

Hydraulic Test Stands For Non Rotating Components

SERIES >HPM-S/M-NR<



HPM-S/M-NR-60-50 incl. optional assemblies and cylinder workbench

The test stand is developed to test non rotating components such as Nose Landing Gear Steering Metering Valve Module or Main Landing Gear Retract Actuator Assembly.

It tests pressure, flow, temperature, leakage, time, hysteresis, etc.

It is possible to adapt this test stand for various non-rotating components.

- > The test bench can be supplied for Skydrol or mineral oil.
- > Various options grant an assembly of the test stand in accordance with individual requirements.
- > Five different types of this test stand are available, other designs can be offered on request.
- > Expansion by means of the test stand module "Cylinder workbench <HPM-S/M-LU>" to test linear actuators (option).
- > Universal quick release skewer for pressures up to a max. of 650bar (option).
- > The supply is ensured by the hydraulic power unit <HPM-S/M-PU>.

RANGE OF APPLICATION

> The Skydrol version (letter “S“) can be used for the following aircraft types:

AIRBUS A300 A319 A320 A330/340 A380 A400M	BOEING B737 B747 B757 B767 B777 B787	BOMBARDIER CRJ Series	ANTONOV AN-148
		EMBRAER ERJ135/145 E-Jets	SUKHOI SSJ-100

> The mineral oil version (letter “M“) can be used for the following aircraft types:

Eurofighter	Tornado	F-18	F-16	F-15	F-4	AN-124
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3000PSI HYDRAULIC TEST STAND

> suitable for aircraft types equipped with a 3000psi system

Type	Flow HP circuit [US gpm]	Flow HP circuit [l/min]	Flow LP circuit [US gpm]	Flow LP circuit [l/min]
HPM-S/M-NR-20-30	20	76	40	151
HPM-S/M-NR-40-30	40	151	62	235

5000PSI HYDRAULIC TEST STAND

> suitable for aircraft types equipped with a 3000psi and 5000psi system, e.g.: A380

Type	Flow HP circuit [US gpm]	Flow HP circuit [l/min]	Flow LP circuit [US gpm]	Flow LP circuit [l/min]
HPM-S/M-NR-20-50	20	76	40	151
HPM-S/M-NR-40-50	40	151	62	235
HPM-S/M-NR-60-50	60	227	62	235

MISCELLANEOUS

- > The equipment can be easily serviced and transported due to its modular design.
- > Two monitors (19" TFT) with touch screen and keyboard with trackball (option) control the equipment. They are arranged vertically on a telescope swivel arm.
- > The framework of the test stand is fitted with a drain pan to collect leaking medium during maintenance and to prevent environmentally hazardous conditions.
- > The electrically operated elements are integrated in system blocks inside the system. They are operated by means of the system computer.
- > The drain pan with oil sump is located underneath the test bed to collect leakage during the change of UUT's.
- > One return pump is fitted to return test medium from the drain pan - located underneath the test bed - into the main tank of the hydraulic power unit.
- > The use of stainless steel where required and suitably protected aluminium control panels, covers and housings ensure corrosion resistance (for the Skydrol version).
- > Filters in the supply and return lines ensure purity of test medium.

OPTIONS

- > The wide range of different options and the modular design ensure an assembly of the power unit in accordance with individual requirements.
e.g.: different control consoles, touch screen, pillar jib crane, extensions to enable testing of servo valves, flight control, etc.

TECHNICAL DATA

> **Electrical parameters (max.):**NR:

Mains connection: 3/N/PE AC 50Hz 400V

Nominal current: 32A

Power: 22kVA

LU:

Mains connection: 3/N/PE AC 50Hz 400V

Nominal current: 10A

Power: 7kVA

> **Pneumatic supply (requirements):**Compressed air supply: 2 to 15bar
(29 to 218psi)Nitrogen supply: 20 to 350bar
(290 to 5,076psi)> **Hydraulic supply (requirements):**Low pressure:

Flow: 235l/min (62USgpm)

Pressure: max. 15bar (218psi)

High pressure:

Flow: 230l/min (60USgpm)

Pressure: max. 350bar (5,076psi)

High pressure:

Flow: 10l/min (2.6USgpm)

Pressure: max. 650bar (5,076psi)

Actuating pressure:

Flow: 22l/min (5.8USgpm)

Pressure: max. 385bar (5,594psi)

Return> **Medium:**Letter "S":

Skydrol IV, Skydrol V

HyJet IV, HyJet V

Letter "M":

Hydraulic oils i.a.w.: MIL-H-5606

MIL-H-83282

MIL-H-87257

> **Operating conditions:**Ambient temperature: +5 to +45°C
(+41 to +113°F)Storage temperature: 0 to +60°C
(+32 to +140°F)Height: max. 3,000m above SL
(max. 9,840ft)

Humidity: 10 to 95%

> **Dimensions and weight:**NR (basic module):

Length: 4,000mm (13.1ft)

Width: 1,600mm (5.2ft)

Height: 2,300mm (7.5ft)

Weight: approx. 6,000kg (13,228lb)

LU 200 (dimensions depend on the frame size):

Length: 5,450mm (17.9ft)

Width: 1,350mm (4.4ft)

Height: 1,800mm (5.9ft)

Weight: approx. 2,000kg (4,409lb)

MEASUREMENT RANGE

> **Measurement range (incl. all options):**Flowmeter:

(2-off)	0.02 to 2lpm (0.01 to 1.1USgpm)	±0.5% o.f.s.
(2-off)	0.16 bis 16lpm (0.04 to 4.2USgpm)	±0.5% o.f.s.
(5-off)	6 to 250lpm (0.002 to 0.5USgpm)	±0.5% o.f.s.

Pressure sensor:

(2-off)	0 to 2.5bar (0 to 36.3psi)	±0.5% meas.r.
(2-off)	0 to 10bar (0 to 145psi)	±0.5% meas.r.
(3-off)	0 to 16bar (0 to 232psi)	±0.5% meas.r.
(2-off)	0 to 250bar (0 to 3,626psi)	±0.5% meas.r.
(11-off)	0 to 400bar (0 to 5,801psi)	±0.5% meas.r.
(9-off)	0 to 600bar (0 to 8,702psi)	±0.5% meas.r.

Temperature sensor:

(9-off)	0 to 100°C (32 to 212°F)	±1°C abs.
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Load (LU):

(1-off)	-250 to +250kN	±0.5% o.f.s.
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Voltmeter:

(2-off)	0 to 40VDC	±0.5% o.f.s.
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Current:

(2-off)	0 to 15ADC	±0.5% o.f.s.
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Voltmeter (LVDT):

(8-off)	-10 to 10Vrms	±0.5° o.f.s.
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Voltmeter (LVDT DEM):

(8-off)	-10 to 10VDC	±0.5° o.f.s.
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Phase shifting LVDT:

(8-off)	-360 to +360°	±0.5° abs.
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Exciting voltage LVDT:

(2-off)	-20 to 20VDC	±0.5° o.f.s.
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Exciting voltage LVDT RMS:

(2-off)	0 to 20Vrms	±0.5° o.f.s.
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Exciting current LVDT:

(2-off)	-500 to +500mADC	±0.5% o.f.s.
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Exciting current LVDT RMS:

(2-off)	0 to 500mArms	±0.5% o.f.s.
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Voltmeter (SOLENOID):

(2-off)	0 to 35VDC	±0.5% o.f.s.
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Current (SOLENOID):

(2-off)	0 to 1ADC	±0.5° o.f.s.
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Voltmeter (SERVO):

(2-off)	0 to 40Vrms	±0.5° o.f.s.
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(2-off)	-20 to 20VDC	±0.5° o.f.s.
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(2-off)	-40 to 40VDC	±0.5° o.f.s.
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Current (SERVO):

(1-off)	0 to 10mArms	±0.5° o.f.s.
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(1-off)	0 to 60mArms	±0.5° o.f.s.
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(2-off)	-10 to 10mADC	±0.5° o.f.s.
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(2-off)	-60 to 60mADC	±0.5° o.f.s.
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Voltmeter (REAL LOCK IN):

(1-off)	-10 to 10VDC	±0.5° o.f.s.
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Voltmeter (IMAG LOCK IN):

(1-off)	-10 to 10VDC	±0.5° o.f.s.
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MEASUREMENT RANGE (Continuation)

> Freely connectable measurements:			(2-off)	0 to 16bar (0 to 232psi)	±0.5% meas.r.
<u>Pressure sensor:</u>			(2-off)	0 to 2.5bar (0 to 36.3psi)	±0.5% meas.r.
(1-off)	0 to 600bar (0 to 8,702psi)	±0.5% meas.r.			
(2-off)	0 to 400bar (0 to 5,801psi)	±0.5% meas.r.			
(2-off)	0 to 250bar (0 to 3,626psi)	±0.5% meas.r.			
			o.f.s.	... of full scale	
			meas.r.	... measurement range	
			abs.	... absolute	