



TURBOJET ENGINES



The PBS brand is built on **200 years
of history and a global reputation**
for high quality engineering
and production

www.pbs.cz



ABOUT PBS

PBS Velka Bites is a member of PBS GROUP – stable, high quality and innovative engineering company that has been active in the field of high precision engineering for over 200 years.

The key area for PBS Velka Bites is aerospace engineering: in-house development, production, testing and certification of small turbojet, turboprop and turboshaft engines, auxiliary power units (APU) and environmental control systems (ECS). Besides aerospace, PBS also focuses on investment casting and cryogenics.

RESEARCH & DEVELOPMENT CAPABILITIES

- Development of new products
- Innovation of existing products
- Thermodynamic and aerodynamic calculations
- Airflow calculations and analyses
- Strength calculations

TESTING CAPABILITIES

- Testing laboratory for aerospace engines, APU, ECS
- Turbojet engines with a thrust of up to 2,000 N
- Testing with airpressure up to 1,200 kPa
- Temperatures from -60 °C to 80 °C
- Vibration and impact tests

AIRCRAFT ENGINES

PBS has designed and successfully launched a series of high-quality, reliable small turbojet engines, used mainly in UAVs, target drones, other unmanned systems, experimental aircraft and ultralight helicopters.

PBS turbojet engines are the world leaders in their category, thanks to their excellent thrust-to-weight ratio and high-level technical parameters.

ENGINES TURBOJET

for UAVs, target drones, and other unmanned systems

MAIN FEATURES

- Excellent weight/thrust ratio
- Compact design
- Built-in starter-generator
- Electric starting
- Ground or in-flight restart
- Short starting sequence
- Windmill starting option under 7 sec
- Salt water recovery option
- Customer modifications
- Low fuel consumption
- High electrical power output

PBS TJ150

- ✓ Increased thrust option at high altitudes



PBS TJ150		Metric	Imperial
TECHNICAL PARAMETERS			
Thrust	1,500 N	337 lbf	
Power supply	28 V DC	28 V DC	
Electrical power output	600 W (2,300 W)	600 W (2,300 W)	
Specific fuel consumption	0.116 kg/N/h	1.138 lb/lbf/hr	
Time before overhaul	50 hrs	50 hrs	
DIMENSIONS AND WEIGHT			
Outer diameter	272 mm	10.71 in	
Length	518 mm	20.39 in	
Weight	18.9 kg	41.67 lb	
OPERATING FLUIDS			
Fuel	JET-A1 or similar		
Oil	Mobil Jet Oil II / AeroShell 560		
OPERATING ENVELOPE			
Max. altitude	10,000 m	32,808 ft	
Max. speed	0.9 M	0.9 M	
Ambient temperature	-50 °C/+45 °C	-58 °F/+113 °F	
STARTING ENVELOPE			
Max. altitude	6,000 m	19,685 ft	
Max. speed	0.5 M	0.5 M	
Ambient temperature	-35 °C/+45 °C	-31 °F/+113 °F	

PBS TJ150P

- ✓ Fuel lubrication



PBS TJ150P		Metric	Imperial
TECHNICAL PARAMETERS			
Thrust	1,500 N	337 lbf	
Power supply	28 V DC	28 V DC	
Electrical power output	600 W (2,300 W)	600 W (2,300 W)	
Specific fuel consumption	TBD	TBD	
Time before overhaul	20 hrs	20 hrs	
DIMENSIONS AND WEIGHT			
Outer diameter	272 mm	10.71 in	
Length	636 mm	25.04 in	
Weight	17.1 kg	37.70 lb	
OPERATING FLUIDS			
Fuel	JET-A1 or similar		
Oil	+3% mixed in fuel		
OPERATING ENVELOPE			
Max. altitude	10,000 m	32,808 ft	
Max. speed	0.9 M	0.9 M	
Ambient temperature	-50 °C/+45 °C	-58 °F/+113 °F	
STARTING ENVELOPE			
Max. altitude	6,000 m	19,685 ft	
Max. speed	0.5 M	0.5 M	
Ambient temperature	-35 °C/+45 °C	-31 °F/+113 °F	

ENGINES

TURBOJET

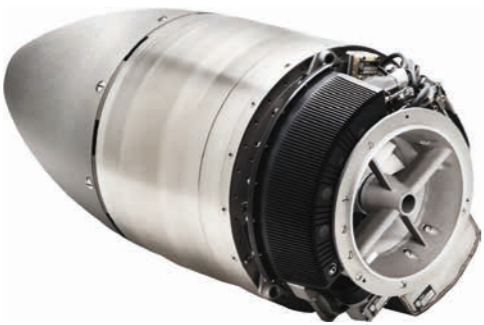
for UAVs, target drones, and other unmanned systems

MAIN FEATURES

- Excellent weight/thrust ratio
- Compact design
- Built-in starter-generator
- Electric starting
- Ground or in-flight restart
- Short starting sequence
- Windmill starting option under 7 sec
- Salt water recovery option
- Customer modifications
- Low fuel consumption
- High electrical power output

PBS TJ100

✔ Worldwide operation proven



PBS TJ100	Metric	Imperial
TECHNICAL PARAMETERS		
Thrust	1,250 N	281 lbf
Power supply	28 V DC	28 V DC
Electrical power output	750 W (2,300 W)	750 W (2,300 W)
Specific fuel consumption	0.118 kg/N/h	1.157 lb/lbf/hr
Time before overhaul	50 - 300 hrs	50 - 300 hrs
DIMENSIONS AND WEIGHT		
Outer diameter	272 mm	10.71 in
Length	625 mm	24.61 in
Weight	19.5 kg	42.99 lb
OPERATING FLUIDS		
Fuel	JET-A1 or similar	
Oil	Mobil Jet Oil II / AeroShell 560	
OPERATING ENVELOPE		
Max. altitude	10,000 m	32,808 ft
Max. speed	0.9 M	0.9 M
Ambient temperature	-50 °C/+45 °C	-58 °F/+113 °F
STARTING ENVELOPE		
Max. altitude	6,000 m	19,685 ft
Max. speed	0.5 M	0.5 M
Ambient temperature	-35 °C/+45 °C	-31 °F/+113 °F

PBS TJ100P

✔ Possibility of short time oil free operation



PBS TJ100P	Metric	Imperial
TECHNICAL PARAMETERS		
Thrust	1,250 N	281 lbf
Power supply	28 V DC	28 V DC
Electrical power output	750 W (2,300 W)	750 W (2,300 W)
Specific fuel consumption	0.126 kg/N/H	1.236 lb/lbf/hr
Time before overhaul	20 hrs	20 hrs
DIMENSIONS AND WEIGHT		
Outer diameter	272 mm	10.71 in
Length	636 mm	25.04 in
Weight	17.6 kg	38.80 lb
OPERATING FLUIDS		
Fuel	JET-A1 or similar	
Oil	+3% mixed in fuel	
OPERATING ENVELOPE		
Max. altitude	10,000 m	32,808 ft
Max. speed	0.8 M	0.8 M
Ambient temperature	-50 °C/+45 °C	-58 °F/+113 °F
STARTING ENVELOPE		
Max. altitude	6,000 m	19,685 ft
Max. speed	0.5 M	0.5 M
Ambient temperature	-35 °C/+45 °C	-31 °F/+113 °F

MAIN FEATURES

- Excellent weight/thrust ratio
- Compact design
- Built-in starter-generator
- Electric starting
- Ground or in-flight restart
- Short starting sequence
- Windmill starting option under 7 sec
- Salt water recovery option
- Customer modifications
- Low fuel consumption
- High electrical power output

PBS TJ80

✔ Quick air-start under 7 seconds



PBS TJ80	Metric	Imperial
TECHNICAL PARAMETERS		
Thrust	900 N	202 lbf
Power supply	28 V DC	28 V DC
Electrical power output	750 W (2,300 W)	750 W (2,300 W)
Specific fuel consumption	0.123 kg/N/h	1.206 lb/lbf/hr
Time before overhaul	50 hrs	50 hrs
DIMENSIONS AND WEIGHT		
Outer diameter	235 mm	9.25 in
Length	514 mm	20.24 in
Weight	12.1 kg	26.68 lb
OPERATING FLUIDS		
Fuel	JET-A1 or similar	
Oil	+3% mixed in fuel	
OPERATING ENVELOPE		
Max. altitude	10,000 m	32,808 ft
Max. speed	0.9 M	0.9 M
Ambient temperature	-50 °C/+45 °C	-58 °F/+113 °F
STARTING ENVELOPE		
Max. altitude	6,000 m	19,685 ft
Max. speed	0.6 M	0.6 M
Ambient temperature	-35 °C/+45 °C	-31 °F/+113 °F

PBS TJ40-G2

✔ High electric power output



PBS TJ40-G2	Metric	Imperial
TECHNICAL PARAMETERS		
Thrust	395 N	89 lbf
Power supply	28 V DC	28 V DC
Electrical power output	1,100 W	1,100 W
Specific fuel consumption	0.147 kg/N/H	1.442 lb/lbf/hr
Time before overhaul	50 hrs	50 hrs
DIMENSIONS AND WEIGHT		
Outer diameter	147 mm	5.79 in
Length	373 mm	14.69 in
Weight	3.8 kg	8.38 lb
OPERATING FLUIDS		
Fuel	JET-A1 or similar	
Oil	+3% mixed in fuel	
OPERATING ENVELOPE		
Max. altitude	9,000 m	29,528 ft
Max. speed	0.8 M	0.8 M
Ambient temperature	-50 °C/+50 °C	-58 °F/+122 °F
STARTING ENVELOPE		
Max. altitude	4,500 m	14,764 ft
Max. speed	0.35 M	0.35 M
Ambient temperature	-40 °C/+50 °C	-40 °F/+122 °F

ENGINES

TURBOJET

for UAVs, target drones, and other unmanned systems

MAIN FEATURES

- Excellent weight/thrust ratio
- Compact design
- Built-in starter-generator
- Electric starting
- Ground or in-flight restart
- Short starting sequence
- Windmill starting option under 7 sec
- Salt water recovery option
- Customer modifications
- Low fuel consumption
- High electrical power output

PBS TJ40-G1

- ✔ Starting in any position



PBS TJ40-G1	Metric	Imperial
TECHNICAL PARAMETERS		
Thrust	395 N	89 lbf
Power supply	14 V DC	14 V DC
Electrical power output	150 W	150 W
Specific fuel consumption	0.147 kg/N/h	1.442 lb/lbf/hr
Time before overhaul	50 hrs	50 hrs
DIMENSIONS AND WEIGHT		
Outer diameter	147 mm	5.79 in
Length	304 mm	11.97 in
Weight	3.4 kg	7.50 lb
OPERATING FLUIDS		
Fuel	JET-A1 or similar	
Oil	+3% mixed in fuel	
OPERATING ENVELOPE		
Max. altitude	9,000 m	29,528 ft
Max. speed	0.8 M	0.8 M
Ambient temperature	-50 °C/+50 °C	-58 °F/+122 °F
STARTING ENVELOPE		
Max. altitude	4,500 m	14,764 ft
Max. speed	0.35 M	0.35 M
Ambient temperature	-40 °C/+50 °C	-40 °F/+122 °F

PBS TJ40-G1NS

- ✔ Affordable version for target drones



PBS TJ40-G1NS	Metric	Imperial
TECHNICAL PARAMETERS		
Thrust	395 N	89 lbf
Power supply	14 V DC	14 V DC
Electrical power output	150 W	150 W
Specific fuel consumption	0.147 kg/N/H	1.442 lb/lbf/hr
Time before overhaul	50 hrs	50 hrs
DIMENSIONS AND WEIGHT		
Outer diameter	147 mm	5.79 in
Length	304 mm	11.97 in
Weight	3.6 kg	7.94 lb
OPERATING FLUIDS		
Fuel	JET-A1 or similar	
Oil	+3% mixed in fuel	
OPERATING ENVELOPE		
Max. altitude	9,000 m	29,528 ft
Max. speed	0.8 M	0.8 M
Ambient temperature	-50 °C/+50 °C	-58 °F/+122 °F
STARTING ENVELOPE		
Max. altitude	4,500 m	14,764 ft
Max. speed	0.15 M	0.15 M
Ambient temperature	-30 °C/+50 °C	-22 °F/+122 °F

TURBOPROP

for experimental aircraft and UAVs

MAIN FEATURES

- Low weight
- Small installation dimensions
- Excelent power to weight ratio
- Digital interface for control and monitoring
- Stable operation at high altitudes and high temperatures
- Gearbox design offers the possibility to install an additional alternator with output power up to 1.5 kW

PBS TP100

- ✔ Push and tractor configuration option



PBS TP100	Metric	Imperial
TECHNICAL PARAMETERS		
Output shaft speed	2,158 RPM	2,158 RPM
Power supply	28 V DC	28 V DC
Electrical power output	720 W (up to 1.5 kW)	720 W (up to 1.5 kW)
Max. continuous power	180 kW	241 HP
Specific fuel consumption	0.548 kg/kW/h	0.901 lb/HP/hr
DIMENSIONS AND WEIGHT		
Height x width (no exhaust)	398 x 330 mm	15.67 x 13.00 in
Length	891 mm	35.08 in
Weight	61.6 kg	135.80 lb
OPERATING FLUIDS		
Fuel	JET-A1 or similar	
Oil	Mobil Jet Oil II / AeroShell 560	
OPERATING ENVELOPE		
Max. altitude	9,000 m	29,528 ft
Ambient temperature	-50 °C/ISA +30 °C	-58 °F/ISA +86 °F
STARTING ENVELOPE		
Max. altitude	6,000 m	19,685 ft
Ambient temperature	-30 °C/ISA +30 °C	-22 °F/ISA +86 °F

TURBOSHAFT

for light helicopters

PBS TS100

- ✔ Take-off weight up to 1,000 kg



PBS TS100	Metric	Imperial
TECHNICAL PARAMETERS		
Output shaft speed (ZA/DA)	5,978 / 2,158 RPM	5,978 / 2,158 RPM
Power supply	28 V DC	28 V DC
Electrical power output	720 W (up to 1.5 kW)	720 W (up to 1.5 kW)
Max. power	180 kW	241 HP
Specific fuel consumption	0.548 kg/kW/h	0.901 lb/HP/hr
DIMENSIONS AND WEIGHT		
Height x width (no exhaust)	398 x 330 mm	15.67 x 13.00 in
Length (ZA/DA)	829 / 881 mm	32.64 / 34.69 in
Weight (ZA/DA)	56.7 / 61.3 kg	125.00 / 135.10 lb
OPERATING FLUIDS		
Fuel	JET-A1 or similar	
Oil	Mobil Jet Oil II / AeroShell 560	
OPERATING ENVELOPE		
Max. altitude	9,000 m	29,528 ft
Ambient temperature	-50 °C/ISA +50 °C	-58 °F/ISA +86 °F
STARTING ENVELOPE		
Max. altitude	6,000 m	19,685 ft
Ambient temperature	-30 °C/ISA +30 °C	-22 °F/ISA +86 °F

Licences and Certificates



→ Approval to design, manufacture and maintain turbine systems and equipment **EASA –DOA, POA, MOA**



→ Certificates for manufacturing and maintaining the military aerospace products **MAA 056** and **MAA 076** from the Ministry of Defence and Armed Forces of the Czech Republic



→ Certificate of Conformity with the quality system and with the requirements of **ČSN EN ISO 9001:2009** and **ČOS 051622 (AQAP 2110)** from the Defence Standardisation, Codification, and Government Quality Assurance Authority

→ **NADCAP** for non-destructive testing (PT, RT) and chemical processes

→ Certificates: **AS 9100, ISO 9001, ISO 14001**



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