



## Flexible Shaft Vibrator Care and Use

Denver Concrete Vibrator's line of electric flex shaft motors have been engineered to handle the harsh conditions often found on construction sites and in precast yards. Properly cared for, Denver's flex shaft motors will provide years of trouble-free service while requiring only minimal maintenance. Please use the following guidelines regarding the proper use and care of the vibrator.

- To ensure proper concrete consolidation and finish, always use proper vibrating techniques as shown in the "Vibrating Concrete" section at the end of this manual.
- Before each use, always do a visual inspection of the entire vibrator assembly checking for damaged, loose or missing parts. Extra attention should be given when checking for damage to the switch, power cord and plug.
- Upon start-up, always listen for sounds that are not usually heard with a normal functioning flex shaft vibrator as this may indicate that maintenance is needed.
- To avoid damage to the on/off switch, only your fingers should be used to turn the motor on and off. Never kick the switch with your foot or use the vibrating head to turn the switch on or off.
- Never operate the vibrating head out of the concrete for an extended periods of time as this will shorten bearing life. Vibrating heads produce a tremendous amount of heat and the only way they can keep themselves cool is by being submerged in concrete.
- The core inside the flex shaft should be cleaned and re-greased after every 25 hours of use. Excessive rattling inside the flex shaft or hot spots felt on the shaft are indications that the core needs to be greased. See "Flexible Shaft Maintenance" section below.
- Do not bend the shaft at sharp angles as this can kink the flex shaft and damage it beyond repair. This is especially important at the motor and head ends. A kink in the shaft cannot be straightened and will often require that the flex shaft be replaced.

- Keep all inlet and exhaust holes on the motor clean and free of any dirt, concrete or debris. Without proper ventilation, the motor will not be able to keep itself cool and may cause the motor to fail
- Excessive rattling in the motor and/or head may indicate that the bearings are worn and need replacing.
- Always use the proper gauge extension cord for the size of motor being used. Using an extension cord gauge that is too small can cause the motor to overheat and fail. Please refer to the recommended cord gauge guide below:

### Extension Cord Gauge Recommendation for Flex Shaft Motors

Motor Model	Amps at 115V	Extension Cord Length				
		50 ft	100 ft	150 ft	200 ft	300 ft
ES10	9	14	14	12	10	8
EM15	11	14	12	10	8	8
EH25	15	14	12	10	8	8

- When using a generator to power the vibrators, always make sure the generator is properly grounded.
- Always use the proper motor needed for the job. Using too large of a motor with a small head and short flex shaft may result in the vibrator operating at speeds faster than necessary and may cause poor consolidation and certain components (bearings, brushes, etc...) to wear prematurely. Using too small of a motor for large heads and long shafts may overheat the motor and cause it to fail. Please contact the factory at 800.392.6703 or by emailing to [info@denverconcretevibrator.com](mailto:info@denverconcretevibrator.com) if you have any questions or concerns about your equipment being properly sized.
- When the vibrator is not going to be used for an extended period of time it is recommended that the unit be stored indoors. If indoor storage is not possible, keep the unit covered and in a dry environment.

### Flexible Shaft Maintenance

The flexible shaft consists of 2 parts; the outer rubber housing with a steel liner and an inner wire core. Periodic maintenance of the shaft will increase its service life. As the vibrator is being used, the grease inside the shaft will work its way down from the motor towards the head. After every 25 hours of use, it is recommended that the inner core be removed, cleaned and re-greased.

Excessive rattling of the flex shaft or hot spots when being held are indicators that the core is dry and needs to be re-greased.

To re-grease the flex shaft, start by removing the motor and head from the shaft. Both the motor and the vibrating head have left-handed threads. Therefore, you will need to turn the motor and head to the right (clockwise) to loosen. After removing the head and motor, pull the core from inside of the housing. (Note: Vibrator models with the quick disconnect feature have a safety clip on the end of the core at the head end. The core on the quick disconnect models can only be removed from the head end.) Once the core is removed, wipe the core with a clean cloth to remove old grease. Carefully examine the core to see if there are any signs of wear such as broken wire strands. If the core is damaged or worn, it is recommended that the core be replaced. Remove any old grease that has accumulated inside the top of the head. Also, check the head bearings to make sure they are smooth by inserting a screwdriver into the core fitting at the top of the head and turning the eccentric weight inside the head. If the bearings feel rough or are extremely loose, they should be replaced.

To grease the core, use a high quality, high temperature grease (We recommend Denver Flex Core Lube p/n: FS4912). Take a good handful of grease and rub onto the core as it is being reinserted into the flex housing. Generally, a heavier film of grease is applied to the motor end of the core and a lighter film of grease is applied to the head end. As the vibrator is being used, the grease will work its way down from the motor end to the head end. (Note: On models with a quick disconnect, make sure that the core is reinserted so that the safety clip on the core is at the head end.)

Reassemble by attaching the motor and head onto the flex shaft. The threads are left-handed so you will need to turn the motor and head to the left (counter clockwise) to tighten. Do not use a thread locker on the flex shaft threads but it is recommended that you use a non-seizing product such as “Never Seize™” on the threads. Tighten by hand until snug and finish tightening with a pipe wrench. After assembling, turn on the vibrator and listen to make sure the motor is turning freely. If there is excessive rattling inside the flex shaft, there may not have been enough grease applied to the core. Remove the core and apply more grease. If the motor seems to be slow or “bogging down”, too much grease may have been applied. Often times, this will correct itself as the grease becomes evenly distributed throughout the flex shaft. However, if the slow running speed does not improve, remove some of the excess grease by pulling out the core, wiping it down and reinserting into the housing without re-greasing.

## **Vibrating Heads**

Always try to use as large a head as possible for the job taking into account any space restrictions such as rebar, stiffness of the concrete, etc... Every head has an area of influence that can be used to help size the application for the proper head. Please see the “Radius of Influence” chart regarding each heads particular area of influence. The data stated in the chart was measured while the head was in concrete with a 2 to 4 inch slump. The radius of influence will increase when the

head is used in wetter slump concrete or with super plasticizers. By some measurements, the area of influence will almost be double the published radius of influence on the accompanying chart when the heads are used in high slump concrete or with super plasticizers. (Please note: Some heads are available with rubber noses to protect the form face and rubber coating to protect epoxy coated rebar. Please contact the factory for details.)

**Flex Shaft Heads Radius of Influence**

Head P/N	Diameter Inches	Length Inches	Weight Pounds	Frequency VPM	Radius of Influence	1/2 wave Amplitude
D.81-6	13/16	6	1	12000	1.66"	0.024
D.81	13/16	11	1	12000	2.5	0.03
D1.25	1.25	8	2	12000	4.5	0.035
D1.5	1.5	13	5	10000	6.5	0.045
D1.75	1.75	15	7	10000	8.5	0.05
D2.0	2	10	6	10000	8.5	0.055
D2.5	2.5	10	9	10000	10	0.055
D3.0	3	12	15	10000	12	0.051
DSP2.75	2.75	6	6	10000	11	0.036
DSP3.0	3	4.5	5	10000	7	0.039

Please contact the factory at 800.392.6703 or by email at [info@denverconcretevibrator.com](mailto:info@denverconcretevibrator.com) if you have questions or would like assistance in sizing your application for the proper vibrating head.



**Flex Shaft Vibrator with Insulated Head**