

Stratoflex

*Crashworthy Fuel Breakaway Valves
for the Aerospace Industry*

*Catalog 106-CFBV
August 1999*



The World Standard

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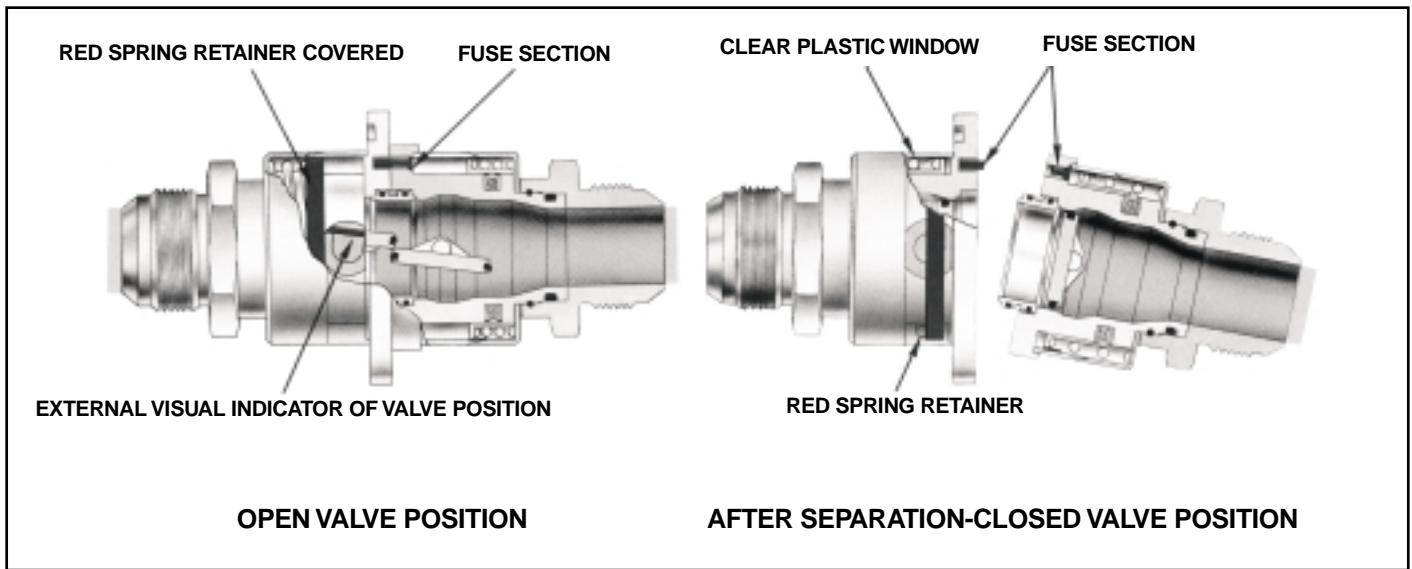
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Stratoflex Crashworthy Fuel Breakaway Valves



APPLICATIONS:

Proven lifesavers, Stratoflex breakaway valves* separate under crash loads on fluid lines exceeding a predetermined value. Upon separation, the valves automatically seal the fluids in the lines to effectively prevent spills. Breakaway valves are typically used on fuel lines, main fuel tanks, extended range aircraft auxiliary fuel tanks, air-to-air refueling systems, and fall away external tanks. Tank vent lines often use the single valve versions.

DESIGN FUNCTION:

The basic design incorporates a butterfly valve mounted to a cam shaft loaded by a coil spring. This design allows for a small envelope, lightweight and minimum pressure drop across the coupling. The mechanism consists of two valve plates and/or a single plate and detent post, which are held against each other by spring action until the fuse section separates to allow valve closure. During this movement, leakage is prevented by an internal sealing sleeve. This construction permits a clean valve passage, minimizing ice formation and contamination. No parts are released to interfere with the valve operation during closure.

The primary function of breakaway valves is to protect attached fuel system lines from damage due to excessive separation loads. Breakaway valves safely separate at the fuse area, preventing fuel line rupture while sealing the fuel lines before the attached plumbing material can be stressed to the point of failure or leakage. The breakaway fuse is usually designed to separate at 25 to 50% of the attached plumbing's normal strength, allowing controlled and safe separation in the line, and valve closure before damage occurs.

MATERIALS:

Available in aluminum alloy, stainless steel, titanium, and other special materials. Stratoflex representatives will provide assistance on selection materials.

SIZES:

The breakaway valves are available in sizes from 3/8" to 3" with both single and dual valve closures.

TROUBLE-FREE INSTALLATION:

End fittings are free to swivel during installation, preventing torque from being transmitted to the fused section. They also permit easy bolt hole alignment of flange mounted couplings.

In the rare event of damage during maintenance, which may cause minor separation and valve closure, a red spring retainer moves forward and becomes visible through the plastic window, 360 around the coupling, indicating a closed valve. The Stratoflex design allows the fuse elements which control separation to be replaced at nominal cost.

*Patent Pending

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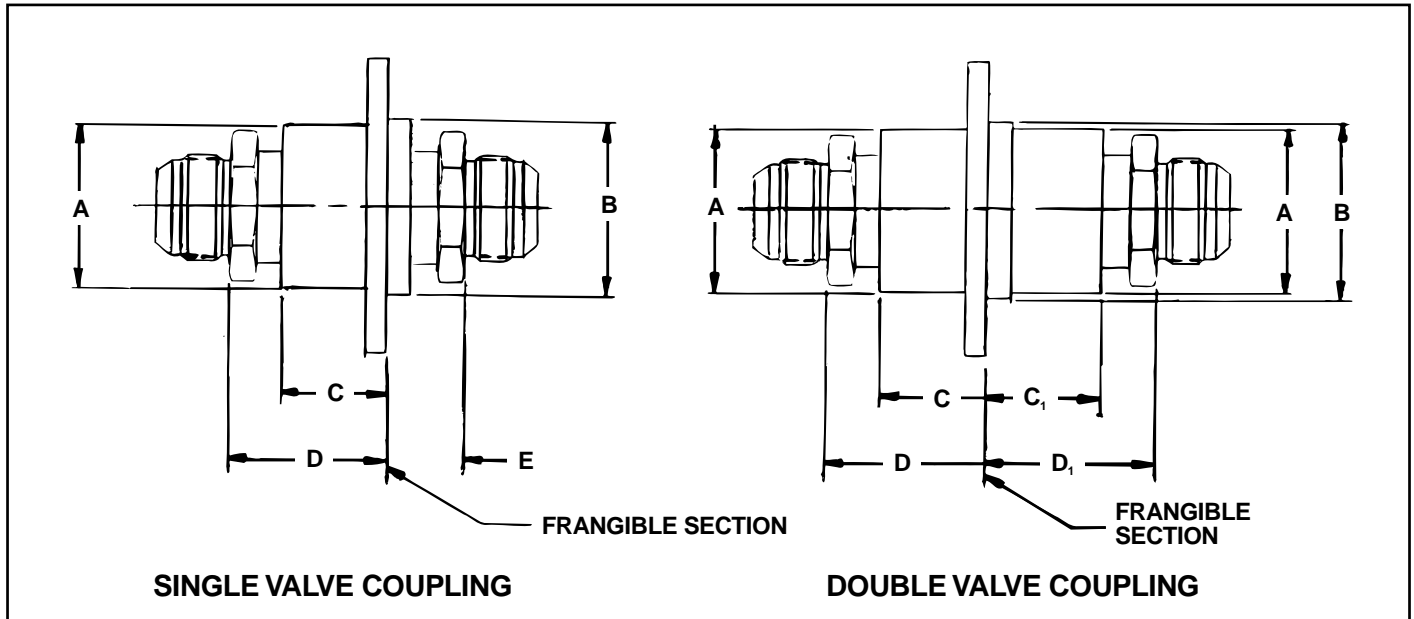


TABLE OF COUPLING ENVELOPE DIMENSIONS

Tube Size (Inches)	Dimensions in Inches (Millimeters)						
	A	B MAX	C	C ₁	D	D ₁	E
1/2 / 3/4	1.50 (38.1)	1.50 (38.1)	1.19 (30.2)	1.01 (25.6)	1.76 (44.7)	1.58 (40.1)	0.93 (23.6)
1	2.06 (52.3)	2.18 (55.4)	1.61 (40.9)	1.36 (34.5)	2.17 (55.1)	1.92 (48.8)	1.13 (28.7)
1-1/2	2.50 (63.5)	2.52 (64.0)	1.68 (42.7)	1.43 (36.3)	2.24 (56.9)	1.99 (50.5)	1.20 (30.5)
2	3.20 (81.3)	3.25 (82.5)	1.85 (47)	1.60 (40.6)	2.85 (72.4)	2.60 (66)	1.25 (31.8)
2-1/2 / 3	4.25 (108)	4.25 (108)	2.18 (55.4)	1.93 (49)	3.12 (79.2)	2.87 (72.9)	1.25 (31.8)

TABLE OF COUPLING CHARACTERISTICS

Tube Size (Inches)	Single Valve Max. Weight LBS (KGS)	Double Valve Max. Weight LBS (KGS)	Rated Flow GPM (LPM)	Pressure Drop at Rated Flow PSI (BARS)	Fluid Loss CC
1/2 / 3/4	0.77 (0.35)	1.00 (0.45)	20 (76)	4.0 (.28)	8
1	0.90 (0.41)	1.15 (0.52)	50 (189)	3.0 (.21)	15
1-1/2	1.40 (0.64)	2.19 (0.99)	120 (454)	3.0 (.21)	50
2	1.72 (0.78)	3.12 (1.42)	200 (757)	1.5 (.10)	70
2-1/2 / 3	2.27 (1.03)	4.09 (1.86)	300 (1135)	2.5 (1.7)	140

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7. Special Tooling: A tooling charge may be imposed for any special tooling, including without limitation, dies, fixtures, molds and patterns, acquired to manufacture items sold pursuant to this contract. Such special tooling shall be and remain Seller's property notwithstanding payment of any charges by Buyer. In no event will Buyer acquire any interest in apparatus belonging to Seller which is utilized in the manufacture of the items sold hereunder, even if such apparatus has been specially converted or adapted for such manufacture and notwithstanding any charges paid by Buyer. Unless otherwise agreed, Seller shall have the right to alter, discard or otherwise dispose of any special tooling or other property in its sole discretion at any time.

8. Buyer's Property: Any designs, tools, patterns, materials, drawings, confidential information or equipment furnished by Buyer or any other items which become Buyer's property, may be considered obsolete and may be destroyed by Seller after two (2) consecutive years have elapsed without Buyer placing an order for the items which are manufactured using such property. Seller shall not be responsible for any loss or damage to such property while it is in Seller's possession or control.

9. Taxes: Unless otherwise indicated on the face hereof, all prices and charges are exclusive of excise, sales, use, property, occupational or like taxes which may be imposed by any taxing authority upon the manufacture, sale or delivery of the items sold hereunder. If any such taxes must be paid by Seller of if Seller is liable for the collection of such tax, the amount thereof shall be in addition to the amounts for the items sold. Buyer agrees to pay all such taxes or to reimburse Seller therefore upon receipt of its invoice. If Buyer claims exemption from any sales, use or other tax imposed by any taxing authority, Buyer shall save Seller harmless from and against any such tax, together with any interest or penalties thereon which may be assessed if the items are held to be taxable.

10. Indemnity For Infringement of Intellectual Property Rights: Seller shall have no liability for infringement of any patents, trademarks, copyrights, trade dress, trade secrets or similar rights except as provided in this Part 10. Seller will defend and indemnify Buyer against allegations of infringement of U.S. patents, U.S. trademarks, copyrights, trade dress and trade secrets (hereinafter "Intellectual Property Rights"). Seller will defend at its expense and will pay the cost of any settlement or damages awarded in an action brought against Buyer based on an allegation that an item sold pursuant to this contract infringes in the Intellectual Property Rights of a third party. Seller's obligation to defend and indemnify Buyer is contingent on Buyer notifying Seller within ten (10) days after Buyer becomes aware of such allegations of infringement, and Seller having sole control over the defense of any allegations or actions including all negotiations for settlement or compromise. If an item sold hereunder is subject to a claim that it infringes the Intellectual Property Rights of a third party, Seller may, at its sole expense and options, procure for Buyer the right to continue using said item, replace or modify said item so as to make it noninfringing, or offer to accept return of said item and return the purchase price less a reasonable allowance for depreciation. Notwithstanding the foregoing, Seller shall have no liability for claims of infringement based on information provided by Buyer, or directed to items delivered hereunder for which the designs are specified in whole or part by Buyer, or infringements resulting from the modification, combination or use in a system of any item sold hereunder. The foregoing provisions of this Part 10 shall constitute Seller's sole and exclusive liability and Buyer's sole and exclusive remedy for infringement of Intellectual Property Rights.

If a claim is based on information provided by Buyer or if the design for an item delivered hereunder is specified in whole or in part by Buyer, Buyer shall defend and indemnify Seller for all costs, expenses or judgments resulting from any claim that such item infringes any patent, trademark, copyright, trade dress, trade secret or any similar right.

11. Force Majeure: Seller does not assume the risk of and shall not be liable for delay or failure to perform any of Seller's obligations by reason of circumstances beyond the reasonable control of Seller (hereinafter "Events of Force Majeure"). Events of Force Majeure shall include without limitation, accidents, acts of God, strikes or labor disputes, acts, laws, rules or regulations of any government or government agency, fires, floods, delays or failures in delivery of carriers or suppliers, shortages of materials and any other cause beyond Seller's control.

12. Entire Agreement/Governing Law: The terms and conditions set forth herein, together with any amendments, modifications and any different terms or conditions expressly accepted by Seller in writing, shall constitute the entire Agreement concerning the items sold, and there are no oral or other representations or agreements which pertain thereto. This Agreement shall be governed in all respects by the law of the State of Ohio. No actions arising out of the sale of the items sold hereunder or this Agreement may be brought by either party more than two (2) years after the cause of action accrues.

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