TB-E600DLX SERIES

Alternator / Generator / Starter Test Bench

OPERATING & SET-UP INSTRUCTIONS

SET-UP, CONNECTIONS AND TEST PROCEDURES

Starter | Alternator | Generator | Diode and regulator testing

Specification	TB-E600DLX Series
System voltage	6 / 12 / 24 V
Starter test current	Up to 500 A
Alternator / generator capacity	Up to 1.44 kW
Drive motor	2.2 kW variable speed
Rotation	Forward / reverse

Revision 2026.08

Contents

IMPORTANT
Use the component manufacturer's service information for component-specific terminal identification, test values and acceptance limits.

1. Purpose and Test Capability

The TB-E600DLX Series is a workshop test bench for testing automotive alternators, generators and starter motors. The bench provides selectable 6 V, 12 V and 24 V DC supplies, a variable-speed drive for alternator and generator testing, dedicated high-current starter connections, and built-in diode and electronic regulator test functions.

Alternator / generator testing

Mount and belt-drive the unit from the bench motor. Measure voltage, current and speed, check regulator operation and perform maximum-output testing with an external load where required.

Starter motor testing

Check solenoid and pinion operation, perform a no-load voltage/current/speed test, then perform a locked-armature torque test using the TBA-671 Torque Arm.

What the bench measures

Function	Measurement / capability
DC voltage	0-10 V, 0-20 V and 0-50 V meter ranges
Alternator / generator current	50 A and 100 A ranges
Starter current	500 A range automatically used through the starter test circuit
Drive speed	Variable speed, forward / reverse, RPM indication
Starter torque	Calculated from spring force and torque-arm length during the locked-armature test

IMPORTANT

Always compare measured values with the component manufacturer's specifications. The test bench provides test conditions and measurements; component-specific pass/fail limits are not universal.

Before any test

- Identify component voltage, polarity and terminal functions.
- Confirm the required direction of rotation.
- Inspect for damaged terminals, loose housings, seized bearings or obvious mechanical defects.
- Use leads of adequate conductor size for the expected current.
- Secure the component before energising or rotating it.

2. Safety, Installation and Battery Supply

Bench installation

1. Install the bench on a level, stable floor with access to both sides for operation and battery servicing. The bench may be secured to the floor for additional stability.
2. Connect the bench only to the AC supply specified on its nameplate and use the fitted protective-earth connection. Do not disconnect or defeat the earth conductor.
3. Locate the main switch and circuit breaker on the right-hand side of the control box.
4. Locate the emergency stop on the left-hand side. It stops the drive motor. Turn the emergency-stop control clockwise to reset it before restarting.

Drive motor and remote control

1. Switch the test bench on at the main switch.
2. Lift the motor remote control from its hanging position on the right-hand side of the bench.
3. Select clockwise or anticlockwise drive direction as required by the unit under test.
4. Set the required motor speed. The Deluxe drive display indicates motor-shaft speed.
5. After the test, reduce speed before selecting motor stop, then switch the bench off at the main switch.

Battery installation

Locate the external test batteries conveniently behind the bench and connect them as shown in Figure 1. The battery bank may use either four 6 V batteries, or two 6 V batteries plus one 12 V battery, to provide the 6 V, 12 V and 24 V supply points.

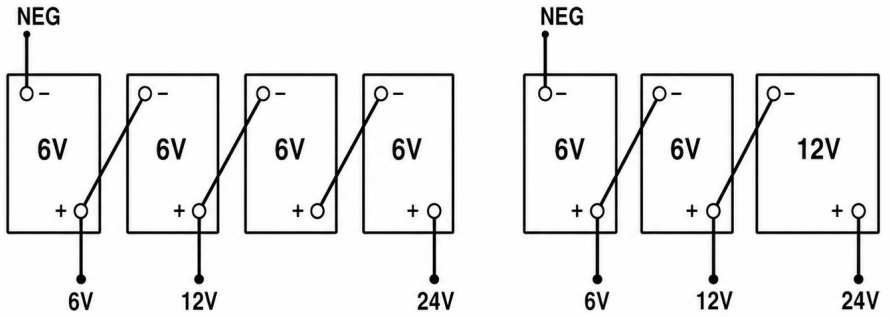

Figure 1. Battery Connections

Verify the battery connections

1. Select the VOLTS range to 50 V and use the 0-50 V scale.
2. Connect the black voltmeter lead to NEGATIVE.
3. Touch the red lead in turn to the 6 V, 12 V and 24 V terminals. Confirm approximately 6 V, 12 V and 24 V respectively before proceeding.

SAFETY WARNING

Tests can involve high current, rotating machinery and battery gases. Keep tools and loose clothing clear of rotating parts and ensure the battery area is ventilated.

3. Controls and Connection Points

Use the front-panel drawing below to identify the meters, range selectors, battery-voltage bridge, ground selector, alternator/generator connections and starter test connections before following a test procedure.

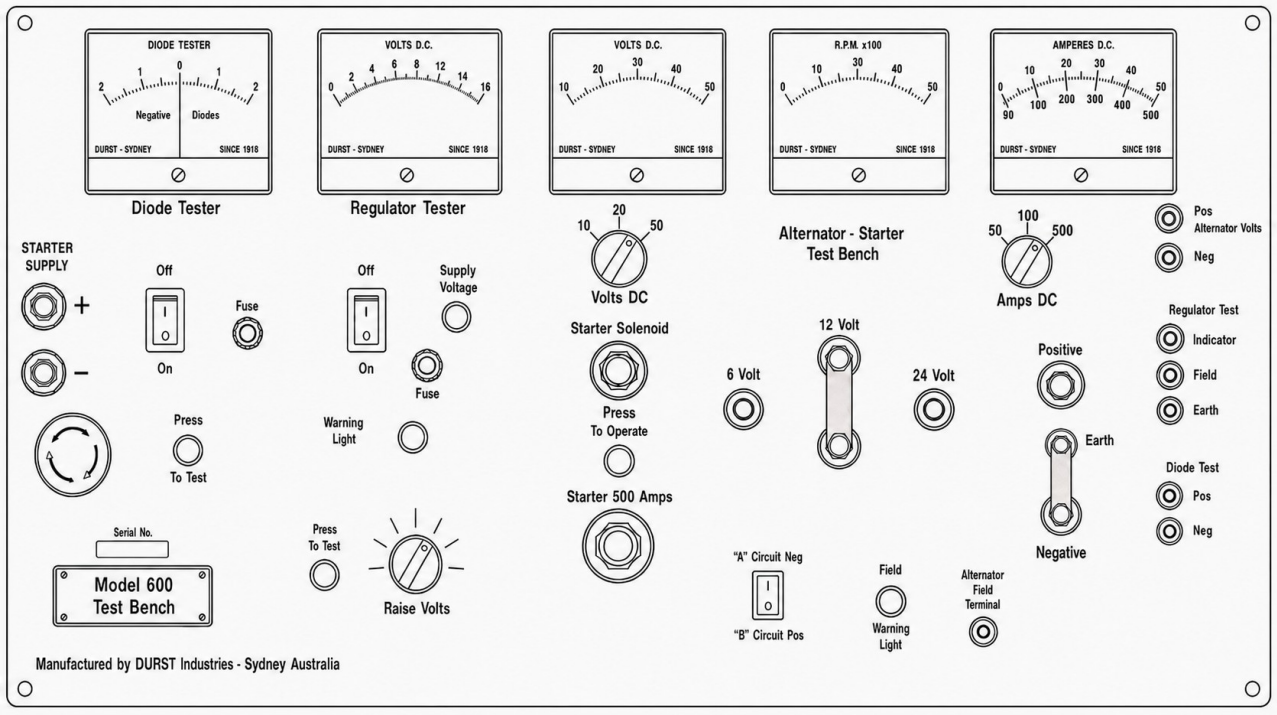

Figure 2 - Model 600 control panel

Primary control reference

Control / terminal	Function
VOLTS selector	Selects the 0-10, 0-20 or 0-50 V voltmeter range.
AMPS selector	Selects the 50 A or 100 A range for alternator/generator tests. The 500 A range is activated through the starter test circuit.
VOLTAGE SELECTOR BRIDGE	Connects the required 6 V, 12 V or 24 V battery supply to the test circuit.
GROUND selector bridge	Connects bench frame ground to positive or negative as required by the component.
POSITIVE / NEGATIVE	Battery supply connections used for alternator, generator and general component testing.
Alternator Volts Pos / Neg	Voltmeter connections for component output voltage.
STARTER SOLENOID	Supplies the shift solenoid while PRESS TO OPERATE is pressed.
STARTER 500 AMPS	High-current starter supply, energised by PRESS TO OPERATE.

4. Meter Operation and Selector Bridges

Reading the analogue meters

Before taking a reading, select the required meter range, identify the matching scale on the meter face, and determine the value of the smallest scale division.

EXAMPLE - 100 A RANGE

On the 100 A range, use the centre scale. With four graduations between 0 and 20, each small division represents 4 A. A practical reading accuracy is approximately one half of the smallest scale division, or about 2 A.

Mechanical zero adjustment

Each analogue meter has a small mechanical zero-adjustment screw at the lower centre of the meter. With no power applied to the meter, the screw may be used to return the pointer to zero. Adjust only by the small amount required.

Voltmeter polarity

Check polarity by momentarily making the voltmeter connection while watching the pointer. Correct polarity moves the pointer upscale from left to right. If it attempts to move below zero, reverse the voltmeter leads before taking a reading.

Ammeter operation

- The AMPERES DC meter has 50 A, 100 A and 500 A scales with displaced zero.
- The 50 A and 100 A ranges are selected with the AMPS selector for alternator and generator testing.
- The 500 A range is automatically used when current is taken from the starter test terminals.
- During alternator/generator testing, current may indicate charge into or discharge from the bench batteries. During starter testing, it indicates current delivered from the batteries to the starter.

Voltage selector bridge

To change battery voltage, loosen the bridge centre terminal and the required 6 V, 12 V or 24 V terminal, rotate the slotted bridge end onto the required terminal, then tighten both terminals using finger pressure only.

Ground selector bridge

To change frame polarity, loosen the EARTH/GROUND terminal and the required POSITIVE or NEGATIVE terminal, rotate the bridge to the required polarity, then tighten using finger pressure only.

5. Alternator / Generator Mechanical Mounting

Mount alternators and generators on the transverse slide with the drive pulley facing the control panel. If an external regulator is being tested, secure it to the regulator mounting plate on the transverse slide.

1. Secure the unit with the universal V-clamp or TBA-669 quick-acting alternator clamp as applicable.
2. Fit the correct belt between the bench drive pulley and the component pulley. Use the appropriate belt profile for multi-ribbed units.
3. Align the pulleys so the belt runs in a straight line.
4. Tension the belt using hand pressure on the feed-screw crank only, then tighten the slide lock clamps.
5. Run the drive at low speed in the required direction and confirm the unit turns freely.
6. Reduce speed before stopping the motor.
7. Use test leads with suitable terminals. Output leads must be large enough to carry the specified full-load current.

Typical alternator terminal markings

Marking	Typical function
B / B+ / BAT	Main alternator output
D+ / L	Charge warning lamp and/or regulator connection
DF / F / Field	Rotor field connection where applicable
Frame / case	Ground

TERMINAL IDENTIFICATION

Terminal codes vary between manufacturers. Confirm the actual unit before wiring; do not assume that a familiar code has the same function on every alternator or regulator.

6. Alternator Test - Internal Regulator

The following procedure shows a Bosch 14 V 35 A negative-ground alternator with an internal electronic regulator. Confirm the alternator manufacturer's terminal identification and specifications before testing.

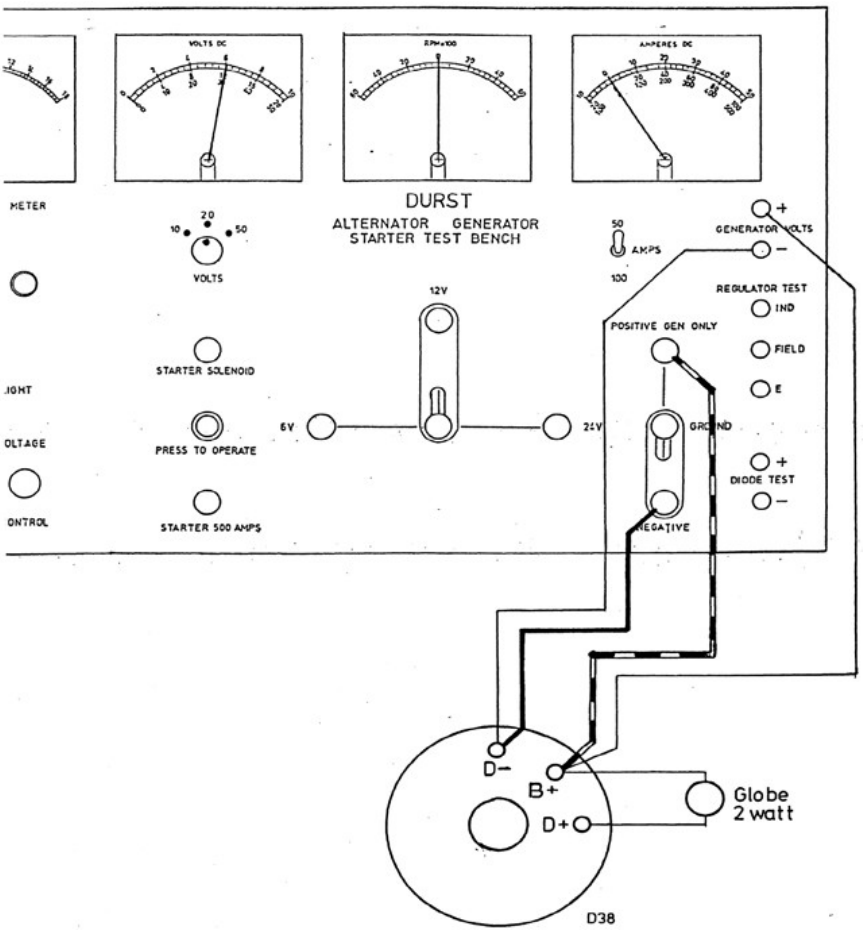

Figure 5 - Typical internal-regulator alternator connections

Connection sequence

1. Mount and belt-align the alternator.
2. Select GROUND to NEGATIVE.
3. Select AMPS to 50 A for a 35 A alternator.
4. Select VOLTS to 20 V for a 12 V system.
5. Connect POSITIVE to the alternator B+ / output terminal.
6. Connect NEGATIVE to the alternator frame.
7. Connect a 12 V 2 W lamp between B+ and D+ / L. Use a 24 V 2 W lamp on a 24 V system.
8. Connect the bench voltmeter positive to B+ and negative to the alternator frame.
9. Select 12 V on the battery-voltage bridge. The warning lamp should glow before the alternator is driven.

Running test

1. Run the alternator at approximately 1000 rpm. Confirm output voltage rises above battery voltage.
2. Check charging current. With a Bosch 14 V 35 A alternator and nearly charged bench batteries, charging current may be approximately 5 to 15 A.
3. Increase speed in steps to approximately 2500, 3500 and 4500 rpm. Record voltage and current at each step.
4. For the Bosch 14 V 35 A alternator shown in this procedure, regulated voltage should be 13.7 to 14.3 V. For other alternators, use the manufacturer's specified regulated-voltage range.
5. At 4500 rpm, apply an external carbon-pile/load-bank load if maximum output is required.
6. Monitor voltage while allowing the alternator to warm. Compare all readings with the alternator manufacturer's specification.
7. Reduce speed, stop the drive, open the VOLTAGE SELECTOR BRIDGE, then disconnect the alternator.

7. Alternator Test - External Regulator

The following procedure shows a Bosch 14 V 35 A negative-ground alternator with a separate regulator. External-regulator terminal codes and switching arrangements vary, so confirm the applicable wiring information before testing.

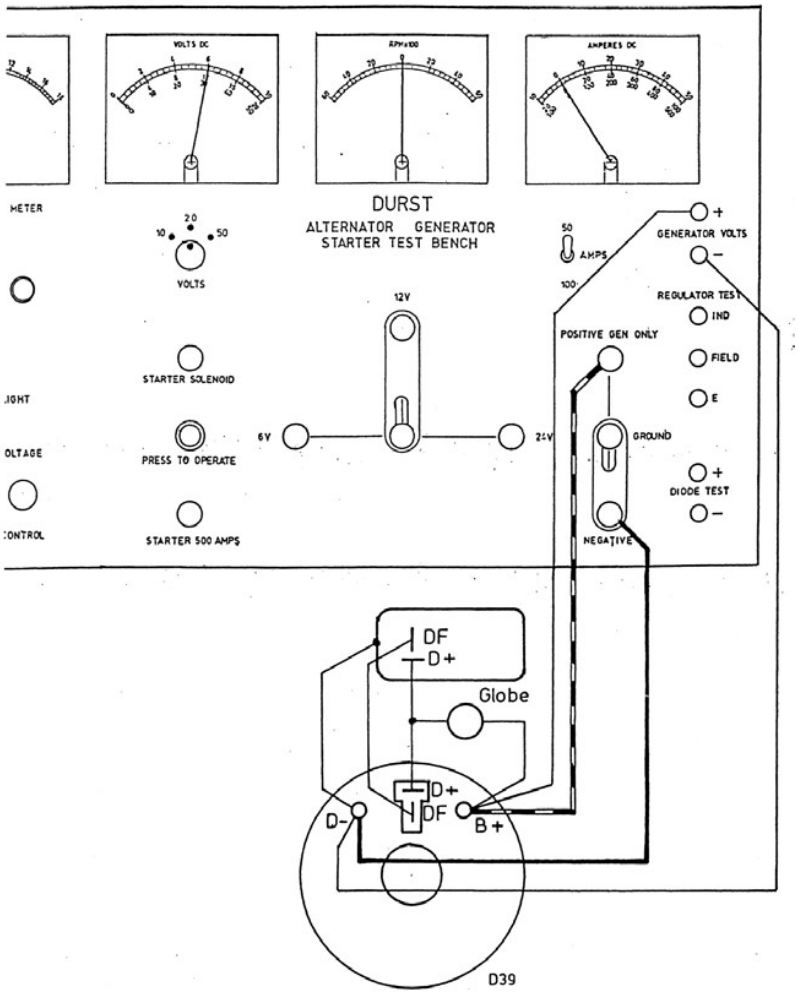

Figure 6 - Typical external-regulator alternator connections

Set-up and connections

1. Mount and belt-align the alternator and secure the regulator to the slide.
2. Select the required ground polarity, AMPS range and VOLTS range. For the 12 V negative-ground alternator shown here, select NEGATIVE ground, 50 A and 20 V.
3. Connect bench POSITIVE to the alternator output and NEGATIVE to the alternator frame.
4. Connect regulator D+ to alternator D+ and regulator DF to alternator DF where these designations apply.
5. Connect a 2 W warning lamp between alternator output and regulator D+.
6. Connect the regulator mounting bracket/base to the alternator frame.
7. Connect the bench voltmeter across alternator output and frame.
8. Select the appropriate battery voltage. The warning lamp should illuminate before rotation.

Running test

1. Run the alternator at approximately 1000 rpm and confirm voltage rises above battery voltage.
2. Observe charge current. With nearly charged bench batteries, a 35 A alternator may show approximately 5 to 15 A charging current.
3. Increase speed in steps to approximately 2500, 3500 and 4500 rpm. Record voltage and current at each step.
4. Apply an external carbon-pile/load-bank load at the specified test speed where maximum-output testing is required.
5. Monitor voltage during warm-up, then reduce speed, stop the drive, open the voltage-selector bridge and disconnect.

8. Alternator Maximum-Output and Unregulated Tests

A. Maximum output with an external load

A regulated alternator may not deliver rated current unless the test batteries are sufficiently loaded. Use a suitable carbon pile or load bank to increase alternator output demand while monitoring voltage and current.

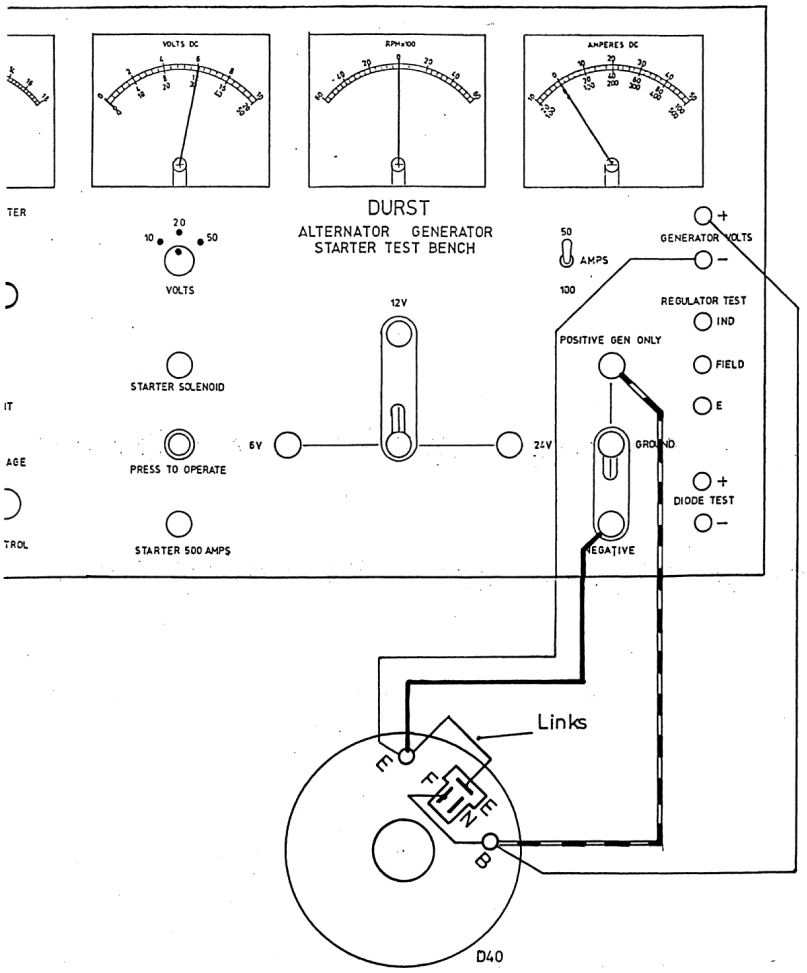

Figure 7 - Maximum-output connection example

- Run the alternator at the speed specified by the manufacturer.
- Increase external load while watching AMPERES DC and VOLTS DC.
- Do not exceed the alternator manufacturer's current rating.
- Remove load and reduce drive speed before disconnecting.

B. Unregulated maximum-output test

This maximum-output test directly excites the alternator rotor so the alternator operates without normal voltage regulation. Use this procedure only where the alternator manufacturer's data supports direct field excitation.

1. Mount the alternator and select the correct ground, current and voltage ranges.
2. Connect bench POSITIVE to the alternator output and NEGATIVE to the frame.
3. For the Nippondenso 12 V negative-ground alternator shown in this procedure, link the E terminal to the alternator frame and link the F terminal to the alternator output.
4. Connect the bench voltmeter across alternator output and frame.
5. Run at approximately 1000 rpm, then increase speed until output current stabilises.
6. Compare current and voltage with the manufacturer's specifications. For the Nippondenso alternator shown in this procedure, voltage is typically approximately 14 to 15 V.
7. Reduce speed, stop the drive, open the selector bridge and disconnect.

9. Generator Field Types and Motor Test

A DC generator can be checked quickly by operating it as a shunt motor. This test also polarises the generator. The field connection type must be identified before power is applied.

Type A and Type B field circuits

Type	Description
Type A	Field internally connected to armature positive; the regulator applies ground to the field. Bosch generators are cited as a common example.
Type B	Field internally connected to armature negative; the regulator applies positive to the field. Lucas, Delco Remy and other American generators are cited as common examples.

Typical armature terminal codes include A, B+ or D+. Typical field codes include F or DF. Disconnect any fitted voltage regulator or cut-out for the motor test.

Generator-as-motor procedure

1. Mount the generator securely.
2. Identify Type A or Type B field connections and confirm terminal codes.
3. Connect the field to the appropriate armature/ground point for the identified type.
4. Apply battery power to the armature and ground connections.
5. Observe that the generator runs as a motor. The ammeter indicates discharge because current is being taken from the bench batteries.
6. Compare the behaviour with service information for the generator.

INTERPRETATION

Lower motor-test speed generally corresponds with lower generator cut-in speed. Use this only as a qualitative indication; manufacturer test data remains the reference.

10. Generator Maximum-Output Test

For maximum-output testing, the generator field is excited directly from a battery of the same nominal voltage as the generator. The procedure below is for a 12 V Type B generator and must be modified as required for Type A units.

1. Mount the generator as described in Section 5.
2. Select GROUND to NEGATIVE for the 12 V Type B negative-ground generator shown in this procedure.
3. Select AMPS to 50 A and VOLTS to 50 V.
4. Connect bench POSITIVE to the generator armature terminal and NEGATIVE to the generator frame.
5. Link the armature terminal to the field terminal using a suitable short lead.
6. Connect the bench voltmeter positive to the armature terminal and negative to the generator frame.
7. Run the generator initially at low speed in the correct direction.
8. Select the appropriate battery voltage. A small discharge may initially be indicated.
9. Increase generator speed while watching voltage and current. Current delivered by the generator will depend on battery state of charge and drive speed.
10. Increase speed until the generator reaches maximum output or the manufacturer's specified test point.
11. Reduce speed until current is approximately zero, open the VOLTAGE SELECTOR BRIDGE, stop the motor, then disconnect.

CURRENT LIMIT WHERE RATING IS UNKNOWN

If maximum generator current is not known, do not exceed 25 A. Discontinue the test if generator temperature becomes excessive.

11. Generator Regulator Testing and Adjustment

This procedure covers a three-unit electro-mechanical generator regulator containing a voltage regulator, cut-out and current regulator. Obtain the regulator manufacturer's specifications for air gaps, contact gaps and electrical settings before adjustment.

Functions and adjustment order

Unit	Function
Voltage regulator	Controls generator output voltage.
Cut-out	Connects the generator to the battery when generator voltage is sufficient and disconnects it when voltage falls.
Current regulator	Limits generator current to protect the armature.

Adjust the regulator functions in this order: voltage regulator, cut-out, then current regulator.

EXAMPLE TEST VALUES

For the Lucas/Delco Remy 12 V Type B regulator example, the test values are 14.9-15.5 V regulator voltage, 12.7-13.3 V cut-in, -2 to -5 A reverse-current cut-out and 25 A current regulation. Use the regulator manufacturer's specifications for the actual unit under test.

Preliminary set-up

1. Mount the generator and secure the regulator on the transverse-slide regulator plate.
2. For a 12 V Type B negative-ground generator, select GROUND to NEGATIVE, AMPS to 50 A and VOLTS to 20 V.
3. Connect bench POSITIVE to regulator BAT, bench NEGATIVE to generator frame, generator armature to regulator GEN, generator field to regulator F, and generator frame to regulator base.
4. Connect the bench voltmeter positive to regulator GEN and negative to bench NEGATIVE.
5. Select the appropriate battery voltage.

Adjustment sequence

- Voltage regulator: isolate the cut-out contacts as required by the regulator service procedure, run at the specified speed, and adjust spring tension to the manufacturer's voltage setting.
- Cut-out: increase speed while watching voltage for contact closure, then reduce speed while watching reverse current for opening.
- Current regulator: short the voltage-regulator contacts only where specified by the regulator procedure, run at the specified speed and adjust current-regulator spring tension to the rated current. An external load may be required.
- Final check: replace the regulator cover, run the unit to operating temperature and confirm voltage remains within the specified setting before disconnecting.

12. Starter Motor Set-Up - Mounting and Connections

Mount the starter with its drive assembly facing away from the control panel. This provides access to the pinion for speed measurement and for the TBA-671 Torque Arm during locked-armature testing.

Mechanical mounting

1. Confirm starter voltage and identify the battery and solenoid terminals.
2. Secure the starter in the bench mounting clamp with the drive end facing away from the panel.
3. Support the starter body and mounting flange fully and tighten the clamp securely.
4. Keep the pinion area accessible for tachometer and torque-arm use.

SAFETY

Do not perform starter testing with the starter secured only in a vice. The starter can free itself and injure personnel.

Electrical connections

1. Select the correct battery voltage and ground polarity. For a 12 V negative-ground starter, select 12 V and the 20 V voltmeter range.
2. Connect a light-gauge lead from STARTER SOLENOID to the solenoid SW/start terminal.
3. Connect a suitable heavy-gauge lead from STARTER 500 AMPS to the starter solenoid battery terminal.
4. Connect bench negative to the starter frame or appropriate negative terminal.
5. Connect the bench voltmeter across the starter supply if test voltage is to be recorded.

HIGH-CURRENT LEADS

Starter leads must carry the expected full-load current. Excessive lead resistance reduces starter voltage and can invalidate the test result.

13. Starter Motor Test Procedure

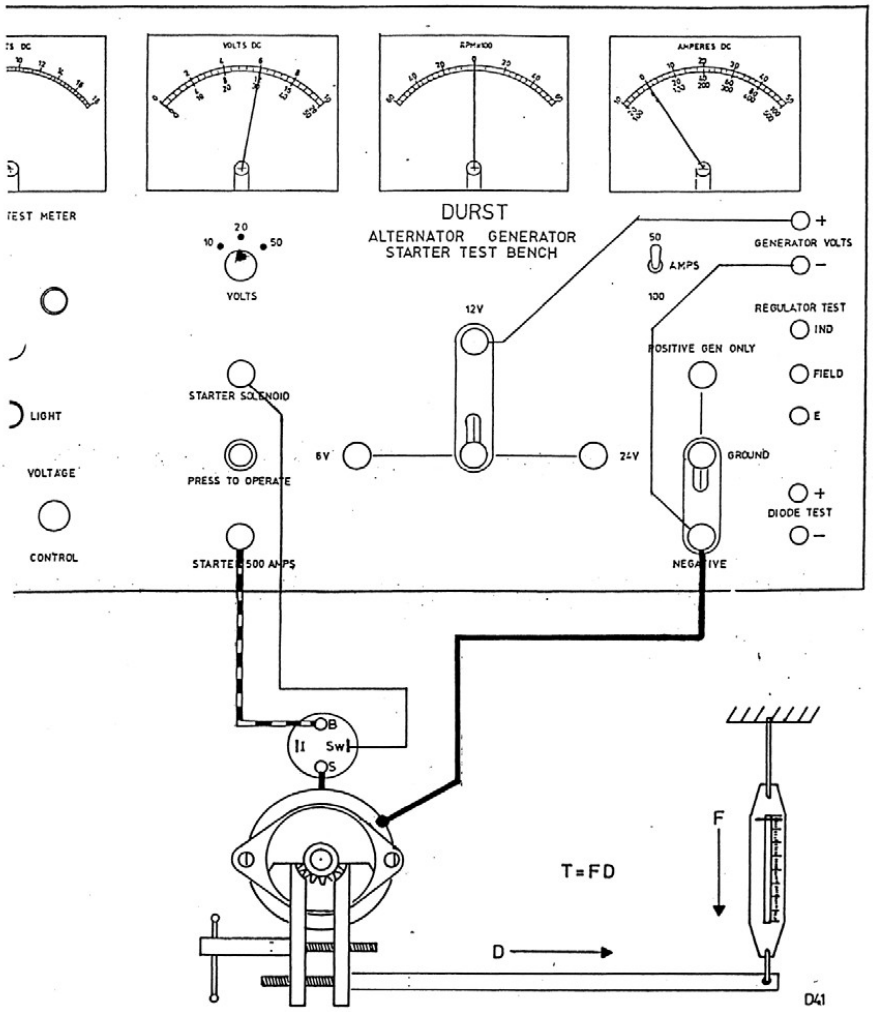

Figure 8 - Starter connections and TBA-671 torque arrangement

A. Solenoid and pinion operation

1. With the starter securely mounted and the solenoid lead connected, select the correct battery voltage.
2. Press PRESS TO OPERATE momentarily. Confirm the solenoid moves the pinion to the engaged position. The armature may rotate at low speed.
3. Check pinion-to-thrust-collar clearance against the starter manufacturer's specification.
4. Release PRESS TO OPERATE before making any adjustment.

B. No-load test

1. Connect the heavy STARTER 500 AMPS lead.
2. Press PRESS TO OPERATE and allow the starter to accelerate to no-load speed.
3. Record starter voltage and current.
4. Measure starter speed with a suitable mechanical, optical or electronic tachometer.
5. Release PRESS TO OPERATE and compare all measurements with the starter manufacturer's no-load specifications.

14. Starter Locked-Armature / Stall Test

The TB-E600 load test is a locked-armature test. It measures starter voltage, current and mechanical torque at stall. It does not provide progressively increasing mechanical load while the starter continues to rotate.

Fit the TBA-671 Torque Arm

1. Complete the no-load test first and stop the starter.
2. Fit the TBA-671 securely to the starter pinion/drive.
3. Position the spring balance so its pull is at right angles to the torque arm.
4. Measure distance D from the starter pinion centreline to the spring-balance line of action.
5. Confirm the torque arm cannot strike the bench or operator.

Perform the stall test

1. Press PRESS TO OPERATE only long enough to obtain the required locked-armature readings.
2. Record voltage, current and spring-balance force.
3. Release PRESS TO OPERATE immediately after the readings are obtained.
4. Calculate torque and compare voltage, current and torque with the starter manufacturer's locked-armature specifications.

TORQUE CALCULATION

T = F x D. T is torque in newton metres, F is spring-balance force in newtons, and D is torque-arm length in metres.

STARTER RESISTANCE

Starter resistance can be calculated from locked-armature voltage divided by locked-armature current (R = V / I).

PROGRESSIVE ROTATING LOAD

Where a test procedure requires mechanical load to be progressively increased while the starter remains rotating, a dedicated starter load bench such as the TB-1900S is the appropriate type of equipment.

15. Starter Results and Test Record

Use the starter manufacturer's specifications as the acceptance reference. The combinations below are diagnostic indicators only.

Observed result	Possible areas to investigate
Low no-load speed + high current	Mechanical drag, bearing/bush issues, armature contact or internal short.
Low no-load speed + low current	High resistance in cables, solenoid contacts, brushes or supply battery.
Normal speed + excessive current	Internal electrical loss or incorrect test voltage.
Low stall torque	Insufficient starter voltage, high circuit resistance or starter internal fault.
Normal electrical readings + abnormal noise	Mechanical wear, pinion/gear damage or bearing/bush condition.

Starter test record

Test item	Measured	Manufacturer specification
System voltage		
Solenoid / pinion operation		
Pinion clearance		
No-load voltage		
No-load current		
No-load speed		
Locked-armature voltage		
Locked-armature current		
Torque arm length D		
Spring force F		
Calculated stall torque		
Calculated starter resistance		

16. Alternator Diode Tester

The diode tester checks alternator power diodes and exciter diodes under simulated operating conditions while they remain connected to the stator windings. A serviceable diode produces a repeatable meter deflection. An open-circuit or shorted diode remains at or near zero.

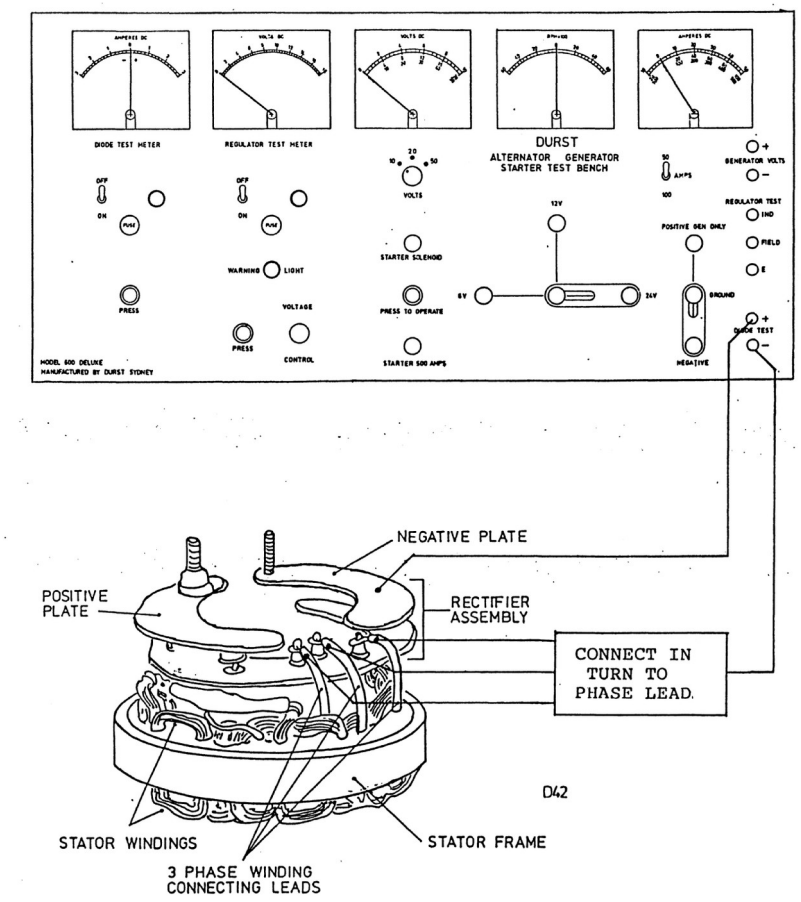

Figure 9 - Typical diode test configuration

Negative power diodes

1. Switch the diode tester power on and confirm its power indicator.
2. Connect the red and black test leads to the corresponding DIODE TEST terminals.
3. Connect the red lead clip to the negative diode plate, which is directly connected to the rear end shield on the six-diode alternator arrangement shown.
4. Place the black lead on one stator-winding connection.
5. Press PRESS TO TEST and observe direction and magnitude of diode-meter deflection.
6. Repeat at the other stator connections. Serviceable diodes should produce approximately consistent deflection.

Positive power diodes

1. Connect the red test lead to the insulated main alternator output terminal / positive diode plate.
2. Place the black lead on each stator-winding connection in turn.
3. Press PRESS TO TEST for each connection and compare direction and magnitude of meter deflection.
4. Disconnect the leads and turn the diode tester off when complete.

EXCITER DIODES

Meter deflection for exciter diodes is lower than the deflection observed for power diodes.

17. Electronic Regulator Tester

The regulator tester is intended for internal and external electronic voltage regulators. Positive- and negative-switching regulator configurations exist; the procedure below covers a negative-switching regulator. Do not use this tester for electro-mechanical generator regulators.

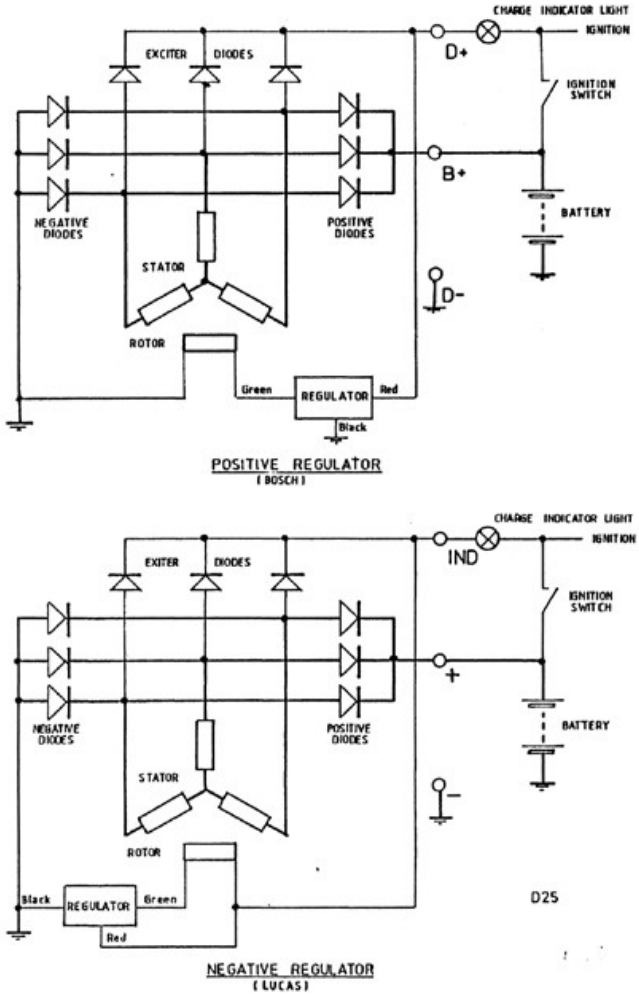

Figure 10 - Electronic regulator configurations

Negative-regulator test procedure

1. Confirm the bench battery supply can provide 24 V for the regulator test circuit.
2. Switch regulator-tester power on and confirm the indicator light.
3. Turn the VOLTAGE CONTROL fully anticlockwise before making the test.
4. Connect the regulator to the REGULATOR TEST terminals according to its actual terminal identification and switching configuration.
5. Press and hold the regulator test button. The warning light should illuminate initially. If it does not, check the regulator and test connections.
6. While holding the test button, turn the voltage control slowly clockwise and observe the REGULATOR TEST meter.
7. Record the voltage at which the warning light goes out and compare it with the regulator manufacturer's specification.

EXAMPLE TEST VALUES

For the regulator example shown, switching voltage is typically 13.7-14.3 V. Use the manufacturer's specification for acceptance. The warning light may glow slightly at the switching point. Electro-mechanical regulators must be tested using the generator/regulator procedure in Section 11.

18. Additional Electrical Tests

A. Use the bench as a component power supply

1. Connect test leads to the bench POSITIVE and NEGATIVE supply terminals.
2. For negative-ground component testing, leave the ground bridge connected to NEGATIVE.
3. Select AMPERES DC to 50 A.
4. Touch the test leads to the component and read operating current on the ammeter.

B. Insulation / short-to-ground test

To test insulation, place a test lamp in series with the 12 V or 24 V supply. Leave the voltage-selector bridge open and connect the lamp between the bridge centre terminal and the selected 12 V or 24 V supply point. With POSITIVE and NEGATIVE test leads fitted, touching the leads together should illuminate the lamp.

1. Touch one lead to component ground/frame and the other to the winding or terminal being checked.
2. If the lamp illuminates, the circuit under test is shorted to ground in this test arrangement.
3. Use a 24 V lamp and 24 V supply when checking starter fields, armatures, alternator stators and rotors for shorts to ground.

C. Alternator rotor example

1. Connect the NEGATIVE test lead to the rotor shaft.
2. Touch the POSITIVE test lead to each slip ring. Lamp illumination indicates a short to ground.
3. For winding continuity/current, apply power across the slip rings and read current on the AMPERES DC meter. A typical serviceable rotor may draw approximately 2 to 5 A; confirm the correct value against the component manufacturer's specification.

19. Quick Set-Up Reference and Accessories

Alternator / generator

- Identify voltage, polarity, terminals and direction.
- Clamp securely, align and tension the belt.
- Confirm free rotation at low speed, then stop before wiring.
- Select correct ground polarity, battery voltage and meter ranges.
- Connect output, ground, warning-lamp/field circuits as required.
- Start at low speed, increase in controlled steps and record voltage/current.
- Use an external carbon pile/load bank when the specified output test requires additional load.

Starter motor

- Identify voltage and terminals.
- Clamp securely with drive end facing away from the panel.
- Check solenoid/pinion operation.
- Connect the heavy 500 A starter supply and ground.
- Perform no-load voltage/current/speed test.
- Fit TBA-671 for locked-armature torque testing.
- Apply stall power only long enough to obtain readings.

Available test accessories

Part	Description
TBA-671	Starter Torque Arm. Spring-balance type tester that clamps to the starter gear for locked-armature torque testing.
TBA-669	Quick-acting alternator clamping bracket for the transverse slide.
TBA-668	Self-contained field ammeter, 10-0-10 A, supplied with test leads.
LB70	Portable 12 V alternator load bank rated to 70 A, with 20 A + 20 A + 10 A + 10 A + 5 A + 5 A switchable loads and an ammeter.
TBA-667	Carbon pile rheostat for applying variable electrical load, supplied with heavy-duty leads and clips.

20. Troubleshooting and Support

Condition	Check first
Starter slow on no-load	Battery state, battery cable resistance/size, terminal tightness, starter condition.
Starter current low	Voltage at starter, high-resistance connections, battery condition, solenoid contacts.
Starter current high	Correct system voltage, mechanical drag, internal starter fault, manufacturer specification.
Alternator little/no output	Correct rotation, belt tension, wiring, warning-lamp/excitation circuit, battery supply.
Alternator will not reach rated current	Battery/load demand may be insufficient; verify load bank/carbon pile and battery state.
Unstable readings	Test leads, battery connections, component ground, belt stability and meter range.

Service and technical support

For service, replacement accessories or technical support, contact Durst Industries. Provide the test bench model and serial number together with a clear description of the component being tested and the issue observed.

Durst Industries (Aust.) Pty Ltd	
Address	Unit 1, 11 Packard Avenue, Castle Hill NSW 2154, Australia
Website	durst.com.au
Email	sales@durst.com.au
Phone	+61 2 9660 1755