



SPACE THROUGH-BULKHEAD INITIATOR (TBI)

Pyroalliance designs and produces a series of Through-Bulkhead Initiators (TBI) for the European Ariane and Vega launcher families.

TBIs are designed to ignite the propellant in a solid rocket motor and also guarantee tightness after functioning between upstream and downstream side of bulkhead, preventing any pressure loss.

They are a key component of the propulsion function reliability/safety.

TBIs belong to a pyrotechnic chain which ensures transition from a detonating signal stemming from a detonating transfer line into the combustion of an ignition load, across a tight barrier.

TBIs, combined with other Pyroalliance's products, are part of Ignition pyro-chains for solid rocket motors or retro-rockets. They are designed and manufactured under Pyroalliance design authority.

Through Bulkhead Initiator (TBI)

Operation mode

When the upstream detonating transfer line is activated, the detonating signal is transmitted via the TBI from the donor charge to the receptor charge through the tight barrier. The signal is then converted into combustion mode by the TBI ignition mix, to trigger the downstream igniter train. TBIs operate through a shock wave stemming from the detonating line.

Benefits

TBIs provide:

- Structural barrier preventing loss of pressure of downstream elements
- Mass savings through the reduced quantity of embedded electrical power
- Free from primary explosives, therefore one single Safe & Arm Device at the beginning of the pyrotechnic chain is sufficient
- Reduced dispersion of ignition times
- High level of safety (EMC and lightning immunity)

Applications

- Single pulse solid propellant motors ignition, from retro-rockets (few kilograms) to heavy boosters.



Ariane 5

Ariane 6

VEGA

Key figures

Operating time:	< 5ms
Output energy:	Range of 3000 J
Ignition mode:	Detonating line
Donor & Receiver loading:	RDX
Leak rate:	Better than 10^{-6} scc/sec after functioning
Operating temperature:	-53°C to + 71°C
Storage life time:	7 years (depending on storage conditions)

[For more information please contact us.](#)
[Visit our website: www.pyroalliance.com](http://www.pyroalliance.com)

Product Classification

- Number UN: UN0454 and UN designation: Igniters
- Explosive Class: 1.4S in storage & delivery configuration
1.3C out of storage configuration
- Not restricted by ITAR regulations
- This product is certified in accordance with the European Directive: 93/15/CEE-CE
Certificate number: 0080.EXP.07.011

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Produced by the Communication Department of Pyroalliance

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