Hydraulic Test Stand For Flight Control Units

>HFCU3<

The test stand is developed for testing the BOEING 777 Flight Control Units.

It can be adapted for Flight Control Units of other aircraft types with similar testing requirements.

- Specific testing requirements e.g. loading, stroke, pressure, flow, voltage, current, “closed loop” performance, etc. can be carried out by a two circuit hydraulic supply, which can be connected to the UUT, as and where required.
- The testing and setup time is considerably reduced due to the universally adaptable test bed.
- The test stand hydraulic supply can be provided by existing hydraulic power supply units. If required an external Hydraulic Supply Unit can be supplied by Test Fuchs.
- A Frequency generator and lock-in-amplifier are fitted to produce and evaluate the measured voltages, currents and frequences of the UUTs.
- A hydraulical load unit (servo-cylinder) provides mechanical loading of up to 120kN.

GENERAL INFORMATION

- The aircraft electronics is simulated by the test stand for control of the UUTs.
- Doors and removable covers enable easy access for maintenance purposes.
- The test chamber is fitted with a drip tray and protective PET panels for safety, protection from skydrol and providing good visibility and accessibility to the UUT.
- UUT rotation and cycling fixtures are fitted with torque and anglular measurement outputs.
- The displacement transducer can be placed to any position required.
- A bladder accumulator with 5 liter capacity serves as a pressure accumulator for the hydraulic supply.
- A radial piston pump provides pressures of up to a maximum of 310bar (4500PSI) for proof pressure testing.
- Two monitors are provided to control the test run and at the same time enable the test instructions and protocol to be observed.
- The integrated modem enables updating and maintenance of the test stand software, test procedures and trouble shooting to be carried out by Test-Fuchs from the factory in Austria.
- The test stand is fitted with the Test-Fuchs standard software which can be extended as required.
- Easy and quick calibration is carried out by use of the Test-Fuchs standard software.
- The unit is of an ergonomic and compact design which provides easy access to the test chamber with sliding doors for quick UUT change.
- Test stand framework is made from stainless steel with anodized aluminum panels.
- Special to type adapter cables, rotational and mechanical fixtures and hoses are supplied for each UUT as required by the customer.

TECHNICAL DATA

Electrical Supply (requirements):

Test stand:	
Supply:	3/N/PE AC 50Hz 400V
Nominal power:	17kVA
Nominal current:	max. 25A
Computer:	
Supply:	1/N/PE 50Hz 230V
Nominal power:	2kVA
Nominal current:	10A

Hydraulic Supply (requirements):

Supply:	254bar (3700PSI) max. 150l/min (40gpm)
Return:	max. 3bar (44PSI) max. 150l/min (40gpm)
Used oil line:	max. 20l/min (5.3gpm)

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TECHNICAL DATA

> **Medium:**

SKYDROL

> **Electrical Parameter:**

4-off maintenance sockets:	1/N/PE 50Hz 230V max. 10A

> **Hydraulic Parameter:**

2 Outputs with up to 245bar (3600PSI)
1 Output with 310bar (4500PSI)
1 Return with up to 210bar (3050PSI)

> **Operating Conditions:**

Operational temperature: +5 to +35°C (+41 to +95°F)
Storage temperature: 0 to +60°C (+32 to +140°F)
Relative humidity: 10 - 95% (non-condensing)

> **Dimensions and Weight:**

Test stand:

Length:	3900mm (12.8ft)
Width:	1000mm (3.3ft)
Height:	2500mm (8.2ft) incl. swivelling arm
Weight:	approx 2200kg (4850lb) incl. switch cabinet

Switch cabinet:

Length:	800mm (2.6ft)
Width:	400mm (1.3ft)
Height:	2100mm (6.9ft)

Computer system:

Length:	600mm (1.9ft)
Width:	800mm (2.6ft)
Height:	2200mm (7.2ft)
Weight:	approx 230kg (510lb)

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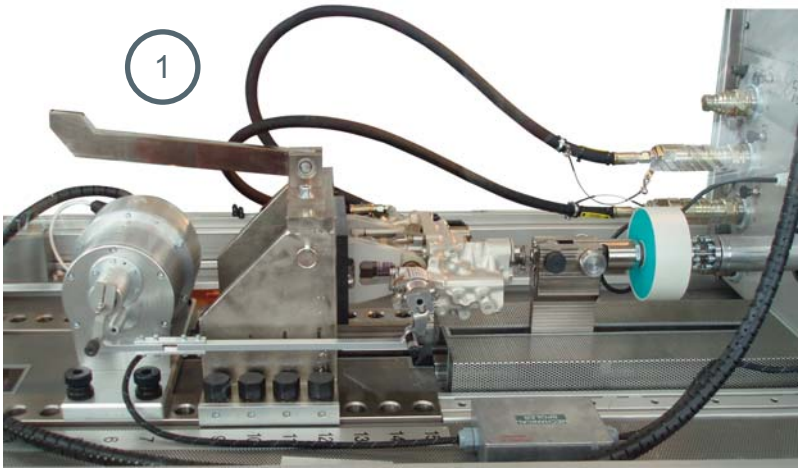

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1 Example of a test setup with UUT rotation and cycling fixtures

2 Network cabinet with adaptations for test cable storage

3 Universally Adaptable Test Bed

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TECHNICAL DATA

> **Measurement range:**

Temperature:
4 off 0 - 100°C (32 - 212°F), ±1K abs.

Ambient temperature:
1 off -10 bis 60°C (14 - 140°F), ±1K abs.

Pressure:
7 off 0 - 400bar (0 - 5081PSI)
1 off 0 - 100bar (0 - 1450,4PSI)
2 off 0 - 25bar (0 - 362,9PSI)
1 off 0 - 1,6bar abs (0 - 23,2PSI abs.)
±0,25% of full scale

Flow:
1 off each 0 - 4l/min (0 - 1gpm),
0 - 150l/min (0 - 40gpm),
± 0,5% of full scale

Force:
1 off ±120kN ± 0,2% of full scale

Angle:
1 off 0 - 360° ±0,1° abs.

Torque:
1 off ± 1Nm ± 0,5% off full scale

Stroke:
2 off each 0 - 1050mm
0 - 500mm
± 0,05mm abs.
1 off 0 - 30mm ± 0,01mm abs.

Voltage LVDT:
1 off 8 Stk. ± 10Vrms ± 0,1% of full scale

Voltage LVDT DEM:
8 off ± 10VDC ±0,1% of full scale

Phase shifting:
8 off ± 360° ± 0,5° abs.

Excitation voltage LVDT:
2 off 0 - 10VDC ± 0,1% of full scale

Excitation voltage LVDT:
2 off 0 - 10Vrms ± 0,1% of full scale

Excitation current LVDT:
2 off 0 - 100mADC ± 0,5% of full scale

Excitation current LVDT RMS:
1 off 0 - 100mArms ± 0,5% of full scale

Voltage SOLENOID:
2 off 0 - 35VDC ± 0,5% of full scale

Current SOLENOID:
2 off 0 - 1ADC ± 0,5% of full scale

Voltage SERVO:
2 off ± 20VDC ± 0,5% of full scale

Current SERVO:
2 off 0 - 35ADC ± 0,5% of full scale

OPTIONS

Many options are possible for adaption,
e.g. adaption to Flight Control Units of other aircraft types, etc.

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