



NetterVibration In the Industry

- Loosening product compaction
- Eliminating bridging
- Loosening stubborn adhesions
- Maintaining product flow
- Compacting materials
- Driving conveyor trays





NetterVibration



Vibrators For Industrial Purposes



Loosening hard crusts
with pneumatic linear vibrators



Loosing product compaction
with pneumatic circular oscillators



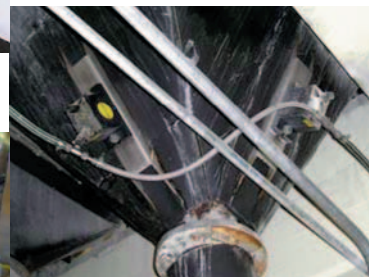
Gentle conveying and dosing of
bulk materials with conveyor trays



Sieving coarse bulk material
with electric external vibrators



Conveyor sieving tray, driven by stainless
steel electric external vibrators



Eliminating bridging with
pneumatic circular oscillators



Compacting / levelling materials in a production
line with a vibrating table



Easing, loosening
wire coils with
electric external
vibrators



Conveying with stainless steel
electric external vibrators

Applications

Vibrators supplied by **NetterVibration** are used in many industrial branches.

Applications include simple loosening of adhesions, maintaining product flow and compacting.

A special part of vibration technique is conveyor technology. The systematic use of resonance effects and material properties allows conveyor performances which would require considerable effort if other technologies were used.

In addition to the standard devices, **NetterVibration** offers a wide range of special solutions, adapted to suit the

individual requirements of the client.

NetterVibration has a worldwide staff of experienced application engineers and field representatives. We would be pleased to offer advice on site and to help optimize your applications using vibration technology.

We would be pleased to prove our consulting competence in connection with a free trial of our test units.

Netter provides solutions.
Consult our experienced application technicians.

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Netter Electric External Vibrators Series NEG



- Circular vibration
- Nominal frequency from 750 min⁻¹ to 3.600 min⁻¹
- Centrifugal force from 40 N to 217.700 N
- Smooth housing surface
- Stainless steel weight covers up to housing size 133
- Ex II 2 G D (ATEX) available
- Protection IP 66-7, Insulation class F
- Stainless steel versions available





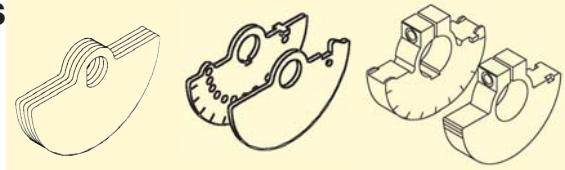
NetterVibration



Netter Electric-External Vibrators

Series NEG 3-Phase
Series NEA Single Phase
Series NED Direct Current

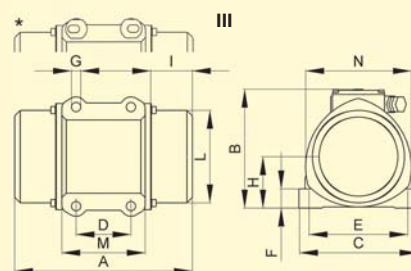
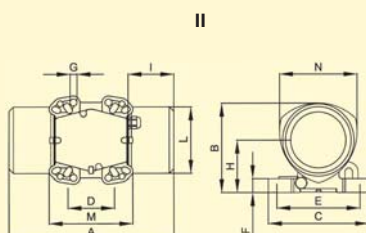
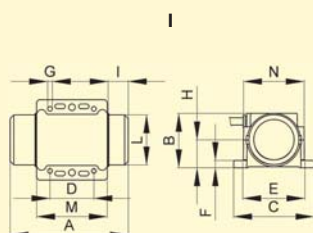
Unbalance type XI Unbalance type XM Unbalance type XS



min ⁻¹	Type	Housing		Unbalance		Centrifugal Force		EEx II	Power Input				Nominal Current			
		Size	Material	[cmkg]		[N]			[kW]				[A]			
		NEG/NEA		NEG/NEA		NEG/NEA			NEG E	NEG		NEA		NEG		NEA
				50 Hz	60 Hz	50 Hz	60 Hz	50/60 Hz	50 Hz 400 V	60 Hz 480 V	50 Hz 230 V	60 Hz 115 V	50 Hz 400 V	60 Hz 480 V	50 Hz 230 V	60 Hz 115 V
3000 3600	NEA 504*	50	Al	0,08	0,08	40	57	–	–	–	0,024	0,024	–	–	0,13	0,30
	NEG/NEA 5020*	60	Al	0,39	0,39	192	277	–	0,035	0,035	0,035	0,035	0,15	0,15	0,17	0,42
	NEG/NEA 5050*			0,91	0,91	450	647		0,045	0,045	0,045	0,045	0,16	0,16	0,20	0,46
	NEG/NEA 5060	100	Al	1,22	1,22	602	867	–	0,12	0,12	0,165	0,165	0,27	0,23	0,75	1,52
	NEG/NEA 50120	101	Al	2,4	2,4	1.185	1.706	–	0,18	0,18	0,165	0,165	0,35	0,30	0,75	1,52
	NEG/NEA 50200			4,2	3,0	2.073	2.133									
	NEG/NEA 50300	110	Al	6,02	4,08	2.972	2.900	T3, T4	0,26	0,27	0,28	0,28	0,60	0,50	1,25	2,40
	NEG/NEA 50550	120	Al	9,97	6,48	4.921	4.606	T3, T4	0,45	0,50	0,5	0,5	0,80	0,75	2,30	4,50
	NEG/NEA 50770	130	Al	15,59	10,40	7.695	7.392	T3, T4	0,65	0,685	0,7	0,75	1,10	1,00	3,25	7,00
	NEG 50980 NEG 501140	133	Al	19,8 23,0	13,2 16,5	9.772 11.352	9.382 11.727	T3, T4	1	1,2	–	–	1,75	1,75	–	–
1500 1800	NEG 2530	101	Al	2,4	2,4	296	426	–	0,085	0,095	–	–	0,21	0,20	–	–
	NEG 2570			6,2	4,2	766	747									
	NEG 25210	110	Al	16,84	11,76	2.078	2.090	T4	0,17	0,17	–	–	0,41	0,40	–	–
	NEG 25420 NEG 25540	120	Al	32,64 43,80	22,66 32,64	4.028 5.405	4.027 5.800	T3, T4	0,30	0,35	–	–	0,60	0,60	–	–
	NEG 25700	130	Al	57,18	41,89	7.056	7.444	T3, T4	0,525	0,665	–	–	0,92	0,98	–	–
	NEG 25930	133	Al	75,0	52,0	9.254	9.239	T4	0,55	0,68	–	–	0,95	0,95	–	–
	1000 1200	NEG 1630	110	Al	6,02	6,02	331	476	–	0,12	0,135	–	–	0,30	0,30	–
NEG 1690		16,84			16,84	924	1.330									
NEG 16190		120	Al	32,64	32,64	1.790	2.578	T4	0,185	0,205	–	–	0,50	0,50	–	–
NEG 16310		130	Al	57,18	41,89	3.136	3.309	T4	0,35	0,38	–	–	0,72	0,68	–	–
NEG 16410 NEG 16500		133	Al	75,0 90,7	52,0 66,5	4.113 4.974	4.106 5.251	T4 –	0,35 0,42	0,38 0,46	– –	– –	0,75 0,79	0,67 0,77	– –	– –
NEG 12100		120	Al	32,64	32,64	1.007	1.450	T3	0,23	0,25	–	–	0,85	0,76	–	–
750 900	NEG 12180	130	Al	56,8	56,8	1.752	2.523	T3	0,35	0,38	–	–	1,10	1,05	–	–
	NEG 12230	133	Al	75,0	75,0	2.314	3.332	T4	0,28	0,30	–	–	0,60	0,68	–	–
3000	NED 50100	102	Al	2,0		987		–	0,13 (12 V =)		0,13 (24 V =)		11 (12 V =)		5,8 (24 V =)	
	NED 50200	103	Al	3,9		1.925		–	0,22 (12 V =)		0,22 (24 V =)		18 (12 V =)		9 (24 V =)	

* Protection IP 65, ** Technical Data available upon request

Unbalance type XLs



	Type	Weight [kg]		Type of housing	Dimensions [mm]													Unbalance [No. of unbalance discs]		
		NEG/NEA		NEG	NEG/NEA													NEG/NEA		
		50 Hz	60 Hz	NEA	A	B	C	D	E	F	G	H	I	L	M	N	n²	Typ	50 Hz	60 Hz
	NEA 504*	0,90	0,90	I	113	62,5	90	25-40	75	9	5,5	32	20	56,6	70,5	75	4	XL	8	8
	NEG/NEA 5020*	1,75	1,70	I	154	74,5	110	60	85	10	6,5	38	27,5	68,6	97	85	4	XL	8	8
	NEG/NEA 5050*	1,95	1,90		169			25-40	92				90			9			35	99
	NEG/NEA 5060	4,8	4,8	II	197	121	126	60	100	20	9	72	33	92	88	105	4	XL	10	10
								62	95											
								65	85											
								70	106											
	NEG/NEA 50120	6,1	6,0	II	207	143	165	65	140	25	13	86	44	100	156	123	4	XM	4	4
								62-74	106											
								80	110											
								115	135											
	NEG/NEA 50200	6,7	6,5	II	223			135	115		11		52						4	4
								124	110											
								135	115											
								124	110											
	NEG/NEA 50300	10,3	10,1	II	247	172,5	165	65	140	25	13	103	50	124	156	146	4	XM	4	4
								80	110											
								115	135											
								135	115											
								124	110											
								90	125											
	100	180	30	17	113	62,5	143	137	168	4	XM	4	4							
	105	140																		
	NEG/NEA 50770	22,3	21,3	III	308	212	238	100*	180*	43	17	93,5	63	168	163	193	4	XM	4	4
	NEG 50980	24,5	23,4	III	324	216	219	100	180	35	17	93,5	76	168	153	193	4	XM	4	4
	NEG 501140	25,0	24,0	II															4	4
	NEG 2530	6,1	5,8	II	207	143	165	65	140	25	13	86	44	100	156	123	4	XM	4	4
								62-74	106											
								80	110											
								115	135											
	NEG 2570	7,3	6,9		243			135	115		11		62						4	4
								124	110											
								135	115											
								124	110											
	NEG 25210	12,8	11,8	II	307	172,5	165	65	140	25	13	103	80	124	156	146	4	XS	4	4
								80	110											
								115	135											
								135	115											
								124	110											
								90	125											
	NEG 25420	20,7	19,7	II	355	192	217	100	180	30	17	113	98,5	143	137	168	4	XS	4	4
	NEG 25540	22,7	21,7		391			105	140				13							
	NEG 25700	29,4	28,4	III	392	212	238	100*	180*	43	17	93,5	105	168	163	193	4	XS	4	4
	NEG 25930	34,2	32,7	III	452	216	219	92-128*	167-203*											
	NEG 1630	12,0	10,1	II	247	172,5	165	65	140	25	13	103	50	124	156	146	4	XM	4	4
								80	110											
								115	135											
								135	115											
	NEG 1690	12,7	12,7		307			124	110		11		80					XS		
								90	125											
								124	110											
								90	125											
	NEG 16190	20,5	20,5	II	355	192	217	100	180	30	17	113	98,5	143	137	168	4	XS	4	4
								105	140		13									
	NEG 16310	28,9	27,9	III	392	212	238	100*	180*	43	17	93,5	105	168	163	193	4	XS	4	4
								92-128*	167-203*											
	NEG 16410	34,1	33,6	III	452	216	219	100	180	35	17	93,5	140	168	153	193	4	XS	4	4
	NEG 16500	36,1	35,1																4	4
	NEG 12100	20,5	20,5	II	355	192	217	100	180	30	17	113	98,5	143	137	168	4	XS	4	4
								105	140		13									
	NEG 12180	28,0	28,0	III	392	212	238	100*	180*	43	17	93,5	105	168	163	193	4	XS	4	4
								92-128*	167-203*											
	NEG 12230	34,6	34,6	III	452	216	219	100	180	35	7	93,5	140	168	152	193	4	XS	4	4
	NED 50100	4,6		II	210	142	125	62-74	106	15	9	55	40	90	102	10	4	XLs	12	12
	NED 50200	6,2		II	257	157	165	65	140	20	13	70	45,5	112	140	119	4	XLs	10	10
								74	106											
								80	110											
								118	135											

* Variable mounting pattern see operating manual, ** Recommended mounting pattern in bold type.



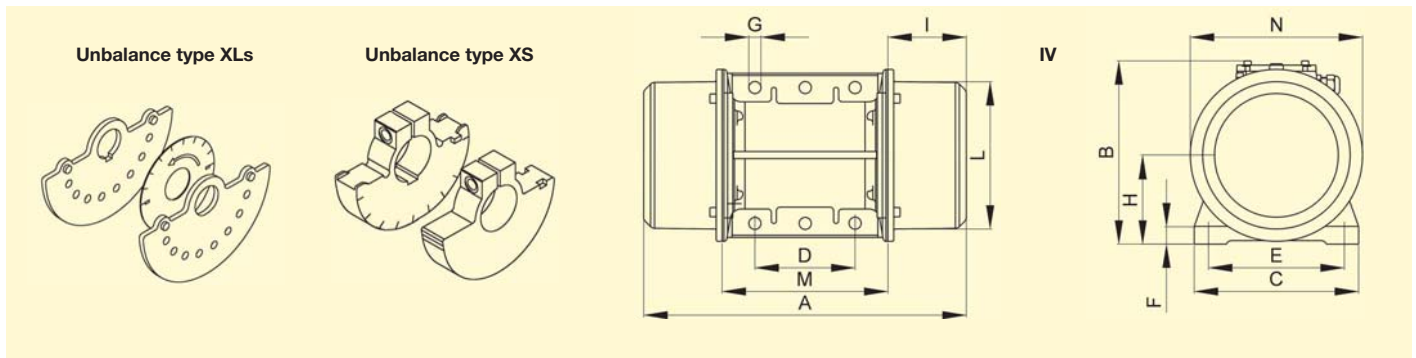
NetterVibration



Netter Elektrik-External Vibrators Series NEG 3-Phase

min ⁻¹	Type	Housing Size	Material	Unbalance [cmkg]		Centrifugal Force [N]		EEx e II **	Power Input [kW]		Nominal Current [A]		Weight [kg]	
				50 Hz	60 Hz	50 Hz	60 Hz		50 Hz 400 V	60 Hz 480 V	50 Hz 400 V	60 Hz 480 V	50 Hz	60 Hz
3000 3600	NEG 501510	150	GGG	30,6	20,4	15.103	14.499	T3, T4	1,4	1,45	2,3	2,0	44	43
	NEG 501770			35,8	25,6	17.669	18.195	T3	2,0	2,0	3,3	2,9	45	44
	NEG 502020			41,0	25,6	20.236	18.195	T3	2,2	2,2	3,5	3,0	49	47
	NEG 502270			46,0	30,6	22.704	21.748	T3	2,2	2,2	3,5	3,0	50	49
	NEG 503400	170	GGG	68,8	43,0	33.957	30.561	–	3,8	3,8	6,2	5,4	106	102
	NEG 503820			77,4	51,6	38.202	36.673	–	4,0	4,0	6,5	5,6	107	103
	NEG 506220			126,0	88,6	62.189	62.970	–	5,5	5,5	9,2	8,0	188	181
	NEG 508830			179,0	123,8	88.347	87.988	–	10,0	9,3	18,0	13,0	215	210
1500 1800	NEG 251370	140	GGG	111,2	80,0	13.721	14.215	T3, T4	0,9	1,05	1,45	1,5	57	54
	NEG 251760	150	GGG	142,8	97,0	17.620	17.235	T3, T4	1,1	1,2	2,0	1,9	64	60
	NEG 252060			166,6	112,3	20.557	19.954	–	1,35	1,45	2,5	2,3	68	64
	NEG 252450	160	GGG	198,4	138,2	24.481	24.556	T3, T4	1,6	1,7	3,2	3,0	85	79
	NEG 253080			250,0	174,0	30.848	30.917	–	1,9	2,0	3,8	3,5	95	92
	NEG 253720	170	GGG	301,6	206,7	37.214	36.726	T3, T4	2,2	2,5	3,9	3,9	127	122
	NEG 254310			349,2	234,7	43.088	41.702	–	2,5	2,8	4,8	4,65	125	120
	NEG 254900	180	GGG	396,8	272,8	48.961	48.472	T3	3,6	3,4	6,0	5,0	174	166
	NEG 256460	190	GGG	523,8	364,6	64.632	64.783	–	6,0	6,0	10,5	9,0	212	200
	NEG 258040	195	GGG	652,0	452,0	80.450	80.312	–	10,0	9,3	18,0	13,0	215	210
	NEG 258260	197	GGG	669,2	492,4	82.573	87.490	–	7,5	8,5	12,2	12,0	317	303
	NEG 2511210	200	GGG	908,8	633,2	112.137	112.508	–	10,0	10,5	17,5	15,5	433	411
	NEG 2513850			1.122,8	825,2	138.542	145.981	–	11,0	12,0	20,0	20,0	458	424
	NEG 16780	140	GGG	142,8	111,8	7.831	8.829	T3, T4	0,68	0,76	1,4	1,35	60	55
	NEG 161080	150	GGG	196,4	142,8	10.771	11.277	T3, T4	0,75	0,75	1,65	1,5	70	61
	NEG 161470			267,8	187,4	14.686	14.799	–	1,0	1,0	1,8	1,7	81	74
1000 1200	NEG 161660	160	GGG	303,1	198,4	16.622	15.668	T3, T4	1,1	1,3	2,6	2,8	96	86
	NEG 162150			392,8	275,0	21.541	21.717	–	1,5	1,7	3,0	2,75	105	93
	NEG 162550	170	GGG	464,2	323,0	25.457	25.507	T3	1,96	2,1	4,1	3,75	140	127
	NEG 163030			553,4	400,0	30.348	31.588	–	2,2	2,4	4,5	4,3	156	141
	NEG 163820	180	GGG	696,4	467,4	38.191	38.253	T3, T4	2,5	3,0	5,1	5,0	200	182
	NEG 164700			857,0	587,4	46.998	46.387	–	3,2	3,6	6,5	6,0	219	198
	NEG 165190	190	GGG	946,4	658,4	51.901	51.994	T3	3,8	4,0	7,0	6,5	247	225
	NEG 166270			1.142,8	795,0	62.671	62.781	–	4,3	5,0	8,2	8,1	279	251
	NEG 166670	197	GGG	1.216,6	795,8	66.718	62.844	–	5,0	5,9	10,0	9,8	285	257
	NEG 167890	195	GGG	1.439,4	993,4	78.937	78.448	–	7,0	7,5	9,6	13,0	320	282
	NEG 168500			1.550,4	1.077,0	85.024	85.050	–	7,5	8,2	14,0	12,9	326	289
	NEG 169510	197	GGG	1.734,6	1.132,8	95.125	89.457	–	4,6	8,0	13,5	12,4	381	340
	NEG 1612060	200	GGG	2.199,2	1.508,6	120.604	119.134	–	9,0	9,5	16,3	15,0	500	445
	NEG 1613890	205	GGG	2.532,4	1.740,0	138.877	137.407	–	10,6	11,3	19,0	18,0	643	605
	NEG 1617000			3.100,0	2.087,8	170.004	164.873	–	13,0	13,7	24,5	23,0	705	656
	NEG 1621960	210	GGG	4.005,0	2.510,6	219.634	198.261	–	19,0	19,0	33,0	25,5	926	896
750 900	NEG 12440	140	GGG	142,8	142,8	4.405	6.343	–	0,4	0,45	1,2	1,2	60	60
	NEG 12610	150	GGG	196,4	196,4	6.058	8.724	T3	0,4	0,5	1,4	1,3	70	70
	NEG 12930	160	GGG	303,1	303,1	9.350	13.464	T3, T4	0,95	1,1	2,2	2,2	95	95
	NEG 121430	170	GGG	464,2	464,2	14.319	20.620	T3	1,5	1,79	4,1	4,2	133	133
	NEG 122150	180	GGG	696,4	696,4	21.482	30.934	T3	2,0	2,3	5,4	5,2	201	201
	NEG 122640			857,0	857,0	26.436	38.068	T3	2,5	3,0	6,0	6,0	217	217
	NEG 122920	190	GGG	964,4	964,4	29.194	42.839	–	2,8	3,35	6,5	6,5	242	242
	NEG 123530			1.142,8	1.142,8	35.253	50.764	T3	4,0	4,3	8,2	7,85	267	267
	NEG 124440	195	GGG	1.439,4	1.439,4	44.402	63.939	T3	4,9	5,8	9,9	9,5	320	320
	NEG 127640	197	GGG	2.478,0	2.194,6	76.440	97.485	–	6,8	7,5	13,2	12,0	438	419
	NEG 128520	200	GGG	2.763,2	2.481,4	85.238	110.225	–	7,6	8,3	14,0	13,5	540	520
	NEG 1211070	205	GGG	3.589,2	3.100,0	110.718	137.703	–	9,2	9,6	21,0	19,5	702	680
	NEG 1213160			4.267,4	3.812,8	131.639	169.366	–	10,4	11,2	22,0	20,0	755	711
	NEG 1217670	210	GGG	5.726,6	4.901,6	176.651	217.731	–	12,5	16,2	26,5	28,0	1015	981

** Technical Data available upon request



min ⁻¹	Type	Type of housing	Dimensions [mm]													Unbalance [No. of unbalance discs]		
			NEG NEA	A	B	C	D	E mounting pattern	F	G	H	I	L	M	N	n ₂	Typ	50 Hz
3000 3600	NEG 501510	IV	428	235	232	140	190	25	17	104	86,5	188	248	224	4	XLs	12	8
	NEG 501770		14								10							
	NEG 502020		16								10							
	NEG 502270		18								12							
	NEG 503400	IV	558	335	310	155	255	30	23,5	160	108	274	302	310	4	XLs	16	10
	NEG 503820																18	12
	NEG 506220	IV	670	380	390	200	320	32	28	189	155	340	352	384	4	XS	4	4
	NEG 508830	IV	636	403	392	200	320	35	28	200	138	367	360	402	4	XS	4	4
1500 1800	NEG 251370	IV	451	257	231	140	190	25	17	124,5	109,5	206	224	241	4	XS	4	4
	NEG 251760	IV	501	257	231	140	190	25	17	124,5	134,5	206	224	241	4	XS	4	4
	NEG 252060		573								170,5							
	NEG 252450	IV	535	283	278	155	225	28	22	140	136	236	255	271	4	XS	4	4
	NEG 253080		619								178							
	NEG 253720	IV	588	335	310	155	255	30	23,5	160	139	274	302	310	4	XS	4	4
	NEG 254310		670								180							
	NEG 254900	IV	640	369	340	180	280	30	26	173	155	302	322	340	4	XS	4	4
	NEG 256460	IV	670	380	390	200	320	32	28	189	155	340	352	384	4	XS	4	4
	NEG 258040	IV	629	395	392	200	320	35	28	192	135	355	270	375	4	XS	4	4
	NEG 258260	IV	862	436	460	125	380	35	38	215	230	387	320	414	6	XS	4	4
	NEG 2511210	IV	990	454	530	140	440	38	45	230	240	423	370	448	6	XS	4	4
	NEG 2513850																	
	1000 1200	NEG 16780	IV	501	257	231	140	190	25	17	124,5	134,5	206	224	241	4	XS	4
NEG 161080		IV	573	257	231	140	190	25	17	124,5	170,5	206	232	241	4	XS	4	4
NEG 161470																		
NEG 161660		IV	619	283	278	155	225	28	22	140	178	236	255	271	4	XS	4	4
NEG 162150																		
NEG 162550		IV	670	335	310	155	255	30	23,5	160	180	247	302	310	4	XS	4	4
NEG 163030			710								200							
NEG 163820		IV	742	369	340	180	280	30	26	173	206	302	322	340	4	XS	4	4
NEG 164700			802								236							
NEG 165190		IV	772	380	390	200	320	32	28	189	206	340	352	384	4	XS	4	4
NEG 166270			850								245							
NEG 166670		IV	750	436	460	125	380	35	38	215	174	387	320	414	6	XS	4	4
NEG 167890		IV	870	395	392	200	320	35	28	192	255	355	270	375	4	XS	4	4
NEG 168500																		
NEG 169510		IV	862	436	460	125	380	35	38	215	230	387	320	414	6	XS	4	4
NEG 1612060		IV	990	454	530	140	440	38	45	230	240	420	370	448	6	XS	4	4
NEG 1613890		IV	960	526	570	140	480	41	45	268	200	495	510	516	8	XS	4	4
NEG 1617000			1.040								240				8	XS	4	4
NEG 1621960	IV	1.150	607	610	140	520	38	45	297	297,5	542	510	582	8	XS	4	4	
750 900	NEG 12440	IV	501	257	230	140	190	25	17	124,5	134,5	206	224	241	4	XS	4	4
	NEG 12610	IV	573	257	230	140	190	25	17	124,5	170,5	206	232	241	4	XS	4	4
	NEG 12930	IV	619	283	278	155	225	28	22	140	178	236	255	271	4	XS	4	4
	NEG 121430	IV	670	335	310	155	255	30	23,5	160	180	274	302	310	4	XS	4	4
	NEG 122150	IV	742	369	340	180	280	30	26	173	206	302	322	340	4	XS	4	4
	NEG 122640		802								236							
	NEG 122920	IV	772	380	390	200	320	32	28	189	206	340	352	384	4	XS	4	4
	NEG 123530		850								245							
	NEG 124440	IV	870	395	392	200	320	35	28	192	255	355	270	375	4	XS	4	4
	NEG 127640	IV	1.002	436	460	125	380	35	38	215	300	387	320	414	6	XS	4	4
	NEG 128520	IV	1.070	454	530	140	440	38	45	230	280	423	370	448	6	XS	4	4
	NEG 1211070	IV	1.040	526	570	140	480	41	45	268	240	485	510	516	8	XS	4	4
	NEG 1213160		1.120								280							
	NEG 1217670	IV	1.150	607	610	140	520	38	45	297	279,5	542	510	582	8	XS	4	4



Netter Electric External Vibrators Series NEG

Special Version with Reduced Duty Time

Applications

Series NEG electric external vibrators are designed for continuous operation with 100% duty time. In addition, special versions with reduced duty times are available. The reduced duty time allows the use of smaller units possible with the same power output.

Design and functioning principle

Special vibrators with larger unbalances can be used for intermittent or short-time operation. Despite smaller unit size they deliver the same centrifugal forces as the next housing size up.

NEG with reduced duty times are built according to the customer's requirements, to enable individual solutions.

Special Version with CC Unbalances



Applications

The special version with CC unbalances are used when two different unbalance settings need to be available during operation.

Design and functioning principle

In order to use the CC unbalances, a suitable electric switching circuit is required so that the NEG can be operated in both directions. When the NEG rotates in one direction it operates with e.g. maximum unbalance.

When the direction of rotation changes, the outer unbalance disc automatically turns through a specified angle against the inner unbalance disc, creating a reduced unbalance setting. The CC unbalances are built according to the customer's requirements and allow a second unbalance setting of 25-100% of the main value.

Special Version NEG S in Stainless Steel



Applications

Series NEG S electric external vibrators can be used wherever the surfaces are subject to particular requirements for chemical resistance. An important feature of the NEG S series is its modular construction. This enables economical production of even the smallest of series in various steel materials. The protection class IP 66 (protection from dust entry and water flooding) allows cleaning with power jets and aggressive cleaning agents.

Design and functioning principle

All internal components of the stainless steel vibrators come from the established NEG series and are thus production proved.

Even the standard version of the NEG S has a surface quality of 6,3 µm and therefore satisfies the requirements for the chemical and pharmaceutical industries. A higher surface quality can easily be provided if required, e.g. for the food industry. Stainless steel housings are generally heavier than the standard housings. The greater mass must therefore be considered in the layout stage.

Netter Frequency Converter Series NFU

Applications

Series NFU frequency converters are used to regulate the frequency of series NEG electric external vibrators. Certain applications require frequencies which cannot be achieved with the normal multipole external vibrators at mains frequency. The special feature of this frequency converter is its robust and simple construction. The fully equipped units are designed for wall-mounting.

Design and functioning principle

Low-loss power electronics make operation with high tolerance input voltages possible. The frequency converters produce constant 3-phase voltages at frequencies of 0.5 Hz to 120 Hz, making rotational speeds of 30 to 7200 rpm/min. possible with a 2-pole NEG. This enables easy adjustment of the rotational speed.

The permissible temperature range lies between 0°C and +40°C.

Type	kW/A	Supply Voltage	Protection Class
NFU 1-002/1,5	0,18/1,5	1~: 170 to 264 V, 50/60 Hz	IP 55
NFU 1-004/3,3	0,37/3,3	1~: 170 to 264 V, 50/60 Hz	IP 55
NFU 1-004/3,7	0,55/3,7	1~: 170 to 264 V, 50/60 Hz	IP 55
NFU 1-007/4,2	0,75/4,2	1~: 170 to 264 V, 50/60 Hz	IP 55
NFU 1-011/6,9	1,1/6,9	1~: 170 to 264 V, 50/60 Hz	IP 55
NFU 1-015/8	1,5/8,0	1~: 170 to 264 V, 50/60 Hz	IP 55
NFU 1-022/11	2,2/11	1~: 170 to 264 V, 50/60 Hz	IP 55
NFU 2-004/1,5	0,37/1,5	3~: 323 to 550 V, 50/60 Hz	IP 55
NFU 2-006/1,9	0,55/1,9	3~: 323 to 550 V, 50/60 Hz	IP 55
NFU 2-007/2,3	0,75/2,3	3~: 323 to 550 V, 50/60 Hz	IP 55
NFU 2-011/3	1,1/3,0	3~: 323 to 550 V, 50/60 Hz	IP 55
NFU 2-015/4,1	1,5/4,1	3~: 323 to 550 V, 50/60 Hz	IP 55
NFU 2-022/5,5	2,2/5,5	3~: 323 to 550 V, 50/60 Hz	IP 55
NFU 2-030/7,1	3,0/7,1	3~: 323 to 550 V, 50/60 Hz	IP 55
NFU 2-040/9,5	4,0/9,5	3~: 323 to 550 V, 50/60 Hz	IP 55

The use of a braking resistance allows rapid braking within a few revolutions after switching off the supply voltage, in order to avoid undesired resonance vibrations.



Type	Ohm/Watt	Protection Class
BZ 100/100	100/100	IP 54

Netter Braking Devices Series BZ

Applications

Series BZ braking devices are used to bring the running NEG to a standstill, as quickly as possible. It is often necessary to be able to switch off vibrating tables and conveyors without them running on, in order to avoid the symptoms of resonance.

A special feature of these devices is a very high braking efficiency with compact unit size.

Name	Supply Voltage	Protection Class	Max. Nominal Power NEG at 50 Hz/60 Hz
BZ 30	1~230 V or 3~400 V 50/60 Hz	IP 23	5 kW/5,5 kW
BZ 70	1~230 V or 3~400 V 50/60 Hz	IP 23	10 kW/11 kW
BZ 200	1~230 V or 3~400 V 50/60 Hz	IP 23	26 kW/28 kW

The max. nominal power serves only as a guide for selection. Please consult us, we will help you with your layout!



Design and functioning principle

Upon activation the load-resistant power electronics change the direction of the electric rotational field, thus bringing the NEG to an immediate standstill. The momentarily high braking currents are easily tolerated by the NEG.

The permissible temperature range lies between 0°C and +40°C.

These braking devices are only suitable for constant mains frequencies of 50Hz or 60 Hz. Operation together with a frequency converter is not permitted.



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Netter Electric External Vibrators Series NEG

Formulas

Unbalance	$M = s \times m$	Centrifugal force	$F = a_{(g)} \times m \times 9,81$
Acceleration	$a_{(g)} = s \times \left(\frac{n}{1000}\right)^2 \times 5,59$	Centrifugal force	$F = M \times \left(\frac{n}{1000}\right)^2 \times 54,84$

Symbols and Units

s	Displacement	cm	n	Frequency	min ⁻¹
m	Weight with vibrator	kg	M	Unbalance	cmkg
F	Centrifugal force	N	a _(g)	Acceleration	g

Which Kind of Vibrator for Which Kind of Duty?

Duty	Frequency	Acceleration [a _(g)] Times acceleration due to gravity	Amplitude	Vibration	
				Rotary Linear	
Conveying, dosing	750 – 3000	2 – 5	Large		
Sieving	1000 – 1500	3 – 4	Large		
Draining	1500 – 3000	3 – 5	Medium		
Cleaning, shaking off filters	1500 – 3000	2 – 3	Medium		
Lightening, loosening Emptying bulk material	1500 – 3000	0.15 - 0.2 of weight of material in the conical part of the silo	Medium		
Compacting bulk material	1500 – 6000	2 – 4	Small		
Concrete compaction	3000 – 9000	0,8 – 1,5	Very small		
Testing components	300 – 6600	0,5 – 5	Adjustable		



Conveying



Sieving



Compacting

Applications

Series NEG, NEA or NED electric external vibrators are used whenever, for example, conveyor chutes or sieves need to be driven. In addition, these devices can loosen material blockages and adhesions in silos. When used on concrete forms, the especially even vibration produces high surface quality and compaction of the concrete.

The special feature of the NEG is its maintenance-free operation, even in rough environmental conditions.

Design and functioning principle

Electric external vibrators are unbalance motors, which work according to the short circuit runner principle and, apart from a few significant differences, are very similar to conventional electric motors.

The 3-phase NEG units run at 750, 1000 or 3000 min⁻¹ with a 230/400V, 50 Hz power supply, depending on the number of poles.

The NEA single phase units run at 3000 min⁻¹ with a 230V, 50 Hz power supply. Additional voltages are available.

The direct current NED units run at 3000 min⁻¹ with a 12 or 24 Volt power supply.

Unbalances sitting on each end of the shaft produce an unidirectional sinus-shaped rotation at the frequency of the respective speed of rotation.

All NEG/NEA are also designed for operation at 60 Hz. The speed of rotation then lies at 20% above the values at 50 Hz. The unbalance is adjusted if necessary.

Generously dimensioned rolling bearings guarantee high operational safety. All NEG are suitable for operation with Netter frequency converters, without limitation.

**Netter provides solutions.
Consult our experienced application technicians.**

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Netter Pneumatic External Vibrators Series NVR, NVG, NVT and NQT



- Circular vibration
- Nominal frequency from 8.500 min⁻¹ to 17.000 min⁻¹
- Centrifugal force from 7.130 N to 62.260 N
- Frequency infinitely variable by air pressure
- No bearings
- Easily and quickly removable
- Noise reduced design NQT



NVG 61



NVR 61



NVT with bracket NVH 4



NetterVibration



Netter Pneumatic External Vibrators Series NVR, NVG, NVT and NQT

Type		NVR®, NVG®			NVT®, NVG®		NVT®, NVG®			NQT	
		49	55	61	82	113	84	87	105	93	108
Nominal frequency	[min ⁻¹]	17.000	16.500	16.000	9.000	8.500	16.000	15.200	14.500	10.000	10.000
Centrifugal force	[N]	7.130	11.000	14.250	15.320	38.830	27.400	37.500	62.260	18.480	24.788
Unbalance	[cmkg]	0,45	0,74	1,02	3,45	9,80	1,95	2,96	5,40	3,37	4,52
Air consumption	[l/min]	1.000	1.100	1.200	1.600	1.700	1.600	1.600	1.800	1.450	1.550
Weight	[kg] ①	6,6	7,0	7,6	14,9	16,9	14,0	14,4	16,3		
without hose	[kg] ②	7,1	7,3	7,8	19,7	22,6	20,0	20,4	22,4		
Weight with hose	[kg]									18,6	20,3

NVG with base plate. NVT and NQT with carrying handle on top for bracket NVH 4. NVR without carrying handle for bracket NVH 1. Data obtained on 6 bar.

NVR / NVT / NQT

NVG

Type	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	Ø G [mm]	H [mm]
NVG 49, 55, 61	220	111	175	60	180	—	20	20
NVR 49, 55, 61	182	140	175	90	—	—	—	—
NVT 82, 113, 84, 87, 105	240	185	150	83	225	—	—	—
NVG 82, 113, 84, 87, 105	260	187	145	140	200	70	17	12
NQT 93, 108	240	230	240	80	—	—	—	—



Compacting of moulding sand



Tunnel moulds

Dimensions of NVH 1 and NVH 4		Type		NVH 1	NVH 4
		A		180	240
		B		105	100
		C		60	70
		D		100	130

Dimensions of NVH 1 and NVH 4

Application

The pneumatic external vibrators series NQT, NVG, NVR und NVT are especially suitable for compacting, conveying and loosening bulk material.

They are used to compact concrete, empty bins and as drives for conveyors, sieves and vibrating tables.

A special feature is the ruggedness against strong varying loads. There is no danger of overload.

Design and functioning principle

The vibration (circular) is produced by eccentric rotating rotors. The frequency and herewith the centrifugal force are continuously adjustable by the operating pressure. For operation a control valve is required (not included in scope of delivery).

Permissible operating conditions

Drive medium:

Compressed air or nitrogen (Filter ≤ 5 µm), preferably with oil mist.

Operating pressure:

1 bar to 7 bar

Ambient temperature:

–10°C to +60°C

Units for other temperatures are available.

NetterVibration offers the accessories required for the mounting, installation and control of vibrators and interval impactors.

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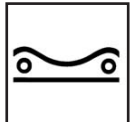
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15

Netter Vacuum Fixing Devices for Vibrators Series VAC



- Quick mounting without bolting or welding
- Strong connection due to high vacuum
- Can also be used on curved or uneven surfaces
- Optional air economizer
- ATEX conform and stainless steel versions available
- Customized versions possible



VAC 10 with NCT 4



VAC 15 with PKL 150 ST



VAC 30 with NTS 50/04



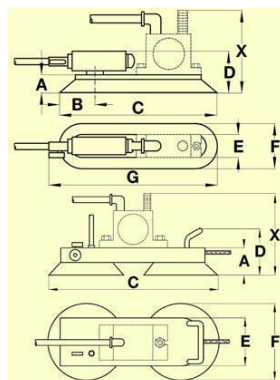
Netter Vacuum Fixing Devices for Pneumatic Vibrators Series VAC

Type	Air consumption without vibration [l/min]		Weight [kg]	Minimum diameter for round containers [mm]	Suitable vibrator
	4 bar	6 bar			
VAC 8 + HG 10 N	40	60	0,95	110	NCB 1-2, NCT 1-2; NTK 8 AL - 18 AL, NTP 25 B**; NTS 120-180 HF+NF*
VAC 8 + HG 10 S	20	22	1,20		
VAC 10+HG 10 N	40	60	1,05	110	NCB 1-3, NCR 3, NCT 3-4, NTK 15X, NTK 18 AL, NTP 25 B**; NTS 180-250 HF+NF*, PKL 125**
VAC 10+HG 10 S	20	22	1,30		
VAC 11+HG 10 N	40	60	1,25	110	NCB 3-5, NCR 10, NCT 5-10, NTK 18 AL, NTS 180-250 HF+NF, PKL 135**
VAC 11+HG 10 S	20	22	1,50		
VAC 12+HG 15 N	60	122	2,85	350	NCB 10-20, NCR 22, NCT 15-29, NTP 32 B**, PKL 135**+150**, PKL 170*, NTK 25 AL, NTS 350 HF+NF, NTS 100/01-50/01**
VAC 12+HG 15 S	29	36	3,20		
VAC 15+HG 15 N	110	170	3,40	650	NCB 10-70, NCR 22-57*, NCT 15-108*, NTP 32 B-48 B*, PKL 150, NTK 18 AL, NTK 25, NTS 75/01-70/02*, NTS 250-350 HF+NF
VAC 15+HG 15 S	41	52	3,75		
VAC 20+HG 15 N	110	170	7,25	850	NCR 57, NCT 55-108, NTP 32 B-48 B, NTS 70/02-50/04*, PKL 170, PKL 220
VAC 20+HG 15 S	41	52	7,60		
VAC 30+HG 30 N	110	170	11,50	1.500	NCR 120, NCT 250, NTS 50/04, NTS 50/08*, NVG 49/55/61, NVG 82/84*, PKL 200/5
VAC 30+HG 30 S	49	60	12,00		
VAC 40+HG 40 N	220	340	20,00	1.500	NTS 50/08*, NTS 50/10*

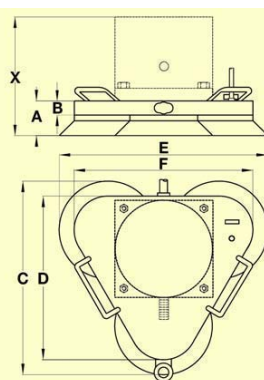
The technical data are comparative values and can vary depending on the application. Additional data available upon request.

* Depending on application, please consult Netter. ** Adapter plate necessary, please include in order!

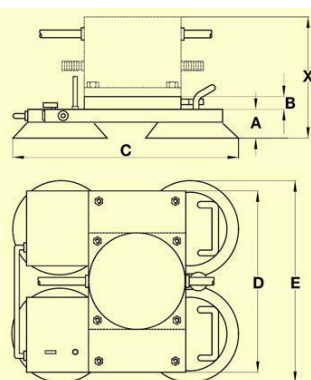
Type	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	Type	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]
VAC 8	20	30	150	53	33	55	190	VAC 15	50	-	350	95	100	150	-
VAC 10	22	40	200	53	31	55	245	VAC 20	70	-	440	115	150	200	-
VAC 11	19	40	300	53	31	55	330	VAC 30	70	30	398	340	428	370	-
VAC 12	25	60	300	60	72	100	330	VAC 40	60	25	428	375	425	-	-



VAC 8/10/11/12, VAC 15/20



VAC 30



VAC 40 dimension X depending on vibrator



Mobile use on stainless steel container

Applications

The vacuum fixing devices series VAC are designed to allow quick attachment of vibrators to smooth or, under circumstances, uneven and curved surfaces. A special feature of the the vacuum fixing is the ease of attachment, which requires no welding or bolting.

Construction and working principle

The appropriate vibrator is screwed to the vacuum fixing and connected to the supply hose leading to the hand valve.

As soon as the vacuum fixing is connected to the compressed air supply, the unit is sucked tightly to the mounting surface, thus ensuring a strong connection between the vibrator and the surface.

The air economizer "S" creates a reduced vacuum, which is sufficient to clamp the vibrator when it is not running and which reduces the air consumption by over 30%.

ATEX conform vacuum fixings series VAC and units with a stainless steel plate are available.

When the vibrator starts, the fixing device automatically produces the full vacuum.

Permissible operating conditions

Drive medium:

Compressed air or nitrogen (filter ≤ 5µm)

Operating pressure:

2 bar to 6 bar

Ambient temperature:

-10°C to 60°C

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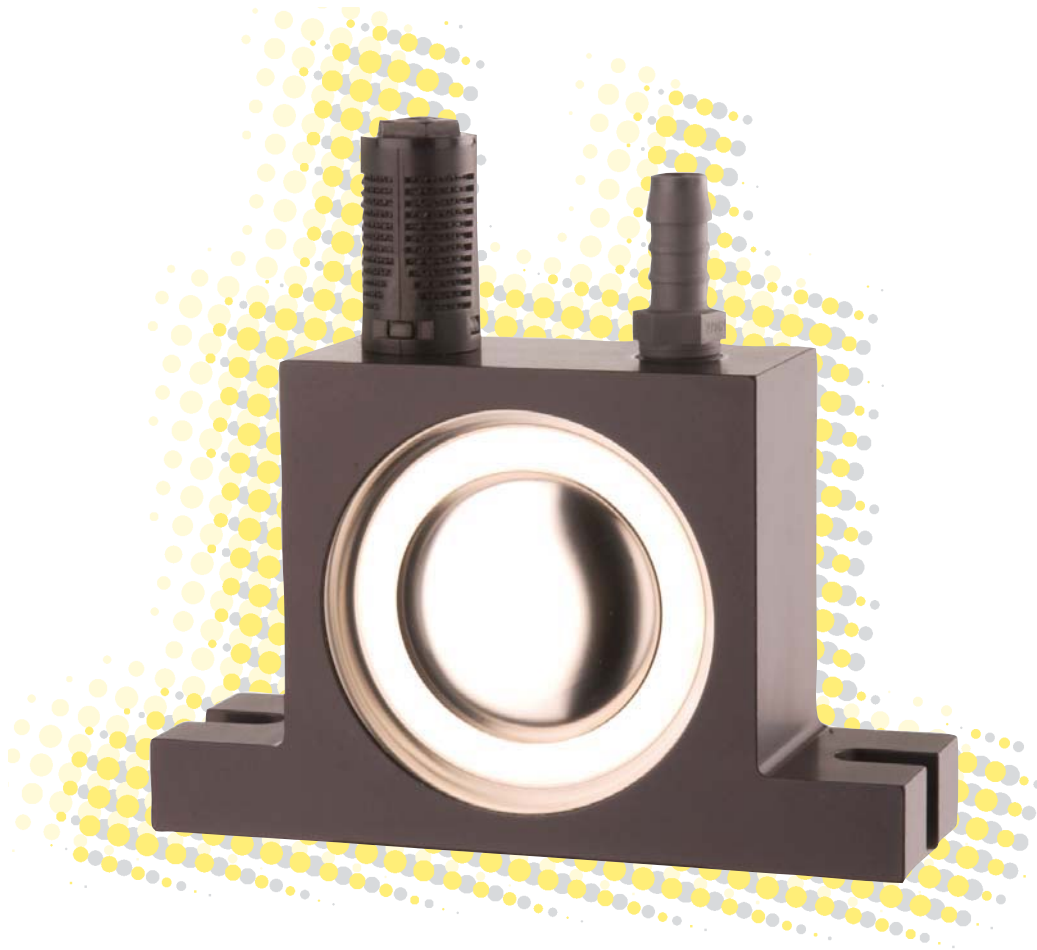
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Netter Pneumatic Ball Vibrators Series NCB



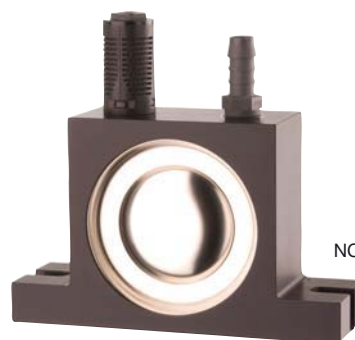
- Rotary vibration
- Nominal frequency from 7.220 min⁻¹ to 42.340 min⁻¹
- Centrifugal force from 220 N to 4.866 N
- Frequency continuously adjustable via air pressure
- Suitable for temperatures up to 200°C



NCB 1



NCB 10



NCB 50



NetterVibration

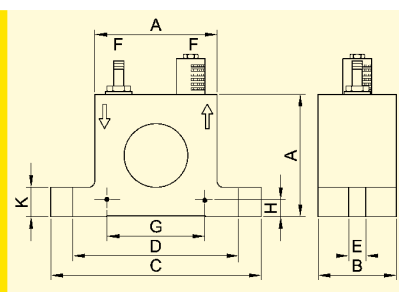


Netter Pneumatic Ball Vibrators Series NCB

Type	Working moment [cmkg]	Nominal frequency [min ⁻¹]			Centrifugal force [N]			Air consumption [l/min]	Noise level* [dB(A)]
		2 bar	4 bar	6 bar	2 bar	4 bar	6 bar		
NCB 1	0,005	28.460	37.060	42.340	222	377	491	38 – 112	71 – 79
NCB 2	0,009	22.880	31.160	37.540	258	479	696	38 – 115	74 – 79
NCB 3	0,029	17.100	21.600	24.360	465	742	947	81 – 219	74 – 82
NCB 5	0,046	15.220	19.180	22.480	587	933	1.277	77 – 217	78 – 85
NCB 10	0,131	11.320	14.380	16.380	921	1.486	1.928	226 – 463	82 – 89
NCB 20	0,211	10.560	13.780	15.420	1.298	2.198	2.753	222 – 468	78 – 86
NCB 50	0,522	7.220	9.940	11.220	1.492	2.828	3.603	312 – 733	80 – 86
NCB 70	0,808	7.220	8.820	10.480	2.310	3.446	4.866	310 – 728	75 – 84

*Specific silencer to reduce the noise level available.

Type	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G* [mm]	H* [mm]	K [mm]	Weight [kg]
NCB 1										
NCB 2										
NCB 3										
NCB 5										
NCB 10										
NCB 20										
NCB 50										
NCB 70										



*Dimensions for horizontal mounting, bore ØE



Sorting and aligning



Emptying without bridging

Applications

Series NCB pneumatic ball vibrators can be used wherever bulk materials need to be moved.

They serve in the emptying of bunkers, for preventing bridging, rat-holing and adhesion. When used to drive chutes, sieves and vibrating tables, they ensure that the material flow is maintained.

The special feature is the simple construction.

Construction and Working Principle

The rotary vibration is created by the high centrifugal force produced by a circulating steel ball, which runs on hardened, polished steel races.

The frequency, and hence the centrifugal force, can be continuously regulated via the operating pressure.

Series NCB ball vibrators can be operated using lubrication-free compressed air.

A multi-directional valve is required for operation (not included in the scope of supply).

Permissible Operating Conditions

Drive medium:

Compressed air or nitrogen (filter ≤ 5 µm), preferably with oil mist

Operating pressure:

2 bar to 6 bar

Ambient temperature:

–20°C to +120°C

HT version up to +200°C

NetterVibration offers the accessories required for the mounting, installation and control of vibrators and interval impactors.

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20

Netter Pneumatic Roller Vibrators



Series NCR

- Rotary vibration
- Suitable for aggressive environmental conditions
- High propulsive power
- Nominal frequency from 10.140 min⁻¹ to 34.300 min⁻¹
- Centrifugal force from 878 N to 9.100 N
- Frequency continuously adjustable via air pressure
- Suitable for temperatures up to 200°C





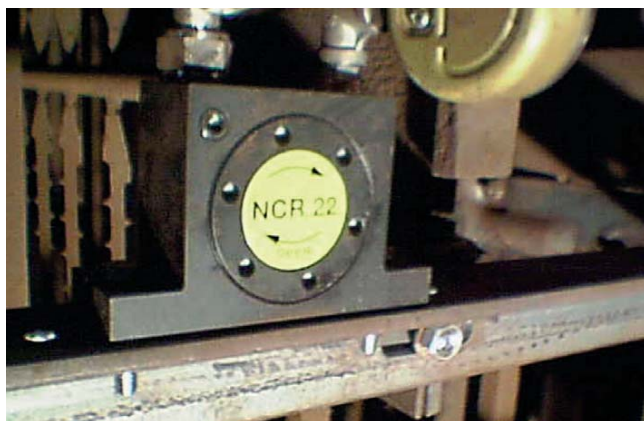
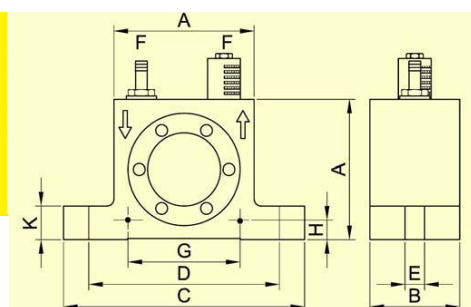
Netter Pneumatic Roller Vibrators Series NCR

Type	Working moment [cmkg]	Nominal frequency [min ⁻¹]			Centrifugal force [N]			Air consumption [l/min]			Noise level [dB(A)]		
		2 bar	4 bar	6 bar	2 bar	4 bar	6 bar	2 bar	-	6 bar	2 bar	-	6 bar
NCR 3	0,031	22.699	30.480	34.304	878	1.579	2.000	55	-	146	74	-	85
NCR 10	0,102	20.180	24.520	27.760	2.278	3.363	4.311	121	-	301	74	-	86
NCR 22	0,224	16.400	20.040	21.780	3.313	4.933	5.828	162	-	424	77	-	87
NCR 57	0,572	12.480	14.370	15.465	4.902	6.489	7.520	246	-	574	74	-	91
NCR 120	1,200	10.140	11.680	11.760	6.765	8.976	9.100	315	-	768	86	-	97

The technical data are comparative values and can vary depending on application. Additional data available upon request.

Type	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G* [mm]	H* [mm]	K [mm]	Weight [kg]
NCR 3	51	28,5	86	68	7	G 1/8	40	7	12	0,235
NCR 10	67	36	113	90	9	G 1/4	50	9	16	0,535
NCR 22	80	42,5	128	104	9	G 1/4	60	10	16	0,940
NCR 57	100	51	160	130	13	G 3/8	80	12	20	1,800
NCR 120	120	75	194	152	17	G 3/8	100	13	24	4,250

*dimensions for mounting horizontal, bore ØE



Dusting off filter wires



Emptying silo trailers

Applications

Pneumatic roller vibrators series NCR are particularly suitable for the elimination or reduction of friction.

They can be used for emptying bunkers and preventing adhesion to pipes and plates. Special features of the NCR vibrators are very high frequencies, high centrifugal forces and insusceptible resonance behaviour.

Construction and working principle

The rotary vibration is created by the high centrifugal force of a circulating steel roller, which runs on a steel ring at very high frequency.

The frequency, and hence the centrifugal force, can be continuously regulated via the operating pressure.

Series NCR roller vibrators can be operated using lubrication-free compressed air.

A multi-directional valve is required for operation (not supplied).

Permissible Operating Conditions

Drive medium:

Compressed air or nitrogen (filter ≤ 5µm) preferably with oil mist

Operating pressure:

2 bar to 6 bar

Ambient temperature:

-20°C to 120°C

HT version for temperatures up to 200°C

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Netter Pneumatic Turbine Vibrators Series NCT



- Rotary vibration
- Resistant to aggressive environmental conditions
- Unrestricted, lubrication-free operation
- Nominal frequency from 4.900 min^{-1} to 45.460 min^{-1}
- Centrifugal force from 288 N to 8.659 N
- Frequency continuously adjustable by means of air pressure
- Reduced noise level
- Maintenance-free due to continuously lubricated rolling bearing
- Available in ATEX conform or in stainless steel versions





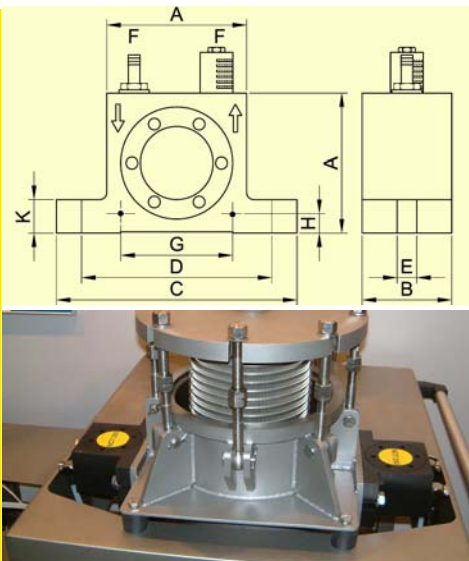
Netter Pneumatic Turbine Vibrators Series NCT

Type	Working moment [cmkg]	Nominal frequency [min ⁻¹]			Centrifugal force [N]			Air consumption [l/min]			Noise level [dB(A)]		
		2 bar	4 bar	6 bar	2 bar	4 bar	6 bar	2 bar	-	6 bar	2 bar	-	6 bar
NCT 1	0,006	29.100	38.820	45.460	288	513	703	19	-	45	68	-	83
NCT 2	0,012	21.360	29.520	34.000	311	594	787	20	-	48	66	-	81
NCT 3	0,016	26.940	34.900	39.700	637	1.069	1.383	28	-	75	63	-	77
NCT 4	0,023	21.740	26.920	30.380	597	915	1.165	31	-	73	62	-	76
NCT 4i	0,046	14.020	18.560	21.000	496	869	1.112	31	-	75	61	-	73
NCT 5	0,049	22.740	27.840	30.940	1.389	2.082	2.572	93	-	284	74	-	90
NCT 10	0,096	16.940	20.680	22.980	1.511	2.251	2.780	92	-	287	66	-	78
NCT 10i	0,192	12.200	14.680	16.420	1.567	2.269	2.839	93	-	286	63	-	77
NCT 15	0,160	15.740	20.060	22.700	2.174	3.530	4.521	215	-	461	72	-	84
NCT 29	0,282	11.920	14.760	16.740	2.197	3.369	4.334	216	-	461	66	-	78
NCT 29i	0,564	7.360	10.240	11.780	1.676	3.243	4.291	213	-	463	63	-	77
NCT 55	0,545	11.000	13.980	15.760	3.618	5.845	7.426	386	-	918	77	-	85
NCT 108	1,081	8.280	10.420	11.720	4.067	6.441	8.152	379	-	911	73	-	84
NCT 108i	2,161	4.900	6.860	8.000	2.860	5.590	7.591	392	-	927	66	-	77
NCT 126	1,262	6.060	8.280	9.400	2.591	4.760	6.124	653	-	1.707	71	-	83
NCT 250	2,502	5.500	7.020	7.800	4.152	6.761	8.348	655	-	1.710	71	-	82
NCT 250i	5,000	-	5.100	5.620	-	7.131	8.659	1.222*	-	1.732	70	-	74

The technical data are relative values and can vary depending on the application. Additional data available upon request. *at 4 bar

Type	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G* [mm]	H* [mm]	K [mm]	Weight [kg]
NCT 1	40	27	70	56	6,5	G 1/8	30	5,5	10	0,165
NCT 2	40	27	70	56	6,5	G 1/8	30	5,5	10	0,162
NCT 3	50	32	86	68	7	G 1/8	40	7	12	0,230
NCT 4	50	32	86	68	7	G 1/8	40	7	12	0,240
NCT 4i	50	32	86	68	7	G 1/8	40	7	12	0,250
NCT 5	65	43	113	90	9	G 1/4	50	9	16	0,550
NCT 10	65	43	113	90	9	G 1/4	50	9	16	0,570
NCT 10i	65	43	113	90	9	G 1/4	50	9	16	0,610
NCT 15	80	56	128	104	9	G 1/4	60	10	16	1,045
NCT 29	80	56	128	104	9	G 1/4	60	10	16	1,090
NCT 29i	80	56	128	104	9	G 1/4	60	10	16	1,180
NCT 55	100	73	160	130	13	G 3/8	80	12	20	2,125
NCT 108	100	73	160	130	13	G 3/8	80	12	20	2,250
NCT 108i	100	73	160	130	13	G 3/8	80	12	20	2,500
NCT 126	120	86	194	152	17	G 3/8	100	13	25	3,585
NCT 250	120	86	194	152	17	G 3/8	100	13	25	3,820
NCT 250i	120	86	194	152	17	G 3/8	100	13	25	4,290

* dimensions for mounting horizontal, bore ØE



Sifting of fine grained products

Applications

Series NCT pneumatic turbine vibrators are particularly suitable for moving bulk materials. They can be used for emptying bunkers, driving chutes, sieves and vibrating tables and for the mechanical stimulation of processes. Special features of the NCT vibrators are high frequency at low noise level and low air consumption.

Design and functioning principle

The rotary vibration is produced by an eccentrically mounted turbine with integrated unbalance masses. The frequency and therefore the centrifugal force can be continuously regulated via the operating pressure. A directional control valve is necessary for operation (not supplied).

ATEX conform series NCT turbine vibrators and units with stainless steel housings are available.

Permissible operating conditions

Drive medium:

Compressed air or nitrogen (filter ≤ 5µm), preferably with oil mist

Operating pressure:

2 bar to 6 bar

Ambient temperature:

-20°C to 120°C

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Technical data sheet Netter hydraulic external vibrators Series NHG L

July 2007
No. 4135E



Application:

Container discharge, especially for bulky material on transport trucks. Easy mounting on molds for concrete compaction or on machine parts to vibrate bulk material, on hoppers or silos.

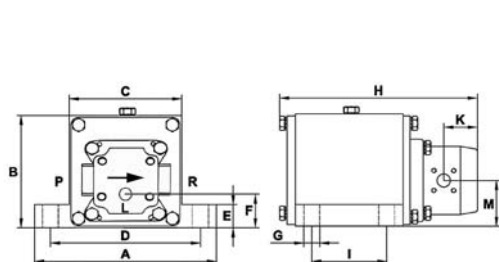
Type	Unbalance [cmkg]	Long term operation ED 100%			Short term operation ED ≤ 60%			Weight [kg]
		Frequency [U/min]	Centrifugal force [N]	Flow [l/min]	Frequency [U/min]	Centrifugal force [N]	Flow [l/min]	
NHG 500 L	2,06	6.000	4.070	12	7.000	5.550	14	6,4
NHG 600 R L	3,00	6.000	5.922	12	7.000	5.723*	14	8,2
NHG 900 L	6,64	4.000	5.870	8	5.000	9.100	10	7,7
NHG 3000 L	29,18	3.500	19.600	20	4.000	25.600	22	29,0

*) In this case the unbalance must be reduced to 2,19 cmkg.

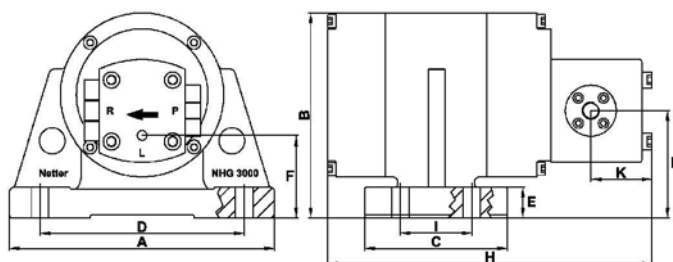
Type	Operating pressure inlet [bar]	Oil temperature [°C]	Ambient temperature [°C]
NHG 500 L	200	-15 to 90	-20 to 80
NHG 600 R L	200	-15 to 90	-20 to 80
NHG 900 L	200	-15 to 90	-20 to 80
NHG 3000 L	300	-15 to 90	-20 to 60

The NHG 500 L, NHG 900 L and NHG 3000 L have fixed unbalances.

Type NHG 600 R L (reversible) has an unbalance that can be adjusted in steps. Adjustment of the unbalance is accomplished from outside, no opening of covers required. Adjustable unbalance and larger types of vibrators on request.



NHG 500 L, NHG 600 R L and NHG 900 L



NHG 3000 L

Type	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	Ø G [mm]	H [mm]	I [mm]	K [mm]	Ø L [mm]	M [mm]	Ø P [mm]	Ø R [mm]
NHG 500 L, NHG 600 R L NHG 900 L	194	120	120	160	24	36	17	212	80	37	G1/4	47	G1/4	G3/8
NHG 3000 L	260	190 (210)	140	200	30	60 (80)	17	320	70	50	M12x1,5	94 (114)	G3/8	G1/2

Our experienced technicians will advise you further.

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Netter Pneumatic Linear Vibrators Series NTK



- Linear vibration
- Nominal frequency from 420 min⁻¹ to 3.800 min⁻¹
- Centrifugal force from 14 N to 4.748 N
- Variable additional weights
- Frequency and amplitude are separately adjustable
- Stainless steel version available
- Ex II 2 GD 85°C (T6) available (ATEX)



NTK 8 AL



NTK 25



NTK 55 AL



Netter Pneumatic Linear Vibrators Series NTK

The table shows the most frequent ratings of piston vibrators series NTK.

1 "Piston" means, that the piston vibrates, the housing is bolted to the mass to be operated.

2 The additional weights SM increase the mass of the piston and in consequence the amplitude.

3 "Housing" in the table means that the vibrator is fixed to the piston and allows additional

combinations.

4 Some vibrators may be fitted with additional weights SM at the housing.

Methods of attachment



*in case of horizontal mounting with weights, please pay particular attention to the operating manual!

Type	Oscillating part		Working moment [cmkg]			Nominal frequency [min ⁻¹]			Centrifugal force [N]			Air consumption [l/min]***	Noise level [dB(A)]
	Assembly	Mass [kg]**											
			2 bar	4 bar	6 bar	2 bar	4 bar	6 bar	2 bar	4 bar	6 bar	2 bar – 6 bar	2 bar – 6 bar
NTK 8 AL*	Piston	0,030	0,05	0,06	0,06	2.440	3.120	3.657	15	32	44	7 – 32	61 – 75
	Piston + SM 8-1	0,046	0,08	0,10	0,10	1.858	2.412	3.000	16	32	48	6 – 31	
	Piston + 2 x SM 8-1	0,058	0,09	0,14	0,15	1.680	2.100	2.571	14	33	54	6 – 29	
	Piston + SM 8-2	0,088	0,15	0,37	0,21	1.380	1.333	2.080	15	36	50	6 – 25	
NTK15 x*	Piston	0,135	0,29	0,33	0,29	1.745	2.182	2.544	49	85	104	17 – 72	53 – 64
	Piston + SM 16-1	0,455	0,81	1,17	1,27	1.029	1.137	1.343	47	83	126	16 – 57	
	Piston + SM 16-2	0,675	1,69	3,06	1,69	758	720	1.152	53	87	123	14 – 54	
NTK16	Piston	0,150	0,27	0,37	0,34	1.680	1.920	2.400	42	75	106	14 – 58	54 – 67
	Piston + SM 16-1	0,470	1,14	1,48	1,48	908	1.309	1.527	52	139	189	11 – 44	
	Piston+SM16-1+SM 16-2	0,990	2,96	3,02	2,96	686	914	1.085	76	139	191	8 – 41	
	Housing	1,330	4,90	4,60	4,50	600	778	923	96	153	210	8 – 39	
NTK18 AL*	Piston	0,210	0,29	0,33	0,36	1.600	1.980	2.350	41	70	109	19 – 68	55 – 68
	Piston + SM 16-1	0,530	1,18	1,47	1,41	972	1.321	1.572	61	141	191	13 – 58	
	Piston + SM 16-2	0,750	1,96	2,29	2,16	878	1.168	1.371	83	171	223	11 – 56	
	Piston + SM 16-1+SM 16-2	1,050	3,27	3,27	3,21	738	965	1.174	98	167	242	10 – 50	
	Piston + 2xSM16-2	1,270	3,86	4,13	3,93	702	902	1.039	104	184	233	9 – 46	
NTK25 AL*	Piston	0,420	1,18	1,38	1,24	1.289	1.821	1.986	107	250	269	34 – 149	56 – 73
	Piston + SM 25-1	0,775	2,59	2,95	2,88	988	1.371	1.622	139	304	415	26 – 138	
	Piston + SM 25-2	0,970	3,54	3,86	3,67	894	1.237	1.477	155	324	439	24 – 127	
	Piston + SM 25-3	1,655	6,88	6,94	6,55	686	898	1.080	177	307	419	22 – 115	
	Piston + 2 x SM 25-3	2,840	11,79	11,46	11,13	540	823	943	188	425	543	21 – 104	
NTK25	Piston	0,470	1,12	1,36	1,32	1.440	1.946	2.270	127	282	374	38 – 156	57 – 73
	Piston + SM 25-2	1,020	3,07	3,62	3,76	993	1.320	1.655	166	346	565	28 – 115	
	Piston + SM 25-3	1,705	5,58	6,41	6,34	800	988	1.292	196	343	581	25 – 105	
	Housing	2,600	9,10	9,95	9,82	690	911	1.067	237	452	612	24 – 102	
	Housing + SM 25-2	3,150	9,82	11,62	11,29	649	847	973	226	457	586	23 – 100	
	Housing + SM 25-3	3,835	11,45	14,07	13,74	609	780	933	233	469	656	23 – 100	
	Housing + 2 x SM 25-3	5,020	14,40	18,00	17,67	565	738	825	252	538	660	20 – 99	
NTK40 AL*	Piston	1,240	2,88	2,64	2,16	1.231	1.620	2.094	239	380	519	54 – 220	58 – 70
	Piston + SM 25-3	2,475	6,72	8,40	7,44	900	1.168	1.389	298	628	787	36 – 210	
	Piston + 2 x SM 25-3	3,660	13,08	13,20	12,96	710	923	1.169	361	617	971	34 – 173	
	Piston + SM 25-4	4,910	24,24	20,64	18,72	565	780	985	424	689	995	33 – 152	
NTK40	Piston	1,270	3,57	3,57	2,46	1.200	1.629	1.930	282	520	503	49 – 228	58 – 70
	Piston + SM 25-3	2,505	7,39	8,62	8,50	889	1.175	1.433	320	653	957	38 – 188	
	Piston + 2 x SM 25-3	3,690	12,07	14,17	13,80	673	933	1.206	300	677	1.100	35 – 165	
	Housing	4,200	19,48	17,08	16,36	600	840	1.108	385	661	1.100	34 – 161	
	Piston + SM 25-4	4,940	27,10	22,67	19,71	554	778	980	456	753	1.037	32 – 152	
	Housing + SM 25-3	5,435	33,44	26,34	21,65	519	738	933	494	788	1.034	29 – 145	
NTK55 AL*	Piston	2,100	3,62	3,50	2,66	1.500	1.920	2.400	447	708	839	98 – 398	62 – 71
	Piston + SM 85-1	3,430	7,25	7,25	6,28	1.113	1.440	1.768	492	824	1.077	83 – 384	
	Piston + 2 x SM 85-1	4,610	11,11	10,87	9,90	985	1.292	1.500	591	995	1.222	81 – 371	
	Piston + SM 85-2	5,870	14,49	14,49	13,28	884	1.175	1.371	621	1.097	1.370	79 – 366	
	Piston + 2xSM 85-1+SM85-2	8,285	22,94	22,22	20,29	758	1.011	1.200	723	1.244	1.602	73 – 355	
NTK55 HF	Piston	2,100	2,49	2,74	2,49	1.760	2.352	2.836	423	831	1.099	65 – 295	64 – 74
	Piston + SM 85-2	3,430	4,98	6,35	6,11	1.380	1.705	2.050	520	1.013	1.407	53 – 291	

Type	Oscillating part		Working moment [cmkg]			Nominal frequency [min ⁻¹]			Centrifugal force [N]			Air consumption [l/min]**	Noise level [dB(A)]
	Assembly	Mass [kg]**	2 bar	4 bar	6 bar	2 bar	4 bar	6 bar	2 bar	4 bar	6 bar		
NTK 55 NF	Piston	2,100	4,08	3,60	2,88	1.405	1.879	2.351	441	696	872	101 – 408	62 – 71
	Piston + 2 x SM 85-1	4,610	11,03	11,75	10,55	973	1.358	1.611	573	1.189	1.501	69 – 345	
	Housing	5,900	14,40	15,09	13,47	884	1.206	1.467	617	1.204	1.588	64 – 330	
	Piston + SM 85-1 + SM 85-2	7,050	18,94	19,66	18,22	853	1.140	1.380	755	1.401	1.903	63 – 321	
	Piston + SM 85-3	14,630	41,37	41,97	41,97	677	862	1.015	1.039	1.708	2.371	62 – 317	
	Housing + SM 85-3	18,430	46,44	52,25	49,92	649	823	960	1.071	1.940	2.523	61 – 286	
NTK 85 HF	Piston	5,200	3,01	3,76	3,88	2.520	3.120	3.800	1.047	2.006	3.075	118 – 431	64 – 79
	Piston + 2 x SM 85-1	7,710	5,01	6,39	6,27	2.031	2.466	2.954	1.133	2.130	2.997	120 – 446	
NTK 85 NF	Piston	5,200	3,91	4,67	5,04	1.892	2.400	2.830	767	1.474	2.215	166 – 545	61 – 76
	Piston + SM 85-1	6,530	6,31	6,56	6,56	1.622	2.108	2.514	910	1.597	2.273	167 – 544	
	Piston + SM 85-2	8,970	9,58	10,09	10,09	1.345	1.714	2.067	950	1.626	2.364	159 – 536	
	Housing	12,100	13,59	14,07	13,11	1.200	1.543	1.838	1.073	1.836	2.428	148 – 532	
	Piston + SM 85-3	17,500	25,47	26,48	24,21	894	1.166	1.407	1.116	1.975	2.627	128 – 513	
	Piston + SM 85-2 + SM 85-3	21,000	32,16	32,79	30,89	821	1.060	1.297	1.187	2.021	2.851	120 – 505	
	Piston + SM 85-4	28,900	45,40	51,70	45,40	707	879	1.076	1.244	2.191	2.880	111 – 494	
NTK 110	Piston	8,000	6,03	7,87	7,87	2.133	2.571	3.040	1.505	2.852	3.986	210 – 652	62 – 78
	Piston + SM 85-2	11,770	9,18	11,27	11,80	1.760	2.160	2.538	1.559	2.884	4.169	209 – 650	
	Housing	16,600	13,48	15,68	15,93	1.447	1.846	2.133	1.548	2.930	3.974	207 – 634	
	Piston + SM 85-3	20,530	17,04	19,93	20,98	1.324	1.655	1.964	1.638	2.993	4.435	206 – 631	
	Piston + SM 85-2 + SM 85-3	24,090	21,24	23,60	24,65	1.200	1.527	1.821	1.677	3.018	4.480	203 – 628	
	Piston + SM 85-4	31,990	29,89	32,78	32,51	1.046	1.292	1.632	1.794	3.001	4.748	191 – 614	
	Piston + SM 85-5	44,455	38,67	44,57	41,95	900	1.143	1.371	1.718	3.192	4.326	180 – 606	

* For lubrication free operation contact our application technicians.

Subject to technical modifications.

** All weights inclusive fixing bolt. ***Normal litre = uncompressed air. NTK 16, 25, 40, 55, 85 and 110 operation is possible up to 16 bar.
Technical data may vary depending on application. Please request comparative values.

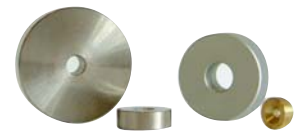
NTK weights

Piston, housing, total weight

Additional weights

Series SM

Vibrator	Piston [kg]	Housing [kg]	Total weight [kg]	Possible combinations	Additional weights	Dimensions [Ømm x mm]	Bore [Ømm]	Weight [kg]
NTK 8 AL	0,03	0,06	0,09	The combination of vibrators and weights in the same group is possible.	SM 8-1	17 x 8	5,0	0,012
NTK 15 x	0,13	0,32	0,45		SM 8-2	30 x 10	5,0	0,053
NTK 16	0,15	1,34	1,49		SM 16-1	50 x 20	10,5	0,29
NTK 18 AL	0,21	0,53	0,74		SM 16-2	65 x 20	10,5	0,51
NTK 25 AL	0,43	0,50	0,92	See table page 2 and page 3.	SM 25-1	50 x 20	16,5	0,27
NTK 25	0,47	2,63	3,10		SM 25-2	65 x 20	16,5	0,47
NTK 40 AL	1,28	1,01	2,29		SM 25-3	100 x 20	16,5	1,18
NTK 40	1,29	4,20	5,49		SM 25-4	100 x 60	16,5	3,60
NTK 55 AL	2,10	1,75	3,85		SM 85-1	100 x 20	20,5	1,16
NTK 55 HF	2,10	5,60	7,70		SM 85-2	100 x 60	20,5	3,50
NTK 55 NF	2,10	5,90	8,00		SM 85-3	200 x 50	20,5	12,30
NTK 85 HF	5,20	11,30	16,50		SM 85-4	200 x 100	20,5	23,70
NTK 85 NF	5,20	12,10	17,30		SM 85-5	200 x 150	20,5	35,55
NTK 110	8,00	16,60	24,60					



Applications

Additional weights SM are used to increase the working moment.

While fixing additional weights on the moving part of the vibrator, the working moment and also the amplitude are individually adjustable.

The additional weights are available in different sizes. All weights are made of nickel-plated steel, except SM 8-1 which is made of brass.

Netter Bellows

Series NFB

Bellow	Vibrator	Inside diameter [mm]	Outside diameter [mm]
NFB 20	NTK 15 x, 16, 18 AL	20	50
NFB 25	NTK 25 AL	30	65
NFB 30	NTK 25	30	65
NFB 45	NTK 40	45	85
NFB 60	NTK 55	60	110
NFB 90	NTK 85	90	140
NFB 115	NTK 110	115	165

Applications

The bellows series NFB for linear vibrators series NTK are designed for the protection of the piston against outside influences such as dirt and dust.

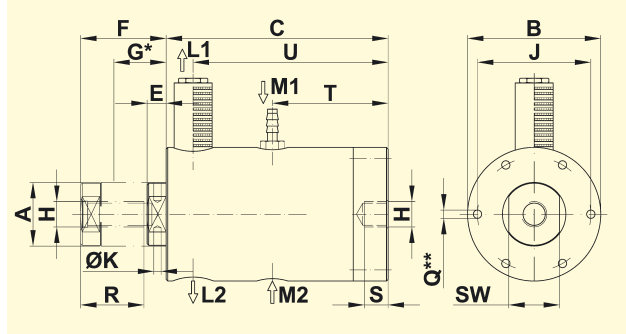
NFB bellows are available for all types from NTK 15x up to NTK 110. They are easily removable by velcros and make the flats of the piston accessible.



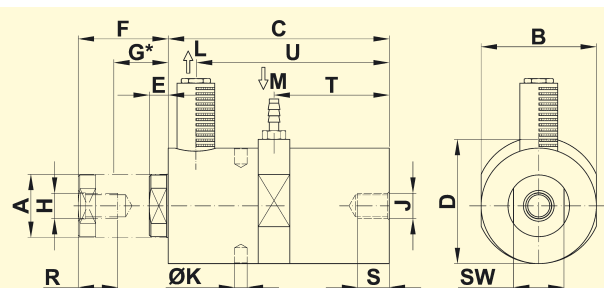


Netter Pneumatic Linear Vibrators Series NTK

Type	ØA [mm]	ØB [mm]	C [mm]	E [mm]	F [mm]	G* [mm]	H	ØJ [mm]	ØK [mm]	L	M	ØQ** [mm]	R [mm]	S [mm]	T [mm]	U [mm]	SW [mm]
NTK 15 x	15	50	114	9	38	23,5	M10	–	–	G 1/8	G 1/8	–	20	10	55	99	13
NTK 16	16	49	111	5	38	21,5	M10	–	–	G 1/8	G 1/8	–	21	10	57	96	14
NTK 18 AL	18	49	116	8	42	25,0	M10	–	–	G 1/8	G 1/8	–	21	10	62	101	16
NTK 25	25	64	138	9	52	30,5	M16	–	–	G 1/4	G 1/4	–	25	10	73	125	22
NTK 40	40	84	140	12	54	33,0	M16	–	–	G 3/8	G 1/4	–	40	15	73	123	32
NTK 55NF	55	110	125	19	55	38,0	M20	96	–	G 3/8	G 3/8	4 x 8,5	40	30	60	108	46
NTK 55HF	55	110	115	29	65	47,0	M20	96	–	G 3/8	G 3/8	4 x 8,5	40	30	50	98	46
NTK 85NF	85	160	122	20	45	32,5	M20	143	12,8	2 x G 3/8	G 3/8	6 x 10,5	40	20	57	105	–
NTK 85HF	85	160	112	30	55	42,5	M20	143	12,8	2 x G 3/8	G 3/8	6 x 10,5	40	20	47	95	–
NTK 110HF	110	200	122	22	55	38,5	M20	182	12,8	2 x G 1/2	2 x G 3/8***	8 x 12,5	40	25	57	105	–



* centre of vibration
** additional forms of attachment from NTK 55 upwards
*** optional M₁ or M₂



Type	ØA [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G* [mm]	H	J	ØK [mm]	L	M	R [mm]	S [mm]	T [mm]	U [mm]	SW [mm]
NTK 8 AL	8	22	91	22	5	32	18,5	M 5	M 6	–	M 5	M 5	15	7	47	76,5	7
NTK 25 AL	25	50	138	54	7	52	29,5	M 16	M 16	–	G 1/4	G 1/4	25	18	72	120,5	22
NTK 40 AL	40	73	140	79	12	57	34,5	M 16	M 16	8	G 3/8	G 1/4	25	20	73	122,5	32
NTK 55 AL	55	98	133	109	20	58	38,5	M 20	M 20	10	G 3/8	G 3/8	40	35	66	115,0	46

* centre of vibration

Applications

The pneumatic linear vibrators series NTK are especially suitable for conveying, compacting and loosening bulk material, due to the completely linear vibration. They may also serve to stimulate and influence production processes.

A special feature of the NTK vibrators is the variety of mounting options. It is possible to attach the housing or the piston to a vibrating mass. Additional weights SM allow to adjust the frequency and the amplitude in many different ways.

Design and functioning principle

The vibration (linear) is produced by a freely oscillating, self reversing piston. NTK linear vibrators start and stop instantly in any installed position. The noise level is lower than 80 dB(A). The frequency can be adjusted continuously by regulating the air supply. The amplitude can be adjusted by throttling the exhaust air.

Vibrators with aluminium housing series NTK AL as well as type NTK 15x may be operated

lubrication-free in compliance with instructions of **NetterVibration**. NTK vibrators with steel housing require lubricated air. For operation a control valve is required (not included in scope of delivery). ATEX compliant linear vibrators of the NTK series and units with stainless steel housing are available.

Permissible operating conditions

Drive medium:

Compressed air or nitrogen (Filter ≤ 5 µm), preferably with oil mist

Operating pressure:

2 bar to 6 bar

Ambient temperature:

NTK AL 5°C to 60°C

NTK 15 x 5°C to 100°C

NTK with steel housing –10°C to 150°C

HT version up to 200°C

NetterVibration offers the accessories required for mounting, installation and control of vibrators and interval impactors.

Netter provides solutions.

Consult our experienced application technicians.

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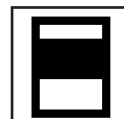
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Netter Pneumatic Linear Vibrators Series NTS



- Linear vibration
- Resistant against aggressive environmental conditions
- Nominal frequency from 827 min^{-1} to 9.040 min^{-1}
- Centrifugal force 32 N to 21.808 N
- Frequency and amplitude can be adjusted separately
- Synchronous operation possible (NTS 350 and higher)
- Available in ATEX version or in stainless steel



NTS 120 NF



NTS 54/02



NTS 50/10



NetterVibration



Netter Pneumatic Linear Vibrators Series NTS

Type	Housing material	Working moment [cmkg]			Nominal frequency [min ⁻¹]			Centrifugal force [N]			Air consumption [l/min]		Noise level [dB(A)]	
		2 bar	4 bar	6 bar	2 bar	4 bar	6 bar	2 bar	4 bar	6 bar				
NTS 120 HF	AL	0,018	0,018	0,018	6.280	7.920	8.960	40	63	81	10	36	68	73
NTS 120 NF	AL	0,038	0,046	0,046	3.871	4.510	5.095	32	52	66	7	19	66	72
NTS 180 HF	AL	0,035	0,045	0,046	5.520	6.880	9.040	59	116	207	15	67	68	73
NTS 180 NF	AL	0,138	0,149	0,163	3.000	4.160	4.880	68	141	212	14	57	66	72
NTS 250 HF	AL	0,152	0,190	0,190	3.654	4.756	5.773	111	235	346	21	105	68	74
NTS 250 NF	AL	0,402	0,475	0,542	2.328	3.100	3.894	119	251	451	20	99	68	72
NTS 350 HF	AL	0,208	0,308	0,349	3.866	4.754	5.579	179	399	594	37	135	66	74
NTS 350 NF	AL	0,756	0,932	0,992	2.412	3.077	3.663	241	486	733	26	110	65	70

NTS 100/01*	AL	0,33	0,43	0,41	3.920	4.640	5.840	281	513	764	33	181	68	80
NTS 75/01*	AL	1,01	1,31	1,44	2.848	3.596	4.038	451	934	1.291	99	442	67	81
NTS 50/01*	AL	2,18	2,62	2,66	1.924	2.408	2.825	442	834	1.164	88	416	76	84
NTS 70/02*	AL	2,81	2,77	3,04	2.096	2.808	3.336	676	1.186	1.847	128	564	76	87
NTS 54/02*	AL	4,54	5,51	5,07	1.730	2.064	2.544	745	1.288	1.800	152	698	80	89
NTS 50/04*	AL	7,9	9,8	9,7	1.920	2.296	2.672	1.591	2.844	3.789	271	977	77	86
NTS 21/04	AL	34,9	45,9	49,1	941	1.156	1.334	1.694	3.362	4.786	225	718	73	83
NTS 50/08*	AL	11,3	15,3	17,0	1.977	2.331	2.669	2.426	4.555	6.642	216	803	81	90

NTS 50/10	GG	14,5	17,9	18,9	1.983	2.392	2.809	3.128	5.626	8.174	454	1.647	82	92
NTS 30/10	GG	50,0	80,0	96,0	840	1.044	1.300	1.940	4.780	8.900	312	1.438	75	85
NTS 50/15	GG	25,0	32,7	35,8	1.830	2.209	2.464	4.589	8.754	11.922	726	2.108	81	91
NTS 50/20	GG	24,7	34,2	37,3	1.823	2.252	2.591	4.511	9.527	13.737	887	2.491	81	92
NTS 30/20	GG	57,3	84,8	92,6	1.227	1.528	1.759	4.727	10.852	15.693	551	2.014	78	88
NTS 24/20	GG	94,2	126,6	144,8	936	1.176	1.388	4.515	9.596	15.290	642	2.083	75	80
NTS 50/40	GG	72,5	93,0	99,5	1.335	1.617	1.920	7.090	13.333	20.114	994	3.296	80	92
NTS 20/40	GG	218,9	286,7	302,3	827	985	1.147	8.227	15.239	21.808	1.340	4.252	77	89

The technical data can vary depending on application. Please request comparative values.

* oil free operation possible

Standard vibrators
NTS 120 bis NTS 350



Standard vibrators
NTS 100/01 bis NTS 20/40



Stainless steel vibrators
NTS S



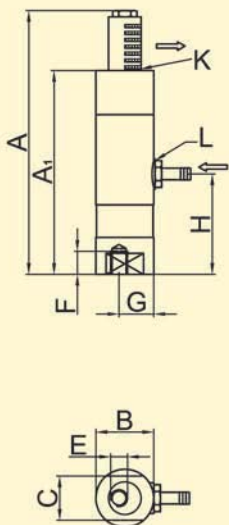
ATEX compliant vibrators
NTS E

Netter Pneumatic Linear Vibrators Series NTS

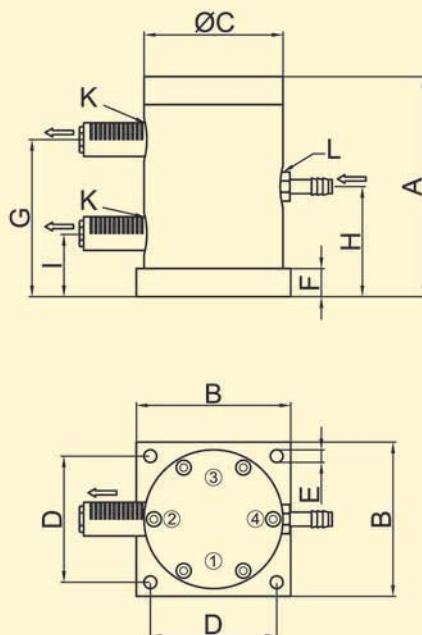


Type	A [mm]	A ₁ [mm]	B [mm]	C [mm]	D [mm]	ØE [mm]	F [mm]	G [mm]	H [mm]	I [mm]	K Outlet	L Inlet	Outlet on side	Housing [kg]	Piston [kg]	Total [kg]	Housing type
NTS 120 HF	97,5	70,0	27,5	SW 21	–	M 8	11	16,5	34,5	–	G1/8	G1/8	–	0,086	0,022	0,108	I
NTS 120 NF	125,0	97,5	27,5	SW 21	–	M 8	11	16,5	48,5	–	G1/8	G1/8	–	0,119	0,042	0,161	I
NTS 180 HF	108,5	73,0	33,5	SW 27	–	M10	10	19,5	35,5	–	G1/4	G1/8	–	0,124	0,050	0,174	I
NTS 180 NF	146,5	110,5	33,5	SW 27	–	M10	10	19,5	53,8	–	G1/4	G1/8	–	0,192	0,110	0,302	I
NTS 250 HF	145,5	98,0	41,5	SW 36	–	M12	12	24,0	49,0	–	G3/8	G1/8	–	0,238	0,155	0,393	I
NTS 250 NF	190,0	141,0	41,5	SW 36	–	M12	12	24,0	70,5	–	G3/8	G1/8	–	0,335	0,290	0,625	I
NTS 350 HF	146,5	99,0	53,0	SW 46	–	M12	12	30,5	49,5	–	G3/8	G1/4	–	0,359	0,325	0,684	I
NTS 350 NF	193,0	145,0	53,0	SW 46	–	M12	12	30,5	72,5	–	G3/8	G1/4	–	0,505	0,570	1,075	I
NTS 100/01	89	–	Ø69	69	–	M12	20	65,5	48,5	31,5	G1/4	G1/4	3	0,64	0,36	1,0	II
NTS 75/01	115	–	90	80	72	9	20	81	60	38	G1/4	G1/4	2	1,1	0,8	1,9	II
NTS 50/01	155	–	90	79	72	9	20	121	80	40	G1/4	G1/4	2	1,5	1,4	2,9	II
NTS 70/02	130	–	110	100	90	9	20	91	65	39	G3/8	G3/8	2	1,9	1,2	3,1	II
NTS 54/02	157	–	110	100	90	9	20	112	79	45	G3/8	G3/8	2	2,3	1,6	3,9	II
NTS 50/04	157	–	150	139	124	13	20	113	79	44	G3/8	G3/8	2	4,0	4,3	8,3	II
NTS 21/04	330	–	150	139	124	13	20	280	165	49	G3/8	G3/8	2 + 4	8,5	12,5	21	III
NTS 50/08	173	–	200	170	165	17	30	125	92	58	G3/8	G3/8	2 + 4	9,0	7,1	16,1	III
NTS 50/10	157	–	200	190	165	18	20	112	79	45	G3/8	G1/2	2 + 4	20	9,0	29	III
NTS 30/10	340	–	200	190	165	18	20	289	170	52	G3/8	G1/2	2 + 4	41	25	66	III
NTS 50/15	185	–	230	220	190	22	30	134	95	56	G3/8	G3/4	1 – 4	32	15	47	III
NTS 50/20	190	–	250	250	210	22	30	134	95	57	G3/8	G3/4	1 – 4	42	19	61	III
NTS 30/20	278	–	250	250	210	22	30	218	139	61	G3/8	G3/4	1 – 4	54	37	91	III
NTS 24/20	360	–	250	250	210	22	30	298	180	62	G3/8	G3/4	1 – 4	68	54	122	III
NTS 50/40	266	–	320	320	260	26	40	194	133	72	G1/2	G 1	1 – 4	89	52	141	III
NTS 20/40	470	–	320	320	260	25	40	392	235	78	G1/2	G 1	1 – 4	134	125	259	III

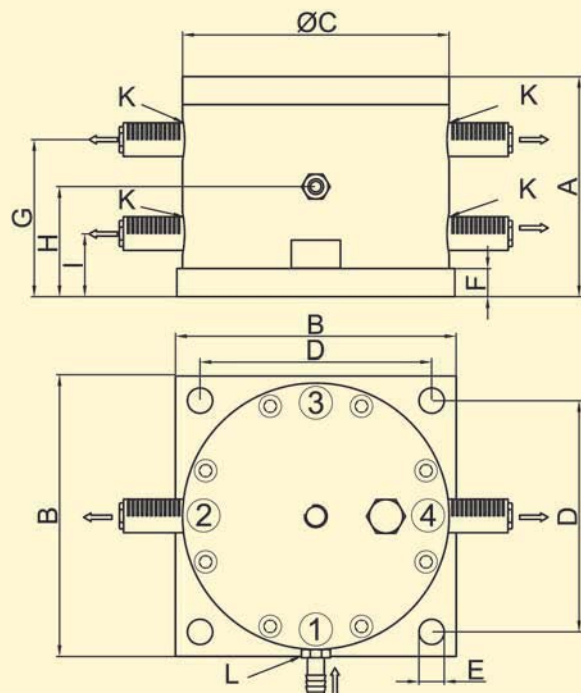
Housing type I
NTS 120 to 350



Housing type II
NTS 100/01 to NTS 50/04



Housing type III
NTS 21/04 to NTS 20/40





Netter Pneumatic Linear Vibrators Series NTS



Filling of powder products



Maintaining material flow



Vibrating and compacting of various material in cartons



Discharging aid on the container



Conveying with Netter **PowerPack**



Compaction of form sand in foundry forms



Compaction of powder in sacks

Applications

The pneumatic linear vibrators series NTS are especially suitable for conveying, compacting and loosening bulk material, due to the completely linear vibration. They are used to empty bins and as drives for conveyor and dosing troughs. A special feature of NTS vibrators is the possibility of the synchronous operation of several NTS when using a coupling kit. Starting from NTS 350 NF to NTS 50/08 this is available as special execution and starting from NTS 50/10 to NTS 20/40 it is standard.

Design and functioning principle

The vibration (sinus-shaped oscillation) is produced by a freely vibrating, self reversing piston. This oscillation supports, expedites or enables a variety of applications. NTS linear vibrators start and stop without delay in any installed position.

A built-in pressure spring provides a reliable start-up of vibrators with aluminium housing up to NTS 50/04 and NTS 50/08. The amplitude is set by means of the optional throttle valve.

An increase of the supply pressure causes a higher frequency. For operation a control valve is required (not included in scope of delivery). ATEX compliant linear vibrators of the NTS series and units with a stainless steel housing are available.

Permissible operating conditions

Drive medium:

Compressed air or nitrogen (Filter $\leq 5 \mu\text{m}$), preferably with oil mist

Operating pressure:

2 bar to 6 bar

Ambient temperature:

-10°C to 60°C

Aluminium housing 5°C to 60°C

NetterVibration offers the accessories required for mounting, installation and control of vibrators and interval impactors.

Netter provides solutions.

Consults our experienced application technicians.

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Netter Pneumatic Piston Vibrators Series NTP



- Linear vibration
- Nominal frequency from 1.328 min⁻¹ to 8.784 min⁻¹
- Centrifugal force from 190 N to 2.039 N
- Frequency and amplitude are adjustable separately
- Available in ATEX compliant or in stainless steel



NTP 25



NTP 32



NTP 48



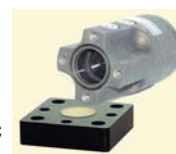
Netter Pneumatic Piston Vibrators Series NTP

Type	Working moment [cmkg]			Nominal frequency [min ⁻¹]			Centrifugal force [N]			Air consumption [l/min]		Noise level [dB(A)]	
	2 bar	4 bar	6 bar	2 bar	4 bar	6 bar	2 bar	4 bar	6 bar	2 bar – 6 bar		2 bar – 6 bar	
NTP 25 B+C	0,144	0,163	0,196	5.848	7.000	8.784	269	438	830	33 – 108		68 – 82	
NTP 25 B	0,488	0,613	0,686	2.645	3.159	3.602	190	341	487	23 – 92		64 – 73	
NTP 32 B+C	0,602	0,665	0,665	2.959	4.080	5.040	289	607	926	50 – 198		71 – 86	
NTP 32 B	1,080	1,365	1,449	1.824	2.221	2.614	197	369	543	37 – 143		64 – 77	
NTP 48 B+C	2,081	1,992	1,992	2.618	3.456	4.320	782	1.305	2.039	96 – 336		78 – 90	
NTP 48 B	4,718	6,188	6,641	1.328	1.603	1.963	456	872	1.403	67 – 295		65 – 80	

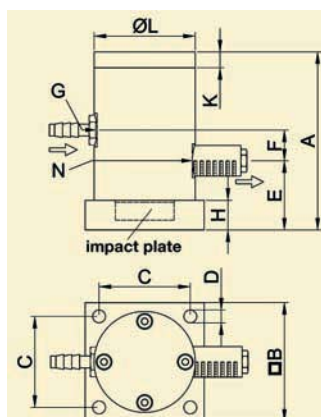
Standard version B+C: Bottom plate with elastomer inlay, B: Bottom plate with air cushion.
The technical data are comparative values and can vary depending on application.
Further data on demand. Subject to technical modification.

Type	A [mm]	B [mm]	C [mm]	ØD [mm]	E [mm]	F [mm]	G [mm]	H [mm]	K [mm]	ØL [mm]	N [mm]	Weight [kg]
NTP 25	90	60	46	6,5	36	14,5	G 1/8	15	8	51	G 1/8	0,61
NTP 32	140	75	51	11	48	32	G 1/4	20	10	70	G 1/4	1,47
NTP 48	194	100	78	13	60	51	G 3/8	25	15	95	G 3/8	3,95

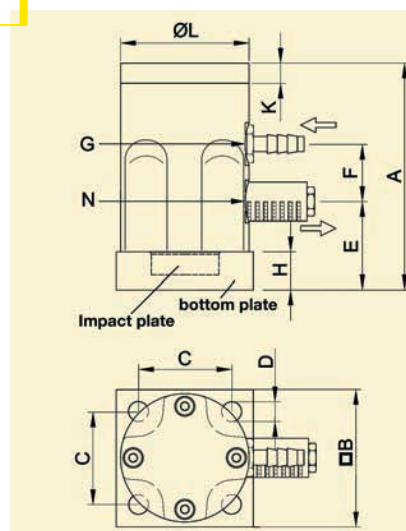
NTP B+C



aligning of layers



NTP 25 B+C



NTP 32 B+C and NTP 48 B+C

Applications

The pneumatic piston vibrators series NTP are especially suitable for knocking off material adhering to container walls in funnels, containers, silos and hoppers. They can be used as drives for vibrating tables and chutes and as assistance for emptying containers. Special features of NTP vibrators are: impacts like a rubber hammer or vibration with high peak acceleration.

Design and functioning principle

The vibration (linear) is produced by a freely vibrating differential pressure piston. In the standard version B+C the piston is knocking against an elastomer impact plate and works like a rubber hammer. In the version B without impact plate the piston works against an air cushion (noise reduced). Hard knocking versions available. The frequency can be adjusted by varying the pressure of the air supply and the amplitude by throttling the exhaust.

For operation a control valve is required (not included in scope of delivery). Lubrication-free operation is possible in compliance with the recommendations of Netter.

ATEX compliant linear vibrators of the NTP series and units with stainless steel housing are available.

Permissible operating conditions

Drive medium:

Compressed air or nitrogen (Filter ≤ 5 µm), preferably with oil mist

Operating pressure:

2 bar to 6 bar

Ambient temperature:

5°C to 60°C

NetterVibration offers the accessories required for the mounting, installation and control of vibrators and interval impactors.

Netter provides solutions.

Consult our experienced application technicians.

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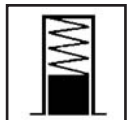
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Netter Pneumatic Impactors Series PKL



- Higher impact power than traditional impactors
- Lower compressed air requirement per impact
- Low-noise versions with elastomer insert EE
- Versions with automatic control ST
- ATEX or stainless steel versions available



PKL 150



PKL 170



PKL 220



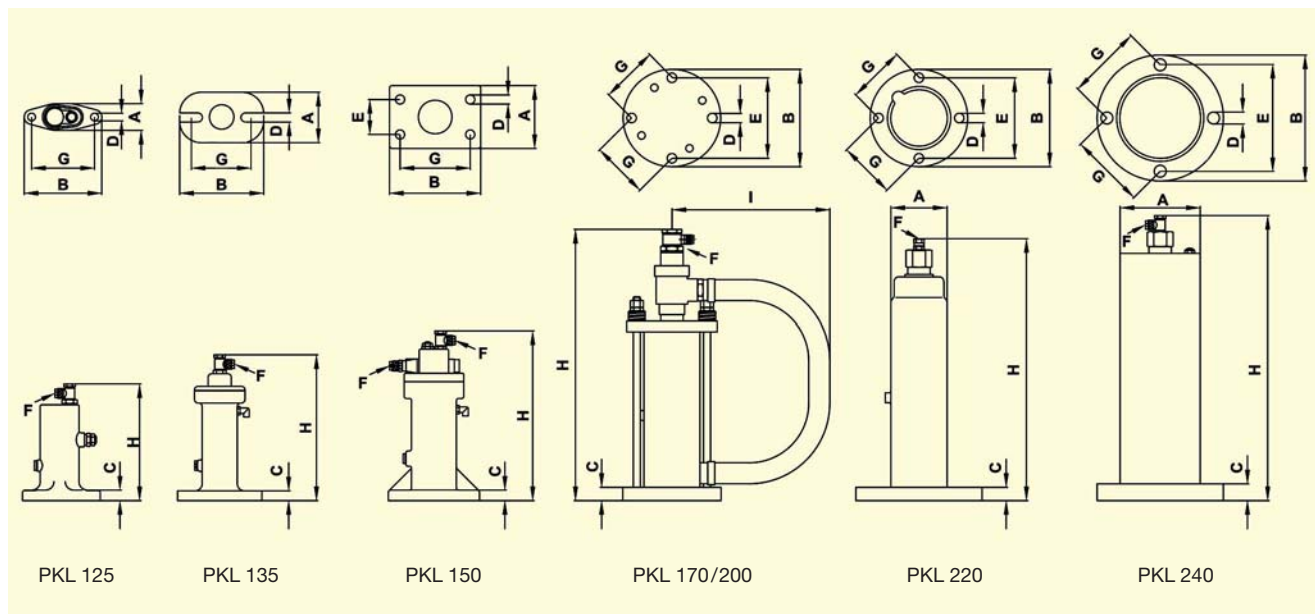
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Netter Pneumatic Impactors Series PKL

Type	Optimum operating pressure [bar]	Impact force* [kg]	Air requirement/impact at optimum pressure [Normal litre]	Weight [kg]	Suitable for wall thickness [mm]
PKL 125/4	4,0	0,43	0,09	0,8	1 – 2
PKL 125/6	5,3	0,60	0,14	0,8	1 – 2
PKL 135/4	3,0	0,56	0,13	1,5	1 – 3
PKL 135/6	4,5	0,92	0,18	1,5	1 – 3
PKL 150/3	2,5	1,30	0,27	2,6	2 – 4
PKL 150/4	3,8	1,80	0,38	2,6	2 – 4
PKL 150/5	4,3	2,10	0,43	2,6	2 – 4
PKL 150/6	5,0	2,70	0,54	2,6	2 – 4
PKL 170/3	3,3	4,20	0,95	10,4	3 – 5
PKL 170/5	5,0	6,30	1,41	10,5	3 – 5
PKL 200/3	3,0	4,85	2,16	19,8	4 – 8
PKL 200/5	4,0	7,55	2,40	19,9	4 – 8
PKL 220/4	3,5	5,50	1,43	8,5	8 – 10
PKL 220/6	5,6	8,80	2,10	8,6	8 – 12
PKL 240/4	4,5	12,40	2,00	24,0	10 – 12
PKL 240/6	6,0	16,60	3,01	24,1	> 10
PKL 240/8	7,0	19,30	3,97	24,2	> 10

*The impact corresponds to the effect of the given weight, when dropped from a height of 1 m.



Type	A [mm]	B [mm]	C [mm]	Ø D [mm]	E [mm]	F	G [mm]	H [mm]	I [mm]
PKL 125	38	111	15	9,0	–	G1/8, NW 6×1	90,0	167	–
PKL 135	72	120	14	13,0	–	G1/8, NW 6×1	90,0	204	–
PKL 150	90	130	15	12,5	50	G1/8, NW 6×1	100,0	240	–
PKL 170	–	Ø 140	19	13,5	Ø 115	G1/2, NW 6×1	81,5	397	~ 230
PKL 200	–	Ø 180	24	17,0	Ø 152	G1/2, NW 6×1	107,5	425	~ 230
PKL 220**	Ø 80	Ø 140/180	18/22	13,5/17,0	Ø 115/152	G1/8, NW 6×1	81,5/107,5	380/384	–
PKL 240	Ø 114	Ø 180	27	17,0	Ø 152	G1/8, NW 6×1	107,5	405	–

** Optionally available with fixing dimensions as for PKL 170 or PKL 200

Netter Pneumatic Impactors Series PKL



ST Kit

Applications

The ST kit enables a continuous impact sequence when connected to a permanent compressed air supply.

Impact Frequency

The impact frequency can be adjusted by means of a throttle valve installed in the air supply line. The maximum impact sequence must be observed.



EE Kit

Applications

The EE kit is used to produce a low-noise impact or "rubber hammer effect".

Design and Function

A spacer plate with an elastomer insert, is installed between the impactor and the mounting surface of models PKL 125, 135 and 150.

From model PKL upwards, the existing impact plate is replaced by an impact plate with an integrated elastomer insert. The noise level is considerably reduced by the elastomer disc.



Special Versions ATEX / Stainless Steel / High Temperature

PKL E (ATEX)

Netter series PKL E pneumatic impactors comply with directive 94/9/EC (ATEX product directive) device group II and are suitable for use in potentially explosive areas of category 2 (2G and 2D 85°C[T6]) in zones 1, 2, 21 and 22.

PKL S (Stainless Steel)

Stainless steel intermittent impactors satisfy the specific requirements for chemical resistance of the surfaces.

PKL HT (High Temperature)

The HT series is designed for use at ambient temperatures of up to 160°C.



Weld-On Consoles

Applications

Weld-on brackets ASB and weld-on plates ASP, available as straight or round versions, are suitable for attachment to square, round and conical containers.

They allow optimum transfer of the impulses produced by the impactor, while reducing the loads on weld seams and container walls.

Design and Function

The weld-on consoles are welded directly to the container. The impactor is then screwed to the console using fixing set NBS.



Fixing Sets NBS

Applications

NBS fixing sets provide a safe and permanent fixing of PKL impactors.

NBS fixing sets consist of special screws,

damping elements, washers and nuts, to suit the respective application.

The fixing sets are available in different executions.



Control Valves

Applications

Directional control valves are necessary for the control of impactors.

They can be activated either by hand or by means of an electronic timer.

Our product range includes electric, pneumatic and manually operated valves.



Electronic Timer AP and PAP

Applications

Electronic timers are used for the control of impactors, solenoid valves and contactors, wherever a process requires variable timing.

Design and Function

The adjustable duty time or pause time of the AP 115 has a control function by means of an electric signal (e.g. to a solenoid valve). The pneumatic duty-pause controls (PAP 115 and PAP 116) directly control the compressed air supplied to the system and can be used in wet areas.

Controlling the duty time reduces energy consumption and noise levels.



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Netter Pneumatic Impactors Series PKL



Insulation hoods

Applications

The use of hoods is particularly worthwhile for bunkers with insulation covers.

Attaching the insulation hood to the insulation cover fully insulates the source of the noise (bunker).

Vacuum Fixing Devices VAC

Applications

Series VAC vacuum fixing devices serve the fast fixation of impactors on smooth or, under certain circumstances, rough or curved surfaces. They allow quick and simple attachment without welding or screwing.

Design and Function

As soon as compressed air is supplied to the VAC mounting, the device is sucked tight, ensuring a force-locked connection between the impactor and the mounting surface. ATEX compliant mountings and units with stainless steel plates are available.



Cleaning filters



Cleaning bunker walls



Cleaning weighing containers

Applications

Series PKL pneumatic impactors are particularly suitable for knocking stubborn residues from walls, pipes and containers.

Examples of applications include: elimination of tube-forming, bridging and evacuation of residues.

Design and Function

The impact (similar to a hammer) is created by the piston. With PKL 125 to 150 the impact is produced directly against the surface upon which the impactor is mounted.

From PKL 170 upwards the impact is produced against the base plate. The compressed air pushes the piston against one or two springs. The fast exhausting of the piston chamber causes the piston to strike abruptly against the impact surface.

Series PKL impactors can be operated using non-lubricated compressed air.

A directional control valve is necessary for

activation (not included). The maximum impact sequence is 10 impacts in a row, at a rate of 15 impacts per minute and 180 impacts per hour.

Permissible Operating Conditions:

Drive Medium:

Compressed air or nitrogen (filter $\leq 5 \mu\text{m}$), Preferably with oil mist

Operating Pressure:

2,5 bar to 6 bar

Ambient Temperature:

-20°C to 60°C

HT version up to 160°C

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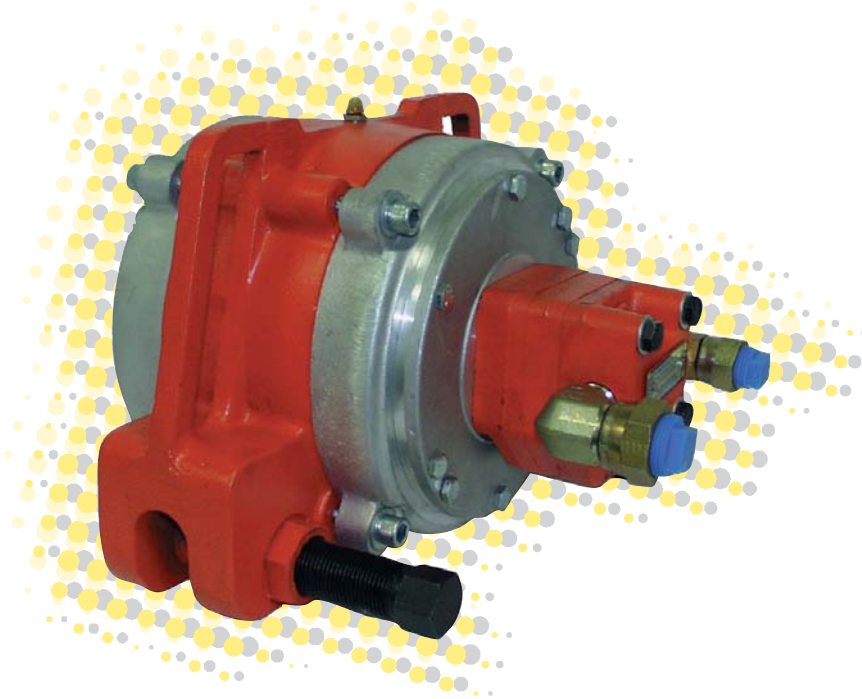
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Netter Hydraulic External Vibrators Series CC, CV, CCV and DV



- Driven by flanged hydraulic motor
- Nominal frequency from 1.750 min^{-1} to 5.400 min^{-1}
- Centrifugal force from 7.320 N to 49.210 N
- Frequency continuously adjustable by hydraulic pressure
- High working moment, high amplitude
- Low unit weight combined with high capacity
- Mounting by attachment screw (CCV), bracket (CC) or flange (CV/DV)



CV 2.8



CC 2.8



CCV 6



DV 6



Netter Hydraulic External Vibrators Series CC, CV, CCV and DV

Type	Unbalance adjustment **	Working moment [cmkg]	Starting pressure [bar]	Frequency* [U/min]	Volume flow [l/min]	Centrifugal force [N]	Frequency* [U/min]	Volume flow [l/min]	Centrifugal force [N]
CC2.8-5HB CV2.8-5HB CCV 4-5HB DV 4-5HB	1	18,3	13	2.700	15,5	7.320	4.400	26,5	19.430
	2	18,0	12	2.800	15,9	7.740	4.500	25,7	19.990
	3	16,9	10	2.800	17,0	7.270	4.600	26,9	19.610
	4	15,3	9	3.300	18,9	9.140	4.800	27,3	19.330
	5	12,8	9	3.800	21,6	10.140	5.000	28,8	17.550
	6	9,8	7	4.000	22,7	8.600	5.400	30,3	15.670
CCV6-12-8HA DV6-12-8HA	0 – 100 %	28	8	2.750	34,0	11.610	3.500	45,8	18.810
CCV6-25-8HA DV6-25-8HA	0 – 100 %	59	9	2.500	30,7	20.220	3.900	43,5	49.210
CCV6-50-8HA DV6-50-8HA	0 – 100 %	119	11	1.750	23,5	19.980	2.600	34,1	44.110

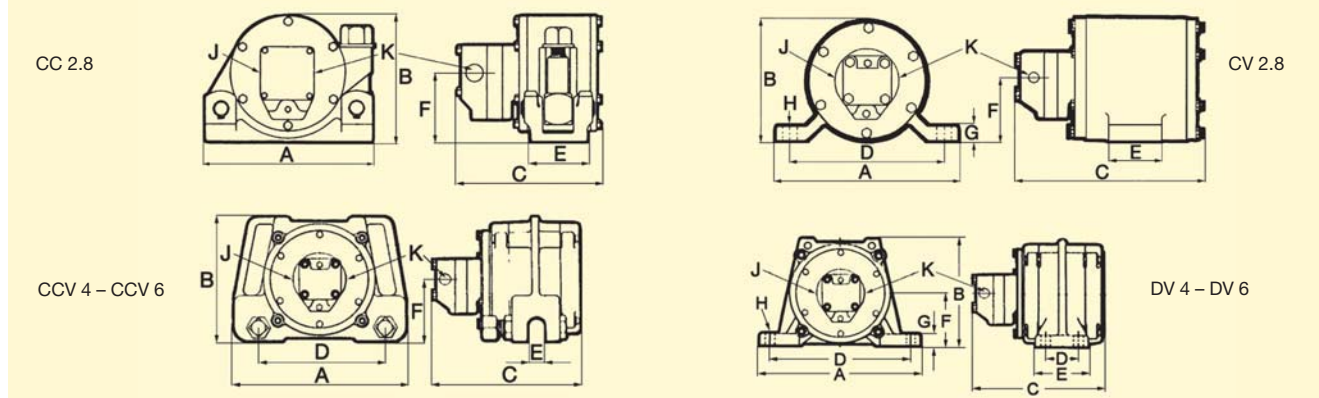
CC = mounting with bracket NVH
CCV = mounting with attachment screw

DV/CV = mounting with flange screw
5 HB/8 HA = hydraulic motor

* Notice: Hydraulic external vibrators for higher frequency see leaflet series NHG.

**The working moment of series CC, CV, CCV and DV 2.8/4 is adjustable in 6 steps.

Type	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	Outlet J	Inlet K
CV 2.8	250,8	174,6	249,2	203,2	76,2	87,3	23,8	22,0	3/4"	1/2"
CC 2.8	228,6	181,0	241,3	–	76,2	87,3	–	–	3/4"	1/2"
CCV 4	292,1	209,6	244,5	209,6	23,8	104,8	–	–	3/4"	1/2"
DV 4	304,8	206,4	244,5	4 bores: 63,5 x 266,7	101,6	101,6	22,2	16,5	3/4"	1/2"
CCV 6	368,3	287,3	320,7	285,8	25,4	142,9	–	–	3/4"	1/2"
DV 6	457,2	279,4	320,7	6 bores: 50,8 x 50,8 x 406,4	152,4	141,3	28,6	22,0	3/4"	1/2"



Application

Netter hydraulic external vibrators series CV, CC, CCV and DV are especially suitable to unload rail wagons and bulk hoppers as well as for the sieving and compacting of different materials.

Trucks and tractors which use hydraulic energy for dumping and lifting, are sources of hydraulic power.

A special feature of CC/CCV vibrators is the quick manual repositioning.

Design and functioning principle

The vibration (circular) is produced by unbalance pairs with double bearings.

The frequency and thus the centrifugal force are continuously adjustable by the volume flow. The hydraulic external vibrators generate high amplitudes with low frequencies.

The working moment of series CC, CV, CCV and DV 2.8/4 is adjustable in 6 steps. The working moment of series DV 6-12,

-25 and -50 is continuously adjustable. The only difference between the units is the execution of the housings. The vibrators generate very high forces in proportion to their weight.

Permissible operating conditions

Drive medium:

Hydraulic oil (clean and filtered)
DIN 51524/25 or motor oil DIN 51511

Operating pressure:

Max. 80 bar inlet,
max. 2 bar outlet.

Ambient temperature:

- 20°C to 60°C

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35

Netter Electronic Timer Type AP 115 and Series PAP



- Adjustment exact to the second
- Dust and water-splash protected
- For the control of electric and pneumatic vibrators



AP 115



PAP 115



PAP 116

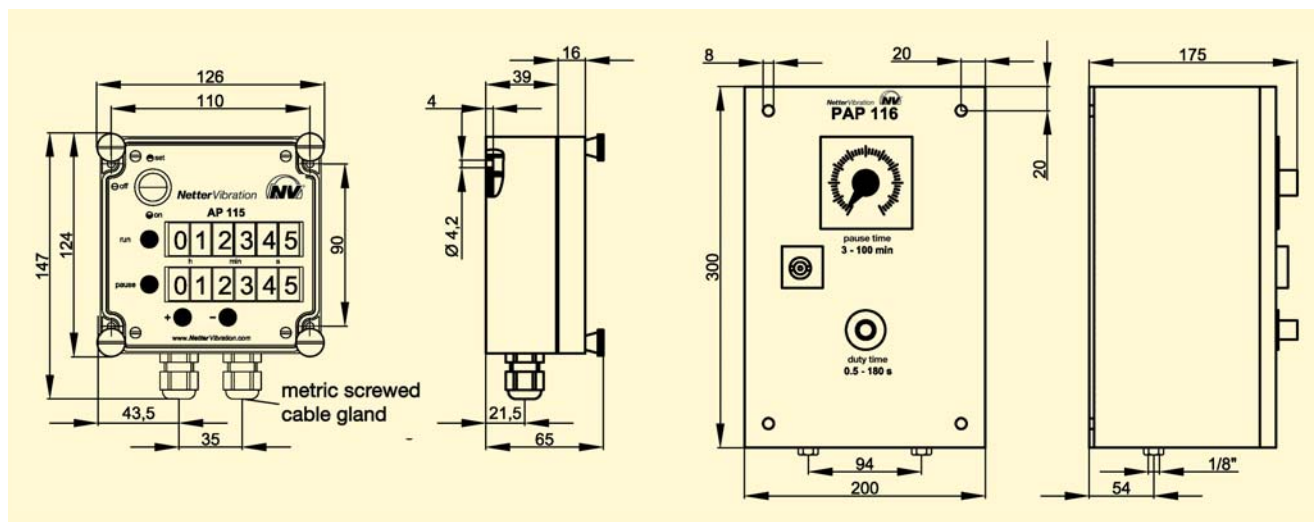


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Netter Electronic Timer Type AP 115 and Series PAP

Type	AP 115	PAP 115	PAP 116
Operation mode	electric, non-contact	pneumatic	pneumatic
Adjustment	digital	analogue	analogue
Duty time	hh : mm : ss, 1 s to 99 h	0,5 s to 180 s (down)	0,5 s to 180 s (down)
Pause time	hh : mm : ss, 1 s to 99 h	0,5 s to 100 s (up)	1 min to 180 min (up)
-	-	-	-
Own consumption	7,5 VA	-	-
Input/output	AC 100 V to 240 V (50/60 Hz) DC 24 V $\pm$ 5 %	1/8"	1/8"
Operating pressure	-	min. 3 bar	min. 3 bar
Ambient temperature	- 20°C to 40°C	- 20°C to 60°C	- 20°C to 60°C
Protection	IP 65, radio interference suppression	IP 66	IP 66
Housing	polycarbonate, crystal clear cover	Al	Al



AP 115

Applications

The electronic timer AP115 is used to control pneumatic and electric vibrators. The advantages of temporary vibrator application are that noise levels can be reduced and energy saved.

Construction and Working Principle

The electronic timer is used to operate solenoid valves or motor overheating protection at freely selectable intervals. The sequence begins with the duty time, which can be adjusted from 1 s to 99 h. During this time the supply voltage is applied to the consuming device being controlled. When the duty time ends, the pause time of 1 s to 99 h is run, then the duty time, etc. The elapsed time is visible on the display. The A115 can be used separately or integrated in a switching cabinet.

PAP 115 and PAP 116

Applications

Series PAP pneumatic time controls are suitable for interval control of vibrators, as well as the control of impactors (PKL). The times can be continuously adjusted.

Construction and Working Principle

Activation (on/off) with a directional control valve. The PAP can actuate all directional, valves, but is not sufficient for the direct activation of consuming devices. It must be ensured that enough adequately sized actuation valves are provided for vibrators, etc. The pause time of the PAP 115 can be adjusted exact to the second, that of the PAP 116 exact to the minute. Use filtered (filter $\leq$ 5 μ m) compressed air. Constant pressure guarantees reproducible times.

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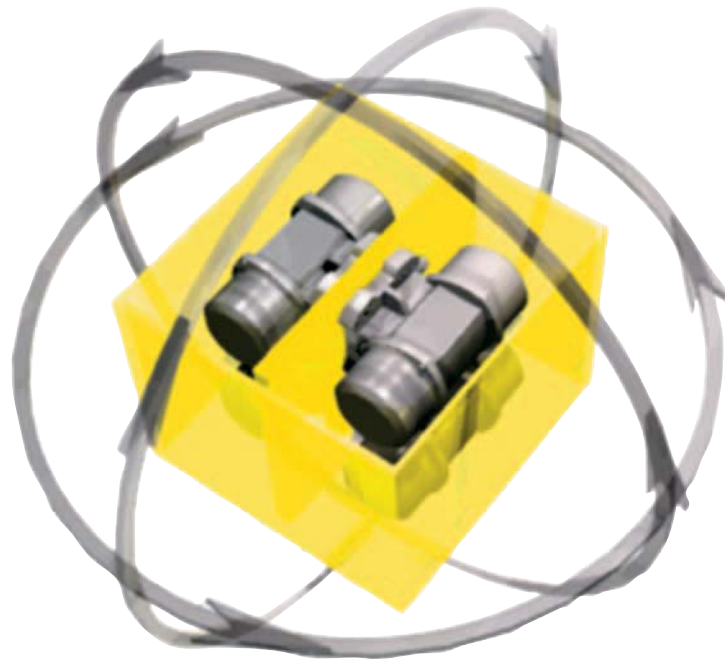
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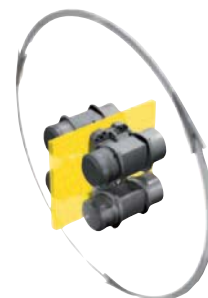
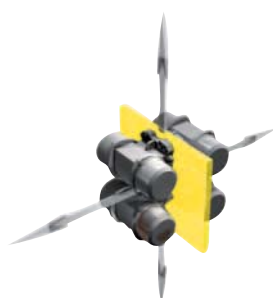
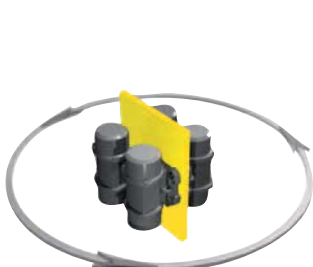


37

Netter Multiple-Shaft Vibration Systems Series *VectorDrive*



- 100% controlled vibration in each direction
- Resonance-free start and stop
- Amplitude adjustment during operation
- Frequency control during operation
- Constant acceleration with varying loads
- Prevention of resonance and associated noise
- Operating times of less than 1 second possible
- Control loops for acceleration possible





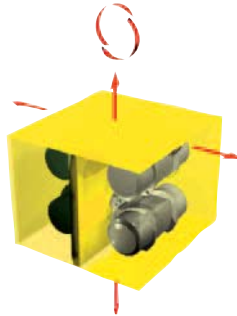
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Netter Multiple-Shaft Vibration Systems Series *VectorDrive*

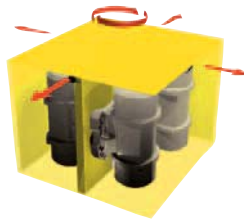
Horizontal arrangement of vibrators

E.g. for mixing, feeding,
compacting and rocking



Vertical arrangement of vibrators

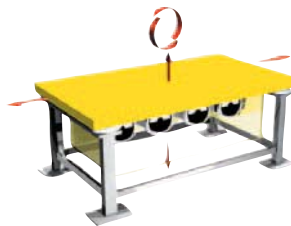
E.g. for mixing, tumbling,
compacting and sieving



Linear arrangement of vibrators

(compact mounting)

E.g. for feeding, compacting
and rocking



VectorDrive



Visual aging of paving stones

Applications:

The multiple-shaft vibration system **VectorDrive** offers a multitude of application possibilities.

The resonance-free starting and stopping, together with independent regulation of the working direction, frequency and amplitude open up new possibilities for compacting, mixing, feeding and distributing.

Design and Function:

The **VectorDrive** system consists of a control unit and at least 4 vibrators.

For an electric vibrator there are generally two operating conditions and two transitional phases: standstill (no vibration), nominal rotational speed (vibration) and deceleration down to standstill. Often, however, only the two operating conditions, standstill and nominal rotational speed, are desired, since detrimental resonance zones must be passed through in the transitional phases.

Example: Bulk material is optimally compacted using external vibrators at 3000 revs/min. When passing through rotational speeds between 1700 revs/min and 1300 revs/min, undesirable loosening can occur. The best solution would be to simply switch on the vibration at the nominal rotational speed and then switch it off again.

The control unit of the **VectorDrive** system makes this desired "on/off" effect (vibration / no vibration) possible.

Within a fraction of a second, the unbalances are positioned with each other in a way that allows the required centrifugal force and working direction.

Independent of the arrangement of the vibrators on the table, it is possible to create circular vibrations, as well as linear vibrations, by a change of the working direction. The various working directions can be controlled successively during operation, also with changing frequencies and amplitudes.

The **PowerCube** is the preferred variant for the arrangement of the vibrators. The vibrators, in this case, are arranged in a cube under the table. The vibrators can be easily rearranged by dismounting and rotating the cube. Of course, it can just as easily be mounted under a different table construction.

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You have the opportunity for a free demonstration or trial of our devices, with no further obligation. In order for us to serve you quickly and effectively, we request that you complete this questionnaire.

Application

Emptying bunkers (Provide main dimensions on reverse)
Slides / chutes (Provide main dimensions on reverse)
Compaction of

Material Consistency

Specific weight kg/l% moistness

- | | | |
|----------------------------------|---------------------------------------|--|
| ☐ dry | ☐ sticky | ☐ granulated |
| ☐ moist | ☐ slimy | ☐ can be trickled |
| ☐ dusty | ☐ flaky | ☐ splintery |
| ☐ powdery | ☐ fine-grained | ☐ coarse-grained |

Environmental Conditions

- | | |
|---|--|
| ☐ normal | ☐ ambient temperature°C |
| ☐ warm radiation | ☐ very damp (water spray) |
| ☐ corrosive atmosphere | ☐ Ex protection required |
| ☐ other | |

Pneumatic Vibrators

What is the operating pressure of your compressor system? bar

What is the power of your compressor?

(Alt. enter kW) m³/min (induced air)

How high is the loading of your compressor? ☐ low ☐ normal ☐ to the limit

Must exhaust air be dissipated? ☐ yes ☐ no

Electric Vibrators

Which type of voltage is required?

- ☐ 230 V, 3-phase ☐ 230/400 V, 50 Hz ☐ special voltage

Which vibrators are you particularly interested in?

- | | |
|--|---|
| ☐ Pneumatic vibrators | ☐ Electric vibrators |
| ☐ Hydraulic vibrators | ☐ The most suitable device
dependant on application |



NetterVibration

If you have already performed tests or currently work with other vibrators, please enter the following details:

Frequency vibrations/min

Centrifugal force N

Drive ☐ electric ☐ pneumatic ☐

If these data are not known, please enter the type and manufacturer

Type:..... Manufacturer:.....

What improvements or modifications do you expect? What are you not pleased about?

Sketch (include extra sheet if necessary)

Please enter main dimensions!

Company

Name:

Street:

Department:

Town:

Who is directly responsible for this matter?

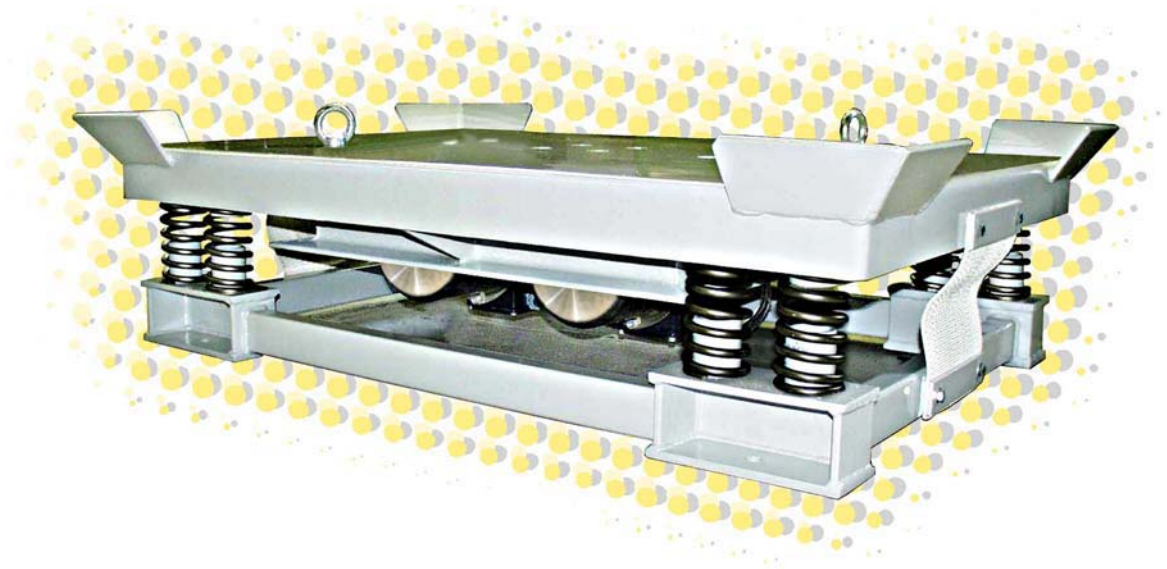
Telephone:

Date:

Name:

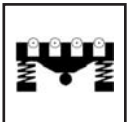
Required

- ☐ Offer with proposal
- ☐ Test device(s)
- ☐ Demonstration



41

Netter Vibrating Tables Series VT



- Elektric or pneumatic drives
- Variable centrifugal force
- Adjustable vibration amplitude
- Directional or circular rotation
- Optimum vibration insulation
- Low noise
- Low overall height
- Robust versions for continuous operation
- Various controls and accessories
- Movable



VTP 3/3
with NTS 350 NF
pneumatic



VTF 8/8
with 2 NTS 50/0:
flat design



VT 7/8
with 2 NEG 50770
electric



NetterVibration



Netter Vibrating Tables Series VT

A small extract from our range of vibrating tables

Version	Type	Vibrator	Length [mm]	Width [mm]	Height [mm]	Vibrations	Weight [kg]
Electric	VTE 3/3	NEG 50120	300	300	273	circular	20
	VTE 6/6	2xNEG 2570	600	600	273	vertical directional	41
	VTE 8/12	2xNEG 25930	800	1200	350	vertical directional	290
Pneumatic	VTP 3/3	NTK 18 AL	300	300	350	vertical directional	22
	VTP 5/5	NTS 50/01	500	500	350	vertical directional	31
	VTP 10/10	NTS 50/08	1000	1000	300	vertical directional	185

All sizes: A special feature is the flat construction, with heights from just 80 mm on.

Loads: 1 to 20.000 kg

Materials: Painted or galvanized sheet steel and pickled stainless steel

Controls: Electric switch cabinet with:

- On/Off switch with motor protection relay
- Frequency control and display
- Brakes
- Timers
- Remote controls and much more.

Electro-pneumatic controls in terminal boxes:

- Control valves
- Throttles
- Maintenance units

Multiple-shaft vibration system



In individual cases, the required drive can only be determined by means of testing.
We provide free test devices (excl. transport costs) for this purpose.

Design: The electric or pneumatic vibrators are attached to the inflexible plate of the vibrating table.
The plate is connected to the base via a vibration-optimized spring suspension.

Applications

Electrical, Electronic and Precision Engineering Industries	
Inspection	of connections, individual parts or complete devices for cold solder spots, hairline cracks, functional errors, natural resonancies
Simulation	of transport movements, mechanical environmental influences
Untangling, separating, distributing, aligning	of small parts, such as screws, bolts, springs, hooks, rings, etc. prior to hand-assembly or automatic processing on assembly lines
Testing	of electrical components and devices (mechanical vibration tests)
Car Industry, Vehicle Construction	
Inspection (Durability tests)	of small add-on parts, such as carburetors, coils, valves, mechanical and electrical connections, safety devices, headlights, exterior mirrors, etc. for functional errors, hairline cracks, natural resonancies, wear

Food, Packaging and Chemical Industries	
Compaction	of loose products in small containers, such as barrels, cardboard drums, cartons, bags etc.
Flattening, distributing	of granules before closing packages
Loosening	of products which have become compacted during transport or storage, prior to further processing
Sedimentation	of solid materials out of suspensions
Levelling	of sacks and bags, prior to palletising or stacking
Construction industry	
Compaction	of concrete blocks, on the construction site or in the test laboratory



VTF/R 10/12 with 2 NEG 251370 E for applications conforming to ATEX



VTH/W 12/12 with 2 NEG 501510 for a weighing machine

NetterVibration offers the accessories required for the mounting, installation and control of vibrators and vibrating tables.

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Netter questionnaire for the preparation of a quotation

☐ please tag whatever is applicable

1. Application :

- **Compaction of bulk materials in containers** ☐
- **Compaction of refractory materials** ☐
- **Compaction of foundry moulding sand** ☐
- **Compaction of prefabricated concrete parts** ☐
- **Compaction of polymer concrete** ☐
- **Levelling of pouring cones and distribution** ☐
- **Flattening of bags** ☐
- **Removal of sticky material on parts etc.** ☐
- **Loosening of wire coils for further processing** ☐
- **Separation of parts sticking together** ☐
- **Cleaning off material sticking to work pieces** ☐

Container:

- Type of container:
- Carton ☐ Cardboard drums ☐ Steel barrels ☐ Forms ☐
- Octabins ☐ Containers ☐ Big Bags ☐
- Other containers ☐
- Dimensions (length • width • height): [mm]
- Weight: [kg]

Content :

- Product designation: [kg/m³]
- Bulk weight: [kg]
- Consistency:
- powdery ☐ grainy ☐ doughy ☐ moist ☐ sticky ☐ bulky ☐
- Weight of the total content: [kg]

Desired size of vibrating table:

- Size of vibrating plate (length • width): [mm]
- From top side of table plate to floor: [mm]

Installation situation:

Roller track

- Installation into existing roller track ☐
- Vibrating table with roller track ☐
- Roller diameter: [mm] Roller distance: [mm]
- Top edge of roller to floor: [mm] Width of roller track: [mm]
- not driven ☐ driven ☐ : Conveying speed: [m/min]

Scale

- Installation on a scale ☐
- Installation above a scale ☐
- Dimensions of scale (width • depth • height): [mm]



Pit

- Installation in a pit, top side of vibration table is level with floor ☐
 - Dimensions of pit (length • width • depth) : [mm]
- Application of container:
 - Manual lift truck ☐ Fork lift truck ☐ Crane ☐

Conveyor belt

- Installation into a conveyor belt ☐
 - Width of belt[mm] Distance between top and bottom belt [mm]
 - Top side of upper belt to floor: [mm]

Other versions

- Flat design ☐
 - Desired height from top side of table plate to floor: [mm]
- Portable version ☐
- Moveable ☐
- **Tests, material and product tests** ☐
 - Mechanical vibration test according to own requirements or standards.
 - Simulation of transport movements or environmental influences.
 - Other application:

- Desired frequency:
 - Fixed frequency in [Hz] ☐ or [oscillations / min.] ☐
 - Controllable up to in [Hz] ☐ or [oscillations / min.] ☐
- Desired acceleration:[a_(g) = multiple of the acceleration due to gravity]
- Desired oscillation width:[mm]
- Desired direction of oscillation:
 - circular vertical ☐ directed vertical ☐
 - circular horizontal ☐ directed horizontal ☐
- Desired timing range or number of cycles (please describe) :
.....

• Other applications

Please describe, if possible add a sketch:.....
.....
.....

2. Environmental influences (please describe) :

- Ambient temperature: [°C]
- Humidity (e.g. spray water):
- Caustic atmosphere:
- Other environmental influences:

3. Type of drive :

- *Compressed air*
 - Available pressure: [bar]
 - Supply quantity: [m³ / min]
- *Electric*
 - Available voltage and mains frequency: [V] [Hz]
 - Explosion protection ☐, if yes: Information about the explosion protection class:

4. Control :

- By customer ☐ Specify interface:
- Offer ☐

5. Address :

Company :.....
Name :Department :
Country:
Place :
Street :
Phone : Fax :
Internet address:..... E-mail :



44

Netter Dosing Station Series *DosyPack*



- Exact dosing
- High conveying performance
- Gentle and uniform dosing
- Adjustable fine or coarse flow
- All product-carrying parts made of stainless steel 1.4301
- High surface quality
- Quick and easy to clean



DosyPack 40



DosyPack 56



DosyPack 80



Netter Dosing Station Series *DosyPack*

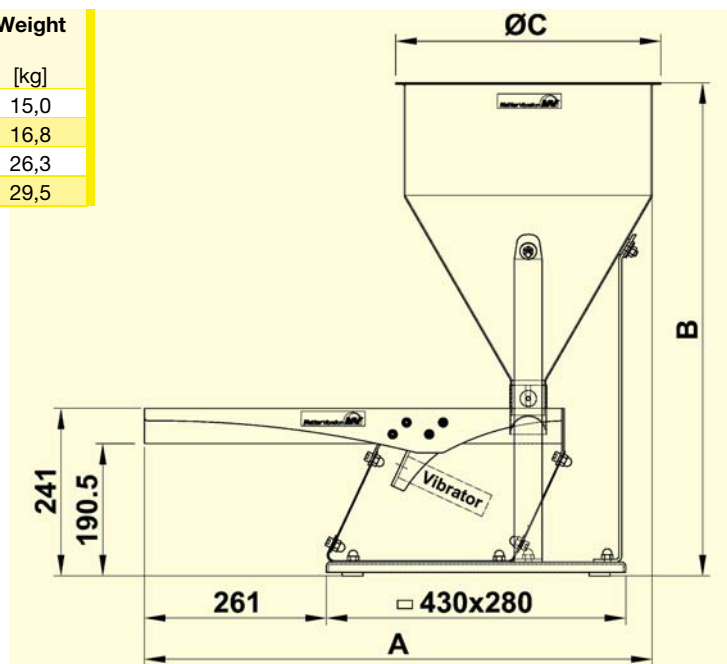
Product Characteristics			Feed Rate [g/s]	Noise Level [dB(A)]
Example	Grain Density [kg/ dm ³]	Grain Size [mm]		
Sand	1,54	0 - 1	0 - 260	56 - 75
Granulate	0,70	1 - 3	0 - 150	56 - 75
Plastic caps	0,20	Ø 10	0 - 25	56 - 73

The technical data relate to the examples given and can vary, depending on the product.

Type	A [mm]	B [mm]	ØC [mm]	V (Container volume) [l]	Weight [kg]
<i>DosyPack 25</i>	729	710	381	25	15,0
<i>DosyPack 40</i>	729	860	381	40	16,8
<i>DosyPack 56</i>	805	844	533	56	26,3
<i>DosyPack 80</i>	805	994	533	80	29,5



Dosing port at the silo outlet



Applications

DosyPack dosing stations are particularly suitable for the fast and exact dosing of all types of bulk material, or as feeders for optical sorting facilities. Gentle dosing is possible for especially sensitive products.

Design and functioning principle

The dosing station basically consists of a conveyor channel mounted on leaf springs and a silo. All product-carrying parts are made of brushed stainless steel ($R_a=0,25$, $R_z=1$), all other parts are made of corrosionresistant and physiologically harmless materials.

Because of the functional design *DosyPacks* are fast and easy to clean. This allows it to be used even under the extreme hygienic conditions demanded by the chemical, pharmaceutical and food industries.

The flow rate can be varied with the dosing port at the silo outlet.

Two compressed air linear vibrators, of type NTS 250 NF or type NTK 18 AL + SM 16-1, are available. They work without running on, so that the product flow is immediately interrupted, once the vibrators are switched off.

The exact feed quantity is regulated by adjusting the frequency and amplitude of vibration. Both can be independently adjusted. Increasing the supply pressure causes an increase in the frequency. The amplitude can be adjusted by regulating the optional throttle.

A multi-directional valve is required for operation (not supplied).

In addition to the standard versions, series *DosyPack* dosing stations are also available in customized designs. Furthermore, all individual components can be supplied separately.

Permissible operating conditions

Drive medium:

Compressed air or nitrogen (filter $\leq 5 \mu m$), preferably with oil mist

Operating pressure:

2 bar to 6 bar

Ambient temperature:

5°C to 60°C

NetterVibration offers the accessories required for mounting, installation and control of vibrators and interval impactors.

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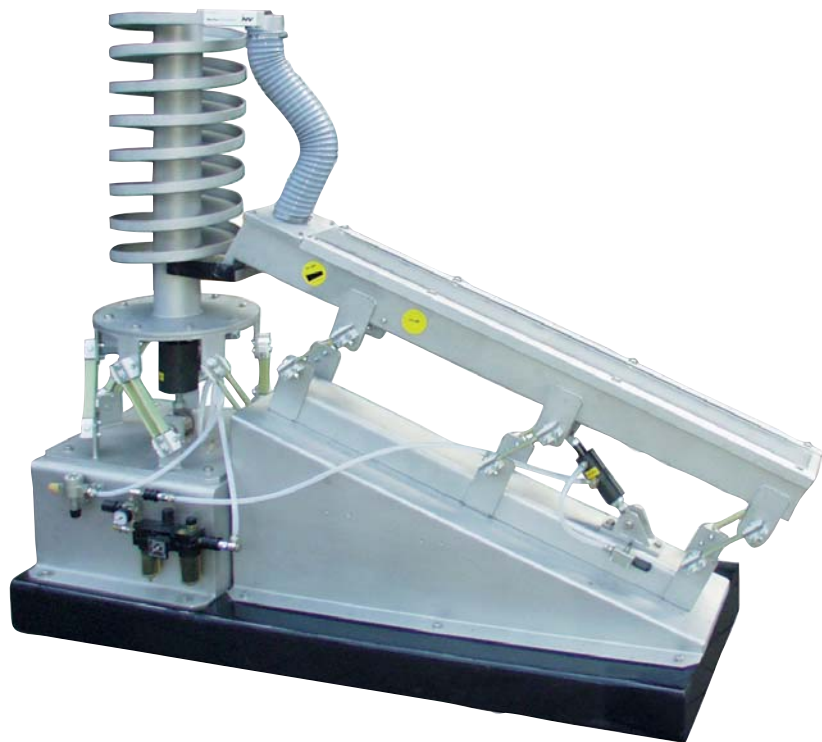
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Netter Resonance Conveyor System Series *FlexiLink*



- High conveying performance by use of spring resonance
- Low air consumption
- Immediate starting and stopping
- Low unit weight



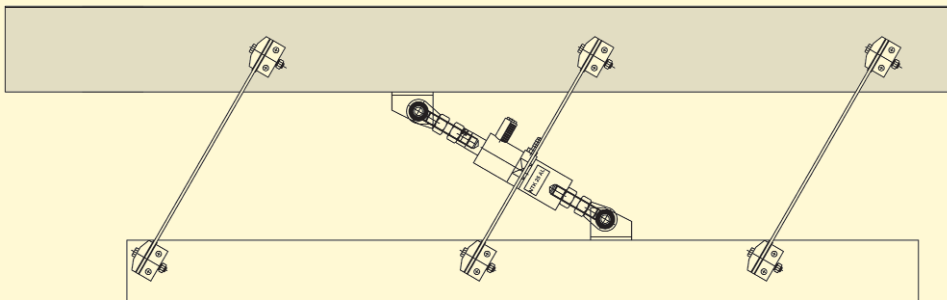


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Netter Resonance Conveyor System Series *FlexiLink*

Netter resonance conveyor systems in the FlexiLink series consist of:

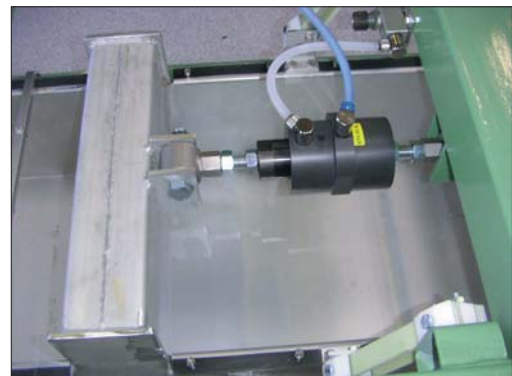


A conveyor trough,
manufactured either by
the client or as per the
client's requirements

blade springs,

a pneumatic linear vibrator
series NTK with
the *FlexiLink*
connecting element

and the counter-weight
(frame/floor)



Applications

Conveyor systems of the *FlexiLink* series serve to convey bulk material efficiently and gently.

Design and functioning principle

The feeder system consists of a pneumatic linear vibrator of series NTK, blade springs and the *FlexiLink* connecting element.

This system uses the natural resonance of the springs in order to convey bulk materials. Once the trough starts to vibrate at the resonance frequency, very little additional energy is required to maintain the vibration. Even with varying loads, the trough continues to vibrate in resonance.

The amplitude can be adjusted by means of an optional exhaust throttle.

In addition to driving classic feeder troughs, the *FlexiLink* system can also be used to drive spiral feeders. The blade springs are then arranged in a circle in order to

accommodate the spiral feeder.

In addition to the standard versions, customized variants of the *FlexiLink* series are also available. Furthermore, all components can be supplied separately.

Permissible operating conditions:

Drive Medium:

Compressed air or nitrogen (filter $\leq 5 \mu\text{m}$), preferably with oil mist

Operating pressure:

2 bar to 6 bar

Ambient temperature:

5°C to 60°C

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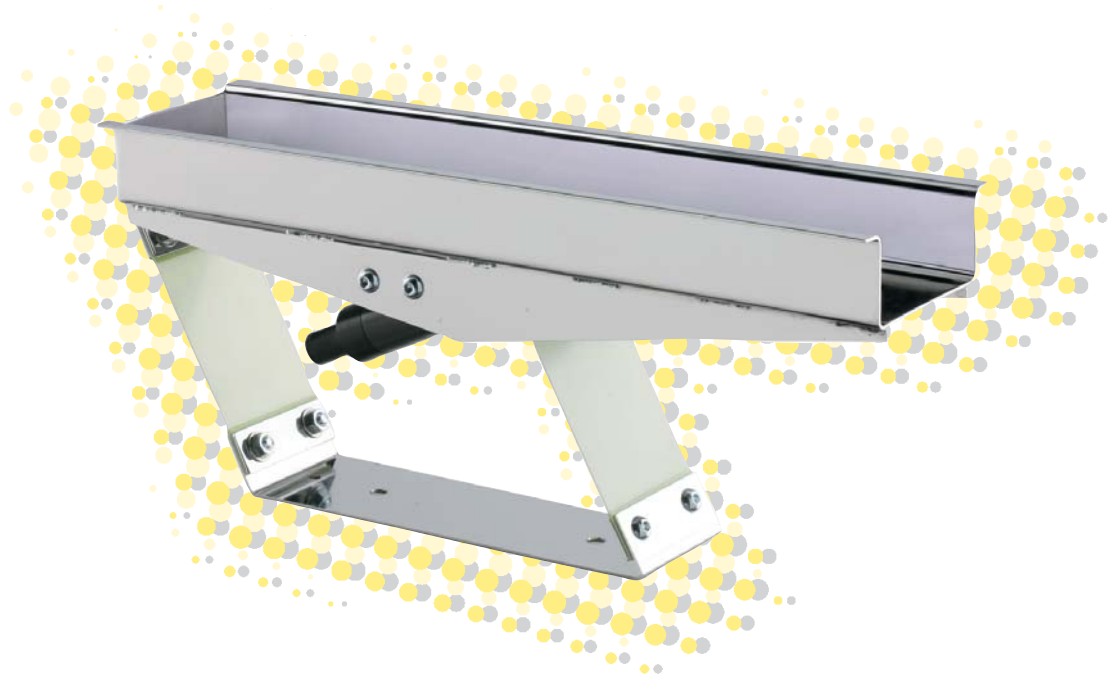
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Netter Conveyor Systems Series **PowerPack**



- Gentle and smooth conveying
- Coarse and fine flow settings
- Instant starting and stopping
- Stainless steel version possible

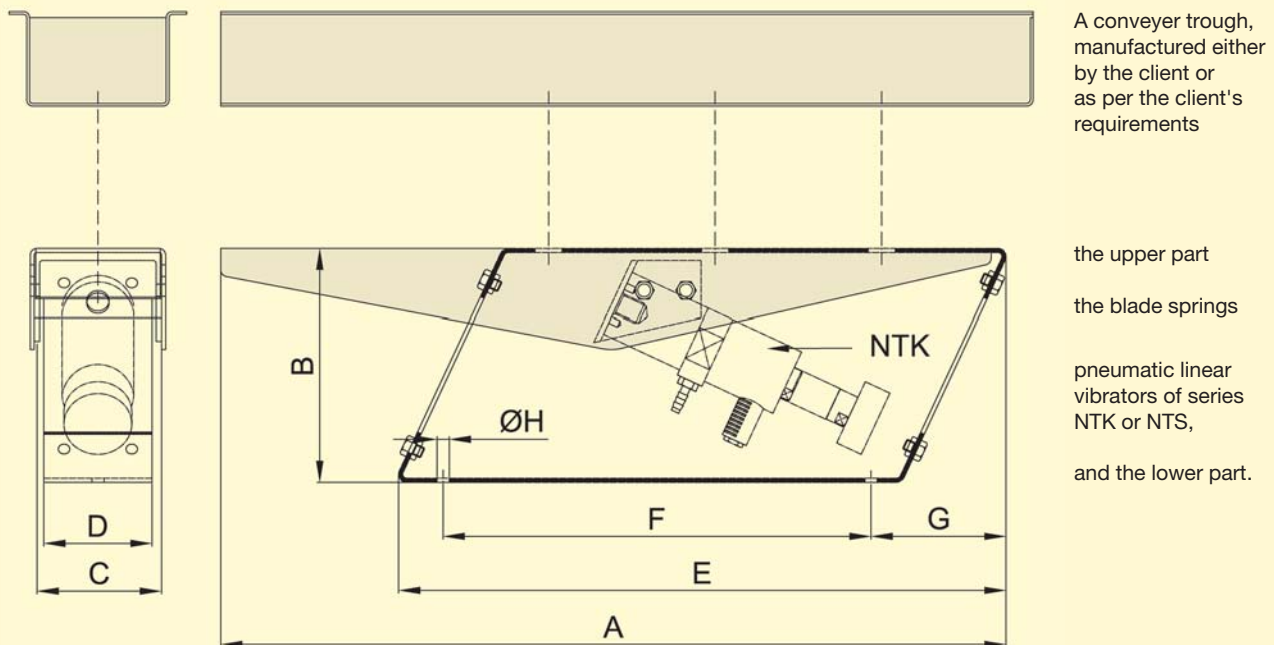




Netter Conveyor Systems Series *PowerPack*

Type	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	ØH [mm]	Weight incl. trough [kg]
PowerPack 180	500	ca. 173,5	85	81	342	230	90	9	ca. 3,5
PowerPack 250/350	580	ca. 173,5	100	94	449	321,5	99	9	ca. 6,6

Conveyor systems of the PowerPack series consist of:



Applications

Conveyor systems of the **PowerPack** series serve to convey bulk material efficiently and gently. The stainless steel version allows the operation in the chemical, pharmaceutical and food industries.

Design and functioning principle

The **PowerPack** feeder system works with forced vibrations. The conveyor trough is mounted on blade springs and is driven by a pneumatic linear vibrator of the NTK or NTS series. Depending on the application, it is also possible to use an electric external vibrator of the NEG series. The selection of the vibrator depends not only on the material properties, but also on the requested frequency or amplitude. Unlike many other conveyor systems, the frequency and amplitude of the **PowerPack** series can be controlled separately. It is therefore possible to satisfy many individual requirements.

In addition to the general standard versions, customized versions of the **PowerPack** series are also available. Furthermore, all components can be supplied separately.

Permissible operating conditions:

Drive medium:

Compressed air or nitrogen (Filter 5 µm), preferably with oil mist.

Operating pressure:

2 bar to 6 bar

Ambient temperature:

5°C to 60°C
HT versions up to 200°C

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