

# Spacer Dampers

For Effective Protection of Conductor Bundles

# Best Solution for Each Bundle Configuration

## General

For high voltage transmission lines, conductor bundles are used for each phase to fulfil electrical requirements.

Spacing devices are installed on the bundles to maintain subconductor separation. Elastic and damping elements are introduced into the spacing devices for distributing the damping effect along the spans which prevents entrapment of vibration between Spacer Dampers and avoids bending stresses at the clamps.

## Key Data

PFISTERER has been developing Spacer Dampers since 1980 to provide the correct damping of wind-induced vibrations for bundled conductor lines. Modern Spacer Dampers are characterized by an accurate coordination between the inertial and elastic damping properties. This provides maximum effectiveness in controlling the levels of subconductor motions.

## Features

- Maintain the design spacing between subconductors under normal service conditions
- Control the levels of aeolian vibrations and subspan oscillations within the internationally accepted safety limits
- Preserve mechanical, elastic and damping properties over the entire service temperature range and for the expected lifetime of the line
- Maintenance-free for the whole lifetime of the line
- Permit movement of the subconductors in any direction without damaging the spacer components or the subconductors strands
- Maintain a suitable clamp grip
- Guarantee high corona extinction voltage due to proper clamp design and manufacturing
- Withstand minimum short circuit current of 63 kA for 1 sec



Twin Spacer Damper



Triple Spacer Damper



Quad Spacer Damper

# History PFISTERER's Spacer Damper

**1973**

Development of PFISTERER first semi flexible Spacer

**1979**

Setup of PFISTERER outdoor test span for self damping measurements

**1980**

Development of PFISTERER first Spacer Dampers

**1982**

First field vibration measurements made by PFISTERER

**1986**

Introduction of PFISTERER Software for analytical vibration damping studies

**1991**

Field vibration measurements made by first generation PFISTERER field vibration recorder

**2001**

New double frame Spacer Damper design developed

**2002**

Upgrade of PFISTERER internal laboratory for mechanical type testing as acc. to IEC 61854

**2006**

Spacer Damper for UHV hex bundle applications developed

**2008**

World first subspan oscillation recorder introduced

**2009**

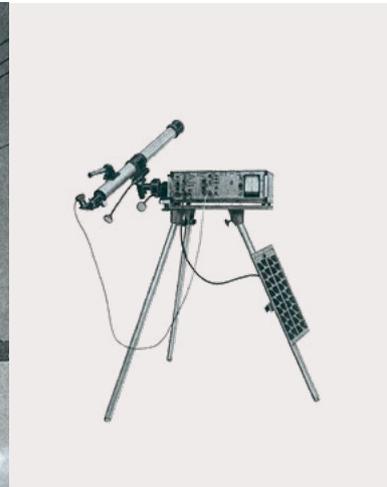
World first wireless field vibration measurement device developed

**2014**

Upgrade of PFISTERER Spacer Damper designs

**2016**

High temperature boltless spacer damper clamp type developed

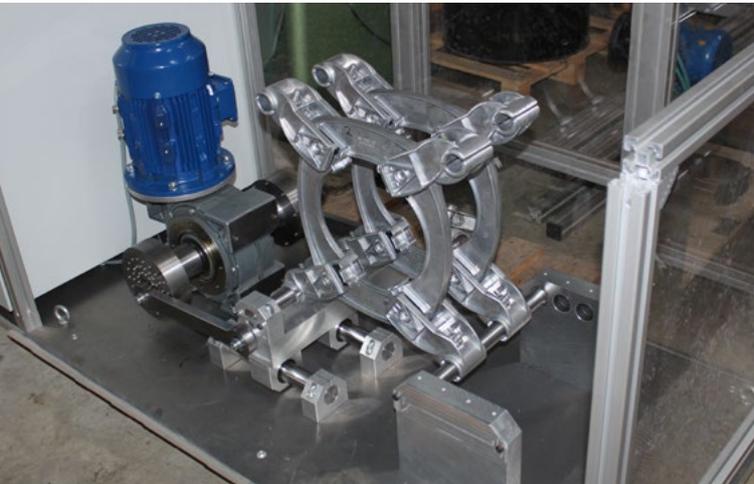
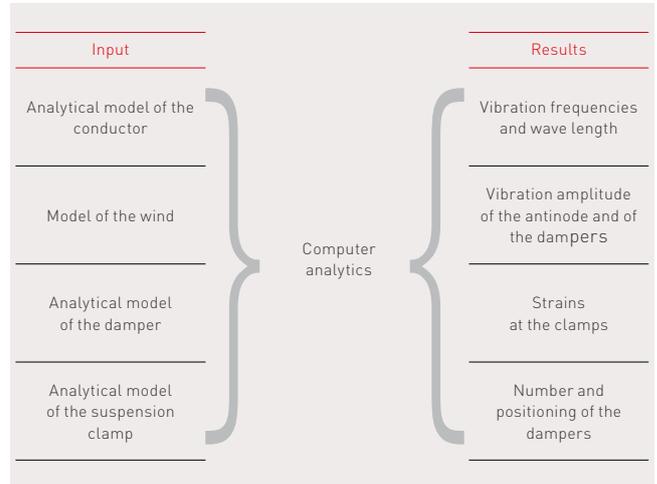


# Special Features

## Analytical Vibration Damping Study

The analytical vibration damping studies are made at the design stage to predict the vibration behaviour of single and bundled conductors.

The calculations are based on the energy balance between the energy introduced by the wind and the energy dissipated by the conductors with and without the relevant damping units. As a result, the most suitable damping system including the right type, numbers of dampers and their exact position can be provided.



Fatigue type testing of a quad Spacer Damper



Subspan oscillation recorder VR500 PT

## Test Facilities

PFISTERER runs its own laboratory for vibration damper and conductor self-damping testing since 1979. In this laboratory, design, type and sample testing is carried out in accordance with the appropriate standards and in the presence of inspectors if required.

The laboratory personnel are in charge of research and development as well as routine quality testing. This ensures that the products are in a worldwide leading position in terms of service, performance and quality consistency, even for large quantities supplies.

## Field Vibration Measurements

PFISTERER has developed an unique, wireless, conductor vibration recorder, the VIBREC500, for aeolian and subspan oscillation field measurements. These recorders are used to verify the conductor vibration severity and to confirm that the damping system installed on the transmission line is correct.

# Reliable Clamp Designs

## General

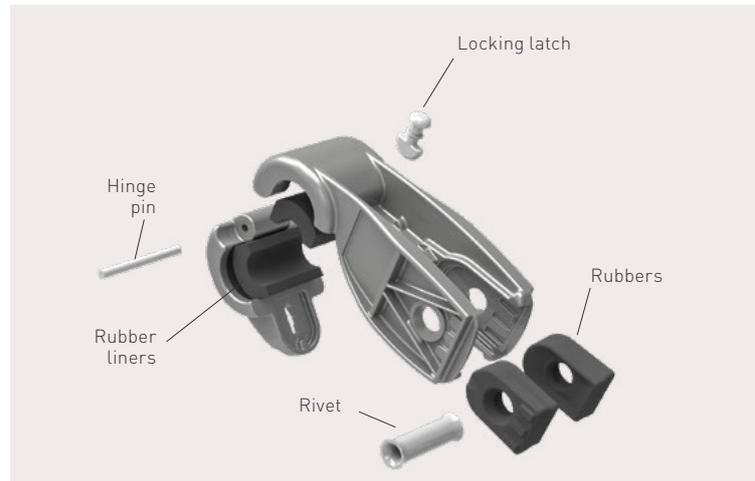
The PFISTERER Spacer Dampers are available with two different clamp designs. Both, the nut cracker and the cantilever clamp type designs provide a firm but gentle and permanent grip while protecting the conductor against the local static and dynamic stresses occurring during normal operation conditions. The weight of the clamps are as light as possible in order to maintain their mobility at the highest frequencies of aeolian vibrations and to avoid nodal points on the conductors that would impair the damping unit performance and increase bending strain at the clamp attachment. They provide sufficient clamp grip to restrain the subconductor from slipping and rotating inside the clamp during the normal service conditions. The fastening systems consider an appropriate anti-unscrewing to prevent any loosening of the clamp due to conductor vibrations and oscillations. Moreover, great care has been taken in selecting the clamp materials to avoid any corrosion.

## Nut Cracker Clamp Type

The nut cracker clamp type is rubber lined and boltless. For the correct installation, an additional assembling tool is required to finally lock the clamp system with a quarter turn locking latch.

### Materials

- Body and clamps: high pressure die cast aluminium alloy
- Rubber elements: elastomer
- Locking latch: stainless steel



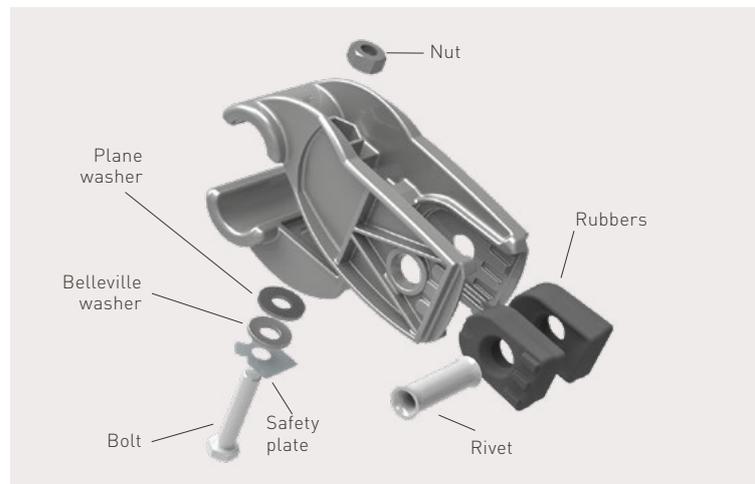
Nut cracker clamp type

## Cantilever Clamp Type

The cantilever clamp type is directly attached to the conductor. For the correct installation and tightening of the bolt, the use of a calibrated torque wrench is mandatory.

### Materials

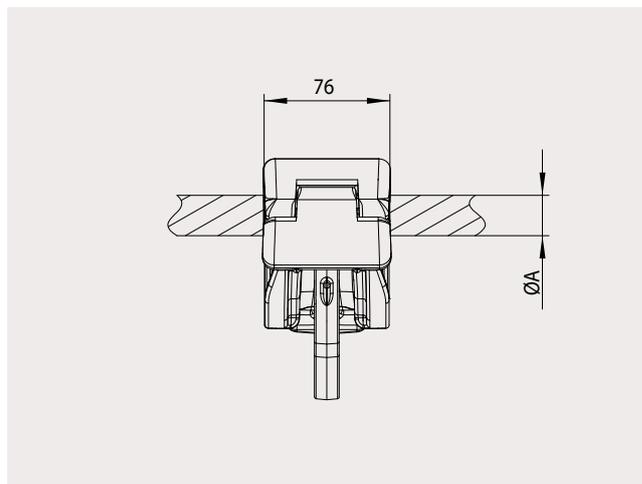
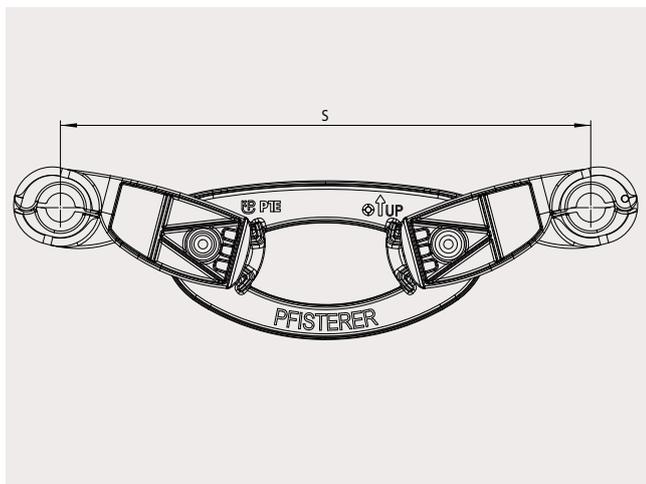
- Body and clamps: high pressure die cast aluminium alloy
- Rubber elements: elastomer
- Bolts, nuts, plain washers: galvanized steel
- Belleville washers: mechanically galvanized steel
- Safety plates: stainless steel



Cantilever clamp type

# Twin Spacer Damper

## Nut Cracker Clamp Type



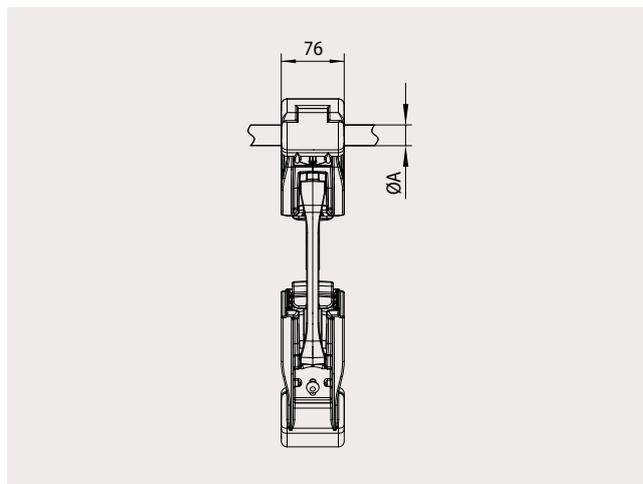
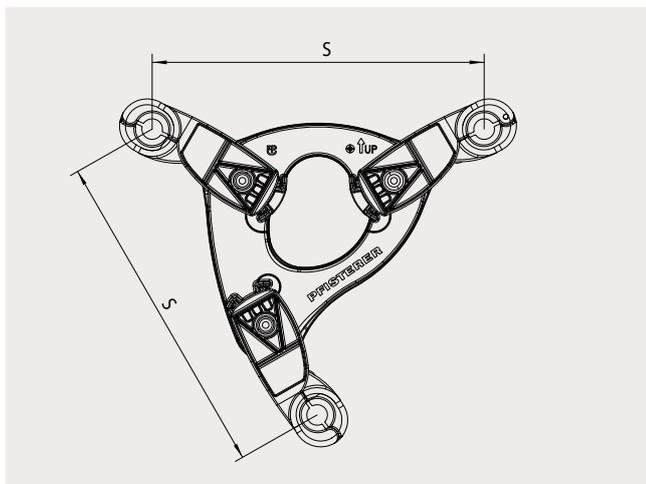
## Order Information

Ø Conductor Range "A" [mm]	Bundle Spacing "S" [mm]		
	400 Part Number	450 Part Number	500 Part Number
Ø 16.0 - 16.5	186 954-011	186 954-091	186 954-231
Ø 16.5 - 17.0	186 954-012	186 954-092	186 954-232
Ø 17.0 - 17.5	186 954-013	186 954-093	186 954-233
Ø 17.5 - 18.0	186 954-014	186 954-094	186 954-234
Ø 18.0 - 18.5	186 954-015	186 954-095	186 954-235
Ø 18.5 - 19.0	186 954-016	186 954-096	186 954-236
Ø 19.0 - 19.5	186 954-017	186 954-097	186 954-237
Ø 19.5 - 20.0	186 954-018	186 954-098	186 954-238
Ø 20.0 - 20.5	186 954-019	186 954-099	186 954-239
Ø 20.5 - 21.0	186 954-020	186 954-100	186 954-240
Ø 21.0 - 21.5	186 954-021	186 954-101	186 954-241
Ø 21.5 - 22.0	186 954-022	186 954-102	186 954-242
Ø 22.0 - 22.5	186 954-023	186 954-103	186 954-243
Ø 22.5 - 23.0	186 954-024	186 954-104	186 954-244
Ø 23.0 - 23.5	186 954-025	186 954-105	186 954-245
Ø 23.5 - 24.0	186 954-026	186 954-106	186 954-246
Ø 24.0 - 24.5	186 954-027	186 954-107	186 954-247
Ø 24.5 - 25.0	186 954-028	186 954-108	186 954-248
Ø 25.0 - 25.5	186 954-029	186 954-109	186 954-249
Ø 25.5 - 26.0	186 954-030	186 954-110	186 954-250
Ø 26.0 - 26.5	186 954-031	186 954-111	186 954-251
Ø 26.5 - 27.0	186 954-032	186 954-112	186 954-252
Ø 27.0 - 27.5	186 954-033	186 954-113	186 954-253
Ø 27.5 - 28.0	186 954-034	186 954-114	186 954-254
Ø 28.0 - 28.5	186 954-035	186 954-115	186 954-255
Ø 28.5 - 29.0	186 954-036	186 954-116	186 954-256

Ø Conductor Range "A" [mm]	Bundle Spacing "S" [mm]		
	400	450	500
	Part Number	Part Number	Part Number
Ø 29.0 - 29.5	186 954-037	186 954-117	186 954-257
Ø 29.5 - 30.0	186 954-038	186 954-118	186 954-258
Ø 30.0 - 30.5	186 954-039	186 954-119	186 954-259
Ø 30.5 - 31.0	186 954-040	186 954-120	186 954-260
Ø 31.0 - 31.5	186 954-041	186 954-121	186 954-261
Ø 31.5 - 32.0	186 954-042	186 954-122	186 954-262
Ø 32.0 - 32.5	186 954-043	186 954-123	186 954-263
Ø 32.5 - 33.0	186 954-044	186 954-124	186 954-264
Ø 33.0 - 33.5	186 954-045	186 954-125	186 954-265
Ø 33.5 - 34.0	186 954-046	186 954-126	186 954-266
Ø 34.0 - 34.5	186 954-047	186 954-127	186 954-267
Ø 34.5 - 35.0	186 954-048	186 954-128	186 954-268
Ø 35.0 - 35.5	186 954-049	186 954-129	186 954-269
Ø 35.5 - 36.0	186 954-050	186 954-130	186 954-270
Ø 36.0 - 36.5	186 954-051	186 954-131	186 954-271
Ø 36.5 - 37.0	186 954-052	186 954-132	186 954-272
Ø 37.0 - 37.5	186 954-053	186 954-133	186 954-273
Ø 37.5 - 38.0	186 954-054	186 954-134	186 954-274
Ø 38.0 - 38.5	186 954-055	186 954-135	186 954-275
Ø 38.5 - 39.0	186 954-056	186 954-136	186 954-276
Ø 39.0 - 39.5	186 954-057	186 954-137	186 954-277
Ø 39.5 - 40.0	186 954-058	186 954-138	186 954-278
Ø 40.0 - 40.5	186 954-059	186 954-139	186 954-279
Ø 40.5 - 41.0	186 954-060	186 954-140	186 954-280
Ø 41.0 - 41.5	186 954-061	186 954-141	186 954-281
Ø 41.5 - 42.0	186 954-062	186 954-142	186 954-282
Ø 42.0 - 42.5	186 954-063	186 954-143	186 954-283
Ø 42.5 - 43.0	186 954-064	186 954-144	186 954-284
Ø 43.0 - 43.5	186 954-065	186 954-145	186 954-285
Ø 43.5 - 44.0	186 954-066	186 954-146	186 954-286
Ø 44.0 - 44.5	186 954-067	186 954-147	186 954-287
Ø 44.5 - 45.0	186 954-068	186 954-148	186 954-288
Ø 45.0 - 45.5	186 954-069	186 954-149	186 954-289
Ø 45.5 - 46.0	186 954-070	186 954-150	186 954-290
Ø 46.0 - 46.5	186 954-071	186 954-151	186 954-291
Ø 46.5 - 47.0	186 954-072	186 954-152	186 954-292
Ø 47.0 - 47.5	186 954-073	186 954-153	186 954-293
Ø 47.5 - 48.0	186 954-074	186 954-154	186 954-294
Ø 48.0 - 48.5	186 954-075	186 954-155	186 954-295
Ø 48.5 - 49.0	186 954-076	186 954-156	186 954-296
Ø 49.0 - 49.5	186 954-077	186 954-157	186 954-297
Ø 49.5 - 50.0	186 954-078	186 954-158	186 954-298

# Triple Spacer Damper

## Nut Cracker Clamp Type



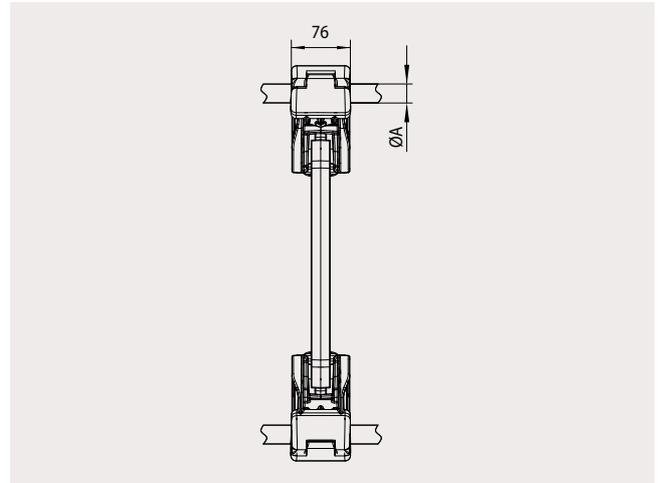
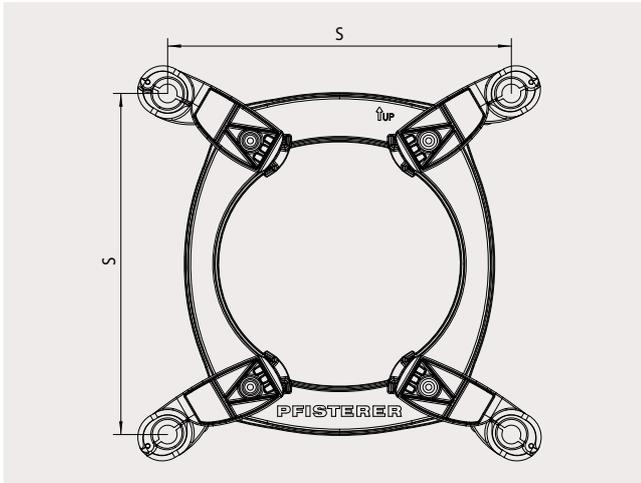
## Order Information

Ø Conductor Range "A" [mm]	Bundle Spacing "S" [mm]		
	400 Part Number	450 Part Number	500 Part Number
Ø 16.0 - 16.5	186 954-641	186 954-711	186 954-851
Ø 16.5 - 17.0	186 954-642	186 954-712	186 954-852
Ø 17.0 - 17.5	186 954-643	186 954-713	186 954-853
Ø 17.5 - 18.0	186 954-644	186 954-714	186 954-854
Ø 18.0 - 18.5	186 954-645	186 954-715	186 954-855
Ø 18.5 - 19.0	186 954-646	186 954-716	186 954-856
Ø 19.0 - 19.5	186 954-647	186 954-717	186 954-857
Ø 19.5 - 20.0	186 954-648	186 954-718	186 954-858
Ø 20.0 - 20.5	186 954-649	186 954-719	186 954-859
Ø 20.5 - 21.0	186 954-650	186 954-720	186 954-860
Ø 21.0 - 21.5	186 954-651	186 954-721	186 954-861
Ø 21.5 - 22.0	186 954-652	186 954-722	186 954-862
Ø 22.0 - 22.5	186 954-653	186 954-723	186 954-863
Ø 22.5 - 23.0	186 954-654	186 954-724	186 954-864
Ø 23.0 - 23.5	186 954-655	186 954-725	186 954-865
Ø 23.5 - 24.0	186 954-656	186 954-726	186 954-866
Ø 24.0 - 24.5	186 954-657	186 954-727	186 954-867
Ø 24.5 - 25.0	186 954-658	186 954-728	186 954-868
Ø 25.0 - 25.5	186 954-659	186 954-729	186 954-869
Ø 25.5 - 26.0	186 954-660	186 954-730	186 954-870
Ø 26.0 - 26.5	186 954-661	186 954-731	186 954-871
Ø 26.5 - 27.0	186 954-662	186 954-732	186 954-872
Ø 27.0 - 27.5	186 954-663	186 954-733	186 954-873
Ø 27.5 - 28.0	186 954-664	186 954-734	186 954-874
Ø 28.0 - 28.5	186 954-665	186 954-735	186 954-875
Ø 28.5 - 29.0	186 954-666	186 954-736	186 954-876

Ø Conductor Range "A" [mm]	Bundle Spacing "S" [mm]		
	400	450	500
	Part Number	Part Number	Part Number
Ø 29.0 - 29.5	186 954-667	186 954-737	186 954-877
Ø 29.5 - 30.0	186 954-668	186 954-738	186 954-878
Ø 30.0 - 30.5	186 954-669	186 954-739	186 954-879
Ø 30.5 - 31.0	186 954-670	186 954-740	186 954-880
Ø 31.0 - 31.5	186 954-671	186 954-741	186 954-881
Ø 31.5 - 32.0	186 954-672	186 954-742	186 954-882
Ø 32.0 - 32.5	186 954-673	186 954-743	186 954-883
Ø 32.5 - 33.0	186 954-674	186 954-744	186 954-884
Ø 33.0 - 33.5	186 954-675	186 954-745	186 954-885
Ø 33.5 - 34.0	186 954-676	186 954-746	186 954-886
Ø 34.0 - 34.5	186 954-677	186 954-747	186 954-887
Ø 34.5 - 35.0	186 954-678	186 954-748	186 954-888
Ø 35.0 - 35.5	186 954-679	186 954-749	186 954-889
Ø 35.5 - 36.0	186 954-680	186 954-750	186 954-890
Ø 36.0 - 36.5	186 954-681	186 954-751	186 954-891
Ø 36.5 - 37.0	186 954-682	186 954-752	186 954-892
Ø 37.0 - 37.5	186 954-683	186 954-753	186 954-893
Ø 37.5 - 38.0	186 954-684	186 954-754	186 954-894
Ø 38.0 - 38.5	186 954-685	186 954-755	186 954-895
Ø 38.5 - 39.0	186 954-686	186 954-756	186 954-896
Ø 39.0 - 39.5	186 954-687	186 954-757	186 954-897
Ø 39.5 - 40.0	186 954-688	186 954-758	186 954-898
Ø 40.0 - 40.5	186 954-689	186 954-759	186 954-899
Ø 40.5 - 41.0	186 954-690	186 954-760	186 954-900
Ø 41.0 - 41.5	186 954-691	186 954-761	186 954-901
Ø 41.5 - 42.0	186 954-692	186 954-762	186 954-902
Ø 42.0 - 42.5	186 954-693	186 954-763	186 954-903
Ø 42.5 - 43.0	186 954-694	186 954-764	186 954-904
Ø 43.0 - 43.5	186 954-695	186 954-765	186 954-905
Ø 43.5 - 44.0	186 954-696	186 954-766	186 954-906
Ø 44.0 - 44.5	186 954-697	186 954-767	186 954-907
Ø 44.5 - 45.0	186 954-698	186 954-768	186 954-908
Ø 45.0 - 45.5	186 954-699	186 954-769	186 954-909
Ø 45.5 - 46.0	186 954-700	186 954-770	186 954-910
Ø 46.0 - 46.5	186 954-701	186 954-771	186 954-911
Ø 46.5 - 47.0	186 954-702	186 954-772	186 954-912
Ø 47.0 - 47.5	186 954-703	186 954-773	186 954-913
Ø 47.5 - 48.0	186 954-704	186 954-774	186 954-914
Ø 48.0 - 48.5	186 954-705	186 954-775	186 954-915
Ø 48.5 - 49.0	186 954-706	186 954-776	186 954-916
Ø 49.0 - 49.5	186 954-707	186 954-777	186 954-917
Ø 49.5 - 50.0	186 954-708	186 954-778	186 954-918

# Quad Spacer Damper

## Nut Cracker Clamp Type



## Order Information

Ø Conductor Range "A" [mm]	Bundle Spacing "S" [mm]			
	400	450	500	600
	Part Number	Part Number	Part Number	Part Number
Ø 16.0 - 16.5	186 954-361	186 954-431	186 954-501	186 954-571
Ø 16.5 - 17.0	186 954-362	186 954-432	186 954-502	186 954-572
Ø 17.0 - 17.5	186 954-363	186 954-433	186 954-503	186 954-573
Ø 17.5 - 18.0	186 954-364	186 954-434	186 954-504	186 954-574
Ø 18.0 - 18.5	186 954-365	186 954-435	186 954-505	186 954-575
Ø 18.5 - 19.0	186 954-366	186 954-436	186 954-506	186 954-576
Ø 19.0 - 19.5	186 954-367	186 954-437	186 954-507	186 954-577
Ø 19.5 - 20.0	186 954-368	186 954-438	186 954-508	186 954-578
Ø 20.0 - 20.5	186 954-369	186 954-439	186 954-509	186 954-579
Ø 20.5 - 21.0	186 954-370	186 954-440	186 954-510	186 954-580
Ø 21.0 - 21.5	186 954-371	186 954-441	186 954-511	186 954-581
Ø 21.5 - 22.0	186 954-372	186 954-442	186 954-512	186 954-582
Ø 22.0 - 22.5	186 954-373	186 954-443	186 954-513	186 954-583
Ø 22.5 - 23.0	186 954-374	186 954-444	186 954-514	186 954-584
Ø 23.0 - 23.5	186 954-375	186 954-445	186 954-515	186 954-585
Ø 23.5 - 24.0	186 954-376	186 954-446	186 954-516	186 954-586
Ø 24.0 - 24.5	186 954-377	186 954-447	186 954-517	186 954-587
Ø 24.5 - 25.0	186 954-378	186 954-448	186 954-518	186 954-588
Ø 25.0 - 25.5	186 954-379	186 954-449	186 954-519	186 954-589
Ø 25.5 - 26.0	186 954-380	186 954-450	186 954-520	186 954-590
Ø 26.0 - 26.5	186 954-381	186 954-451	186 954-521	186 954-591
Ø 26.5 - 27.0	186 954-382	186 954-452	186 954-522	186 954-592
Ø 27.0 - 27.5	186 954-383	186 954-453	186 954-523	186 954-593
Ø 27.5 - 28.0	186 954-384	186 954-454	186 954-524	186 954-594
Ø 28.0 - 28.5	186 954-385	186 954-455	186 954-525	186 954-595
Ø 28.5 - 29.0	186 954-386	186 954-456	186 954-526	186 954-596

Ø Conductor Range "A" [mm]	Bundle Spacing "S" [mm]			
	400	450	500	600
	Part Number	Part Number	Part Number	Part Number
Ø 29.0 - 29.5	186 954-387	186 954-457	186 954-527	186 954-597
Ø 29.5 - 30.0	186 954-388	186 954-458	186 954-528	186 954-598
Ø 30.0 - 30.5	186 954-389	186 954-459	186 954-529	186 954-599
Ø 30.5 - 31.0	186 954-390	186 954-460	186 954-530	186 954-600
Ø 31.0 - 31.5	186 954-391	186 954-461	186 954-531	186 954-601
Ø 31.5 - 32.0	186 954-392	186 954-462	186 954-532	186 954-602
Ø 32.0 - 32.5	186 954-393	186 954-463	186 954-533	186 954-603
Ø 32.5 - 33.0	186 954-394	186 954-464	186 954-534	186 954-604
Ø 33.0 - 33.5	186 954-395	186 954-465	186 954-535	186 954-605
Ø 33.5 - 34.0	186 954-396	186 954-466	186 954-536	186 954-606
Ø 34.0 - 34.5	186 954-397	186 954-467	186 954-537	186 954-607
Ø 34.5 - 35.0	186 954-398	186 954-468	186 954-538	186 954-608
Ø 35.0 - 35.5	186 954-399	186 954-469	186 954-539	186 954-609
Ø 35.5 - 36.0	186 954-400	186 954-470	186 954-540	186 954-610
Ø 36.0 - 36.5	186 954-401	186 954-471	186 954-541	186 954-611
Ø 36.5 - 37.0	186 954-402	186 954-472	186 954-542	186 954-612
Ø 37.0 - 37.5	186 954-403	186 954-473	186 954-543	186 954-613
Ø 37.5 - 38.0	186 954-404	186 954-474	186 954-544	186 954-614
Ø 38.0 - 38.5	186 954-405	186 954-475	186 954-545	186 954-615
Ø 38.5 - 39.0	186 954-406	186 954-476	186 954-546	186 954-616
Ø 39.0 - 39.5	186 954-407	186 954-477	186 954-547	186 954-617
Ø 39.5 - 40.0	186 954-408	186 954-478	186 954-548	186 954-618
Ø 40.0 - 40.5	186 954-409	186 954-479	186 954-549	186 954-619
Ø 40.5 - 41.0	186 954-410	186 954-480	186 954-550	186 954-620
Ø 41.0 - 41.5	186 954-411	186 954-481	186 954-551	186 954-621
Ø 41.5 - 42.0	186 954-412	186 954-482	186 954-552	186 954-622
Ø 42.0 - 42.5	186 954-413	186 954-483	186 954-553	186 954-623
Ø 42.5 - 43.0	186 954-414	186 954-484	186 954-554	186 954-624
Ø 43.0 - 43.5	186 954-415	186 954-485	186 954-555	186 954-625
Ø 43.5 - 44.0	186 954-416	186 954-486	186 954-556	186 954-626
Ø 44.0 - 44.5	186 954-417	186 954-487	186 954-557	186 954-627
Ø 44.5 - 45.0	186 954-418	186 954-488	186 954-558	186 954-628
Ø 45.0 - 45.5	186 954-419	186 954-489	186 954-559	186 954-629
Ø 45.5 - 46.0	186 954-420	186 954-490	186 954-560	186 954-630
Ø 46.0 - 46.5	186 954-421	186 954-491	186 954-561	186 954-631
Ø 46.5 - 47.0	186 954-422	186 954-492	186 954-562	186 954-632
Ø 47.0 - 47.5	186 954-423	186 954-493	186 954-563	186 954-633
Ø 47.5 - 48.0	186 954-424	186 954-494	186 954-564	186 954-634
Ø 48.0 - 48.5	186 954-425	186 954-495	186 954-565	186 954-635
Ø 48.5 - 49.0	186 954-426	186 954-496	186 954-566	186 954-636
Ø 49.0 - 49.5	186 954-427	186 954-497	186 954-567	186 954-637
Ø 49.5 - 50.0	186 954-428	186 954-498	186 954-568	186 954-638

# Twin Spacer Damper

## Cantilever Clamp Type

### Clamp option

Component code:

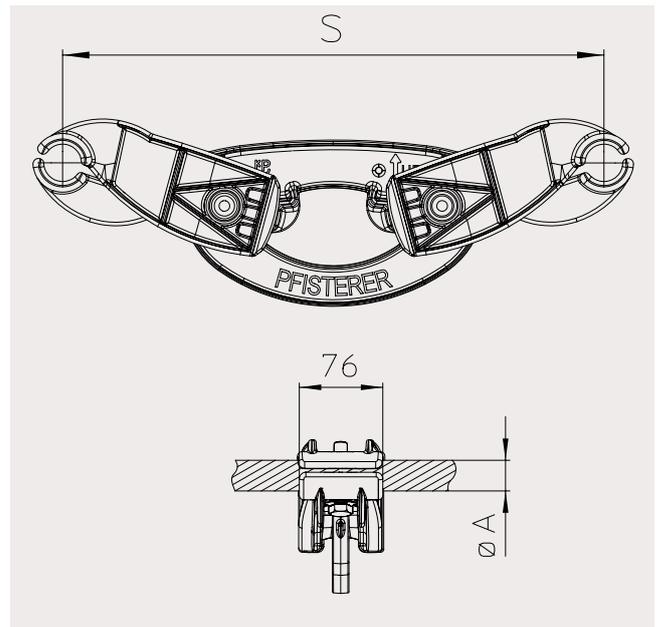
B Shear head caps

S Stainless steel bolts

BS Shear head caps and stainless steel bolts

### Orders with clamp option

Orders for clamp option must be indicated with the component code of the desired option at the end of the part number.



## Order Information

Ø Conductor Range "A" [mm]	Bundle Spacing "S" [mm]			
	400	450	457	500
	Part Number	Part Number	Part Number	Part Number
ø 16.4 - 17.7	182 953-001	182 953-101	182 953-181	182 953-121
ø 17.7 - 19.0	182 953-002	182 953-102	182 953-182	182 953-122
ø 19.0 - 20.3	182 953-003	182 953-103	182 953-183	182 953-123
ø 20.3 - 21.6	182 953-004	182 953-104	182 953-184	182 953-124
ø 21.6 - 22.9	182 953-005	182 953-105	182 953-185	182 953-125
ø 22.9 - 24.2	182 953-006	182 953-106	182 953-186	182 953-126
ø 24.2 - 25.5	182 953-007	182 953-107	182 953-187	182 953-127
ø 25.5 - 26.8	182 953-008	182 953-108	182 953-188	182 953-128
ø 26.8 - 28.1	182 953-009	182 953-109	182 953-189	182 953-129
ø 28.1 - 29.4	182 953-010	182 953-110	182 953-190	182 953-130
ø 29.4 - 30.7	182 953-011	182 953-111	182 953-191	182 953-131
ø 30.7 - 32.0	182 953-012	182 953-112	182 953-192	182 953-132
ø 32.0 - 33.3	182 953-013	182 953-113	182 953-193	182 953-133
ø 33.3 - 34.6	182 953-014	182 953-114	182 953-194	182 953-134
ø 34.6 - 35.9	182 953-015	182 953-115	182 953-195	182 953-135
ø 35.9 - 37.2	182 953-016	182 953-116	182 953-196	182 953-136
ø 37.2 - 38.5	182 953-017	182 953-117	182 953-197	182 953-137
ø 38.5 - 39.8	182 953-018	182 953-118	182 953-198	182 953-138
ø 39.8 - 41.1	182 953-019	182 953-119	182 953-199	182 953-139

# Triple Spacer Damper

## Cantilever Clamp Type

### Clamp option

Component code:

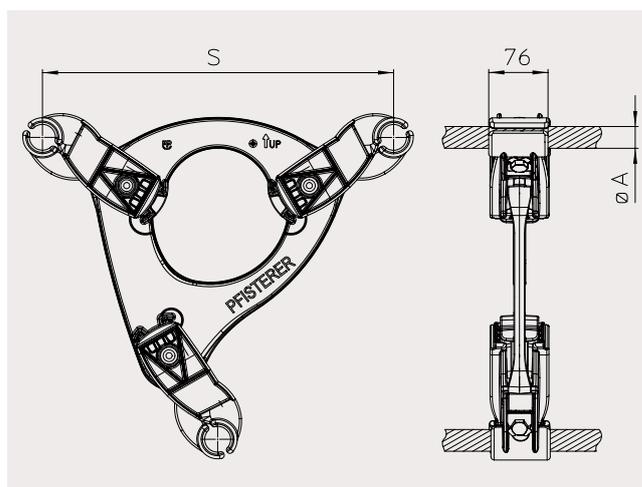
B Shear head caps

S Stainless steel bolts

BS Shear head caps and stainless steel bolts

### Orders with clamp option

Orders for clamp option must be indicated with the component code of the desired option at the end of the part number.



## Order Information

∅ Conductor Range "A" [mm]	Bundle Spacing "S" [mm]			
	400	450	457	500
	Part Number	Part Number	Part Number	Part Number
∅ 16.4 - 17.7	182 953-331	182 953-301	182 953-381	182 953-361
∅ 17.7 - 19.0	182 953-332	182 953-302	182 953-382	182 953-362
∅ 19.0 - 20.3	182 953-333	182 953-303	182 953-383	182 953-363
∅ 20.3 - 21.6	182 953-334	182 953-304	182 953-384	182 953-364
∅ 21.6 - 22.9	182 953-335	182 953-305	182 953-385	182 953-365
∅ 22.9 - 24.2	182 953-336	182 953-306	182 953-386	182 953-366
∅ 24.2 - 25.5	182 953-337	182 953-307	182 953-387	182 953-367
∅ 25.5 - 26.8	182 953-338	182 953-308	182 953-388	182 953-368
∅ 26.8 - 28.1	182 953-339	182 953-309	182 953-389	182 953-369
∅ 28.1 - 29.4	182 953-340	182 953-310	182 953-390	182 953-370
∅ 29.4 - 30.7	182 953-341	182 953-311	182 953-391	182 953-371
∅ 30.7 - 32.0	182 953-342	182 953-312	182 953-392	182 953-372
∅ 32.0 - 33.3	182 953-343	182 953-313	182 953-393	182 953-373
∅ 33.3 - 34.6	182 953-344	182 953-314	182 953-394	182 953-374
∅ 34.6 - 35.9	182 953-345	182 953-315	182 953-395	182 953-375
∅ 35.9 - 37.2	182 953-346	182 953-316	182 953-396	182 953-376
∅ 37.2 - 38.5	182 953-347	182 953-317	182 953-397	182 953-377
∅ 38.5 - 39.8	182 953-348	182 953-318	182 953-398	182 953-378
∅ 39.8 - 41.1	182 953-349	182 953-319	182 953-399	182 953-379

# Quad Spacer Damper

## Cantilever Clamp Type

### Clamp option

Component code:

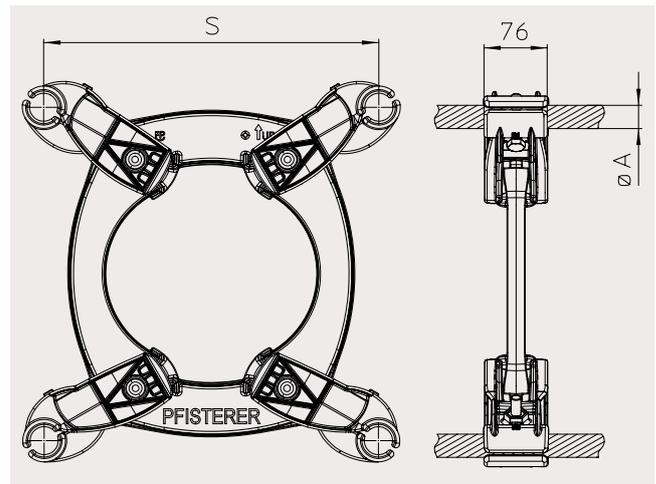
B Shear head caps

S Stainless steel bolts

BS Shear head caps and stainless steel bolts

### Orders with clamp option

Orders for clamp option must be indicated with the component code of the desired option at the end of the part number.



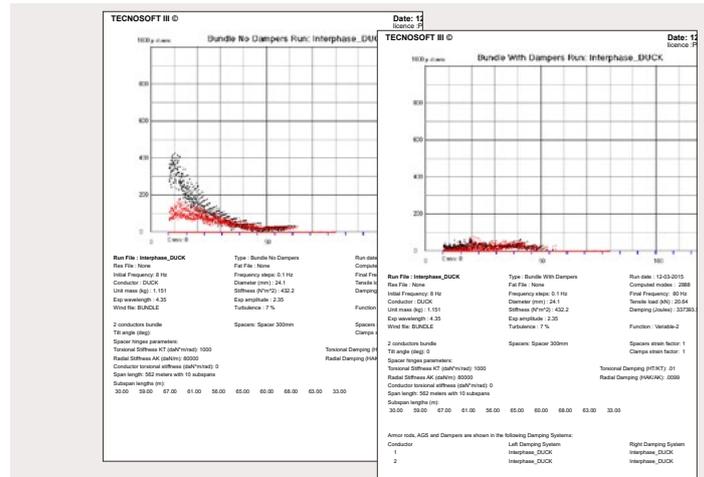
## Order Information

Ø Conductor Range "A" [mm]	Bundle Spacing "S" [mm]			
	400	450	457	500
	Part Number	Part Number	Part Number	Part Number
ø 16.4 - 17.7	182 953-401	182 953-441	182 953-521	182 953-551
ø 17.7 - 19.0	182 953-402	182 953-442	182 953-522	182 953-552
ø 19.0 - 20.3	182 953-403	182 953-443	182 953-523	182 953-553
ø 20.3 - 21.6	182 953-404	182 953-444	182 953-524	182 953-554
ø 21.6 - 22.9	182 953-405	182 953-445	182 953-525	182 953-555
ø 22.9 - 24.2	182 953-406	182 953-446	182 953-526	182 953-556
ø 24.2 - 25.5	182 953-407	182 953-447	182 953-527	182 953-557
ø 25.5 - 26.8	182 953-408	182 953-448	182 953-528	182 953-558
ø 26.8 - 28.1	182 953-409	182 953-449	182 953-529	182 953-559
ø 28.1 - 29.4	182 953-410	182 953-450	182 953-530	182 953-560
ø 29.4 - 30.7	182 953-411	182 953-451	182 953-531	182 953-561
ø 30.7 - 32.0	182 953-412	182 953-452	182 953-532	182 953-562
ø 32.0 - 33.3	182 953-413	182 953-453	182 953-533	182 953-563
ø 33.3 - 34.6	182 953-414	182 953-454	182 953-534	182 953-564
ø 34.6 - 35.9	182 953-415	182 953-455	182 953-535	182 953-565
ø 35.9 - 37.2	182 953-416	182 953-456	182 953-536	182 953-566
ø 37.2 - 38.5	182 953-417	182 953-457	182 953-537	182 953-567
ø 38.5 - 39.8	182 953-418	182 953-458	182 953-538	182 953-568
ø 39.8 - 41.1	182 953-419	182 953-459	182 953-539	182 953-569

# More Service

## Vibration Analysis and Damper Studies

PFISTERER experts prepare on customers behalf vibration analysis and damper studies. Thus, the arrangement for an optimal performance of the damping system can be calculated already in the planning phase of the overhead line. With the given line and conductor parameters an experienced PFISTERER engineer compares the vibration behavior with and without damping system. At the same time the optimal solution with PFISTERER Spacer Dampers and Stockbridge Dampers for the damping system of the transmission line will be calculated.



Calculations of the damping study

## Vibration Measurement on OHL Conductors

### VIBREC500

- Measurement of aeolian vibrations and subspan oscillations
- Including wind and temperature measurement
- Readout of data via wireless connection possible
- Quick and easy evaluation of the measurement data
- In accordance with the IEEE/EPRI and CIGRE guidelines

### Services provided by PFISTERER

- Performing measurements of the aeolian conductor vibrations and subspan oscillation
- Training for the measuring system VIBREC500 and the analysis software LIFE500
- Rental of the measuring system VIBREC500
- Evaluation of the measurement data



VIBREC500 in operation



Training for VIBREC500 and LIFE500

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In 1921, Karl Pfisterer founded his factory in Stuttgart for special electrical products with the aim of improving the world of power transmission. The PFISTERER Group has pursued this goal of quality and technological leadership for more than 100 years. Today, PFISTERER is one of the world's leading specialists and system suppliers for energy infrastructure – with a complete range of cable accessories, overhead line technology and components along the entire transmission chain from power generation to consumption. With state-of-the-art manufacturing processes and 1,200 employees at 18 international locations, PFISTERER not only connects the power grids of today and tomorrow, but also makes an important contribution to a sustainable and secure energy supply.