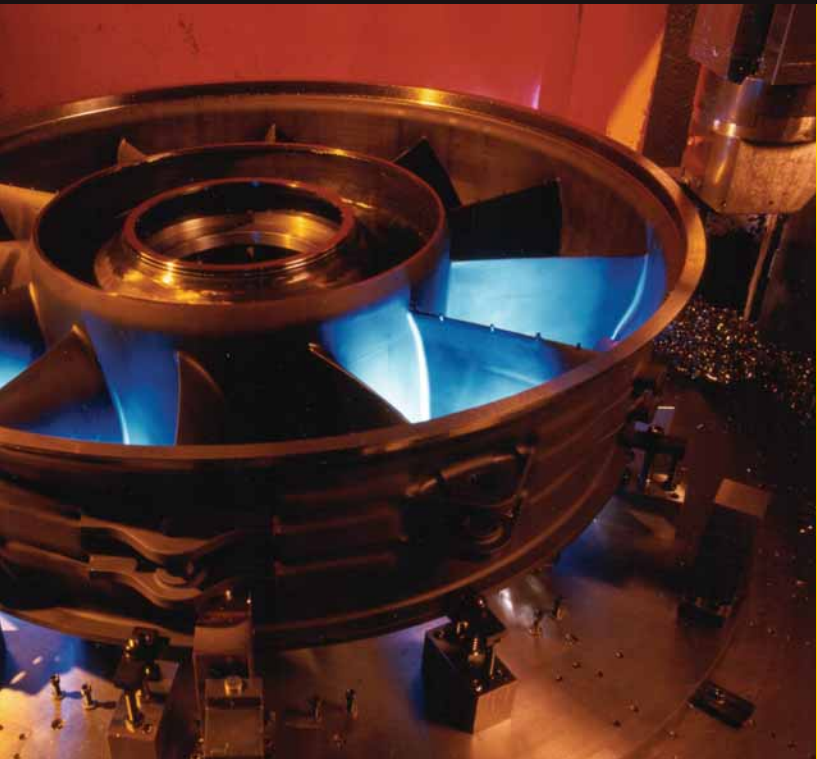




PERFECT YOUR **PERFORMANCE**

Barnes Aerospace  **BARNES**<sup>®</sup>  
GROUP INC

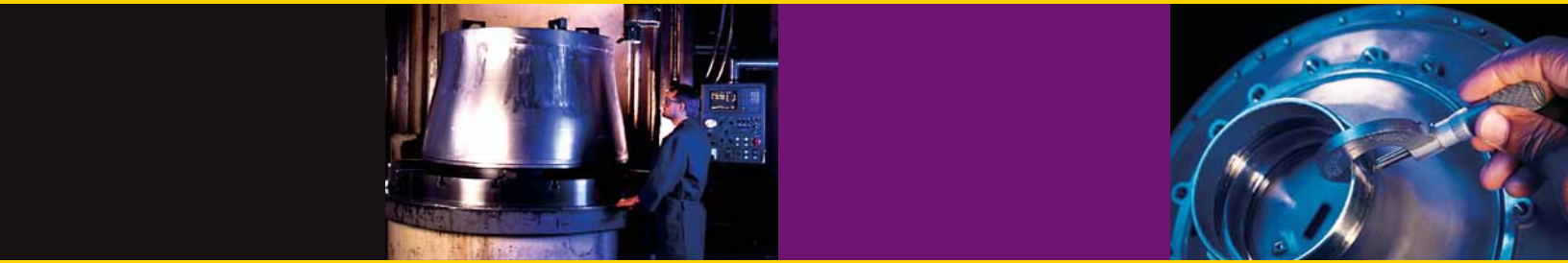
FOR MORE THAN 50 YEARS, BARNES AEROSPACE has been perfecting the art of performance by producing superior machined and fabricated components and assemblies for aircraft engine and airframe manufacturers, while providing comprehensive component overhaul and repair for the United States military and most of the world's major commercial airlines.



## PERFECT YOUR PERFORMANCE

It requires precision, accuracy and expertise. It must be driven by quality and rely on advanced solutions. It must be innovative and consistently surpass the competition.

**It begins with  
Barnes Aerospace.**



## INSIDE BARNES AEROSPACE

**BARNES AEROSPACE** is a business unit of Barnes Group Inc., a diversified international manufacturer of precision metal parts and distributor of industrial supplies, serving a wide range of markets and customers.

Founded in 1857 and headquartered in Bristol, Conn., Barnes Group consists of three businesses:

- **Barnes Distribution** – an international, full-service distributor of maintenance, repair, operating and production supplies
- **Barnes Industrial** – one of the world's largest manufacturers of precision mechanical and nitrogen gas products and a global supplier of retaining rings, reed valves, shock disks and injection-molded plastic components
- **Barnes Aerospace** – a manufacturer and repairer of highly engineered assemblies and components for aircraft engines, airframes and land-based industrial gas turbines

Over 6,600 dedicated employees at more than 65 locations worldwide contribute to Barnes Group's success. The legacy shared between Barnes Group Inc. and Barnes Aerospace is one of innovation, commitment and expertise.





## MISSION-CRITICAL PRECISION

By building components made from high temperature space-age alloys, Barnes Aerospace is able to expedite manufacturing and repairs to meet ongoing military demands both at home and abroad. Barnes Aerospace understands that **speed to market** is critical, and is fully enabled to meet industry standards.

Barnes Aerospace supplies industry components, large subassemblies and support for a variety of military platforms, including:

- F-35 Lightning II
- F-22 Raptor
- F/A-18E/F Super Hornet
- F-16 Falcon Fighter
- F-15 Eagle Fighter
- F-4 Phantom Fighter
- T-38 Talon Trainer

- AH-64 Apache Attack Helicopter
- UH-60 Black Hawk Utility Helicopter
- OH-58 Warrior Attack Helicopter
- CH-53 Stallion
- CH-47 Chinook Transport Helicopter

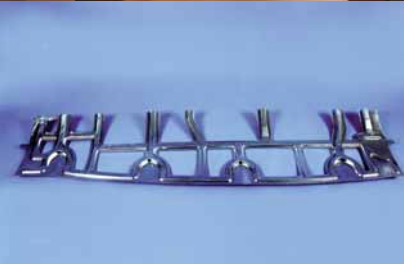
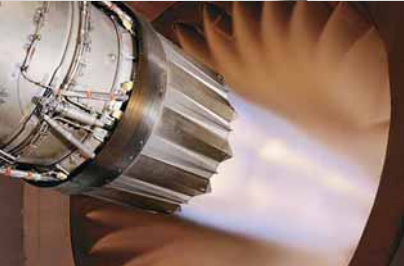
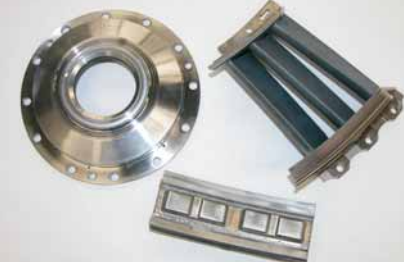
- C-130 Cargo Transport
- C-17 Cargo Transport
- V-22 Osprey Tilt Rotors

- E-6A Early Warning Aircraft
- E-2C Early Warning Aircraft

- M1A1 Abrams Combat Tank

Utilizing high temperature alloys, Barnes Aerospace provides precision machining, fabrications, gear machining and special processes. This blend of skilled technologies and proprietary processes, combined with engineering, quality, program management and continuous improvement programs, delivers excellent military support service.





## SETTING THE STANDARD

Barnes Aerospace has set the industry standard by offering a comprehensive range of in-house support and capabilities. By developing a culture where continuous improvement, lean thinking and Six Sigma are practiced across all divisions and throughout the organization, Barnes Aerospace ensures superior customer service, reduction in turn-times and competitive prices.

Through our long-standing and valued customer relationships, Barnes Aerospace is depended upon to provide manufacturing research, testing and evaluation, as well as provide our customers with expert design capabilities of components and assemblies.



# THE BARNES AEROSPACE DIFFERENCE

With Barnes Aerospace, the difference is in quality. Working to AS 9100 standards, Barnes Aerospace provides critical manufacturing services in five primary areas:

- Precision machining
- Fabrications
- Gear machining
- Kits & assemblies
- Maintenance, repair & overhaul

## Precision Machining

Barnes Aerospace machines complex critical components for turbine engines and is a leading supplier for high-thrust, lightweight aircraft turbine engine components. Barnes Aerospace has advanced manufacturing technologies and expertise in the following areas:

- Extensive grinding capability, including continuous dressing, rise and fall creep grinding, 4-axis rotary grinding and 5-axis radial grooving
- Non-conventional machining, including electrical discharge and laser cutting
- 4- and 5-axis milling centers
- 5-axis lathe and vertical turret lathes
- On-site metallurgical lab

Barnes Aerospace engine components can be found in most major airlines and military applications worldwide. These components, located in the compressor, combustor and turbine sections of the engine, include:

- Engine cases
- Panels and fairings
- Combustion liners
- Tail bearing housings
- Bearing housings
- Rotating air seals
- Shroud hanger segments
- Swirlers
- Spanner nuts
- Fuel shroud nozzles
- Shafts

## Fabrications

Barnes Aerospace Fabrications Divisions, located in West Chester, Ohio; Lansing, Michigan; and Ogden, Utah are leading suppliers for fabricated airframe and engine components for the aerospace industry, specializing in:

- Hot and superplastic forming
- Sutton Core Process
- Diffusion bonding
- Cold forming
- Welding and brazing
- Honeycomb brazing and grinding
- Multi-axis machining
- Laser and water jet cutting technologies

These superior, cost-effective solutions are made from high temperature titanium, inconel, hastelloy, stainless steel and nickel alloy materials. Barnes Aerospace's proficiency in technologies like superplastic and back-to-back forming result in increased design freedom, the elimination of costly multi-welded assemblies, reduced part count and material and tooling savings – benefits and savings that are passed directly to its customers.

**QUALITY –  
ON TIME,  
EVERY TIME.**



## SUPERIOR SOLUTIONS

### Gear Machining

Known for tight tolerance gear machining, Barnes Aerospace is capable of hobbing and shaping a wide variety of internal and external gear features, such as splines, ratchets, spurs, helicals and crowns. Barnes Aerospace gears are used in high-precision applications, including aircraft starters, actuating systems, fuel controls, hydraulic and fuel pumps, and environmental control units.

Barnes Aerospace also specializes in complex assemblies, offering customers complete assembly, balancing and testing services. In-house processes include:

- CNC turning
- 5-axis machining
- Gear hobbing and shaping
- Inside Diameter/Outside Diameter (ID/OD) centerless and surface grinding
- Honing and lapping

### Kits and Assemblies

Barnes Aerospace offers customers the opportunity to simplify their supply chain by assuring accurate kit configuration, inventory control and on-time delivery. Equipped to meet government specifications and requirements, Barnes Aerospace uses the following technologies to produce kits and assemblies:

- Automatic and manual drilling, countersinking, riveting
- Welding and brazing
- Diffusion bonding
- Hot and superplastic forming
- Specialized packaging
- Precision balancing
- Functional test
- Precision cleaning

### Maintenance, Repair & Overhaul (MRO)

Barnes Aerospace Windsor Airmotive Division is an industry leader in providing highly specialized repair modification, and overhaul services on engine components to the major airlines, the U.S. military and to both OEM and independent engine overhaul shops. Barnes Aerospace Windsor Airmotive Division has earned a strong reputation built on service, quality and performance.

Components repaired by Barnes Aerospace Windsor Airmotive Division can be found on the following engine platforms:

- F117
- F100
- TF34



[www.barnesaero.com](http://www.barnesaero.com)



**Barnes Aerospace**  **BARNES**<sup>®</sup>  
GROUP INC

PERFECT YOUR PERFORMANCE

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