

BALVAC®

14000 Series Self-Sealing Breakaway Fuel Valves (couplings) for crash-resistant fuel systems.



NEW FEATURE:

**The only Self-Sealing
Breakaway Valve
coupling with pure
Centrip® captive release.**

- Avoids flow loss from overlapped valve members
- Reacts with early closing upon partial separation
- Optimum response with circumferential separation from any direction
- No loose parts

Spectrum introduces a new and improved series of BALVAC® Self-sealing Breakaway fuel valves that are designed to close upon separation and seal off fuel lines in response to structurally induced shear, tension or bending forces.

These patented valves are installed where fuel lines connect to tanks, between tanks, at firewalls, and other points where hard landing can cause fuel system leaks.

BALVAC® Breakaway valves separate and shut off fuel lines with negligible loss of fluid during separation (See Table). Self-sealing mechanism survives high impact without damage. Precision seals of specially-reinforced Teflon compound are protected from fuel flow.

BALVAC® valves have been designed and qualified to meet MIL-STD-1290 and AIR 1616 requirements. (See Guidelines of typical separation loads for selected valve usage.)

Simple design specifies qualified frangible elements in Franginsert® construction. Upon separation, Centrip®, a captive hemispherical trigger, leaves

its mating socket releasing each ball valve to instantly rotate. Balls close securely against limit stops, driven by rugged torsion springs.

Valve balls are also mechanically grounded in standby open position providing uninterrupted fuel flow and negligible pressure drop through the valve.

BALVAC® Breakaway Fuel Valves are currently qualified and specified on modern aircraft including the CH-53E, MH-60S, HH-60G and SH-2G.

Spectrum is the leader in self-sealing breakaway ball valves. Send us your specifications. Our engineers will promptly design a BALVAC® valve for you. We currently manufacture more than 85 models. Chances are, one may meet your existing or planned specifications.

Avoid fuel leakage hazards of aircraft structural damage from hard landings.



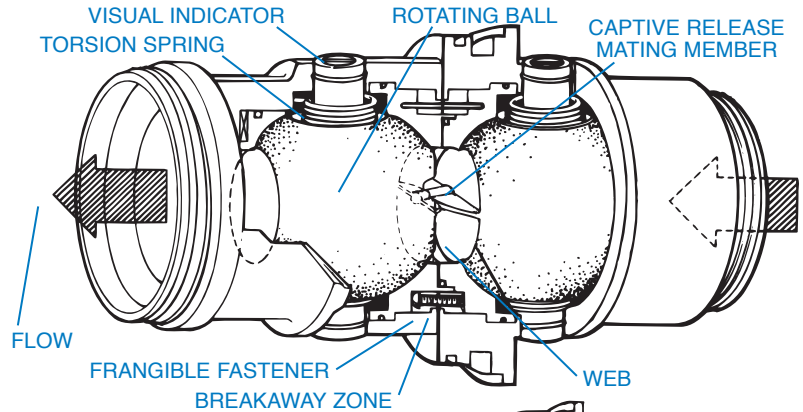
Spectrum®



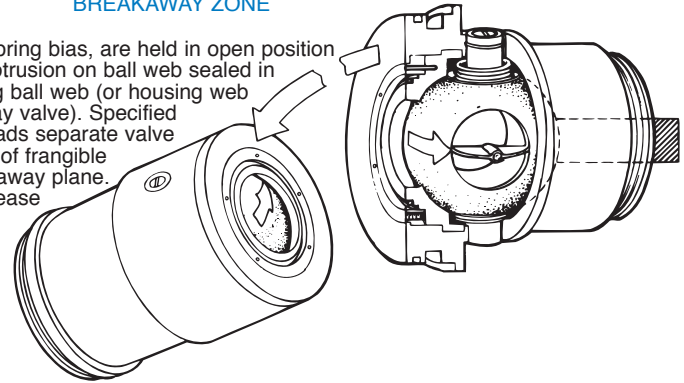
BALVAC® Self-Sealing Breakaway Fuel Valves

Advantages:

- Single or double shut-off valves
- Economical affordable assembly
- Small size, light weight, rugged construction
- Only two moving parts (double valve)
- Superior design simplicity
- Patented rotating member with Centrip® release
- Mechanically-grounded open-closed positions
- Negligible pressure drop improves hot day performance
- Low profile/bore ratio
- Ball seals protected from fuel flow
- Closed ball surface, debris resistant
- External visual indication open-closed
- No leakage prior to separation
- Retrofits poppet, butterfly or flapper designs
- Production, flight proven
- MS Environmentally sealed
- Fully qualified

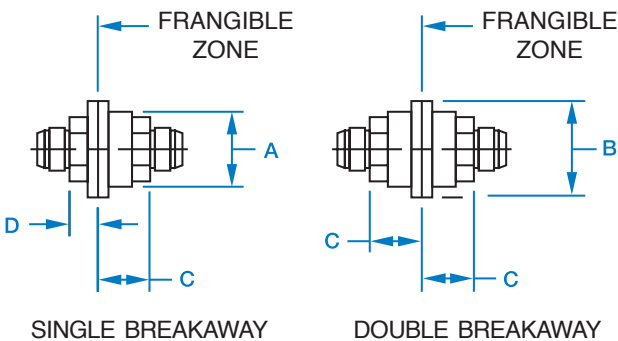


Valve balls, with spring bias, are held in open position by hemisphere protrusion on ball web sealed in socket of opposing ball web (or housing web in single breakaway valve). Specified structural crash loads separate valve halves by fracture of frangible elements at breakaway plane. Captive trigger release upon separation. Valve balls rotate 90° against stops to the fully closed position. Ball surface secure against reopening by crash debris.



Tube Size Inches	Dimensions In Inches			
	A	B	C	D
1/2	1.28	1.70	1.18	0.62
3/4	1.62	2.00	1.61	0.62
1	1.84	2.24	1.78	0.62
1-1/2	2.45	2.84	2.28	0.62
2	3.34	3.75	3.19	0.62

Tube Size (In)	Single Weight (Lbs)	Double Weight (Lbs)	Rated Flow (GPM)	Pressure Drop (PSI)	Spillage (CC)
1/2	0.60	1.70	10	0.1	3
3/4	0.70	0.90	20	0.1	6
1	0.81	1.01	50	0.2	10
1-1/2	1.41	1.81	100	0.2	10
2	2.50	3.62	3.00	0.4	35



TYPICAL BREAKAWAY LOAD CALCULATION

Item	Lowest Failure Load (Lb.)*	Failure Mode
Flex Hose	3000	Tension Breakage
Flex Hose	1500	Pull out of End Fitting
Tank Fitting	7500	Pull Out of Tank
Hose End Coupling	1650	Break (Bending)
Breakaway Valve	2500	Pull Out of Tank Fitting
Breakaway Valve	Not more than 1500 = 750	Break at Frangible Section
	2	
	Not less than 1500 = 375	
	4	

* Loads may or may not be representative; values are for explanatory purposes only.

Typical method of breakaway load calculation guidelines (tank installation used as example only; basic technique applicable to other configurations.)



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From concept through production.

