AllianceMotori

MVI Series

Vibrator Motor

Manual Book

◆ **Dear Customers**

Thank u very much for choosing us.Before installation of the product,please read the manual book carefully,and follow the instructions strictly to install and run the motor.

If there is anything unclear,please contact us in case of unexpected incident!

◆ **Model description**

The manual book is capable as a guidance to horizontal vibration motors:like three phase/single phase,AC/DC type vibration motors.The following is description of the models:

*AC type vibration motor：

For example:MVI 300 / 3 (M)

- M:Single phase(without "M" is three phase)
- 3:Rotating speed 3000rpm
- 300:Centrifugal force 300 Kgs
- MV:Vibration motor

*DC type Vibration motor：

For example：MVI 200 DC-12V

- 12:Working voltage is DC 12V
- DC:Centrifugal force 200 Kgs
- MV:Vibration motor

*High frequency vibration motor：

For example：MVIHC 1800 / 6 / 042

- 042:Working voltage is AC 42V
- 6:Rotating speed 6000rpm
- 1800:Centrifugal force 1800 Kgs
- MV:Vibration motor
- HC:Quick-coupling installation type
- HF:Hole mounting installation type

◆ **Operation condition**

1、Ambient temperature：-20℃-40℃.

2、Altitude：No more than 1000m.

3、Frequency:50/60Hz(except high frequency and DC type vibration motor),the frequency of high frequency vibration motor is 100/200Hz.(Special frequency can be customized if there is need;be aware that the electricity should match the data on the nameplate).

4、Rated voltage:(Except high frequency,DC and single phase type vibration motor),all motor out factory is with voltage 380V.For motor power less than 4Kw,the motor voltage is 220/380V,out factory with "Y" connection；otherwise,the motor voltage is 380/660V,out factory with "△" connection"(some models are exceptional）.The voltage of high frequency vibration motor is 220/380V or 42V.（The voltage of DC type vibration motor is DC 12V/24V and the single phase is 115V/220V.（Special Voltage can be customized if there is need;be aware that the electricity must match the data on the nameplate）

5、Insulation class：Class F.

6、Protection class：IP66.

7、Working method：S1.

◆ **Storage and transportation**

1、The motor produced by our company is packed by plastic bag and carton from frame size10~40;The others is packed by plastic bag and wooden case, and motor with frame size 70 or above is also with bolt fixed on the wooden case.Please don't dispatch the package during storage , ensure a dry and ventilated environment, and avoid a rapid change in environmental temperature.

2、The vibration motor should not be upside down during storage and transportation.

Importance:Please confirm with the logistic company about the damage caused during transportation in time and feedback the information to us so that we can have a better negotiation with the logistic company.

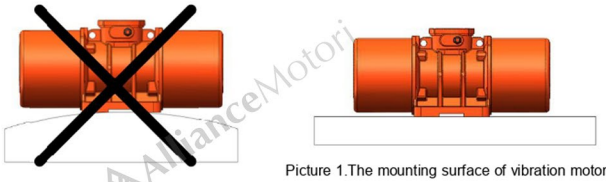
◆ **Installation**

⚠ **Warning!Please cut off all the electricity to the facility or device before installation of the motor, and set warning signs.**

1、Before installation,please check if the vibration motor was damaged,damped,and if the bolt fixed to the wooden case is tight etc.If the storage time of the vibration motor exceed 18 months,we suggest dispatch the end covers to check if the rotor drives lubricated.And also check if the insulation resistance is normal.If any abnormalities found,please contact us.

2、Please check if the data on nameplate meet the requirement on site.Without special requirement of customers,all the vibration motor out factory is with 100% centrifugal force.

3、The mounting surface should be flat and strong like picture 1;The flatness of the mounting surface should less than 0.08mm,and we can not welding on the mounting surface,otherwise it will affect the flatness of the mounting surface.The mounting plate should not have air holes and cracks;The thickness of the mounting plate should be bigger than the thickness of the vibration motor foot.



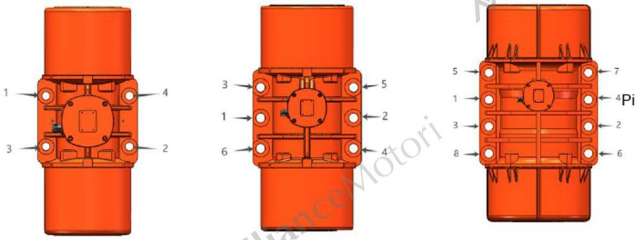
Picture 1.The mounting surface of vibration motor

4、Please ensure the mounting surface and bottom of the vibration motor is clean and without painting.

Attention！ We should not welding on the mounting plate when the motor is installed and connected to the electricity.It may damage the winding motor and bearings.

5、The strength of the bolt for installation should not be less than class 8.8.Please adopt anti-loosing measures to fix the bolt tightly without any looseness.Regarding anti-loosing measures,for vibration motor from size 10~50,we suggest flat gasket;For vibration motors from size60~110,we suggest flat gasket and double nut.Please apply thread adhesives to the bolts before tightening the bolts, then tighten the bolts in orders according to Picture 2 otherwise the motor maybe not completely fixed on the mounting plate tightly.

6、Please tighten the bolt according to the tightening torques in Table 1.



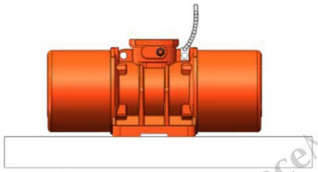
Picture 2.Orders in fixing fixing the bolts

Table Ⅰ Requirements of tightening bolts and its torque

Bolt		Gasket		Tightening torque	
Metric	Imperial	Metric	Imperial	Nm	Ft*lb
M6	1/4"	6.4x12	1/4"	9	6.5
M8	5/16"	8.4x16	5/16"	23	16.5
M10	3/8"	10.5x20	3/8"	45	33
M12	1/2"	13x24	1/2"	80	58
M16	5/8"	17x30	5/8"	185	137
M20	13/16"	21x37	13/16"	373	275
M22	7/8"	23x29	7/8"	550	411
M24	15/16"	25x44	15/16"	696	513
M27	1"	28x50	1"	873	645
M36	1-3/8"	37x66	1-3/8"	1864	1370
M42	1-5/8"	43x78	1-5/8"	2,850	2,102

7、There is anti-drop holes near the terminal box of all MVI series vibration motor.If the height of the installed vibration motor is more than 0.2m to the ground,we suggest tighten the vibration motor with iron chain like picture 3 in case the motor drop and cause damage to the facility or safety accidence.

8、After the motor run 10 to 20 minutes,please check if the bolts is tight.If necessary,please tight the bolts again.



Picture 3.Anti drop design

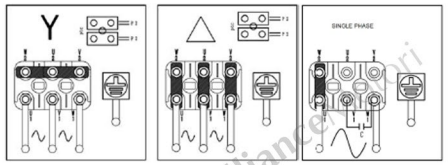
◆ **Wire connection**

1、Please find the wiring drawing diagram on the nameplate like Picture 4 or Picture 5.

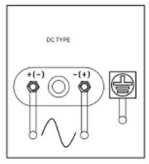
2、Cross the leading cable over the cable gland,strip the end of wires, and thread into the connection terminal,then press the connection terminal tightly with press clamp.There should not have copper wire exposed out. (If need,u can get the wiring video from our sales).

3、In order to ensure the sealing connection between the leading cable and cable gland,the leading cable should have four copper wires,one of them is the earthing wire with yellow and green color.Cable diameter and wire nominal cross-section is as table Ⅱ.

Attention！Please be sure the withstand voltage of the cable should be equal or above the voltage of the vibration motor before connecting the leading cable to the vibration motor.The max rated temperature of the cable should be 105℃,and the minimum diameter of the cable should follow table II.If the cable diameter is smaller,there would be space between the cable and the cable gland,then the vibration motor would be damaged because of the dusts or humidity in the terminal box.If the cable was damaged,it will also lead to short circuit of electricity or earthing,and cause the damage to the vibration motor.



Picture 4 AC type vibration motor wire connection



Picture 5.DC type vibration motor wire connection

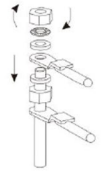
Table Ⅱ Cable diameter

Cable gland size	Cable diameter(mm)	Cable nominal cross-section	Wire terminal	Remark
M16x1.5	φ4~8	4-1.5	1.5-5	SIZE10
M20x1.5	φ6~11	4-2.5	2.5-5	SIZE20～50
M25x1.5	φ10~12	4-4.0	4-5	SIZE60、70
M32x1.5	φ18~25	4-6.0	6-6	SIZE75～90
			6-8	SIZE100、105
			6-10	SIZE110
		4-10.0	10-10	SIZE120

4、Please connect the wire strictly according to the table above.The leading cable should have four copper wires.Please pay attention to connect the earthing wire(yellow and green color) tightly in case wrong wiring cause dangers to people or burn the motor.The earthing wire should always be longer than other wires to ensure that the earthing wire will broke at last when the cable broke.

5、The capacitor of single phase vibration motor should match with the capacitor specification on the nameplate.And it should be connected at a section outside the motor where there is no vibration.

6、After the wire terminal assembled onto the binding post as picture 6,press the gasket on it,then tighten it with the wiring nut.Please pay attention to the position of the wire terminals,the space between them should bigger than 8mm.



Picture 6 Cable wiring

7、Tighten the cable gland according to the cable length,the tighten the nut of the cable gland.Pay attention that the seal of the cable should cover on the protective rubber layer of the cable tightly.

⚠ **Importance：The cable of the vibration motor should be in a relaxed state after connecting the wires.Especially when running the motor under humidity environment,otherwise the water on cable may flow along the cable into the terminal box.**

8、The motor should be connected with a overload or short circuit protection device in operation.At same time,we should avoid to using one protection device to control two motor at same time.

9、Vibration motor with frame size60~120 can be customized with PTC connected with temperature control module.

⚠ **Warning! Frequency converters are strictly prohibited.If need connect a frequency converter,please contact with us in advance.Otherwise,the motor burn due to connection of a frequency converter,we will not offer free guarantee.**

◆ **Check the rotating condition of the shaft**

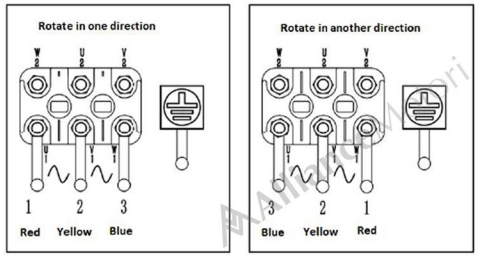
1、Dispatch the end cover of the vibration motor and pay attention to protect the "O" ring seal.

Attention！Do not dispatch the mass if not necessary.When there is need to dispatch the mass,please not run the motor after dispatch the masses.Otherwise,it will lead damage to the bearings.

⚠ **Warning！When checking the rotating condition of the vibration motor without the end cover,please not touch any rotating parts of the vibration motor,otherwise your fingers maybe injured.**

2、Start running the vibration motor for 1 second,then stop.

3、Pay attention to the rotating direction of the shaft,If the direction is wrong,should cut off the electricity and a warning sign should be given or locked,then adjust the wires connection of the external cable to change the rotating direction of the shaft.Detailed adjustment of wires connection is on Picture 7.



Picture 7.Detailed adjustment of wires connection

4、Please reassemble the end covers of the vibration motor.Pay attention not throw away or extrude the "O" ring.Otherwise,the sealing of the vibration motor will be reduced.

◆ **Mass adjustment**

Attention：All MVI series vibration motor has a set of mass at both ends of shaft.And all vibration motor out factory is with 100% force.But it can be customized if customer need.

1、If u need adjusting the force,u can adjust the adjustable mass to meet your needs.（if u need,u can get the video of force adjustment from our sales.)

⚠ **Warning！It is necessary to cut off the electricity before adjusting the force,and lock or set a warning sign.**

2、Dispatch the end cover of the vibration motor and pay attention to protect the "O" ring seal.

3、Force adjustment for vibration motor with blade masses(Picture 8).

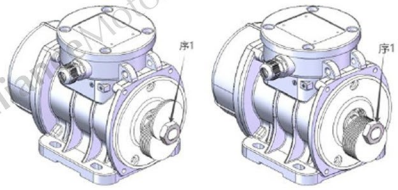
3.1 Force change details in table Ⅲ.For tightening torque,please refer to table Ⅳ.

3.2 Blade mass force is calculated:Force=(total number of blade masses-number of upward masses*2)/total number of masses%.

Attention：After adjustment of the force,be sure that the qty and direction of the masses at both side is same.Otherwise,may cause big discount of the vibration motor life and working effect,and lead damage to the vibration motor.

1、Table Ⅲ Force adjustment of vibration motor with blade masses

Total number of blade masses	5+5	8+8	9+9	12+12	13+13
The percent of force reduced by upward one piece of mass at each side	40	25	22.2	16.7	15.4



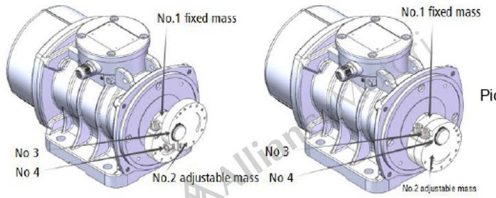
Picture 8.Force adjustment of vibration motor with blade masses

4、Force adjustment of vibration motor with round masses;(Picture 9)

4.1 Loosen the screw(No.3) on the adjustable mass(No.2) until the adjustable mass can rotate freely,no need to take off the lock ring(No.4) at the end of shaft and also no need to loosen the screw on the fixed mass(No.1).

4.2 Adjust the force according to the needs,When the center line of the slot of the adjustable mass (No.2) aligns with the scale on the fixed mass (No.1), then we get the force in need.（Above force adjustment is for vibration motor with electricity 50Hz,60Hz masses=50Hz masses adjusted at 70% except customized massed for 60Hz.

4.3 Round mass force is calculated:Force=the max force*scale value.



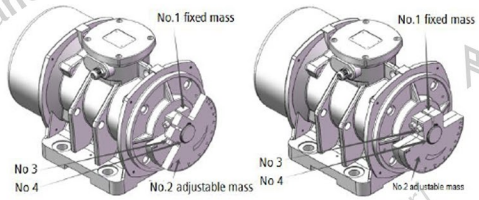
Picture 9.Force adjustment for vibration motor with round mass

5、Force adjustment of vibration motor with fan-shaped masses;(Picture 10)

5.1 Loosen the screw(No.3) on the adjustable mass(No.2) until the adjustable mass can rotate freely,no need to take off the lock ring(No.4) at the end of shaft and also no need to loosen the screw on the fixed mass(No.1).

5.2 Adjust the force according to the needs,When the center line of the slot of the adjustable mass (No.2) aligns with the scale on the fixed mass (No.1), then we get the force in need.（Above force adjustment is for vibration motor with electricity 50Hz,60Hz masses=50Hz masses adjusted at 70% except customized massed for 60Hz.

5.3 Fan-shaped mass force is calculated:Force=the max force*scale value.



Picture 10.Force adjustment for vibration motor with fan-shaped mass

6、After adjusting the force,tight the screw on masses.For detailed tightening torque,please refer to table Ⅳ.

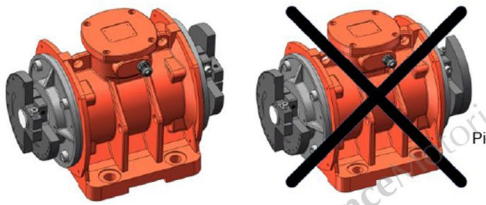
Screw specification	M15*1	M6	M8	M10	M12	M14	M16	M20
Tightening torque（Nm）	50	11	15	52	95	160	175	350

Table Ⅳ tightening torque of screw on the masses

7、Check if the "O" ring seal is there,then assemble the end covers of the vibration motor.

Attention：After tightening the masses.Please stroke at end of the shaft to make the rotor rotate smoothly by using a soft stick wooden mallet in case the rotor not rotate well and make the vibration motor burn.

Attention：Please ensure that the adjustable masses at each side is with same scale value as picture 11,Otherwise,the force at two side will not be same, and it will discount the life of the vibration motor and working effect,even make the vibration motor burn.



Picture 11 correct mass adjustment for vibration with fan-shape mass

◆ **First time running/Current inspection**

1、Turn on the electricity power and let the vibration motor run 10 to 20 minutes.

2、If there is abnormal noise or excessive noise,please check if the mounting bolts is tight and the mounting plate is well welded without any damage.

3、Please check the DB of noise when the vibration motor is running.

Attention：The working current of the vibration motor should not be bigger than the rated current marked on the nameplate.If the vibration motor works continuously with current bigger than the rated current on nameplate, there is big possibility that the vibration motor will burn.

4、Please check the current of each wire after the vibration motor running several hours.If the current exceed the rated current on nameplate,adjust the adjustable mass to a smaller value and further tighten the installation components.Then recheck the current of each wire until the wire current is smaller than the rated current on nameplate.

Attention: Do not run the vibration motor beyond the frequency range specified on the nameplate, otherwise it may cause damage to the vibration motor.

5、Check if the mounting bolts is tight after running every 8 hours,if necessary,please tighten the bolts according to table I.

◆ **Maintenance**

1、All the small power vibration motor produced by us is assembled with international famous brand deep groove ball bearing,no need further maintenance.

2、All the big power vibration motor is assembled with cylindrical roller bearing ,its maintenance and precautions is as follow:

Attention！ In order to reduce internal friction and abrasion,and avoid burn,the vibration motors out factory are filled with enough grease.

Attention！ Please use the specified grease in table V,if add fill in other type/brand greas,may lead damage to the bearings and vibration motor.Only grease the bearings after the vibration running for a certain time with related quantity of grease.If grease the bearings in earlier time or with bigger quantity of grease will lead damage to the bearing.（For exceptional cases,please refer to 2.3）

2.1 Please pay attention to the lubrication of the bearings,and check the temperature of the bearings of the vibration motor after running every 15days.If the temperature of the bearing rises above 10℃,it shows that the bearings are not lubricated well, and need to be greased with enough specified grease according to table V.

2.2 In order to keep the performance of the bearings, Please use the specified grease in Table V only. The bearing must be lubricated after running every 2000 hours. the corresponding special lubricating grease must be filled once according to Table V. Before lubricating, please use a clean cloth to clean around the oil nozzle. It is normal that bearings will have a natural temperature rise which will last one or two days after filling in new grease.

Attention！ If the vibration motor runs in 3600r/min continuously or run without stop for very long time,we need to shorten the greasing time,and fill in new grease with the quantity given on table V. Otherwise the bearings maybe work without lubrication,and break down quickly.

2.3 If the temperature of the motor house exceed 90℃,the lubricating time and quantity should be half discounted every 10℃.The max working temperature of bearing is 120℃.Please contact us immediately or our agent if the temperature of the motor house exceed 100℃.

2.4 In case dusts come into the oil hole and cause damage to the bearing.Please not throw away the screw on the oil hole after greasing.

2.5 The filling in or replace quantity of grease of each bearing is as table V below.

2.6 Please pay attention to the quality of grease,if the grease is unqualified or went bad or with dusts and dirty,it will cause higher temperature of the bearing and reduce the life of vibration motor.

Attention：The lubrication quantity of the motor under 50Hz or 60Hz is same.

Never try to repair the motor or change the bearings by yourself.If u repair the motor or change the bearing without informing us,and the motor finally burn,we will not offer free warranty even the warranty time is still valid.

Table Ⅴ Grease brand and quantity for filling in or replace

Motor frame	models	Grease	Fill	replace
SIZE60 (2P)	1600/3 1800/3 2000/3 2200/3 2300/3	Mobile SHC 102 EM or SKF LGHP2(detailed model with different brand of grease,please refer to the nameplate on the terminal box cover)	15g	21g
SIZE60 (4P) (6P)(8P)	1400/15 1700/15 2400/15; 800/1 1100/1 1400/1 1500/1 1600/1 650/0.75 900/0.75			27g
SIZE70(4P)(6P)(8P)	2500/15 3000/15 1620/1 2100/1 1300/0.75		18g	55g
SIZE75(4P)(6P)(8P)	3800/15 4300/15 2600/1 3000/1 2100/0.75			
SIZE75(2P)	3200/3 4000/3 5000/3			30g
SIZE80(4P)	5500/15		60g	90g
SIZE80(6P)(8P)	3800/1 4700/1 3100/0.75 3800/0,75			120g
SIZE85(2P)	6500/3 9000/3			75g
SIZE85(4P)	7200/15 9000/15			90g
SIZE85(6P)	5200/1 6500/1 8000/1 9000/1			120g
SIZE85(8P)	4200/0.75 5300/0.75 6500/0.75			145g
SIZE90(2P)	12000/3		67g	85g
SIZE90(4P)(6P)	10000/15 10000/1			105g
SIZE90(6P)	13000/1		80g	135g
SIZE90(8P)	10000/0.75			155g
SIZE100(4P)	11500/15 14500/15			230g
SIZE105(6P)	15000/1		125g	350g
SIZE105(6P)	17500/1 19500/1		180g	250g
SIZE110(6P)	22000/1 25000/1		235g	300g
SIZE120(6P)	30000/1		235g	450g

3、All the MV series vibration motor is with protection class IP65.If the "O"ring seals is not damaged or lose during wires connection and force adjustment,the dusts or dirty components will not be able to come into the motor.

4、Please tighten the mounting bolts again at least two times during the first working month of the motor after its installation.And then check if the mounting bolt is tight every one month.

◆ **Vibration motor check**

Please check the vibration motor,the cable,the mounting base and bolts every three month.

⚠ Waning！ **Please cut off the electricity and set a warning sign before check.**

1. Check if the bolts inside the terminal box is tight.
2. Check if there is cracks or friction on the cables.
3. Check the condition of earth wire connection,be sure that the electricity resistance of the motor frame is less than 0.1 Ω.Ensure the torque of the bolts on the earthing wire terminal and the bolts inside the terminal box can meet the requirement of table IV.Not too tight or loose.