TESCO METERING

OPERATIONS MANUAL

ARTIFICIAL RESISTIVE LOAD

PRODUCT:

326X

ARTIFICIAL RESISTIVE LOAD OPERATIONS MANUAL

CATALOG NO. 326X

TESCO METERING

Revision: 1.0.0

TESCO – The Eastern Specialty Company

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LIMITED WARRANTY & LIMITATION OF LIABILITY

TESCO warrants to the original purchaser that it will correct all defects in material and/or workmanship in the Instrument, test equipment or software covered by this warranty (herein called **"PRODUCT"**), provided that TESCO is notified of such defect within the warranty period (set forth below) in accordance with paragraph four of this warranty.

WARRANTY PERIOD. The warranty period shall begin on the date of shipment of the PRODUCT or the date of the issuance of this warranty certificate, whichever is later. If no warranty period is specified below and signed by an authorized DISTRIBUTOR of TESCO, the warranty period shall be one (1) year. In no event shall this warranty remain in effect for more than the stated warranty period plus two (2) months after the date of shipment. TESCO's sole obligation and the purchaser's sole remedy under this warranty is limited to repair or replacement, at TESCO's option, free of charge, F.O.B. TESCO's factory at Bristol, PA of any workmanship and/or part which in TESCO's sole judgment displays evidence of defect. On-site warranty repairs will be made when in TESCO's judgment the PRODUCT cannot practically be shipped to TESCO's factory. Any modifications, additions or upgrades made to the PRODUCT or control software after this warranty becomes effective shall not extend the term of this warranty.

COVERAGE. The warranty set forth above shall be applicable only if the PRODUCT:

1. Is used for the specific purpose for which it was intended;
2. Is operated in accordance with instructions, if any, supplied by TESCO;
3. Has not been modified, neglected, altered, tampered with, vandalized, abused or misused, or subjected to accident, fire, flood or other casualties;
4. Has not been repaired by unauthorized persons;
5. Has not had its serial number altered, defaced or removed;
6. Has not been connected, installed or adjusted other than in accordance with the instructions, if any, furnished by TESCO.

The warranty set forth herein DOES NOT APPLY to defects resulting from ordinary wear, tear and usage, or any cause, similar or dissimilar, not resulting solely from defective material and/or workmanship.

The warranty set forth herein shall NOT be effective unless:

1. Notice of defect is given to TESCO by phone, fax, email, or mail as soon as the defect is discovered.
2. Notice of defect contains the following information: PRODUCT serial number, PRODUCT model number, date of original installation, and an accurate and complete description of the defect including the exact circumstances leading to the defect.
3. The defective PRODUCT or part is returned only upon authorization from TESCO as evidenced by the issuing of a Return Merchandise Authorization (RMA) number, and that the transportation charges are prepaid (except that TESCO may, at its option, appoint a qualified DISTRIBUTOR to make field inspections of the PRODUCT for which purpose the purchaser shall permit such DISTRIBUTOR to enter upon its premises and examine the PRODUCT).
4. The Return Merchandise Authorization (RMA) number is written on the shipping label and all paperwork defective PRODUCT or part.
5. The defective PRODUCT or part is returned in the original packing or packing approved by TESCO

TESCO is not responsible for drayage charges, damages, or labor costs incurred in conjunction with failure, removal, or reinstallation of any PRODUCT, all of which shall be at the purchaser's expense. TESCO is not responsible for special, incidental, or consequential damages, whether resulting from breach of warranty, negligence, or any other reason.

TESCO manufactured parts will be available for a minimum period of at least two years after the manufacture of a PRODUCT has been discontinued.

TESCO will provide original purchaser during the warranty period, unlimited telephone consulting time for the purpose of PRODUCT trouble shooting/servicing and for the first thirty (30) days of the warranty period, unlimited telephone consulting time for the purpose of PRODUCT/software application.

THE WARRANTY CONTAINED HEREIN IS IN LIEU OF ALL OTHER WARRANTIES AND TESCO MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, WARRANTIES OR CONDITION, DESIGN, MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR ANY OTHER MATTER.

No other warranty, express or implied, is authorized by TESCO, and no DISTRIBUTOR of TESCO or any other person has any authority to amend, extend, modify, enlarge, or otherwise alter the foregoing warranty and disclaimers in any way whatsoever, except as provided for in an Extended Limited PRODUCT warranty agreement.

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1.0 INTRODUCTION

1.1 Introduction

A Lightweight and Reliable Artificial Load for Everyday Field Use

The 326X is designed for technicians who need a simple, portable, and dependable artificial resistive load. It provides stable performance for training, testing, and equipment verification without the size or weight of traditional load banks.

With support for multiple voltage inputs and a full 50-amp load capability, the 326X delivers consistent results in a compact 13lb design. Its internal resistor network, cooling system, and protective heat shield help maintain safe operation during extended use.

The 326X is built for convenience, durability, and ease of use in any field environment. It offers practical performance in a small footprint, making it a valuable tool for anyone who requires quick and reliable load simulation.

1.2 Contacting TESCO

For Technical Support or Calibration/Repair, please call 215.228.0500.

You can also send an email to **support@tescometering.com** with any questions.

To view, print, or download the latest manual supplement, visit **tescometering.com**.

1.3 General Safety Summary

This manual contains information and warnings that must be observed to ensure safe operation and keep the Instrument in a safe condition. Operation or service in conditions or in a manner other than specified could compromise safety. For the correct and safe use of this device, it is essential that both operating and service personnel follow accepted safety procedures in addition to the safety precautions specified.

In this manual, a **WARNING** identifies conditions and actions that pose hazard(s) to the user, while a **CAUTION** identifies conditions and actions that may damage the Instrument or the test equipment.

WARNING 

To avoid electrical shock, personal injury, or fire hazard:

- **The device must not be switched ON if it is damaged or suspected to be faulty.**
- **Do not operate the device in wet, condensing, dusty, or explosive gas conditions.**
- **If the equipment is used in a manner not specified in this manual, the protection provided by the Instrument may be impaired.**

- **Whenever it is likely that safety protection has been impaired, the device must be made inoperative and be secured against any unintended operation. Inform qualified maintenance or repair personnel.**
- **Safety protection is likely to be impaired if, for example, the Instrument displays visible damage or fails to operate normally.**
- **Use of any fuse other than specified may cause damage.**
- **Defeating any safety devices may result in electric shock and potential death.**

1.4 Description of Safety-related Icons

ICONS	DESCRIPTION
	Risk of danger. Important information. See manual.
	Hazardous voltage. Risk of electrical shock.

1.5 Grounding

WARNING 

To avoid electrical shock or personal injury, do not intentionally or unintentionally interrupt the protective ground conductor inside or outside the Instrument. Interrupting the protective ground conductor is likely to make the Instrument dangerous. Intentional interruption is prohibited.

1.6 Product Features

The 326X is built to provide a consistent and stable artificial resistive load for a wide range of voltage applications. It combines a lightweight design with durable internal components to support routine field use, training, and controlled load simulation. The instrument is engineered to remain reliable under varying conditions and is designed to be simple to operate and maintain.

1.6.1 Key Features

- Lightweight 13lb design for easy transport
- Supports 69, 120, 240, 277, and 480 volt input applications
- Provides a stable 50-amp full load output
- Compact case with reinforced internal mounting supports
- Efficient cooling system for safe thermal performance
- Simple setup with clearly labeled voltage input terminals
- Designed for daily field use in demanding environments

1.6.2 Standard Features

- Full load 50-amp resistive output
- Internal transformer assembly for voltage support
- Resistor board equipped with H 738L resistors
- Integrated heat shield positioned above resistor assembly
- Relay board assembly for controlled load switching
- XTMR board and internal standoff system to stability
- Cooling fan mounted to internal bracket for continuous airflow
- Panel mounted fuse for circuit protection
- Filter assembly and bezel installed for case ventilations
- Durable case designed for transport and field handling

1.7 General Specifications

The following specifications apply to the 326X artificial resistive load. These values reflect the certified product information and verified internal assembly details

1.7.1 Input Characteristics

PARAMETERS	DATA
Supported Voltages	69 V, 120 V, 240 V, 277 V, 480 V (69 V optional)
Load Type	Artificial resistive load
Full Load Output	50 A
Current Range	Amperes (external ammeter optional)

1.7.2 Dimensions

PARAMETERS	DATA
Width	11” (27.94 cm)
Depth	7” (17.78 cm)
Height	10” (25.40 cm)
Weight	13 lbs (5.90 kg)

1.7.3 Internal Components

PARAMETERS	DATA
Internal Transformer	801225 9200
Resistor Elements	H 738L
Heat Shield	GA 50 206
Relay Board	911 00034 0002 001
XTMR Board	911 0034 0001 00
Cooling Fan	300 1271
Fuse	300 0105
Filter Assembly	19155K23
Mechanical Supports	326 302 spacers and 326 304 standoffs
Case Components	Bezel kit and ventilation filter assembly

1.8 About this Operations Manual

This manual provides essential instructions for the safe installation, operation, and maintenance of the 326X Artificial Resistive Load. It is intended for qualified personnel who work with electrical equipment and follow standard safety practices.

The manual outlines installation steps, voltage connections, operational guidance, maintenance procedures, troubleshooting information, and available accessories. All content is based on approved engineering documentation for the 326X.

Users should review this manual before operating the Instrument to ensure safe and proper use

2.0 INSTALLATION

2.1 Introduction

This section provides instructions for unpacking, placing, and preparing the 326X for use. Read all installation steps before connecting the Instrument to any voltage source. Only qualified personnel should install or operate the 326X.

2.2 Unpacking and Inspection

The 326X is shipped in a container designed to protect the Instrument during transportation. Inspect the shipping container and Instrument for any visible damage upon arrival.

Perform the following steps:

- Remove the Instrument and packing materials.
- Verify that the case, front panel, voltage terminals, and cooling opening show no signs of damage.
- Confirm that the Instrument matches the model ordered.
- If any damage or discrepancies are found, report them immediately before operating the unit.

A packing list may be included with the shipment. Ensure that any accessories or added items are accounted for.

Figure 2.2.1 326X Load Box Pelican Case

2.3 Setup and Placement

Place the Instrument on a stable, flat surface that supports adequate airflow around all sides. Ensure that the voltage input terminals are accessible and that there is enough space to safely route cables.

The 326X should be positioned away from moisture, dust, and excessive heat sources. Maintain clear access to the fuse holder and cooling fan area.

2.4 Airflow and Cooling

The 326X uses a continuous cooling fan to maintain proper operating temperature. To ensure safe operation:

- Keep the fan intake and exhaust openings free from obstruction.
- Do not place objects against the sides of the case.
- Avoid operating the Instrument near materials that may restrict airflow.
- Inspect the filter assembly for dust or debris and clean as needed.

Restricted airflow can cause overheating and may damage internal components, including the resistor assembly and transformer.

Figure 2.4.1 Cooling fan on the side of the unit.

2.5 Voltage Input Connections

The 326X supports input voltages of 69, 120, 240, 277, and 480 volts. Only qualified personnel using proper PPE should make voltage connections.

Before connecting voltage:

- Confirm that the voltage source matches one of the supported input values.
- Ensure that all cables and connectors are rated for the intended voltage and current.
- Identify the correct input terminal for the voltage being applied.
- Verify that the instrument is placed securely and is not energized during connection.

Apply voltage according to approved electrical safety procedures. Once connected, the load switch can be used to apply the full 50-amp load.

Figure 2.5.1 Voltage Input Connections on the unit.

3.0 FUNCTIONALITY

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3.1 Introduction

This section explains how to operate the 326X Artificial Resistive Load. Only qualified personnel should perform these procedures. Before applying voltage or load, ensure that all safety information in this manual has been reviewed and understood.

The 326X is designed to provide a stable resistive load when connected to approved voltage sources. The Instrument supports multiple voltage inputs and delivers a consistent 50-amp full load when engaged.

3.2 Front Panel Overview

The front panel includes the following main elements:

1. Voltage input terminals for connecting the selected voltage
2. A load switch that applies or removes the resistive load
3. A power indicator light
4. A panel mounted fuse
5. Load wire holders for secure cable placement

Each component is mechanically reinforced and rated for field conditions.

Figure 3.2.1 326X Front Panel

3.3 Connecting Voltage

Before connecting voltage to the instrument:

- Confirm the voltage source matches one of the supported input levels
- Ensure cables are rated for the intended voltage
- Verify proper grounding
- Confirm the Instrument is stable and unobstructed

Connect the voltage leads to the appropriate terminal set. Each terminal is clearly marked to indicate voltage designation.

After connections are secure, verify that the power indicator light is functioning. If the light does not illuminate, De-Energize connections and check the fuse and voltage source.

3.4 Applying the Load

The 326X provides a fixed resistive load that produces approximately 50 amperes when voltage is applied.

To apply the load:

1. Confirm that voltage is present at the input terminals
2. Verify correct placement of load wires
3. Flip the load switch to the ON position
4. Allow the load to stabilize under the connected voltage

The cooling fan will operate continuously when the Instrument is under load to manage internal temperature.

To remove the load, set the switch to the OFF position.

3.5 Understanding Full Load Operation

During full load operation, the internal resistor assembly will generate heat. The cooling fan and heat shield are designed to maintain safe operating temperature with the Instrument. The case may become warm during extended use, which is normal under full load conditions.

To ensure safe operation:

- Maintain clear airflow around the fan and filter assembly
- Do not cover or obstruct any part of the case
- Monitor the Instrument for abnormal sounds, heat, or smell

If any abnormal condition occurs, turn the load switch off and disconnect voltage immediately. Allow the Instrument to cool fully before resuming operation.

4.0 MAINTENANCE

4.1 Introduction

This section provides general maintenance procedures for the Instrument. Regular inspections and routine care help ensure safe and reliable operation. Only qualified personnel should perform maintenance tasks involving electrical components. Disconnect all voltage sources before servicing the Instrument.

4.2 Fuse Replacement

The instrument is equipped with a panel mounted fuse for circuit protection. If the power indicator light does not illuminate or if voltage is present with no load response, the fuse may need to be replaced.

To replace the fuse:

1. Disconnect all voltage from the Instrument
2. Allow the unit to cool before handling
3. Remove the fuse holder cap on the front panel
4. Replace the fuse with the same rating and type
5. Secure the fuse holder and verify operation

If the new fuse immediately fails, inspect voltage connections and wiring before continuing operation.

Figure 4.2.1 Panel Mounted Fuse

4.3 Cleaning the Unit

Keep the exterior of the Instrument clean and free from dust or debris.

- Wipe the case with a soft, dry or lightly dampened cloth
- Do not use solvents or abrasive cleaners
- Ensure that moisture does not enter the case or terminals

Cleaning should be performed regularly, especially in dusty or outdoor environments.

If the fan does not operate or airflow is restricted, discontinue use until the issue is resolved.

4.4 Fan and Airflow Care

The cooling fan operates continuously when the load is active. Proper airflow is essential for temperature control and safe use.

Perform the following checks:

- Inspect the fan intake and exhaust opening for dust buildup
- Clean or clear debris from the filter assembly as needed
- Ensure that no objects block air movement on any side of the unit
- Verify fan operation during full load use.

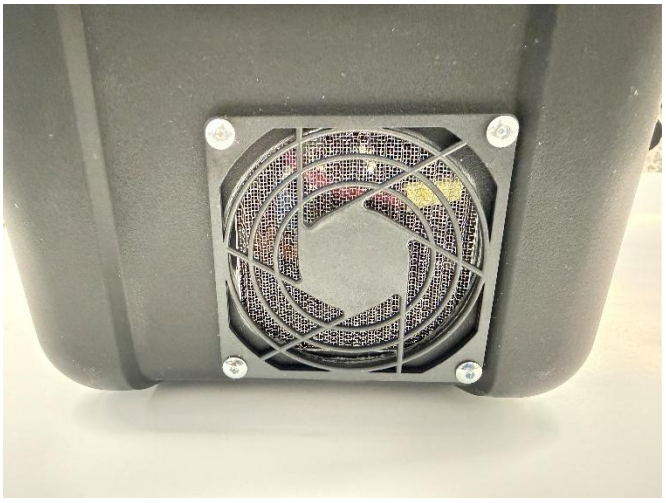

Figure 4.4.1 Cooling Fan for the 326X

4.5 Terminal Inspection

Inspect the voltage terminals and load wire holders regularly

- Confirm that all terminals are free of damage or corrosion
- Tighten any loose hardware
- Inspect wiring for discoloration or wear
- Ensure all terminal labels remain clear and readable

Proper terminal condition ensures stable operation and prevents unsafe connections.

5.0 FREQUENTLY ASKED QUESTIONS

5.1 Introduction

The following questions address common topics related to the use, operation, and compatibility of the Instrument. For additional support, see section 1.2 Contacting TESCO.

5.2 Electrical and Load Questions

What voltages can the instrument accept?

The instrument supports 69, 120, 240, 277, and 480 volt input levels.

How much load does the Instrument draw?

The unit provides a fixed resistive load of approximately 50 amperes.

Is the 69 volt required?

No. The 69 volt input is optional.

5.3 Operation and Usage

How do I know when the load is active?

The load becomes active when voltage is applied and the load switch is turned to the ON position.

Does the Instrument require warm up time?

No. The load engages immediately once active.

Can the Instrument be used continuously?

Yes, but ensure airflow is unobstructed and monitor temperature during extended operation.

5.4 Accessories and Compatibility

Can I use an external ammeter?

Yes. An external ammeter can be used to observe load current.

Are custom voltages available?

Yes. Custom input configurations can be ordered if required.

What additional accessories are supported?

Common accessories include cable sets, load to line jumpers, and protective field bags.

6.0 TROUBLESHOOTING

6.1 Troubleshooting

6.1 Troubleshooting

No power indicator light

- Check the fuse
- Verify that voltage is present at the input terminals

Load does not activate

- Confirm the load switch is in the ON position
- Check all terminal connections
- Verify that voltage level matches a supported input

Fan not operating

- Remove load immediately
- Inspect airflow openings
- Allow the unit to cool before further use

Unit overheating

- Ensure airflow is not blocked
- Inspect filter assembly
- Confirm fan function

Unusual smell or sound

- Disconnect voltage immediately
- Allow the unit to cool
- Inspect wiring and components before resuming operation