

# Directory: military engines

Model (Inc submodel)	Max thrust reheat (lb)	Max thrust dry (lb)	Max power (SL) (kW)	Notes/description
				powers MiG-27; R-29BS-300 powers Su-22
<b>RD-1700</b>				
RD-1700	4,410	3,750	-	Turbofan. MiG-AT
<b>RD-2500</b>				
RD-2500	-	5,500	-	Turbofan. Yak-130

## TURBOMECA

In February, Turbomeca signed its largest-ever engine order with Hindustan Aeronautics (HAL) for more than 400 TM333-2B2 turboshafts and for co-development of the engine's higher-power successor, the Ardidien 1H Shakti. The engines will be used on HAL's Dhruv advanced light helicopter, with the Shakti powering the second-generation Dhruvs. The agreement follows the initial 82-strong TM333 order for early Dhruvs and a follow-on order for several hundred more Shaktis is expected once the development phase is complete in 2006. Turbomeca is also developing the 1A version of the Arridien for the Eurocopter EC155HP+ and the 2K for the Bell-Agusta Aerospace AB139. The Arriel tur-

boshaft is being updated to 2S2 specifications for Sikorsky's S-76C+ helicopter, with first deliveries due in 2005. Up-rated Makila 2As (formerly 1A4s) will power Eurocopter EC725s for French special forces from next year, and the civil EC225 version launched by Canadian Helicopters. Turbomeca is demonstrating a more powerful Arriel 2C1 on a US Coast Guard HH-65 Dolphin, as preparation for a bid to modernise the helicopters for the Deepwater programme in 2007. An Arriel production line being established in Texas will produce 150 units a year, 50% of Arriel output. Final assembly of the first Agusta A109 Light Utility Helicopter for the South African Air Force, which will incorporate Arrius 2K2s, is under way.

### Arriel

Arriel 1B	-	-	480	Turboshaft. Eurocopter AS350/550
Arriel 1D1	-	-	545	Turboshaft. AS350B2, AS550
Arriel 1S1	-	-	540	Turboshaft. Arriel 1S powers Sikorsky S-76A+; Arriel 1S1 powers Sikorsky S-76A++/S-76C
Arriel 2C2	-	-	465	Turboshaft. AS565 Panther; -2C1 powers Eurocopter EC.155B1, -2S1 powers S-76C+
Arriel 2S2	-	-	500	S-76C+ from 2005

### Arrius

Arrius 2K2			520	Turboshaft. Augusta A109 Power
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### Makila

Makila 1A1	-	-	1,355	Turboshaft. Eurocopter AS330S Puma, AS332/532
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### TM333

TM333 1M/2	-	-	745	Turboshaft. Powers Eurocopter AS565
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### Arridien (formerly TM333)

Arridien-2C2	-	-	800	Turboshaft. Formerly TM333, HAL Dhruv, Panther
Arridien 1H Shakti	-	-	895	Future HAL Dhruvs

## TURBO-UNION

Turbo Union is a joint partnership of Rolls-Royce, MTU and Fiat which produced over 2,070 RB199 turbofans for the Panavia Tornado family. The Mk101 entered service in 1980 on the initial Tornado IDSs for European forces, while the latest Mk105 versions were delivered for Saudi Arabia's fleet. Spares production is

maintained to support in-service fleets. In January MTU delivered the first optimised high-pressure compressor for the RB199 to the German armed services Tornado IDSs. Providing 12% more airflow than the original HPC, the up-rated engine has additional thrust capability.

### RB199

RB199-103	15,500	9,100	-	Turbofan. Panavia Tornado IDS
RB199-104	16,400	9,100	-	Turbofan. Panavia Tornado ADV
RB199-105	16,800	9,500	-	Turbofan. Panavia Tornado ECR and IDS

## VOLVO AERO

Volvo Aero's RM12 turbofans derived from GE's F404-400 are powering 204 Saab Gripen on order for the Swedish air force, and overseas contracts include 28 Saab/BAE Systems Gripen for South Africa and 14 to be leased by Hungary. The Czech Republic ordered 24 aircraft last year, but cancelled the order in

November following flooding. Good news came from EADS's selection of the GE F414 for the Mako advanced supersonic trainer and light attack aircraft scheduled for service entry in 2010. GE is expected to offer build-share partnerships with European companies, including Volvo, to "Europeanise" the engine.

### F404

F404-RM12	18,090	12,135	-	Turbofan. Gripen. Produced with GE and based on F404
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## WSK PZL-RZESZOW

The PZL-Mielec I-22 Iskra 2, formerly the Iryda, which is powered by PZL-Rzeszów's K-15 turbojet, resumed flight testing last year, and is being offered to the Polish air force as an advanced trainer to replace its TS-11 Iskras. Poland cancelled its original order for the I-22 in 1997 following a fatal accident during a

training flight. Seventeen I-22s could go to the Polish navy, as MiG-21 replacements, and export opportunities may arise if the Polish campaign is successful.

Polish aviation industry rationalisation under the industrial development agency ARP may affect the future shape of the PZL-Rzeszow.

### K-15

K-15	-	3,300	-	Turbofan. PZL I-22 Iskra 2
SO-3W				
SO-3W	-	2,427	-	Turbofan. TS-11 Iskra