

# High Voltage Surge Arresters Buyer's Guide — Section HS PEXLIM P-T

# Zinc-Oxide Surge Arrester HS PEXLIM P-T

Protection of switchgear, transformers and other equipment in high voltage systems against atmospheric and switching overvoltages.

- in areas with very high lightning intensity
- where grounding or shielding conditions are poor or incomplete
- for important installations
- where energy requirements are very high (e.g. very long lines, capacitor protection).
- Specially suited to extreme seismic zones.

Superior where low weight, non-fragility and additional personnel safety is required.

 Other data can be ordered on request. Please



contact your local sales representative.

## Brief performance data

<b>System voltages (<math>U_m</math>)</b>	245 - 550 kV
<b>Rated voltages (<math>U_r</math>)</b>	180 - 444 kV
<b>Nominal discharge current (IEC)</b>	20 kA <sub>peak</sub>
<b>Classifying current (ANSI/IEEE)</b>	10/15 kA <sub>peak</sub>
<b>Discharge current withstand strength:</b>	
High current 4/10 $\mu$ s	100 kA <sub>peak</sub>
Low current 2000 $\mu$ s	1500 A <sub>peak</sub>
<b>Energy capability:</b>	
Line discharge class (IEC)	Class 4
[2 impulses, (IEC Cl. 8.5.5)]	10.5 kJ/kV ( $U_r$ )
Fulfils/exceeds requirements of ANSI transmission-line discharge test for 362 kV systems.	
<b>Short-circuit/Pressure relief capability</b>	65 kA <sub>sym</sub>
<b>External insulation</b>	Fulfils/exceeds standards
<b>Mechanical strength:</b>	
Specified long-term load (SLL)	19000 Nm
Specified short-term load (SSL)	28000 Nm
<b>Service conditions:</b>	
Ambient temperature	-50 °C to +45 °C
Design altitude	max. 1000 m
Frequency	15 - 62 Hz

# HS PEXLIM P-T

## Guaranteed protective data

Max. system voltage $U_m$	Rated voltage $U_r$	Max. continuous operating voltage <sup>1)</sup>		TOV capability <sup>2)</sup>		Max. residual voltage with current wave						
		as per IEC	as per ANSI/IEEE	1 s	10 s	30/60 $\mu$ s			8/20 $\mu$ s			
		$U_c$	MCOV			1 kA	2 kA	3 kA	5 kA	10 kA	20 kA	40 kA
kV <sub>rms</sub>	kV <sub>rms</sub>	kV <sub>rms</sub>	kV <sub>rms</sub>	kV <sub>rms</sub>	kV <sub>rms</sub>	kV <sub>peak</sub>	kV <sub>peak</sub>	kV <sub>peak</sub>	kV <sub>peak</sub>	kV <sub>peak</sub>	kV <sub>peak</sub>	kV <sub>peak</sub>
<b>245</b>	180	144	144	208	198	351	364	373	390	410	449	492
	192	154	154	222	211	375	388	398	415	437	479	525
	228	156	180	264	250	445	461	473	493	519	568	623
<b>300</b>	228	182	182	264	250	445	461	473	493	519	568	623
	240	191	191	278	264	468	485	497	519	546	598	656
	264	191	212	306	290	515	534	547	571	601	658	721
<b>362</b>	258	206	209	299	283	504	522	535	558	587	643	705
	264	211	212	306	290	515	534	547	571	601	658	721
	276	221	221	320	303	539	558	572	597	628	688	754
<b>380</b>	288	230	230	334	316	562	582	597	623	656	718	787
<b>400</b>	300	240	240	348	330	585	607	622	649	683	748	819
<b>420</b>	330	264	267	382	363	644	667	684	714	751	823	901
	360	267	291	417	396	702	728	746	779	819	897	983
	390	267	315	452	429	761	788	808	843	888	972	1070
<b>550</b>	396	317	318	459	435	773	800	820	856	901	987	1086
	420	336	336	487	462	819	849	870	908	956	1051	1152
	444	349	353	515	488	866	897	920	960	1015	1111	1217

More detailed information on the TOV capability and the protective characteristics are given in Publ. 1HSM 9543 13-01en.

1) The continuous operating voltages  $U_c$  (as per IEC) and MCOV (as per ANSI) differ only due to deviations in type test procedures.  
 $U_c$  has to be considered only when the actual system voltage is higher than the tabulated.  
 Any arrester with  $U_c$  higher than or equal to the actual system voltage divided by  $\sqrt{3}$  can be selected.

2) With prior duty equal to the maximum single-impulse energy stress (7.0 kJ/kV ( $U_r$ )).

Arresters with lower or higher rated voltages may be available on request for special applications.

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## Technical data for housings

Max. system voltage	Rated voltage	Housing	Creepage distance	External insulation *)				Dimensions					
				1.2/50 $\mu$ s dry	50 Hz wet (60s)	60 Hz wet (10s)	250/2500 $\mu$ s wet	Mass	A <sub>max</sub>	B	C	D	Fig.
U <sub>m</sub>	U <sub>r</sub>												
kV <sub>rms</sub>	kV <sub>rms</sub>		mm	kV <sub>peak</sub>	kV <sub>rms</sub>	kV <sub>rms</sub>	kV <sub>peak</sub>	kg	mm	mm	mm	mm	mm
245	180-192	TM245	4950	750	350	350	525	115	1770	600	-	300	1
	180-192	TH245	7150	1081	524	510	750	150	2310	800	-	500	1
	228	TH245	7150	1081	524	510	750	150	2310	600	-	300	1
300	228-264	TM300	7150	1081	524	510	750	150	2310	900	-	400	1
	228	TV300	9900	1500	700	700	1050	245	3495	1400	1000	700	3
	240	TV300	9900	1500	700	700	1050	245	3495	1200	1000	600	3
	264	TV300	9900	1500	700	700	1050	235	3495	900	-	500	2
362	258-264	TH362	9900	1500	700	700	1050	245	3495	1600	1000	1000	3
	276	TH362	9900	1500	700	700	1050	240	3495	1200	1000	800	3
380	288	TH380	9900	1500	700	700	1050	240	3495	1400	1000	700	3
400	300	TM400	9900	1500	700	700	1050	240	3495	1400	1000	700	3
420	330-390	TH420	12100	1831	874	860	1275	270	4035	1200	1000	800	3
550	396	TH550	13900	2162	1048	1020	1500	315	4890	1800	1000	1000	4
	420	TH550	13900	2162	1048	1020	1500	315	4890	1800	800	1000	4
	444	TH550	14850	2250	1050	1050	1575	365	5540	1800	1000	1000	5

\*) Sum of withstand voltages for empty units of arrester.

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## Technical data for housings

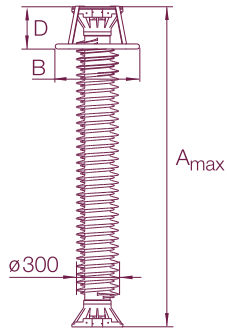


Figure 1

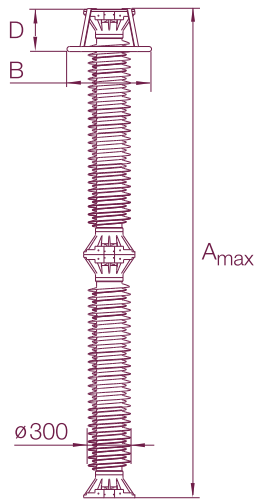


Figure 2

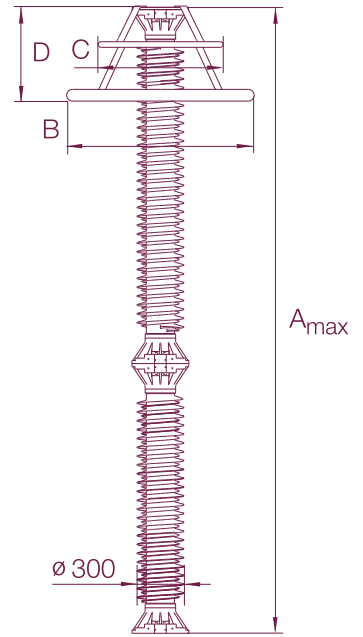


Figure 3

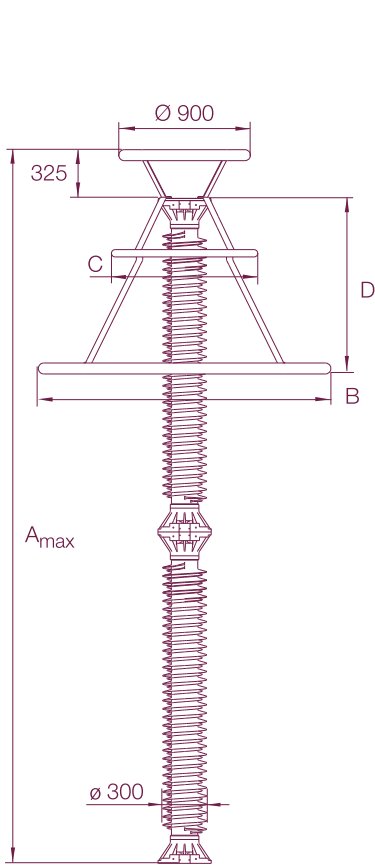


Figure 4

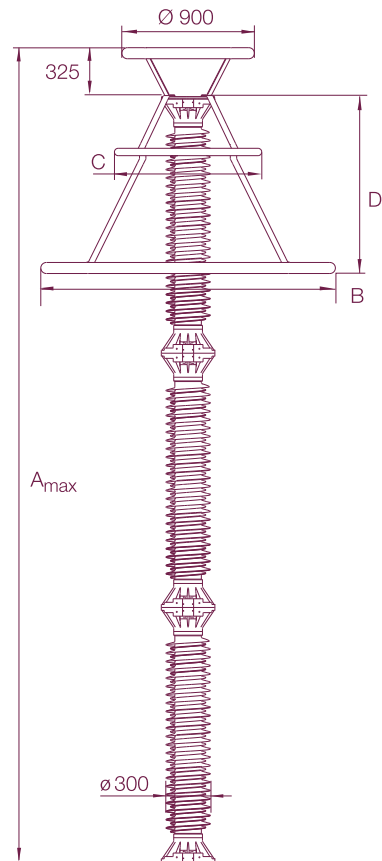
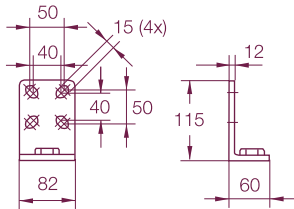


Figure 5

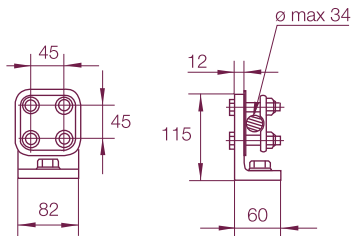
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## Accessories

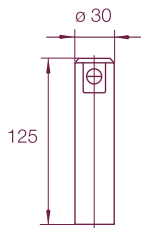
### Line terminals



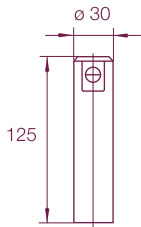
**1HSA410 000-A**  
Aluminium



**1HSA410 000-B**  
Aluminium flag with other  
items in stainless steel

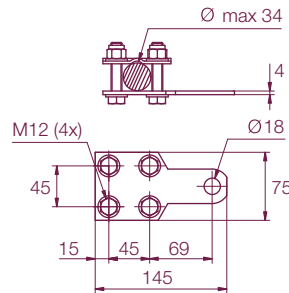


**1HSA410 000-C**  
Aluminium

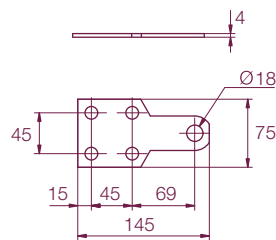


**1HSA410 000-D**  
Stainless steel

### Earth terminals

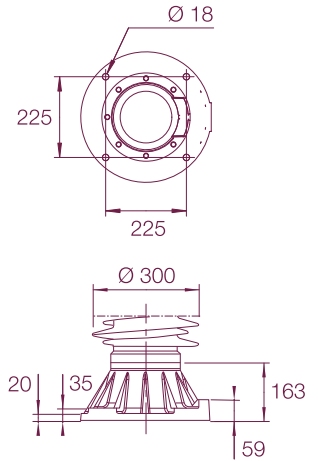


**1HSA420 000-U**  
Stainless steel

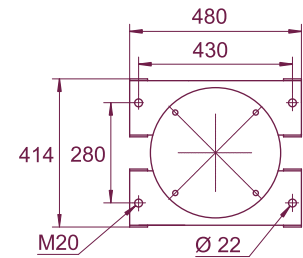
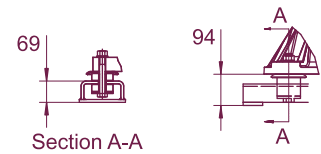


**1HSA420 000-V**  
Stainless steel

### Drilling plans



Without insulating base  
Aluminium



Insulating base  
**1HSA430 000-P**  
Galvanized steel

M20 bolts for connection to  
structure are not supplied by ABB.

# HS PEXLIM P-T

## Shipping data

Rated voltage $U_r$	Housing	Number of arresters per crate					
		One		Three		Six	
$kV_{rms}$		Volume	Gross	Volume	Gross	Volume	Gross
		$m^3$	kg	$m^3$	kg	$m^3$	kg
180	TM245	2.4	208	2.4	476	4.8	953
192	TM245	2.4	208	2.4	474	4.8	949
180	TH245	5.6	308	5.6	645	6.5	1200
192	TH245	5.6	307	5.6	643	6.5	1196
228	TH245	5.4	299	5.4	628	6.0	1167
228	TM300	5.6	307	5.6	642	6.5	1194
240	TM300	5.6	306	5.6	640	6.5	1190
264	TM300	5.6	303	5.6	631	6.5	1172
228	TV300	2.4	351	4.4	905	-	-
240	TV300	2.3	334	4.2	883	-	-
264	TV300	2.6	329	4.3	860	-	-
258	TH362	2.8	393	5.3	969	-	-
264	TH362	2.8	392	5.3	968	-	-
276	TH362	2.3	333	4.2	879	-	-
288	TH380	2.4	346	4.5	890	-	-
300	TM400	2.4	347	4.5	891	-	-
330	TH420	5.2	423	5.5	1000	-	-
360	TH420	5.2	420	5.5	990	-	-
390	TH420	5.2	416	5.5	980	-	-
396	TH550	5.8	523	6.6	1210	-	-
420	TH550	5.8	521	6.6	1203	-	-

Rated voltage $U_r$	Housing	Number of arresters per crate			
		One		Two	
$kV_{rms}$		Volume	Gross	Volume	Gross
		$m^3$	kg	$m^3$	kg
444	TH550	3.7	562	5.5	975

Each crate contains a certain number of arrester units and accessories for assembly and erection. A packing list is attached externally on each crate.

Each separate crate is numbered and the numbers of all crates and their contents are listed in the shipping specifica-

tion. ABB reserves the right to pack arresters in the most effective/economic combination. Alternate or non-standard crates may involve additional charges.



The table above is to be seen as an approximation and specific data for deliveries may differ from the values given.

For more information please contact:

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