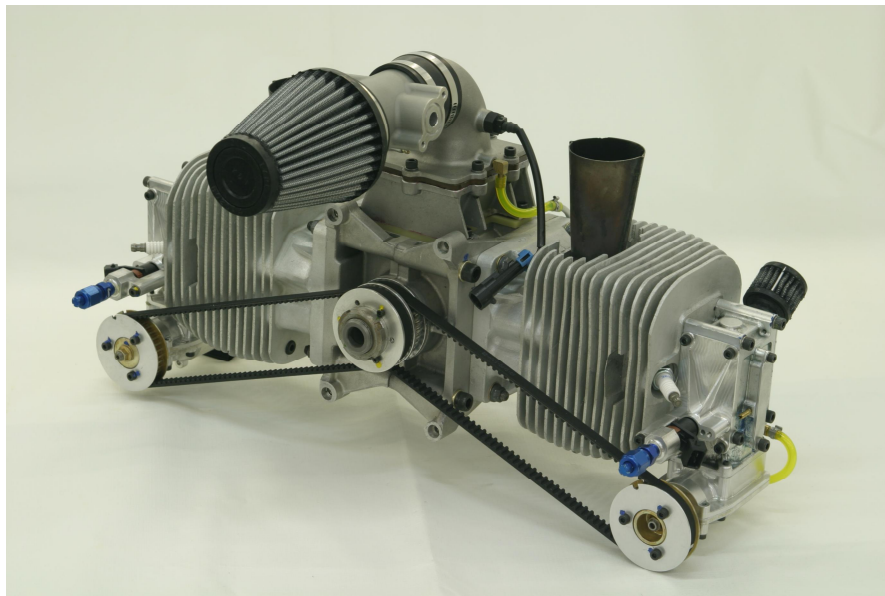


# **XRDi 400 Multi-fuel Engine**

## **Engine Overall:**

<b>Engine</b>	<b>XRDi 400</b>
<b>Type</b>	<b>Boxer Twin Cylinder, two stroke</b>
<b>Displacement</b>	<b>400 cm<sup>3</sup></b>
<b>Mixture Control</b>	<b>MCDI (XRDi patented direct injection technology)</b>
<b>Stroke</b>	<b>60 mm</b>
<b>Bore</b>	<b>65.15 mm</b>
<b>Power</b>	<b>35 hp</b>
<b>Ignition</b>	<b>Dual Spark Plug ECU Controlled</b>
<b>Cooling</b>	<b>Liquid or Air cooled versions available</b>
<b>Weight</b>	<b>33 lb. with electronics</b>
<b>Speed Range</b>	<b>2000-7500 rpm</b>
<b>Fuel</b>	<b>Any US military grade fuel</b>
<b>Lubrication</b>	<b>Oil injection</b>
<b>Temperature Range</b>	<b>Tested to -30 °C to and + 60 °C</b>
<b>Physical Dimensions</b>	<b>21 in X 12 in X 9 in</b>



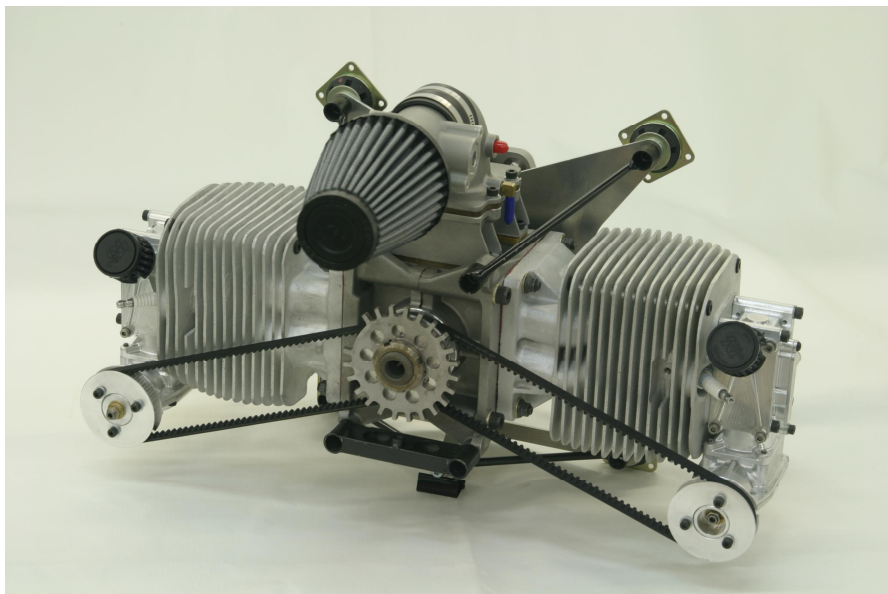
Air Cooled

## **XRDi 400 Multi-fuel Engine**

### **Engine Design:**

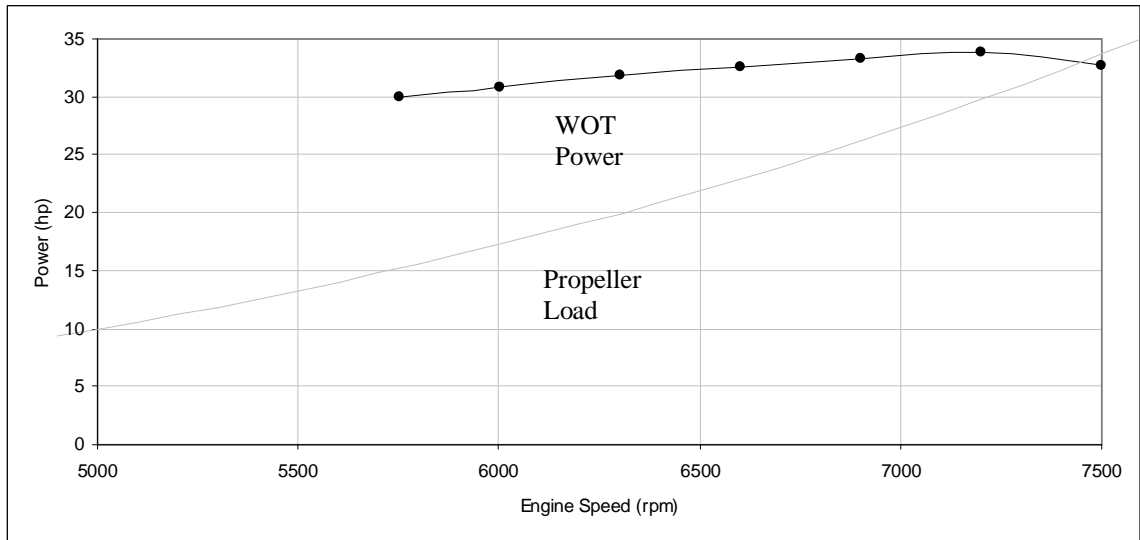
<b>Engine Design</b>	<b>XRDi 400</b>
<b>Cylinders</b>	<b>Aluminum alloy castings with nickel silicon carbide coating</b>
<b>Crankcase</b>	<b>Aluminum alloy</b>
<b>Connecting Rods</b>	<b>Forged steel with caged needle bearings</b>
<b>Crankshaft</b>	<b>High strength steel crankshaft supported by 3 bearings</b>
<b>Engine Control</b>	<b>MotoTron 48 pin ECU</b>
<b>Fuel Metering</b>	<b>Electronic Fuel Injection @ 28.5 psi (200 kPa)</b>
<b>Ignition System</b>	<b>4 spark plugs, 4 coils, ECU Controlled</b>
<b>Spark Plugs</b>	<b>4 NGK DCPR9E</b>
<b>Exhaust System</b>	<b>Short Stack open exhaust upward facing</b>
<b>TBO</b>	<b>&gt;250 hours *</b>
<b>Fuel</b>	<b>Any US military grade fuel</b>
<b>Lubrication</b>	<b>Dual Oil injection pumps</b>
<b>Temperature Range</b>	<b>-30 °C to + 60 °C</b>
<b>Physical Dimensions</b>	<b>21 in X 12 in X 9 in</b>

*The air cooled version of the XRDi 400 was tested by The US Army Aviation and Missile Research Development and Engineering Center (AMRDEC) and successfully completed 150 hours of a FAR 33 test suite.*



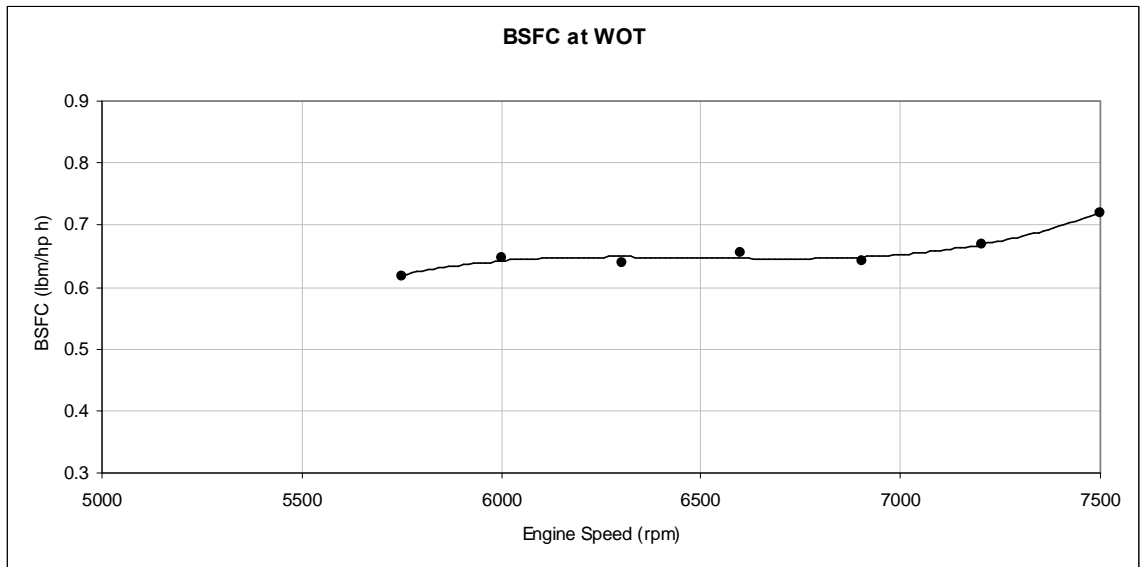
# XRDi 400 Multi-fuel Engine

## Performance:



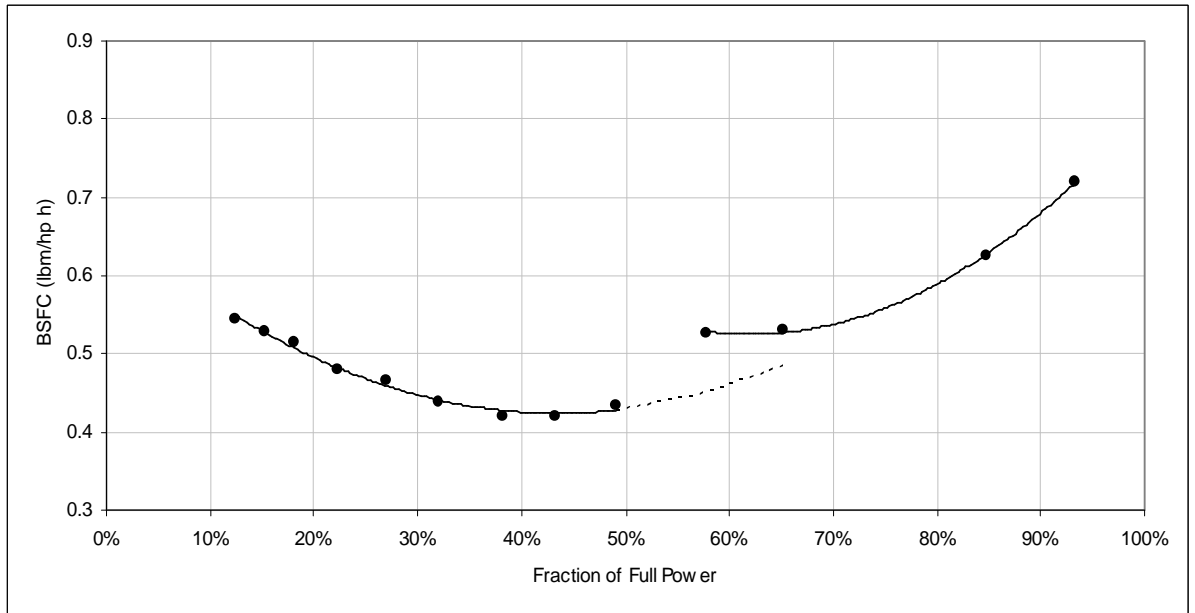
*Measured at steady state for a period of 45 sec. The fuel was JP-8. The light gray line is the same propeller load curve used for the specific fuel consumption results below.*

## BSFC at maximum horsepower (WOT).



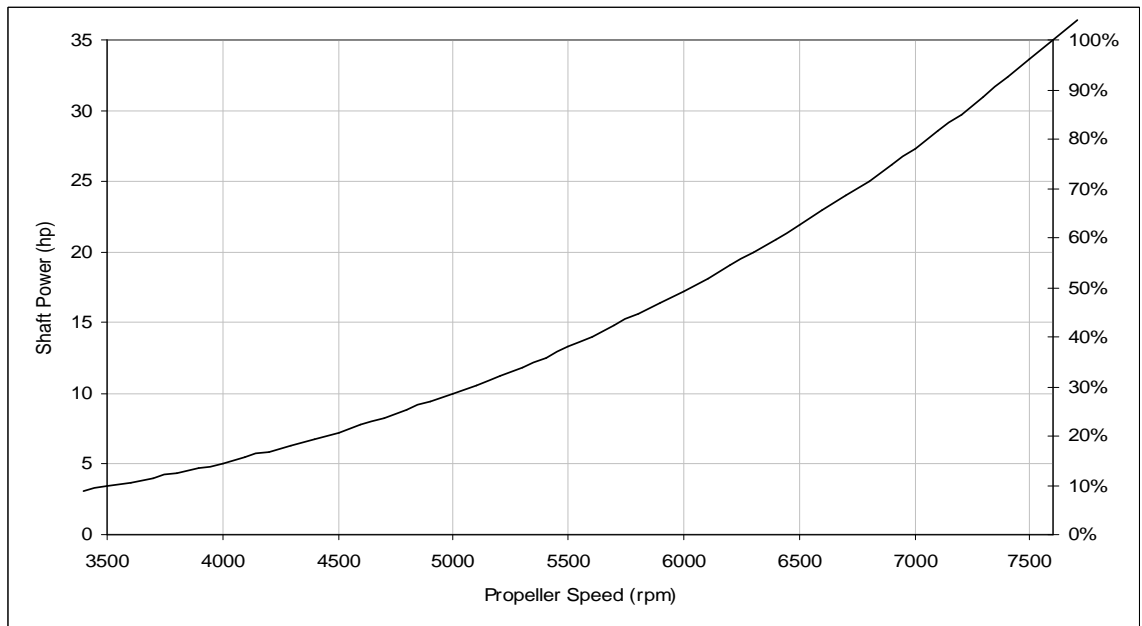
# XRDi 400 Multi-fuel Engine

**BSFC along propeller loading curve:**



*The fraction of full power is given as the fraction of 35 hp. Each point measured at steady state for a period of 60 sec. The fuel was JP-8.*

**Shaft Horsepower:**



## **XRDi 400 Multi-fuel Engine**

**Assembled engine weight breakdown:**

<b>Component</b>	<b>Weight (lb)</b>
<b>Engine (including filters and sensors)</b>	<b>23.7</b>
<b>Lubrication System (2 pumps, less oil tank)</b>	<b>0.5</b>
<b>Electronics (ECU, harness, connectors, coils)</b>	<b>5.2</b>
<b>Cooling System (Liquid cooled version)</b>	<b>2.0</b>
<b>Operational Fluids (water, oil, and fuel)</b>	<b>1.6</b>
<b>Bulkhead Mount (engine and generator)</b>	<b>1.2</b>
<b>Total Package</b>	<b>32.2</b>

**Maintenance:**

<b>Replacement Items</b>	<b>Time to Replacement</b>
<b>Spark Plugs</b>	<b>&gt;150 hours</b>
<b>Compressor Timing Belts</b>	<b>&gt;150 hours</b>
<b>Main Air Intake Filter</b>	<b>100 hours</b>
<b>Compressor Air Intake Filter</b>	<b>150 hours</b>

**Operational temperature limits:**

	<b>Temperature</b>
<b>Low Temperature</b>	<b>- 30° C</b>
<b>High Temperature</b>	<b>60° C</b>