Application Note AN-3014
Using a 70S to Align Fibers for Reel Testing

Background

OTDR testing is generally required after construction of an optical network. What is commonly referred to as reel testing is typically required prior to placing fiber optic cables in either underground or aerial construction.

Reel testing is the OTDR testing of a fiber optic cable prior to placing the cable, while the cable is still on a reel.

This document outlines the procedure for setting up a splice mode in the Fujikura 70S so that the fusion splicer can be used to align the test jumper to the fiber under test.

1. Select a splice mode that is not currently used.

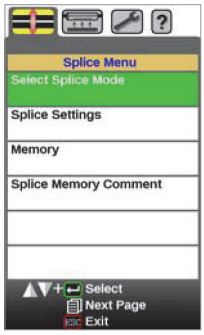

Fig. 1

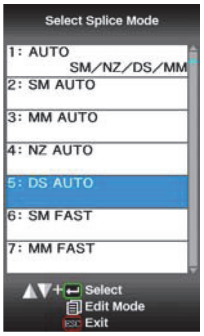

Fig. 2

One method frequently used to align fibers for reel testing is to connect a jumper to the launch fiber, then align the other end of the jumper to the fiber under test within the cable. This will allow the OTDR to test across a narrow gap between the fiber endfaces. A PAS type fusion splicer that has (core alignment) capabilities can be used to align the fiber from the test jumper to the under test.

2. Press the menu key to (Edit Mode), select (SM-SM) splice mode from fiber type.

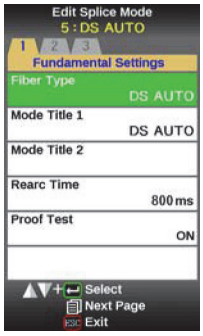

Fig. 3

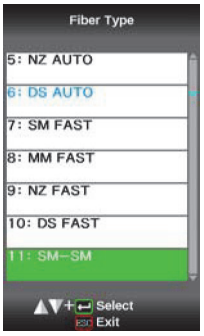

Fig. 4

Fig. 5

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3. Re-name Mode Title 2 to (OTDR Testing) for identification and future use.

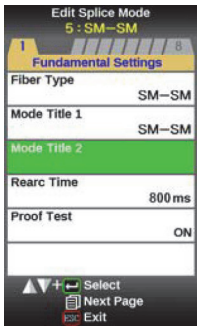

Fig. 6

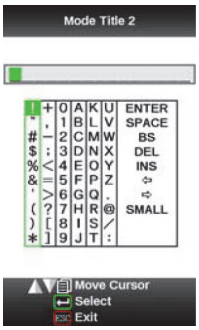

Fig. 7

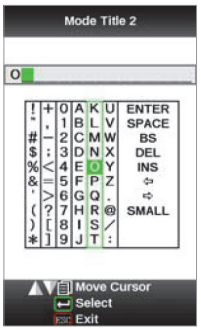

Fig. 8

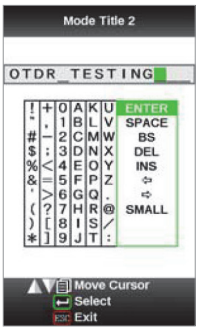

Fig. 9

4. Turn cleaning arc off. Turning the cleaning arc off will eliminate rounding of the endface on the test jumper through repeated testing, helping to keep insertion loss at (pause 2) to a minimum. If small debris is seen on the launch fiber it may be advisable to leave the cleaning arc on for the first test then turn the cleaning arc off for the remaining tests to eliminate rounding of the endface.

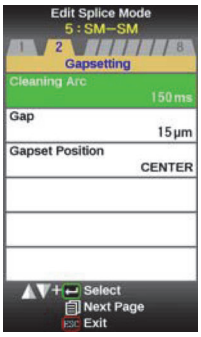

Fig. 10

Fig. 11

Fig. 12

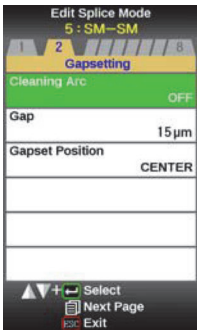

Fig. 13

5. Set gap to 10 µm. This will provide a narrow gap (at pause 2) with insertion loss low enough for the OTDR to test through.

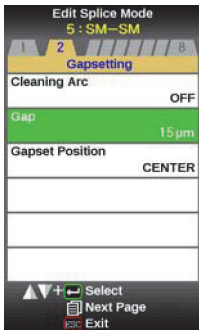

Fig. 14

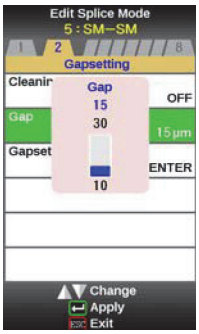

Fig. 15

Fig. 16

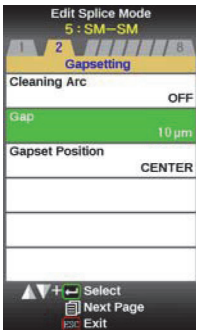

Fig. 17

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6. Set align to manual. This is important as no other alignment method will maintain the narrow gap at pause 2. With (align) set to manual, the 70S will perform initial X/Y alignment based on the fiber cladding.

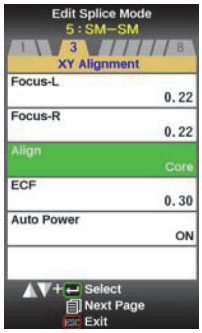


Fig. 18

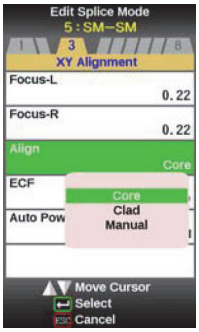


Fig. 19

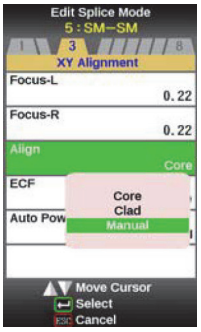


Fig. 20

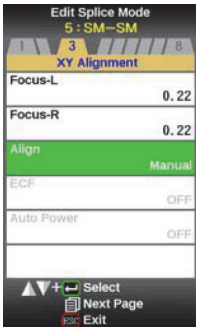


Fig. 21

7. Exit from (Edit Splice Mode).

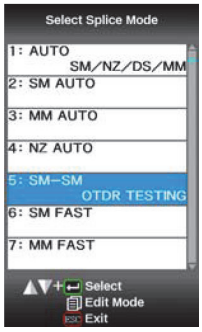


Fig. 22

8. Exit from (Select Splice Mode).

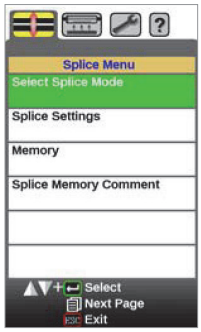


Fig. 23

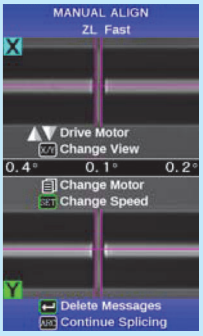
Ghost

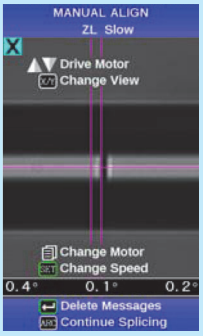
Depending on the fiber and the cleaves, a ghost may be present in the trace.

It may be possible to eliminate the ghost by driving the fibers to a narrower gapset.

1. At pause, press the (Set) hey to change speed to slow.
2. Press the up arrow in short successions to drive the Z-motor forward to a narrow gaps.

This should eliminate the ghost.





NOTE: Reducing pulse width on the OTDR can also help to eliminate ghosts.

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9. At page 1 of (Splice Settings) Turn (Pause 2) to on.

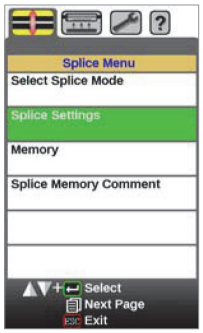

Fig. 26

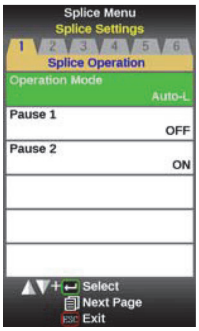

Fig. 27

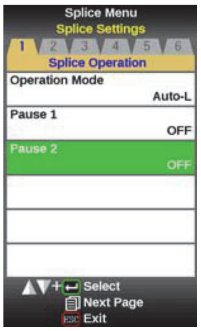

Fig. 28

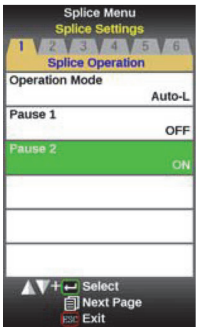

Fig. 29

Operation:

1. Prepare launch fiber (strip, clean and cleave), and load into splicer.

2. Prepare fiber for test (strip, clean and cleave), and load into splicer.

3. Press the (SET) key and wait for (Pause 2).

4. Perform OTDR test.

5. Press (REST)

6. Repeat steps 2-4 for the next fiber to be tested.