

VSPHERE TYPE SPU



- Bear horizontal loads in transversal direction
- Allow rotations in any direction
- Allow movements in longitudinal direction and restrain in the transversal one

Bearings according to Euronorm EN 1337-7 and AASHTO LRFD 2020

GUIDED BEARING													
DATASHEET FOR A HORIZONTAL LOAD OF 10% THE VERTICAL LOAD AND A LONGITUDINAL DISPLACEMENT OF +/-50MM													
BEARING DESIGNATION	V _{max, ULS} (kN)	V _{max, SLS} (kN)	H _{max, ULS} (kN)	H _{max, SLS} (kN)	UX (mm)	EN				AASHTO			
						L5 (mm)	B5 (mm)	D2 (mm)	TH (mm)	L5 (mm)	B5 (mm)	D2 (mm)	TH (mm)
SPU-500-H10% ±50	500	358	50	36	±50	322	222	172	61	315	221	168	62
SPU-1000-H10% ±50	1000	715	100	72	±50	371	271	221	68	369	280	227	74
SPU-1500-H10% ±50	1500	1072	150	107	±50	411	311	261	73	412	322	259	74
SPU-2000-H10% ±50	2000	1429	200	143	±50	442	342	292	73	447	357	294	78
SPU-3000-H10% ±50	3000	2143	300	214	±50	494	404	344	82	506	427	354	84
SPU-4000-H10% ±50	4000	2858	400	286	±50	540	450	390	86	557	482	409	97
SPU-5000-H10% ±50	5000	3572	500	357	±50	577	497	427	96	602	541	458	103
SPU-6000-H10% ±50	6000	4286	600	429	±50	615	535	465	97	640	581	498	107
SPU-7000-H10% ±50	7000	5000	700	500	±50	647	577	497	106	678	633	540	113
SPU-8000-H10% ±50	8000	5715	800	572	±50	675	605	525	106	712	669	576	117
SPU-9000-H10% ±50	9000	6429	900	643	±50	708	638	558	111	744	713	610	127
SPU-10000-H10% ±50	10000	7143	1000	714	±50	735	665	585	112	774	745	642	128
SPU-12000-H10% ±50	12000	8572	1200	857	±50	785	725	635	122	831	816	703	142
SPU-14000-H10% ±50	14000	10000	1400	1000	±50	832	782	682	132	883	872	759	152
SPU-16000-H10% ±50	16000	11429	1600	1143	±50	872	822	722	137	932	935	812	153
SPU-18000-H10% ±50	18000	12858	1800	1286	±50	915	875	765	146	978	995	862	162
SPU-20000-H10% ±50	20000	14286	2000	1429	±50	951	911	801	147	1020	1039	906	168
SPU-22000-H10% ±50	22000	15715	2200	1572	±50	990	950	840	152	1061	1094	951	177
SPU-24000-H10% ±50	24000	17143	2400	1714	±50	1023	993	873	157	1099	1134	991	182
SPU-26000-H10% ±50	26000	18572	2600	1857	±50	1059	1029	909	161	1138	1177	1034	182
SPU-28000-H10% ±50	28000	20000	2800	2000	±50	1090	1070	940	166	1174	1225	1072	184
SPU-30000-H10% ±50	30000	21429	3000	2143	±50	1120	1100	970	167	1208	1261	1108	197
SPU-34000-H10% ±50	34000	24286	3400	2429	±50	1182	1172	1032	181	1276	1345	1182	207
SPU-38000-H10% ±50	38000	27143	3800	2714	±50	1239	1239	1089	186	1338	1421	1248	227
SPU-42000-H10% ±50	42000	30000	4200	3000	±50	1294	1284	1144	192	1397	1484	1311	227
SPU-46000-H10% ±50	46000	32858	4600	3286	±50	1346	1356	1196	206	1452	1553	1370	237
SPU-50000-H10% ±50	50000	35715	5000	3572	±50	1397	1407	1247	216	1507	1622	1429	247

GUIDED BEARING													
DATASHEET FOR A HORIZONTAL LOAD OF 10% THE VERTICAL LOAD AND A LONGITUDINAL DISPLACEMENT OF +/-100MM													
BEARING DESIGNATION	V _{max, ULS} (kN)	V _{max, SLS} (kN)	H _{max, ULS} (kN)	H _{max, SLS} (kN)	UX (mm)	EN				AASHTO			
						L5 (mm)	B5 (mm)	D2 (mm)	TH (mm)	L5 (mm)	B5 (mm)	D2 (mm)	TH (mm)
SPU-500-H10% ±100	500	358	50	36	±100	422	222	172	68	415	221	168	69
SPU-1000-H10% ±100	1000	715	100	72	±100	471	271	221	68	469	280	227	74
SPU-1500-H10% ±100	1500	1072	150	107	±100	511	311	261	78	512	312	259	79
SPU-2000-H10% ±100	2000	1429	200	143	±100	542	342	292	78	547	357	294	83
SPU-3000-H10% ±100	3000	2143	300	214	±100	594	404	344	86	606	417	354	88
SPU-4000-H10% ±100	4000	2858	400	286	±100	640	450	390	86	657	482	409	98
SPU-5000-H10% ±100	5000	3572	500	357	±100	677	497	427	101	702	541	458	107
SPU-6000-H10% ±100	6000	4286	600	429	±100	715	535	465	101	740	581	498	108
SPU-7000-H10% ±100	7000	5000	700	500	±100	747	567	497	107	778	633	540	117
SPU-8000-H10% ±100	8000	5715	800	572	±100	775	595	525	111	812	669	576	118
SPU-9000-H10% ±100	9000	6429	900	643	±100	808	638	558	111	844	703	610	132
SPU-10000-H10% ±100	10000	7143	1000	714	±100	835	665	585	113	874	745	642	132
SPU-12000-H10% ±100	12000	8572	1200	857	±100	885	725	635	126	931	806	703	147
SPU-14000-H10% ±100	14000	10000	1400	1000	±100	932	772	682	137	983	872	759	153
SPU-16000-H10% ±100	16000	11429	1600	1143	±100	972	822	722	141	1032	925	812	157
SPU-18000-H10% ±100	18000	12858	1800	1286	±100	1015	865	765	151	1078	985	862	167
SPU-20000-H10% ±100	20000	14286	2000	1429	±100	1051	911	801	151	1120	1029	906	168
SPU-22000-H10% ±100	22000	15715	2200	1572	±100	1090	950	840	153	1161	1084	951	182
SPU-24000-H10% ±100	24000	17143	2400	1714	±100	1123	993	873	161	1199	1134	991	182
SPU-26000-H10% ±100	26000	18572	2600	1857	±100	1159	1029	909	161	1238	1177	1034	187
SPU-28000-H10% ±100	28000	20000	2800	2000	±100	1190	1060	940	171	1274	1215	1072	188
SPU-30000-H10% ±100	30000	21429	3000	2143	±100	1220	1090	970	171	1308	1251	1108	198
SPU-34000-H10% ±100	34000	24286	3400	2429	±100	1282	1172	1032	186	1376	1335	1182	207
SPU-38000-H10% ±100	38000	27143	3800	2714	±100	1339	1229	1089	187	1438	1411	1248	227
SPU-42000-H10% ±100	42000	30000	4200	3000	±100	1394	1284	1144	196	1497	1484	1311	227
SPU-46000-H10% ±100	46000	32858	4600	3286	±100	1446	1346	1196	216	1552	1543	1370	238
SPU-50000-H10% ±100	50000	35715	5000	3572	±100	1497	1407	1247	216	1607	1612	1429	247

GUIDED BEARING													
DATASHEET FOR A HORIZONTAL LOAD OF 20% THE VERTICAL LOAD AND A LONGITUDINAL DISPLACEMENT OF +/-50MM													
BEARING DESIGNATION	V _{max, ULS} (kN)	V _{max, SLS} (kN)	H _{max, ULS} (kN)	H _{max, SLS} (kN)	UX (mm)	EN				AASHTO			
						L5 (mm)	B5 (mm)	D2 (mm)	TH (mm)	L5 (mm)	B5 (mm)	D2 (mm)	TH (mm)
SPU-500-H20% ±50	500	358	100	72	±50	322	222	172	61	315	221	168	62
SPU-1000-H20% ±50	1000	715	200	143	±50	371	281	221	68	369	290	227	74
SPU-1500-H20% ±50	1500	1072	300	214	±50	411	321	261	73	412	332	259	74
SPU-2000-H20% ±50	2000	1429	400	286	±50	442	362	292	73	447	377	294	83
SPU-3000-H20% ±50	3000	2143	600	429	±50	494	424	344	82	506	447	354	84
SPU-4000-H20% ±50	4000	2858	800	572	±50	540	470	390	86	557	512	409	97
SPU-5000-H20% ±50	5000	3572	1000	714	±50	577	527	427	96	602	571	458	107
SPU-6000-H20% ±50	6000	4286	1200	857	±50	615	565	465	101	640	611	498	107
SPU-7000-H20% ±50	7000	5000	1400	1000	±50	647	607	497	106	678	673	540	117
SPU-8000-H20% ±50	8000	5715	1600	1143	±50	675	635	525	107	712	709	576	117
SPU-9000-H20% ±50	9000	6429	1800	1286	±50	708	668	558	111	744	753	610	128
SPU-10000-H20% ±50	10000	7143	2000	1429	±50	735	705	585	112	774	785	642	132
SPU-12000-H20% ±50	12000	8572	2400	1714	±50	785	765	635	126	831	866	703	147
SPU-14000-H20% ±50	14000	10000	2800	2000	±50	832	822	682	132	883	932	759	152
SPU-16000-H20% ±50	16000	11429	3200	2286	±50	872	872	722	141	932	995	812	157
SPU-18000-H20% ±50	18000	12858	3600	2572	±50	915	925	765	147	978	1055	862	163
SPU-20000-H20% ±50	20000	14286	4000	2857	±50	951	971	801	151	1020	1099	906	168
SPU-22000-H20% ±50	22000	15715	4400	3143	±50	990	1010	840	152	1061	1154	951	178
SPU-24000-H20% ±50	24000	17143	4800	3429	±50	1023	1053	873	161	1099	1204	991	182
SPU-26000-H20% ±50	26000	18572	5200	3714	±50	1059	1099	909	161	1138	1247	1034	183
SPU-28000-H20% ±50	28000	20000	5600	4000	±50	1090	1130	940	167	1174	1305	1072	188
SPU-30000-H20% ±50	30000	21429	6000	4286	±50	1120	1170	970	171	1208	1341	1108	198
SPU-34000-H20% ±50	34000	24286	6800	4857	±50	1182	1252	1032	186	1276	1435	1182	207
SPU-38000-H20% ±50	38000	27143	7600	5429	±50	1239	1319	1089	187	1338	1511	1248	227
SPU-42000-H20% ±50	42000	30000	8400	6000	±50	1294	1374	1144	196	1397	1584	1311	227
SPU-46000-H20% ±50	46000	32858	9200	6572	±50	1346	1446	1196	216	1452	1653	1370	247
SPU-50000-H20% ±50	50000	35715	10000	7143	±50	1397	1507	1247	216	1507	1722	1429	247

GUIDED BEARING													
DATASHEET FOR A HORIZONTAL LOAD OF 20% THE VERTICAL LOAD AND A LONGITUDINAL DISPLACEMENT OF +/-100MM													
BEARING DESIGNATION	V _{max, ULS} (kN)	V _{max, SLS} (kN)	H _{max, ULS} (kN)	H _{max, SLS} (kN)	UX (mm)	EN				AASHTO			
						L5 (mm)	B5 (mm)	D2 (mm)	TH (mm)	L5 (mm)	B5 (mm)	D2 (mm)	TH (mm)
SPU-500-H20% ±100	500	358	100	72	±100	422	222	172	68	415	221	168	69
SPU-1000-H20% ±100	1000	715	200	143	±100	471	271	221	68	469	290	227	74
SPU-1500-H20% ±100	1500	1072	300	214	±100	511	321	261	78	512	332	259	79
SPU-2000-H20% ±100	2000	1429	400	286	±100	542	352	292	78	547	367	294	83
SPU-3000-H20% ±100	3000	2143	600	429	±100	594	414	344	86	606	437	354	88
SPU-4000-H20% ±100	4000	2858	800	572	±100	640	470	390	86	657	502	409	102
SPU-5000-H20% ±100	5000	3572	1000	714	±100	677	517	427	101	702	571	458	107
SPU-6000-H20% ±100	6000	4286	1200	857	±100	715	555	465	101	740	611	498	112
SPU-7000-H20% ±100	7000	5000	1400	1000	±100	747	597	497	111	778	663	540	117
SPU-8000-H20% ±100	8000	5715	1600	1143	±100	775	625	525	111	812	699	576	118
SPU-9000-H20% ±100	9000	6429	1800	1286	±100	808	668	558	111	844	743	610	132
SPU-10000-H20% ±100	10000	7143	2000	1429	±100	835	695	585	117	874	775	642	132
SPU-12000-H20% ±100	12000	8572	2400	1714	±100	885	755	635	126	931	856	703	147
SPU-14000-H20% ±100	14000	10000	2800	2000	±100	932	812	682	137	983	922	759	157
SPU-16000-H20% ±100	16000	11429	3200	2286	±100	972	862	722	141	1032	985	812	158
SPU-18000-H20% ±100	18000	12858	3600	2572	±100	1015	915	765	151	1078	1045	862	167
SPU-20000-H20% ±100	20000	14286	4000	2857	±100	1051	961	801	151	1120	1089	906	169
SPU-22000-H20% ±100	22000	15715	4400	3143	±100	1090	1000	840	157	1161	1154	951	182
SPU-24000-H20% ±100	24000	17143	4800	3429	±100	1123	1043	873	161	1199	1194	991	183
SPU-26000-H20% ±100	26000	18572	5200	3714	±100	1159	1089	909	166	1238	1237	1034	187
SPU-28000-H20% ±100	28000	20000	5600	4000	±100	1190	1120	940	171	1274	1285	1072	189
SPU-30000-H20% ±100	30000	21429	6000	4286	±100	1220	1160	970	172	1308	1331	1108	202
SPU-34000-H20% ±100	34000	24286	6800	4857	±100	1282	1242	1032	186	1376	1425	1182	217
SPU-38000-H20% ±100	38000	27143	7600	5429	±100	1339	1309	1089	191	1438	1501	1248	227
SPU-42000-H20% ±100	42000	30000	8400	6000	±100	1394	1354	1144	197	1497	1574	1311	227
SPU-46000-H20% ±100	46000	32858	9200	6572	±100	1446	1436	1196	216	1552	1643	1370	247
SPU-50000-H20% ±100	50000	35715	10000	7143	±100	1497	1497	1247	216	1607	1712	1429	247

GUIDED BEARING													
DATASHEET FOR A HORIZONTAL LOAD OF 30% THE VERTICAL LOAD AND A LONGITUDINAL DISPLACEMENT OF +/-50MM													
BEARING DESIGNATION	V _{max, ULS} (kN)	V _{max, SLS} (kN)	H _{max, ULS} (kN)	H _{max, SLS} (kN)	UX (mm)	EN				AASHTO			
						L5 (mm)	B5 (mm)	D2 (mm)	TH (mm)	L5 (mm)	B5 (mm)	D2 (mm)	TH (mm)
SPU-500-H30% ±50	500	358	150	107	±50	322	222	172	61	315	231	168	62
SPU-1000-H30% ±50	1000	715	300	215	±50	371	281	221	68	369	300	227	74
SPU-1500-H30% ±50	1500	1072	450	322	±50	411	331	261	75	412	342	259	74
SPU-2000-H30% ±50	2000	1429	600	429	±50	442	372	292	78	447	387	294	83
SPU-3000-H30% ±50	3000	2143	900	643	±50	494	434	344	85	506	467	354	84
SPU-4000-H30% ±50	4000	2858	1200	857	±50	540	490	390	88	557	532	409	97
SPU-5000-H30% ±50	5000	3572	1500	1072	±50	577	547	427	103	602	601	458	107
SPU-6000-H30% ±50	6000	4286	1800	1286	±50	615	585	465	106	640	641	498	107
SPU-7000-H30% ±50	7000	5000	2100	1500	±50	647	637	497	114	678	703	540	117
SPU-8000-H30% ±50	8000	5715	2400	1715	±50	675	665	525	112	712	739	576	117
SPU-9000-H30% ±50	9000	6429	2700	1929	±50	708	698	558	118	744	793	610	132
SPU-10000-H30% ±50	10000	7143	3000	2143	±50	735	735	585	121	774	825	642	132
SPU-12000-H30% ±50	12000	8572	3600	2572	±50	785	795	635	131	831	906	703	147
SPU-14000-H30% ±50	14000	10000	4200	3000	±50	832	862	682	142	883	982	759	153
SPU-16000-H30% ±50	16000	11429	4800	3429	±50	872	912	722	149	932	1055	812	157
SPU-18000-H30% ±50	18000	12858	5400	3857	±50	915	975	765	161	978	1115	862	167
SPU-20000-H30% ±50	20000	14286	6000	4286	±50	951	1031	801	166	1020	1169	906	169
SPU-22000-H30% ±50	22000	15715	6600	4715	±50	990	1070	840	171	1061	1224	951	182
SPU-24000-H30% ±50	24000	17143	7200	5143	±50	1023	1113	873	178	1099	1274	991	183
SPU-26000-H30% ±50	26000	18572	7800	5572	±50	1059	1159	909	180	1138	1327	1034	188
SPU-28000-H30% ±50	28000	20000	8400	6000	±50	1090	1200	940	188	1174	1375	1072	192
SPU-30000-H30% ±50	30000	21429	9000	6429	±50	1120	1240	970	191	1208	1411	1108	202
SPU-34000-H30% ±50	34000	24286	10200	7286	±50	1182	1322	1032	207	1276	1515	1182	218
SPU-38000-H30% ±50	38000	27143	11400	8143	±50	1239	1389	1089	215	1338	1601	1248	227
SPU-42000-H30% ±50	42000	30000	12600	9000	±50	1294	1444	1144	212	1397	1674	1311	229
SPU-46000-H30% ±50	46000	32858	13800	9857	±50	1346	1526	1196	235	1452	1743	1370	247
SPU-50000-H30% ±50	50000	35715	15000	10715	±50	1397	1587	1247	241	1507	1822	1429	248

GUIDED BEARING													
DATASHEET FOR A HORIZONTAL LOAD OF 30% THE VERTICAL LOAD AND A LONGITUDINAL DISPLACEMENT OF +/-100MM													
BEARING DESIGNATION	$V_{max, ULS}$ (kN)	$V_{max, SLS}$ (kN)	$H_{max, ULS}$ (kN)	$H_{max, SLS}$ (kN)	UX (mm)	EN				AASHTO			
						L5 (mm)	B5 (mm)	D2 (mm)	TH (mm)	L5 (mm)	B5 (mm)	D2 (mm)	TH (mm)
SPU-500-H30% ±100	500	358	150	107	±100	422	222	172	68	415	231	168	69
SPU-1000-H30% ±100	1000	715	300	215	±100	471	281	221	69	469	300	227	74
SPU-1500-H30% ±100	1500	1072	450	322	±100	511	331	261	81	512	342	259	79
SPU-2000-H30% ±100	2000	1429	600	429	±100	542	362	292	78	547	387	294	83
SPU-3000-H30% ±100	3000	2143	900	643	±100	594	434	344	90	606	457	354	88
SPU-4000-H30% ±100	4000	2858	1200	857	±100	640	480	390	89	657	522	409	102
SPU-5000-H30% ±100	5000	3572	1500	1072	±100	677	537	427	109	702	591	458	107
SPU-6000-H30% ±100	6000	4286	1800	1286	±100	715	575	465	107	740	631	498	112
SPU-7000-H30% ±100	7000	5000	2100	1500	±100	747	627	497	120	778	693	540	117
SPU-8000-H30% ±100	8000	5715	2400	1715	±100	775	655	525	117	812	729	576	122
SPU-9000-H30% ±100	9000	6429	2700	1929	±100	808	698	558	120	844	783	610	132
SPU-10000-H30% ±100	10000	7143	3000	2143	±100	835	725	585	127	874	815	642	133
SPU-12000-H30% ±100	12000	8572	3600	2572	±100	885	785	635	133	931	896	703	147
SPU-14000-H30% ±100	14000	10000	4200	3000	±100	932	852	682	146	983	962	759	157
SPU-16000-H30% ±100	16000	11429	4800	3429	±100	972	902	722	154	1032	1035	812	162
SPU-18000-H30% ±100	18000	12858	5400	3857	±100	1015	965	765	162	1078	1095	862	167
SPU-20000-H30% ±100	20000	14286	6000	4286	±100	1051	1011	801	171	1120	1149	906	173
SPU-22000-H30% ±100	22000	15715	6600	4715	±100	1090	1050	840	171	1161	1214	951	183
SPU-24000-H30% ±100	24000	17143	7200	5143	±100	1123	1103	873	179	1199	1264	991	187
SPU-26000-H30% ±100	26000	18572	7800	5572	±100	1159	1149	909	184	1238	1307	1034	189
SPU-28000-H30% ±100	28000	20000	8400	6000	±100	1190	1190	940	189	1274	1355	1072	196
SPU-30000-H30% ±100	30000	21429	9000	6429	±100	1220	1220	970	195	1308	1401	1108	202
SPU-34000-H30% ±100	34000	24286	10200	7286	±100	1282	1312	1032	212	1376	1495	1182	217
SPU-38000-H30% ±100	38000	27143	11400	8143	±100	1339	1379	1089	215	1438	1581	1248	227
SPU-42000-H30% ±100	42000	30000	12600	9000	±100	1394	1434	1144	221	1497	1664	1311	238
SPU-46000-H30% ±100	46000	32858	13800	9857	±100	1446	1506	1196	235	1552	1733	1370	247
SPU-50000-H30% ±100	50000	35715	15000	10715	±100	1497	1577	1247	241	1607	1812	1429	248

Bearings have been designed with the following parameters :

Concrete on deck is H40 ($f_{ck} = 40$ MPa)

Concrete on piers and abutment is H35 ($f_{ck} = 35$ MPa)

Bearing designation: bearing type – $V_{max, ULS}$ (kN) – % $H_{max, ULS}$ (kN) – Longitudinal displacement capacity ULS (mm)

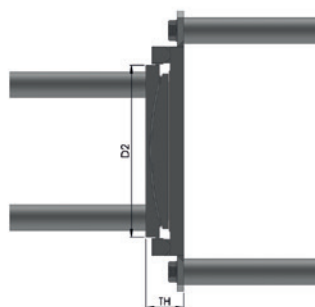
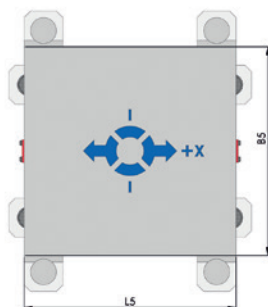
*% of horizontal load in ULS in comparison with vertical load in ULS

Minimum vertical load at SLS and ULS is 25% of maximum vertical load at SLS

Rotation 0,01 rad (EN) and 0,02 rad (AASHTO)

Other models are available on request.

The dimensions given are indicative. Designs and dimensions may be modified by VSL without prior notification.



Notes

L5 = upper plate length

B5 = upper plate width

D2 = lower plate diameter

TH = total height