Test stand for fuel pumps and components

>KKP1000M-407<

The test stand is developed for testing of electrically or externally driven fuel pumps and control units, fuel valves with and without actuator, fuel coolers and other fuel components of the TORNADO and EUROFIGHTER TYPHOON aircraft.

It is possible to use this test stand to test other aircraft's fuel system components.

- The test stand tests and records performance data, e.g. pressure, flow and temperature.
- The test stand has three test stations
  - Swivelling tank for immersion pumps
  - Components test module
  - Pump test module
- Self test concept for early detection of malfunction of ARI's (AGE Replaceable Items) and for prevention of consequential damages - Power-On Built-In Test (PBIT) while switching on, Continuous Built-In Test (CBIT) during operation, and Initiated Built-In Tests (IBIT).
- The test stand <KKP1000M-407> is computer controlled.
- Test medium is kerosene (JP-8), however after recalibration MIL-C-7024II or EXXSOL D40 or any other typical fuel can be used.
- Explosion protection in accordance with ATEX Directive 94/9/EC for hazard area.

GENERAL INFORMATION

- TF standard software is fitted which can be easily extended for changes to the test procedures
- Measurement data acquisition and recording of flow, pressure, temperature, etc.
- Wide range of adapters for the different UUTs
- A gas warning unit, control of medium temperature below flash point and technical ventilation are used to prevent any explosive atmosphere in accordance with the ATEX directive
- A modem is fitted to enable trouble shooting and updating of the test stand software/test procedures from Test-Fuchs in Austria
- Easy and quick calibration is carried out by use of the TEST-FUCHS standard software

TECHNICAL DATA

Basic data:

Test medium: JP-8
Main tank: 1400l (369.8USgal)
Swivelling tank: 380l (100.0USgal)

Electric supply (requirements):

Test system:
3/N/PE AC 50Hz 400V
Nominal current: 480A
Back-up fuse: 500A gL
Power: approx. 333kVA

UPS:
1/N/PE AC 50Hz 230V
Nominal current: 13A
Back-up fuse: 13A
Power: approx. 3kVA

Compressed air supply (requirements):

6 to 10bar (87 to 145psi)
dry and oilfree

Nitrogen supply (requirements):

with an independent unit component
max. 200bar (2900psi)

Cold water supply (requirements):

1.6bar, 21.3m^3/h
(23.2psi, 21.3m^3/h)

Technical ventilation:

Supply air: 1000m^3/h (35315ft^3)
Exhaust air: 1100m^3/h (38846ft^3)

Hydraulic and mechanic parameter:

Boost circuit:
max. 1000l/min at 5bar (max. 1849.2gpm at 72.5psi)

HP supply (2 off):
120bar (1740.5psi)
0 to 50l/min (0 to 13.2USgpm)

MP supply:
50bar (725psi)
0 to 120l/min (0 to 31.7USgpm)

Swivelling tank and measurement circuit 1:
750l/min at 10bar (185USgpm at 145psi)

Load and measurement circuit 2:
max. 750l/min, max. 20bar
(max. 198USgpm, max. 290psi)

Load and measurement circuit 3:
max. 160l/min, max. 120bar
(max. 42.3USgpm, max. 1740psi)

Leak measurement circuit:
0.03-11.5cm^3/min, max. 35bar (max. 508 psi)

Hydraulic supply:
0-20l/min, max. 160bar (0-5.3USgpm, max. 2321psi)

Nitrogen supply:
0.3 to 10l/min (0.08 to 2.6USgpm)

Vacuum circuit:
up to 0.033 bar abs. (-0.48psi)

UUT drive:
Power: 30kW
Rotational speed: 12500rpm

TECHNICAL DATA (continuation)

> **Measurement range:**

Volume flow fuel: (9 off)
e.g.
113 to 1150l/min (30 to 304USgpm)
or
0.02 - 2l/min (0.01 - 0.53USgpm)
±0.75% of full scale

Volume flow nitrogen: (1 off)
0.3 to 10Nl/min
±2% range

Mass flow: (1 off)
1.5 - 550g/h
±2% range

Relative pressure: (31 off)
e.g.
0 - 250bar (0 - 3626psi)
or
0 - 0.6bar (0 - 8.7psi)
±0.25% range

Absolute pressure: (1 off)
800 - 1200mbar abs. (11.6 - 17.4psi)
±0.25% range

Temperature: (15 off)
0 - 50°C (32 - 122F)
±0.5K abs.

Water in fuel: (1 off)
0-100ppm
±3ppm abs.

Air humidity: (1 off)
0 - 100% relative humidity
±7% range

DC voltage: (1 off)
- 40 to +40VDC
±0.25% of full scale

Direct current: (1 off each)
0 - 60A
0 - 10A
0 - 2A
± 0.25% of full scale

AC voltage: (3 off each)
0 - 300V
0 - 150V
±0.5% of full scale

Alternating current: (3 off)
0 - 10A
±0.5% of full scale

Frequency: (1 off)
0 - 500Hz
±1% of full scale

Rotational speed: (1 off)
0 - 15000rpm
±15rpm abs.

Torque: (1 off)
-10 to +10Nm
±0.25Nm abs.

Fill level: (2 off)
-330 to 330mm (-1.08 to +1.08ft)
±1mm abs.

Angle swivelling tank: (1 off)
-180° to +180°
±1° abs.

TECHNICAL DATA (continuation)

> Dimensions and weights:

Components test module:

Length:	3885mm	(12.7ft)
Width:	3010mm	(9.9ft)
Height:	2400mm	(7.9ft)
Weight:	3500kg	(7700lb)

Hydraulic power unit:

Length:	3880mm	(12.6ft)
Width:	1960mm	(6.4ft)
Height:	2200mm	(7.2ft)
Weight:	4400kg	(9700lb)

Swivelling tank module:

Length:	1130mm	(3.7ft)
Width:	3010mm	(9.9ft)
Height:	2400mm	(7.9ft)
Weight:	1770kg	(3750lb)

Pump test module:

Length:	1130mm	(3.7ft)
Width:	3010mm	(9.9ft)
Height:	2400mm	(7.9ft)
Weight:	1220kg	(2690lb)

Switch cabinet:

Length:	3020mm	(10.0ft)
Width:	510mm	(1.8ft)
Height:	2200mm	(7.2ft)
Weight:	860kg	(1900lb)

Control cabinet:

Length:	610mm	(2.0ft)
Width:	830mm	(2.7ft)
Height:	2210mm	(7.3ft)
Weight:	180kg	(397lb)

Hydraulic Power Unit

Control cabinet

Swivelling Tank

Technical data are subject to change!