

1. Product Design Principles

"Ultrasonic Transducer for Ink Cutting" is applicable to cut ink off nozzle of the non-contact inkjet printer. Due to differences in industry terms, it's commonly known as "resonators" in inkjet industry. For the ease of understanding, the following description adopts "resonator".

- Vibration Mechanism

Resonator is generally composed of a piezoelectric crystal and drive rod. The resonator generate high-frequency ultrasonic vibration (60 KHz and above) and a micro-displacement (stretching back and forth) of same high-frequency in the front-end by high-frequency electrical stimulus.

In the elastic medium, such as water or ink, this kind of medium will spread the ultrasonic vibration in column wave form. At this time, the medium vibrates in a sparse-dense alternating regulation. To the medium, the sparse point is pulling force (negative pressure) and the density point is pressure (positive pressure). It is 1/2 wavelength distance between the two points.

- Cutting-off Ink Mechanism

The ink is pushed to the chamber by a pump and spray out from a few dozen microns hole (nozzle) in the front-end of the chamber. The injected ink is of a continuous flow line of fine ink.

Ultrasonic-off ink is realized through superimposing the high-frequency vibration wave generated by resonator before the ink line flow injected. The column wave of the ink line flow vibrates in a sparse-dense alternating regulation and generates negative and positive pressure wave. The injected ink is cut off at the negative pressure and shrinks into a ball at the positive pressure. Thus, the ink forms into equidistant and same size particles flow.

- Inkjet Printer Mechanism

The formation mechanism of character coding is similar to that of CRT imaging. The ink-flow particles transform into a stream of charged particles by high-pressure polarization, flying through the detection area and the high-pressure electrode deflection zone and finally become a lattice falling onto the surface to be printed.

Because of the low power of resonator, this tecGPique generally applies to small inkjet printers.

2. Classification of Applicable Inkjet Printers

Our Company's products are mainly applicable to imported brands of printer and domestic printer. Specifically:

Imaje Series: 62.5K(model G), 80K (model M) and 125K (model P) ;

Domino Series: 58K (alcohol Ink), 64 KHz (model A) and 128K (model M);

Metronic series: 62.5k (same as Imaje G) 、 65Khz and 87Khz;

Laibinjet series:62.5k,69k;

Videojet (Willett): 55 KHz, 75 KHz and 125Khz

Hitachi: 75K

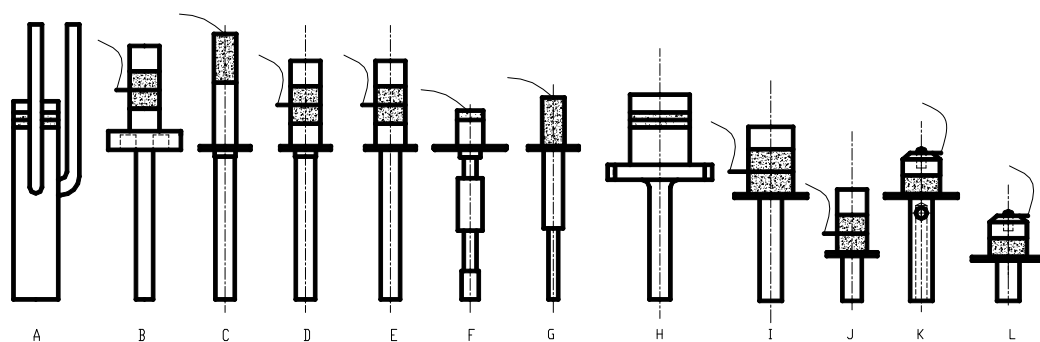
Chinese type: 62.5 kHz and latest improved model: 62.5 K, 75K, 80K

3. TecGPical parameter table

Type	Resonance frequency (KHz)	Resonance impedance (Ω)	Static capacitance (μ F)	Diameter (mm)		Application machine	Drawing
				Dmax D	Dmin d		
GPP-5SS-0458	$F_s=58.0\pm 1.5$	≤ 3.5	$110\mu\text{F}\pm 10\%$	$\emptyset 9.75$	$\emptyset 2.3$	Domino	B
GPP-5SS-0460A	$F_s=62.0\pm 1.5$	≤ 3.5	$110\mu\text{F}\pm 10\%$	$\emptyset 9.75$	$\emptyset 2.3$	Domino A	E
GPP-5SS-0460B	$F_s=62.5\pm 1.5$	≤ 3.5	$110\mu\text{F}\pm 10\%$	$\emptyset 6.8$	$\emptyset 2.6$	Chinese	D
GPP-5SS-0460C	$F_s=62.5\pm 1.5$	≤ 3.5	$110\mu\text{F}\pm 10\%$	$\emptyset 8.0$	$\emptyset 2.6$	Chinese	D
GPP-4SS-0460L	$F_s=62.5\pm 1.5$	≤ 3.5	$85\mu\text{F}\pm 10\%$	$\emptyset 6.0$	$\emptyset 2.3$	Laibinger	D
GPP-5SS-04128	$F_s=125.0\pm 2.0$	≤ 2.0	$110\mu\text{F}\pm 10\%$	$\emptyset 9.75$	$\emptyset 2.3$	Domino M	J
GPP-5SS-0360A	$F_s=62.5\pm 1.5$	≤ 15.0	$30\mu\text{F}\pm 10\%$	$\emptyset 5.2$	$\emptyset 2.6$	Imaje	C
GPP-5SS-0360B	$F_s=62.5\pm 1.5$	≤ 12.0	$30\mu\text{F}\pm 10\%$	$\emptyset 5.2$	$\emptyset 2.3$	Laibinger	C
GPP-5SS-0380	$F_s=80.0\pm 2.0$	≤ 15.0	$30\mu\text{F}\pm 10\%$	$\emptyset 5.2$	$\emptyset 1.4$	Imaje M	G
GPP-5SS-0396	$F_s=95.0\pm 2.0$	≤ 15.0	$30\mu\text{F}\pm 10\%$	$\emptyset 5.2$	$\emptyset 1.4$	Imaje M	G
GPP-5SS-03125	$F_s=125.0\pm 2.0$	≤ 15.0	$85\mu\text{F}\pm 10\%$	$\emptyset 5.2$	$\emptyset 2.6$	Imaje P	F
GPP-4SS-0685	$F_s=85.0\pm 1.0$	≤ 3.0	$130\mu\text{F}\pm 10\%$	$\emptyset 9.75$	$\emptyset 3.0$		I
GPP-4SS-0660	$F_s=61.0\pm 2.0$	≤ 0.5	$130\mu\text{F}\pm 10\%$	/	$\emptyset 6.0$	Videjet64k, White ink	A
GPP-4SS-0675	$F_s=75.0\pm 2.0$	≤ 0.4	$130\mu\text{F}\pm 10\%$	/	$\emptyset 6.0$	Videjet430S,43S	A
GPP-4SS-06125	$F_s=123\pm 2.0$	≤ 0.3	$130\mu\text{F}\pm 10\%$	/	$\emptyset 6.0$	Video Jet 460MIG	A
GPP-4SS-0875	$F_s=73.0\pm 1.0$	≤ 3.0	$160\mu\text{F}\pm 10\%$	$14*14$	$\emptyset 2.8$	Hitachi75K	H
GPP-5SS-1065	$F_s=64.0\pm 2.0$	≤ 1.0	$120\mu\text{F}\pm 10\%$	$\emptyset 16$	$\emptyset 4.0$	Metronic 65K	K
GPP-5SS-1087	$F_s=87\pm 2.0$	≤ 0.5	$120\mu\text{F}\pm 10\%$	$\emptyset 16$	$\emptyset 7.0$	Metronic 87K	L
GPP-5SS-10120	$F_s=120\pm 2.0$	≤ 0.5	$120\mu\text{F}\pm 10\%$	$\emptyset 16$	$\emptyset 7.0$	Metronic 120K	M

4 Products profile shows

几种典型的喷码机晶振外型示意图



5. Product Category Comparison

A. Classification:

Resonator of inkjet printer in the tecGPical classification is divided into pre-stressed screw-locking sandwich type of piezoelectric resonator (hereinafter referred to as “sandwich-type locking resonator”) and epoxy gluing single-crystal cylinder type of piezoelectric resonator (for short “single-crystal gluing type resonator”).

B. Application:

Sandwich-type locking resonator is mainly used for the printer brands of Domino, Videojet, Hitachi and latest improved model of Chinese Domino.

The single-crystal gluing resonator is mainly used for brands of Imaje, Meronic and Chinese old-style models, etc.

C. Comparison:

The sandwich-type locking resonator has more advantage relatively to the single-crystal gluing resonator:

- The circuit output voltage is low, usually 10 V-100V, while the latter is as high as 100V-300V;
- Vibration amplitude is high and can withstand a higher power;
- Product is more reliable and maintainable, not easy to broken or off-line;
- Adjustable frequency range is wide, usually adjustable within 10 KHz;
- High potential for product improvements; the products can be extended out from 60 KHz to 130 KHz of a same structure of product;

Disadvantages:

- Complex structure; high machining precision and high costs.
- Side-out wire with the larger size of the spray chamber.

D. Features of Our Company's Product:

Our company mainly produces sandwich-type locking resonator with the feature of excellent temperature stability and frequency stability and high product consistency and reliability. The frequency of resonator can also be amended and re-designed in accordance with user requirements.

TecGPology Development

Because of the many advantages of sandwich-type locking-type resonator relatively to the single-crystal gluing resonator, its structure is seemed as a design direction in most of the new product development. Currently, several major manufacturers in domestic are successively improved the resonator in this direction, and has started to launch new products.

In order to facilitate manufacturing, most of the manufacture in domestic adopts theory of domino resonator and Imaje spray-chamber for modification and combining into new products. For the convenience of other user in the industry, our company combines these components and accessories to supply the market.

Please refer to the following “Related Products”.

6. Our company has developed the system products of different ultrasonic tecGPology with the above functions and applied them pertinently depend on market demand,