

## 7000 Series Modified Microliter™ Syringe

Congratulations! You have purchased the finest quality precision syringe available today. We combine the highest quality materials with skilled workmanship, ensuring the highest possible performance level of every precision fluid device we manufacture. With proper care and handling, Modified Microliter syringes will provide years of use.



**Syringes and needles manufactured by Hamilton Company are intended for scientific research and laboratory use only and are not intended for human *in vivo* use.**

The Hamilton 7000 Series Modified Microliter syringes are used for gas chromatography (GC), thin layer chromatography (TLC), animal injections, and micro-volume fluid transfers. This syringe series is unique, as the sample is held in the stainless steel needle. The tungsten plunger wire travels inside the needle, dispensing 100% of the sample when fully depressed. The knurled hub nut is seated against a sealing ferrule at the junction of the needle/glass barrel to ensure injection pressures up to 41.4 MPa (6,000 psig). To maintain this seal, periodically tighten the knurled hub nut until light resistance to plunger movement is felt. Use of pliers on the knurled hub nut may be required to achieve this tightness. The black PTFE-coated plunger sleeve makes it easy to read the exact volume.

Two sizes of spacers are available to control the depth of needle penetration. A standard spacer (P/N 86203), resulting in a 19 mm (0.75 inch) exposed needle length, and a shorter spacer (P/N 86201), resulting in a 45 mm (1.75 inch) exposed needle length. The spacer also provides a convenient handhold when inserting the needle.

Order 7000 Series Modified Microliter syringes with your choice of two needle point styles. Point style 2 has a 22° bevel; point style 3 has a 90° blunt end. Point style 3 is recommended for transfer pipetting and micro-volumes.

Two accessories are available for use with the 7000 Series Modified Microliter syringes. The Reproducibility Adapter assures repetitive plunger location, while the Syringe Guide aids in preventing plunger bending and accidental removal of the plunger.

## Operating the 7000 Series Syringe

1. Ensure that your sample contains no minute particles.
2. Before filling, flush the syringe several times to help eliminate bubbles.
3. To fill the syringe, draw the plunger assembly back slowly to a point slightly beyond the desired volume. Move the plunger forward to the desired sample volume.
4. Quickly and fully press the plunger forward to dispense the sample.

**Note: When operating the syringe, avoid touching the needle, as body heat causes volume irregularities. Hold the spacer, if used, to stabilize the needle.**

**Note: Do not pull the plunger completely out of the 7000 Series Syringe as this will expose the small tungsten plunger wire and will cause irreparable damage.**

## Replacement Parts And Syringe Repair

Replacement parts are available for in-field repair of syringes. Refer to Figure 1 and the table on the opposite page for replacement parts.

### Disassembly of the 7000 Series Syringe

Refer to Figure 1 for reference to part number in parentheses.

1. Loosen the knurled hub nut (4) from the glass syringe barrel (1) and remove it.  
**Note: Some earlier versions of the 7000 Series syringes have two small washers located between the hub nut and the needle ferrule. Discard these washers.**
2. Remove the needle (3) and ferrule (2) from the barrel.
3. Extract the plunger assembly (5) from the barrel.

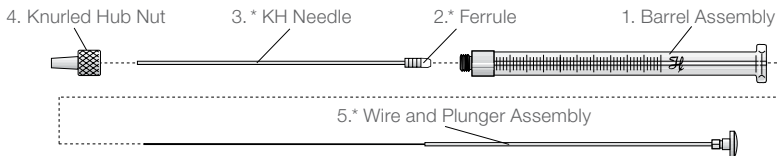
### Assembling the 7000 Series Syringe

Refer to Figure 1 for reference to part number in parentheses.

**Note: Avoid handling the plunger wire with your fingers. Oils and dirt from your fingers may cause the plunger wire to seize within the needle during assembly or operation. Use a lint-free tissue when handling the plunger wire.**

1. Remove the needle (3) and ferrule (2) from the replacement plunger assembly.
2. Place the needle and ferrule into the end of the syringe barrel. Install the knurled hub nut (4) but do not tighten completely.
3. Using a lint-free tissue, carefully hold the plunger wire as close to the end as possible and insert it into the inner sleeve of the syringe barrel. Rotating the plunger wire back and forth will help thread the wire through the inner sleeve, ferrule, and needle.
4. Tighten the knurled hub nut (4) until light resistance to plunger movement is felt.

**Figure 1:** Exploded view of the 7000 Series Syringe



\* Indicates items in the repair kit.

Reference Drawing (Not to Scale)

## Replacement Parts for the 7000 Series Syringe

Part	Syringe Series						
	7000.50C	7000.5	7001	7101	7002	7102	7105
Hub Nut	17658	—	17789	17789	17789	17789	17789
Repair Kit, Pt. Style 2 Needle	—	17887	17888	17890	17891	—	17893
Repair Kit, Pt. Style 3 Needle	86258	17187	17188	17190	17191	17192	17193
Spacer, 25 mm (1.0 inch)	86201	86201	86201	86201	86201	86201	86201
Spacer, 51 mm (2.0 inch)	86203	86203	86203	86203	86203	86203	86203

## Cleaning and Maintaining 7000 Series Syringes

For rapid cleaning of the 7000 Series Modified Microliter syringe, Hamilton recommends its Syringe Cleaner (P/N 76610 for 120V or 76615 for 220V). This dry method of cleaning is normally sufficient to vaporize most common liquid samples used in GC applications without the need for vacuum assistance. You may include a vacuum source, if necessary to remove suspected residuals.

Follow these steps to clean 7000 Series syringes with Hamilton's syringe cleaner:

1. When the syringe cleaner has reached its full operational temperature 370 °C (698 °F), insert the syringe needle through the septum and into the preheated chamber for 30 seconds.
2. Move the plunger in and out of the syringe several times. Do not remove the plunger assembly from the syringe. Remove the syringe and repeat the above procedure as necessary.

The 7000 Series Modified Microliter syringes may also be cleaned with Hamilton Cleaning Solution Concentrate (P/N 18310) or appropriate solvents by flushing the needle/plunger assembly thoroughly after each injection.

**Note: Do not heat the needle if the syringe has been used with a proteinaceous material or with a material not likely to evaporate at higher temperatures. This bakes the material onto the inner surface of the needle, and the needle will have to be replaced.**

## WARRANTY STATEMENT

Hamilton Company unconditionally guarantees its products to be free of defects in materials and workmanship. Any product that fails due to such a defect will be repaired or replaced at our discretion without cost, provided the device is returned on a Return Materials Authorization (RMA). It is the responsibility of the purchaser to determine the suitability of application and material compatibility of the product based on the published specifications of the product.

## RETURN OF GOODS

Hamilton Company's return and repair policy is written to protect its employees from potentially hazardous materials (e.g., serum, radioactive materials, carcinogenic chemicals, etc.) or any substance that may cause them partial or permanent disability during the inspection or repair process. In returning a product, the customer acknowledges that the product is free from any hazardous materials. Furthermore, the customer assumes responsibility should the returned product prove to be hazardous.

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