

Test Equipment For Single Aisle Flow Line

>TE-FLSA<



>TE-FLSA1< (part of >EHPSAT6-8<)
High Pressure Test, Flushing and Particle Measuring



>TE-FLSA2<
Hydraulic Supply



>TE-FLSA3<
Bonding and Loop
Resistance Test



>TE-FLSA4<
Rudder Deflection Test



>TE-FLSA5<
Gap Measurement



>TE-FLSA6<
Antenna Test



>TE-FLSA7<
Cable Test



The equipment has been developed for testing diverse characteristics of the vertical tail plane of Single Aisle planes (AIRBUS A318 to A321) in the flow line at the AIRBUS factory in Stade/Germany.

- Low and high pressure tests of tube lines
- Flushing incl. particle measuring
- Bonding and loop resistance test
- Rudder Deflection Test (Move Rudder)
- Hydraulic supply
- Gap measurement of fuselage fittings
- Antenna test
- Continuity and insulation test of the electrical cable harnesses

The test equipment can be adapted for other components as well.

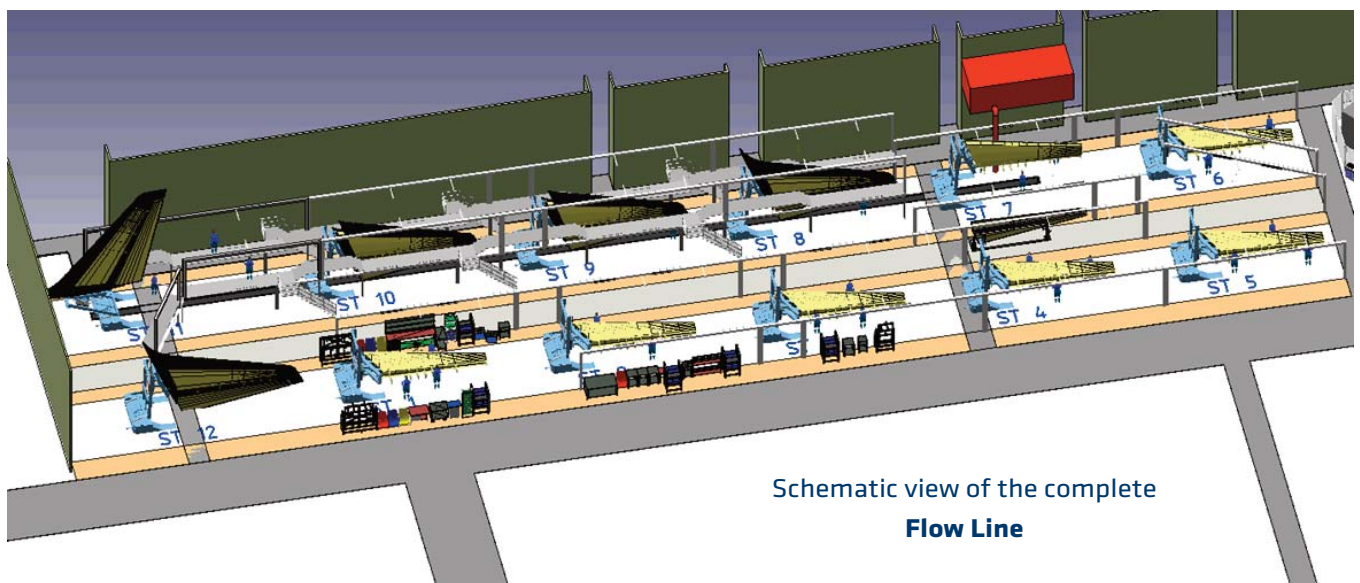
- > Flexible application of the test equipment by mobile setup
- > Central operation / remote control of the single modules via WLAN or VNC
- > Test devices of the same type can be interchanged
- > Automatic test programs
- > Use of approved functions and test equipment

GENERAL INFORMATION

- > Test equipment is of an ergonomic design
- > By the paint and the anodized aluminium front panels, the test devices are resistant against the test medium (skydrol) and cleaning detergents
- > The LAN- and WLAN connection enables maintenance of the TEST-FUCHS test stand software, test procedures, network printer as well as trouble shooting on the device
- > Easy and quick calibration is provided via the TEST-FUCHS standard software

TECHNICAL DATA

<p>> Application area:</p> <p>Single Aisle planes: Airbus A318 Airbus A319 Airbus A320 Airbus A321</p>	<p>> Operating conditions:</p> <p>Operating temp.: 5 to 35°C (59 to 86°F)</p> <p>Storage temperature: 0 to 55°C (41 to 140°F)</p> <p>Height: up to 1,000m (3,280ft) via MSL</p> <p>Rel. air humidity: 5 to 95% (non-condensing)</p> <p>Installation: in a non-explosive range</p>
<p>> Hydraulic medium:</p> <p>Medium: SKYDROL LD4, SKYDROL 5</p>	



Schematic view of the complete
Flow Line

OPTIONS

A wide range of options is available to fulfil our customers' requirements.
 e.g.: Adaption to numerous UUTs, requirements to the test program, dimensioning,...

>TE-FLSA<

Test Equipment For Single Aisle Flow Line

>TE-FLSA1< HIGH PRESSURE TEST, FLUSHING, PARTICLE MEASURING

- > Developed for different hydraulic tests on the vertical tail: preliminary test for tightness with compressed air, flushing and particle measuring for each system, leakproof test with low and high pressure, filling, draining and depressurization of the hydraulic lines
- > Test station specific hydraulic valve groups for pressure test performance only on the respective part and not on the whole system
- > The same test equipment is used for TWIN AISLE Hydraulic test



TECHNICAL DATA

> Electrical supply (requirements):

Mains connection: 3/N/PE AC 50Hz 400V
 Nominal current: 105A
 Nominal power: 73kVA
 Prefuse: 125A

> Pneumatic supply (requirements):

Pressure: max. 8bar (116psi)
 (dry and oil-free)

> Measurements:

Particle meas.: 5 to 100µm
 Temperature: 0 to 100°C (32 to 212°F)
 (6 off) ±1K (1.8°F) abs.
 -20 to +80°C (-4 to +176°F)
 (2 off) ±1K (1.8°F) abs.
 Humidity: 0 to 100% relative humidity
 (2 off) ±3% abs.
 Pressure: 0 to 500bar (0 to 7.252psi)
 (8 off) ±0.5% o.m.r.
 Flow: 0 to 80l/min (0 to 21USgpm)
 (4 off) ±1% o.f.s.

> Hydraulic parameters:

Main tank: 300l (80USgal)
 Circulating/supply circuit: 75l/min (max. 20USgpm)
 HP-circuits: 10 to 45l/min, max. 360bar
 (2.6 to 11.9USgpm, max. 5,220psi)
 Return circuits, compressed air circuit

> Dimensions:

Power unit & switch cabinet
 Width: approx. 4,880mm (192in)
 Depth: approx. 2,060mm (81.1in)
 Height: approx. 2,220mm (87.4in)

Computer table:
 Width: approx. 1,500mm (59.1in)
 Depth: approx. 800mm (31.5in)
 Height: approx. 760mm (29.9in)

Rack 1:
 Width: approx. 600mm (23.6in)
 Depth: approx. 800mm (31.5in)
 Height: approx. 2,300mm (90.6in)

Test Equipment For Single Aisle Flow Line

>TE-FLSA2< HYDRAULIC SUPPLY

- > Developed for hydraulic supply of more test stands with two independent power units; redundant design
- > Tank compensating line to connect the tanks, full volume of both tanks can be used
- > Optic and electrical fill level monitoring, filter in the supply and return lines as well as integrated cooling units



TECHNICAL DATA

> Electrical supply (requirements):

Mains connection: 3/N/PE AC 50Hz 400V
 Performance: 38kVA
 Nominal current: 55A
 Prefuse: 13A GL (mains line)

> Hydraulic parameters:

Tanks: 2 x 300l (80USgal)
 Temperature: max. 90°C (194°F)
 Pressure: max. 180bar (2,610psi)
 Safety valve: max. 230bar (3,340psi)

> Dimensions and weight:

Hydraulic power unit (>TE-FLSA2< consists of two power units)

Width:	approx. 1,300mm	(51.2in)
Depth:	approx. 950mm	(37.4in)
Height:	approx. 1,530mm	(53.1in)
Weight:	approx. 400kg	(880lb)

Switch cabinet

Width:	approx. 780mm	(30.7in)
Depth:	approx. 350mm	(13.8in)
Height:	approx. 760mm	(29.9in)
Weight:	approx. 150kg	(330lb)

Test Equipment For Single Aisle Flow Line

>TE-FLSA3< BONDING AND LOOP RESISTANCE TEST

- > Developed for bonding and loop resistance tests
- > “Bonding Tester >MVP10S-24FS<“ to test electrical equipment with long connecting lines with an output performance of up to 240W
- > Loop resistance measurement by means of “Loop Resistance Tester >IM2-FS<“ and “Impedance Measurement Clamp >IMZ7< with automatic compensation and range switchover, search-mode for quick localization of defect connections



TECHNICAL DATA

> Electrical supply (requirements):

Mains connection: 1/N/PE AC 50Hz 230V
 Performance: 2.9kVA
 Nominal current: 13A
 Prefuse: 13A GL (mains line)

> Dimensions:

Width: approx.790mm (31.1in)
 Depth: approx.750mm (29.5in)
 Height: approx.960mm (37.8in)
 Weight: approx.150kg (330lb)

> Measurements:

Bonding tester:
 - Current: 0 to 10A permanent current
 - Voltage: 0 to 24V
 - Resistance: 0 to 100Ω
 - Precision: at least 0.5%

Loop resistance measuring device:
 - Resistance: 0 to 200mΩ
 - Precision: at least 5%

Test Equipment For Single Aisle Flow Line

>TE-FLSA4< RUDDER TEST

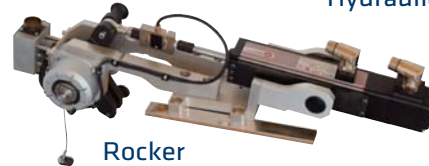
- > Developed to test the rudder mechanics of the vertical tail
- > The “rocker“ mounted on the carrier of the vertical tail simulates rope hoist for rudder operation
- > Rocker with integrated angle and force measurement
- > Mobile hydraulic distributor for flexible connection to the hydraulic power unit
- > External rudder angle sensor



Network cabinet



Hydraulic distributor



Rocker

TECHNICAL DATA

> Electrical supply (requirements):

Mains connection: 1/N/PE AC 50Hz 230V
 Performance: 2.9kVA
 Nominal current: 13A
 Prefuse: 13A GL (mains line)

> Hydraulic supply (requirements):

Supply: >TE-FLSA2<

> Measurements:

Force: -2,000 to +2,000N
 (-450 to +450lbf)
 (1 off) ±8N (1.8lbf)
 Angle: -360 to +360°
 (2 off) ±0.1°

> Dimensions and weight:

Network cabinet

Width: approx. 790mm (31.1in)
 Depth: approx. 680mm (26.7in)
 Height: approx. 1,355mm (53.3in)
 Weight: approx. 140kg (309lb)

Rocker

Length: approx. 730mm (28.7in)
 Width: approx. 180mm (7.1in)
 Height: approx. 250mm (9.8in)

Hydraulic distributor

Width: approx. 770mm (30.3in)
 Depth: approx. 730mm (28.7in)
 Height: approx. 1,570mm (61.8in)

Test Equipment For Single Aisle Flow Line

>TE-FLSA5< GAP MEASUREMENT

- > Developed for gap measurement of the fuselage intake from the vertical tail. The vertical tail can be mounted exactly afterwards and the exact placing on the carrier is already ensured during manufacture
- > Gap measurement with 12 LVDT- stroke measurements
- > Accessory drawer for storing the test cable and sensors



TECHNICAL DATA

> Electrical supply (requirements):

Mains connection: 1/N/PE AC 50Hz 230V
Performance: 2.9kVA
Nominal current: 13A
Prefuse: 13A GL (mains line)

> Measurements:

Stroke: -5 to +5mm (-0,2in to+0.2in)
(12 off) ±0.1mm (0.004in) abs.

> Dimensions and weight:

Width:	approx. 720mm	(28.3in)
Depth:	approx. 660mm	(26in)
Height:	approx. 960mm	(37.8in)
Weight:	approx. 105kg	(230lb)

Test Equipment For Single Aisle Flow Line

>TE-FLSA6< ANTENNA TEST

- > Developed for testing the VOR antenna and antenna cabling
- > Evaluation of continuity and reflexion value of the antenna
- > Automatic changeovers
- > Redundant antenna line
- > Automatic test program



TECHNICAL DATA

> Electrical supply (requirements):

Mains connection: 1/N/PE AC 50Hz 230V
Performance: 2.3kVA
Nominal current: 10A
Prefuse: 13A GL (mains line)

> Dimensions and weight:

Width:	approx. 630mm	(24.8in)
Depth:	approx. 765mm	(30.1in)
Height:	approx. 1,355mm	(53.3in)
Weight:	approx. 150kg	(330lb)

> Measurements:

Antenna measurement

Test Equipment For Single Aisle Flow Line

>TE-FLSA7< CABLE TEST

- > Developed for cable tests of cable harness in the vertical tails
- > Designed for more application areas with central control including more complete cable sets and two independent switching boxes
- > Additional reserve cable packages for test continuation in case of failure
- > Cable storage in the switch cabinet or in the cable drums with a rope hoist hanging from the wall



TECHNICAL DATA

> Electrical supply (requirements):

Mains connection: 1/N/PE AC 50Hz 230V
Performance: 1.4kVA
Nominal current: 6A
Back-up fuse: 13A GL (mains line)

> Measurements:

Cable test
Insulation test
Continuity test

> Dimensions and weight:

Cabinet system:

Width:	approx. 2,310mm	(90.9in)
Depth:	approx. 615mm	(24.2in)
Height:	approx. 1,850mm	(72.8in)
Weight:	approx. 390kg	(860lb)