MICHELIN®
COMMERCIAL & REGIONAL
AIRCRAFT TIRES

MICHELIN
A better way forward

Multiple Performances Together

At Michelin, we continually focus on quality, reliability and landings – all at the same time, without any trade-offs, and with the best total cost advantage. That's what we mean by MICHELIN® Total Performance™, which has always been, and always will be, our difference on every tire.

MICHELIN®
Total Performance™

THE PIONEER AND INNOVATION LEADER

1981: Michelin introduced the first aircraft radial tire on the Mirage 3

1997: Michelin introduced NBT (New Bias Technology) with a first flight on the F16 Block 40

2001: Michelin introduced Radial NZG (Near Zero Growth) technology on the A380 and Concorde

Now: Michelin offers more aircraft radial tire fitments than any other tire manufacturer

THE MOST RELIABLE PRODUCTS

- The leader in Original Equipment market-share across all segments (Commercial, Regional, Military and General Aviation)
- The trusted supplier to major airframers and wheel and brake manufacturers, as well as major clients like AIR FRANCE, US AIR FORCE, US NAVY, EMIRATES, AIR CHINA, EASY JET and others
- Strategically aligned with manufacturers to develop tires for future airframes
- The widest product range covering more aircraft fitments than any other tire manufacturer

HELPING YOUR BUSINESS SOAR

- A committed and trusted business partner
- Sensible tire solutions & technical support that provide expertise and peace of mind
- Lowest total cost of ownership compared to competitive offers: reduced fuel burn, reduced maintenance costs, and less unscheduled maintenance
- Making our customers' operations more environmentally friendly

MICHELIN'S REVOLUTIONARY NZG RADIAL TECHNOLOGY

NZG stands for Near Zero Growth because it virtually eliminates casing growth in properly inflated tires. Developed in 1999 and under continuous improvement since, MICHELIN® NZG Technology represents an unrivaled technological breakthrough in radial aircraft tire design.

NZG RADIAL TECHNOLOGY PROVIDES MEASURABLE BENEFITS FOR YOU

✓ Reduces Operating Costs

FEWER TIRE CHANGES
- Get up to 100% more landings (1)

LESS MAINTENANCE
- Up to half as many wheel changes

FUEL SAVINGS
- Less fuel burn thanks to reduced tire weight (2)

✓ Provides Peace of Mind

BETTER FOD RESISTANCE
- Up to 50% better resistance to foreign object damage (FOD) (3)

MICHELIN ENGINEERING AND DESIGN EXCELLENCE
- Michelin is the trusted brand of aircraft manufacturers (4)

BUSINESS CONTINUITY MANAGEMENT
- Multiple manufacturing sites to ensure consistent supply

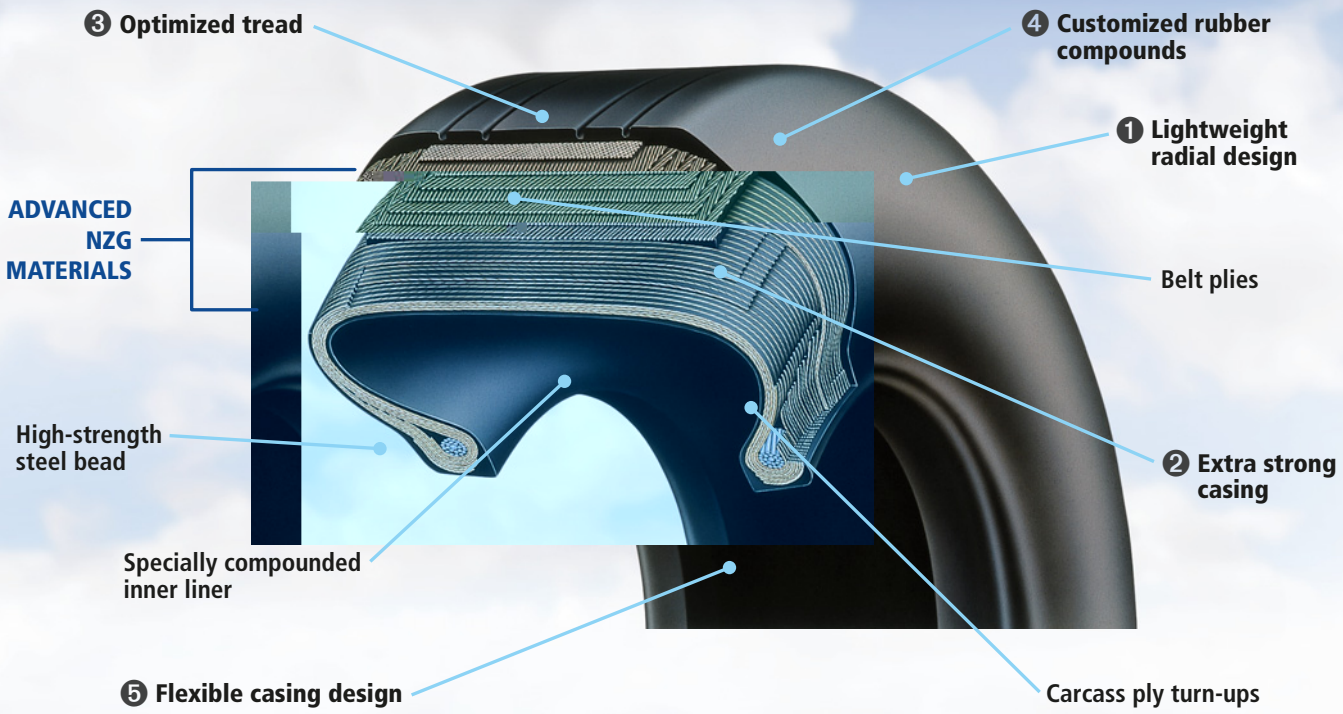
✓ Environmentally Friendly

FEWER MATERIALS
- On average, a radial NZG tire uses 22% fewer raw materials than a standard bias equivalent (5)

LOWER EMISSIONS
- Fewer CO_2 emissions (6)

(1) NZG tire compared to bias tire as reported by a French airline. | (2) An estimated U.S. $36 million could be saved annually if the worldwide aircraft fleets were equipped with MICHELIN® NZG radial tires – Michelin estimates based on: average tire weight by market segment and by tire technology, ACAS fleet data, and average fuel barrel price of $100.00 US. | (3) NZG compared to bias. Michelin estimated based on NZG performance study on 4 representative large sizes of commercial tires on a sample of 36,000 MICHELIN tires. | (4) Based on ACAS fleet data and Michelin estimates. | (5) Michelin's calculation comparing tire mass vs. actual carried weight per tire. | (6) An estimated 160,000 tons of CO2 (or the CO2 emissions generated by 80,000 cars) could be saved annually if the worldwide aircraft fleets were equipped with MICHELIN® NZG radial tires – Michelin estimates based on: average tire weight by market segment and by tire technology, ACAS fleet data, and average CO2 emissions of 23.88 pounds per fuel gallon.

MICHELIN® NZG RADIAL TIRE CONSTRUCTION



MICHELIN® NBT TECHNOLOGY

New Bias Technology (NBT) is Michelin's innovative solution to improve performance and operating costs when the aircraft is not designed for a radial fitment. It uses a circumferential crown reinforcement to produce a flatter footprint than those of conventional bias tires.

Compared with traditional bias technology, MICHELIN® NBT Technology offers:

- Reduced wear for longer tire life and lower operating costs
- Reduced fuel burn thanks to weight savings, compared to traditional bias tires
- Improved lateral stability and resistance to heat buildup

MICHELIN SPECIFIC FITMENTS FOR KEY COMMERCIAL AIRCRAFT

Boeing 737 Max

Proven in service, the NZG radial technology promises the following competitive advantages to operators of the Boeing 737 MAX 7 and 8:

- Up to 50% more FOD resistance through NZG patented technology.
- More than 20% reduction in weight (compared to a bias-ply tire), which translates into significant fuel savings for airlines.
- Up to a 100% increase in the number of landings* which means less maintenance downtime for aircraft operators.
- Retrofitable on 737 NG

Airbus A320 Neo

Michelin will propose, starting in 2016, a radial tire with NZG technology that will allow for an additional 35% landings-per-tread compared to a standard radial tire.

Boeing 787

Michelin' NZG tehcnology is now approved on the 787-8 and on the 787-9. This technology improves aircraft reliability by reducing downtime due to unscheduled tire maintenance.

Airbus A350

Michelin NZG technology increases the load carrying capacity by 15% while reducing tire weight.

MICHELIN SPECIFIC FITMENTS FOR KEY REGIONAL AIRCRAFT

Embraer 190

MICHELIN® NZG enables twice as many landings per tire when compared to its bias counterpart.*

Thanks to their superior performance, MICHELIN® NZG radial tires are the most extensively used tires on the Embraer E-190, whether they're rolling off the E-190 assembly line or being used by airlines. The MICHELIN® E-190 main tire is also retreadable.

* NZG tire compared to a bias-ply tire as reported by a French airline.

Bombardier C Series

As an official partner on this aircraft, Michelin worked hand-in-hand with Bombardier in bringing this aircraft to market. Michelin is committed to providing safe and innovative products specially with the NZG technology to help reduce our customers' operating costs.

ATR 42 / 72

Our main tire's performance sets the highest standard available on the market. The MICHELIN® NZG Technology contributes to overall cost reduction with enhanced tire longevity, resulting in less maintenance. Both ATR main tires are also retreadable.

COMMERCIAL AND REGIONAL TIRE FITMENT GUIDE

MICHELIN® Commercial Aircraft Tires

POSITION: MAIN / NOSE	SIZE	PLY RATING	SPEED (MPH)	PART NUMBER	TECHNOLOGY
AIRBUS					
A300 / A310					
Main	49X17	32	235	020-791-0	Bias
Nose	40X14	24	225	039-769-2	Bias
A318 / A319 / A320 / CJ					
Main	46X17.0R20	30	225	M01103	Radial
Nose	30X8.8R15	16	225	M08201	Radial
A318 / A319 / A320 / A320 Neo					
Main *(available in 2017)*	46X17.0R20	30	225	M01106	Radial NZG
A321-100/200					
Main	1270X455R22	30	225	M13901	Radial
Main	1270X455R22	32	225	M20101	Radial
Nose	30X8.8R15	16	225	M08201	Radial
A330 / A340 -200/300					
Main	1400X530R23	36	235	M05102	Radial
Nose	1050X395R16	28	235	M07601	Radial
A340-500/600					
Main	1400X530R23	40	235	M16004	Radial NZG
Nose	45X18.0R17	36	235	M14001	Radial
A350-900					
Main	1400X530R23	42	235	M18801	Radial NZG
Nose	1050X395R16	28	245	M20301	Radial
A350-1000					
Main *(available in 2017)*	50X20.0R22	34	245	M42203	Radial NZG
Nose	1050X395R16	28	245	M20301	Radial
A380-800					
Main	1400X530R23	40	235	M16004	Radial NZG
Nose	50X20.0R22	34	235	M42204	Radial
Nose	1270X455R22	32	235	M17402	Radial
BOEING					
737-200/300/400/500					
Main	H40X14.5-19	26	235	040-800-1	Bias
Nose *(all but 737-200)*	27X7.75R15	12	225	M12801	Radial
Nose	27X7.75-15	12	225	029-616-0	Bias
737 NG-600/700/800/900/900ER/BBJ					
Main	H44.5X16.5-21	28	225	029-894-0	Bias
Main	H44.5X16.5-21	28	235	040-894-1	Bias
Main	H44.5 X16.5R21	30	235	M19001	Radial NZG
Nose	27X7.75R15	12	225	M12801	Radial
Nose	27X7.75-15	12	225	029-616-0	Bias
Nose	27X7.75R15	12	235	M15501	Radial
747-200/300					
Main / Nose	49X17	32	235	020-791-0	Bias
Main / Nose	49X19.0-20	34	235	040-873-0	Bias
747-400					
Main / Nose	H49X19.0-22	32	235	020-805-3	Bias
Nose	49X17	32	235	020-791-0	Bias
Nose	49X19.0-20	34	235	040-873-0	Bias

* For any other tire size not featured in the above listing, please contact your local sales office.

MICHELIN® Commercial Aircraft Tires (continued)

POSITION: MAIN / NOSE	SIZE	PLY RATING	SPEED (MPH)	PART NUMBER	TECHNOLOGY
747-400ER/400ERF					
Main / Nose	50X20.0R22	34	235	M42201	Radial
747-8/8F					
Main	52X21.0R22	36	235	M13104	Radial
Nose	50X20.0R22	26	235	M12901	Radial
Nose	50x20.0R22	32	235	M12301	Radial
Nose	50x20.0R22	34	235	M42201	Radial
757-200/300					
Main	H40X14.5-19	26	235	040-800-1	Bias
Nose	H31x13.0-12	20	225	029-838-0	Bias
Nose	H31X13.0-12	20	235	040-838-0	Bias
767-200/200ER/300/300ER					
Main	H46x18.0-20	28	225	039-859-0	Bias
Main	H46X18.0-20	32	235	040-807-0	Bias
Main	H46X18.0-20	32	235	020-807-0	Bias
Nose	H37x14.0-15	22	225	032-744-0	Bias
Nose	H37X14.0-15	24	235	020-739-0	Bias
767-400ER					
Main	50X20.0R22	32	235	M12301	Radial
Main	50X20.0R22	32	235	M12302	Radial NZG
Nose	H37X14.0-15	24	235	020-739-0	Bias
777-200					
Main	50X20.0R22	26	235	M12901	Radial
Main	50X20.0R22	32	235	M12302	Radial NZG
Nose	42X17.0R18	26	235	M12501	Radial
777-200ER/300					
Main	50X20.0R22	32	235	M12301	Radial
Main	50X20.0R22	32	235	M12302	Radial NZG
Nose	42X17.0R18	26	235	M12501	Radial
777-200LR/300ER					
Main	52X21.0R22	36	235	M13104	Radial
Main	52X21.0R22	36	245	M20501	Radial
Main *(available in 2016)*	52X21.0R22	36	245	M13105	Radial NZG
Nose	43X17.5R17	32	235	M17701	Radial
787-8					
Main	50X20.0R22	34	235	M42201	Radial
Main *(available in 2016)*	50X20.0R22	34	235	M42202	Radial NZG
Nose	40X16.0R16	26	235	M18501	Radial
787-9					
Main	54X21.0R23	38	235	M19501	Radial NZG
Nose	40X16.0R16	26	235	M18501	Radial
MCDONNELL DOUGLAS					
DC10-30/40					
Main	52X20.5-23	30	235	020-885-0	Bias
Nose	40X15.5-16	28	235	020-848-0	Bias
MD11					
Main	H54X21.0-24	36	235	020-888-0	Bias
Nose	40X15.5-16	28	235	020-848-0	Bias
MD80/81/82/83/87/88					
Main	H44.5X16.5-20	28	225	039-853-0	Bias
Nose	26X6.6	12	225	029-658-0	Bias

* For any other tire size not featured in the above listing, please contact your local sales office.

MICHELIN® Commercial Aircraft Tires (continued)

POSITION: MAIN / NOSE	SIZE	PLY RATING	SPEED (MPH)	PART NUMBER	TECHNOLOGY
COMAC					
C919					
Main *(available in 2017)*	46X17.0R20	30	225	M01110	Radial
Nose *(available in 2017)*	30X8.8R15	16	225	M08203	Radial

MICHELIN® Regional Aircraft Tires

POSITION: MAIN / NOSE	SIZE	PLY RATING	SPEED (MPH)	PART NUMBER	TECHNOLOGY
ATR					
ATR 42					
Main	32x8.8R16	12	190	M13201	Radial NZG
Nose	450x190-5	10	190	026-545-0	Bias
ATR 72					
Main	H34x10.0R16	14	190	M10001	Radial NZG
Nose	450x190-5	10	190	026-545-0	Bias
BEECHCRAFT					
Beechcraft 1900 C & D					
Main	22x6.75-10	10	190	026-524-0	Bias
Nose	19.5x6.75-8	10	190	026-335-1	Bias
BOMBARDIER					
C SERIES 100/300					
Main	H42x15.0R21	26	225	M 20201	Radial NZG
Nose	27x8.5R12	16	225	M 20001	Radial
CRJ 100/200					
Main	H29X9.0-15	16	210	027-438-0	Bias NBT
Nose	18x4.4	12	210	027-614-0	Bias
CRJ 700/900 (STC)					
Main	H36x12.0-18	18	225	029-901-0	Bias NBT
Nose	20.5x6.75-10	12	225	036-897-0	Bias
Dash 8 Q100/Q200					
Main (STC)	H31x9.75-13	12	190	026-202-0	Bias
Nose	18x5.5	8	190	028-630-0	Bias
BRITISH AEROSPACE					
Jetstream J31/J32					
Main	28x9.0-12	12	160	028-728-0	Bias
Nose	6.00-6	8	160	021-317-1	Bias
DE HAVILLAND					
DHC6					
Main	11.00-12	10	160	021-355-0	Bias
Nose	8.90-12.50	6	160	021-436-0	Bias
DHC7					
Main	33.5x10.75-15	12	160	028-717-1	Bias
Nose	6.50-10	10	160	021-356-1	Bias
EMBRAER					
EMB-120 ER					
Main	24x7.25-12	12	190	026-609-0	Bias
Nose	18x5.5	10	210	033-631-0	Bias

* For any other tire size not featured in the above listing, please contact your local sales office.

MICHELIN® Regional Aircraft Tires (continued)

POSITION: MAIN / NOSE	SIZE	PLY RATING	SPEED (MPH)	PART NUMBER	TECHNOLOGY
E-170/175/175AR					
Nose	24x7.7R10	16	225	M18201	Radial
E-190/195/Lineage1000					
Main	H41x16.0R20	22	225	M18602	Radial NZG
Nose	24x7.7R10	16	225	M18201	Radial
E-190/195 E2					
Main	H42X16.0R20	24	225	M21101	Radial NZG
Nose	27X8.5R12	16	225	M20001	Radial
SAAB					
SAAB 340 B					
Main	24x7.7	14	190	026-675-0	Bias NBT
Nose	17.5x6.25-6	8	190	028-327-0	Bias
SAAB 2000					
Main	32x8.8	14	210	027-711-0	Bias
Nose	18x5.5	8	210	027-630-0	Bias
SUKHOI					
SSJ100					
Main	H40x14.5R19	24	225	M12601-01	Radial
Nose	24x7.7R10	16	225	M18201	Radial

* For any other tire size not featured in the above listing, please contact your local sales office.

Download the FREE MICHELIN® Aircraft Tire APP

- Includes a searchable copy of the Michelin Care & Service Manual, tire fitment guide, tire wear guide, product information, troubleshooting help (with photos), dealer locator and more
- Available from the App Store and Google Play

HOW TO INCREASE THE SERVICE LIFE OF YOUR TIRES

KEEP YOUR TIRES PROPERLY INFLATED

Proper inflation helps:

- Reduce squirm – tread movement during surface contact for improved landings per tread
- Enhance casing durability, which impacts retreadability and helps reduce the potential for in-service incidents

Be aware of temperature changes and their impact on inflation pressure:

- Flying from hot environments to cold environments will result in over-deflection unless a compensation is made for the decrease in pressure due to the expected drop in ambient temperature
- The same drop in pressure occurs when checking pressures in a heated hangar in the winter, then moving the aircraft to a colder ambient temperature
- A "hot tire" resulting from landing / taxi will have a higher pressure than a tire checked at ambient temperature, so the operator must compensate for the expected drop in pressure if a "hot" pressure check is required

Remember, operating below nominal inflation pressure can cause an aircraft tire to over-deflect. Under-inflation increases the flex of the tire which could result in overheating, abnormal tire wear, shortened tire life and possible tire failure.

CHECK FREQUENTLY FOR FOREIGN OBJECT DEBRIS ON THE AIRPORT OPERATING SURFACES

Other important recommendations:

- Protect tires in storage to avoid ozone damage on tire surfaces
- Slow down before turning and increase turn radius when possible
- If operating procedures permit, use thrust reversers to slow the aircraft on landing rather than brakes

Please refer to the Michelin Care and Service Manual at airmichelin.com for further advice on tire maintenance.

MICHELIN EXPERTISE CAN HELP YOU INCREASE THE SERVICE LIFE OF YOUR TIRES

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Highly-Experienced Aviation Experts

- Michelin's aviation business unit includes a dedicated team of technical experts and sales professionals devoted strictly to aircraft tires
- Michelin provides expert tire program solutions including tire care, service training and technical visits
- Michelin offers worldwide coverage through an integrated global team that shares best practices across all disciplines
- Michelin has a long and storied history in aviation dating back to 1908

YouTube http://youtube.com/airmichelin

www.airmichelin.com

MICHELIN
A better way forward