Concrete Vibrators

Square Head Performance Data

NOTE: This chart is based on 1-1/2 inch aggregate. All variables of concrete mixes, aggregate sizes, and slump have an effect on the performance of a vibrator. Therefore, the listed values for radius of vibration and yards per hour are *approximate*.

Flex Shaft

Vibrator Head	Size (in.) Shape	Perimeter (in.)	Length (in.)	Centrifugal Force in ft/lb @ RPM						Adv. Amp in. (× 2)	Radius of Vibration @ 10,000 Slump			Cubic in. Displace	Yd./Hr.
				8000	9000	10,000	10,500	11,000	12,000		1-1/2"	3"	4-1/2"		
											Perm × 0.75	Perm × 1.5	Perm × 1.9		
750-D	13/16 Sq.	3.25	13	72	93	115	127	139	170	0.032 (0.064)	2.5	5	6	45.6	2…4
750-EH	1 Sq.	4.25	13	162	209	258	285	311	380	0.05 (0.10)	3.5	6	8	60.5	4…7
750-FI	1-3/8 Sq.	5.5	14.5	367	474	585	645	704	860	0.058 (0.116)	6	8	10	86.5	8…12
750-GI	1-3/4 Sq.	7	13	602	776	958	1056	1153	1408	0.064 (0.128)	8	11	13	97.7	10…16
750-FIPC	1-3/4 Sq.	7	14.5	367	474	585	645	704	860	0.058 (0.116)	6	8	10	108.2	8…12
750-LI	2 Sq.	8	13	791	1020	1259	1388	1516	1850	0.068 (0.136)	9	12	15	111.1	14…20
750-MI	2-1/4 Sq.	9	14	1037	1338	1652	1821	1989	2428	0.074 (0.148)	10	14	18	134.3	18…24
750-LIPC	2-3/8 Sq.	9.5	13	791	1020	1259	1388	1516	1849	0.068 (0.136)	9	12	15	130.6	14…20
750-SBI	2-1/2 Round	7.85	6	401	518	639	704	769	938	0.045 (0.09)	8.5	11	13	62.1	7…12
750-SBIPC	2-7/8 Sq.	7.85	6	401	518	639	704	769	938	0.045 (0.09)	8.5	11	13	62.1	7…12

High Cycle

Vibrator Head	Size (in.) Shape	Perimeter (in.)	Length (in.)	Centrifugal Force in ft/lb @ RPM			Adv. Amp in. (× 2)	Radius of Vibration @ 10,000 Slump			Cubic in. Displace	Yd./Hr.
				8000	10,800	11,000		1-1/2"	3"	4-1/2"		
								Perm × 0.75	Perm × 1.5	Perm × 1.9		
417-XXX	2 Round	6.28	14	273	500	617	0.062 (0.124)	7	9	11	118.9	11…17
416-XXX	2-3/8 Sq.	9.5	19	874	1600	1975	0.073 (0146)	12	16	20	191.6	22…32

See *"Tips for Consolidating Concrete" on page 2*.

TIPS FOR CONSOLIDATING CONCRETE

Inspect the Vibrator

Make sure the vibrator is in proper operating condition and have a backup unit . If a special power source is required, have a backup of the power source, too.

Fit the Vibrator to the Job

Select a size that:

- Fits easily within the steel clearance.
- Matches with the width of the forms.

Make sure you have secure forming.

Consolidation Process

Most of the consolidation is done with the forward part or end of the vibrator. In this area, the amplitude and displacement is the greatest. When *starting* the consolidation process, lower the vibrator to a point where the consolidation is to begin, pause for 6…10 seconds, then slowly withdraw the vibrator (about 3 seconds per foot). *During* the consolidation process, lower the vibrator and pause only several seconds before withdrawing it.

Be Consistent

The most important thing when vibrating concrete is to be consistent. Use good pattern planning. Visualize the process and think about what you are expecting the vibrator to accomplish. Remember, the vibrator only provides a motion to the concrete. Gravity does all the work. Concrete does not flow up.

Plan the Vibration Pattern

Insert the vibrator in an consistent pattern that overlaps the previous pattern by 1/2 the radius of vibration.

Example: With a slump of 3 inches, using a 1-3/4 inch head, the radius of vibration is 11 inches. The insertion pattern should then be 11 inches + 5.5 inches = 15.5 inches. That means you insert the vibrator every 15.5 inches in all directions.

Blend the Lifts

Penetrate into any previous lifts at least 6…12 inches to create a good blend and eliminate lift lines or cold joints. When pouring slabs, always insert the vibrator into the adjacent, previously poured concrete.

Allow Extra Time for Consolidation

There are areas in every pour that need extra time to consolidate:

- The start or base of the pour, because of the corners and right angles, and because oftentimes the first concrete delivered from a truck is harsh, dry and short of grout.
- Anywhere there are box outs, because of corners and areas where the concrete must flow horizontally to fill the box out.
- The finish of the pour, because there is no additional vibration being applied.
- Any area containing a large amount of steel, because steel blocks the forces of the vibrator. Use more force in these areas so the concrete fills holes behind the steel.

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