



## Electric External Vibrators



- Circular vibration
- Nominal frequency from 750 min<sup>-1</sup> to 6,000 min<sup>-1</sup>
- 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

### Contents

	Page		Page
<b>Notes on vibrator design</b>	2	<b>NEG E series</b>	10–11
		NEG as ATEX version	
<b>Designs and ambient conditions</b>	3	<b>NEG S series</b>	12
		Stainless steel, especially smooth surface	
<b>Information on the NEG/NEA/NED series</b>	3	<b>NES series</b>	13
Applications, design and function		Stainless steel, for chemically aggressive ambient conditions	
<b>NEG series</b>	4–7	<b>NEG/NEH series</b>	14
Three-phase alternating current		High frequency electric external vibrators	
<b>NEA series</b>	8–9	<b>Special designs</b>	15
Single-phase alternating current			
<b>NED series</b>	8–9	<b>Accessories</b>	15–16
Direct current			

### 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 <sup>-1</sup>
m	weight with vibrator	kg	M	working moment	cmkg
F	centrifugal force	N	a <sub>(g)</sub>	acceleration	g

#### Which kind of vibration for which task?

Task	Frequency	Acceleration [a <sub>(g)</sub> ] 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).

## Electric External Vibrators



### 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<sup>-1</sup>. The NEA AC units run on 230 V, 50 Hz at 3,000 min<sup>-1</sup>. Further voltages are available. The NED DC vibrators run on 12 or 24 V at 3,000 min<sup>-1</sup> (NED 601110 only on 24 V, 3,600 min<sup>-1</sup>).

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.

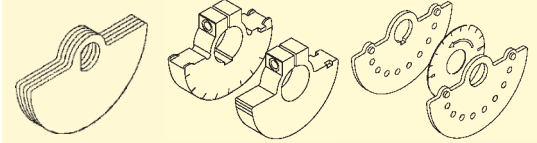


**NetterVibration**



**Electric External Vibrators**  
NEA Single-Phase AC Series

Unbalance type XL    Unbalance type XS    Unbalance type XLs



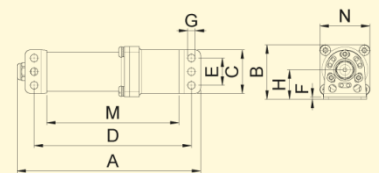
min <sup>-1</sup>	Type	Housing size	Housing material	Unbalance [cmkg]		Centrifugal force [N]		Nominal power [kW]		Nominal current [A]		Weight [kg]	
				50 Hz	60 Hz	50 Hz	60 Hz	50 Hz 230 V	60 Hz 115V	50 Hz 230 V	60 Hz 115V	50 Hz	60 Hz
3000 3600	NEA 504*	50	AL	0.1	0.1	49	71	0.024	0.024	0.13	0.30	1.0	1.0
	NEA 5020	60	AL	0.4	0.4	197	284	0.035	0.035	0.17	0.42	2.20	2.20
	NEA 5050			1	1	494	711	0.045	0.045	0.20	0.46	2.45	2.45
	NEA 5060	100	AL	1.2	1.2	592	853	0.11	0.11	0.56	1.52	4.9	4.9
	NEA 50120	101	AL	2.4	2.4	1,185	1,706	0.165	0.165	0.75	1.52	5.9	5.9
	NEA 50200			4	3.2	1,974	2,274					6.5	6.3
	NEA 50300	110	AL	6	4	2,961	2,843	0.28	0.28	1.25	2.40	10.2	10.0
	NEA 50550	120	AL	11.5	6.9	5,676	4,904	0.5	0.5	2.30	4.50	16.3	16.1
NEA 50770	130	AL	14.7	11	7,255	7,818	0.7	0.75	3.25	7.00	22.1	21.6	
1500 1800	NEA 2530	101	AL	2.4	2.4	296	426	0.09	-	0.43	-	6.1	5.8
	NEA 2570			6.4	4.8	790	853					7.3	6.9
	NEA 25210	110	AL	16.8	11.8	2,073	2,097	0.21	-	1.00	-	12.8	11.8
	NEA 25420	120	AL	32.6	22.7	4,023	4,033	0.24	-	1.20	-	20.7	19.7
	NEA 25540			43.8	32.6	5,404	5,792					22.7	21.7
	NEA 25700	130	AL	57.2	41.9	7,058	7,445	0.45	-	2.50	-	29.4	28.4

\* degree of protection IP 65

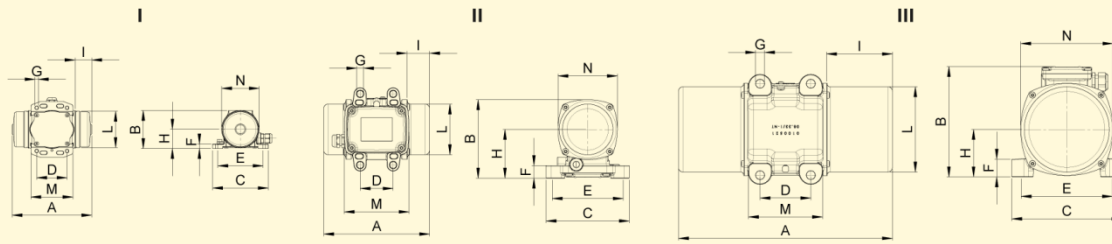


**Electric External Vibrators**  
NED Direct Current Series

NED 605



Type	Revolutions [min <sup>-1</sup> ]	Nominal voltage [V]	Housing size	Housing material	Unbalance [cmkg]	Centrifugal force [N]	Nominal power [kW]	Nominal current [A]		Weight [kg]
								24V	12V	
NED 605	3,600	24/-	-	AL/POM	0.07	50	0.011	0.45	-	0.4
NED 5016	3,600	24/12	-	POM	0.3	213	0.02	0.6	1.4	1.5
NED 50100	3,000	24/12	102	AL	2.4	1,185	0.19	4.0	8.0	5.7
NED 50200	3,000	24/12	103	AL	4	1,974	0.19	4.0	8.0	6.0
NED 50500	3,000	24/12	122	AL	10	4,936	0.27	11.3	22.5	13.1
NED 601110	3,600	24/-	133	AL	15.6	11,087	0.53	22.0	-	20.8
NED 601510	3,600	24/-	133	AL	21	14,925	0.53	22.0	-	21.5

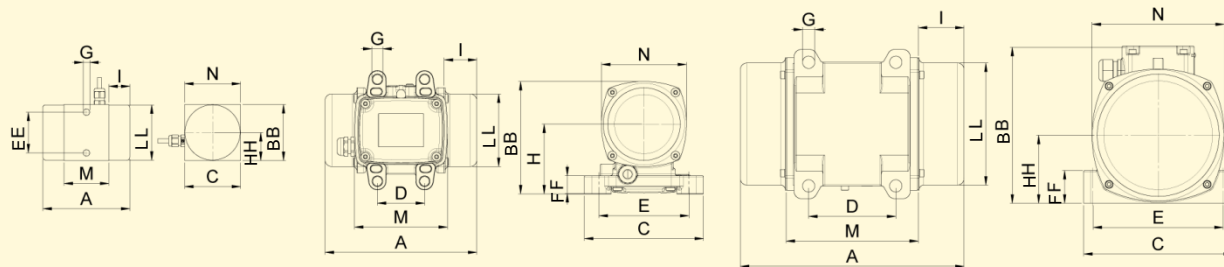


Type	Housing type	Dimensions [mm]													Unbalance [number of unbalance discs]	
		A	B	C	D E n <sub>2</sub> * F G mounting dimensions**				H	I	L	M	N	Type	50/60 Hz	
NEA 504	I	111	67	90	25-40	75	4	9	5.5	34	24	63	59	65	XL	8
NEA 5020	I	157	75	110	<b>60</b>	<b>85</b>	4	9	<b>6.5</b>	38	33	72	83	74	XL	8
NEA 5050		169			25-40	92										39
NEA 5060	II	197	123	127	30	85	4	24	<b>9</b>	70	40	103	86	106	XLs	4
					<b>30</b>	<b>100</b>										
					62	85										
					<b>62</b>	<b>100</b>										
NEA 50120	II	209	154.5	164	<b>65</b>	<b>140</b>	4	25	<b>13</b>	96	45	100	128	117	XLs	6
NEA 50200		225			62-74	106					9					53
NEA 50300	II	255	175.5	164	<b>65</b>	<b>140</b>	4	25	<b>13</b>	105	54	124	128	141	XLs	8/6
NEA 50550	II	284	195	217	<b>100</b>	<b>180</b>	4	30	<b>17</b>	115	63	143	144	160	XLs	10/6
					105	140										
NEA 50770	III	308	211	215	100	180	4	35	17	93.5	63	168	144	182	XLs	8/6
NEA 2530	II	209	154.5	164	<b>65</b>	<b>140</b>	4	25	<b>13</b>	96	45	100	128	117	XLs	6
NEA 2570		241			62-74	106					9					61
NEA 25210	II	295	175.5	164	<b>65</b>	<b>140</b>	4	25	<b>13</b>	105	74	124	128	141	XS	4
					90	125										
NEA 25420	II	340	195	217	<b>100</b>	<b>180</b>	4	30	<b>17</b>	115	91	143	144	160	XS	4
NEA 25540		380			105	140					13					
NEA 25700	III	378	211	215	100	180	4	35	17	93.5	98	167	144	193	XS	4

NED 5016

NED 50100/NED 50200

NED 601110/NED 601510

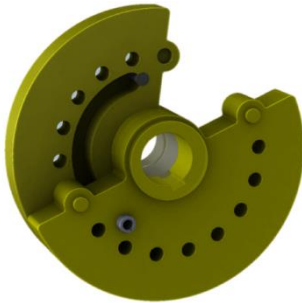


Type	Dimensions [mm]													Unbalance [number of unbalance discs]	
	A	B	C	D E F G mounting dimensions**				H	I	L	M	N	Type	No.	
NED 605	169	50	40	145	25	2	7	27	-	-	122	46	XL	1	
NED 5016	121	77	77	-	56	-	9	38.5	29	76	63	-	XL	6	
NED 50100	209	154,5	164	<b>65</b>	<b>140</b>	25	13	96	45	100	128	117	XLs	6	
NED 50200	225	154,5	164	<b>65</b>	<b>140</b>	25	13	96	53	100	128	117	XLs	10	
				62-74	106	9									
NED 50500	288	203	167	105	140	30	13	82.5	65	145	140	160	XM	4	
NED 601110	308	216	205	120	170	45	17	93.5	63	170	160	182	XM	4	
NED 601510	308	216	205	120	170	45	17	93.5	63	170	160	182	XM	4	

\* number of bores

\*\* recommended mounting dimensions printed in bold

## 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.**

#### Netter GmbH

Fritz-Lenges-Str. 3  
55252 Mainz-Kastel

- Germany
- Switzerland
- Poland
- Spain
- Australia
- United Kingdom

www.**NetterVibration.com**  
info@**NetterVibration.com**