

MIXPAC™ Two-Component System 2.5 to 10mL



FILLING GUIDELINE
Version 1.1



DENTAL 

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1 General

1.1 SCOPE OF CONTENT

This document is intended as a general guideline for the process of filling and piston insertion. The information within provides a solid foundation to achieve high quality results. The guideline is applicable to manual operation as well as automated filling lines but the result of the filling process must in either case be verified by the customer (storage and application).

medmix provides the system. The receiving party shall be responsible and liable for the usage of the system and the materials applied therewith.

NOTE



In case of system compatibility issues, please do not hesitate to contact your local medmix Sales Manager.

1.2 SYSTEM NAME

MIXPAC™ Two-Component System 2.5 to 10 mL

1.3 SYSTEM PROVIDER

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1.4 TERMINOLOGY

The following terms are used in this filling guideline:

Multicomponent cartridge system – 2.5mL to 10mL Systems; Cartridge, Plunger, Piston, Cap

1.5 SYMBOLS

Please observe the meaning of the following symbols:

CAUTION



Topic

Please be aware of possible system failure if instructions are not followed.

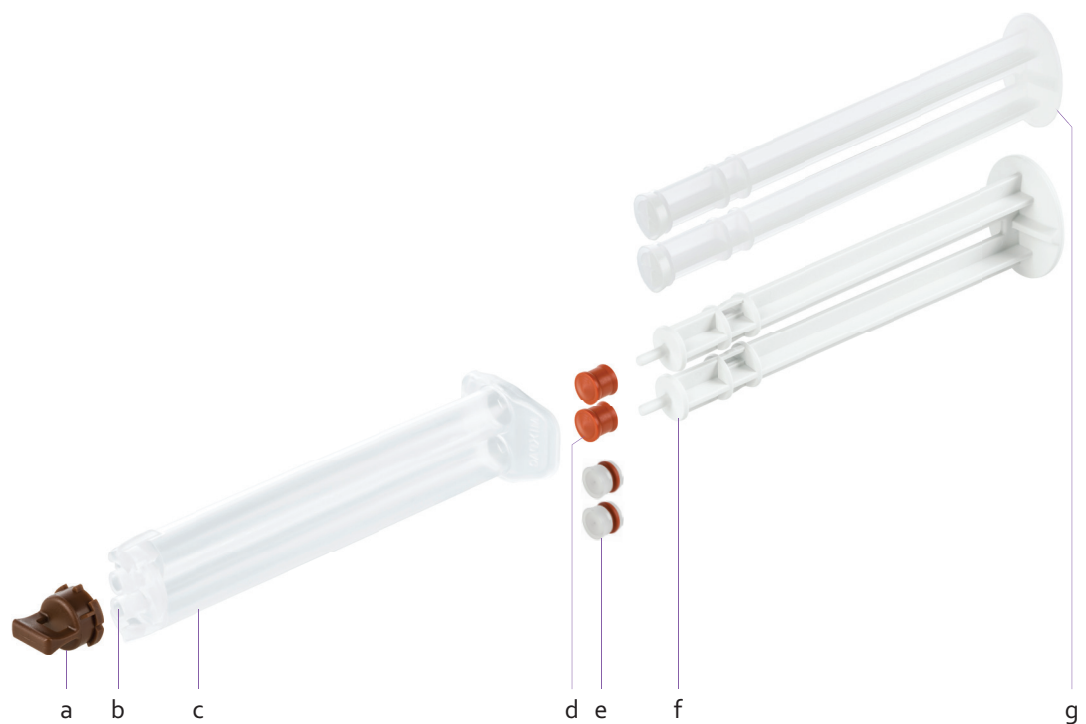
NOTE



Additional information for specific application

2 System Overview

The application system consists of a multicomponent cartridge, matching cap and matching pistons and/or plungers.



- a) Cap
- b) Separated outlets
- c) Cartridge
- d) Silicone pistons
- e) Lip pistons with O-ring
- f) Plunger for usage with pistons
- g) Plunger with sealing lips

NOTE



Please refer to the MIXPAC™ Dental Products catalogue for detailed information.

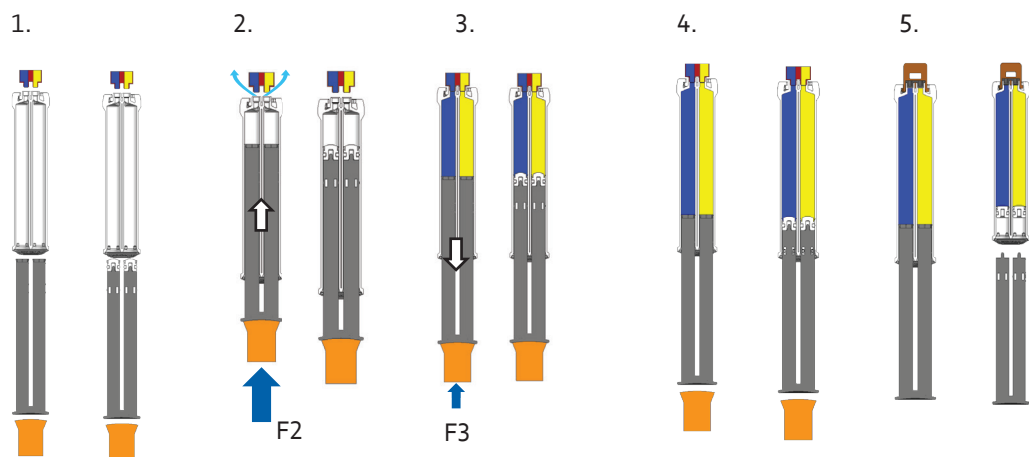
3 Plunger Insertion and Filling Principles

Due to the plunger design and the confined space inside the tubes, the viable process is front filling. The section below lists the factors to be considered for an air-free filling process, without contaminating and/or damaging the sealing features. The illustrations show a generic multicomponent system 5mL cartridge system.

CAUTION

Sealing features

Damage to or contamination of the sealing features will subsequently lead to leakage during transportation or storage of the filled cartridges and/or system failure upon usage.



1. The cartridge is held securely in place with an appropriate alignment fixture. The outlets are not yet connected to the filling nozzles unless a venting/vacuum feature is available in the nozzle. The plungers are aligned with the cartridge and the setting process is initiated. Please ensure that the plungers are arranged concentrically with the openings. Please also ensure to select the correct type of plunger and that the sealing features are not pre-damaged.
2. The plungers are pushed towards the front of the cartridge tubes. The necessary force is dependent on the tube diameter, as well as the cartridge and plunger / piston material combination. The placing force and speed must be well controlled and verified by the customer in order to prevent damage to the sealing features (note: F2 up to 15N). After the air has been purged from the tubes, the cartridge outlets are connected to the filling nozzle. Some air will be entrapped at the interface between nozzle and pistons. For air-free filling, a venting or even better a vacuum mechanism should be integrated into the filling nozzle.
3. The filling nozzle is activated. The materials are forced into the A- and B-side tubes of the cartridge. The material pushes the plungers towards the back of the cartridge. To optimize the filling process, applying a light counter-force on the plunger may be beneficial. (note: F3 ~5N).
4. The filling volume must not exceed the net volume specified. The material flow has to be stopped with a dosing pump or limit switch. Using a mechanical end stop for the plunger is not recommended in order to prevent high compressive load in the system. An integrated valve function in the nozzle prevents material overflow and contamination of the sealing features.
5. The cartridge is removed and closed by a cap with integrated plug. Plungers with sealing lips must not be pulled back after closing the cartridge as air would ingress into the system. If pistons are used the plunger may be retracted for transportation.

4 Plunger Retention

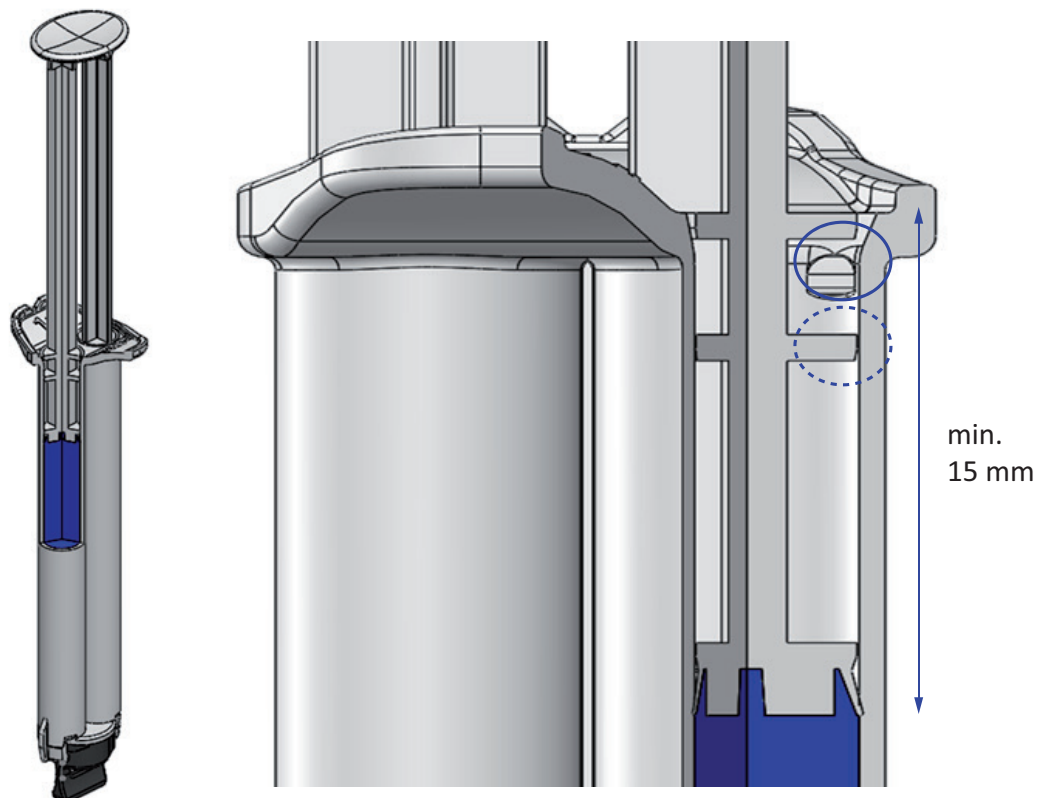
Some cartridges have an integral plunger retention feature that prevents the plunger from becoming dislodged during handling or dropping the application system. Reusable plungers can be removed for shipping.

CAUTION

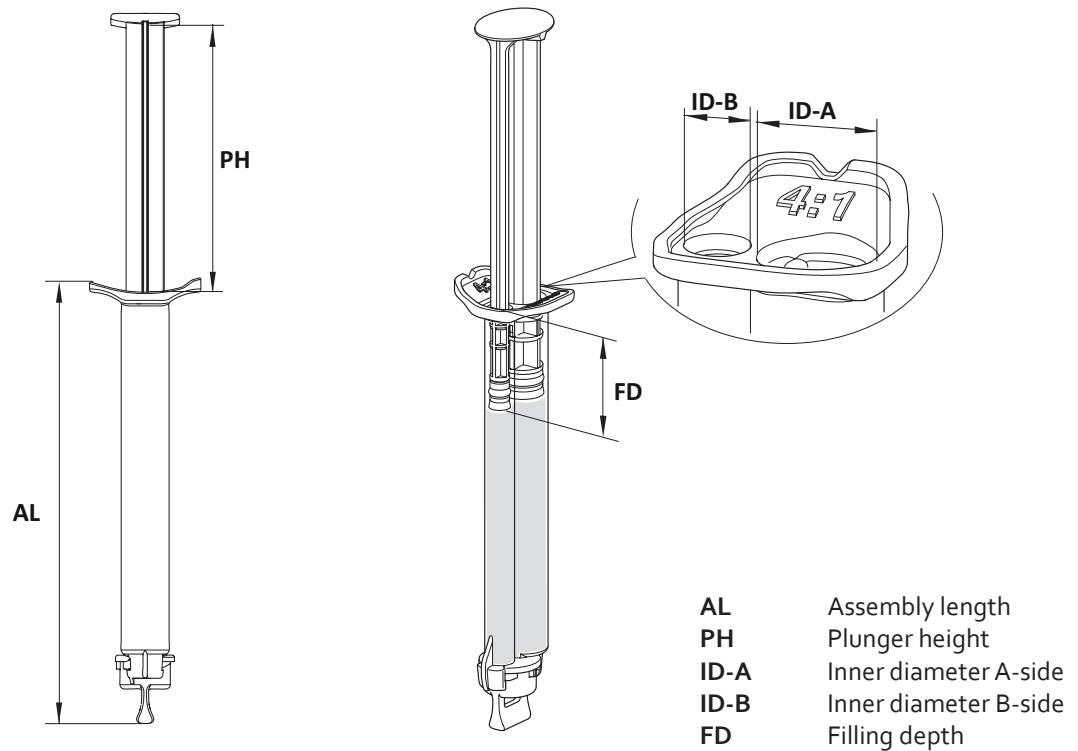


Air ingress

Lip seal plungers must not be retracted after filling as air would ingress into the system.



5 Cartridge Volume (mL)



| Size [mL] | Ratio | AL [mm] | PH [mm] | ID-A [mm] | ID-B [mm] | FD [mm] |
|-----------|-------|---------|---------|-----------|-----------|---------|
| 2.5 | 1:1 | 80 | 43 | 6.3 | 6.3 | 22.2 |
| | 2:1 | 76 | 42 | 7.3 | 5.2 | 22.3 |
| | 4:1 | 80 | 43 | 8 | 4 | 22.5 |
| 5 | 1:1 | 104 | 62 | 7.3 | 7.3 | 22.9 |
| | 4:1 | 104 | 63 | 9.2 | 4.6 | 23.1 |
| 10 | 1:1 | 112 | 61 | 10.5 | 10.5 | 32 |
| | 4:1 | 112 | 61 | 13.3 | 6.65 | 31.6 |
| | 10:1 | 112 | 58 | 14.5 | 4.6 | 33.9 |

The dimensional information contained within this table is meant as a guideline (source: internal data). Valid information for the specific system in use (system drawing) can be requested from your local medmix Sales Manager.

6 Large Air Inclusions

Air trapped within the cartridge system can drastically reduce the performance of a two component material. The air inhibits the ability of the cartridge to deliver an accurate ratio between the A- and B-side materials. As the air behaves like a shock absorber, it can cause one or several of the following problems; lead lag issues, poor mixing, cross contamination and hence, potential degradation of the two component material.

Please refer to the separate info sheet for an illustrated description of the mechanics. The customer has to verify the amount of air entrapped in the system by his filling process as well as the effects of the latter on the mixing quality.

7 Technical Data

The technical data needed for your cartridge system might differ due to filling material specific needs. Please contact your local medmix sales manager in order to provide you the necessary information for your application.

8 Available Tools and Drawings from MIXPAC™

For the insertion of the pistons prior to front filling, medmix has developed a solution with an external partner. Detailed information can be shared upon request. Please contact your local medmix sales manager in order to provide you the necessary information for your application.

9 Applicable Documents

Effects of air inclusions - Multicomponent cartridge system
Manufacturers of filling equipment - Dental systems

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at the Highest Level



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