ELECTRONIC HAMMER

Powerful Vibration and **Impact**

Blockage cleaning system

FASCOENG.Co.,Ltd.

www.fascoeng.co.kr

YOUR BUSINESS PARTNER

FASCOENG

We are constantly working hard to developing under the mission that customer satisfaction determines the future of our company.

CONTENTS

With our own technology and patents, we are constantly striving and developing, targeting the domestic and global markets in various fields such as steel mills, power plants, and the cement, petroleum/chemical, grain, and battery industries etc.

We are recognized as a solutions company that solves difficulties in the field of raw material transportation (SILO, HOPPER, etc.) based on experience and technology built up in the steel mill and petroleum/chemical fields.

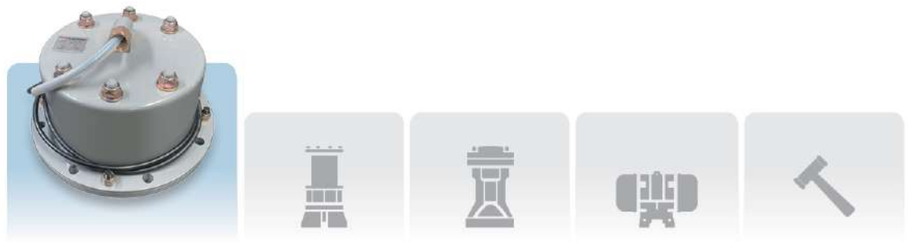
Following suggestions from customers based on this belief and trust, we are expanding our business to unclog powder conveying equipment. FASCOENG is always striving for more advanced products, skilled technology and good service.

Your Process Partner, **FASCOENG**

Based on our unceasing effort and development aimed at the domestic and global markets in various fields, the electronic hammer, a device for solving problems with conveying equipment of raw material, is being recognized for its excellence.

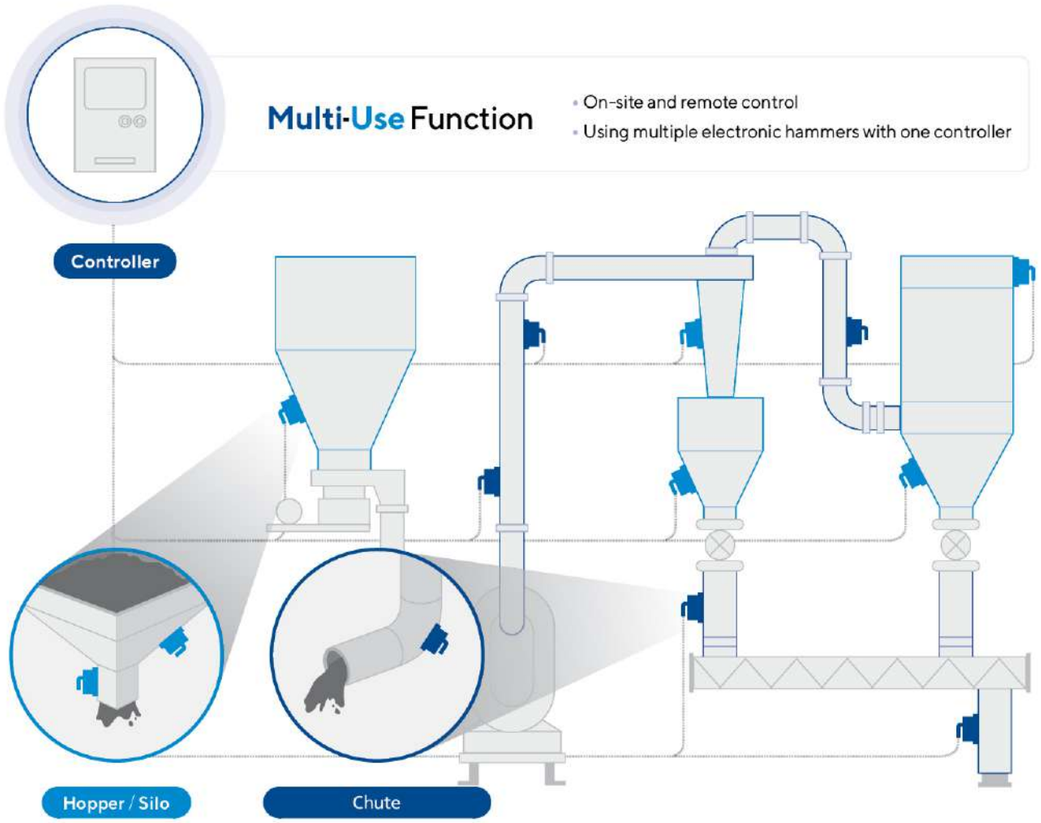
EXCELLENCE IN ELECTRONIC HAMMER

Power is transmitted to the inside of the inner wall of the hopper or chute with strong vibrations and impact at 60 times per second, thus solving blockages caused by sticking of cake/bridge/powder. It is an innovative product that is great for cost save by preventing facility shutdown due to blockages and dangering labors. This prevents production decline and damage to facilities due to fatigue and also extends cleaning cycles.



MODEL	4 Generation	3 Generation		2 Generation	1 Generation
	ELECTRONIC HAMMER	MAGNET HAMMER	AIR KNOCKER	VIBRATOR (Motor)	PORTAL HAMMER
Power source	Electromagnetic force / Vibration and Impact When current flows through the E-core, it is converted into mechanical vibrations by moving the E-core with magnetic force. Impact and vibration converted by SPWM control are transmitted.	Electromagnetic force / Force When current flows through the coil of the fixed core, it moves the reciprocating piston with magnetic force to generate a force.	Compressed air / Force Vibration impactor using indirect impact method by inducing correlation reaction between compressed air and magnetic force.	Electromagnetic force / Vibration (Eccentricity) A vibratory weighter is attached to the motor to induce vibrations at the required amplitude.	Physical force / Force Human brute strength.
Operation	Precise operation possible	Simple operation possible	Simple operation possible	Constant	Constant
Variable Frequency	Variable 20Hz~60Hz	None Variable	None Variable	None Variable	None Variable
Shock Absorber	Inside	None	None	None	None
Explosion Proof Certification	O	X	X	X	X
Fatigue Destruction	X	O	O	O	O
Vibration Range	Wide	One Point	One Point	One Point	One Point
Acc.Velocity	Over 100m/s²	Over 15m/s²	Over 15m/s²	Over 15m/s²	Over 30m/s²
Features	• Blockages are removed smoothly without fatigue failure of the equipment by amplifying and transmitting the excitation force through the inherent resonance of the vibration frequency of the equipment. • Operated with a separate controller.	• A simple system that impact with constant force. • Operated with a separate controller.	• A simple system that impact with constant force. • Financial burden of using compressed air. • A separate air compressor is required.	• Energy is small due to amplitude of vibration. • Low cost.	• Increased risk of industrial safety accidents. • Waste of labor and cost.

ELECTRONIC HAMMER **SYSTEM** Technology and solutions



BLOCKAGE SOLUTION

The electronic hammer effectively **solves the blockages** with its vibration and impact.

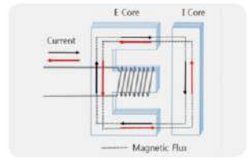
Ratholing
Ensuring continuous flow to prevent ratholing.

Segregation
Break down clumpy powder to prevent blockages.

Bridging
Loosen powder to prevent bridging.

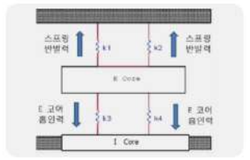
Incomplete Emptying
Dislodge powder stuck to the wall to prevent raw material waste.

VIBRATION AND IMPACT PRINCIPLE



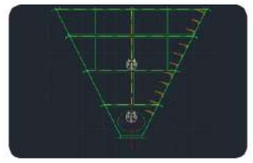
Electronic magnetic force

When alternating current sent through the wire wound around the E core, magnetic flux is generated and electromagnetic force is generated between E Core and I Core by the principle of electromagnetism.



Mechanical vibrations are generated

Mechanical vibrations and impacts are generated by the recovery force against the electromagnetic force by an elastic spring.



Radius of vibration

Instantaneous strong impacts and vibrations are transmitted to the equipment surface and then amplified. By transferring force to the inner wall of the facility, blockages such as powder sedimentation/sticking is prevented.

SOLUTION OF FASCOENG

Difficulty in solving problems when using existing traditional products

Prevent blockages caused by powder settling and sticking

Existing product problems

Difficulty in maintenance due to damage to the hopper equipment surface and fatigue failure.

Frequent cleaning of pipes and disruption to production process due to blocked pipes.

Need for worker into dangerous areas due to bridge/cake phenomenon.

FEATURES OF ELECTRONIC HAMMER

Reduces maintenance costs and increased productivity

It is excellent for not only extending the cleaning cycle but also saving maintenance costs by eliminating blockages caused by powder settling and sticking (cake/bridge) on the inside of the inner wall.

Prevents waste of labor

Since direct impact does not need to be applied to the equipment surface to relieve blockages, man power is minimized. And then facilities are reduced fatigue, such as hoppers.

Reduces Safety accidents

The electronic hammer prevents safety accidents to workers sent to deal with sudden blockages in dangerous areas.

Saves Energy

Outstanding energy savings due to simple installation with 220 V power supply, and low power consumption even when operated all day and night.

APPLICATIONS OF A

ELECTRONIC HAMMER

In order to completely solve the clogging phenomenon of conveying equipment, electronic hammers are installed in complex facilities where process improvement is difficult, and their excellence in increasing production efficiency/reducing maintenance costs has been confirmed and we are supplying them to many factories as a new innovative device.

HOPPER / SILO

CHUTE

VOD

BIN

PETROCHEMICAL PLANT

STEEL PLANT

BATTERY(Secondary Cell) FACTORY

POWER PLANT

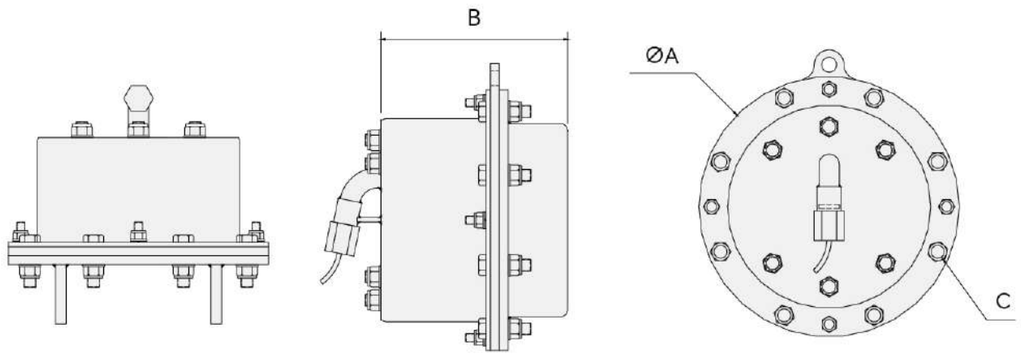
CEMENT PLANT

DUST COLLECTION FACILITY PLANT

ELECTRONIC HAMMER **SYSTEM** Hammer

General type

IP66

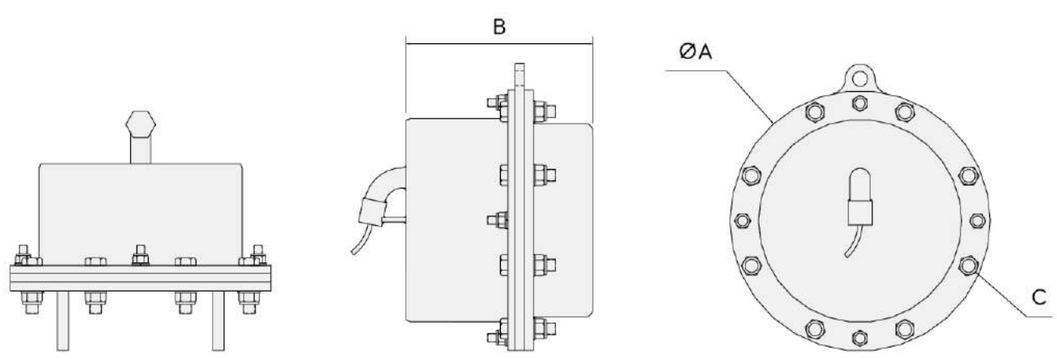


Model			Size (mm) A	Size (mm) B	Size (mm) C	Impact (kgf)	Acc.Velocity (m/s^2)	Current (A)	Weight (kg)
FAEH (Up to 100C°)	ST	L	Ø350	256	M16	940	100	2.5~4.5	43
		M	Ø265	210	M8	650	70	1.2~2.0	22
FAEH (100~180C°)	HT	L	Ø350	256	M16	940	100	2.5~4.5	43
		M	Ø265	210	M8	650	70	1.2~2.0	22
FAEH (180~350C°)	VT	L	Ø350	256	M16	940	100	2.5~4.5	43
		M	Ø265	210	M8	650	70	1.2~2.0	22

Dimensions may vary depending on the design and fabrication method.
Impact and acceleration velocity were measured by attaching to a 30t thick steel plate.

Explosion Proof type

IECEx, CE / ATEX



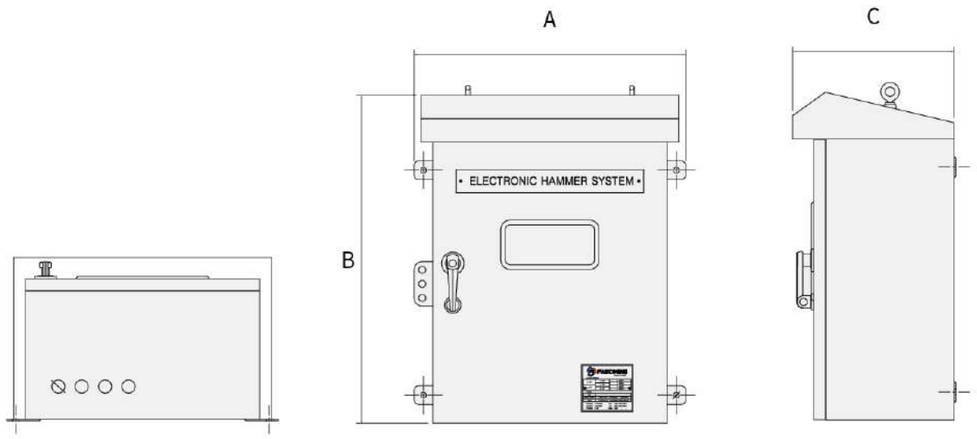
Model			Size (mm) A	Size (mm) B	Size (mm) C	Impact (kgf)	Acc.Velocity (m/s^2)	Current (A)	Weight (kg)
FAEX (Flame proof)	ST	L	Ø350	256	M16	940	100	2.5~4.5	45
		M	Ø265	210	M8	650	70	1.2~2.0	23
FAEX (High temp. Flame proof)	HT	L	Ø350	256	M16	940	100	2.5~4.5	45
		M	Ø265	210	M8	650	70	1.2~2.0	23
FADP (Dust Ignition proof)	ST	L	Ø350	256	M16	940	100	2.5~4.5	45
		M	Ø265	210	M8	650	70	1.2~2.0	23
FADP (High temp. Dust Ignition proof)	HT	L	Ø350	256	M16	940	100	2.5~4.5	45
		M	Ø265	210	M8	650	70	1.2~2.0	23

Dimensions may vary depending on the design and fabrication method.
Impact and acceleration velocity were measured by attaching to a 30t thick steel plate.

ELECTRONIC HAMMER **SYSTEM** Control Panel

General type

Standard

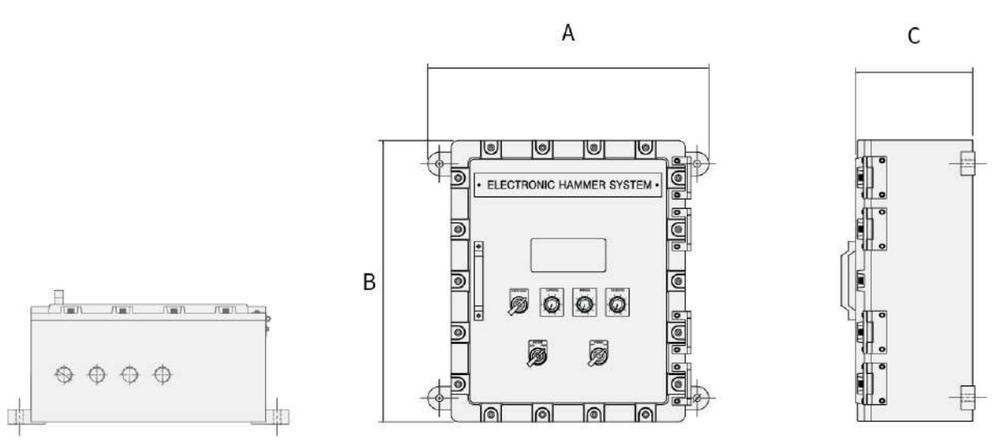


Model			Size (mm) A	Size (mm) B	Size (mm) C	Drive (EA)	Input Power (AC) Volt	Input Power (AC) Hz	Weight (kg)
FAEH (Indoor / Outdoor SUS304)	PY	01	580	700	345	1	220	50/60	38
		02	680	1000	345	2	220	50/60	60
		03	830	1250	390	3	220	50/60	120
		04	1000	2000	500	4	220	50/60	150
FAEH (Indoor, Steel)	PY	01	580	700	345	1	220	50/60	35
		02	680	1000	345	2	220	50/60	57
		03	830	1250	390	3	220	50/60	110
		04	1000	2000	500	4	220	50/60	135

Dimensions may vary depending on the design and fabrication method.

Explosion Proof type

KGS



Model			Size (mm) A	Size (mm) B	Size (mm) C	Drive (EA)	Input Power (AC) Volt	Input Power (AC) Hz	Weight (kg)
FAEX (AI / Flame proof)	PY	01	600	600	250	1	220	50/60	58
		02	600	800	250	2	220	50/60	109
		03	800	1500	350	3	220	50/60	150
		04	800	1500	380	4	220	50/60	190
FADP (AI / Dust Ignition proof)	PY	01	600	600	250	1	220	50/60	58
		02	600	800	250	2	220	50/60	109
		03	800	1500	350	3	220	50/60	150
		04	800	1500	380	4	220	50/60	190
FADP (Dust Ignition Proof)	PY	01	550	550	250	1	220	50/60	45
		02	550	700	250	2	220	50/60	85
		03	700	1000	300	3	220	50/60	110
		04	700	1000	320	4	220	50/60	150

Dimensions may vary depending on the design and fabrication method.

CERTIFIED AND PATENTED TECHNOLOGY

성능인증
중소벤처기업부

The Electronic vibrator (electronic hammer) has been awarded a performance certification by the Ministry of SMEs and Start-up.

CERTIFICATE OF PATENTS			Patent No.
Vibrator drive diagram			10-1531972
Electron vibrator			10-1523352
Generative vibrator			10-1528327

SAFETY CERTIFICATE			Patent No.
Flame proof	Large	FAEH-TD	16-GA2BO-0567
	Medium	FAEH-TD-M	18-GA2BO-0634X
Dust Ignition proof	Large	FAEH-TD	18-GA2BO-0635X
	Medium	FAEH-TD-M	18-GA2BO-0636X

CERTIFICATE	Patent No.
Certificate of design registration	30-0877093
Certificate of related design registration	30-0877094

HISTORY

2021 ~ Present

- 2023 Developing ultrasonic electronic hammer
- 2022 Qualified/CE/ATEX
- 2021 Qualified IECEx

2016 ~ 2020

- 2020 Qualified dust Igniton proof
- 2019 Qualified flame proof
- 2018 Qualified performance of product by ministry of SMES
- 2017 Vendor printed POSCO, Hyndai steel
- 2016 Qualified ISO9001

2011 ~ 2015

- 2015 Printed start-up company
- 2014 Manufactured 1st product
- 2013 Established FASCOENG

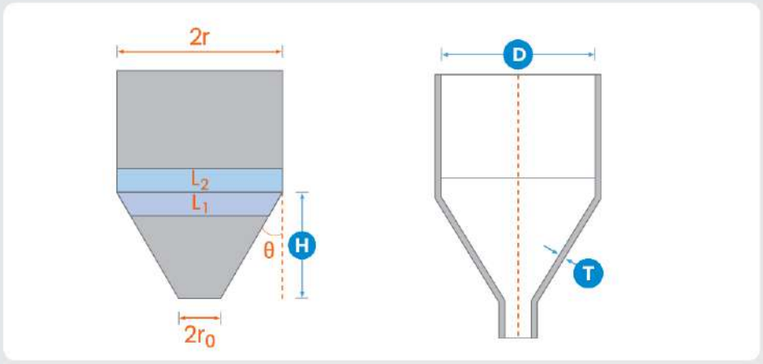
BUSINESS PARTNER

KUMHO PETROCHEMICAL · LG Chem · LG H&H · HYUNDAI STEEL · LOTTE CHEMICAL · SAMSUNG SDI
posco · posco CHEMICAL · LS-Nikko copper · Hanwha · SK on · S-OIL
SeAH CSS · OCI · SGC Energy · YOUNG POONG · Good GRM · DB메탈 DB Metal

SPECIFICATION SELECTION CRITERIA

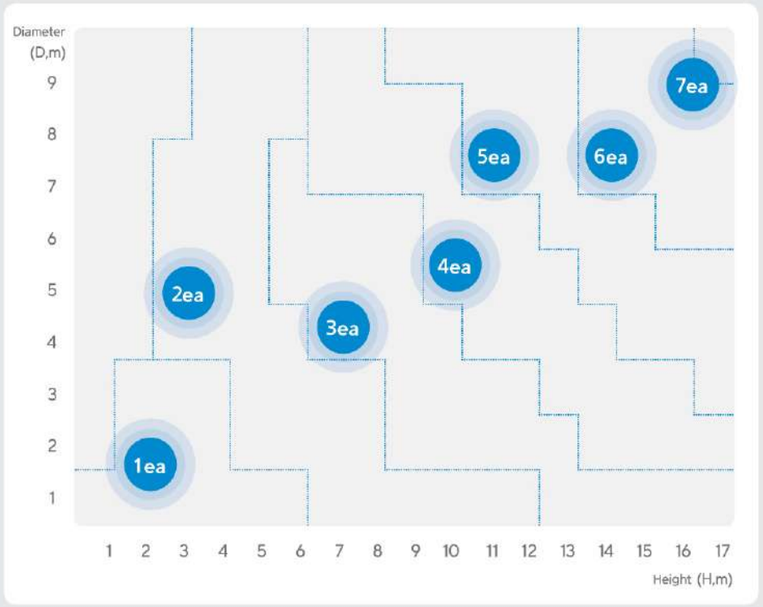
Conditions Affecting Equipment Proportion

Assuming an angle of repose of the hopper of 60°, the model and quantity of hammers will be determined based on the diameter(D) and thickness(T) of the hopper plate. However, this may vary depending on the shape of the hopper, the physical properties of the powder, and the condition.



Conditions Affecting Installation Quantity

The table below is a standard table based on the thickness (T, mm) of 10 mm, not considering 2ro, L1, and L2, so the number of hammer installations may vary depending on the situation.



If you want more detailed information, you can contact us by **phone** or visit our **homepage**.

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