

SFP-520

Process Manual



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Introduction

This manual describes polishing processes for SFP-520 Polishing Machine. In this manual, several different polishing processes are shown according to ferrule and polishing type. These processes are based on and described for optical connectors manufactured by Seikoh Giken. Actual processes may vary somewhat, however, depending on the particular configuration, material, and type of ferrule used.

Note

To ensure safe and proper operations, read this manual carefully alongside the operating and maintenance manuals for SFP-520 Polishing Machine.

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## § 1 Physical Contact (PC) Polishing

### 1-1 PC Polishing - Zirconia Ferrule (Flat)

| Polishing Process                               | Polishing Condition |                |                 |                      |                        |
|-------------------------------------------------|---------------------|----------------|-----------------|----------------------|------------------------|
|                                                 | Polishing Pad       | Polishing Film | Polishing Fluid | Polishing Time(min.) | Pressure Loading       |
| Adhesive Removal                                | PS5X-1000-00        | GA5D           | None            | 30 rotations         | -                      |
| - Mount polishing holder on polishing machine - |                     |                |                 |                      |                        |
| Height Adjustment                               | PP5X-240-00         | GA5D           | Distilled water | 0.5                  | Low after 10 rotations |
| Rough Polishing                                 | PR5X-250-50         | DR5D           | PL50            | 2.0                  | Low                    |
| Middle Polishing                                | PR5X-250-50         | DM5D-BL        | PL50            | 0.5                  | Low                    |
| Final Polishing                                 | PR5X-250-50         | HF5D           | Distilled water | 1.0                  | High                   |
| Cleaning                                        | PR5X-250-50         | CF5D           | Distilled water | 10 rotations         | None                   |

#### Pressure Loading Conditions

| Number of Ferrule | Pressure Gauge Setting |
|-------------------|------------------------|
| 6                 | 5.50                   |
| 7                 | 5.25                   |
| 8                 | 5.00                   |
| 9                 | 5.00                   |
| 10                | 4.75                   |
| 11                | 4.75                   |
| 12                | 4.50                   |

**Note-**

When polishing fewer than 6 ferrules, add dummy ferrules to meet 6 ferrules in total.  
(e.g.) Polishing 4 ferrules     Add 2 dummies.

## 1-2 PC Polishing - Zirconia Ferrule (Pre-radiused)

| Polishing Process                              | Polishing Conditions |                |                 |                      |                  |
|------------------------------------------------|----------------------|----------------|-----------------|----------------------|------------------|
|                                                | Polishing Pad        | Polishing Film | Polishing Fluid | Polishing Time(min.) | Pressure Loading |
| Adhesive Removal                               | PS5X-1000-00         | GA5D           | None            | 30 rotations         | -                |
| -Mount polishing holder on polishing machine - |                      |                |                 |                      |                  |
| Rough Polishing                                | PR5X-250-50          | DR5D           | PL50            | 1.0                  | Low              |
| Middle Polishing                               | PR5X-250-50          | DM5D-BL        | PL50            | 0.5                  | Low              |
| Final Polishing                                | PR5X-250-50          | HF5D           | Distilled water | 1.0                  | High             |
| Cleaning                                       | PR5X-250-50          | CF5D           | Distilled water | 10 rotations         | None             |

## Pressure Loading Conditions

| Number of Ferrule | Pressure Gauge Setting |
|-------------------|------------------------|
| 6                 | 5.50                   |
| 7                 | 5.25                   |
| 8                 | 5.00                   |
| 9                 | 5.00                   |
| 10                | 4.75                   |
| 11                | 4.75                   |
| 12                | 4.50                   |

**Note-**

When polishing fewer than 6 ferrules, add dummy ferrules to meet 6 ferrules in total.  
(e.g.) Polishing 4 ferrules    Add 2 dummies.

## § 2 Angled Physical Contact (APC) Polishing

### 2-1 APC Polishing - Zirconia Step-down Ferrule (Flat)

| Polishing Process | Polishing Condition |                |                 |                      |                         |
|-------------------|---------------------|----------------|-----------------|----------------------|-------------------------|
|                   | Polishing Pad       | Polishing Film | Polishing Fluid | Polishing Time(min.) | Pressure Loading        |
| Adhesive Removal  | PP5X-240-00         | GA5D           | Distilled water | 0.5                  | High after 10 rotations |
| Angle Forming     | PP5X-240-00         | DR5D           | Distilled water | 2.0                  | High                    |
| Rough Polishing   | PR5X-250-50         | DR5D           | PL50            | 1.0                  | Low                     |
| Middle Polishing  | PR5X-250-50         | DM5D-BL        | PL50            | 0.5                  | Low                     |
| Final Polishing   | PR5X-250-50         | HF5D           | Distilled water | 1.0                  | High                    |
| Cleaning          | PR5X-250-50         | CF5D           | Distilled water | 10 rotations         | None                    |

#### Pressure Loading Conditions

| Number of Ferrule | Pressure Gauge Setting |
|-------------------|------------------------|
| 6                 | 5.75                   |
| 7                 | 5.50                   |
| 8                 | 5.50                   |
| 9                 | 5.25                   |
| 10                | 5.25                   |
| 11                | 5.00                   |
| 12                | 5.00                   |

**Note-**

When polishing fewer than 6 ferrules, add dummy ferrules to meet 6 ferrules in total.  
(e.g.) Polishing 4 ferrules     Add 2 dummies.

## 2-2 APC Polishing - Zirconia Step-Down Ferrule (Pre-angled)

| Polishing Process | Polishing Condition |                |                 |                      |                         |
|-------------------|---------------------|----------------|-----------------|----------------------|-------------------------|
|                   | Polishing Pad       | Polishing Film | Polishing Fluid | Polishing Time(min.) | Pressure Loading        |
| Adhesive Removal  | PP5X-240-00         | GA5D           | Distilled water | 0.5                  | High after 10 rotations |
| Rough Polishing   | PR5X-250-50         | DR5D           | PL50            | 1.0                  | Low                     |
| Middle Polishing  | PR5X-250-50         | DM5D-BL        | PL50            | 0.5                  | Low                     |
| Final Polishing   | PR5X-250-50         | HF5D           | Distilled water | 1.0                  | High                    |
| Cleaning          | PR5X-250-50         | CF5D           | Distilled water | 10 rotations         | None                    |

## Pressure Loading Conditions

| Number of Ferrule | Pressure Gauge Setting |
|-------------------|------------------------|
| 6                 | 5.75                   |
| 7                 | 5.50                   |
| 8                 | 5.50                   |
| 9                 | 5.25                   |
| 10                | 5.25                   |
| 11                | 5.00                   |
| 12                | 5.00                   |

**Note-**

When polishing fewer than 6 ferrules, add dummy ferrules to meet 6 ferrules in total.  
(e.g.) Polishing 4 ferrules    Add 2 dummies.

### § 3 Service Life of Polishing Film

Please refer to the below for suggested lifetime (number of times to be used) of polishing film.

| Polishing Film | Lifetime(times) |
|----------------|-----------------|
| GA5D           | 1               |
| DR5D           | 15 ~ 20         |
| DM5D-BL        | 15 ~ 20         |
| HF5D           | 1               |
| CF5D           | 50              |

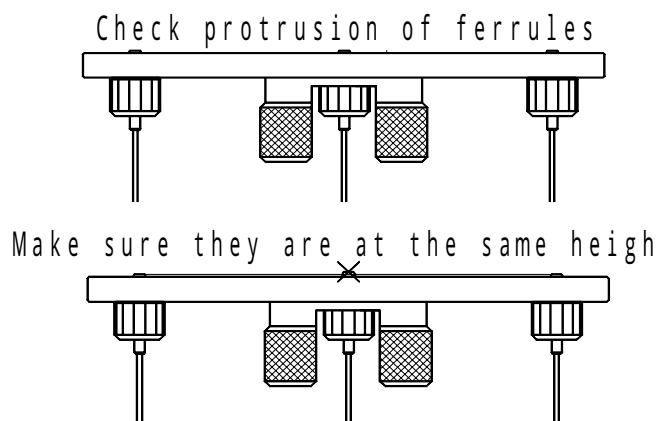
- Note) 1. Lifetime of polishing film may vary depending on its usage and storage condition.  
 2. For repeat use of polishing films (DR5D, DM5D-BL and CF5D), please store them in a dry environment after wiping the films dry and clean.

### § 4 Standard Operations

The following operations are common to all ferrule-polishing operations performed with SFP-520.

#### 4-1 Ferrule Height Check

After mounting ferrules on the polish holder, make sure that all ferrules project to the same height from the bottom surface of the polishing holder.

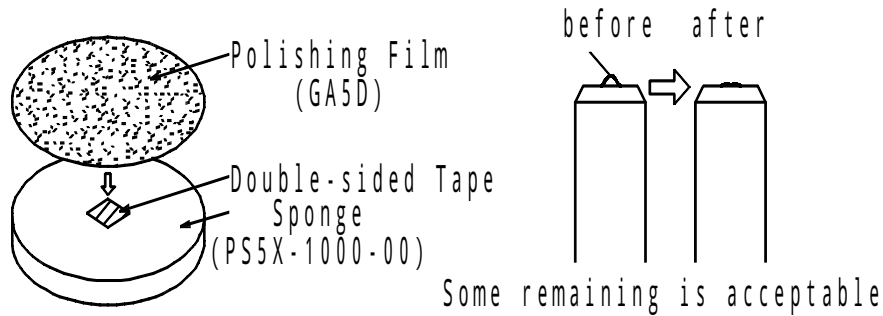


Variations In ferrule height will greatly affect polishing performance. Remove any ferrule that you find to be lower or higher than others after mounting is completed, then clean them, if necessary, and remount. Make sure that all ferrules project to the same height. If a ferrule is too low, adhesive may be stuck on the side of the ferrule, and the ferrule may not be inserted into the holder properly. Once polishing begins, do not remove or remount ferrules.

### 4-2 Adhesive Removal (for PC Polishing)

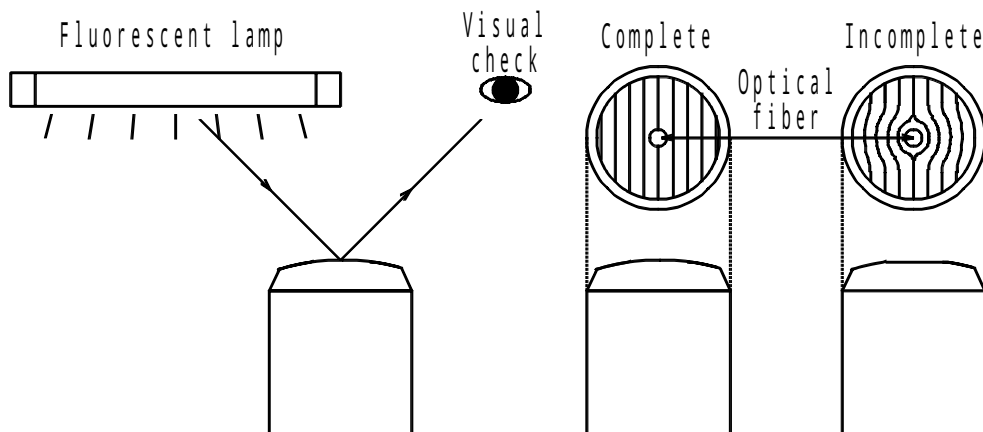
Fiber should protrude from the tip of an optic fiber connector, and adhesive is applied here to attach the ferrule to the fiber. In the following procedures, remove this adhesive before polishing to prevent the adhesive coming off the fiber and damaging the polish film.

Attach a polish film GA5D to a sponge pad with double-sided tape. Hold the sponge and rotate it on the sponge for 30 times to remove the adhesive. After 30 rotations, move on to the next process even if some adhesive remains.



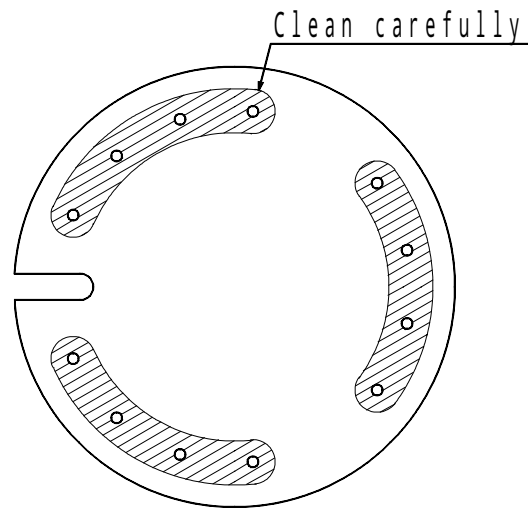
For APC polishing, make sure that the adhesive is completely removed after the first polishing step (Adhesive Removal). If adhesive still remains on the most of ferrules after this polishing step, please repeat the polishing step as excess adhesive on ferrule endface will damage the next polishing film and consequently cause abnormality on ferrule finish.

### 4-3 Convex Forming Check



After the rough polishing process has been completed, check the configuration of the ferrule endface. The endface should be fully rounded, forming Radius of Curvature. If the ferrule endface is not fully rounded, extend the polishing time and check/adjust the ferrule protrusion from the polishing holder and make sure all the ferrules are protruding at the same height.

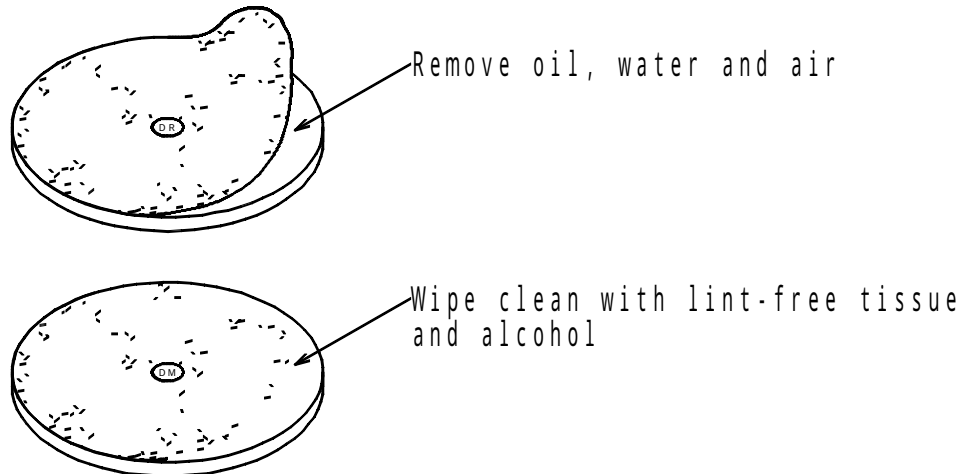
#### 4-4 Cleaning the Polishing Holder



Performing the next process with the coarse grains left on the holder may result in damage to the polishing film and the polished ferrule endface. To prevent this, make sure to clean each time the bottom surface of the polish holder, especially around the ferrule insertion holes, using lint-free tissue moistened with alcohol. The parts shown at left require thorough cleaning.

#### 4-5 Cleaning the Polishing Film / Pad

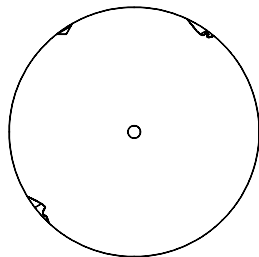
In order to maximize the service life of polishing film, clean the film with a lint free tissue moistened with alcohol after each use. The parts shown below require thorough cleaning. During the operation, polishing oil, distilled water or air bubble might accidentally get in between the polishing pad and the polishing film, which may cause the film to come off, resulting in poor finish on polished ferrule or damage to the film. When cleaning the polishing film, therefore, remember to clean the bonded area between the film and the pad so that no foreign objects remain.



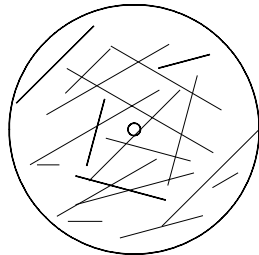
## 4-6 Repolishing

If a polished ferrule endface is scratched or a part of the fiber looks broken or chipped, we suggest to Re-polish those ferrules altogether. Repeat the same polishing processes starting with the adhesive removal process. This applies to all polishing conditions unless otherwise specified. If the Re-polishing made little difference in finish, the polishing film may be worn out, in which case replace it with a new film.

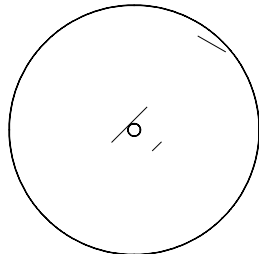
Please refer to the below for some cases requiring Re-polishing:



**Cracking/chipping:** Repeat the process from Rough Polishing step. This may be caused by a part of fiber being removed with adhesive at Adhesive Removal step, or sudden high loading pressure on ferrule endface.



**Numbers of scratches:** It is possible that ferrules were not protruding enough from polishing holder and there was not enough pressure on ferrule endface, or simply that the polishing films were worn out. Place a spacer film underneath the polishing pad, or replace polishing films with new ones.



**A few scratches:** Possible cause is the coarse grains by incomplete cleaning after each polishing step. Repeat the Final Polishing and Cleaning steps. Make sure to clean ferrule endface, polishing holder, and polishing film after each polishing step.

If above Re-polishing methods make little improvement, please read maintenance manual and check thoroughly.

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