

operation and instruction manual



K95800 Reichert Tester

service | innovation | technology

REV K-A

CERTIFICATE OF CONFORMANCE

Reichert Tester K95800

This certificate verifies that part number K95800, Reichert Tester, was manufactured to operate within the parameters set forth on this certification.

Frictional Force - 2N to 200N
Normal Load - 50N to 500N (in steps of 50N)
RPM - 50 to 1500 RPM
Temperature - Ambient to 120°C
Sliding Speed - 0.85 to 2.50 m/s
Preset Timer – Up to 99hrs:59min:59sec

This unit is tested before it leaves the factory, to ensure total functionality and compliance to the above specifications. Test and inspection records are on file for verification.



Vincent Colantuoni
Product Manager

Koehler Instrument Company, Inc.
1595 Sycamore Ave.
Bohemia, NY 11716
United States of America

Serial Number: _____

Date: _____



EC Declaration of conformity

Koehler Instrument Company, Inc.
of 1595 Sycamore Av., Bohemia, New York USA

This declaration of conformity is issued under the sole responsibility of the manufacturer. We declare that the product listed below meets all basic requirements in accordance with the following Directive(s) by design, type, and version placed upon the market by us.

2006/42/EC The Machinery Directive by way of the Low-Voltage directive 2014/35/EU

And hereby declare that:

Equipment: **Reichert Tester**

Model Number(s): **K95800**

Qualifications:

This product may only to be used in a professional laboratory setting by authorized personnel following the instruction handbook.

and

The object of the declaration described above is in conformity with the relevant union harmonization legislation. This product declaration is valid for unmodified equipment when installed and operated by authorized personnel following the instruction handbook.

Conforms to the following standards (as applicable):

Safety	Low-Voltage directive 2014/35/EU
EN 61010-1:2010	Safety Requirements for electrical equipment for measurement, control and laboratory use; by engineering design and risk review and by meeting the requirements of Hi-Pot Test (1500 VAC, 60 sec. per table 5) as detailed in the product's technical documentation.

VINCENT COLANTUONI

Vincent Colantuoni
Product Manager

1595 Sycamore Ave.
Bohemia, NY 11716
United States of America
December 1, 2021

www.koehlerinstrument.com

631-589-3800

Background

The goal of the WEEE Directive is to encourage design of environment-friendly products that increase reuse, recycling and other forms of recovery to reduce waste streams and applies to listed Electronic and Electrical Equipment (EEE) and Koehler's equipment falls broadly into Appendix 1A; Section 9 Monitoring and Control Equipment: Measuring, weighing or adjusting appliances for household or as laboratory equipment.

Any associated non-embedded equipment such as Lighting (Saybolt Color) and PCs/Printers also fall under WEEE. If provided with an order these ancillary items must be WEEE compliant. For these and other reasons (printer cartridges are regionalized) the equipment must be supplied through a third party supplier in Europe.

The WEEE Directive applies to electrical and electronic equipment falling under the categories set out in Annex IA provided that the equipment concerned is not part of another type of equipment that does not fall within the scope of this Directive. Annex IB contains a list of products which fall under the categories set out in Annex IA.

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:037:0024:0038:en:PDF>

We do not qualify for any of the 10 exemption categories.

<http://www.dpa-system.dk/en/WEEE/Products/Exemptions>

Professional use

For equipment defined for 'professional use' local authorities have no role to play. Producers and importers are basically responsible for collection of WEEE recyclables from the professional user and for subsequent management. A separate statement is given cataloging the items that require separation from the equipment along with basic information on subsequent processing or recycling prior to disposal of the equipment.

<http://www.dpa-system.dk/en/WEEE/Products/Private-or-professional-use>

Responsibility for Registration and Annual Reporting:

Koehler will not sell directly to end users in the EU and so has no responsibility to register within each EU state and to make annual reports. Koehler declares that this responsibility is born by the importer who is the first level of the distribution chain and is subject to producer responsibility. We will communicate this in writing to our distributor/importers in the EU stating they are responsible to satisfy WEEE registration and reporting requirements in the EU states where they conduct sales activities.

It is illegal to market electrical and electronic equipment covered by producer responsibility without being registered.

<http://www.dpa-system.dk/en/WEEE/Producers/Whoissubjecttoproducerresponsibility>

Product Design

Koehler's designs allow for complete disassembly to a modular level which usually allows for standard recycling. A qualified refrigeration system technician must be consulted when disassembling and de-commissioning any equipment with refrigeration systems.

Koehler's scientific testing equipment is robustly designed to function over a long service life and are typically repaired many times over the course of years rather than being replaced. We believe that re-use and refurbishment is the very best form of re-cycling.

All batteries must be readily removable not soldered in place.

Recycling instructions

In the event that replacement becomes necessary, we will include instructions, particularized to each instrument that informs the customer of their recycling responsibilities and giving them guidance in doing this. All Koehler equipment has been placed on the market since 13th August 2005 and so Koehler is defined as a "new WEEE producer". As such we must provide information on refurbishment, treatment, and re-use.

Our instrument manual will include this compliance statement and indicate that any collection of materials will be handled by their authorized distributor. In the event that the distributor is unreachable or is no longer a distributor for Koehler Instrument, Co., other arrangements may be made including accepting the materials directly.

Recycling is free of charge. Shipping is the responsibility of the end users. Whether shipping to a distributor or to Koehler directly, safe, properly declared, and labeled packaging and shipping expenses are the sole responsibility of the end user.

WEEE Marking



Since Koehler products are subject to the WEEE Directive we must display the WEEE symbol shown above in accordance with European Standard EN 50419 on the equipment. It must be indelible, at least 5mm in height, and clearly legible. If the equipment is too small the mark must be in the product literature, guarantee certificate, or on the packaging. Rules on marking are established in section 49 of the WEEE Order.

Koehler Instrument Company, Inc.
c/o RECYCLING
1595 Sycamore, Ave.
Bohemia, NY 11716

As a minimum the following substances, preparations and components have to be removed from any separately collected WEEE:

- Mercury containing components, such as switches or backlighting lamps (compact fluorescent lamps, CFL),
- Batteries
- Printed circuit boards if the surface of the printed circuit board is greater than 10 square centimeters (about 4 sq in.),
- Toner cartridges, liquid and pasty, as well as color toner,
- Chlorofluorocarbons (CFC), hydrochlorofluorocarbons (HCFC) or hydrofluorocarbons (HFC), hydrocarbons (HC)
- Liquid crystal displays (together with their casing where appropriate) of a surface greater than 100 square centimeters and all those back-lighted with gas discharge lamps,
- External electric cables
- Components containing refractory ceramic fibers as described in Commission Directive 97/69/EC of 5 December 1997 adapting to technical progress Council Directive 67/548/EEC relating to the classification, packaging and labeling of dangerous substances (2),
- Electrolyte capacitors containing substances of concern (height > 25 mm, diameter > 25 mm or proportionately similar volume)

2. The following components of WEEE that is separately collected have to be treated as indicated:

- Equipment containing gases that are ozone depleting or have a global warming potential (GWP) above 15, such as those contained in foams and refrigeration circuits: the gases must be properly extracted and properly treated. Ozone-depleting gases must be treated in accordance with Regulation (EC) No 2037/2000 of the European Parliament and of the Council of 29 June 2000 on substances that deplete the ozone layer (4).

Table of Contents

1. Introduction	2
1.1. Koehler's Commitment to Our Customers	2
1.2. Technical Data	2
2. Safety Information and Warnings	3
2.1. Mechanical	4
2.2. Hazardous Areas	4
2.3. Electrical	5
2.4. Safety Instructions	5
3. Getting Started	6
3.1. Installation Instructions	6
4. Descriptions	8
4.1. Structure	8
4.2. Instrument Description	8
4.3. Sensors	10
5. Operation	10
5.1. Test Procedure	11
5.2. Procedure Utilizing HMI	12
6. Maintenance	17
7. Troubleshooting	17
8. Electrical Specifications	18
9. Electrical Circuit Diagram	19
10. Service	28
11. Storage	28
12. Warranty	28
13. Returned Goods Policy	28

1. Introduction

The K95800 Reichert tester is used to test extreme pressure properties of lubricating oil. The Reichert Friction and Wear tester consists of a rigidly-mounted test roller, which is pressed against a revolving test wheel by means of weighted lever. The test wheel is semi immersed in the test fluid. Its rotation speed is such that a sufficient quantity of lubricant is always in contact between test roll and test wheel.

This manual provides operating instructions for the K95800 Reichert Tester and should be used in conjunction with applicable standard test methods.

1.1. Koehler's Commitment to Our Customers

Providing quality testing instrumentation and technical support services for research and testing laboratories has been our specialty for almost 100 years. At Koehler, the primary focus of our business is providing you with the full support of your laboratory testing needs. Our products are backed by our staff of technically knowledgeable, trained specialists who are experienced in both petroleum products testing and instrument service to better understand your requirements and provide you with the best solutions. You can depend on Koehler for a full range of accurate and reliable instrumentation as well as support for your laboratory testing programs. Please do not hesitate to contact us at any time with your inquiries about equipment, tests, or technical support.

Toll Free: 1-800-878-9070 (US only)
Tel: +1 631 589 3800
Fax: +1 631 589 3815
Email: info@koehlerinstrument.com
<http://www.koehlerinstrument.com>

1.2. Technical Data

Parameter		Value
Specimen (Test Roller)	Size	12 mm diameter
	Hardness	HRC 28 to 30
	Surface Finish	Mirror Finish
Spindle Speed	Range	100 to 3000 RPM continuously variable
	Sensor	Drive analog input
Normal Load	Method	Normal Load applied by loading lever with aid of pivot cam
	Sensor	FORSENTEK, S-Type Load Cell, Capacity 500 N
	Range	0 to 50 kg
	Precision	1 kg
Force	Accuracy	±2% measured Normal Load
	Sensor	FORSENTEK, S-Type Load Cell, Capacity 500 N
	Range	0 to 50 kg
	Precision	0.1 kg
Test Chamber Temperature	Accuracy	0.1±0.1% measured Frictional Force
	Sensor	PT100 Type RTD
	Range	-199 to 200°C
	Precision	1°C
Test Duration (Max.)	Accuracy	±1% measured temperature (°C)
		2 to 5 min.
Machine Weight		80 kg
Data Acquisition		On-line data acquisition of frictional torque, temperature, normal load, and speed
Electrical/Power Requirement		220V, 50/60Hz, 1 Ph.
Spindle Drive	AC servo motor	Make: Schneider, Servo motor Output 6.29A, 220-240V, 1000W, 3000 rpm
	Compact servo drive	Make: Schneider, LXM26DU10M3X, 1-PHASE, 220-240V, 3000 RPM, OUTPUT – 21A

2. Safety Information and Warnings

Safety Considerations. The use of this equipment may involve *hazardous* materials operations. This manual does not purport to address all of the safety problems associated with the use of this equipment. It is the responsibility of any user of this equipment to investigate, research, and establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

Equipment Modifications and Replacement Parts. Any modification or alteration of this equipment from that of factory specifications is not recommended and voids the manufacturer warranty, product safety, performance specifications, and/or certifications whether specified or implied, and may result in personal injury and/or property loss. Replacement parts must be O.E.M. exact replacement equipment.

Over Temperature Protection. This unit is equipped with Over Temperature Protection (OTP) circuitry to prevent overheating. The unit will automatically interrupt power whether equipment malfunction or operator error causes the temperature to exceed either 20 °C above the set point or the maximum recommended temperature range. The power can only then be restored by identifying and correcting the problem, allowing the unit to return to normal operating temperatures, and resetting the power to the unit.

Unit Design. This equipment is specifically designed for use in accordance with the applicable standard test methods listed in section 1.2 of this manual. The use of this equipment in accordance with any other test procedures, or for any other purpose, is not recommended and may be extremely hazardous.

Chemical Reagents Information. Chemicals and reagents used in performing the test may exhibit potential hazards. Any user must be familiarized with the possible dangers before use. We also recommend consulting the Material Data and Safety Sheet (MSDS) on each chemical reagent for additional information. MSDS information can be easily located on the internet at <http://siri.uvm.edu> or <http://www.sigma-aldrich.com>.

Control Equipment. The control system of the m/c employs a 'trip design'. In the event of tripping, they need only to be switched ON after ascertaining and eliminating the cause for the fault.

Safety Labels. Safety labels and caution markings must be observed and understood before operation. If the safety labels become damaged or become illegible, please replace it or contact KOEHLER. Do not scratch/spoil or remove any safety markings/labels from machine.

Thermal Risk.



Any personnel likely to come into contact with these parts should take precaution to allow them to cool down before attending with bare hands.

- Motors in the machine are likely to be hot during operation.
- Top & bottom Specimen are hot to handle immediately after the test.
- Spindle is HOT to handle immediately after test.
- Use of safety leather gloves is recommended.

Noise.



Noise level produced by the machine is within permissible limits (85Dba). This test is done at our works during final stage running tests using noise level measuring instruments. However, the machine may produce excessive noise during its operation, which can cross beyond safe limits under abnormal conditions. If this is encountered, operating personnel should take required precautions to avoid hearing impairment by using earplugs.

2.1. Mechanical

To ensure proper and appropriate machine operation, follow the Instructions given below.

- (a) Carefully read the instruction manual and make sure you understand the contents. This instruction manual describes correct instructions about correct operation & servicing with warnings at crucial points. Read this manual before operating the machine and fully understand the contents. Never attempt to use the machine in any way not described in the manual.
- (b) Only personnel who are trained for proper operation and handling of the machine and are having sufficient knowledge should be authorized by your supervisor to operate the machine. For maintenance and servicing of electrical components/equipment, only qualified personnel must be authorized to handle the instrument. We suggest a qualification system to be prescribed in your shop/Lab regulations. Koehler shall not be responsible for any direct, incidental or consequential damages on person or property if operators are not knowledgeable about operation and proper practice to use the machine.
- (c) Always keep this instruction manual near the machine. Keep this instruction manual safely in a designated place easily accessible to you. If the manual is damaged or lost, please intimate the machine model number and the work order number to M/s. KOEHLER Instruments Company Inc. for obtaining one such at your cost.
- (d) The machine has to be switched '**OFF**' before opening the electrical cabinet. But input power supply will be present in the incoming supply terminals. Hence maintenance or service personnel must be very careful while removing or replacing components from electrical cabinet when necessary.
- (e) All personnel must be aware of the location of EMERGENCY STOP BUTTON. All personnel concerned with operation and maintenance must know the location of emergency stop button, its location and how to use it under emergency conditions, so that it can be operated at any time without looking at it. Unauthorized persons should not operate the Machine.
- (f) Use only tissue paper & solvent to clean the work zone i.e., spindle, oil container and surrounding areas either before or after testing. Do not blow air for cleaning.

2.2. Hazardous Areas

High Voltage. Opening of electrical cabinet and touching the devices inside will result in serious personnel injury or death from electrical shock. The power input to the machine is 230V, 1 phase and 50/60Hz. Necessary safety measures are provided to protect the operator due to shock in electric motors and other electrical components, electrical cabinet and wiring through which high voltage runs. Hazardous areas are located inside the electrical cabinet. Touching these devices could result in serious personal injury or death due to electric shock.

Machine Range of Movement. Always keep away from the following areas during operation, as they are extremely dangerous.

Machine Guard. Never operate the machine without ensuring that machine guard is in place.

Machine Maintenance. Except during machine operation, turn off the main power, before entering the work zone for maintenance or other reasons.

Machine Operation. Never operate the machine without ensuring the following. Without tightening top specimen and placing bottom specimen on holder. Applying normal load while spindle is switched ON. If the above measures are not taken, it will result in damage to machine or personnel.

Slippery Surfaces. In the event of operating/maintenance personnel entering in the working zone of the machine, they should understand that presence of oil, coolant, or grease etc. Otherwise, it may make surfaces slippery, leading to sliding or slipping or skidding. Hence to prevent such accidents, the working area in and around the machine must be maintained neat & clean. The concerned personnel should adopt precautionary measures like wearing of suitable footwear, goggles and gloves whichever is necessary.

During Operation. Never attempt to open any guard or cover while machine is running.

Parameter Setting. Do not change parameters such as pressing zero buttons of normal load, frictional force, adjustments in machine parts or electrical parameters such as current limit of motor protection circuit breakers under machine operation. If such changes are unavoidable record values prior to changes so that they can be reverted to their original values if necessary.

Interrupting a Cycle. Do not press the 'EMERGENCY' button to stop a cycle. Sort out the problem and fix it before proceeding to the next test. Never attempt to hold back or restrain any machine parts during operation for the purpose of avoiding abnormalities. Always use the operating proper procedure to stop the machine.

Completion of Operation. Make sure that you switch off the electrical power supply to the machine after completion of the test operation before leaving. Clean the machine and the working area.

2.3. Electrical

High Voltage Area. The electrical specifications required for the machine is 230V AC, 60 Hz, 1PH. Necessary safety measures are provided to protect the operator from electric shock due to electrical components. However proper care must be observed while working in and around the machine.

Touching or getting in direct contact with electrical components such as motors and wiring cables would result in a serious personal injury or death. The following are the hazardous devices/areas that must be dealt with caution,

- Electrical Cabinet and Wiring
- Controller
- Electrical motor

Only qualified and trained personnel are permitted to open the door of electrical cabinet, controller box cover and motor terminal protective cover in case of servicing or maintenance. Unqualified personnel must not access to any of these areas.

Protective devices. For safety reasons protective devices are provided in the machine,

- Never damage, remove or relocate any parts of safety devices. Doing so without Koehler's permission would result in serious personnel injury/loss of property.
- Before operation, check that all safety devices are working properly. If not immediately contact Koehler with machine type and track number. Unauthorized personnel are strictly prohibited from opening electrical cabinet door or any cover with protective device for open/close.
- Do not meddle with any limit switches & load cell settings unless you are authorized to do so.

List of Protective Devices.

Name	Location
Emergency Stop Button	On Machine
Main Power Switch	On Machine
MCB	Electrical Cabinet

Checkpoints before Operation.

- Ensure the electric supply voltage to the machine is 230V AC, 1 Phase.
- Ensure that no cables or wires are damaged in or near the machine visually.
- Ensure proper ground connection.
- Remove all unnecessary items on the working area, especially at the work zone.
- Ensure all guards, covers and doors are placed in the proper positions.
- Safety shoes, goggles, gloves etc.
- Lighting for proper illumination of working area.
- Manual operation of all mechanisms for desired results

2.4. Safety Instructions

Carefully read the instruction manual before installing or operating the machine. Partial understanding may cause serious injury. Read all safety instructions and observe strictly all instructions.

- Never make modifications or changes to machine.
- Ensure that only qualified and trained personnel operate the machine.

- Read and understand the manual thoroughly before operating the machine. Please contact Koehler for doubts and clarifications, if any. Partial understanding may cause serious injury to personnel or damage to machinery.
- Read all safety and maintenance instructions.
- Ensure that working area is free of obstructions and suitable bin for collection of test discard.
- Keep hands away/off from the work zone area, while test is under process.
- Ensure spindle is in Stop condition before changing ball pot.
- Never touch the ball pot or try to make adjustments with bare hands when machine is working. •
- Do not operate the machine with safety devices, interlocks, doors and guards removed or bypassed.
- Close all doors and covers before switching ON machine.
- Switch off the main electrical supply during maintenance or repair.
- Do not attempt to touch any electrical device with wet hands as it may result in shock.
- Provide sufficient working space to avoid hazard.
- User is responsible for safe handling and operating of the machine by observing safety precautions provided in the instruction manual and the safety labels on the machine.
- Ensure servicing of the machine by only trained personnel using the maintenance manual.
- Strictly observe the above instructions to avoid serious injury or machine damage. It is the employer's responsibility to comply with the above and to provide necessary safety measures for proper use of the machine.
- For safety reasons, carefully read the instructions. They are important safety precautions to be aware of while transporting, installation and operating. Please follow these precautions to ensure your safety.
- Read operation and instruction manual before attempting operation or service.
- Personnel injury may be resulted by improper operation.
- The equipment may get damage by improper operation.
- Only a competent electrician/technician may install and service the equipment.
- Please ensure a proper ground connection.
- The voltage between ground and neutral should be less than 5 Volts.
- Do not attempt to examine the components and signals when the equipment is ON.
- Do not attempt to disassemble or modify the internal circuitry or wiring.
- Disconnect power supply before any maintenance work.



CAUTION: The electrical cabinet consists of MAINS ON/OFF switch of 32 amperes capacity. This is used to cut off the mains supply from your works to machine. Since this involves 1-phase voltage level of 230V AC, it is extremely dangerous to life of personnel if happen to get in contact or touch with. Extreme care should be taken when 'Back plate' is opened for any maintenance purpose.

NOTE: If power fails during operation switch off supply to the machine by turning the main ISOLATOR switch 'OFF' position. After power resumption, switch on the supply to machine by turning the main ISOLATOR switch to 'ON' position.

Any maintenance or repair work on the electrical part of the installation must be carried out by a duly qualified technician. To protect the operator of the machine, the machine must be connected to earth. The earth point must be as close to the machine as possible.

Each machine must be connected to its own line. The Electric supply mains must be led into the electrical panel through the inlet multi pin connector provided. The cable should be of copper conductor having a minimum cross section of 2.5 Sq. mm, with insulation grade of 650 / 1100 volts. When all these connections have been properly made, the machine can be powered up by operating the main ISOLATOR switch.

3. Getting Started

3.1. Installation Instructions

Transportation. The equipment is packed inside a wooden container. The equipment and spare parts are covered and protected inside the packing box using Insta-pak solution. Carry ropes of suitable size to be used for lifting the equipment while transportation, so that parts of the equipment's are not damaged. For moving on ground surfaces use a Pallet trolley.

Temporary Storage. If the machine is not installed immediately after arrival, it must be stored in an enclosed space such that no dust or moisture enters the equipment. The suggested ambient temperature of the enclosed storage space should range from - 25°C to 55°C.

Unpacking and Cleaning. Before packing all non-painted/plates surfaces are coated with rust preventive oil. After the equipment is unpacked, the entire consignment is to be checked to ensure that it is complete and has not been damaged in transit. Do not dispose of packing material until after inspection. Any damage or defects are to be reported immediately. Remove the wooden side panels by removing the bolts, remove packing materials and cut out all shrink-wrap from around the body of the equipment. The rust preventive oil must be removed with a dry cloth wetted with petrol. A proper electrical power supply with good electrical grounding is to be provided. A tool-kit with commonly used tools for normal operation of the equipment is provided along with the equipment.

CAUTION: Do not operate the machine before cleaning. Do not use compressed air for cleaning.

Hoisting. When hoisting the machine, be sure to lift the equipment properly.

- Only qualified personnel are authorized to lift the equipment by using crane & Forklift.
- Never put yourself under the lifted equipment in any event.
- Use wire, rope, and shackle or lifting jig of the specified size without damage, which can sufficiently withstand the equipment weight while using a crane.
- Use pallet trolley or truck to move it inside the laboratory.

Installation of Equipment:

- Remove the wooden side panels of packing box by removing the bolts, remove the packing materials around the equipment & dismantle the bolts which are fixed to bottom wooden base.
- Place the equipment in a predetermined place with a proper electrical power supply & good electrical grounding has to be provided.
- Connect the instrument to the power supply through the cable which connectors on its both sides.
- Power input cable to transfer 230V, 50-60 Hz, 1Ph power from the external source.
- Connect RTD to a heater cable, load cell cables to corresponding sockets.
- Connect power plug to the "Power Input" socket. Connect the other end of the cable to 230V, 60Hz, 1Ph supply through a suitable plug. Ensure proper neutral and grounding of the single phase supply to the machine.
- Ensure the computer power is disconnected & Reichert tester controller is switched off.

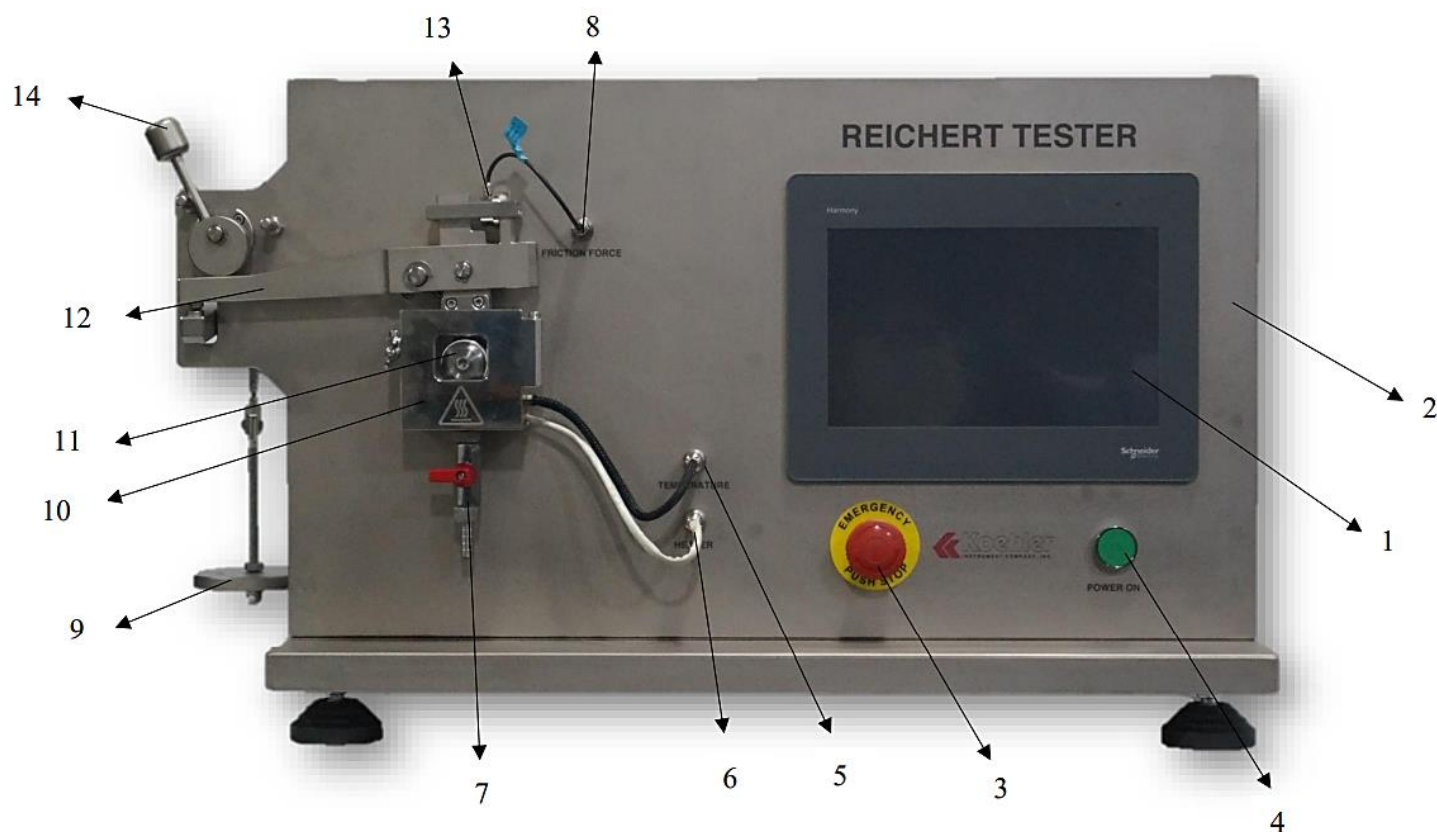
4. Descriptions

4.1. Structure

- A two chamber frame is mounted on the base plate of the machine the right one holds all the electrical equipment's along with the HMI and the left chamber includes motor with its drive in which the motor is situated horizontally including the shaft assembly which protrude outwards in testing chamber.
- The testing chamber includes the shaft on which the test ring is fitted with the help of screw and spacer to the shaft on which the perpendicular force is applied with the help of the loading lever.
- There are two loading levers situated perpendicular to each other on the left side and front side of the machine which is connected by a link and the loads are added to the pan which is connected to load cell to the loading lever which is situated at the side of the machine.
- The front load lever is equipped with one load cell, counterbalance weight and friction lever which, the load cell is connected to the loading lever and the frictional lever which measures the load when applied.
- The two load lever which is connected by the link is equipped with the dial gauge to know the depth of the scar on the specimen which is held by the friction lever with the help of specimen holder, during the operation.
- The load is applied and removed with the help of the pivot cam situated at the side of the machine the load ratio is 1:2 in this case.
- The test chamber is situated with one cartridge heater and one "PT 100 RTD" to measure and control oil temperature, which is controlled to "PID" temperature controller.
- The test chamber also includes oil inlet and outlet valves through which oil is poured during the testing, and then drained and cleaned the loading lever is equipped.



4.2. Instrument Description



Sl. No.	Description
1.	HMI
2.	Body
3.	Emergency Stop Button
4.	Power Button
5.	Temperature Sensor
6.	Heater Connector
7.	Oil Drain Valve

Sl. No.	Description
8.	Friction Force Sensor Connector
9.	Load
10.	Test Chamber
11.	Specimen End Cap
12.	Load Lever
13.	Load Cell
14.	Loading Cam



Sl. No.	Description
1.	Load
2.	Load Lever
3.	Load Cell

Sl. No.	Description
4.	USB Port
5.	Normal Load Connector
6.	Loading Rod

4.3. Sensors

Force sensor fixed between loading lever and friction lever as well as between the loading lever and the weighing pan to measure the friction force capacity up to 20 kg.

RTD and Cartridge heater fixed to the testing chamber to heat the Lubricant and to measure or control the temperature.



5. Operation

Before operation the following conditions must be checked:

- Electrical voltage 230V, 50-60 Hz, 1Ph.
- Check for damaged cables & wires, It can cause electrical shocks.
- Check for all electrical wires including grounding wires connected properly.
- Clean the machine oil spillage, dust etc. Before starting the operation.
- Check the front guard is closed.
- Tools & other accessories not to be placed on the mid plate of the equipment.
- Check for RTD cable connected to the connector.

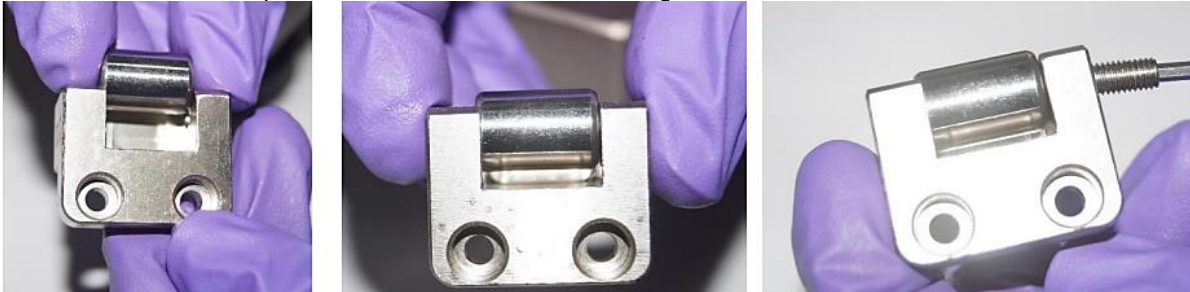
- Check for power cable connected to external source.
- Check for emergency button released.
- After this, all the indicators of the controller will glow; allow five minutes for stabilization of controller

The following points are to be checked visually at least once a shift to keep the equipment in good condition.

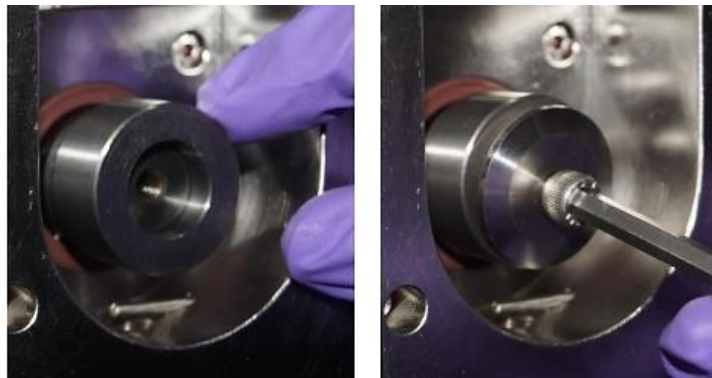
Location	Check For:
Test Chamber	Cleanliness & check the specimen properly inserted in its holder placed properly into the chamber
Test Ring	Cleanliness
Spindle	Cleanliness
Surroundings	Must be clean with no extraneous objects or equipment

5.1. Test Procedure

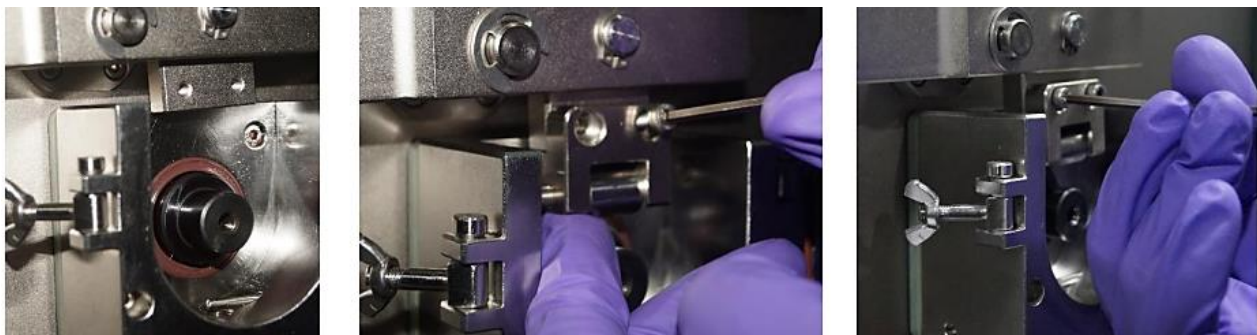
1. Insert the test roller into specimen holder and lock it with the grub screw as shown below.



2. Place the specimen ring into the spindle and lock it with the spacer as shown in the below figure.



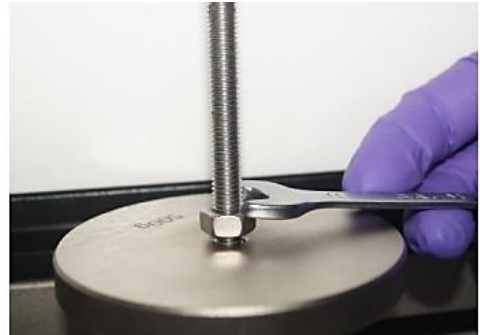
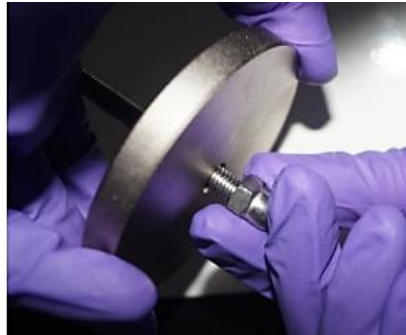
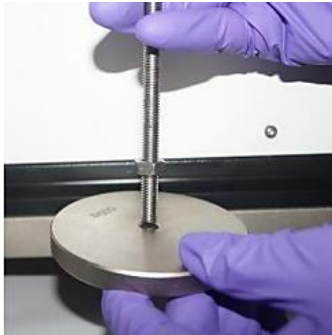
3. Mount the specimen holder to the friction lever as shown below.



4. After assembling specimen roller and specimen ring close the front door, lock it with wing nut and pour the lubricant into the test chamber such that specimen ring is half drowned as shown below.



5. Insert the weights into the loading rod at the right side of the machine and tight the nut at top and bottom as shown below.



6. Apply the load by rotating the cam as shown below.

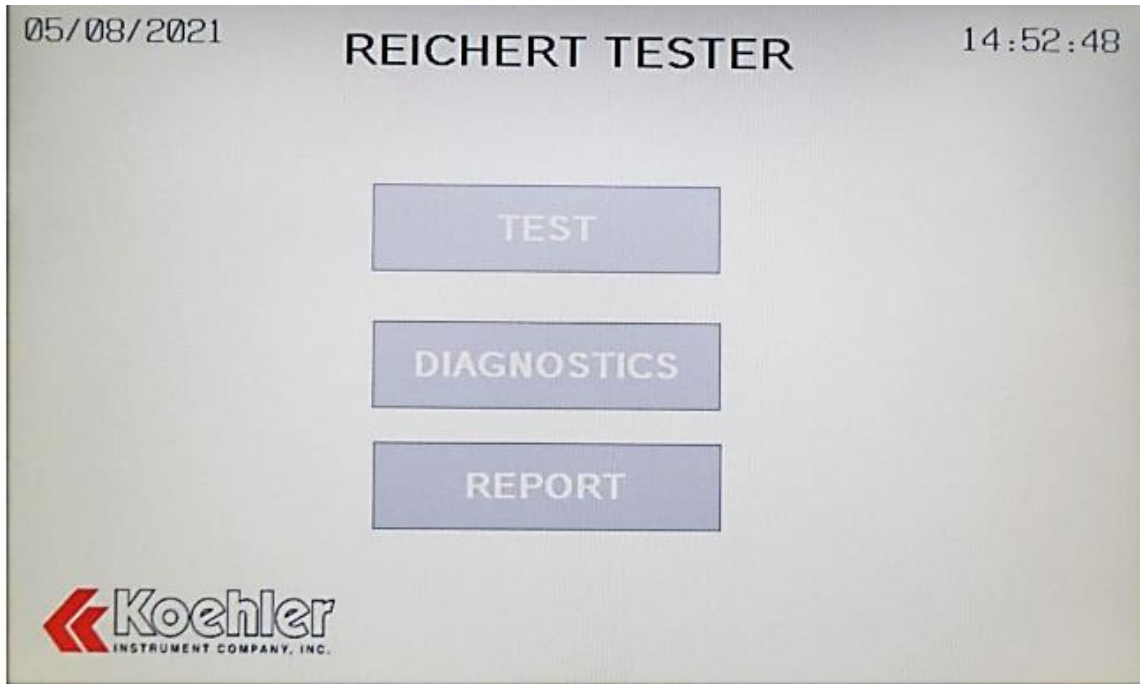


7. Start the machine, after the test is finished drain the oil from the chamber, remove the test ring and the specimen to check the scar on it. Which in-turns give the extreme pressure properties of the oil.

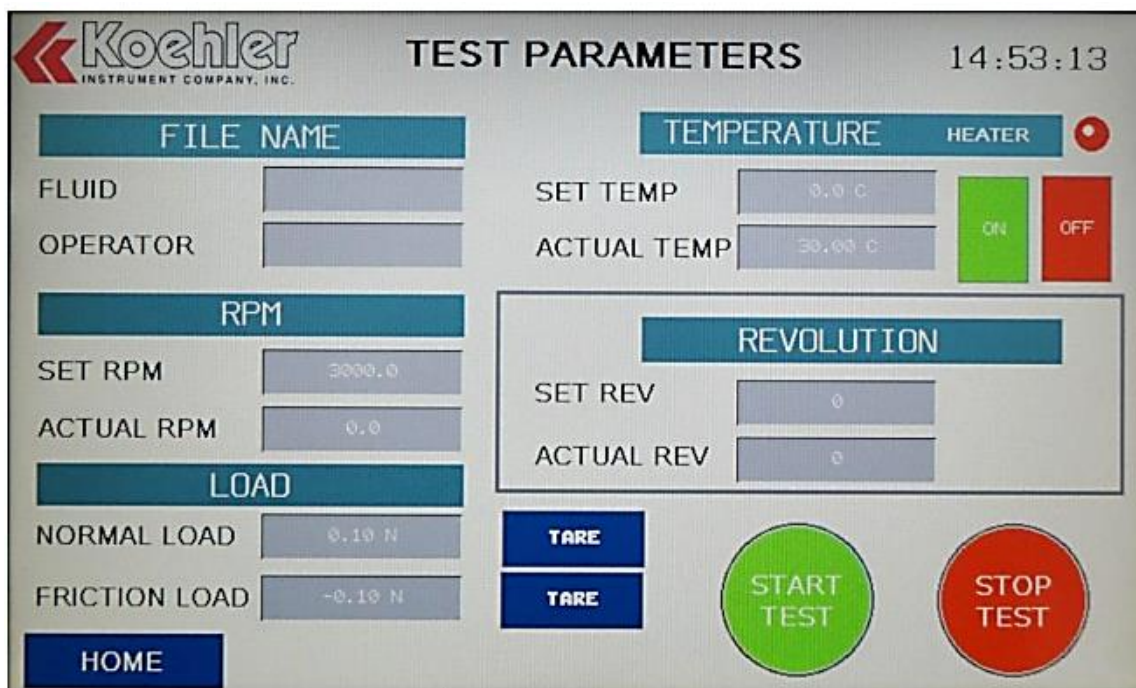
5.2. Procedure Utilizing HMI

Thoroughly clean the specimen and the specimen holder including the shaft and test ring situated on the shaft, then attach the specimen to the specimen holder and attach the test ring to the spindle with the help of spacer and bolt. Once it is set, seal the test chamber by closing its door airtight so there are no leakages, once the door is closed add 25 ml of oil through the oil inlet valve so that the test disk is partially immersed into the oil, then switch on the machine by connecting the power cable, after switching it ON you will see the home screen, on the HMI screen follow these set of instruction to complete the test.

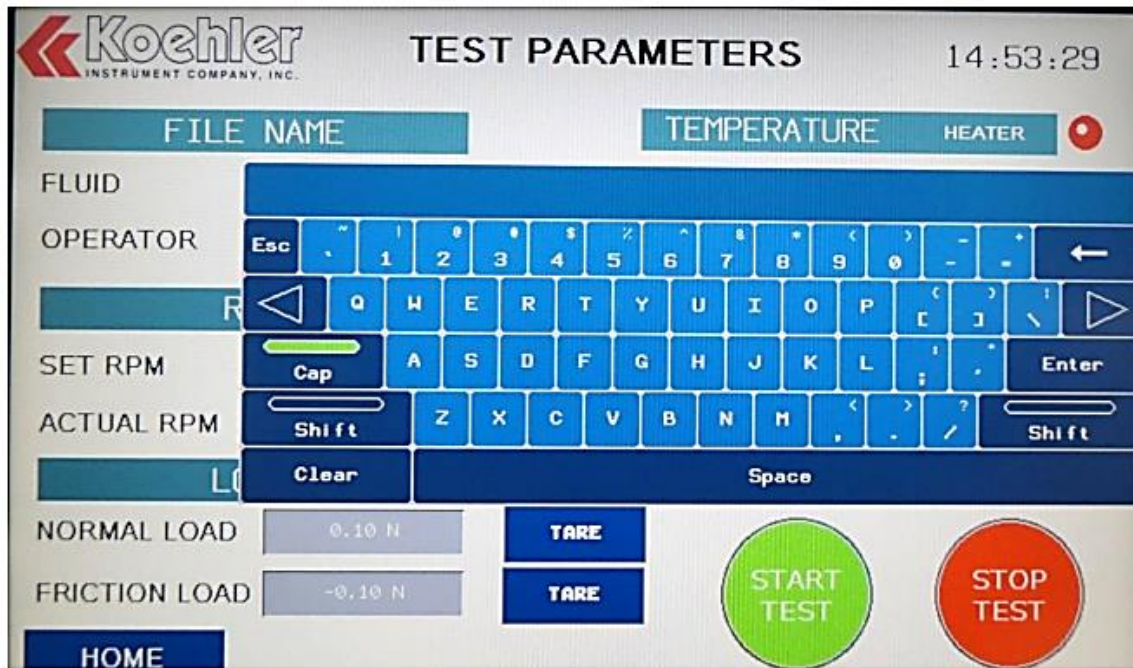
- On the HMI follow home screen click on the TEST icon.



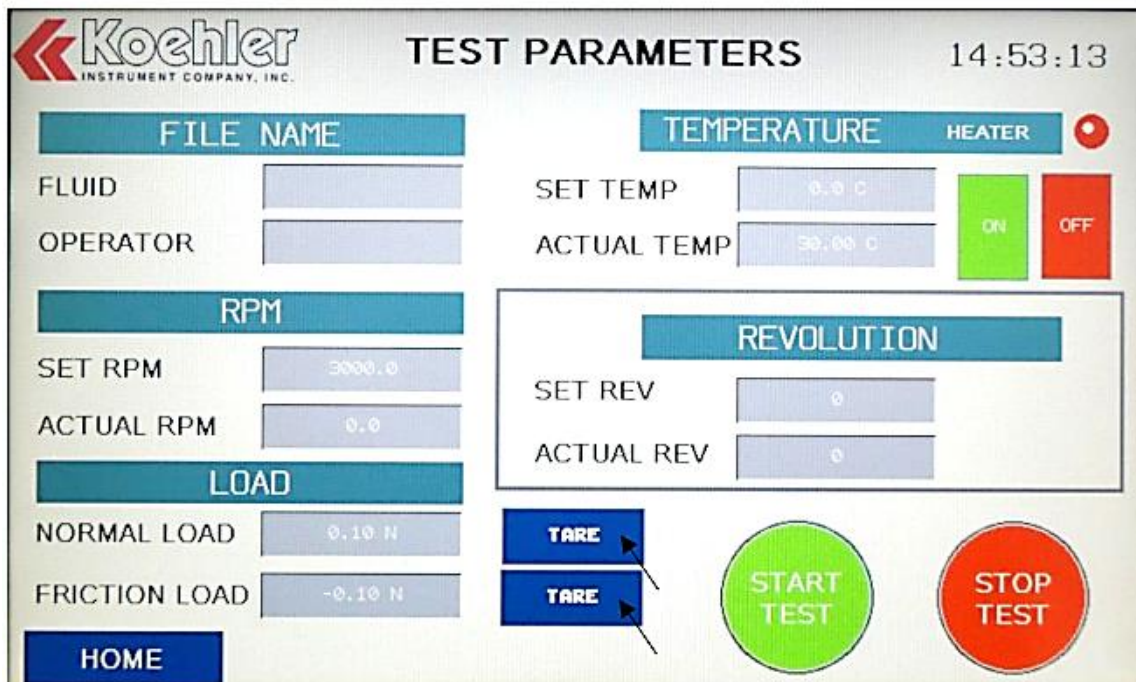
- The screen below will then appear where you can enter the lubricant details, test speed, number of revolutions, test temperature etc.



- To enter the parameters click on the corresponding tab/icon, and an on-screen keyboard will appear. Enter the parameter and click on Enter as shown below.



- Before loading click on the TARE button for both the NORMAL and FRICTION LOAD icon.



- Enter the temperature value in the SET TEMP tab and click ON.

Koehler
INSTRUMENT COMPANY, INC.

TEST PARAMETERS

14:53:13

FILE NAME

FLUID

OPERATOR

TEMPERATURE

SET TEMP

ACTUAL TEMP

HEATER ON OFF

RPM

SET RPM

ACTUAL RPM

REVOLUTION

SET REV

ACTUAL REV

LOAD

NORMAL LOAD

FRICTION LOAD

TARE

TARE

HOME

START TEST

STOP TEST

- Apply the load by rotating the cam and click on the START TEST icon.

Koehler
INSTRUMENT COMPANY, INC.

TEST PARAMETERS

14:53:13

FILE NAME

FLUID

OPERATOR

TEMPERATURE

SET TEMP

ACTUAL TEMP

HEATER ON OFF

RPM

SET RPM

ACTUAL RPM

REVOLUTION

SET REV

ACTUAL REV

LOAD

NORMAL LOAD

FRICTION LOAD

TARE

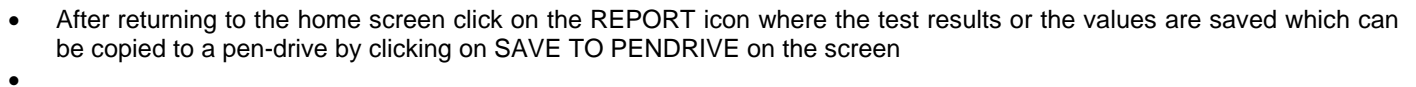
TARE

HOME

START TEST

STOP TEST

- When the DIAGNOSTICS icon is press, the below tab will open indicating the machine is ready by with a green light, if not then press the reset button and then return to the home page



6. Maintenance

A regular and preventive maintenance is must for the operational safety and life of the equipment. A regular and careful cleaning of the equipment from dirt, oil remainders dust increase the life and functional safely of the equipment. It reduces malfunction leading to lower down time and maintains equipment accuracy and precision.

Warning: Never air blast to clean the equipment. To prevent anyone from turning power ON or touching the panel accidentally during maintenance, place a tag saying.

For maintenance of electrical cabinet, turn off the main Power. Failure to observe these instructions may lead to serious injury or death from electric shock.

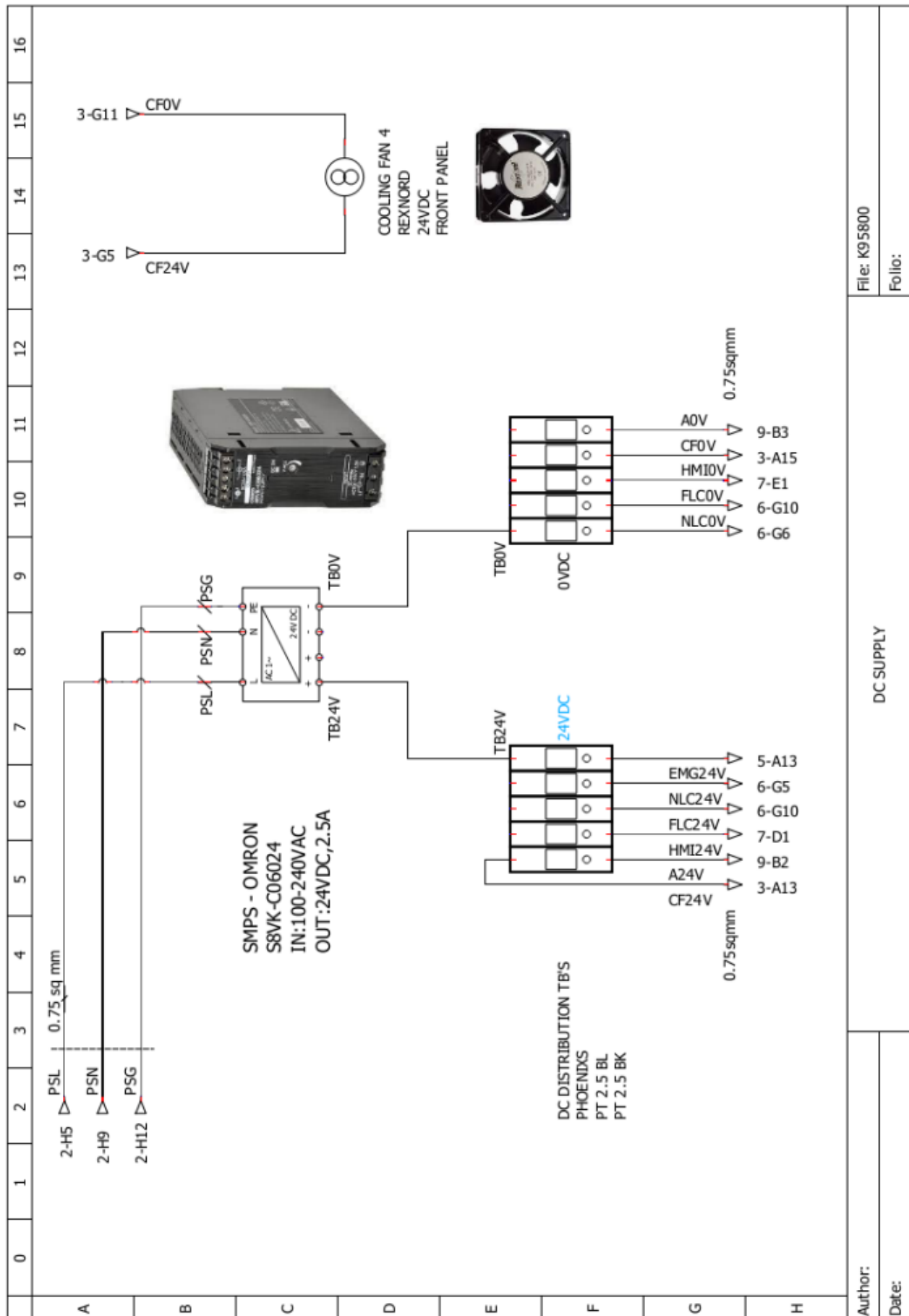
- Insert the specimen inside the specimen holder if there is movement discard the specimen holder.
- Inspect specimen holder for any visual damages discard & replace with a new one.
- Inspect the test ring fitted to shaft, if damaged replace with a new one.
- Ensure connectors are secured tight.
- Loose or dirty contacts cause erratic functioning.
- While not in use, the machine is to be fully covered to keep it free from dust.
- Handle sensors (load cells, thermocouple, and proximity) carefully. Excessive force, shock, temperature, dirt, oil, water effect calibration may cause damage to the sensing element or connecting cable.
- Motor should be kept clean and inspected from time to time.

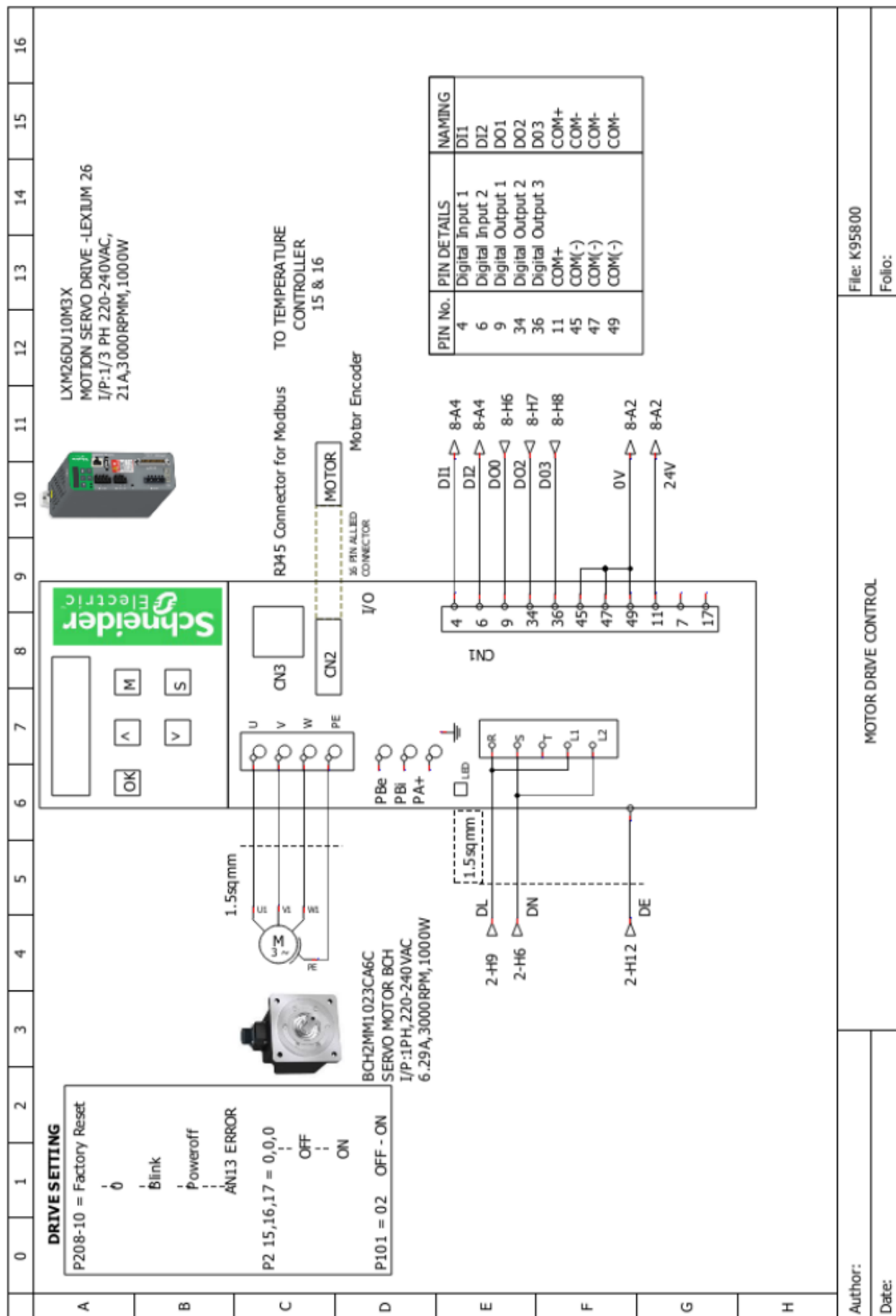
7. Troubleshooting

- If the motor is not rotating check the drive status in the diagnostics page on the home screen and reset it.
- If the machine is not turning on check the RCCB and MCCB for over current.

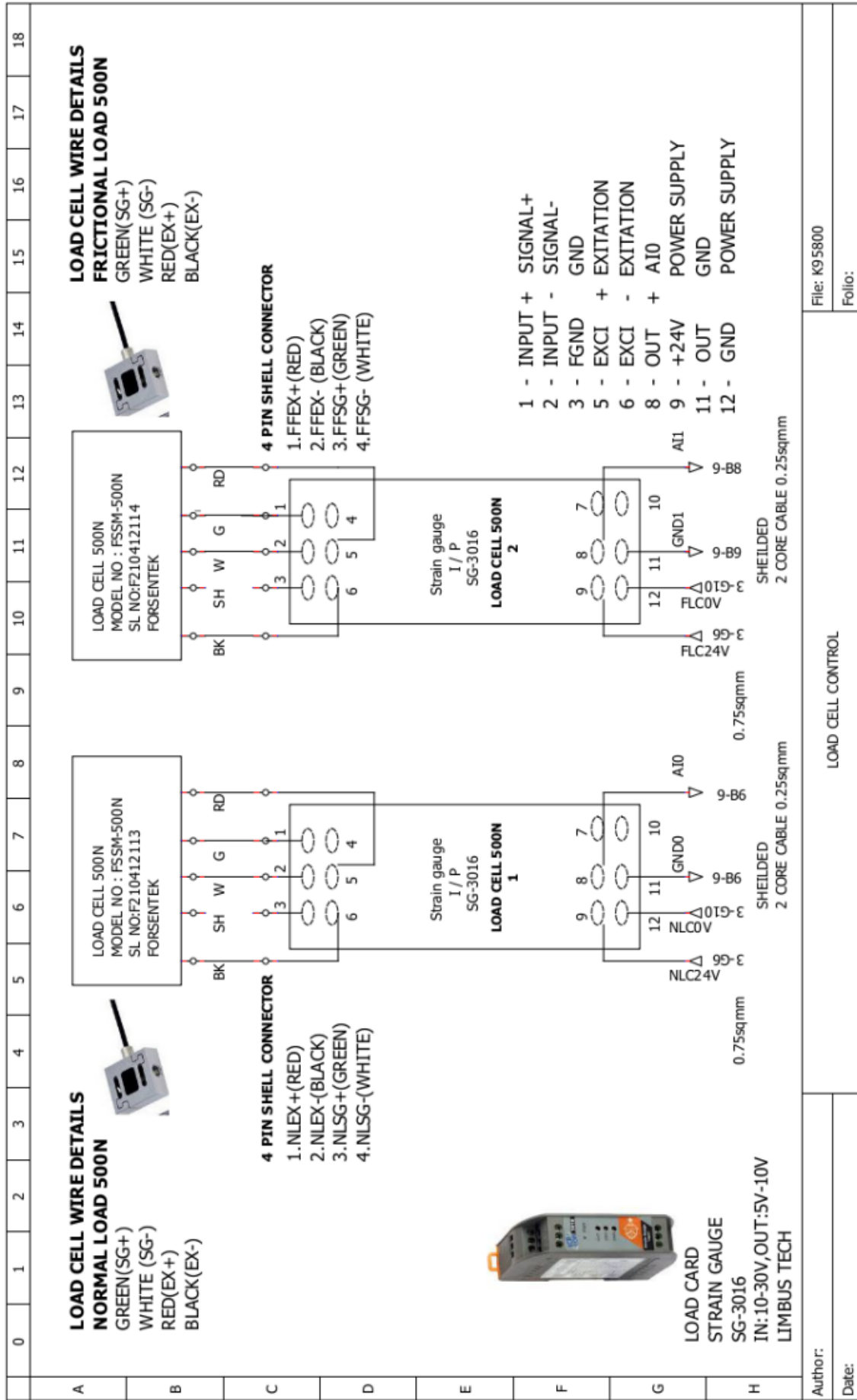
8. Electrical Specifications

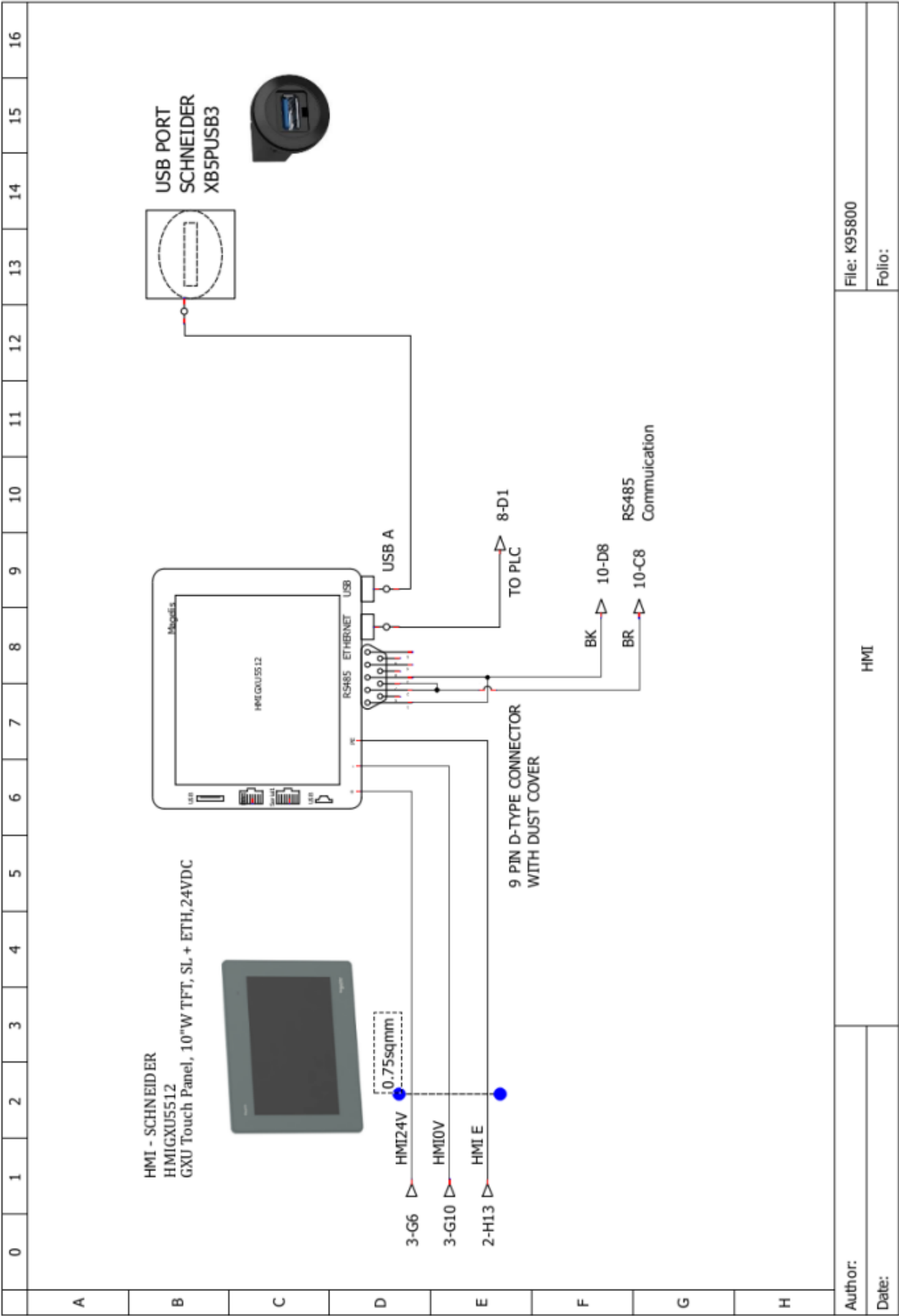
SI No	Item name	Model No	Specification	Make	Qty
1	3 CORE CABLE		3 CORE X 1.5 sqmm	LAPPCABLE	5 mtrs
2	3 PIN CONNECTOR	MS3102R-20-3P	MAIN CONNECTOR	ALLIED	1 SET
3	MAIN RCBO	MS3106F-20-3S A9D07616	Supply Voltage - 1 Ø 220-240 V AC, 50/60 Hz, Current :- 16A No. Pole : (IP+IN)	SIEMENS	1
4	POWER ON SWITCH	LB38-11-22MM		SIBASS	1
5	TRANSFORMER	GX527/72	I/P 1 Phase 230V AC Current 10A O/P:24VAC	GLASTRONICS	1
6	SSR	ERI-001 JDA 331000	I/P:4-32VDC Current : 10A O/P:230VAC	ERI	1
7	SMPS	S8VK-C06024	I/P: I Phase 220-240VAC O/P:24V DC 2.2A	SCHNEIDER	1
8	SPDT RELAY	PLC-BSC-24DC/21	IN:100-240VAC OUT:24VDC,2.5A	PHOENIX CONTACT	2
9	EMERGENCY STOP	XB5AA42N	Control voltage : 230V AC	SCHNEIDER	1
10	NO CHANNEL	ZBE101N		SCHNEIDER	1
11	HEATER		175W ,24VAC DIA. 10mm,LENGTH 60mm	NEXT THERMAL	1
12	TERMINAL BLOCKS			PHOENIX CONTACT	19
13	SERVO MOTOR	BCH2MM1023CA6C	I/P 1 Phase 220-240VAC Current : 6.29A 3000rpm, 1000W	SCHNEIDER	1
14	SERVO DRIVE	LXM26DU10M3X	I/P: 1 Phase 220-240VAC Current 21A 3000rpm, 1000W	SCHNEIDER	1
15	HMI	HMIGXU5512	GXU Touch Panel, 10"W TFT, SL + ETH,24VDC	SCHNEIDER	1
16	PLC	TM200CE24R	CONTR. M200 241 O 220VAC RELAY	SCHNEIDER	1
17	ANALOG INPUT CARD	TM3AM6G	MODULE TM3-4 ANALOG INPUTS	SCHNEIDER	1
18	RTD			RTECH SENSOR	1
19	USB PORT			SCHNEIDER	1
20	COOLING FAN		24VDC	REXNORD	1
21	TEMPERATURE CONTROLLER	TK4S-T4CN	100-240V AC	AUTONICS	1
22	LOAD CELL	FSSM-500N	1.9844mV/V	FORSENTEK	2
23	LOAD CARD	SG-3016-G CR	24VDC	ICP CON	2
24	RTD CONNECTORS		3PIN	SHELL CONNECTOR	1
25	LOADCELL CONNECTOR		4PIN	SHELL CONNECTOR	2
26	HEATER CONNECTOR		2PIN	SHELL CONNECTOR	1
27	USB - USB CABLE				1
28	ETHERCAT CABLE		2m,1m	BECKHOFF	2
29	9 PIN CONNECTOR		RS485 COMMUNICATION	D-TYPE CONNECTOR	1

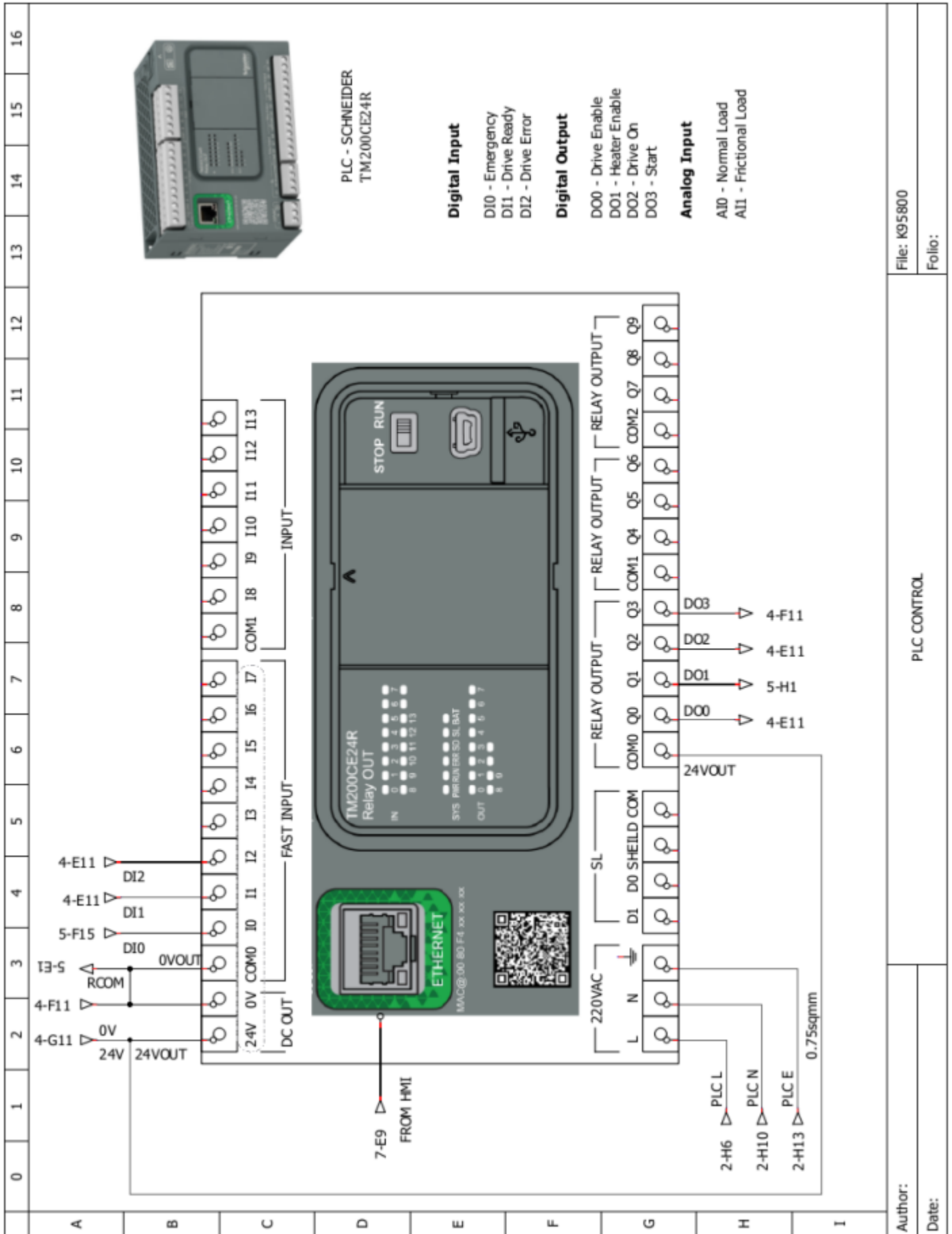
















10. Service

Under normal operating conditions and with routine maintenance, the K95800 Reichert Tester should not require service. Any service problem can be quickly resolved by contacting Koehler's technical service department either by letter, phone, fax, or email. In order to assure the fastest possible service, please provide us with the following information.

Model Number: _____

Serial Number: _____

Date of Shipment: _____

11. Storage

This laboratory test instrument is equipped with electrical components. Storage facilities should be consistent with an indoor laboratory environment. This testing equipment should not be subjected to extremes of temperature and/or moisture.

This equipment was shipped from the factory in a corrugated cardboard container. If long term storage is anticipated, re-packing the instrument in a water-resistant container is recommended to ensure equipment safety and longevity.

12. Warranty

We, at Koehler, would like to thank you for your equipment purchase, which is protected by the following warranty. If within one (1) year from the date of receipt, but no longer than fifteen (15) months from the date of shipment, Koehler equipment fails to perform properly because of defects in materials or workmanship, Koehler Instrument Company, Inc. will repair or, at its sole discretion, replace the equipment without charge F.O.B. its plant, provided the equipment has been properly installed, operated, and maintained. Koehler Instrument Company must be advised in writing of the malfunction and authorize the return of the product to the factory. The sole responsibility of Koehler Instrument Company and the purchaser's exclusive remedy for any claim arising out of the purchase of any product is the repair or replacement of the product. In no event shall the cost of the purchaser's remedy exceed the purchase price, nor shall Koehler Instrument Company be liable for any special, indirect, incidental, consequential, or exemplary damages. KOEHLER INSTRUMENT COMPANY, INC. DISCLAIMS ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE. Please save the shipping carton in the event the equipment needs to be returned to the factory for warranty repair. If the carton is discarded, it will be the purchaser's responsibility to provide an appropriate shipping carton.

13. Returned Goods Policy

To return products for credit or replacement, please contact Koehler Customer Service with your purchase order number, our packing list/invoice number, the item(s) to be returned and the reason for the return. You will be issued a Returned Authorization (RA) number, which must be prominently displayed on the shipping container when you return the material to our plant. Shipping containers without an RA number prominently displayed with will be returned to the sender. Goods must be returned freight prepaid. Returns will be subject to a restocking charge, the application of which will depend upon the circumstances necessitating the return. Some returns cannot be authorized, including certain products purchased from outside vendors for the convenience of the customer, products manufactured on special order, products shipped from the factory past ninety (90) days, and products which have been used or modified in such a way that they cannot be returned to stock for future sale.

[illegible]

[illegible]