

# BLACK BRANT 5 ROCKET MOTOR

*The Black Brant 5 rocket motor, designed and developed at Magellan Aerospace, can be used as a single or multi-stage vehicle for placing scientific payloads into space, or as a ballistic missile target.*

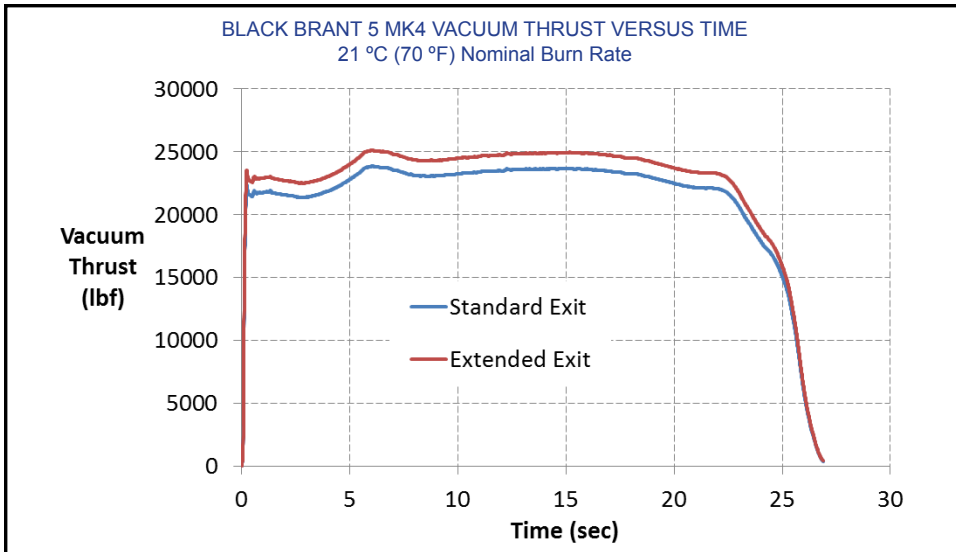
*Since 1962, more than 1,000 Black Brants have been launched with a vehicle success rate of 98.7% (99.4% since 1982).*



Photo © Wallops Imaging Lab

HIGH PERFORMING ROCKET • AFFORDABLE • RELIABLE





## PROPELLANT

The solid propellant is an aluminized hydroxyl-terminated polybutadiene (HTPB) propellant. The propellant grain configuration provides an approximately neutral pressure/thrust-time trace.

## CASE INSULATION/ LINER SYSTEM

The motor case insulation/liner system consists primarily of Kevlar fibre-filled EPDM rubber.

## MOTOR CASE

The motor case is made from 4140 alloy steel and heat treated. Each motor case is hydrostatically proof pressure tested.

## BLACK BRANT MOTOR MASS AND PERFORMANCE PROPERTIES

Units	Post-Fire	Pre-Fire	Property	Pre-Fire	Post-Fire	Units
°F	-10 to 125		Operating/Storage Temperature Range	-23 to 52		°C
sec	26.53		Action Time	26.53		sec
<b>Extended Exit Cone with 4 Fin Tail Assembly:</b>						
lmb	604.7	2819.9	Total Propulsion Unit Weight	1279.1	274.3	kg
lbf-sec	602792		Vacuum Total Impulse at 21 °C	2681.352		kN-sec
<b>Standard Exit Cone with 4 Fin Tail Assembly:</b>						
lmb	566.2	2781.4	Total Propulsion Unit Weight	1261.6	256.8	kg
lbf-sec	572165		Vacuum Total Impulse at 70 °F / 21 °C	2545.117		kN-sec

## MOTOR TO VEHICLE INTERFACES

The Black Brant 5 igniter housing assembly is attached to the motor case head end through the forward tension joint, and the Black Brant 5 aft body assembly is attached to the motor case aft end through the aft tension joint. The four fins are then bolted to the aft body assembly.

## NOZZLE AND EXIT CONE

The nozzle consists of a graphite throat insert and a steel housing. The exit cone consists of a carbon and silica/phenolic liner and a steel housing.

## IGNITER

The igniter contains boron potassium nitrate (BPN) pyrotechnic main charge within a consumable plastic basket, and a booster charge.

## ABOUT MAGELLAN AEROSPACE

Magellan Aerospace is a global aerospace company that provides complex assemblies and systems solutions to aircraft and engine manufacturers, and defence and space agencies worldwide. Magellan designs and manufactures aeroengine and aerostructure assemblies and components for aerospace markets, advanced proprietary products for military and space markets, and provides engine and component repair and overhaul services worldwide. Magellan is a public company whose shares trade on the Toronto Stock Exchange (TSX: MAL), with operating units throughout North America, Europe, and India.

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