



Fiber Optic Connector Cleaning and Inspection Kit Instructions

General

This instruction sheet describes the use of the **CommScope®** Fiber Optic Connector Cleaning and Inspection Kit and the Fiber Optic Connector Consumables Kit.

Cleanliness of fiber optic connections is critical to the performance of optical communication networks. Contamination on a connector end face, even if only at the microscopic level, can create severe problems. Traditional single-mode fiber optic core diameters are approximately 9 microns (0.00035 inches). By comparison, a human hair is 50 microns or larger in diameter. Contamination that blocks the fiber core generates strong back reflections (Return Loss), and may affect attenuation (Insertion Loss). Loose contamination on the connector end face that may not block the core may move during de-mating, or may prevent physical glass-to-glass contact required for proper signal transmission. Rigid contamination trapped between connector end faces may permanently damage the fiber core(s). Dry contaminants are relatively simple to remove compared to oils and films which naturally occur with human contact, vapor condensation, and solvent evaporation.

Ordering information is listed below:

CommScope Material ID	Description
760053199	Fiber optic connector cleaning and inspection kit
760053207	Fiber optic consumables kit



How to Contact Us

- To find out more about **CommScope®** products, visit us on the web at <http://www.commscope.com/>
- For technical assistance or to report missing or damaged parts, visit us on our website at <http://www.commscope.com/SupportCenter>

Optional Tools

- Lint-free wipes (**Kimwipes® EX-L** or equivalent)

Parts List

Verify contents of Fiber Optic Connector Cleaning and Inspection Kit (CommScope Material ID 760053199) against the parts listed below.

Quantity	Description
1	VIAVI P5000i inspection probe with universal 2.5mm tip and barrel assembly for FBP and FiberChek Probes
1	VIAVI HD4i Digital Handheld Video Display
1	LC bulkhead probe tip, long reach
1	MTP/MPO bulkhead ribbonDrive tip, MM, long reach
1	SC bulkhead probe tip
1	Universal Flare Adapter for FMAE adapters. Requires barrel assembly included with the P5000i probe
1	JDSU fiber FBP-HD4i/HD4iP and OLD-82/82P start guide
1	SC coupler, Simplex, SM/MM
1	LC Duplex FMAE series probe adapter
1	LC coupler, Simplex, MM
1	MPO coupler, aligned-keys (gray)
1	OPTIPOP R1 one slot reel cleaner 1.25mm, 2.5mm, MT
1	MPO/MTP internal bulkhead cleaner
1 tube (40 per tube)	1.25mm swabs (Green label)
1 tube (40 per tube)	2.5mm swabs (Blue label)
1 can	Fiber optic cleaning solution
1	Instruction sheet
1	Carrying case
1	Universal 1.25mm patch cord tip
1	LC internal bulkhead cleaner
1	SC internal bulkhead cleaner
1	Optical fiber Visual Fault Locator (VFL) with 1.25 mm adapter

Verify contents of Fiber Optic Connector Consumables Kit (CommScope Material ID 760053207) against the parts listed below.

Quantity	Description
2 rolls	NTT-AT Optipop reel cleaner refill
1	MPO/MTP internal bulkhead cleaner
2 tubes (40 per tube)	1.25mm swabs (Green label)
2 tubes (40 per tube)	2.5mm swabs (Blue label)
1 can	Fiber optic cleaning solution
1	Instruction sheet
1	LC internal bulkhead cleaner
1	SC internal bulkhead cleaner

PRECAUTIONS:

- It is important that every fiber connector be inspected under magnification before a connection is made since many contaminants are too small to be seen by the naked eye.
- Pre-terminated modules and cartridges include factory polished, cleaned, and tested fiber optic connectors in bulkhead (mounted) adapters. Protective dust caps/covers are provided to minimize contamination during shipping, handling, and installation, but do not guarantee a clean connector. Connectors internal to the adapters are clean when purchased; however, exposure of the

modules/cartridges to extremely dusty environments may allow end face contamination despite the dust caps/covers.

- Fiber optic cordage and jumper performance is sensitive to bending, pulling, and crushing. Minimum bend radii must be maintained during installation per the manufacturer's specification. Appropriate pulling socks must be used during installation and pulling forces shall not exceed manufacturer's recommendations. MPO terminated trunk cables may use ribbonized fiber optic cable, which has a preferential bend axis. Use caution to avoid kinking trunk cables.
- Care should be taken not to compromise the stability of racks during inspection and cleaning.
- Over-the-counter or "Drug Store" type isopropyl alcohol (IPA) is not high enough quality (91% minimum purity) for cleaning optical components. Even optical quality IPA can leave a residue on the fiber surface and will attract water and contamination as it dries.
- Components used to clean optical connectors should be lint and contaminant free. Do not touch any surface that will contact any connector end face, as cross-contamination of the end face is likely.
- The IBC MPO/MTP cleaner's clear adapter/cover and the cleaning tip are keyed much like MPO/MTP adapters and connectors. The IBC cleaner must be oriented correctly for the cleaning cloth to contact the connector end face.

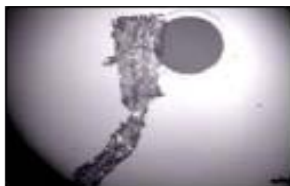
CAUTIONS:

- Disconnected optical components may emit invisible optical radiation that can damage your eyes. Never look directly into an optical component that may have a laser coupled to it. Serious and permanent retinal damage is possible. If accidental exposure to laser radiation is suspected, consult a physician for an eye examination.
- Disconnected optical components may emit invisible optical radiation that can damage the inspection scope and monitor. Never plug the optical scope into an optical component that may have a laser coupled to it. Permanent equipment damage is possible.
- Wearing safety glasses during inspection and cleaning is recommended. Although standard safety glasses provide no protection from potential optical radiation, they offer protection from accidental airborne hardware and cleaning solvents.
- Laser safety glasses can protect from laser light across specific wavelengths. Laser safety glasses must meet federal and state regulations. Wear appropriate laser eye protection, if required, during inspection and cleaning.

Connector Cleaning

Dry cleaning of optical connectors will generally remove airborne contamination and should be attempted first. Wet cleaning is more aggressive than dry cleaning and will remove airborne contamination as well as light oil residue and films.

The figures below illustrate different types of connector contamination.



Single Fiber Connector – Exposed End Face

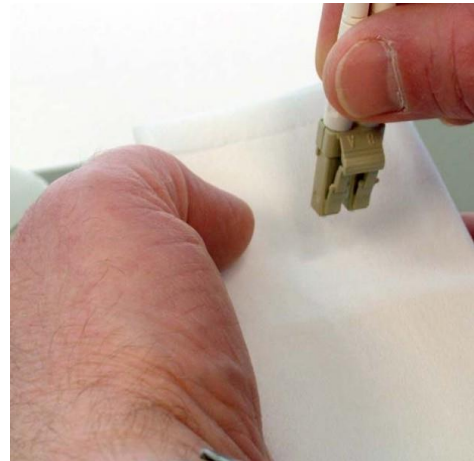
Dry Cleaning

1. Remove the connector dust cap. If a duplex-clipped pair, remove both caps.
2. Depress the lever on the OptiPop cleaner to expose the cleaning cloth.
3. Place the connector end face(s) against the cleaning cloth, apply light pressure, and wipe the end face(s) in the direction of the arrow. Do not allow the end face(s) to contact the gray frame around the cleaning cloth.
4. Inspect the connector end face with the inspection microscope.



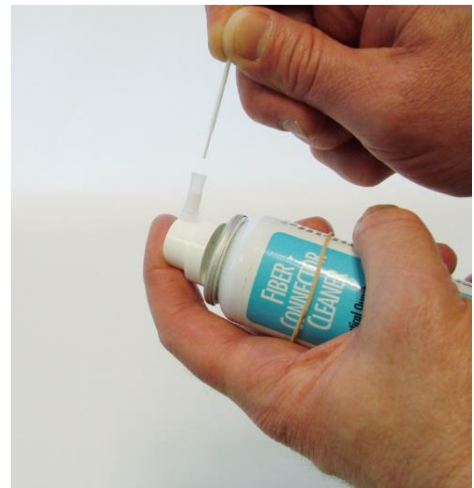
Wet Cleaning

1. Remove the connector dust cap. If a duplex-clipped pair, remove both caps.
2. Lightly dampen a portion of a lint-free wipe with fiber optic cleaning solution, leaving part of the wipe dry.
3. Holding the wipe in your hand, place the connector end face(s) against the wet portion of the lint-free wipe, then applying light pressure, wipe the end face(s) of the connector from the wet area onto the dry area. Do not contact the end face(s) with any surface except the lint-free wipe.
4. Discard the wipe.
5. Inspect the connector end face with the inspection microscope.

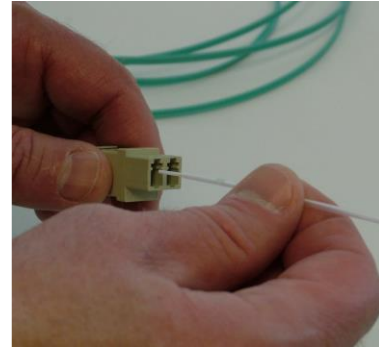


Alternate Wet Cleaning

1. Remove the connector dust cap. If a duplex-clipped pair, remove both caps.
2. Acquire the appropriate adapter from the cleaning kit, and install the connector in the adapter.
3. Tilt the fiber connector cleaner can back slightly, depress the pump, and fill the can's dispensing "well."
4. Dip the appropriate cleaning stick tip into the well to dampen the tip with cleaning fluid. Lightly tap the center portion of the cleaning stick to remove access fluid from the tip. Do not contact the tip.
5. Insert the damp cleaning stick tip into the adapter sleeve to contact the installed connector end face.
6. Rotate the cleaning stick 6 to 10 revolutions with varying light pressure.



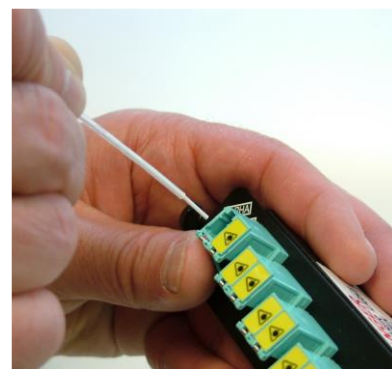
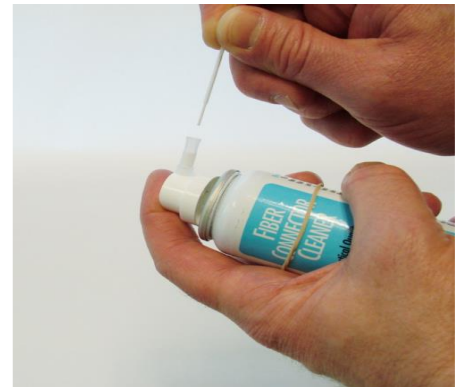
7. Remove the damp tip from the adapter sleeve, insert the dry tip into the adapter sleeve, and rotate the cleaning stick 1 to 3 revolutions.
8. Discard the cleaning stick.
9. Inspect the connector end face with the inspection microscope.



Single Fiber Connector – Bulkhead Adapter Installed

Wet Cleaning

1. Remove the adapter dust cap.
2. Tilt the fiber connector cleaner can back slightly, depress the pump, and fill the can's dispensing "well."
3. Dip the appropriate cleaning stick tip into the well to dampen the tip with cleaning fluid. Lightly tap the center portion of the cleaning stick to remove excess fluid from the tip. Do not contact the tip.
4. Insert the damp cleaning stick tip into the adapter sleeve to contact the installed connector end face.
5. Rotate the cleaning stick 6 to 10 revolutions with varying light pressure.
6. Remove the damp tip from the adapter sleeve, insert the dry tip into the adapter sleeve, and rotate the cleaning stick 1 to 3 revolutions.
7. Discard the cleaning stick.
8. Inspect the connector end face with the inspection microscope.



Multi-Fiber-Array-Connector Unpinned – Exposed End Face

ENDFACE CLEANING (UNPINNED ONLY)

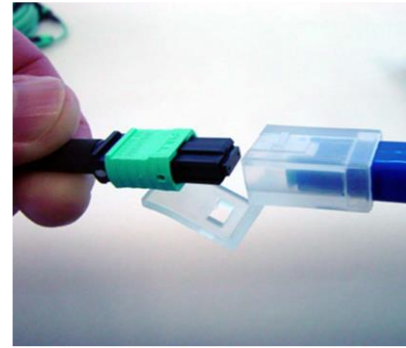
Dry Cleaning

1. Remove the connector dust cap.
2. Depress the lever on the OptiPop cleaner to expose the cleaning cloth.
3. Place the connector end face against the cleaning cloth, apply light pressure, and wipe the end face in the direction of the arrow. Do not allow the end face to contact the gray frame around the cleaning cloth. Take care to hold the flat surface of the connector end face flat against the cloth.
4. Inspect the connector end face with the inspection microscope.



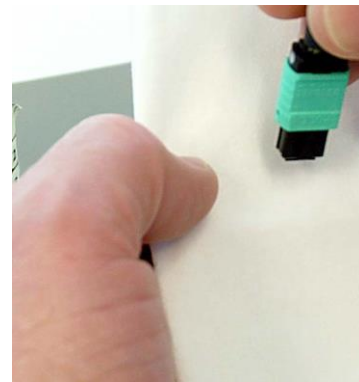
Alternate Dry Cleaning

1. Remove the connector dust cap.
2. Open the hinged adapter cover on the IBC cleaner, exposing the cleaning cloth.
3. Insert the connector into the clear IBC adapter such that the end face contacts the cleaning cloth. Apply light pressure and rotate the IBC cloth with the indexing wheel approximately 1/4 turn.
4. Inspect the connector end face with the inspection microscope.



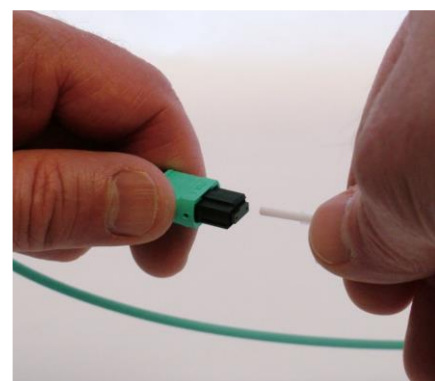
Wet Cleaning

1. Remove the connector dust cap.
2. Lightly dampen a portion of a lint-free wipe with fiber optic cleaning solution, leaving part of the wipe dry.
3. Holding the wipe in your hand, place the connector end face(s) against the wet portion of the lint-free wipe, then applying light pressure, wipe the end face(s) of the connector from the wet area onto the dry area. Do not contact the end face(s) with any surface except the lint-free wipe.
4. Discard the wipe.
5. Repeat steps 3 and 4 with a dry lint-free wipe.
6. Inspect the connector end face with the inspection microscope.



Alternate Wet Cleaning

1. Remove the connector dust cap.
2. Tilt the fiber connector cleaner can back slightly, depress the pump, and fill the can's dispensing "well."
3. Dip a 2.5mm SC/ST/FC cleaning stick tip into the well to dampen the tip with cleaning fluid. Lightly tap the center portion of the cleaning stick to remove excess fluid from the tip. Do not contact the tip.
4. Using the damp tip, apply light pressure to the connector end face and wipe the end face in a direction perpendicular to the fiber array.
5. Repeat step 4 with the dry tip.
6. Discard the cleaning stick.
7. Inspect the connector end face with the inspection microscope.



Alternate Non-Contact Cleaning Method

1. If needed, the MPO/MPT connectors may be cleaned with dry, compressed air for loosely attached contaminations.
2. Remove the connector dust cap.
3. Spray the connector end face using a short burst of dry air.

PINHOLE CLEANING (UNPINNED ONLY)

1. Cleaning the pinholes on MPO connectors is the last resort for trouble-shooting a high loss connection, and only applicable for experienced personnel.
2. Wet the orange TePe dental (pinhole) brush with MicroCare FCC2 or alcohol and insert the brush into the pinhole while turning the brush 90 degrees. The brush will bottom-out at the pin clamp before the handle reaches the ferrule end-face.
3. Pull the brush out of the hole while rotating 90 degrees and then inspect the pinhole with a scope. With the scope at 50x magnification, inspect the leading edge of the pinhole for debris. Then focus down the pinhole (at least to the inner step diameter) for any other contamination. Make sure you do not allow the alcohol or FCC2 to dry on the brush before using. If it does, apply more alcohol or FCC2 and proceed with the cleaning.
4. With the brush bottomed-out in the pinhole, rotate the handle back and forth at least three times (180 degrees in each direction).
5. Pull the brush out of the hole while rotating 90 degrees and then inspect the pinhole with a scope. With the scope at 50x magnification, inspect the leading edge of the pinhole for debris. Then focus down the pinhole (at least to the inner step diameter) for any other contamination.



Multi-Fiber Array Connector (MPO/MTP) Pinned – Exposed End Face

PINNED CONNECTOR CLEANING (MALE ONLY)

1. Wet a Kimwipe with MicroCare FCC2 or alcohol and wipe the pin with the wetted Kimwipe.
2. Inspect the pin surface and the ferrule surface around the pin for contamination using an eye loupe or with a scope at 50x magnification. If contamination is found, use a Q-Tip wetted with MicroCare FCC2 or Alcohol to wipe away the debris. If that does not work, use a pinhole brush to scrub around the pins.
3. Male pin connector cleaning may also be performed with an OptiPop.

ENDFACE CLEANING (PINNED ONLY)

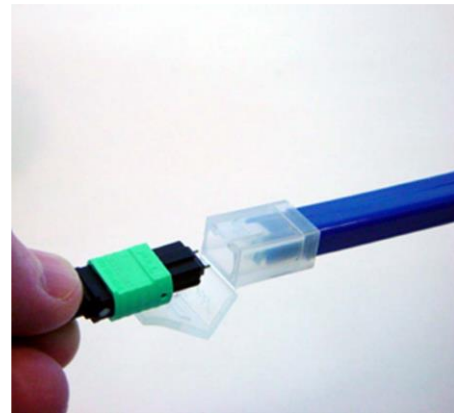
Dry Cleaning

1. Remove the connector dust cap.
2. Depress the lever on the OptiPop cleaner to expose the cleaning cloth.
3. Place the connector end face against the cleaning cloth, apply light pressure, and wipe the end face in the direction of the arrow. Do not allow the end face to contact the gray frame around the cleaning cloth. Take care to hold the flat surface of the connector end face flat against the cloth.
4. Inspect the connector end face with the inspection microscope.



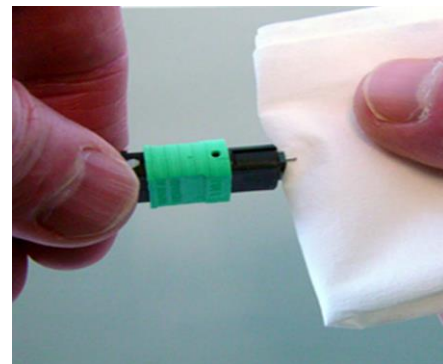
Alternate Dry Cleaning

1. Remove the connector dust cap.
2. Open the hinged adapter cover on the IBC cleaner, exposing the cleaning cloth.
3. Insert the connector into the clear IBC adapter such that the end face contacts the cleaning cloth. Apply light pressure and rotate the IBC cloth with the indexing wheel approximately 1/4 turn.
4. Inspect the connector end face with the inspection microscope.



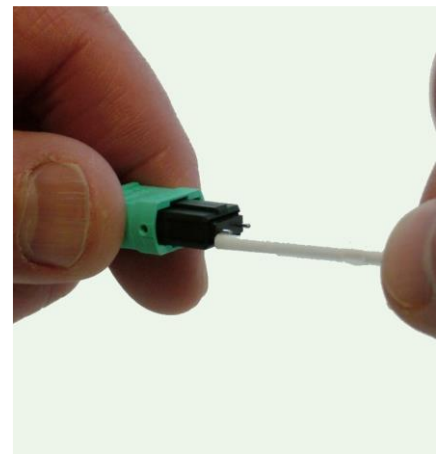
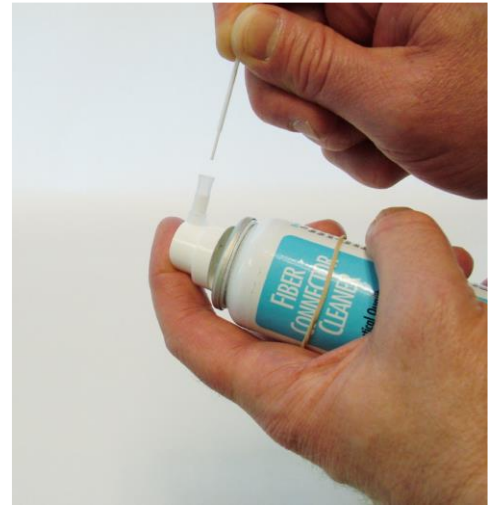
Wet Cleaning

1. Remove the connector dust cap.
2. Lightly dampen a lint-free wipe with fiber optic cleaning solution. Fold over the damp lint-free wipe. Do not contact the portion of the wipe that will contact the connector end face.
3. Using the creased portion of the wipe, clean around the exposed pins.
4. With the creased portion of the wipe, use light pressure and wipe the end face of the connector in a direction perpendicular to the fiber array (between the pins). Wiping in the same direction of the array may transfer contamination from fiber-to-fiber. Do not contact the end face with any surface except the lint-free wipe.
5. Repeat steps 3 and 4 with a dry lint-free wipe.
6. Discard both wipes.
7. Inspect the connector end face with the inspection microscope.



Alternate Wet Cleaning

1. Remove the connector dust cap.
2. Tilt the fiber connector cleaner can back slightly, depress the pump, and fill the can's dispensing "well."
3. Dip a 2.5mm SC/ST/FC cleaning stick tip into the well to dampen the tip with cleaning fluid. Lightly tap the center portion of the cleaning stick to remove access fluid from the tip. Do not contact the tip.
4. Using the damp tip, clean the pins by holding the tip parallel to the pins such that the tip end contacts the ferrule and wipe the cylindrical surface of the pins.
5. Using the damp tip, apply light pressure to the connector end face and wipe the end face in a direction perpendicular to the fiber array.
6. Repeat step 5 with the dry tip.
7. Discard the cleaning stick.
8. Inspect the connector end face with the inspection microscope.



Alternate Non-Contact Cleaning Method

1. If needed, the MPO/MTP connectors may be cleaned with dry, compressed air for loosely attached contaminations.
2. Remove the connector dust cap.
3. Spray the connector end face using a short burst of dry air.

Multi-Fiber Array Connector (MPO/MTP) – Bulkhead Adapter Installed

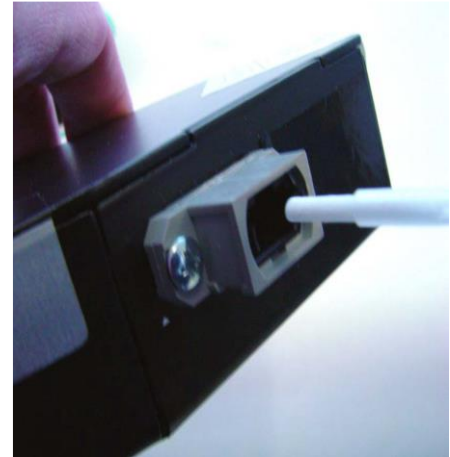
Dry Cleaning

1. Remove the adapter dust cap.
2. Remove the clear adapter/cover on the IBC cleaner, exposing the cleaning cloth.
3. Insert the IBC into the bulkhead MPO/MTP adapter such that the end face contacts the cleaning cloth. Apply light pressure and rotate the IBC cloth with the indexing wheel approximately 1/4 turn.
4. Inspect the connector end face with the inspection microscope.



Wet Cleaning

1. Remove the adapter dust cap.
2. Tilt the fiber connector cleaner can back slightly, depress the pump, and fill the can's dispensing "well."
3. Dip a 2.5mm SC/ST/FC cleaning stick tip into the well to dampen the tip with cleaning fluid. Lightly tap the center portion of the cleaning stick to remove excess fluid from the tip. Do not contact the tip.
4. Insert the damp tip into the adapter and clean the pins by holding the tip parallel to the pins such that the tip end contacts the ferrule. Wipe the cylindrical surface of the pins.
5. Using the damp tip, apply light pressure to the connector end face and wipe the end face in a direction perpendicular to the fiber array.
6. Insert the IBC into the bulkhead MPO/MTP adapter such that the end face contacts the cleaning cloth. Apply light pressure and rotate the IBC cloth with the indexing wheel approximately 1/4 turn.
7. Discard the cleaning stick.
8. Inspect the connector end face with the inspection microscope.



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- For technical assistance, customer service, or to report any missing/damaged parts, visit us at <http://www.commscope.com/SupportCenter>

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