



Electric External Vibrators



- Circular vibration
- Nominal frequency from 750 min⁻¹ to 6,000 min⁻¹
- Centrifugal force from 40 N to 217,749 N
- Smooth housing surface
- Stainless steel unbalance covers
- Available for ambient temperatures up to 55 °C
- Ex tb IIIC Db (dust ignition proof) available
- Ex e IIC available
- Degree of protection IP 66-7, insulation class F
- Stainless steel versions available





NetterVibration



Electric External Vibrators

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Notes on Vibrator Design

Formulary

working moment	$M = s \times m$	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	vibration width	cm	n	frequency	min ⁻¹
m	weight with vibrator	kg	M	working moment	cmkg
F	centrifugal force	N	a _(g)	acceleration	g

Which kind of vibration for which task?

Task	Frequency	Acceleration [a _(g)] Many times the gravitational acceleration	Vibration width	Vibration circular directed
Conveying, dosing	750–3,000	2–5	large	↔
Sieving	1,000–1,500	3–4	large	↔
Draining	1,500–3,000	3–5	medium	↔
Cleaning, shaking off filter	1,500–3,000	2–3	medium	↻
Loosening, releasing Emptying bulk materials	1,500–3,000	0,15–0,2 of the material weight in the conical part of the silo	medium	↻
Compacting bulk materials	1,500–6,000	2–4	medium	↻ ↔
Compacting cement	3,000–9,000	0.8–1.5	small	↻ ↔
Testing components	300–6,600	0.5–5	adjustable	↻ ↔



All external vibrators manufactured by **NetterVibration** comply with the applicable EU directives and bear the CE mark.



Many external vibrators made by **NetterVibration** meet the standard C22.2 no. LR100-95, file no. LR100948 Part B. Class 421101 Motors and Generators (North America).



Designs and ambient conditions



Stainless steel vibrators are resistant to very harsh environmental conditions. Especially the chemical, pharmaceutical and food industries use this resistance in production areas with aggressive, liquid and gaseous media.



ATEX vibrators allow operation in explosive atmospheres (ATEX Zones 1, 2, 21 and 22) using special design measures in which gases, vapours, mists and dusts are used. These vibrators, which meet very high safety standards, find a use especially in the chemical and petroleum industry.



Plastic vibrators have the advantages of stainless steel devices, but are much lighter. The useful properties of these vibrators are used in the manufacture of dairy products (e.g. cheese), throughout the food industry and in extreme industrial applications.

Series	Stainless	Plastics	ATEX zone 21/22	ATEX zone 22	ATEX zone 1/2
NEG			●		
NEA	●			upto GG 60	
NED		●			
NEGE			●	●	●
NEGS	●				
NES	●		●	●	

Information on the NEG, NEA and NED series



Conveying



Sieving



Compacting

Applications

The electric external vibrators of the series NEG, NEA or NED are always used when, for example, conveyor troughs or sieves have to be driven. In addition, these vibrators can loosen product jams and deposit build-ups in silos. When used on concrete formwork, a high surface quality and compaction of the concrete is achieved by a particularly uniform vibration.

One special feature of the NEG is the maintenance-free operation even under harsh environmental conditions.

Design and function

External electric vibrators are unbalance motors based on the short circuit rotor principle and, apart from a few decisive differences, are very similar to commercially available electric motors. The NEG three-phase vibrators run on 230/400 V, 50 Hz, depending on the number of poles, at 750, 1.000, 1.500 or 3.000 min⁻¹. The NEA AC units run on 230 V, 50 Hz at 3.000 min⁻¹. Further voltages are available. The NED DC vibrators run on 12 or 24 V at 3.000 min⁻¹ (NED 601110 only on 24 V, 3.600 min⁻¹).

There are unbalances on both shaft ends, which generate an omnidirectional, sinusoidal vibration with the frequency of the corresponding speed.

All NEG/NEA are also designed for use at 60 Hz, the speed is then correspondingly 20 % higher than the values at 50 Hz. The unbalance is adjusted, if necessary. Generously dimensioned roller bearings guarantee a high degree of operational safety. All NEG are fully suitable for operation with frequency converters.

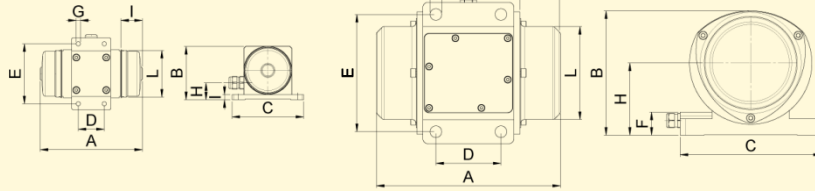


Stainless Steel Electric External Vibrators NEG S Series



NEG 5020 S and NEG 5050 S

other types of NEG S



min ⁻¹	Type	Housing size	Unbalance [cmkg]		Centrifugal force [N]		Nominal power [kW]		Nominal current [A]		Weight [kg]		Dimensions [mm]							
			50 Hz	60 Hz	50 Hz	60 Hz	50 Hz 400 V	60 Hz 480 V	50 Hz 400 V	60 Hz 460 V	50Hz	60Hz	A	B	C	D	E	F	G	I
3000 3600	NEG 5020 S	60	0.39	0.39	192	277	0.035	0.035	0.15	0.15	3.8	3.8	157	82	110	40	92	8	6.5	33
	NEG 5050 S		0.91	0.91	450	647	0.045	0.045	0.16	0.16	4.0	4.0	169							
	NEG 50120 S	101	2.4	2.4	1,185	1,708	0.18	0.18	0.35	0.30	11.2	11.1	207	139	164	65	140	18	13	44
	NEG 50200 S		4.2	3.0	2,073	2,133					11.8	11.6	223							
	NEG 50300 S	110	6.02	4.08	2,972	2,900	0.26	0.27	0.60	0.50	18.5	18.3	246	163	164	65	140	16	13	50
	NEG 50550 S	120	9.99	6.48	4,930	4,606	0.45	0.50	0.80	0.75	30	29.8	283	191	217	100	180	25	18	62.5
	NEG 50770 S	130	15.59	10.40	7,695	7,392	0.65	0.685	1.10	1.00	36	35	308	198	220	100	180	20	19	63
	NEG 50980 S	133	19.8	13.2	9,772	9,382	1.00	1.20	1.70	1.60	40	39	324	207	220	100	180	20	19	76
	NEG 501140 S		23.0	16.5	11,352	11,727					40.5	39.5	324							
1500 1800	NEG 2530 S	101	2.4	2.4	296	426	0.085	0.095	0.21	0.20	11.2	10.9	207	139	164	65	140	18	13	44
	NEG 2570 S		6.2	4.2	766	747					12.3	11.9	243							
	NEG 25210 S	110	16.84	11.76	2,078	2,090	0.17	0.17	0.41	0.40	20.5	19.5	306	163	164	65	140	16	93	80
	NEG 25420 S	120	32.64	22.66	4,028	4,027	0.30	0.35	0.60	0.60	34	33	356	191	217	100	180	25	111	99
	NEG 25540 S		43.60	32.64	5,405	5,800					36	35	392							
	NEG 25700 S	130	57.18	41.89	7,056	7,444	0.525	0.685	0.92	0.98	43	42	392	198	220	100	180	20	107	105
NEG 25930 S	133	75.0	52.0	9,254	9,239	0.55	0.68	0.95	0.95	49	47	452	207	220	100	180	20	115	140	
1000 1200	NEG 1630 S	110	6.02	6.02	331	476	0.12	0.135	0.30	0.30	20	20	246	163	164	65	140	16	13	50
	NEG 1690 S		16.84	16.84	924	1,330					21	21	306							
	NEG 16190 S	120	32.64	32.64	1,790	2,578	0.185	0.205	0.50	0.50	34	34	356	191	217	100	180	25	18	99
	NEG 16310 S	130	57.18	41.89	3,136	3,309	0.35	0.38	0.72	0.68	42.5	41.5	392	198	220	100	180	20	19	105
	NEG 16410 S	133	75.0	52.0	4,113	4,106	0.35	0.38	0.75	0.67	49	48	452	207	220	100	180	20	19	140
	NEG 16500 S		90.7	66.5	4,974	5,251					0.42	0.46	0.79							
750 900	NEG 12100 S	120	32.64	32.64	1,007	1,450	0.23	0.25	0.85	0.76	34	34	356	191	217	100	180	25	18	99
	NEG 12180 S	130	56.8	56.8	1,752	2,523	0.35	0.38	1.10	1.05	42	42	392	198	220	100	180	20	19	105
	NEG 12230 S	133	75.0	75.0	2,314	3,332	0.28	0.30	0.60	0.68	49	49	452	207	220	100	180	20	19	140



Container



Conveyor channel



Sieving channel

Applications

The electric external vibrators of the NEG S series are used wherever special demands are made on the chemical resistance of the surfaces. Even in the standard version, the NEG S have a surface quality RZ of 6,3 µm and therefore meet the requirements of the chemical and pharmaceutical industries. A higher surface quality, e.g. for the food industry, is easily possible on request. The

protection class IP 66 allows intensive cleaning with high-pressure lamps and aggressive cleaning agents.

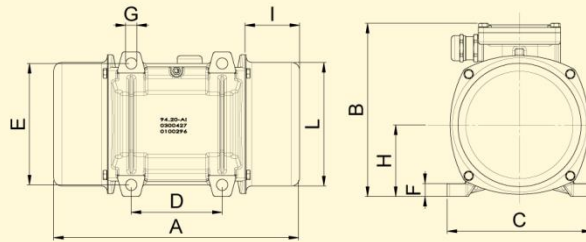
Design and function

One special feature of the NEG s series is its modular design. As a result, even very small series in different steel materials can be produced economically. All internal com-

ponents of the NEG S vibrators come from the proven NEG series and are tried and tested.

Stainless steel housings usually have a higher tare weight than the standard housing. This larger mass is to be considered in the design.

Stainless Steel Electric External Vibrators NES Series



min ⁻¹	Type	Unbalance [cmkg]		Centrifugal force [N]		Nominal power [kW]		Nominal current [A]		Weight [kg]		Dimensions [mm]							
		50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50Hz 400V	60Hz 460V	50 Hz	60 Hz	A 50/60Hz	B	C	D	E	F	G	I 50/60 Hz
3000 3600	NES50120	2.4	2.4	1,185	1,706	0.18	0.18	0.35	0.30	8.0	8.0	209	151	125	62-74	100	22	10	45
	NES50200	4	3,2	1,974	2,274					8.5	8.5	225							53
	NES50300	6	4	2,961	2,843	0.26	0.27	0.60	0.50	12.5	12.0	255	176	152	90	125	12	13	54
	NES50550	11.5	6,9	5,676	4,904	0.45	0.50	0.80	0.75	18.5	17.5	284	200	167	105	140	15	13	63
	NES50770	14.7	11	7,255	7,818	0.65	0.69	1.10	1.00	25.0	24.0	356	225	205	120	170	20	17	77
	NES501140	22.4	14.7	11,056	10,448	1.00	1.20	1.75	1.75	30.0	29.0	356	225	205	120	170	20	17	77
	NES501540	31	21	15,300	14,925	1.40	1.45	2.30	2.00	39.6	38.0	438	245	230	140	190	25	17	103
NES502020	41	26	20,236	18,479	2.20	2.20	3.50	3.00	48.7	46.3	438	245	230	140	190	25	17	103	
1500 1800	NES2530	2.4	2.4	296	426	0.09	0.10	0.21	0.20	7.8	7.8	209	151	125	62-74	106	10	9	45
	NES2570	6.4	4.8	790	853					9.0	8.7	225							53
	NES25100	7.78	6.20	960	1,102	0.09	0.10	0.21	0.20	9.4	9.0	241/225	151	125	62-74	106	10	9	61/53
	NES25210	16.8	11.8	2,073	2,097	0.17	0.17	0.41	0.40	15.8	15.0	295	176	152	90	125	12	13	74
	NES25420	32.6	22.7	4,023	4,033	0.30	0.35	0.60	0.60	22.5	21.7	340	200	167	105	140	15	13	91
	NES25540	43.8	32.6	5,404	5,792					23.9	22.5	380							111
	NES25700	57.2	41.9	7,058	7,445	0.53	0.67	0.92	0.98	32.0	30.7	378	211	205	120	170	17	17	98
	NES251030	83	54.2	10,242	9,630	0.55	0.68	0.95	0.95	42.0	37.5	436	232	205	120	170	20	17	118
	NES251410	112	80	13,820	14,215	0.90	1.05	1.45	1.50	53.0	50.0	442	245	230	140	190	25	17	105
	NES251800	143	97	17,645	17,235	1.10	1.20	2.00	1.90	58.5	54.5	490	245	230	140	190	25	17	129
	NES252060	163	112	20,113	19,900	1.35	1.45	2.50	2.30	70.0	68.0	560	245	230	140	190	25	17	164
	NES252370	192	135	23,691	23,987	1.60	1.70	3.20	3.00	82.0	76.0	525	285	275	155	225	30	22	131
	NES253050	247	172	30,477	30,561	1.90	2.00	3.80	3.50	92.0	89.0	601	285	275	155	255	30	22	135
	NES253720	302	207	37,264	36,780	2.20	2.50	3.90	3.90	115.0	110.0	589	323	310	155	255	35	23.5	139.5
NES254310	344	235	42,446	41,684	2.50	2.80	4.80	4.65	122.0	117.0	589	323	310	155	255	35	23.5	178	
1000 1200	NES1630	6	6	329	474	0.12	0.14	0.30	0.30	12.5	12.5	255	176	152	90	125	12	13	54
	NES1690	16.8	16.8	921	1,327					15.8	15.8	295							74
	NES16190	32.6	32.6	1,788	2,574	0.19	0.21	0.50	0.50	22.5	22.5	340	200	167	105	140	15	13	91
	NES16310	57.2	41.9	3,137	3,309	0.35	0.38	0.72	0.68	32.0	30.7	378	211	205	120	170	17	17	98
	NES16410	75	52	4,113	4,106	0.35	0.38	0.75	0.68	43.5	43.5	434	232	205	120	170	20	17	117
	NES16810	144	112	7,897	8,845	0.68	0.76	1.40	1.35	54.0	52.6	490/442	245	230	140	190	25	17	129/105
	NES161130	202	143	11,078	11,293	0.75	0.75	1.65	1.50	67.0	59.5	560	245	230	140	190	25	17	164
	NES161420	254	187	13,929	14,767	0.95	1.00	2.10	2.00	78.0	71.0	560	245	230	140	190	25	17	164
	NES161610	293	192	16,068	15,162	1.10	1.30	2.20	2.20	94.0	83.0	601/525	285	275	155	225	30	22	169/131
	NES162110	385	264	21,113	20,848	1.50	1.70	3.00	2.90	105.0	93.0	601	285	275	155	225	30	22	169
	NES162550	464	323	25,446	25,507	1.96	2.10	4.10	3.75	130.0	116.0	657/589	323	310	155	255	35	23.5	173.5/139.5
NES163030	553	400	30,327	31,588	2.20	2.40	4.50	4.30	145.0	130.0	705	323	310	155	255	35	23.5	197.5	
750	NES12100	32.64	32.64	1,007	1,450	0.23	0.25	0.85	0.76	22.5	22.5	340	200	167	105	140	15	13	91
	NES12180	56.80	56.80	1,752	2,523	0.35	0.38	1.10	1.05	32.0	32.0	378	211	205	120	170	17	17	98

Applications

The stainless steel electric external vibrators of the NES series are mainly used in the chemical, pharmaceutical and food industries. They serve as drives for conveyors, sieves and discharge aids. The stainless steel surfaces of the vibrators are particularly resistant to chemically aggressive environmental conditions and can be thoroughly cleaned mechanically and automatically with powerful cleaning agents.

The extremely resilient roller bearings guarantee a long service life. All NES are suitable for operation on Netter frequency converters.

Design and function

Stainless steel electric external vibrators are three-phase asynchronous motors with adjustable unbalances on both shaft ends, which generate a sinusoidal vibration with the frequency of the corresponding number of rotations.



Electric External Vibrators Special versions



CC Unbalances

Applications

This special version with CC unbalances is used if two different unbalance settings are to be at a disposal during operation.

The CC unbalances are manufactured on customer request and allow a second unbalance setting of 25-100% of the main value.

Design and function

To use the CC unbalances, the NEG must be operable by a corresponding electrical circuit in both directions of rotation. If the NEG turns in one direction, it works e.g. with a maximum unbalance.

When the direction of rotation changes, the outer unbalance disc automatically rotates at a specified angle against the inner unbalance disc and thus provides a reduced unbalance setting.



Shaft Coupling

Applications

This special version with shaft coupling is used when large centrifugal forces are necessary, but little space is available for installation.

Design and function

Two or more vibrators in series are operated with angular synchronous unbalances by connecting the shafts of the vibrators via a shaft coupling.



Oil Circulating Lubrication

Applications

This special version with external oil circulating lubrication is recommended when operating high frequency vibrators continuously, which would lead to major heating and a reduced bearing life.

Design and function

A hydraulic pump continuously supplies the bearings with oil during operation, which flows back into the oil tank via a cooler.



Rotary Encoders

Applications

These special versions with rotary encoders are always used when the frequency and/or position of the unbalance is to be detected electronically. This enables the building of complex vibration systems.

Design and function

The external electric vibrators are equipped with a special mounting system for rotary encoders. Robust rotary encoders with integrated, highly elastic and a torsionally stiff hollow shaft coupling measure the frequency of the vibrator even under the toughest operating conditions.



SRF



ATV



NFU

Electric External Vibrators Accessories

Static adjustable frequency converters

ATV 320 / NFU Series

Static adjustable frequency controls

SRF Series

Applications

The frequency control of the SRF series and the frequency inverters of the series ATV and NFU are used to control the frequency of electric vibrators.

Special applications require frequencies that cannot be achieved with normal multiple vibrators at mains frequency. The special feature of this frequency converter is its robust and uncomplicated design.

Design and function

SRF frequency controllers are mounted in a control cabinet with a degree of protection of IP 65. ATV units are frequency converters in the IP 2x housing and are intended for switch cabinet installation at the customer. The performance data correspond to the SRF series.

NFU units are frequency converters with a motor circuit in an IP 65 housing for wall mounting and are equipped with a main switch, a rotational direction switch and a setpoint potentiometer.



Electric External Vibrators Accessories



On-Off Switch

Applications

With the on-off switches, one or two electric external vibrators of the NEG or NEA series can be connected directly to the system or decentralized, e.g. be switched on or off from a control room.

Design and function

Depending on the material, the switches are integrated in a housing with a degree of protection of IP 55 or IP 65. Large control buttons allow easy operation. The main emergency stop switch is lockable. Versions with motor protection switch are available.



Brake Units BZ Series

Applications

Brake units of the BZ series are used to bring the NEG as quickly as possible to a standstill during operation.

In order to avoid resonance phenomena of vibration tables and of conveyors, it is often necessary to be able to switch off drives without their running down uncontrollably.

Design and function

The load-resistant power electronics changes the direction of the electric rotating field when the brake is actuated, bringing the NEG immediately to a standstill. The short-term high braking currents can be easily handled by the NEG. The permissible temperature range is between 0 °C and +40 °C, degree of protection is IP 23. The braking devices are only suitable for stable mains frequencies of 50 Hz or 60 Hz. Operation together with a frequency converter is not permitted.

A special feature of these units is the very high braking effect with a compact size.

Vibration Monitoring Systems Series *VibroMonitor*



Applications

The vibration monitoring system of the series *VibroMonitor* is used for the constant monitoring of impactors, vibrators and vibration systems.

The *VibroMonitor* system reliably monitors the functioning of vibrators and impactors, even in hard-to-reach places.

Design and function

The monitoring system consists of a sensor, a connection cable and a controller. The controller ensures safe data transmission of the sensor signal up to a max. distance of 250 m. Depending on the version, one controller can steer up to 4 sensors. The controller can be mounted on a standard M36 DIN rail.



Safety Cable Series NSE

Applications

The safety cables of the NSE series prevent the external electric vibrators from falling down if they accidentally come loose.

The use of safety cables is recommended, especially in critical installation situations, e.g. at high altitudes.



Fastening Kits Series NBS

Applications

The NBS series fastening kits are for the safe and permanent attachment of the electric external vibrators and are sized to exactly match the foot height of the housings.

They are available in different designs, among others in stainless steel in the appropriate strength category.

NetterVibration has a worldwide network of experienced dealers and application technicians who are happy to solve problems, also on-site, together with you or your customers with the help of vibration technology.

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

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