

電樞自動檢驗設備

Armature Automatic Test Apparatus

Model : AWT 533



一、前言：

本檢驗設備適用於直流馬達之電樞及交流串激式馬達之電樞之綜合測試，採用可程式控制器，自動檢查判定試品電樞之良否，測試結果顯示於彩色觸控面板上(人機介面)

測試項目包括：

1. 直流電阻測試
2. 層間短路測試
3. 交流耐壓測試
4. 絕緣電阻測試

二、設備規範：

1、直流電阻測試：

(1). 測試範圍：

- a. 999.9mΩ(分解能: 0.1 mΩ)
- b. 9.999Ω(分解能:0.001Ω)
- c. 99.99Ω (分解能:0.01Ω)

(2). 電阻表：顯示於彩色觸控面板上(人機介面)

(3). 精度：± 0.5% of F.S. 附自動溫度補償，可換算 20°C時之電阻值

(4). 測試方式：換向片之鄰邊電阻

(5). 良品 / 不良品判定方法：與上下限管制值做比較判定

2、層間短路測試:

- (1). 測試電壓範圍：100~1500Vp,手動無段調整
- (2). 電壓表：數位式
- (3). 精度：±5% of F.S.
- (4). 測試波形：1.2 x 40 μ S
- (5). 良品 / 不良品判定方法：讀取試品之振盪波電壓平均值與管制值做比較判定。

3、交流耐壓測試

- (1). 測試電壓範圍：AC100~1500V,手動無段調整
- (2). 電壓表：指針式
- (3). 綜合精度：±5% of F.S.
- (4). 容 量：500VA
- (5). 洩漏電流設定：0.5/1/2/5/10mA，
精度：±2% of F.S.
- (6). 加壓方式：換向片與鐵蕊之間
- (7). 良品 / 不良品判定方法：當洩漏電流高於洩漏電流設定值時，判定為不良品，並由可程式控制器讀取不良品信號。

4、絕緣電阻測試：

- (1). 測試電壓：DC 500V
- (2). 測試範圍：0~100M Ω
- (3). 絕緣電阻表：指針式
- (4). 綜合精度：±5% of F.S.
- (5). 加壓方式：換向片與鐵蕊之間
- (6). 良品 / 不良品判定方法：手動無段設定絕緣電阻下限值,當絕緣電阻低於設定下限時，判定為不良品，並由可程式控制器讀取不良品信號。

5、測試順序：分手動及自動測試模式

(1). 手動測試模式

可由觸控面板(人機介面)選擇測試項目，按下啓動按鈕後進行試驗。

(2). 自動測試模式

A.參數設定：由觸控面板(人機介面)設定各種參數，含機種、序號、層間短路上下限管制值，電阻上下限管制值。

B.測試順序：直流電阻測試(次數：等於換向片數)→層間短路測試1→層間短路測試2→耐壓測試(1次)→絕緣電阻測試(1次)之順序測試，測試結果顯示於觸控面板(人機介面)。若試品不良時，自動停止測試，蜂鳴器警報並以燈號顯示不良。

三、測試治具：

- 1、依客戶提供之試品及圖面製作
- 2、換向片數：最高24片
(另有MODEL:AWT633,換向片數為48片以下)

四、電源及氣壓源需求：

- 1、電源：單相50Hz/60Hz, 110V/220V, 1 kVA
- 2、氣壓源：5kg/cm²以上

五、外型尺寸：

560^W*1100^D*1700^H(mm)附活動輪

六、其他規範說明：

- 1、可程式控制器記憶體最多可儲存40個機種基準值，但測試資料無法儲存。
- 2、試品尺寸、換向片數不同時，測試治具無法共用。
- 3、本規範外之功能可依客戶之需求設計製造。

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Armature Automatic Test Apparatus

Model : AWT 533



I. Introduction:

This apparatus is applicable to inspect the quality of armature which can test DC motor and AC series motor by a programmable logic controller . Test results will be shown on the multi-color touch-panel(HMI). Items of inspection include the following:

1. DC resistance test
2. Layer short test
3. AC puncture test
4. Insulation resistance test

II. Specification:

1. DC Resistance Test:

(1) Range of Test:

- a. 999.9m Ω (Resolution: 0.1m Ω)
- b. 9.999 Ω (Resolution: 0.001 Ω)
- c. 99.99 Ω (Resolution: 0.01 Ω)

(2) Ohmmeter: as shown on the multi-color touch-panel (HMI)

(3) Accuracy: $\pm 0.5\%$ of F.S.

Temperature compensation function included, allowing automatic conversion resistance value at 20°C

(4) Test method: from the side of the commutator bar

(5) Pass/Fail Judgement: with the upper and lower limits of the reference value.

2. Layer Short Test:

- (1) Range of Test Voltage: 100~1500Vp, adjustable
- (2) Voltage Meter: Digital type
- (3) Accuracy: $\pm 5\%$ of F.S.
- (4) Test waveform: 1.2 x 40 μ S
- (5) Pass/Fail Judgement: Record the reading from the oscillating voltage value and Compare the reading with the reference value.

3. A.C. Puncture Test:

- (1) Voltage Range : AC 100~1500V, adjustable
- (2) Volt Meter: Pointer type
- (3) Accuracy: $\pm 5\%$ of F.S.
- (4) Capacity: 500VA
- (5) Leakage Current Setting: 0.5/1/2/5/10mA, Accuracy: $\pm 2\%$ of F.S.
- (6) Voltage applying method: between commutator bar and core stack
- (7) Pass/Fail Judgement: The leakage current is higher than setting value, the specimen fail

4. Insulation Resistance Test:

- (1) Test Voltage: DC 500V.
- (2) Range of Test: 0~100M Ω .
- (3) Insulation Ohmmeter: Pointer type
- (4) Accuracy: $\pm 5\%$ of F.S.
- (5) Voltage applying method: between the commutator bar and core stack.
- (6) Pass/Fail Judgement: Manually set up the lower limit of insulation resistance. The insulation resistance is under the lower limit, the specimen fail.

5. Test the Data Processing System:

- (1) Programmable Logic Controller(P.L.C.).
- (2) A/D Converter
- (3) 10.4" 16-color TFT touch-panel(HMI)

6. Test Sequence: "Manual Test Mode" and "Automatic Test Mode".

- (1) Manual Test Mode
Selecte test items on the touch panel(HMI), and then press the start button to test that item.
- (2) Automatic Test Mode
 - A. Parameter Setting: Use the touch panel(HMI)to set parameter including model, serial number, the upper and lower limit values.
 - B. Test Sequence: DC Resistance Test (The number of test step equals to the number of commutator bars) \rightarrow Layer Short Test 1 \rightarrow Layer Short Test 2 \rightarrow AC puncture Test (1step) \rightarrow Insulation Resistance Test (1step). The test results are shown on the touch-panel(HMI). When a specimen fails in any step, the system will automatically stop, with activation of an alarm buzzer and an alarm indicator light.

III. Test Fixture:

1. The fixture design is based on the specimens and drawings provided by customers.
2. Number of commutator Bar: Bar 24(MAX)
(Another MODEL:AWT 633 Number of commutator Bar:Bar 48(MAX)).

IV. Power Supply and Air Pressure Requirement:

1. Power Supply: Single phase 50Hz/60Hz, 110V/220V, 1 kVA
2. Air Pressure: above 5kg/cm²

V. External Dimension: 560^W*1100^D*1700^H (mm) (Extra Piece: removable wheels)

VI. Other specification descriptions:

1. The memory of the P.L.C. can store a maximum of 40 different model reference values, but cannot store the test data.
2. The test fixture CAN NOT be applied to specimens with difference size and number of commutator bar.
3. We also accept customized orders.



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