

Make Your Learjet 45 Fly Higher, **Faster.**





# Boost

Performance With The BR Engine Upgrade.



**F**ly into higher-altitude airports. Take off in higher temperatures. Climb to cruising altitude nearly 40 percent faster. Enjoy faster high-speed cruise at any given altitude. With a BR engine upgrade from Bombardier Aircraft Services, all those advantages can become part of everyday flying for owners and operators of Learjet\* 45 aircraft.



Hot, High, Fast.

*“Even before we taxied out, we could see how much shorter the runway requirement was. In some cases, the BR upgrade shortened the requirement up to 3,000 feet.”*

— Kelly Magowan, Chief Pilot for Cashman Equipment Company

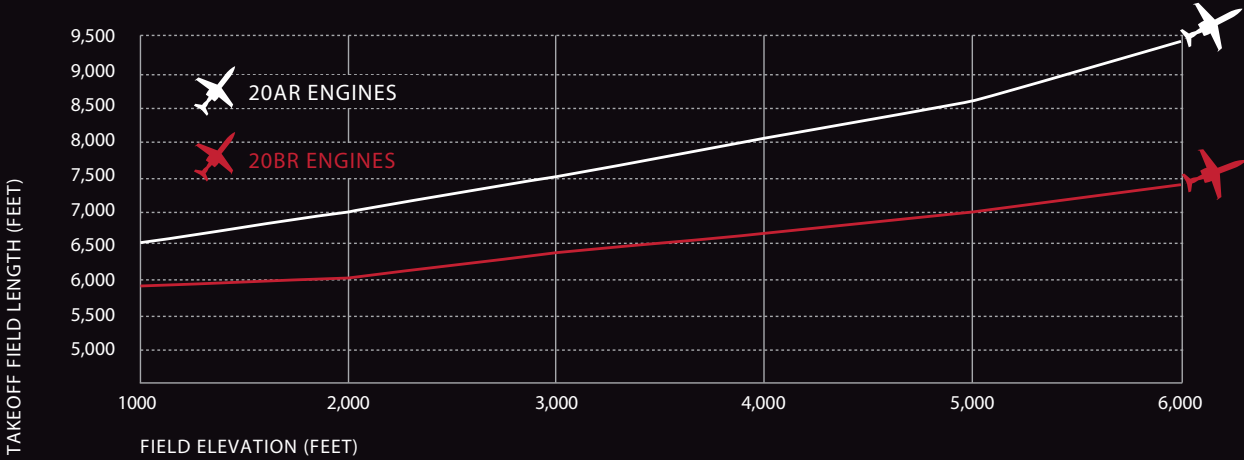
**T**he BR upgrade, which can be accomplished in five days or less, increases the aircraft’s maximum takeoff weight, essentially providing a Learjet 45 owner with superior engines, performance, capabilities and value.

## Changing How You Fly

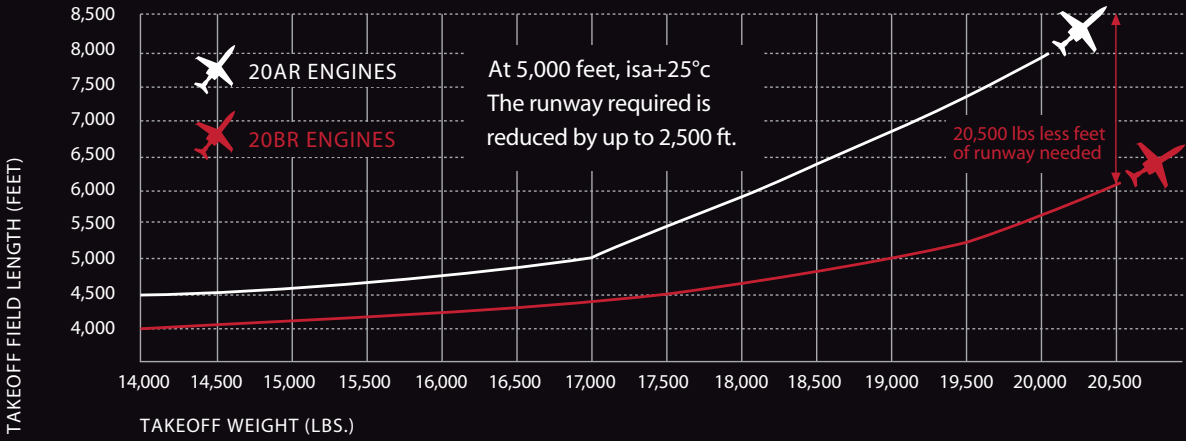
Kelly Magowan, chief pilot for Cashman Equipment Company, sees that better performance and value in action for his employer, the Caterpillar Equipment dealer for Nevada. Magowan flies members of the Cashman team into hot, high-altitude airports all the time now, reaching remote destinations with 40-minute flights instead of seven-hour drives. The upgrade’s performance improvements were immediately apparent.

# Performance By The Numbers.

Field Evaluation vs. Takeoff Field Length (MGTOW, ISA+25°C)



Takeoff Field Length vs. Takeoff Weight (5,000 Ft., ISA+25°C)



### **Faster**

Mach .81 vs. Mach. 78 at ISA (FL430, 18,000 pounds) and Mach .81 vs. Mach .75 at ISA+10 degrees Celsius (FL410, 18,000 pounds) are just two examples.

### **Hotter**

With a takeoff weight of 21,500 pounds on the same runway, a Learjet 45 with the BR upgrade can take off in 8°C to 12°C higher temperatures than one with AR engines.


### **Higher**

At a field elevation of 5,000 feet, the required runway length is reduced by as many as 2,500 feet (ISA +25 degrees C).

### **Heavier**

Out of Aspen, the BR-equipped aircraft will carry 2,500 pounds more weight (resulting in about 1,000 nautical miles more range with eight passengers).





# Steps

To A Learjet 45 BR Engine Upgrade.

# 1

## Service Bulletins Needed

- Learjet Service Bulletin 45-11-4: Maximum Take Off Weight Increase
- Learjet Service Bulletin 45-22-5: Honeywell Avionics Phase IV

# 2

## The Upgrade

Learjet Service Bulletin 45-72-1 covers the BR engine upgrade itself, incorporating the following Honeywell bulletins:

- Honeywell SB TFE731-76-5120: Install Digital Electronic Control Part No. 2118882-1008
- Honeywell SB TFE731-72-5169: Convert Engine TFE731-20AR-1B to TFE731-20BR-1B

# 3

## Check Your FMS/Software and Performance Database

The Learjet 45 comes equipped with either a single or dual Universal FMS system. The FMS systems installed are the UNS 1C, UNS-1C+ or the UNS-1E. In the event your FMS system(s) is (are) equipped with a performance database, and you wish to retain this functionality once the BR engine upgrade is completed, the FMS system(s) will require specific software to accommodate an upgraded performance database compatible with BR engine performance and increased MTOW. See table below for more details:

**BR Engine/21,500 pounds MTOW Compatible FMS Performance Database**

FMS System	FMS software level required	Performance database required
<b>UNS 1C, UNS-1C+ or UNS-1E</b>	<b>SCN-802.X</b>	<b>A12565 PD</b>
No FMS upgrades are required if the customer does not require a performance database		

# 4

## Check Your Aircraft Serial Number

Different Learjet 45s may have different prerequisites depending on the serial number. Contact your Bombardier Aircraft Services Regional Manager to learn more.

- **S/N 45-001 to 45-052** need their “R” engines upgraded to “AR” before the “BR” upgrade can be performed.
- **S/N 45-236 and subsequent** don’t require Phase IV avionics upgrade.
- **SN 45-238 and earlier** require an N2 margin inspection prior to or concurrent with BR upgrade.
- **SN 45-239 and later** do not need the N2 run if they have 400 hours or less on engines and N2 margin was OK when new.



# Supercharged

Performance, Enhanced Value.



The supercharged performance and value advantages of the BR engine upgrade are matched only by the ease of getting them. To give your Learjet 45 the BR boost, simply contact your BAS Regional Manager today or call 1-877-227-6584.

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