Vibration motors

HVE 2

II 2G/D EEx e II T3

Instructions of operation

and

List of Spares

Important remarks concerning the personal safety of operators

These instructions must be understood by each operator, who is in charge of the assembly, putting into operation, maintenance and repair work of vibration motors.

Our vibration motors have been manufactured in accordance with the latest art. In case of use as provided, they are sure to operate.

Unauthorized changes with the motors and specific execution for the client are excluded from the manufactures` guarantee for resulting damage.

Vibration motors generate destructive forces due to their design. They can become a source of great danger, if used in a way they are not intended for. They may, for instance, tumble to the ground in an uncontrolled manner, if not fastened properly. Thus it is recommended that suitable safety measures are put in place.

When performing maintenance or repair work, the vibration motor must be cut from the power system. Putting vibration motors into operation without protective cover is forbidden, because risk of accident may result.

The operator is responsible for the correct, intended use in environments which are potentially explosive.

The HVE 2 series motors are designed in EEx e and are among the machine group II, i.e. increased safety. They satisfy the requirements of the T3 temperature class and have a maximum surface temperature T of 120° C.

They satisfy the requirements of category 2 for the areas in danger of explosion of dust zones 21 and 22, and of gas zones 1 and 2. The regulations of the standard EN 50281-1-1-2, concerning, for instance, temperatures and dust deposits have to be observed.

Instructions for mounting vibration motors

General

Vibration motors must be mounted only on equipment with plane surfaces, which are resistant to bending. These surfaces must not be exposed to tensional stress.

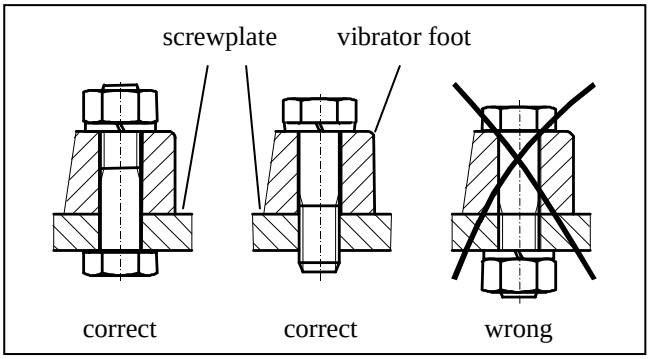
Only screws of grade 8.8 and nuts of grade 6 must be used. The screws must be secured from slackening, e. g. by spring washers or the like.

Posterior tightening of screws and nuts

After the first two hours of operation the screws or nuts must be checked for tight seating. Subsequent inspections shall be performed once daily. In case of necessity the screws or nuts must be retightened.

The minmum torque are for: M10 = 55 Nm
M12 = 90 Nm

If the screws have slackened, danger of breakage for the feet of the feet of the vibrator is impending.



Instructions for establishing the power connection

Dangerous Voltage!
Non-compliance can cause death, serious bodily injury or property damage.

General

The power connection must be established only by an electrician. The voltage and frequency must be that, which is indicated on the machine plate. The vibration motor must be connected only to a power supply which is in agreement with the VDE regulations.

Speed control by means of conventional electronic frequency converters is not allowed.

To secure the motor from overload, it must be connected in series with a terminal circuit breaker, the normal current of which must be set to data, given on the machine plate.
The motor protection has to trip within the time t_E.

The power connetion

HVE 2 machines are equipped with flexible cable in the factory. Only the cable types Lapptherm 105 FD+C 4G 1.5 may be used.

1. The power cable must be fastened firmely shortly behind the cable gland. This first fastening of the cable and the motor should by no means be movable against each other. The cable has to be installed in such a way that it does not start vibrating itself and that it is not subject to any tractional forces.

2. When putting the vibration motor into operation the power input must be examined. Should this be larger than the data on the machine plate, the trouble can be remedied by reducing the centrifugal force.

3. Now and again it must be checked that there are no spots which are subject to friction.

In case the free end of the cable is going to be connected within an Ex zone, a terminal box has be used which meets the respective requirements.

Admitted operating temperature

Every motor must be protected from exessive heat by a thermal cicuit breaker, operating with delayed response which depends on the current.
The thermal circuit breaker must be set for the nominal current of the motor. Furthermore, a circuit breaker must be choosen, which, in case of short circuiting (i.e. when the rotor is stopped) provides that the motor is protected from overheating. This prerequisite is fulfilled if the time of response does not exceed the time of overheating which is indicated for the corresponding group of igniters.

The motors must only run continuously (S1). They must be used only for normal starting successions with which no excessive overheating can occur.

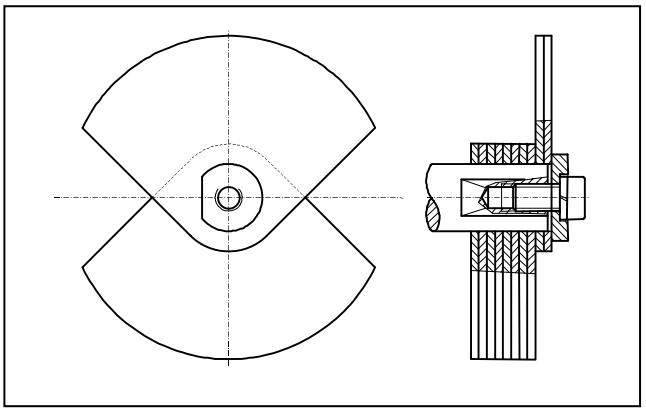
This limit may be surpassed by too high a power input, if the speed which is indicated on the machine plate is not reached, with the result that the winding may burn out. The reason may be too high a centrifugal force for the case which is existing or a construction of insufficient resistance to bending. The trouble can be avoided by reducing the centrifugal force.

Setting the centrifugal force

Provided that no different centrifugal force had been indicated in the order sheet, the motor has been set for the full centrifugal force. In order to be able to change the centrifugal force both protective covers must be taken off. Once the protective covers are taken off, the centrifugal force may be changed as desired. But it must be observed that the adjustment is the same on both sides.
This is achieved by removing the screws or nuts from the armature on both sides and by transposing the flywheels by 180°. With this the centrifugal force is reduced by twice the value of the transposed flywheels. But in this case, the removed flywheels must be replaced by spacers. (Please compare the corresponding list of spares).

One flywheel on each side generates the following centrifugal forces, depending on the type of motor and speed:

Speed with 2 poles = 3000 min^{-1} HVE 2/2 = 22 daN
Speed with 4 poles = 1500 min^{-1} HVE 2/4 = 5,5 daN



After the adjustment, loosened screws must be tightened again and removed protective covers must be mounted again. If this is not observed, risk of accidents is impending.

Maintenance

Motors surfaces must be kept free from accumulatios of dirt in order to make sure sufficient cooling. Now and again, the connection cable must be checked for abrasions. After the first two hours of operation the lock screws must be retightened. Subsequent inspections for tight seating of the screws shall be performed once a day. The bearings of our motors need no maintenance in normal cases. These bearings have a grease filling for life.

In case of wear of the bearing, the motors shall be taken out of service and the special bearings shall be replaced.

We recommed to send these motors to the manufacturers in order to have these repaired.

Only when doing so you may be sure to get motors repaired properly.

If you proceed to disassemble the motors yourselves or to replace bearings, the workplace must be kept clean. No dirt particles must be allowed to get into the interior of the motors. Never use cleaning wool, but non-fluffy cleaning cloths for cleaning motor components.

Never make the motors run without flywheels, because in such cases the bearings could be destroyed.

Spares

When placing orders for spares, please refer to the list of spares and the the drawings of spares.

We take over guarantee only for the use of their original spares.

We point out to the fact that spares, which are not delivered by us have not been tested by us. Using spares from other manufacturers can impare predetermined qualities which are inherent in the construction and thereby influence negatively the active or passive safety. We reject any claim whatsoever, resulting from the use of spares from other manufacturers.
Please keep in mind that many cases, own specifications exist for components of us and other manufacturers and that we deliver always spares according to the latest art.

The name plates are as follows:

würges D-Mot.
Vibrationsmotoren D-86356 Neusäß
CE 0035 Ex II 2G/D EEx e II T3 T=120°

Type HVE 2/2-...			serial number		
V	400 ⅄	Hz	50	min^{-1}	2600
A	0,34	P_1 kW	0,20	cos φ	0,86
Wärmkl.F·IP65·S1·EN60034·EN50014/50019					
PTB 03 ATEX 3047-X/01					
I_A/I_N	3,6	t_E	30 s		
year	Made in Germany 94/9/EC (ATEX)				

würges D-Mot.
Vibrationsmotoren D-86356 Neusäß
CE 0035 Ex II 2G/D EEx e II T3 T=120°

Type HVE 2/2-...			serial number		
V	400 ⅄	Hz	60	min^{-1}	3190
A	0,35	P_1 kW	0,20	cos φ	0,86
Wärmkl.F·IP65·S1·EN60034·EN50014/50019					
PTB 03 ATEX 3047-X/02					
I_A/I_N	4,0	t_E	30 s		
year	Made in Germany 94/9/EC (ATEX)				

würges D-Mot.
Vibrationsmotoren D-86356 Neusäß
CE 0035 Ex II 2G/D EEx e II T3 T=120°

Type HVE 2/4-...			serial number		
V	400 ⅄	Hz	50	min^{-1}	1280
A	0,29	P_1 kW	0,12	cos φ	0,65
Wärmkl.F·IP65·S1·EN60034·EN50014/50019					
PTB 03 ATEX 3047-X/03					
I_A/I_N	2,5	t_E	30 s		
year	Made in Germany 94/9/EC (ATEX)				

würges D-Mot.
Vibrationsmotoren D-86356 Neusäß
CE 0035 Ex II 2G/D EEx e II T3 T=120°

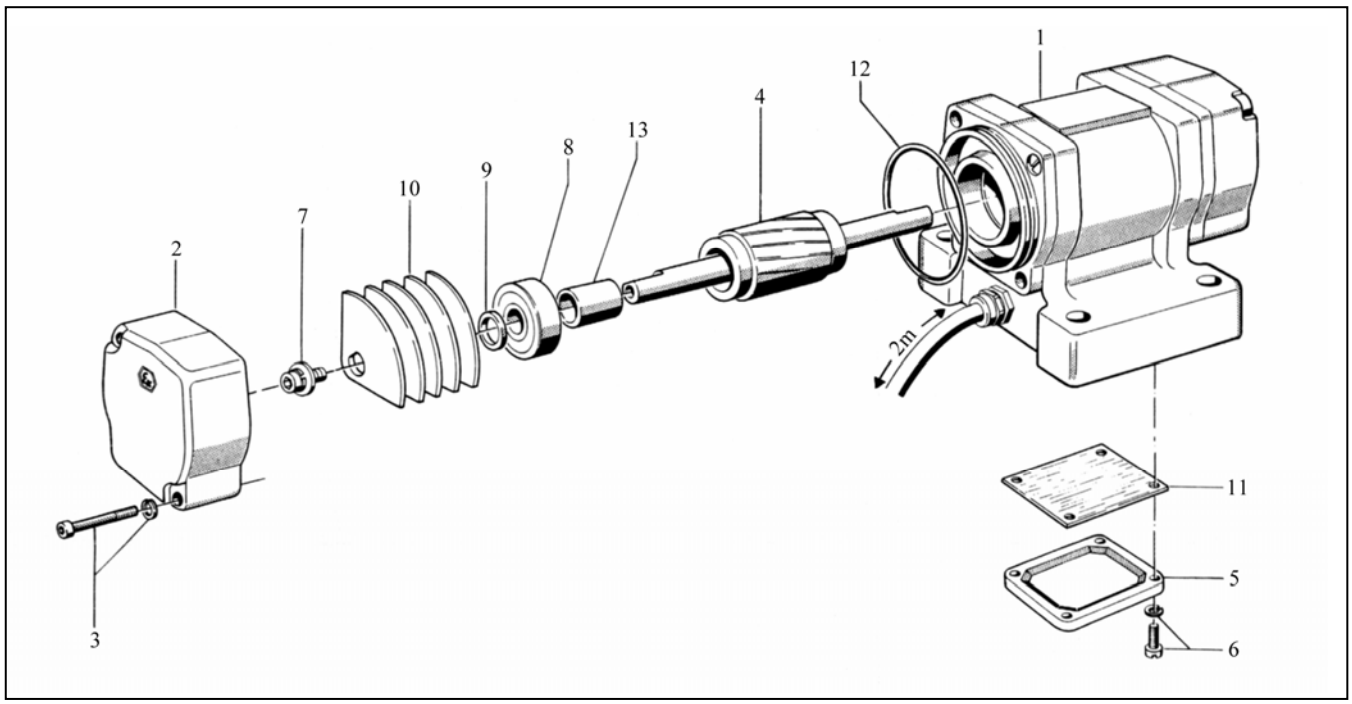
Type HVE 2/4-...			serial number		
V	400 ⅄	Hz	60	min^{-1}	1570
A	0,30	P_1 kW	0,12	cos φ	0,65
Wärmkl.F·IP65·S1·EN60034·EN50014/50019					
PTB 03 ATEX 3047-X/04					
I_A/I_N	2,7	t_E	30 s		
year	Made in Germany 94/9/EC (ATEX)				

Admissible range of voltages:

Motor	Hz	V
HVE 2/2	50	42-550
HVE 2/2	60	
HVE 2/4	50	42 - 400
HVE 2/4	60	42 - 440

Voltages in between those specified above are admissible. The respective currents are determined according to the reciprocal relation between voltage and current.

When placing orders for spares, the type, number of the motor, number of the item and number of pieces required must be mentioned, for item 1 also voltage and periodicity.



Pos.	nomenclature	ord.-nr.	pieces							
			HVE 2/2	HVE 2/2-2	HVE 2/2-4	HVE 2/2-6	HVE 2/4	HVE 2/4-4	HVE 2/4-6	HVE 2/4-9
1	housing complete HV 2/2	-	1	1	1	1	-	-	-	-
1	housing complete HV 2/4	-	-	-	-	-	1	1	1	1
2	protective cap	-	2	2	2	2	2	2	2	2
3	screw for protective cap	-	4	4	4	4	4	4	4	4
4	anchor	-	1	1	1	1	1	1	1	1
5	terminal box lid	00401	1	1	1	1	1	1	1	1
6	screw for terminal box lid	21301	4	4	4	4	4	4	4	4
7	anchor securing screw	22551	2	2	2	2	2	2	2	2
8	Bearing	24301	2	2	2	2	2	2	2	2
9	washer	27001	2	2	2	2	2	2	2	2
10	flyweight	75311	8	12	16	26	8	16	26	40
11	terminal box seal	75801	1	1	1	1	1	1	1	1
12	O-ring	75911	2	2	2	2	2	2	2	2
13	spacer tube	76401	2	2	2	2	2	2	2	2
	Lapptherm 105 FD+C 4G 1,5	63111	2m	2m	2m	2m	2m	2m	2m	2m

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EC-Declaration of conformity

According to Directive 98/37/EC, Appendix II A
As well as Directive 94/9/EC (ATEX 100a)

We hereby declare that the explosion-proof vibration motors of the type

HVE 2/...

comply, due to the construction in which they are supplied, with following relevant regulations.

Applied regulations	:	DIN EN 292-1/-2	/ 1991-11
		DIN EN 50014	/ 2000-02
		DIN EN 50019	/ 2001-06
		DIN EN 50281-1-1	/ 1999-11
		DIN EN 60034-1	/ 2000-09
		DIN EN 60079	/ 1998-08
		RL 94/9EG VII	/ 1994-06

Putting them into operation is prohibited until it has been determined that the machinery to which they are to be mounted is in accordance with the regulations of directive 98/37/EC.

Attesting authorities	:	TÜV Rheinland	No. 0035	(system assessment)
		PTB Braunschweig	No. 0102	(product assessment)

Neusäß, 11.11.03

WÜRGES VIBRATIONSTECHNIK

gez. Reiner Würges