

Disk Rotor Helicopter

The Disk Rotor Helicopter (DRH) is based on the idea to stow the rotor blades in a circular disk and to use this disk as a fixed wing during the cruising flight. This idea has been published already in October 1962 by Dr. W. Just in a German book „Helicopters and VTOL Aircraft“ and studied by Robert H. Stroub of Ames Research Center in NASA Tech Briefs, November 1992 „Smoother Conversion From Helicopter to Airplane“.

The DRH can take off, hover and land as a conventional helicopter, climb to cruising altitude and approach for landing as a gyrocopter and cruise as a fixed wing airplane. The roll and pitch control in the airplane configuration is executed by elevons on the horizontal tail.

The Disk Rotor solves all problems coming with each attempt to fly fast with a conventional helicopter. Conventional helicopter rotor is good for hovering, but flying fast with it, is an aerodynamic crime. The jet stream is good for fast flying, but to hover with it is not economical, due to lack of autorotation unsafe and even for military use unacceptable noisy. The Disk Rotor combines advantages of both systems and has an enormous development potential. A whole family of fast flying machines with vertical take off and landing, ranging from UAV over light, business and transport helicopter, Joint Strike Fighter and even a **supersonic helicopter** is feasible. The circular disk has similar aerodynamic abilities as a delta wing, which has no bad habits in the whole speed range and is particularly suitable for high speed flying.

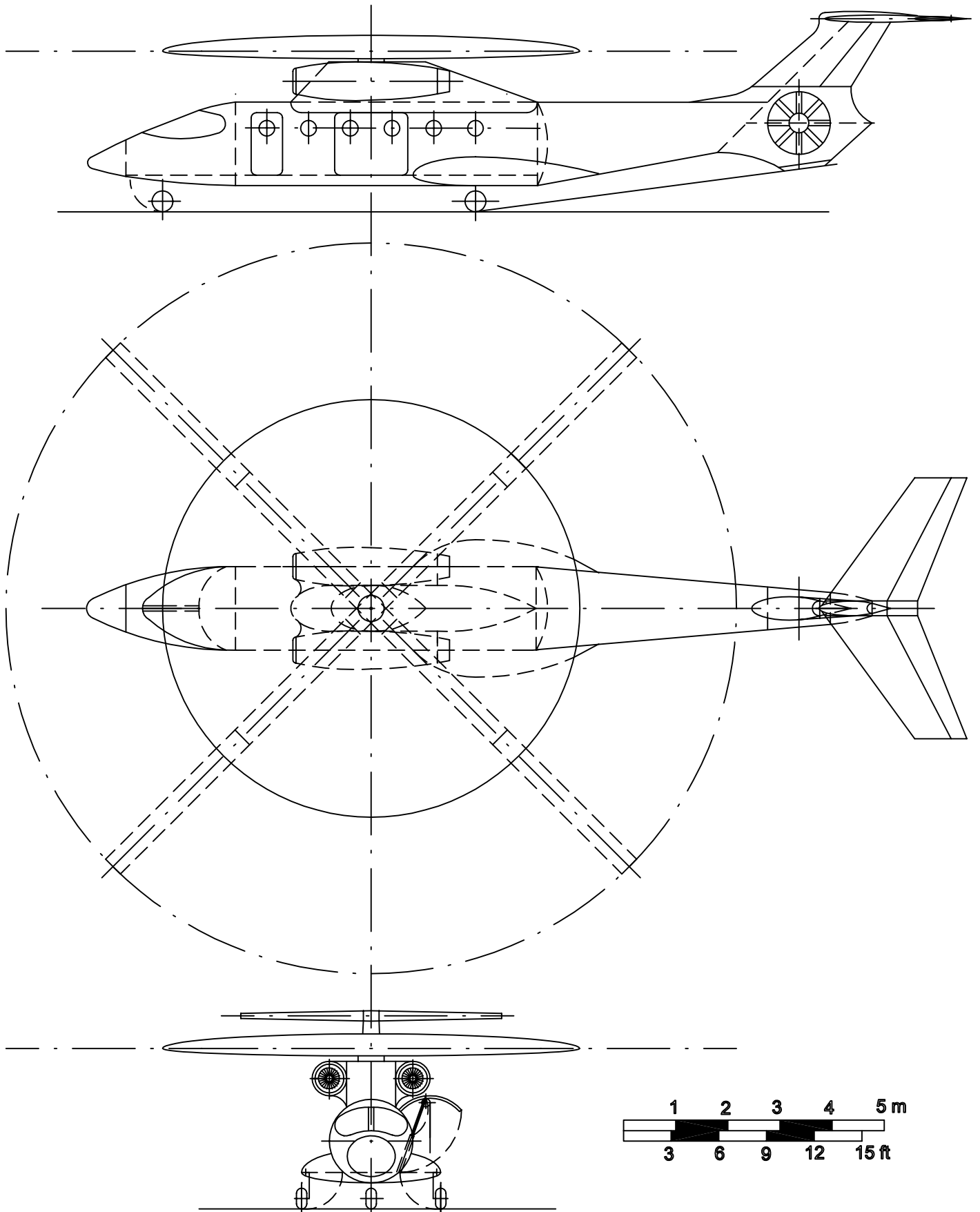
The biggest advantage of the Disk Rotor Helicopter in comparison with other flying machines is the **safety** at each phase of flight operation. If an engine fails during a lift off or climbing, the heavy rotor has enough kinetic energy for a safe emergency landing in autorotation with nearly zero forward speed. If an engine fails during a cruising flight at sufficient altitude, the pilot has enough time to extend the rotor blades, convert the altitude into rotor kinetic energy and initiate an emergency landing as above. Also the **conversion from helicopter to fixed wing airplane and back is a completely safe procedure** because only the rotor diameter changes and the machine stays „as usual“ controllable during the whole procedure. The pilot needs only to push a button in order to retract or extend the rotor blades and adjust the power flow from rotor to jet stream or back again.

The machine shown on the drawing and on the 3D views is a **VTOL business jet** able to transport 6 – 8 passengers with max. **speed limited only by the installed power**.

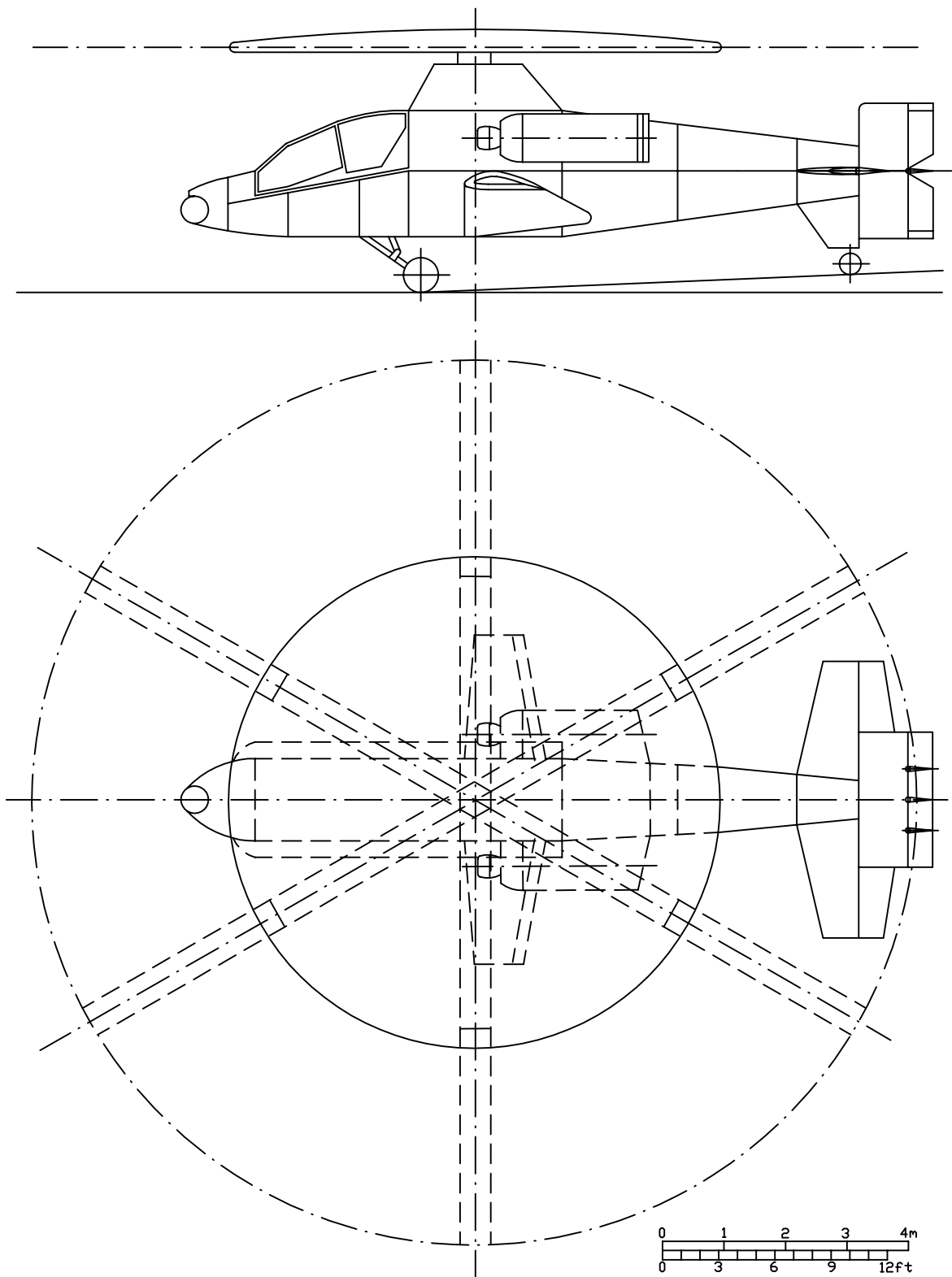
The machine shown on the drawing only is an Apache AH-64 military helicopter **upgraded with the Disk Rotor and a Ducted Propeller** able to cruise with 300 knots in the “clean” configuration.

Please direct your questions and comments if any to

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Disk Rotor Helicopter with 2 Convertible Fan-Shaft Engines
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**Apache AH-64 Attack Helicopter upgraded
with Disk Rotor and Ducted Propeller
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