

Technical Description of Pilot Custom Heritage 912 Fountain Pen

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Definition:

Fountain pens are a writing instrument that deposit ink onto paper using a nib – a thin piece of metal that forms a writing point at its tip. Unlike quills or dip pens, which have similar looking nibs, fountain pens are distinguished by their internal ink reservoirs that allow them to write for much longer without needing frequent ink refilling or dipping into an inkwell. This makes fountain pens excellent for everyday writing or writing for long stretches of time. The contemporary fountain pen is designed to be a luxurious, smooth, and expressive writing experience. Notably, fountain pens require very little pressure to write a solid line, unlike ballpoint pens, and so can relieve tension related hand fatigue and bring more comfort. The Pilot Custom Heritage 912 is a gold-nibbed, cartridge/converter filling fountain pen coming from Pilot's luxury fountain pen line. Being part of the CUSTOM series of their fountain pens, it has a wide range of nibs that allow it to write many types of lines to suit individual preferences. [1]

Overview:

The Pilot Custom Heritage 912 is a pen made of black resin plastic with white rhodium plated metal trimmings, a nib made of rhodium plated fourteen karat gold and employs a cartridge/converter filling system. To unscrew the pen cap requires about 1.5 rotations. The pen has a diameter of: 12mm at the widest part of the barrel, 10 to 11mm at the narrowest to widest parts of the grip section, 14mm at the widest part of the cap. The pen is about 140mm long overall when capped, 155mm long overall posted, with the main pen body alone being about 123mm long and the cap being about 67mm long. Overall the pen weighs about 25g, with the body weighing 16g and the cap 9g. [2]

Components:

Exterior:

- Cap - is primarily made of black plastic, in a flat top design. There are rhodium plated metal trim rings. One near the top of the cap where the clip attaches, two near the cap opening that have the markings “PILOT CUSTOM 912 PILOT JAPAN” engraved. The stiff metal clip is in the shape of a sword’s blade and allows the pen to be attached to pockets, sleeves, etc. Inside the cap is a plastic inner liner that allows the cap to form a tight seal with the pen’s grip section and keep the nib and feed from drying out. The cap unscrews from the pen in roughly one and a half turns.
- Pen barrel – is made of black plastic and has a single rhodium plated metal trim ring near the far end. It has a flat end and tapers down gradually towards this end to allow the pen cap to be posted deeply and securely. Near where the barrel screws onto the grip section, there is a set of threads on the outside to allow the cap to screw onto.

Interior:

- Nib - is a rhodium plated fourteen karat gold nib. It has two tines that tapers into the writing point. It is in Pilot’s number 10 size, being about 21mm in length. The nib on the Custom Heritage 912 is available in 15 different nib types: EF Extra Fine, F Fine, SF Soft Fine, FM Fine Medium, SFM Soft Fine Medium, SM Soft Medium, B Broad, BB Double Broad; and the specialty sizes: PO Posting, FA Falcon, WA Waverly, SU Stub, C Coarse, MS Music. [1] The nib is engraved with a decorative design, the company name “PILOT”, the gold content “14K-585”, the size “10”, a 3-4-digit number string that tells the month and year of manufacture, and the abbreviation for the nib size. The FA nib

version has a unique design with nib cutouts and lacks the decorative engraving, which allows this nib to be the softest and most flexible nib in the lineup. The MS Music nib has two nib slits instead of the standard single slit to allow for greater ink flow for the wide tipping to write fluidly. The Custom Heritage 912 does not come with the specialty nib S Signature.

- Feed - is a gray piece of plastic that sits behind the nib that directs ink to the nib. It is made of two major parts, not meant to ever be disassembled. There is a small inner tube and the main feed. The feed has several fins and two holes on the face that directly meets the nib. In the part of the feed that sits inside the pen, there are two cutouts the nib sits on to align nib and feed during pen assembly.
- Grip section - is the part that is primarily held while writing with the pen. It has two main parts, the plastic outer part that is held while in use and the inner metal part. The plastic outer part is flared to keep the fingers from sliding down to the nib and is slightly conical in shape. There is metal to bring the center of gravity of pen towards where the pen is held, and this metal part has threads to attach the grip section to the pen barrel. The nib and feed assembly are friction fit into a hole in the plastic part of the grip section. There is a small nipple inside the metal part of the grip section allowing the ink cartridge or converter to friction fit onto.
- Cartridge/Converter – is the way this pen stores ink. The cartridge is a hollow cylinder that is sealed and filled with ink. Pressing this converter into the nipple in the grip section breaks the seal and allows the ink to flow. The pen is sold with an ink cartridge and a Pilot CON-70--a press button converter that can hold up to 1mL of ink. [2] This converter allows the pen to “convert” from using ink cartridges to using bottled ink.



Fig 1. Pilot Custom Heritage 912, with cap posted shown on left, capped on right. [2]



Fig 2. Pilot Custom Heritage 912, disassembled, with CON-70 converter shown. [2]

At the top left is the cap, the bottom left shows the pen grip section with nib and feed, the top right is the CON-70 converter, the bottom right shows the pen barrel.

Explanation:

One of the most important parts of any fountain pen is the nib. The pen comes with a fourteen karat gold nib for greater writing character, corrosion resistance to ink, and slight softness compared to a stainless steel nib. The nib comes in 15 types, 6 being standard nib types--EF, F, FM, M, B, BB, 3 softer types--SF, SFM, SM, and 6 specialty types—PO, FA, WA, SU, C, MS. The six standard nib types give a firm, hard nib for normal writing in increasing size from EF to BB. [3]

Fig 3. Hard Nibs [3]



EF **Extra Fine**

Hard nib for extra fine lettering

For those who write using minute lettering, such as in diaries

* For those who are learning pen calligraphy (for PILOT pen calligraphy course, also recommended by teachers)

Way of holding: In upright position



F **Fine**

Hard nib for fine lettering

Wide range of uses, such as notebooks, diaries, letters, CVs (As first-time users tend to press down harder on the nib, fine lettering is recommended.)

Way of holding: Fairly upright



FM **Fine Medium**

Hard nib for medium fine lettering

Notebooks, diaries, letters, CVs and a wide range of other uses

Way of holding: Fairly upright



M **Medium**

Hard, medium lettering

For those who write letters or use slightly larger lettering

Way of holding: Fairly upright



B **Broad**

Bold lettering

For writing names and addresses on envelopes, signatures, etc.

Way of holding: In slightly slanted position



BB **Broad Broad**

Very bold lettering

For writing names and addresses on envelopes, signatures, etc.

Way of holding: Slightly slanted

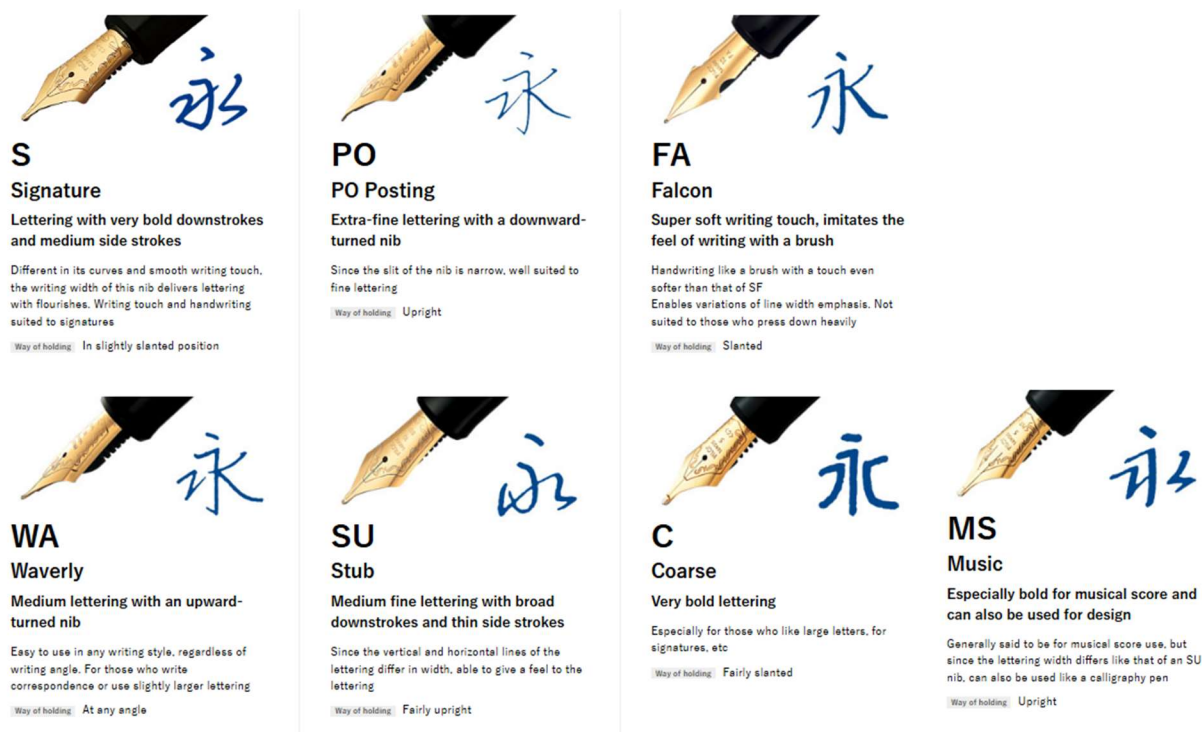
The soft nib types have more flexibility, giving the writing experience a more bouncy, cushioned feel. The slight flexibility also gives some minor line thickness variation in the pen stroke. [3]

Fig 4. Soft Nibs [3]



The specialty nibs are all hard nibs except for the FA. The PO Posting nib has a slightly downturned, super fine nib, making it suited to very fine lettering. The WA Waverly nib has a slightly upturned, medium point nib for an extra smooth writing experience regardless of writing angle. The SU Stub nib has a tip that is ground to write broader vertical strokes and thinner side strokes. The C Coarse nib writes an extra bold line and deposits lots of ink onto the page. The MS Music nib writes similarly to the SU but has two nib slits and can write even broader and deposit even more ink onto the page. The FA nib is the softest and most flexible of the nibs, providing great line variation and a highly cushioned writing experience. [3]

Fig 5. Specialty Nibs [3]



There are two primary methods to fill this pen with ink, by an ink cartridge and by a cartridge converter. The ink cartridge is a sealed plastic tube that holds up to 1mL of ink. At the main opening of the cartridge, there is a small plastic sealing disc that is displaced when the cartridge is installed into the grip section. This breaks the seal and allows the ink to flow freely, but this also means the cartridge is not meant to be removed and resealed to store the ink inside for later use. Empty cartridges can be disposed of or refilled with bottled ink using syringes. The Pilot Custom Heritage 912 includes a push button converter, the CON-70, when purchased. To operate the CON-70, firmly attach its open end into the grip section and dip the nib-grip-converter assembly nib-first into bottled ink until the nib is nearly to fully submerged in ink. Making sure to keep the assembly vertically oriented, firmly and briskly depress and release the black push button at the top of the converter. With each push and release, air will be forced out from the feed and the vacuum that forms in the converter will suck up some ink. Repeat button

press and release until the converter is filled with ink, remove the assembly from the ink, and wipe off any excess ink on the outside of the nib and grip to keep your fingers from getting inky when using the pen. Before changing ink colors or types, it is usually best to clean out the old ink from the nib, feed, grip section, and cartridge/converter.

➤ *Demonstration of CON-70* [4]

Fountain pens write using a combination of capillary action and gravity to bring the ink from the reservoir into the feed, and from the feed to the tip of the nib and onto the page. As such, fountain pens do not need pressure when writing. Simply touching the nib tip to the page will cause ink to start being deposited onto the page. The pen should and will write with just its own weight, guided by the hand. Fountain pens also typically write best in a limited number of orientations. Typically, the nib will be oriented with the nib above the feed, with both nib tines resting evenly on the page, and so that the pen forms about a 45-to-60-degree angle with the page. [5] Writing in other orientations or with undue pressure can cause a worse writing experience or damage the nib.

Since fountain pens require specially formulated water-based inks, they are prone to drying out and require special care and maintenance. When not in use, the pen should be capped to prevent ink from drying out in the nib and feed. For longer term storage on the scale of several weeks to months or years, the pen should be cleaned out of any ink so that no dried ink clogs the feed and hinders the pen's performance. To clean out the fountain pen, the pen should be uncapped, the nib section unscrewed, and the cartridge or converter removed. The nib section can be held under running water to flush out easily removable ink. After this, the nib section can be submerged in a still water soak or ultrasonic bath depending on how thorough a clean is desired. After flushing or soaking, the nib section can be dried with tissue or cloth; leaving it

sitting nib down, wrapped in tissue or cloth for up to a day to fully dry out. It is best to completely dry off the nib section as any remaining water will dilute the next fill of ink. Once dried, the pen can be reassembled and inked for next use or stored away. [6]

Conclusion:

Pilot's CUSTOM Series of pens serves as its flagship line and operates under the slogan "To serve all styles of handwriting." The Pilot Custom Heritage 912 was released in 2009, being released in PILOT's 91st year in business and with the medium sized nib, hence the 2. The pen is entirely manufactured and finished in Japan. The nib is fine-tuned and polished by in-house experts. [1] Since it is made as part of the flagship line and with gold, this pen is quite expensive and retails in America for an MSRP of \$370.00. [2] With its large variety of available nib types, it aims to match the user's writing preferences with a luxurious and quality writing experience.

References:

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