



US006711328B2

(12) **United States Patent**
Griffioen et al.

(10) **Patent No.:** **US 6,711,328 B2**
(45) **Date of Patent:** **Mar. 23, 2004**

(54) **INSTALLATION BUNDLE WITH SPACER**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/904,941**

(22) Filed: **Jul. 12, 2001**

(65) **Prior Publication Data**

US 2003/0012527 A1 Jan. 16, 2003

(51) **Int. Cl.**⁷ **G02B 6/44**

(52) **U.S. Cl.** **385/100; 385/112; 385/109**

(58) **Field of Search** **385/100, 135, 385/137, 136, 114, 53, 76, 77, 123, 109-112**

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(57) **ABSTRACT**

A filling body is inserted together with a loose bundle of guide tubes during installation in an existing protective duct, thus enlarging the bundle diameter (which reduces the buckling risk) and making crossing of the guide tubes impossible. The guide tubes are positioned along the outside of the filling body, providing access to the guide tubes during post-installation branching. The filling body may include radially projecting spacer ribs that separate the guide tubes, thereby preventing crossing movement and helical stranding. The guide tubes are thus constrained and carried along with the filling body in alignment with the spacer ribs, so that buckling, helical stranding and three-dimensional restrictions or tangles cannot occur. The filling body may include a thin tubular sidewall enclosing a longitudinal airflow passage that may be pressurized during installation, and deformable when unpressurized, thus providing mechanical protection against damage of the protective duct after installation.

29 Claims, 4 Drawing Sheets

