REPUBLIC OF INDONESIA
MINISTRY OF TRANSPORTATION
DIRECTORATE GENERAL OF CIVIL AVIATION

AIRCRAFT

Type Certificate

VALIDATION
Number A048

This certificate issued to: ***Aircraft Industries, a.s.***
Na Záhonech 1177, 686 04 Kunovice
Czech Republic

Certifies that the type design for the following products with the operating limitations and conditions therefore as specified in the Civil Aviation Safety Regulations and the Type Certificate Data Sheet, meets the airworthiness requirements of Part 23 of Civil Aviation Safety Regulations for Normal Category Aircraft.

AIRCRAFT MODELS: ***L 410 UVP-E20***

This Certificate, and the Type Certificate Data Sheet which is part hereof, shall remain in effect until surrendered, suspended, revoked, or a termination date is otherwise established by Director General of Civil Aviation.

Date of application : 13 February 2003 *Date of issuance : 15 August 2003*
Date of amended : 31 October 2016 *Date of issuance : 30 December 2016*

Director General of Civil Aviation

SUPRASETYO

Note: The issuance of this Type Certificate is based on EASA Type Certificate Data Sheet number: A.026 Issue 20 dated September 18, 2015 to Aircraft Industries, a.s.

REPUBLIC OF INDONESIA
DEPARTMENT OF COMMUNICATIONS
DIRECTORATE GENERAL OF AIR COMMUNICATIONS

A048
Revision 1
Aircraft Industries, a.s
L 410 UVP-E20

December 30, 2016

TYPE CERTIFICATE DATA SHEET NUMBER A048

This data sheet, which is part of Type Certificate (Validation) No. A048, prescribes conditions and limitations under which the product for which the Type Certificate was issued meets the airworthiness requirements of the Civil Aviation Safety Regulations.

Type Certificate Holder:	Aircraft Industries, a.s. Na Záhonech 1177, 686 04 Kunovice Czech Republic
Type Certificate Holder Record:	Letecké Závody. a.s. changed name to Aircraft Industries, a.s. on January 7, 2014.

Model L 410 UVP-E20 (Commuter Category)

Manufacturer: Aircraft Industries, a.s.
686 04 Kunovice 1177
Czech Republic

Dimensions

Wingspan	19.98 m	with wing tips tanks
	19.479 m	without wing tip tanks
Length	14.424 m	
Height	5.829 m	
Wing Area	35.18 m^2	with wing tips tanks
	34.86 m^2	without wing tip tanks

Engines: 2 (two) WALTER M 601E, or WALTER M 601 E-21, or GE H80-200
Type Certificate Validation No. E 028.

Fuel

1.	RT (PL 6)	CSN 656520	Czech Republic
2.	ATK	DERD 2494	UK
3.	Aeroshell Turbine Fuel 650	DERD 2494	UK
4.	Aeroshell Turbine Fuel 640	DERD 2494	UK
5.	AVTUR 50	DERD 2494	UK
6.	JET - A	ASTM D 1655	USA
7.	JET - A -1	ASTM D 1655	USA

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8. T1 according to ST SEV 5024-85, or GOST 10227-86
9. TS 1 according to ST SEV 5024-85, or GOST 10227-86, or ČSN 656 520
10. RT according to ST SEV 5024-85, or GOST 10227-86, or ČSN 656 520
11. PL 6 according to PND 25005-76
12. PL 7 according to PND 25005-92
13. PSM 2 according to PN-86/C-96026

Oil

1.	B3V	TU 38-191295_75
2.	Aeroshell Turbine Oil 500	MIL-L 23699 C
3.	Aeroshell Turbine Oil 555	MIL-L 23699 C
4.	MOBILE JET Oil II	MIL-L 23699 C
5.	Aero Shell Turbo Oil 560	
6.	Exon TO 2380	
7.	Castrol 599	

Agent for Injection into WALTER M 601E, or WALTER M 601 E-21engines

Distillated water	PN 31-1151-65

Engine Limits

(valid for both engines M 601 E, M 601 E21)

	(kW) / (SHP)	rpm (%)	/ (°C)
Generator Power Speed ITT			
Take-off with or w/o water injection	560 / 751	100	735
Maximum contingency	595 / 797	102	780
Maximum continuous	490 / 657	97	690
Gas generator rotation speed	36,660 RPM (100%)		
Propeller rotation speed	1,700 to 2,080 RPM		

Oil:	minimum pressure (ground)	0,12 MPa *(17.4 psi)*
	minimum pressure (flight)	0,18 MPa *(26.1 psi)*
	maximum pressure	0,35 MPa *(50.7 psi)*
	maximum temperature	85°C *(185 °F)*

Engine WALTER M 601 E

Maximum continuous power rating:	
Maximum power	560 kW
Max. gas generator speed	100.5 %
Max. propeller speed	2080 rpm
Max. ITT	760 °C
Take-off power rating:	
Maximum power	560 kW
Max. gas generator speed	100 %
Max. propeller speed	2080 rpm
Max. ITT	735 °C
Take-off power rating with water injection:	
Maximum power	560 kW
Max. gas generator speed	100 %
Max. propeller speed	2080 rpm
Max. ITT	735 °C
Contingency power rating:	
Maximum power	595 kW
Max. gas generator speed	102 %
Max. propeller speed	2080 rpm
Max. ITT	780 °C

Engine WALTER M 601 E-21

Maximum continuous power rating:	
Maximum power	560 kW
Max. gas generator speed	100.5 %
Max. propeller speed	2080 rpm
Max. ITT	760 °C
Take-off power rating:	
Maximum power	560 kW
Max. gas generator speed	100 %
Max. propeller speed	2080 rpm
Max. ITT	735 °C
Take-off power rating with water injection:	
Maximum power	560 kW
Max. gas generator speed	100 %
Max. propeller speed	2080 rpm
Max. ITT	735 °C
Contingency power rating:	
Maximum power	595 kW
Max. gas generator speed	102 %
Max. propeller speed	2080 rpm
Max. ITT	780 °C

Engine GE H80-200

Maximum continuous power rating:	
Maximum power	522 kW
Max. gas generator speed	98.4 %
Max. propeller speed	1700 - 2080 rpm
Max. ITT	720 °C
Take-off power rating:	
Maximum power	597 kW
Max. gas generator speed	101.5 %
Max. propeller speed	2080 rpm
Max. ITT	780 °C
Continuous OEI power rating:	
Maximum power	597 kW
Max. gas generator speed	101.5 %
Max. propeller speed	2080 rpm
Max. ITT	780 °C

Propeller and Propeller Limits

Constant speed

AVIA Model VJ 8.510, Type Certificate Validation No. P009

Diameter :	2300 mm *(90.55 in)*
Pitch setting at 1,748 mm (68.82 in)	Low 14°
	Feather 79.5°
	Reverse -24°

AV-725-1-E-C-F-R(W)/CFR230-433, Type Certificate Validation No. P034

Diameter:	2300 mm
Number of blades:	5
Sense of Rotation	Clockwise in view of flight direction

Airspeed Limits	V_{MO}	(Maximum operating speed)	335km/h IAS *(181 KIAS)*
	V_A	(Maneuvering speed)	260km/h IAS *(140 KIAS)*
	V_{FE}	(Maximum flaps extended speed)	
		Landing configuration	220km/h IAS *(119 KIAS)*
		Take off configuration	250km/h IAS *(135 KIAS)*
	V_{LO}	(Maximum landing gear operation speed)	
		Retraction	250km/h IAS *(135 KIAS)*
		Extension	250km/h IAS *(135 KIAS)*
	VLE	(Maximum landing gear extended speed)	250km/h IAS *(135 KIAS)*

Maximum design speed	V_D	400 km/h IAS
Demonstrated maximum flight speed	V_{DF}	400 km/h IAS
Maximum operating speed	V_{MO}	335 km/h IAS
Maximum flaps extended speed, landing configuration 42°	V_{FE}	220 km/h IAS
Maximum flaps extended speed, take-off configuration 18°	V_{FE}	250 km/h IAS
Maximum maneuvering speed	V_A	265 km/h IAS
Maximum landing gear operating speed	V_{LO}	250 km/h IAS
Maximum landing gear extended speed	V_{LE}	250 km/h IAS
Maximum spoiler operating speed	V_{SP}	190 km/h IAS
Minimum control speed on ground take-off run	V_{MCG}	130 km/h IAS
Minimum control speed, take-off	V_{MCA}	135 km/h IAS
Minimum control speed during landing approach	V_{MCL}	135 km/h IAS

Airplane with **GE H80-200** engines and AV-725 propellers:

Operating maneuvering speed	V_o	265 km/h IAS
Minimum control speed on ground take-off run	V_{MCG}	111 km/h IAS
Minimum control speed, take-off	V_{MCA}	121 km/h IAS
Minimum control speed during landing approach	V_{MCL}	121 km/h IAS

Center of Gravity (C.G.) limits:

Forward c.g. limit	19 % MAC, 2,555 mm *(100.6 in)* in aft of datum
Aft c.g. limit	30 % of MAC, 2,766 mm *(108.90)* in aft of datum

Datum	Reference point No.2 on fuselage	2.730 m *(107.46 in)* behind the fuselage nose

Levelling Means: In longitudinal direction, the levelling plane is defined by levelling points No. 3, 5, 6 in span wise direction by levelling points No. 19L and 19P.

Mean Aerodynamic Chord (MAC)	1.918 m *(75.50 in)*
MAC starts	2.191 m *(86.26 in)* in aft of datum

Maximum weight
6 600 kg *(14,550 lbs)*: take off
6 400 kg *(14,109 lbs)*: landing
6 000 kg *(13,227 lbs)*: zero fuel weight without wing tip tanks
6 060 kg *(13,360 lbs)*: zero fuel weight with wing tip tanks
6 620 kg *(14,594 lbs)*: taxiing

Minimum Crew 2

Maximum Passengers 19

Number of Seats and Standard version 19

Maximum Baggage	Seats limit 1 thru 6 seats 3 at 1235 mm *(48.62 in)*, 3 at 1995 mm *(78.54 in)* 3 at 2755 mm *(108.46 in)*, 3 at 3515 mm *(138.39 in)* 3 at 4275 mm *(168.31 in)*, 2 at 5035 mm *(198.23 in)* 2 at 5795 mm *(228.15 in)* Seats 17 3 at 1235 mm *(48.62 in)*, 3 at 1995 mm *(78.54 in)* 3 at 2775 mm *(108.46 in)*, 3 at 3515 mm *(138.39 in)* 3 at 4275 mm *(168.31 in)*, 2 at 5035 mm *(198.23 in)* Seats 15 3 at 1235 mm *(48.62 in)*, 3 at 1995 mm *(78.54 in)* 3 at 2775 mm *(108.46 in)*, 3 at 3515 mm *(138.39 in)* 3 at 4275 mm *(168.31 in)*	
Maximum Baggage	All versions Front 110 kg *(234 lb)*	at -1333 mm *(-52.48 in)*
	19 passengers version rear 150 kg *(331 lb)*	at 6 650 mm *(261.81 in)*
	17 passengers version with small baggage and toilet rear 150 kg *(331 lb)*	at 6 035 mm *(237.60 in)*
	17 passengers version with bigger baggage and without toilet rear 227 kg *(500 lb)*	at 6 340 mm *(249.61 in)*
	15 passengers version with the biggest baggage and without toilet rear 330 kg *(727 lb)*	at 6 340 mm *(249.61 in)*

Baggage / Cargo Compartments

Maximum loading of baggage compartments for L 410 UVP-E20 with passengers:

forward baggage compartment	100 kg
aft baggage compartment	150 kg
additional aft baggage compartment	330 kg

Wheels and Tyres	Nose wheel K39-1100-7 with tyre 9.00-6 (550 x 225) M4 or 9.00-6/906 TO6-1 - Good Year	
	Main wheel K38-1100-7 with tyre 12.50-10 (720 x 310) M3 or M4 or 29x11,0-10/11OTO1-1 Good Year	
Maximum baggage floor loading density		400 kg/m² *(81.9 lb/sq.ft)*
Maximum passenger floor loading density		400 kg/m² *(81.9 lb/sq.ft)*
Fuel Capacity	Eight tanks in the wing 1 000 kg *(2,204 lb)*	at 3 134 mm *(123.39 in)*
	unusable fuel	9.5 kg *(21 lb)*
	two wing tip tanks 310 kg *(683 lb)*	at 3 104mm *(122.20 in)*
	unusable fuel	3.7 kg *(8 lb)*
Oil Capacity	In the tank per engine Max. 7 1 *(1.85 gal.)*	at 1 843 mm *(72.56 in)*
	Min. 5.5 1 *(1.45 gal)*	

Destiled water for injection into WALTER M 601E, or WALTER M 601 E-21engines
Max. 10 litre

Maximum Operation Altitude

Maximum operating altitude	4,200 m *(14,000 ft)*
Maximum aerodrome altitude For take off and landing	4,000 m *(13,120 ft)*

All-weather Capability: The aircraft is approved for Day and Night VFR and IFR flights and for intended flights into icing conditions.

Control Surface Movements

Aileron	Up	27° ± 1°
	Down	14° ± 1°
Left aileron trim tab	Up	20° ± 2°
	Down	20° ± 2°
Wing flaps-outer sections		
Takeoff	Down	18° ± 1°
Landing	Down	42° ± 1°
Wing flaps-inner sections		
Landing	Down	52° ± 1.5°
Ground spoilers	Down	72.5° ± 2°
Automatic Bank Control Tab		
	Up	55° + 2°
Elevator	Up	30° ± 1°
	Down	14° ± 1°
Elevator trim tab	Up	10° ± 1°
	Down	16° ± 1°
Rudder	Left	17° - 0.5°
	Right	17° - 0.5°
Rudder trim tab	Left	10° - 1°
	Right	10° - 1.5°
Nose Wheel Steering		
-manual	Left	50° - 0.5°
	Right	50° - 0.5°
-pedal (takeoff, landing)	Left	4.5° ± 1.5°
	Right	4.5° ± 1.5°
For H80-200 engines		
Rudder	Left	25° + 1°
	Right	25° + 1°
Rudder trim tab	Left	28° ± 1.5°
	Right	28° ± 1.5°

Serial Numbers Eligible:	Previously manufactured aircraft: After conversion performed either by the original aircraft manufacturer or a service organization duly authorized by the original aircraft manufacturer to the status conforming to the Indonesian Type design (a/c TC A048). Newly manufactured aircraft: The L 410 UVP-E20 aircraft conforming to the Indonesian Type design (a/c TC A048). The Serial Number of new aircraft will include number of the batch and number of the aircraft in the batch, e.g. 3118.
Flight Manual	For aircraft operating based on Indonesian Type Certificate No. A048 Do-L410-1216.2 Airplane Flight Manual for the L-410 UVP-E20 For aircraft with H80-200 engines and AV-725 propellers: Do-L410-1218.3 Airplane Flight Manual for the L-410 UVP-E20 with H80-200 Engines and AV-725 Propellers
Maintenance Schedule	Do-L410-1223.2 Maintenance Schedule for the L410 UVP-E20 Aeroplane without overhaul The supplement No. 59 to the Maintenance Schedule Do-L410-1223.2 is issued for L 410 UVP-E20 with GE H80-200 engines and AV-725 propellers.
Master Minimum Equipment List	Do-L410-3000.2 Master Minimum Equipment List L410 UVP-E, E9, E20
Maintenance Manual	Do-L410-1232.2 Maintenance Manual for the L 410 UVP-E Aeroplane, L 410 UVP-E9 Aeroplane, L 410 UVP-E20 Aeroplane, Initial Issue, dated 24 July 2014, EASA approved 17 December 2015, or any later EASA approved issue. The supplement No. 210 to the Maintenance Manual Do-L410-1232.2 is issued for L 410 UVP-E20 with GE H80-200 engines and AV-725 propellers.
Wiring Manual	Do-L410-1242.2 Wiring Manual for the L 410 UVP-E Aeroplane, L 410 UVP-E9 Aeroplane, L 410 UVP-E20 Aeroplane The supplement No. 210 to the Wiring Manual Do-L410-1242.2 is issued for L 410 UVP-E20 with GE H80-200 engines and AV-725 propellers.
Illustrated Parts Catalogue	Do-L410-2051.2 Illustrated Parts Catalogue for the L 410 UVP-E Aeroplane, L 410 UVP-E9 Aeroplane, L 410 UVP-E20 Aeroplane
Album of Production, Operation and Repair Tolerances	Do-L410-2031.0 Album of Production, Operation and Repair Tolerances of the L 410 UVP-E, E9, E20 Aeroplane
Inspection Manual	Do-L410-2011.2 Inspection Manual for the L 410 UVP-E Aeroplane, L 410 UVP-E9 Aeroplane, L 410 UVP-E20 Aeroplane
Structural Repair Manual	Do-L410-2021.2 Airframe Repair Manual L 410 UVP, E, E9, E20 Aeroplane
Aging aircraft program	Do-L410-1229.2 Aging aircraft program for the L 410 M aeroplane, L 410 UVP aeroplane, L 410 UVP-E aeroplane, L 410 UVP-E9 aeroplane, L 410 UVP-E20 aeroplane, L-420 aeroplane

Certification Basis

Pursuant to Civil Aviation Safety Regulations of the Republic of Indonesia, part 21 paragraph 21.29, the type certificate number A 048 was issued in validation of the Czech Republic Civil Aviation Authority (CAA) type certification which was found to provide an appropriate level of safety consistent with Indonesian Civil Aviation Safety Regulations.

The basis of the certification is considered applicable to the model L410UVP -E20 airplane with WALTER M 601E, or WALTER M 601 E-21engines:

1. CASR Part23, revision 0, issued December 27, 1993 (equivalent with FAR 23 amendment 23-l through 23-42) for Commuter Category Airplane, except FAR 23 amendment 23 -35 through 23-42.
2. CASR Part 36, revision 0, dated December 27, 1993 (equivalent with FAR Part 36 amendment 36-l up to 36-18.

L410UVP -E20 Airplane with GE H80-200 engines and AV-725 propellers:

1. FAR Part 23 with amendments stated in the EASA TCDS.A.026, Issue 20, dated September 18, 2015
2. CASR Part 36 Amendment 2 dated February 20, 2015 which is equivalent to FAR Part 36 up to Amendment 30, 05 May 2014.

3. See Note 4, for additional compliance.

Import Requirements

Each aircraft to be exported to the Republic of Indonesia shall be accompanied by a certificate of airworthiness for export, which contains the following statements:

(1) This aircraft conforms to its Indonesian type design (Aircraft Type certificate Number A 0**48**) and is in a condition for safe operation.

(2) This aircraft has been subjected by manufacturer to a final operation check and is in a proper state of airworthiness.

Additional guidance is contained in DGAC-Indonesia Advisory Circular 21-2A, Airworthiness Certification of Civil Aircraft, Engines, Propellers, and related products, imported into the Republic of Indonesia.

Equipment

The basic required equipment as prescribed in the applicable airworthiness regulations (see Certification Basis) must be installed in the aircraft for airworthiness certification.

In addition, the following document is required:
EASA approved Airplane Flight Manual Do-L410-1216.2 or Do-L410-1218.3.

The list of approved equipment is shown in the document Do-L410-3200.0
List of models, their variants, serial numbers of L-410/L-420 aircraft and their approved equipment.

NOTES

Note 1

Current weight and balance report, including list of equipment included in certificated empty weight and loading instructions when necessary, must be provided for each aircraft at the time of original certification

The certificated empty weight and corresponding center of gravity positions must include the weight of unusable fuel, engine oil, hydraulic fluid in tanks and in the systems as noted below:

Unusable fuel	9,5 kg (21 lb)
if wing tip tanks installed	3,7 kg (8 lb)
Oil (in tanks plus in the system)	21,6 kg (47.6 lbs)
Hydraulic fluid	17,9 kg (39.5 lb).

Note 2 Required placards are shown in the Airplane Flight Manual.

Note 3 Instructions for Continued Airworthiness are contained in:
Maintenance Manual Do-L410- 1232.2
Maintenance Schedule Do-L410- 1223.2

Note 4 Each L 410 UVP-E2O model exported to the Republic of Indonesia must be modified according to Letecke Zavody a.s. approved drawing as follows:

i.	Master Switch:	DRW. No. B 080 437 N dated 27 June 2003 DRW. No. B 585 493 N dated 30 June 2003
ii.	Airspeed system error: Static pressure system	DRW. No. B 585 329 N dated 27 June 2002
iii.	Battery overheating indication: Modification of Glare shield	DRW. No. B 585 497 N dated 1 July 2003
iv.	Aileron Trim deflection indication: Front console	DRW. No. B 585 494 N dated 30 June 2003
v.	Red color of shut-off valve levers: Front console Handle L Handle R	DRW No. B 585 494 N dated 30 June 2003 DRW No, B 582 706 N dated 10 June 1992 DRW No. B 582 707 N dated 10 June 1992

Note 5 The following type design changes are approved:

- TDC-001-E20: Cargo kit with cargo restrain system for 1700 kg
- TDC-002-E20: Additional baggage / cargo compartment
- TDC-005-E20-420 Deactivation of the deicing system
- TDC-063-E20-420: Installation of Universal EFI-890R Electronic Flight Displays, FA 2200 MADRAS FDR and integrated systems
- TDC-064-E-E9-E20 Increase of crosswind limitation for L410UVP-E, L410 UVP-E9, L410UVP-E20 and L-420 aircraft variants
- TDC-070-E-E9-E20-420: Installation of the HF KHF1050 radio
- TDC-078-E-E9-E20-420: Installation of Portable Toilet Porta Potti on Airplanes L410/L-420
- TDC-092-E-E9-E20-420: Ambulance kit
- TDC-094–E20-420: Conversion of toilet area in rear passenger cabin into baggage compartment
- TDC-106-E20: Installation of GE H80-200 engines and AV-725 propellers
- TDC-108-E-E9-E20-420: Passenger to cargo quick change configuration with foldable seats
- TDC-132-M-UVP-E-E9-E20-420 Replacement of extinguishing agent Halon 2402 with Halon 1301 in the extinguishing bottle drawing No.:B067300N of the engine fire protection system
- TDC-133-E20-420 Sport Parachuting Kit
- TDC-139-E-E9-E20-420 Flight attendant's folding seat installation
- TDC-186-E20-420 Replacement of mechanical STBY instruments by ESI-2000 with MAG-3100 Magnetometers and replacement of dual GNS 430W by one GTN 750 and one GTN 650

including the remaining type design changes approved till the EASA TCDS.A.026, Issue 20, issuance.

-END-