

Counterfeit pipettes and parts, Should you care?

While counterfeiting in the automobile or pharmaceutical industry has always been a hot issue, little has been said about smaller businesses that also endure similar violations, pipetting business being one of them. With the invention of the first variable volume air-displacement pipette, Gilson developed a product that became a standard, rapidly stirring up envy amongst malicious industrials. Gilson products are clearly positioned in the high-end segment of the pipetting industry. Counterfeiting knows no boundaries and Pipetman counterfeits resembling the original originate from many different countries. On an even larger scale counterfeit spare parts are increasingly being distributed throughout the market. Many of these spare parts resemble the original, deceptively leading customers to believe they are genuine Gilson parts. These low-cost parts do not meet Gilson standards and could result in product failure. They are mainly used by non-authorized service centers, deliberately deceiving customers by not mentioning the true origin of parts to the detriment of the performance of the Gilson pipettes. Gilson is currently developing a public awareness plan that will educate the public on how the use of genuine spare parts can increase the pipette's performance as well as improve its durability.

Spare parts manufactured by Gilson are products of intensive research and stringent quality control, guaranteed to deliver value and assure reliability and precision over the long run. Conversely, counterfeiters cut corners on technical studies and quality control to slash costs. Appearances can be deceptive, these look-alike parts are often poorly finished, made to a poorer standard of low quality materials offering less durability as well as less thermal and chemical resistance. Their coarse design cannot be compared with the real thing. They find a privileged sales outlet with unscrupulous multi-brand service centers. Tip-holders, tip-ejectors, pistons, seals and O-rings are the preferred counterfeit parts.

Separating the real from the fake

When it comes to product testing a counterfeiter is not a stickler for details. By rounding up dimension thresholds and loosening up controls, counterfeiters sacrifice the quality and performance on the altar of profitability. Typically, Gilson respects a 0.01mm tolerance for its parts whereas only 0.1mm is observed by counterfeiters (Figure 1). Likewise, tip-holders are moulded from a single piece of PolyVinylidene Fluoride (PVDF) while fakes are moulded in two assembled parts making them less resistant and causing retention of contaminants in the angles and gaps. These approximations entail variations in shape that modify the dead volume, the gravimetric performance and seal (Figure 2).

Gilson uses state of the art moulding equipment and the latest advanced manufacturing technology available which result in pipette parts that consistently meet the tightest dimensional and performance tolerances. The Gilson tip-holders are made from the highest grade polymer ensuring strong chemical resistance and durability; on the contrary the phony ones, made of PBT (PolybutyleneTerephthalate) and PS (Polystyrene), turn yellow when they are autoclaved and become brittle. A legitimate Gilson tip-holder withstands spills of hydrochloric and hydrofluoric acids, as well as dichloromethylene chloride whereas the fake offers weak resistance and degrades rapidly.

Accuracy and precision of the pipetting system is intimately pegged to the performance delivered by the pipette-tip couple. A Gilson study indicates that using poor quality tips can introduce errors of up to 50% in the pipetting system's performance. Commendably, Gilson recommends the use of Gilson Diamond tips which have been designed to fit perfectly on a Gilson tip-holder and ensure a perfect airtight seal. By utilizing a fake tip-holder, all benefits drawn by using the pipette-tip couple can be jeopardized.

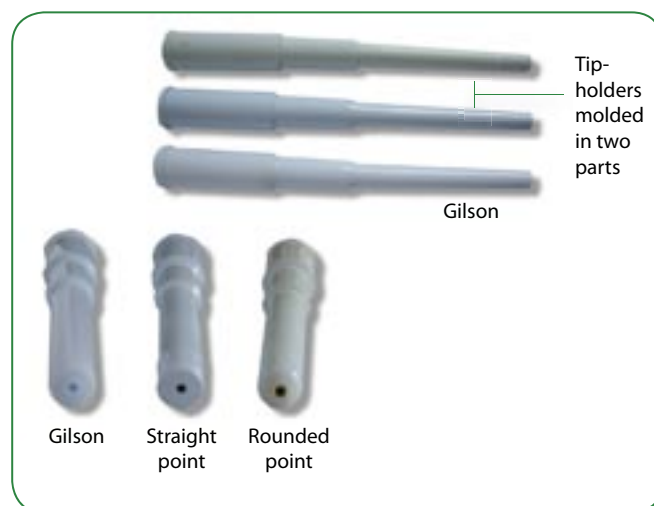


Figure 1: Purported pattern tip-holders differ in length by 1 to 2 mm, and their extremities have a different shape. Gilson tip-holders have a straight end with a slightly rounded point whereas the counterfeit extremities are either straight or slightly rounded.

Systematic (+/- μ l) for Pipetman P1000	200 μ l	500 μ l	1000 μ l
Pipetman 1	0.1	0.1	0.5
Pipetman 2	0.1	0.2	0.3
CSP1 (PBT)	0.2	0.5	0.7
CSP2 (PS)	0.4	0.8	0.8

Figure 2: Comparison of the systematic error at three different volumes of a Pipetman P1000 fitted with original Gilson tip-holders and counterfeits. Counterfeit tip-holders CSP1 & CSP2 respectively made of PBT and PS deteriorate the accuracy of the pipette by a factor of 2.

Seals and O-rings are essential parts subject to wear, deterioration, or contamination in normal usage and particular attention should be paid to them. They ensure that the piston slides in the tip holder freely in a perfectly airtight manner.

The elastic properties of the o-ring vary with time, temperature and the nature of fluids they are in contact with. Butadiene O-rings are predominantly produced by the counterfeiting industry (Figure 3). By using nitrile, Gilson ensures a perfect seal at low pressures. On the other hand, Butadiene is characterized with a lower hardness ratio, poor chemical resistance, and lower durability. To make matters worse, the utilisation of poor raw material is not limited to the tip-holder, seal and o-ring, pistons are also at risk. Fakes are made of low grade quality steel making them more likely to corrode or to scratch which would inevitably cause the pipette to leak. On the other hand, Gilson uses a high-grade stainless steel used to produce surgery instruments, thus ensuring the best possible resistance to wear and to chemical attacks. A roughometer allows for systematic surface checks, complemented by visual verification. Sold as spare parts, pistons are packaged to safeguard their genuineness and integrity.

Another side effect engendered by the use of counterfeit tip-holders is that unprincipled service centers who indulge in counterfeit parts are tempted to re-interpret procedures to their advantage. Simply, they adapt them. For example, the Gilson Pipetman® is a one-of-a-kind pipette resorting to a dry seal system to obtain perfect air tightness. Precision engineered parts are mandatory to ensure a perfect fit between parts. Putting grease to fill gaps between look-alike, cheap parts to help the process is an accommodating trick. Not only does low quality grease hardly resist autoclaving, it may harbour



Figure 3: The level of elasticity based on the ASTM test method is 80 shores for the PIPETMAN® O-ring compared to only 70 shores for the counterfeit ones. When the hardness of the seal is increased, its resistance to deformation is also increased resulting in cracks.

contaminants. Before autoclaving one must completely dismantle and clean the pipette and then readjust before use. If grease is to be re-applied, the amount of grease may vary, inevitably altering the calibration of the pipette. Finding grease on your Pipetman® pipette may be an indication that your pipette has been repaired with counterfeit spare parts. Grease can have a long term detrimental effect on the piston and tip-holder with loss of calibration over time.

Already, Gilson has taken steps in the fight against spurious products

Playing a crucial role in the laboratory as one of the most extensively used pieces of laboratory equipment, pipettes are often required to handle corrosive or hazardous chemical substances. As for all precision instruments, it is paramount that they perform to the highest standards. Having your pipettes regularly serviced by a Gilson certified and audited service center, staffed by qualified technicians and using genuine Gilson spare parts is the only way to guarantee high performance and trouble-free pipetting. Already, Gilson has taken steps in the fight against spurious products. Since 2003, all PIPETMAN tip-holders, pistons and tip ejector heads are embossed with the Gilson trident to protect users from fraudulent products.

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