S122M8/M12 Ultra-Compact Fusion Splicer for Optical Multi-Fiber Ribbon

1. OUTLINE

The S122M8 (for up to eight fibers) and the S122M12 (for up to twelve fibers) fusion splicers have been developed as successor machines to the S199M8 and S199M12 multi-fiber ribbon fusion splicer, respectively. Being positioned as the sister machine of the S122M4 (for up to four fibers), an ultra-compact fusion splicer for FTTH splicing work brought into the market in March, 2006, these splicers have been developed based on the concept of "to enable easy and assured optical fiber splicing anytime, anywhere and by anyone." Thus the S122M8/M12 is provided with compact, lightweight and easy-to-use unit geometry together with a GUI interface offering intuitive and user-friendly operationality, and is applicable to trunk line splicing work involving DSFs. The development of the S122M8/M12 is targeted at expanding the concept of the S122M4 ultra-compact fusion splicer to multiple-fiber ribbons of eight and twelve fibers, and the splicers integrate newly developed functions to enable stabilized fusion splicing of multiple fibers, rendering them a model superior to the S122M4.

2. FEATURES

2.1 Compactness and Lightweight

The S122M8/M12 has been designed based on the miniaturization technology of the S122M4 ultra-compact fusion splicer, making it possible to splice up to eight or twelve fibers with a slight increase of 13 mm in height and 0.1 kg in mass compared to the S122M4. Figure 1 shows the appearance of the S122M12. The outer dimensions are 140W x 189D x 86H excluding projections. The main unit weighs 960 g, a 50% reduction in volume and 70% reduction in weight compared to Furukawa's S199M12 multi-fiber ribbon splicer.

Figure 1 Appearance of S122M12.

2.2 Automatic Program Selection

The S122M8/M12 counts the number of fibers in the ribbon, and automatically selects a suitable splicing program to start splicing. This eliminates the need for replacing the fusion splicing program every time the number of fiber changes.

2.3 Correction of Bent Optical Fiber

Some of the optical fibers may, when a long time has elapsed after installation, be bent to the right and left side or up and down, making proper setting into the V groove of optical fiber fusion splicer difficult. The reformer is a jig to correct bent fibers, and can properly set a bent fiber by fine adjusting the direction of the bending. One can leave it intact after setting, and close the wind shield to proceed to fusion splicing.

2.4 Automatic Fiber Positioning

In case a large misalignment of optical fiber is encountered, this mechanism automatically vibrates the fiber clamp to drop the fiber into the bottom of the V groove, thereby lessening the misalignment. Manual vibration is also possible. Simultaneous use of the reformer above mentioned will enhance the effectiveness.

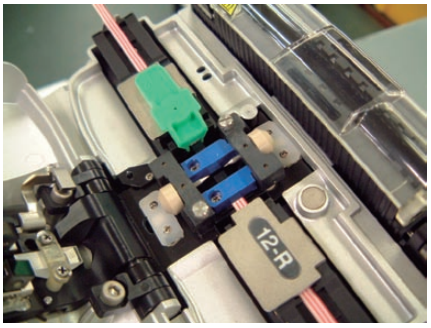

Figure 2 Reformer installed on S122M12.

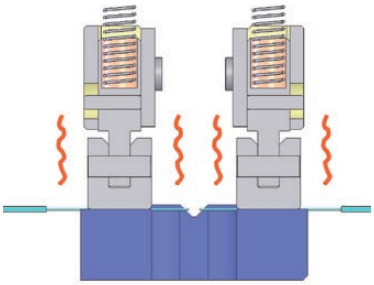

Figure 3 Automatic fiber positioning.

2.5 High-Speed Splicing

The S122M8/M12 takes 15 sec for either eight or twelve fiber ribbons, the fastest in the industry, and heat shrinking the reinforcement sleeve after splicing takes 45 sec.

2.6 Automatic Control of Fusion Temperature

Based on the heating conditions of optical fibers during fusion splicing, arc discharge is controlled in real time to stabilize the heating temperature. This enables to achieve stabilized and low splicing losses, even when any environmental changes should occur during the work.

2.7 Installed Useful Functions

A number of user-friendly and useful functions that have enjoyed a good reputation in the S122M4 ultra-compact fusion splicer have been installed including: a GUI offering intuitive and straightforward operationality; a translucent color LCD monitor capable of displaying clear images even outdoors; fiber image display with a maximum magnification ratio of 56 by means of zooming; memory function for fiber image storage; a helpful counter for maintenance of accessory tools (cleaver and stripper); alarm function which warns when it is time to replace the cleaver blade; and photo illustration of the maintenance guide.

Figure 4 Automatic arc discharge control.

Figure 5 Maintenance guide screen.

3. PRODUCT SPECIFICATIONS

The main specifications are shown in Table 1.

The S122M8/M12 is applicable to splicing not only SM, MM, and DS fibers but also NZDS fibers. History of splicing loss estimation data (splicing loss history) can be stored up to 12,000 fibers, i.e. 1,000 times x 12 fibers, at maximum. Also, the S122M8/M12 can code and memorize as many as 150 programs of fusion splicing.

Table 1 Main specifications of S122M8/M12.

Item	Specification
Applicable fiber type	SM, MM, DS, NZDS
Applicable fiber count	S122M8: Single to eight S122M12: Single to twelve
Splicing loss	SM: 0.05 dB MM: 0.03 dB DS: 0.08 dB NZDS: 0.08 dB
Screening force	1.96 N
Fusion splicing time	15 sec for SM fiber
Heat-reinforcing time	45 sec for S924 sleeve
Splicing loss data	1,000 items
Number of programs	Splicing: 150 max. Heat-reinforcing: 12 max.
Outer dimensions	140W x 189D x 86H mm excluding projections
Weight	Main unit: 960 g Battery: 170 g
Capacity of standard battery	Fusion splicing: 80 times Fusion splicing plus heat-reinforcing: 40 times
Applicable sleeve	40 mm and 60 mm in length

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