

# Starter Generator Test Rig



Product Catalog

## About us:

Neometrix Defence Celebrating 20 Years of Excellence!

For the past two decades, Neometrix Defence has maintained its position as a premier provider of advanced test benches and rigs.

Our accreditation by the Directorate General of Aeronautical Quality Assurance, India (DGAQA) and Defence Research & Development Organization, India (DRDO) underscores our commitment to upholding the highest international defence industry standards.

Counting the Indian Air Force/Army/Navy, Ministry of Defence, Hindustan Aeronautical Limited, and DRDO among our esteemed clientele, we are recognized for delivering state-of-the-art solutions and unwavering performance reliability.

## Strengths & Capabilities:

Neometrix Defence is a powerhouse of engineering brilliance, proudly serving every Indian Air Force station and partnering with the Indian Army, Navy, Railways, BARC, NPCIL, and ISRO. With a team of over 100 elite engineers and visionary founders from IIT Kanpur and IIT Delhi, we harness cutting-edge technology to set the gold standard in mechanical engineering.

### We Don't Just Meet Industry Demands – We Define Them!



- We have established our presence in all Air Force stations across India. With the Indian Air Force as our leading customer, we are dedicated to upholding the highest standards of excellence in the aerospace industry.
- Our extensive clientele extends beyond the defence industry, including projects with the Indian Army, Navy, Railways, BARC, NPCIL, ISRO, and more. In essence, we excel in all aspects of mechanical engineering!
- Our team comprises over 100 graduate engineers, supported by a cutting-edge manufacturing site equipped with state-of-the-art machinery, enabling us to meet the highest Engineering standards.
- The founders of our company are distinguished graduates from IIT Kanpur and IIT Delhi, bringing extensive expertise and a wealth of engineering knowledge to Neometrix Defence.

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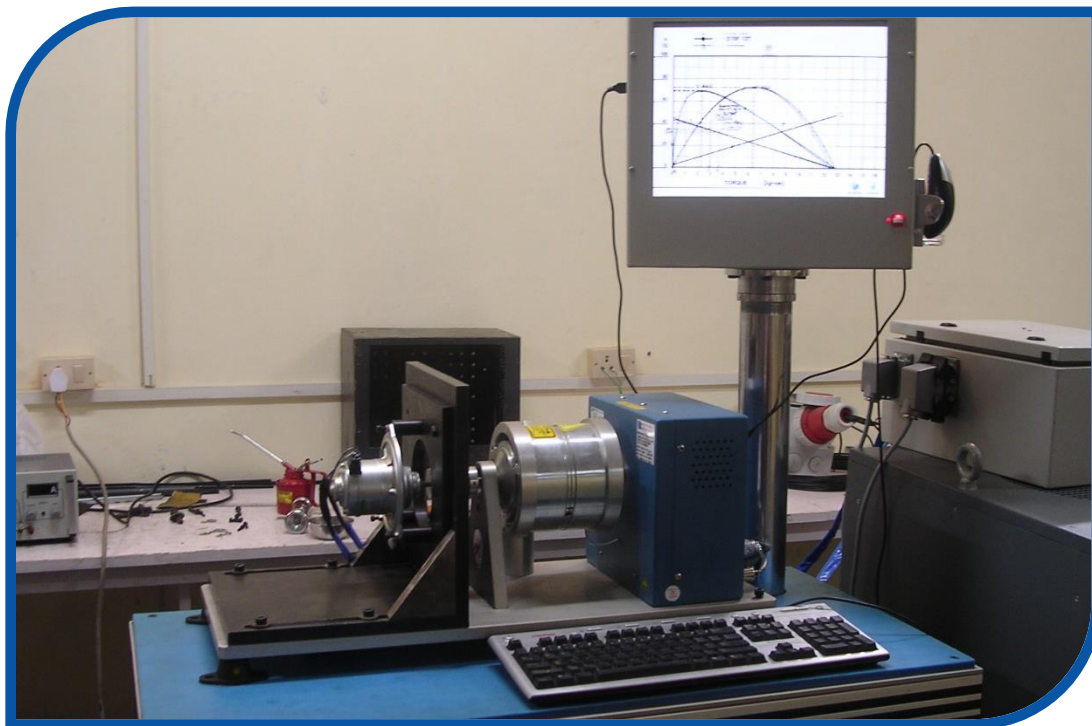
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## Introduction:

The Following Test Rig is for Testing Parameters of Starter Generator of Advanced Light Helicopter (ALH).

The Test Rig has following four tests:

- (a) Generator Mode Load and no Load Test.
- (b) Starter Mode Load Test.
- (b) Vibration Measurement Test.
- (b) Concentricity And Bar to Bar Difference Measurement Test.



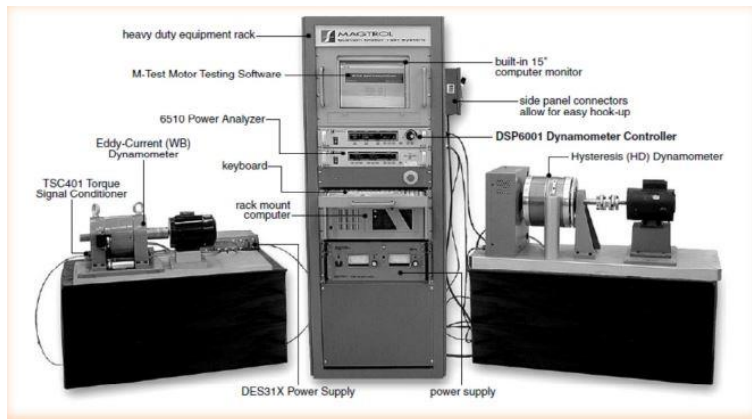
## Description

### Generator Mode Load and No Load Test

- This test will have a Combination of AC Motor of 5000 RPM rigidly Coupled with the Dual Output Gear Box having Ratio of 1:3 to give maximum speed of 15000 RPM at output. The output is to accommodate the shaft of 6KW Starter Generator with Suitable Clamping on the Common Flange.
- Resistive Load Bank with good Cooling Facility provides load to the Starter Generator in steps of 0,50,100,150 and 200 Amp with additional loads of 300A, 375A and 450 Amp. Load is selected from the control panel through selectable switches.
- A.C. Drive ABB make is also provided for this Test with Control signals from control panel.

### Starter Mode Load Test

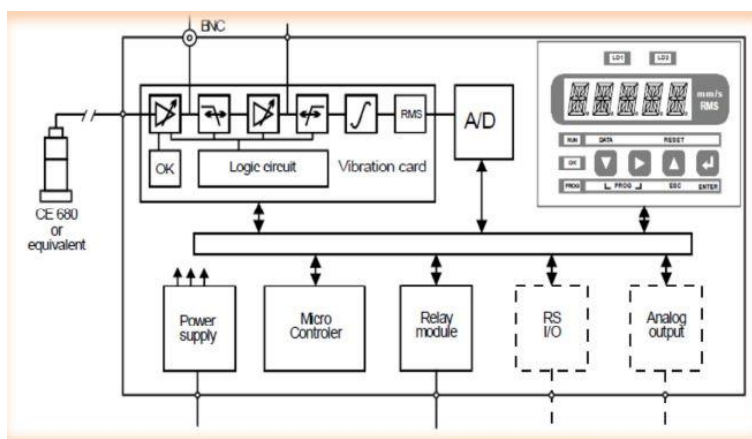
- In Starter Mode Load Test, the S/G is Provided DC Power Supply of 30V, 500 Amp (California Power Supply) so as to operate it as a DC Motor.
- The S/G is mounted form the Shaft side with the Magtrol Hysteresis Dynamometer.
- With the help of control knob Placed on Control Panel (DSP6001 Processor) we can apply the required Mechanical Load i.e., Torque as required.
- Meters for monitoring the Starting Voltage and Current are fitted on Control panel.



## Vibration Measurement Test

- In Vibration Measurement Test the Shaft/Gear is Provided Power Supply of 30V, 100 Amp (Aplab Power Supply) so as to operate it as a DC Motor.
- Vibration Sensor Mounted on the S/G transfers the Vibration level to Vibration Analyzer.
- Meters for monitoring the Starting Voltage and Current are fitted on Control panel.
- RPM of the S/G can be read with the help of Hand-Held tachometer.

### Block Diagram of Vibration Analyzer:



## Technical Data of Test Rig:

Input Power	3 Phase, 415 Volt, 50 Hz
Drive Power	90 KW.
Torque	40 Nm Constant
Speed Range	0- 15000 RPM
Load Bank (Resistive)	25 A (2 in no.), 50 A (4 in no.), 100 A (2 in no.)

## Measurement and Monitoring:

### GENERATOR MODE PARAMETERS:

Speed	0-15000 RPM
Torque	0-45 Nm.
Energy Current (I ex)	0-10 Ampere
Energy Voltage (V ex)	0-50 VDC
Balance Voltage (Ved)	0-2 VDC
Generator Current (I g)	0-500 Ampere
Generator Voltage (V g)	0-50 VDC
Temperature (Input and Output Air)	0-100 degree C
Frame Temperature of S/G	0-200 degree C

### STARTER MODE PARAMETERS:

Starting Current (I d) (Starter Mode)	0-500 Ampere (Load Test)
	0-100 Ampere (No Load)
Starting Voltage (V d) (Starter Mode)	0-30 VDC
Starter Mode Torque	0-20 Nm (1650 RPM to 6000 RPM)
Micro Meter	+50 micrometer to -50 micrometer
Vibration Analyzer	1-10000 Hz.
Digital Tachometer	1-25000 RPM
Power Supply	0-30 VDC, 500 Ampere
	0-30 VDC, 100 Ampere
Micro Ohm Resistance	0-2 Ohm



## Compatibility Matrix:

Manufacturer	Model	Type	Voltage	Current	Power Rating	Speed Range (RPM)	Compatible Aircraft/Engine
Skurka Aerospace	160SG Series	DC	28-30 V	160 A	4.8 kW	Up to 12,100	Bell 206, Robinson R66
Skurka Aerospace	200SGL Series	DC	28.5 V	200 A	6.0 kW	7,050-12,000	Various Turbine Engines
Skurka Aerospace	250SG Series	DC	30 V	250 A	7.5 kW	Up to 12,000	Thrush 510, Beech King Air
Thales	8060 Series	DC	30 V	300 A	9.0 kW	6,500-12,300	Dassault Falcon 20/2000
Thales	8160-180	DC	28 V	—	—	—	Various Aircraft Models
Honeywell Aerospace	1152106-2	DC	28 V	—	—	—	Various Aircraft Models
Honeywell Aerospace	1152108-1	DC	28 V	—	—	—	Various Aircraft Models
Safran	23085-001	DC	28 V	300 A	—	—	Beechcraft King Air 300 series
Safran	23195-001	DC	28 V	2,200 A	—	7,800-12,000	Large Turboshift/Turboprop
AMETEK PDS	MG84 Series	DC	28 V	160-200 A	—	—	Various Turbine Engines
AMETEK PDS	MG88 Series	DC	28 V	300 A	—	—	Various Turbine Engines
Collins Aerospace	VSCF Generator	AC	115 V	—	Up to 180 kVA	—	KF-X/IF-X Aircraft
GE Aviation	Starter Generator	AC	115 V	—	—	—	Various Aircraft Models
Safran	Palouste IV	Gas Turbine	—	—	—	—	Sud-Ouest Djinn Helicopter



Neometrix Defence Ltd.  
Head Office E-148, Sector-63, Noida-201301;  
Phone: +91-120-6524888, Fax: +91-120-4500888