Electric, GE has extended its portfolio to include high and ultra high-voltage power equipment, supporting the highest transmission voltage levels in the world. XD Electric is one of China's largest high voltage equipment manufacturers dedicated to the research, application and development of critical transmission equipment and solutions. XD Electric has a broad range of products to transform and direct the flow of power for industrial, commercial and residential users. The XD|GE partnership brings end-to-end transmission solutions to meet the growing global demand for electricity. The combined portfolios of GE and XD provide a comprehensive range of technology solutions to address the unique challenges faced by the utility sector and energy intensive industries.

XD|GE IEC Post Insulators

XD|GE provides a full range of porcelain and polymer housed IEC rated insulators for AC and DC transmission, substation, and distribution applications. In most cases, one of our standard product offerings will meet your application needs. However, if your requirements do not match one of our standard products, we will work to provide the product you need for your application.

XD|GE solid core post insulators are widely used in power plants, transmission substations, distribution substation and high voltage power equipment up to 1100kV. These solid core post insulators are used in applications for both insulating and structural support of live components.

Product Features

- High mechanical strength design of insulators including cantilever, torsion, compression and expansion strength
- Anti-ageing, anti-UV, anti-sandstorm design
- Smooth surface with high hardness and exceptional anti-pollution performance
- Minimal displacement under load

Manufacturing Excellence

XD|GE produces a variety of insulators in its modern production facilities. The isostatic production processing line is the most advanced insulator production technology, developed in Sweden and adapted by XD|GE to attain the highest performance.

In order to guarantee the electrical and mechanical properties, all insulators are individually examined by an ultrasonic detector and a four-directional cantilever stress test.

Quality

Quality is critical for XD|GE and this focus is evident throughout our manufacturing environment. Quality begins with an incoming inspection of all purchased and outsourced materials to ensure that before we begin the manufacturing process, we have the best possible inputs. Each production facility maintains working environment standards including controls of cleanliness, temperature and humidity.

Through production and assembly, there are multiple checkpoints for critical process steps, including both visual inspection as well as stopped flow inspection performed to documented test plans. Our production facilities follow a strict non-conforming procedure to identify and control and to avoid the use and delivery of the non-conformity.

In addition, XD|GE has a dedicated measuring and inspection department with certified, full-time inspectors in each of our manufacturing sites. This department provides a secondary cross-inspection for work in process and finished products, ensuring quality is achieved throughout the manufacturing process. First pass yield and cost of quality data is maintained and analyzed per product family.



Advanced Test Facilities

XIHARI® is the Xi'an High Voltage Apparatus Research Institute and is an integral part of the XD|GE alliance. XIHARI has extensive testing capabilities at its facility sites, which include: High Power Laboratory, High Voltage Laboratory, Artificial Climate Laboratory, and EMC Laboratory and an Operational Test Circuit for HVDC Thyristor Valves. The testing hall meets the requirements of ISO™/IEC 17025, and boasts some of the largest test equipment in the world, creating capacity to test insulators as large as 1,100kV AC.

The high voltage apparatus laboratory in XIHARI is a government authorized national high voltage apparatus quality supervision and inspection test center. It is an independent third-party laboratory in type tests, routine tests, performance tests and certificate tests for high voltage apparatus. The testing facilities at XIHARI also include an extension environmental laboratory. Testing capabilities here include high altitude testing, high humidity testing, and temperature testing from -70° C up to +150° C.

Global Project Engineering Services

XD|GE is dedicated to the success of its customers and provides an array of services to help successfully deploy and maintain XD|GE products and business solutions globally. World-class post-sales support, professional services, and supportive resources are ready to ensure that you effectively leverage the technical power and business advantages that come with XD|GE products.

This support infrastructure covers the entire life cycle of the product. You can count on our XD|GE global services team from the coordination of transportation logistics through the completion of site acceptance testing and into warranty and support phases of the product life cycle.

Access to our XD|GE support team for post commissioning needs is simplified to a single phone number or email address. Our global support center will be staffed 24x7 to field any incoming concerns and ensure our customer needs are fulfilled as quickly as possible. Our experienced and qualified XD|GE field service team has significant reach and leverage across the globe. The field service team will also have access to significant high-voltage power equipment domain expertise within XD|GE.

Our dedicated global service team comprises of qualified service engineers, in addition to a global field service network to deliver world-class Installation, commissioning and post-sales support.

Specialized Installation & Commissioning

- Logistics including coordination of ocean and inland transportation
- Complete installation services include rigging, labor (mechanical, and electrical)
- Receiving, rigging, and unloading
- Testing system commissioning
- Site acceptance testing



Post-Sales / Installation Support

- 24/7 Global customer service
- Multilingual operators available to respond to customer requests
- Emergency response hotline
- Several customer support access points available to obtain support (telephone, e-mail, fax, or web)
- Warranty backed by the strength of GE
- Local spare parts availability reinforced by a global spare parts reserve
- We offer a global system of maintenance and repair facilities

Insulator Type Tests

All insulators are designed and tested per requirements in IEC 60168, IEC 60273, and IEC 60815 and are available upon request.

Testing Includes

- Power frequency wet withstand
- Lightning critical flashover
- Lightning withstand
- Wet switching critical flashover
- Verification of dimensions
- Mechanical failing load cantilever test
- Compression strength
- Torsion test

Sample Tests

Multiple standard creep ratings are shown. Units need to have the following minimum creep requirements for the pollution severity classes defined in IEC 600815-1.

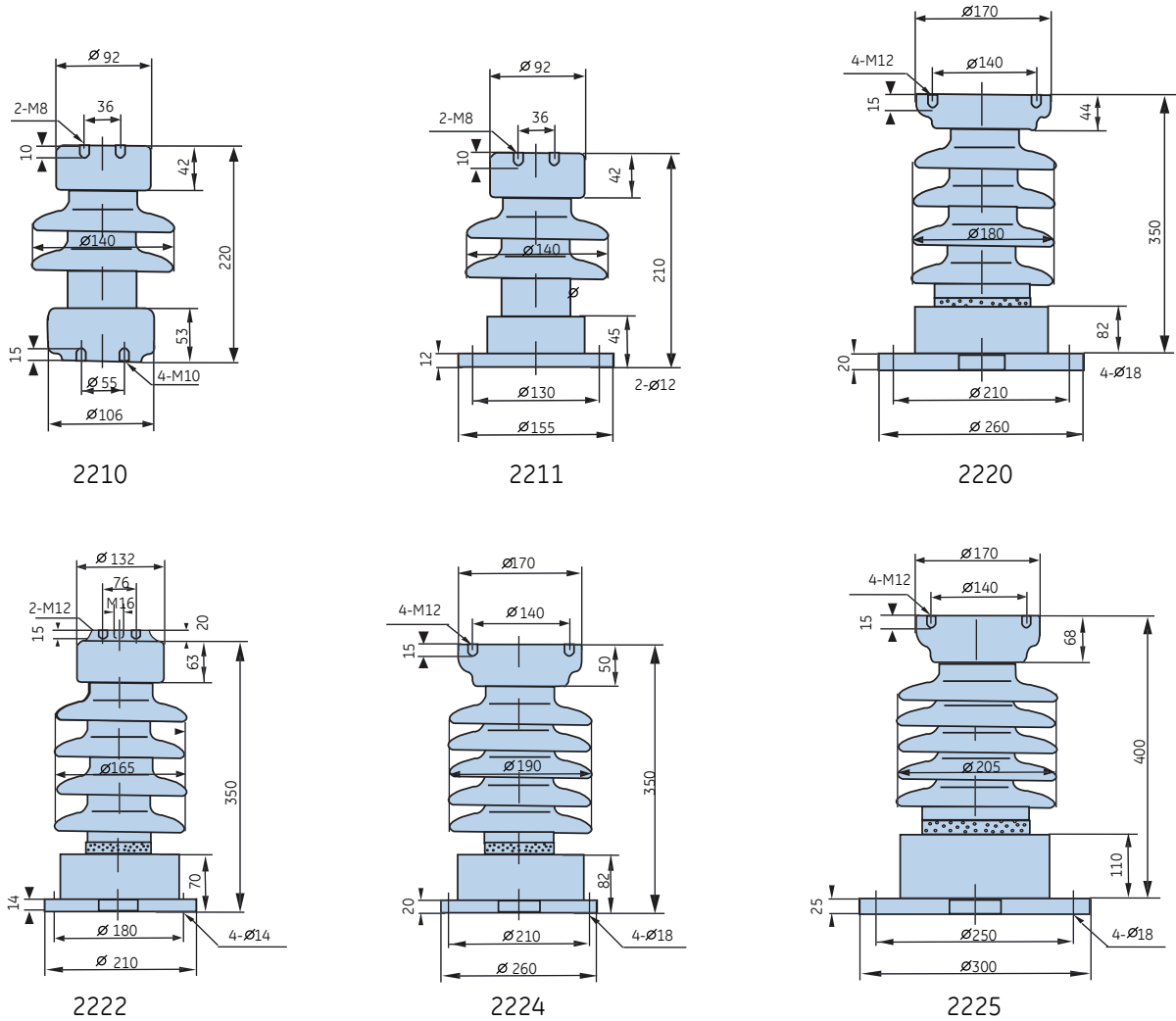
- Verification of dimensions
- Temperature cycle
- Porosity
- Galvanizing
- Cantilever failing strength
- Tensile failing strength

If there are additional creep requirements or any special application that cannot be met by items shown in catalog, contact your XD|GE representative.

Routine Tests

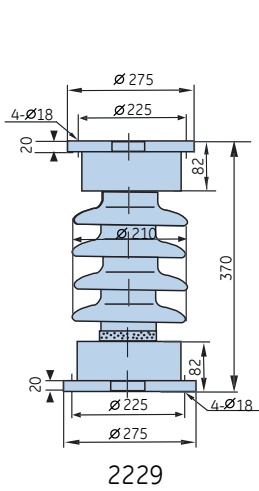
- Verification of dimensions
- Cantilever proof strength
- Tensile proof strength
- Bending moment

Post Insulators (10kV - 20kV)

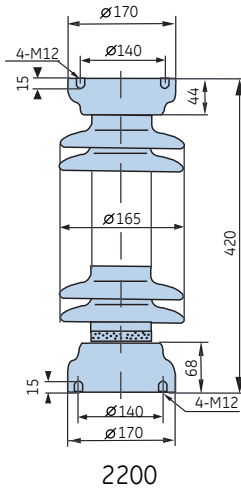


Cat. No	2210	2211	2220	2222	2224	2225		
Type	ZS-10/5L	ZS-10/4	ZS-20/10	ZS-20/8	ZS-20/16	ZS-20/30		
Rated Voltage (kV)	10	10	20	20	20	20		
Nominal Creepage Distance (mm)	230	230	400	400	470	470		
Mechanical Load (min)	Bending (kN)	5	4	10	8	16	30	
	Torsion (kN.m)	--	--	--	--	--	--	
Withstand Voltage (kV)	Lightning Impulse	75	75	150	150	150	150	
	Power Frequency	Dry	60	47	75	75	75	75
		Wet	30	30	50	50	50	50
Shed Number	2	2	4	4	5	5		
Weight (kg)	6	6	18	15	20	32		

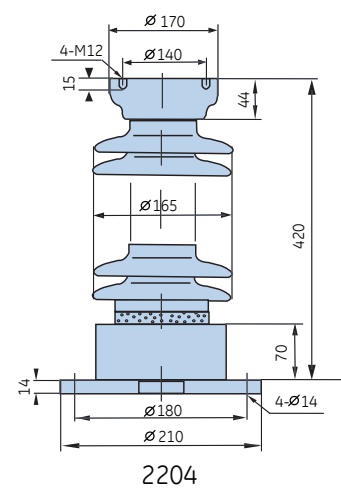
Post Insulators (20kV - 35kV)



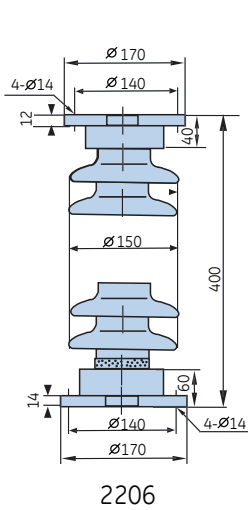
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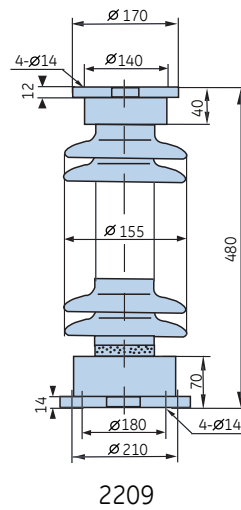
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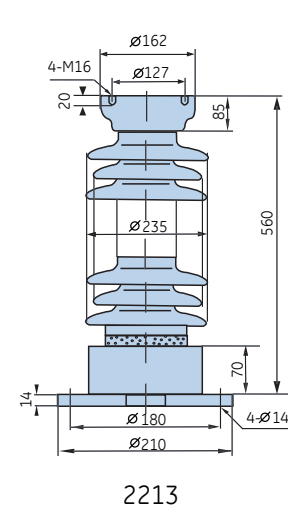
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2206



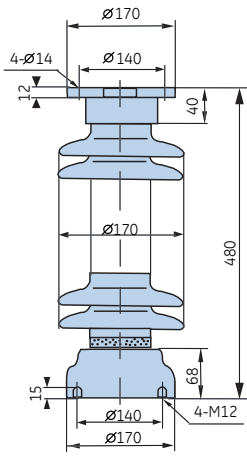
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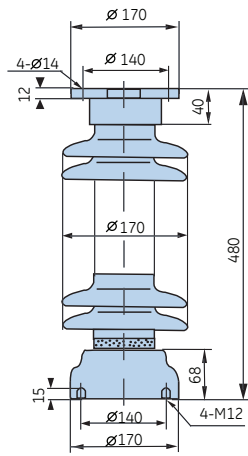
2213

Cat. No	2229	2200	2204	2206	2209	2213	
Type	ZY-20/20	ZS-35/6L	ZS-35/8	ZS-35/4K	ZS-35/4-G	ZSW1-35/4-4	
Rated Voltage (kV)	20	35	35	35	35	35	
Nominal Creepage Distance (mm)	400	648	625	648	650	1260	
Mechanical Load (min.)	Bending (kN)	20	6	8	4	4	
	Torsion (kN.m)	—	3.0	2.0	1.2	1.2	
Withstand Voltage (kV)	Lightning Impulse	150	185	185	185	200	
	Power Frequency	Dry	75	100	100	100	110
		Wet	50	80	80	80	70
Shed Number	4	7	6	7	7	big5 small4	
Weight (kg)	31	17	16	12	15	27	

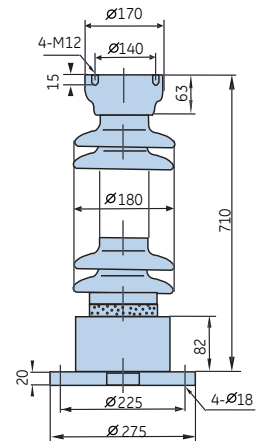
Post Insulators (35kV - 63kV)



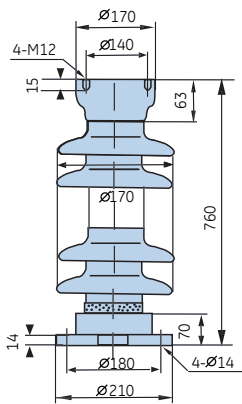
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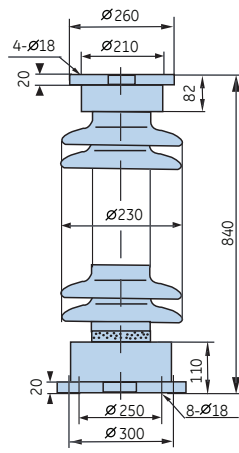
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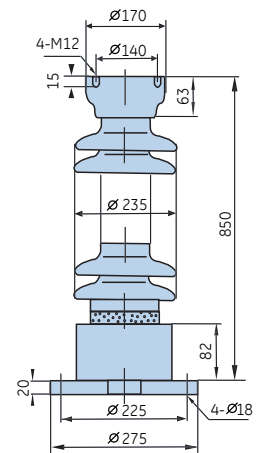
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2241



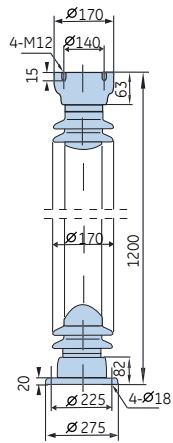
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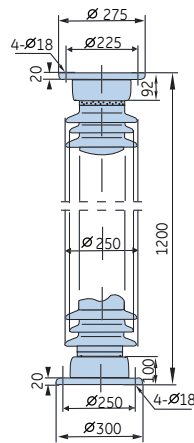
2830

Cat. No	2270	2271	2240	2241	2242	2830		
Type	ZSW-35/4-G	ZSW-35/4-G	ZS-63/5	ZS-63/4	ZS-63/15	ZSW-63/4-4		
Rated Voltage (kV)	35	35	63	63	63	63		
Nominal Creepage Distance (mm)	875	875	1160	1104	1104	2010		
Mechanical Load (min.)	Bending (kN)	4	4	5	4	15	4	
	Torsion (kN.m)	1.2	1.2	2.0	2.0	4.0	2.0	
Withstand Voltage (kV)	Lightning Impulse	200	200	325	325	325	325	
	Power Frequency	Dry	110	110	175	175	175	175
		Wet	70	70	140	140	140	140
Shed Number	7	7	11	10	9	15		
Weight (kg)	15	15	38	29	61	50		

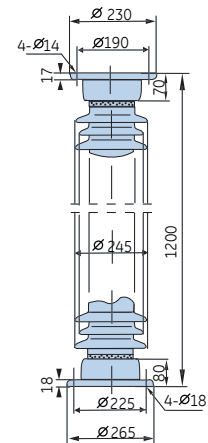
Post Insulators (110kV)



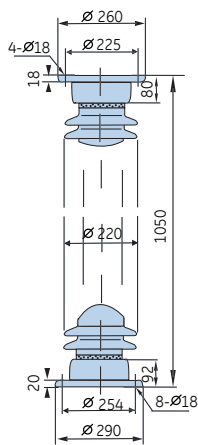
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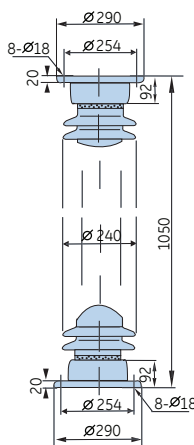
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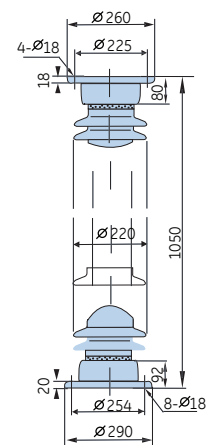
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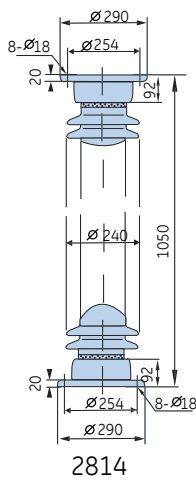
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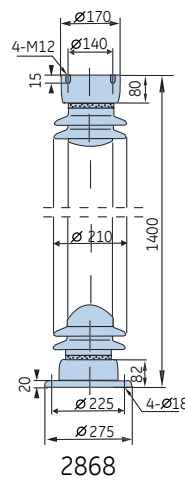
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Cat. No	2243	2272	2295	2810	2811	2811	
Type	ZS-110/4-G	ZSW-110/8K-2	ZSW-110/4K-2	ZS-110/10K	ZS-110-16K	ZS3-110-10K	
Rated Voltage (kV)	110	110	110	110	110	110	
Nominal Creepage Distance (mm)	2016	2830	3025	2142	2200	2650	
Mechanical Load (min.)	Bending (kN)	4	8	4	10	16	
	Torsion (kN.m)	2.0	4.0	3.0	4.0	6.0	
Withstand Voltage (kV)	Lightning Impulse	550	550	550	450	450	
	Power Frequency	Dry	300	300	300	245	245
		Wet	230	230	230	185	185
Shed Number	16	big 12 small 12	big12 small 12	18	18	23	
Weight (kg)	49	89	70	76	93	75	

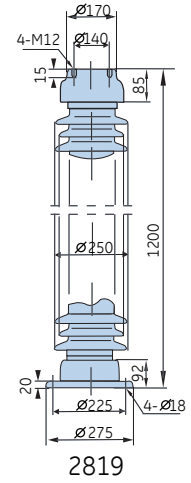
Post Insulators (110kV - 145kV)



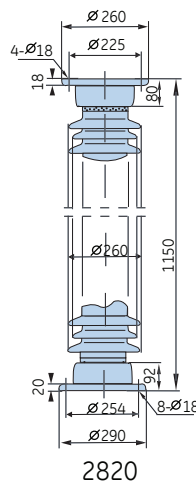
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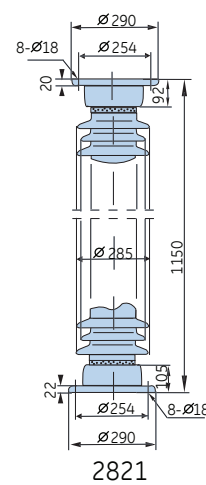
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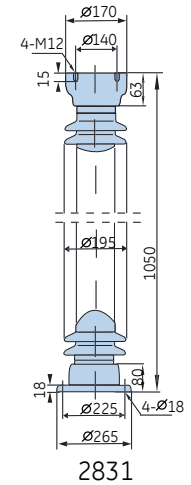
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2820



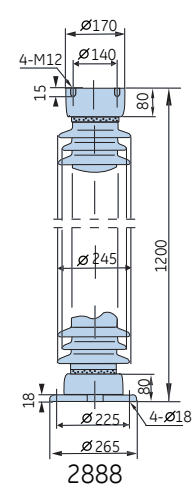
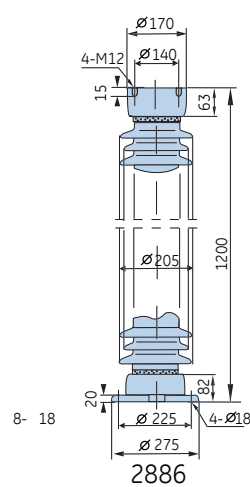
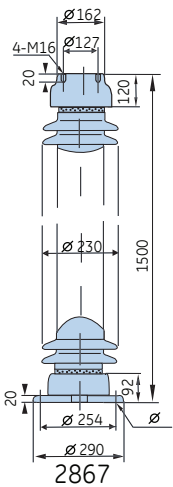
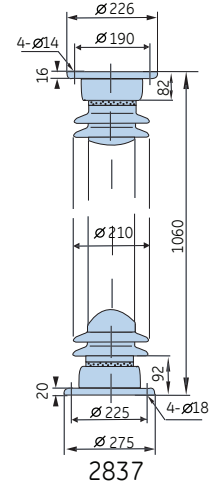
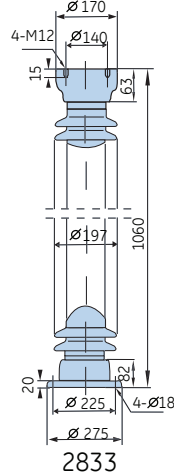
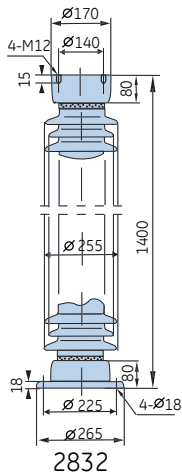
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2831

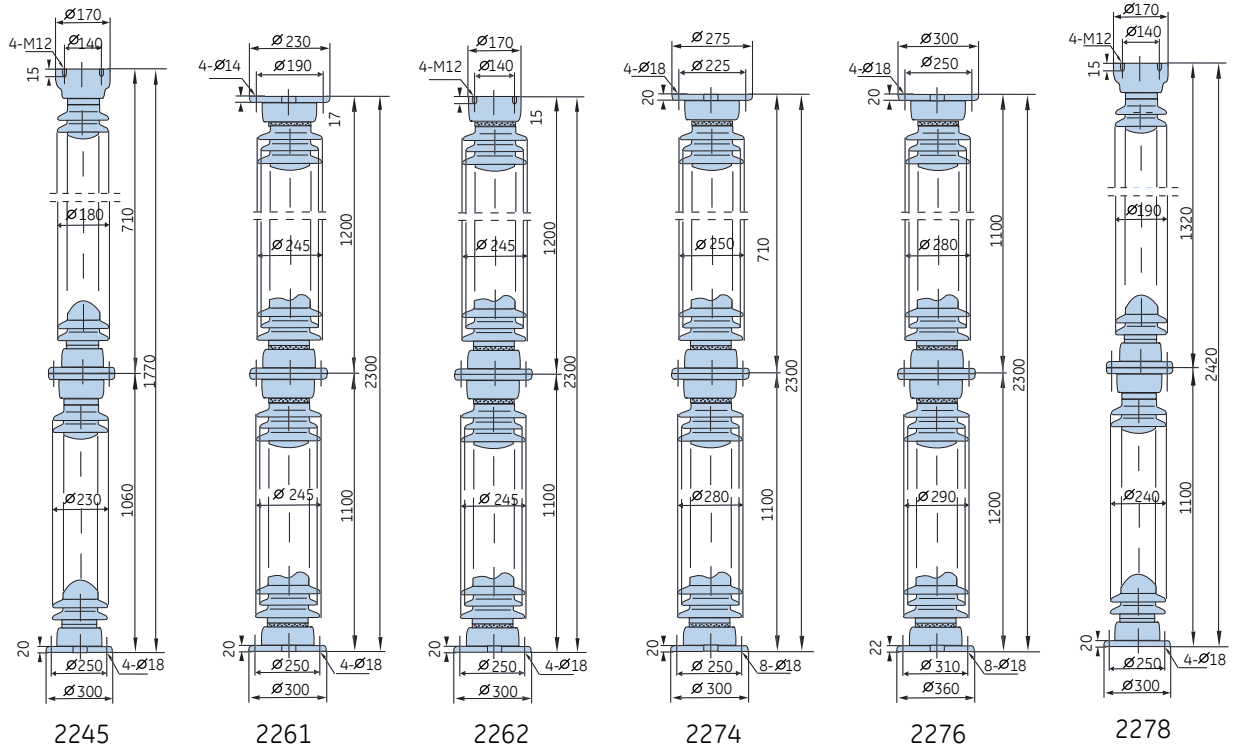
Cat. No	2814	2868	2819	2820	2821	2831	
Type	ZS-110/16K	ZS2-110/4-G	ZSW-110/6-3	ZSW-110/10K-3	ZSW-110/20K-3	ZSW-110/4	
Rated Voltage (kV)	110	110	110	110	110	110	
Nominal Creepage Distance (mm)	2650	2520	3150	3150	3200	2016	
Mechanical Load (min.)	Bending (kN)	16	4	6	10	20	4
	Torsion (kN.m)	6.0	2.0	3.0	4.0	6.0	2.0
Withstand Voltage (kV)	Lightning Impulse	450	650	450	450	450	450
	Power Frequency	Dry	245	375	245	245	245
Wet		185	275	185	185	185	185
Shed Number	23	19	big 12 small 12	big12 small12	big12 small12	16	
Weight (kg)	93	70	77	87	102	50	

Post Insulators (110kV)



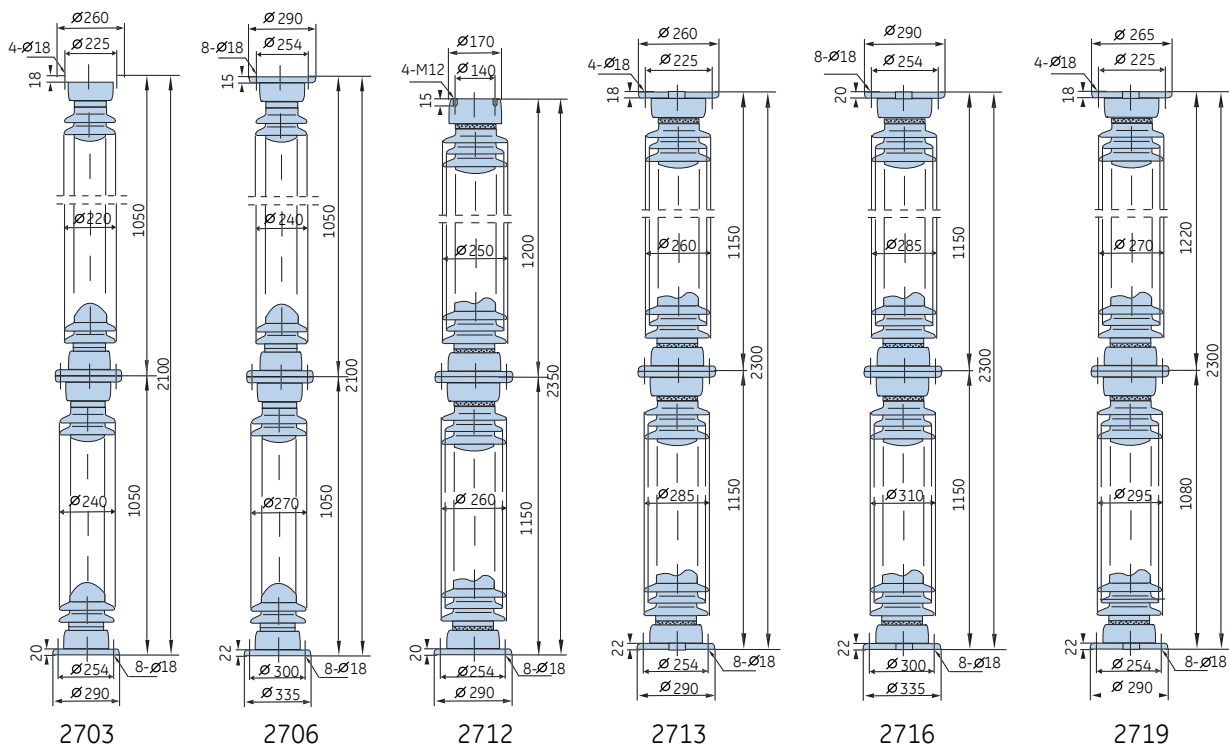
Cat. No	2832	2833	2837	2867	2886	2888	
Type	ZSW-110/4-4	ZS2-110/4	ZS-110/5	ZS-110/10-G	ZSW-110/4-2	ZSW2-110/4-2	
Rated Voltage (kV)	110	110	110	110	110	110	
Nominal Creepage Distance (mm)	3906	2142	1941	3300	2520	3050	
Mechanical Load (min.)	Bending (kN)	4	4	5	4	4	
	Torsion (kN.m)	2.0	2.0	2.0	4.0	3.0	
Withstand Voltage (kV)	Lightning Impulse	650	450	450	650	550	
	Power Frequency	Dry	375	245	245	375	300
		Wet	275	185	185	275	230
Shed Number	big12 small11	19	15	26	big14 small13	big12 small12	
Weight (kg)	72	50	56	108	59	71	

Post Insulator (154kV - 220kV)



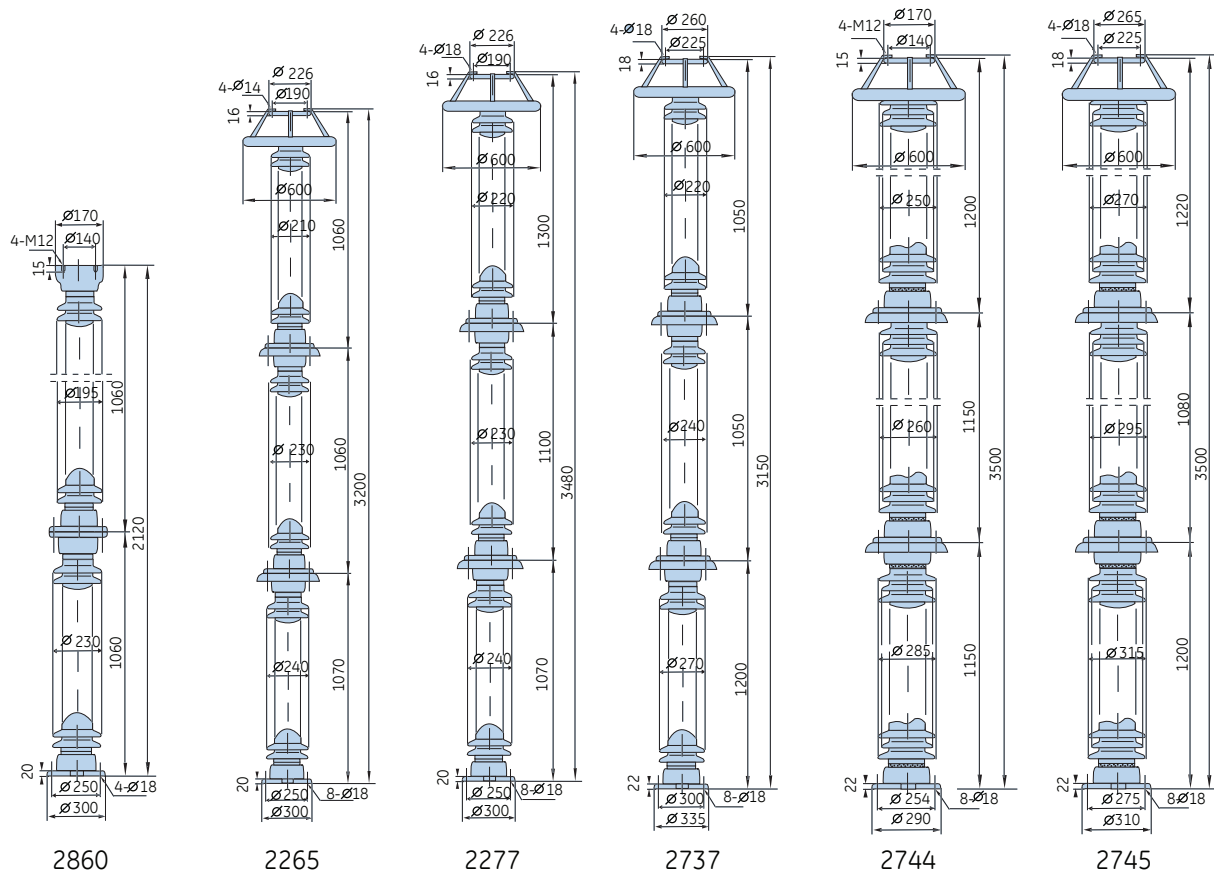
Cat. No	2245	2261	2262	2274	2276	2278		
Type	ZS-154/4	ZSW4-220/4K	ZSW2-220/4	ZSW1-220/8K-2	ZSW1-220/15K-2	ZS-220/4-G		
Rated Voltage (kV)	154	220	220	220	220	220		
Nominal Creepage Distance (mm)	2832	5500	5500	5500	5500	4510		
Mechanical Load (min)	Bending (kN)	4.0	4.0	4.0	8.0	15.0	4.0	
	Torsion (kN.m)	2.0	2.0	2.0	2.0	6.0	2.0	
Withstand Voltage (kV)	Lightning Impulse	660	1050	1050	1050	1050	1050	
	Switching Impulse	--	850	850	850	850	850	
	Power Frequency	Dry	375	525	525	525	525	525
		Wet	290	460	460	460	460	460
Stack Components	2240+2836	2295+2889	2888+2889	2272+2273	2273+2275	2283+2847		
Weight (kg)	115	146	150	189	239	139		

Post Insulator (220kV)



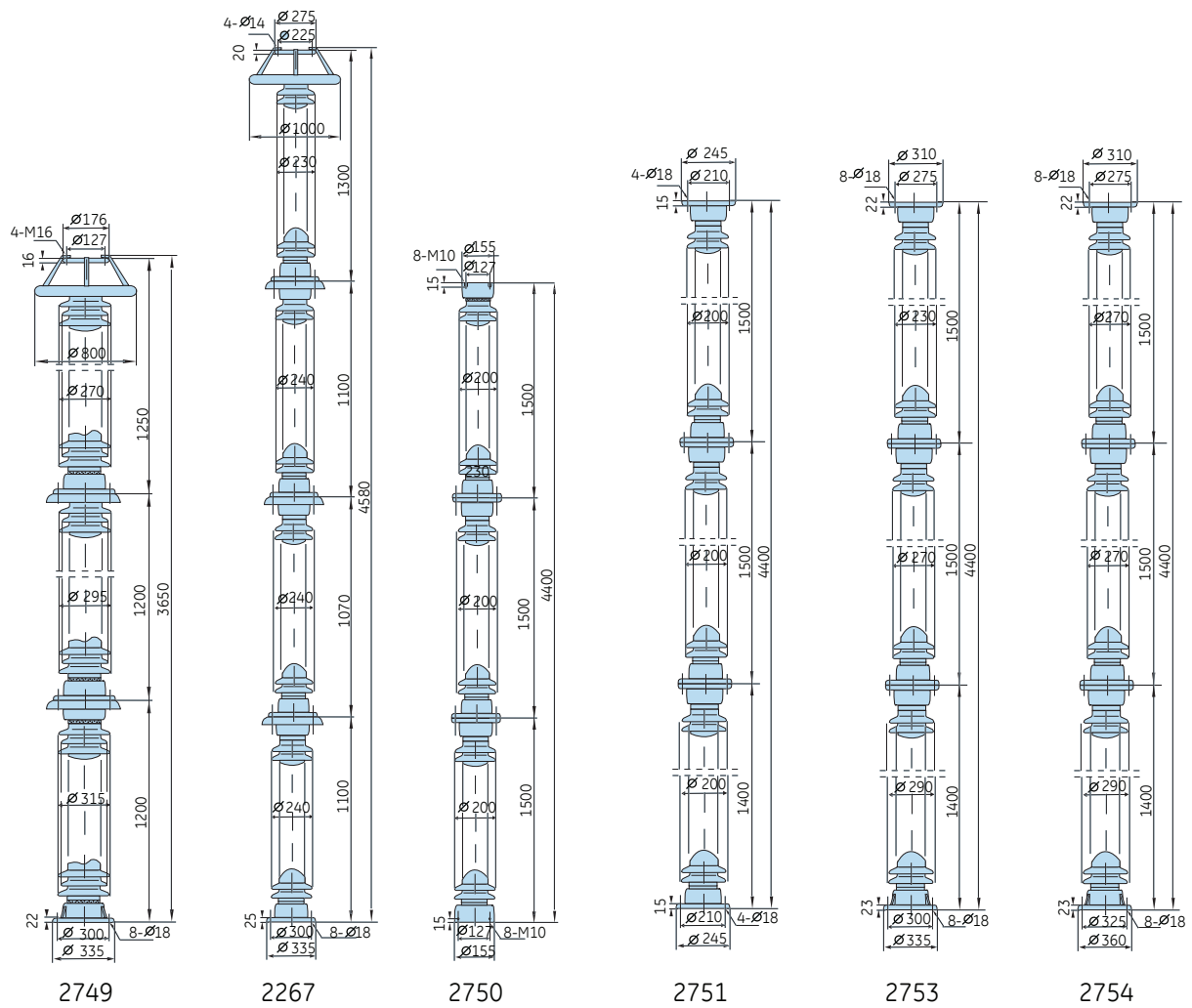
Cat. No		2703	2706	2712	2713	2716	2719	
Type		ZS-220/10K	ZS4-220/16K	ZSW-220/6-3	ZSW-220/10K-3	ZSW-220/16K-3	ZSW-220/8K-3	
Rated Voltage (kV)		220	220	220	220	220	220	
Nominal Creepage Distance (mm)		4284	4284	6300	6300	6300	6300	
Mechanical Load (min)	Bending (kN)	10.0	16.0	6.0	10.0	16.0	8.0	
	Torsion (kN.m)	4.0	6.0	3.0	4.0	6.0	10.0	
Withstand Voltage (kV)	Lightning Impulse	950	950	1050	1050	1050	1050	
	Switching Impulse	750	750	850	850	850	850	
	Power Frequency	Dry	490	490	525	525	525	525
		Wet	390	395	460	460	460	460
Stack Components		2810+2811	2811+2812	2819+2820	2820+2821	2821+2822	2850+2851	
Weight (kg)		169	207	164	190	232	219	

Post Insulator (220kV - 330kV)



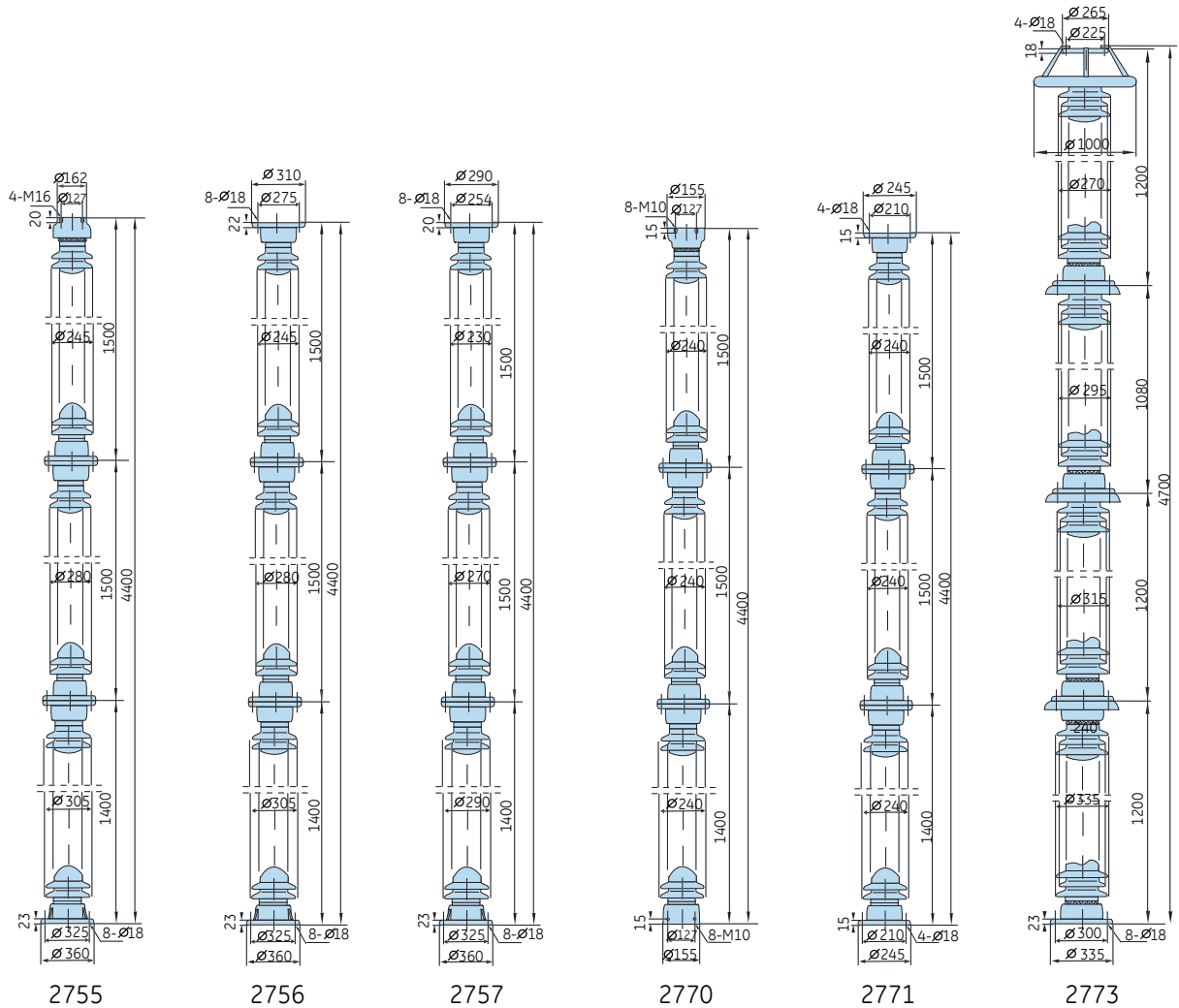
Cat. No	2860	2265	2277	2737	2744	2745		
Type	ZS-220/4	ZS-330/4K	ZS-330/5K	ZS3-330/10K	ZSW-330/6-3	ZSW1-330/8K-3		
Rated Voltage (kV)	220	330	330	330	330	330		
Nominal Creepage Distance (mm)	3740	5610	6740	7800	9075	9075		
Mechanical Load (min)	Bending (kN)	4.0	4.0	5.0	10.0	6.0	8.0	
	Torsion (kN.m)	2.0	2.0	2.0	6.0	3.0	10.0	
Withstand Voltage (kV)	Lightning Impulse	950	1425	1550	1425	1550	1550	
	Switching Impulse	750	1050	1175	1050	1175	1175	
	Power Frequency	Dry	490	695	740	695	740	740
		Wet	395	630	680	630	680	680
Stack Components	2831+2836	2837+2836+2848	2244+2847+2848	2813+2814+2815	2819+2820+2821	2850+2851+2852		
Weight (kg)	128	230	250	295	274	361		

Post Insulator (400kV - 500kV)



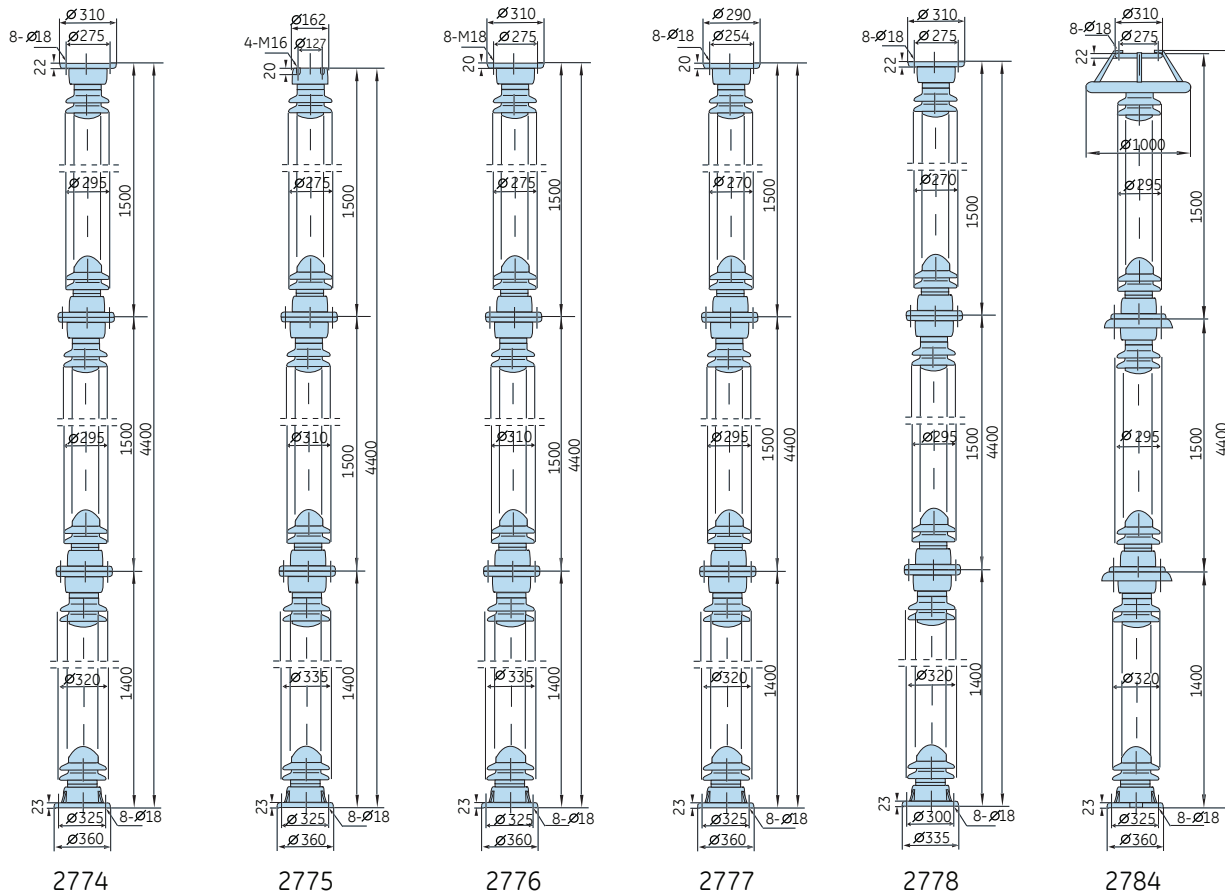
Cat. No	2749	2267	2750	2751	2753	2754		
Type	ZSW-400/8/3	ZS1-500/5K	ZC1-500/N4L	ZC1-500/N4K	ZS-500/8K	ZS1-500/11K		
Rated Voltage (kV)	400	500	500	500	500	500		
Nominal Creepage Distance (mm)	10810	8710	8800	8800	8800	800		
Mechanical Load (min)	Bending (kN)	8.0	5.0	--	--	8.0	11.0	
	Torsion (kN.m)	10.0	2.0	4.0	4.0	10.0	10.0	
Withstand Voltage (kV)	Lightning Impulse	1675	1950	1950	1950	1950	1950	
	Switching Impulse	1175	1300	1300	1300	1300	1300	
	Power Frequency	Dry	820	900	900	900	900	900
		Wet	740	800	800	800	800	800
Stack Components	2854+2855+2856	2846+2847+2848+2849	2871+2872+2873	2872+2872+2877	2861+2862+2863	2866+2866+2865		
Weight (kg)	390	385	193	198	432	465		

Post Insulator (500kV)



Cat. No		2755	2756	2757	2770	2771	2773	
Type		ZS1-500/14	ZS1-500/14K	ZS1-500/10K	ZCW-500/N4L-3	ZCW-500/N4K-3	ZSW1-500/8K-3	
Rated Voltage (kV)		500	500	500	500	500	500	
Nominal Creepage Distance (mm)		8800	8800	8800	13750	13750	13750	
Mechanical Load (min)	Bending (kN)	14.0	14.0	14.0	--	--	8.0	
	Torsion (kN.m)	10.0	10.0	10.0	4.0	4.0	10.0	
Withstand Voltage (kV)	Lightning Impulse	1950	1950	1950	1950	1950	1950	
	Switching Impulse	1300	1300	1300	1300	1300	1300	
	Power Frequency	Dry	900	900	900	900	900	900
		Wet	800	800	800	800	800	800
Stack Components		2881+2882+2883	2880+2882+2883	2864+2862+2865	2874+2875+2876	2875+2875+2878	2850+2851+2852+2853	
Weight (kg)		532	536	423	242	247	540	

Post Insulator (500kV)



Cat. No	2774	2775	2776	2777	2778	2784		
Type	ZSW1-500/11K-3	ZSW1-500/14-3	ZSW1-500/14K-3	ZSW1-500/10K-3	ZSW2-500/8K-3	ZSW2-500/11K-3		
Rated Voltage (kV)	500	500	500	500	500	500		
Nominal Creepage Distance (mm)	13750	13750	13750	13750	13750	13750		
Mechanical Load (min)	Bending (kN)	11.0	14.0	14.0	10.0	8.0	11.0	
	Torsion (kN.m)	10.0	10.0	10.0	10.0	10.0	10.0	
Withstand Voltage (kV)	Lightning Impulse	1950	1900	1900	1950	1950	1950	
	Switching Impulse	1300	1300	1300	1300	1300	1300	
	Power Frequency	Dry	900	900	900	900	900	900
		Wet	800	800	800	800	800	800
Stack Components	2896+2896+2897	2884+2885+2887	2890+2885+2887	2895+2896+2897	2894+2896+2898	2896+2896+2897		
Weight (kg)	530	530	554	494	494	540		



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