

How to use an impulse hammer

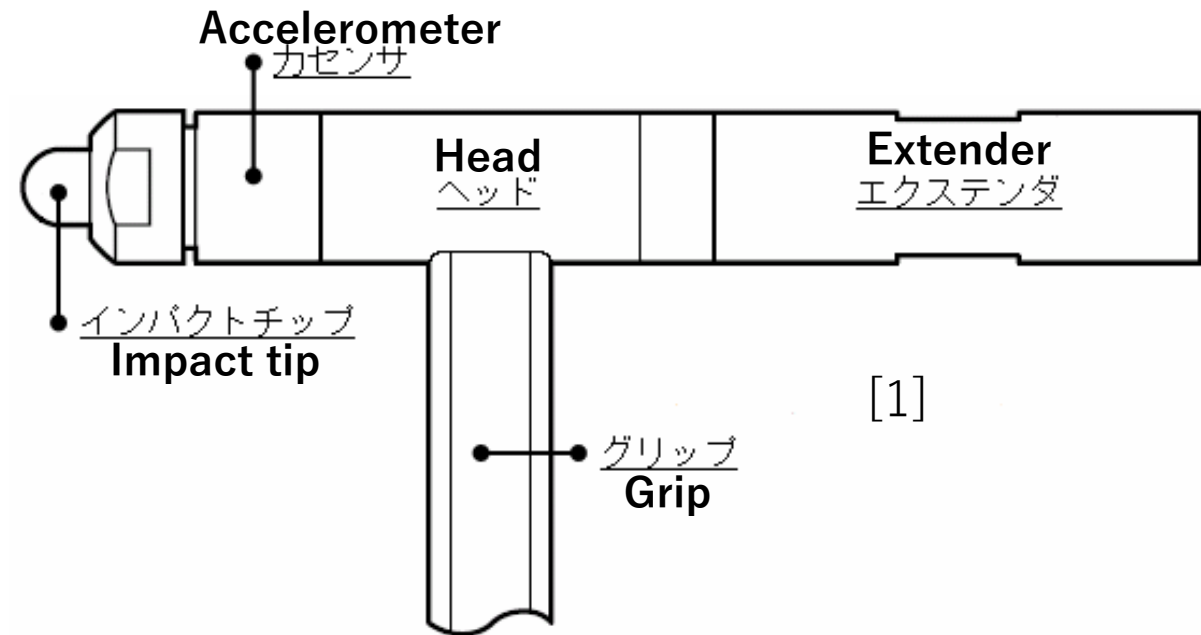
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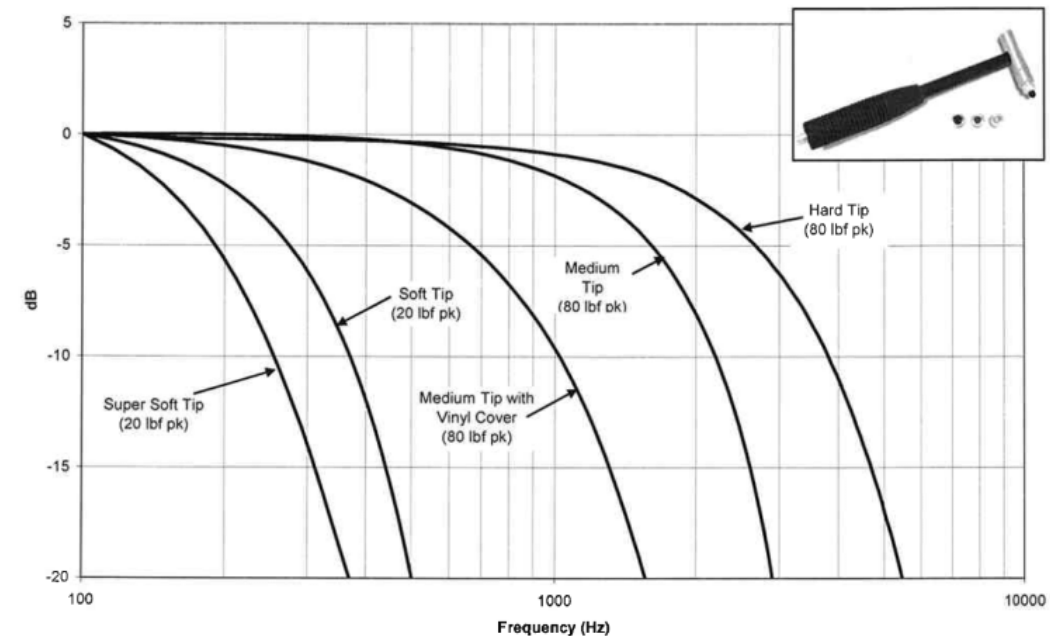
Adjusting the impulse force

- Adjust the impulse force of the impulse hammer by changing the extender and tip
- In general, the tip affects the frequency structure of the impulse, and the extender affects the energy level of the impulse
- The frequency structure and energy level are interrelated, so if the hammer structure is different, both will be affected
- The speed of the impulse also affects both



Adjusting the impulse force

- It is necessary to adjust both energy and frequency structure according to the purpose of measurement
- For large structures with low rigidity, generally use a soft tip and an extender to vibrate sufficiently in low-frequency range
- The following methods can be used to adjust the impulse energy
 - Human adjustment (not recommended)
 - Change the size of the hammer
 - Change extender



Adjusting the impulse force

- As the mass of the hammer increases, the impulse energy also increases, but it is easier to impulse twice (double hammering), so care must be taken
- The frequency structure can be adjusted by selecting the tip of the impulse hammer
- However, even with the same chip, care must be taken because the frequency structure changes depending on the characteristics of the impulsed object

Adjusting the impulse force

- When adjusting the impulse energy by hand
 - If changing the magnitude of the impulse force by hand, it is difficult to maintain reproducibility even by an expert, so avoid it as much as possible
 - Just change the collision speed, not the force of the hammering

How to use a impulse hammer

- At impulse
 - Support a hammer softly and lightly
 - It is important to use the mass of a hammer to impulse rather than hammering with human power
 - Make hammering uniform as possible, and adjust the force by changing the hammer state
 - The hand only gives the hammer the first speed
 - If force is applied by hand, the impulse is unstable and the same impulse cannot be achieved

How to use a impulse hammer

- Impulse point and direction
 - Since the impulse surface of the tip has an area, make sure that the center of the tip matches the impulse point
 - The impulse point must be decided in advance (impulse point marking)
 - The impulse direction must match the direction of the accelerometer in a hammer
 - A hammer should not tilt more than 10 degrees from the normal direction of the object surface
 - Especially when the extender is attached, take care that it does not rotate with the impulse system including the hand

How to use a impulse hammer

- The moment of impulse
 - a hammer is free at the moment of impulse
 - Do not restrain by hand
 - Quickly pull the impulse hammer as soon as it impulse the object
 - Concentrate consciousness on pulling rather than hammering

Reference

- [1] 一振動実験及び振動解析を活用した機械設計技術一
(Japanese)
 - 第2章(p.95, 96, 118)
- [2] Model 086C03, Installation and Operating Manual