

NEBİMAK LPG FEED BACK VAPORIZER



NBH XX SERIES USER MANUAL



II 2G Ex d IIA T3

	Capacity Kg/h	Power Kw/h	Voltage	Design Pressure	Max Pressure
NBH-XX	20	3,5	400V AC	PN 40	17,2 BAR
NBH-XX	30	5,5	400V AC	PN 40	17,2 BAR
NBH-XX	50	7,5	400V AC	PN 40	17,2 BAR

NBH

XX

SERIES



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Signature

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INFORMATIONS FOR CUSTOMERS

This service manual is designed for all customers and users of NEBİMAK LPG FEED-BACK LPG VAPORIZERS series NBHXX. We recommend to become familiar with the present manual before proceeding to installation and use of this feed-back vaporizer.



VERY IMPORTANT NOTICE!!

This service manual and all other associated documents should be kept during the use of the vaporizer. In addition all other materials, supplemented during the use should also be kept.

Preserve this Service Manual and other documents for users in future.



NOTICE !

Shall not be liable for any damages or loss due to improper use of this Service Manual.

In this service manual it is described how to operate the vaporizer properly.

NBHXX series shall also be not liable for damages to persons and material due to failure in adherence to safety regulations contained in this manual.

The safety regulations contained herein are to be considered as a supplement of national regulations instead of replacement and therefore should be within the knowledge of personnel, that is servicing the vaporizer.

Before you start to unpack , install or use the feed back vaporizer,
Please read through the whole Service Manual.

The vaporizer is only to be serviced by personnel, furnished with requisite authorisation according to national regulations.



NOTICE !

Any repairs and modifications in design are subject to the manufacturer's explicit consent. Only parts approved by the manufacturer may be used.

To prevent electric shock or fire, any operation inside the vaporizer shall not be carried out before switching off power supply by the main power switch, that is placed in the room for the service personnel of the plant.

In cases, when a failure is encountered, immediately switch off the vaporizer and the main power switch, that is placed in a room on the plant. Contact the manufacturer's Service Department.

Taking the vaporizer in service shall be conducted by the manufacturer's service or any other authorized service only. Any failure in adherence to these requirements entails the loss of warranty for the purchased product.

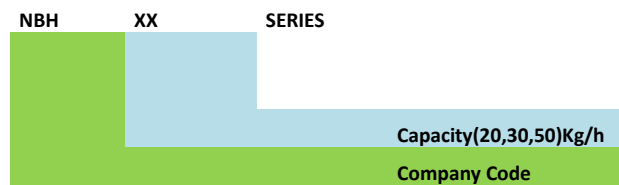
In cases, when irregular operation of the vaporizer is encountered, immediately contact the manufacturer.

The vaporizer may be installed in explosive areas, zone 1,2 defined in EN 60079-10 standard !

2. DENOTATION OF THE FEED-BACK VAPORIZER

Method of denoting the vaporizer (NEBİMAK)

	Capacity Kg/h	Power Kw/h	Voltage	Design Pressure	Max Pressure	Lpg Output Temperature	Brut Volume of enclosure part A	Brut Volume of enclosure part B
NBH-XX	20	3,5	400V AC	PN 40	17,2 BAR	35°C	1100 cm3	2700 cm3
NBH-XX	30	5,5	400V AC	PN 40	17,2 BAR	35°C	1100 cm3	2700 cm3
NBH-XX	50	7,5	400V AC	PN 40	17,2 BAR	35°C	1100 cm3	2700 cm3



3. LP Gas, Precautions,

This chapter provides general information about LP Gas, discusses certain precautions you should take during installation of Nebimak feed-back LPG vaporizers installation.

LP Gas, LPG

Propane, propylene, butane, and butylene, all fall under the general term "LPGas". Under pressure, each becomes a liquid. At atmospheric pressure, at "normal" ambient temperatures, each is a gas.

LP Gas is typically stored and distributed in its liquid state in pressurized containers. When LP Gas is released from the pressurized container, it quickly changes from a liquid to a gas. However, even in its gaseous state, always remember that it is heavier than air. If the gas is released in small quantities, it will generally mix with the air and harmlessly scatter. Released in greater quantities, the gas may spread over an area in flammable concentrations. You must be careful because a spark or other ignition source can cause a fire or explosion in either case.

LP Gas is highly flammable and can be extremely dangerous if not handled properly. Although colorless and odorless, an additive is usually combined with the gas to give it an odor so that leakage can be detected. LP Gas is also non-toxic; however, large concentrations can cause oxygen deficiency. As a result, inhalation can result in asphyxiation.

The mixture of LP Gas and air make a potentially explosive combination. A mixture of LP Gas and air is explosive when as little as 2.15% and not more than 10% of the mixture is LP Gas. When LP Gas changes from a liquid to a gas, it expands its volume by approximately 272 times.

Precautions

You should observe the following general precautions whenever you are working with LP Gas:

- DO NOT SMOKE when you are near storage tanks, transport trucks, or other related equipment.

- Keep all other vehicles, gasoline engines, and electrical motors away from the storage tanks, transport trucks, and related equipment. A running engine or motor can provide the spark needed to cause a fire or explosion.
- DO NOT remove plugs or caps on connections if shut off valves leak.
- Make sure all unloading connections are tight.
- Make sure you understand the purpose and operation of all valves and other equipment before using.
- DO NOT tamper with relief valves.
- Open any valve SLOWLY.
- NEVER place your face, head, hands, or any other part of your body over safety relief valves.
- DO NOT overfill LP Gas storage containers.
- DO NOT allow LP Gas to touch your skin or clothing. The gas evaporates very quickly and can cause freezing

4. Pre-Installation Inspection

Before beginning installation, a thorough inspection of the installation site and all equipment should be completed to ensure that all equipment, valves, fittings, connectors, and lines are prepared and safe.

The following general steps should be taken during the inspection:

- Conduct both a visual and physical (using soap solution or gas detector) inspection for leaks on and around any storage tanks, pumps, unload stations, vaporizers, mixers, and the like.
- Open all valves in line with pressure measuring devices.
- Observe and record any available temperature, pressure, level, or other gauge readings.
- Check status of all other valves.
- Inspect all connections to ensure any necessary protective caps/plugs are in place.

5. Your Vaporizer

This chapter describes the function, features, and specific components of your Vaporizer.

5.1 Function of the Feed back Vaporizer

The function of all models of the Feed Back Vaporizer is to safely and efficiently take liquid LPG from a container, heat it until it reaches a gaseous state, and then send it back to the container.

5.2 Features of the Feed Back Vaporizer

All models of the Feed Back Vaporizer are designed to operate in any climate, provide years of service, and require minimum maintenance.

The vaporizer model numbers are NBH-20, NBH-30 and NBH-50. The model number (for NBH-series: the first 2 digits of the model number) indicate the kilograms per hour LPG vaporization capacity for each unit.

All vaporizers are designed and manufactured under the strict quality control procedures set forth by the ATEX Directive 94/9/EC

6.1 Unpack and Anchor Unit

- Remove vaporizer from shipping container and take out the packing.



IMPORTANT:

Never use the safety relief valve pipe as a handle to move the vaporizer, etc.

- Place the vaporizer on a level concrete platform. The vaporizer base has a hole in each corner, through which anchoring bolts may be affixed. You can check anchoring bolts fixing from **typical installation drawing**

6.2 Install the Inlet Piping

- Install a special nozzle to the liquid outlet of the LPG tank equipped with a liquid valve(OMECA RL 25,REGO 9300 or equivalent) and weld it to the piped according to the directive.

- Install a "Y" (i.e. pipeline) strainer (advised).

NOTE:

In new pipe installations, the strainer should be removed and cleaned after approximately the first hour of operation. This is necessary to remove residue and other materials which may accumulate as a result of the new installation.

- Install a shutoff valve with a minimum rating of PN25 and connect pipe to the feed-back vaporizer LPG inlet. (Either a globe valve or a ball valve may be used.)

6.3 Install the Outlet Piping

- Install a shutoff valve with a minimum rating of PN25. (Either a globe valve or a ball valve may be used).to the gas phase out of the vaporizer.

- Connect pipe)back to the tank.Please be sure of that,tank return line from vaporizer(gas outlet of the

vaporizer)SHOULD BE connected to the gas phase of the LPG tank.



6.4 Electrical Connection and Grounding

All Nebimak vaporizers are shipped with 20 meters of energy cables 4X2,5 mm² and 20 meters of control cables 4 X 1,5 mm² already connected at the factory.

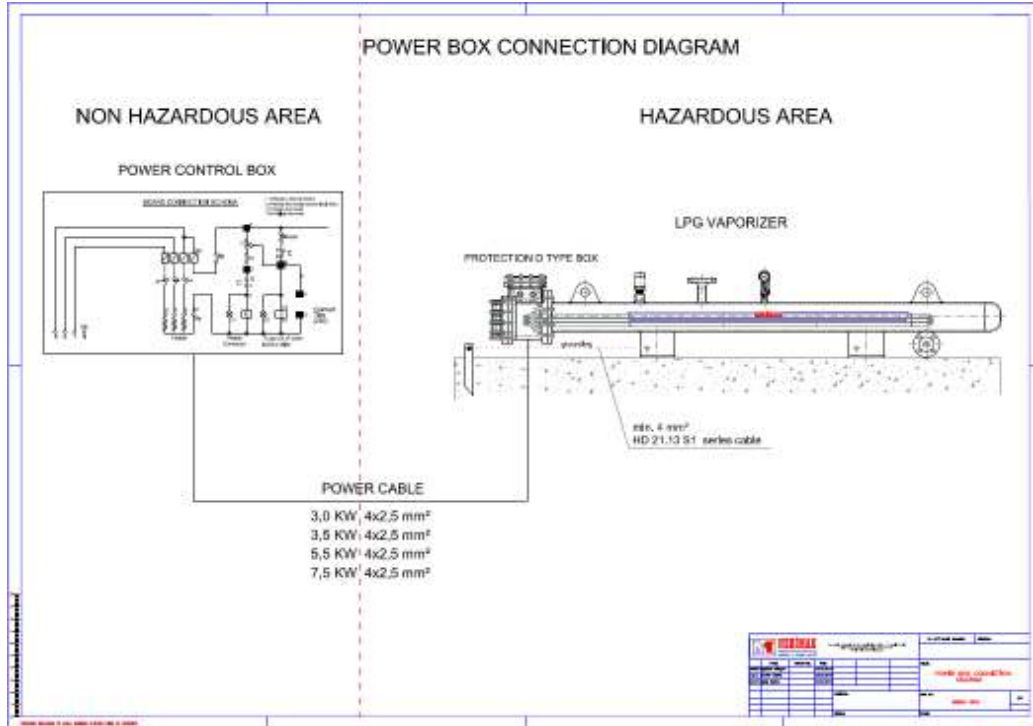


If 20 meter length is not enough, extending the cables,only to be serviced by personnel, furnished with requisite authorisation according to national regulations.

All cables must get through from an $\Phi 3/4$ " individual protected underground steel pipe to protect cables.

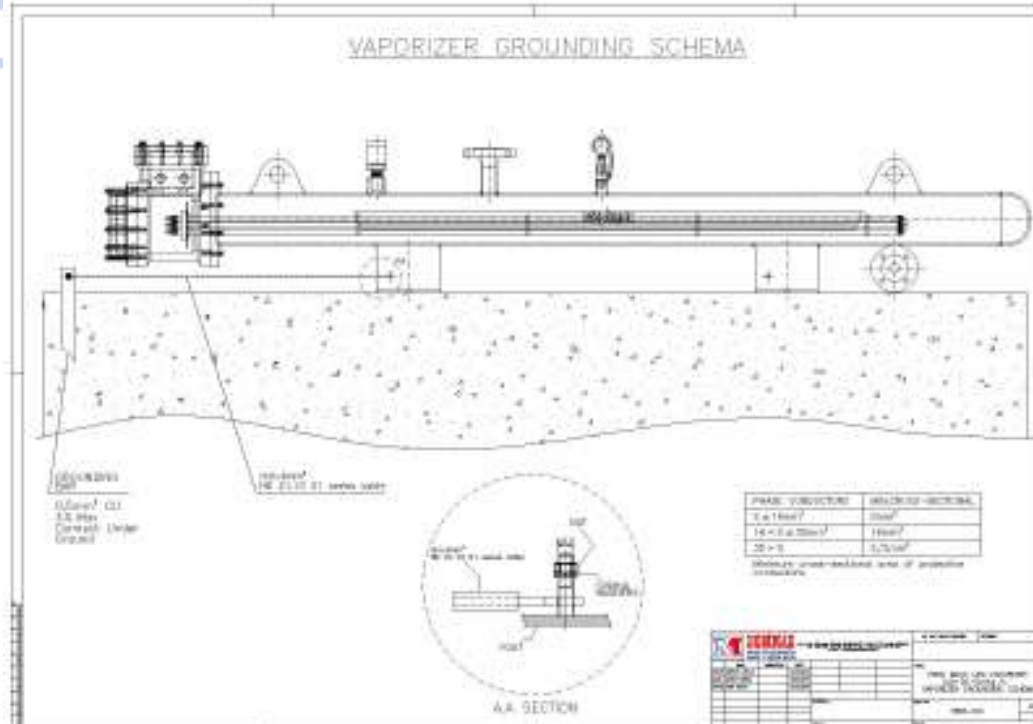
You can find electric board connection details on next page,

ELECTRIC CONNECTION DETAILS



1x 4 mm² grounding cables must be used for grounding vaporizer and grounding value must be lower than 3 ohm. This grounding cable can be connected to M10 bolt connected to the vaporizer foot.

A grounding bar with minimum 0,5 mm² CU must be used to finish grounding of the vaporizer ,you can see grounding connection drawing below.



The vaporizer is now ready to be connected to the load for which the heated and vaporized LPG is being provided

7. Vaporizer Start-Up and Shut-Down

This chapter describes how to start the installed Feed Back Vaporizer. It also describes how to set the controls for either on-going operation *or* for long periods of shut-down.

Starting the Feed Back Vaporizer

The following describes the procedure for starting the vaporizer.

- Inspect all fittings and connections for gas leaks.
- Any leakage must be corrected before proceeding any further.



VERY IMPORTANT NOTICE!!



- **LPG Feed Back Vaporizer must be pressurized by means of inert(nitrogen etc) gas for ventilation before START UP.**
- **Do not connect this vaporizer to a storage tank that has been used in vapor withdrawal service until the tank has been emptied and all sediment and heavy ends have been cleaned from it.**
- Clean all foreign material from all pipes prior to making final connections.
- Open the liquid inlet valve and gas outlet valve slowly.
- Turn On the power from electric board located inside the room at plant. When you see green light, it means your vaporizer is heated and gaseous phase is transferring back to the tank

Control Settings for On-Going Operation

- Open the valve located under the tank. This valve allows the liquid LPG to flow through the pipe line to the feed-back vaporizer. This valve should stay open all the time to avoid the failure light alerting the user when the power is turned on. In this case, the failure light can be turned off by pressing the reset button.
- The ball valve, located on the pipe line from the top of the vaporizer to the tank, should stay open.
- The liquid level of the tank should be controlled. The order to the gas company should be given before the liquid level reaches 20%. The tank should not be filled over the 80% liquid level. Over filling can cause serious damage to the customer's system.
- All pipelines should be periodically controlled to prevent gas leaking.
- The yellow light on the electric box means that the energy is on and should stay lighted when the energy is given. There are two thermostats on the system, one is for working, the other for security.
- The energy is activated by pressing the on-off button. In this case the contactor in the electric box will be activated, the heaters in the vaporizer will begin to heat and the green light will flash on the electric box.
- The green light is connected to the working thermostat in the vaporizer and will flash until the temperature reaches the preset value (determined and set by user). The green light will turn on and off automatically while the system is on. The flashing light indicates the heaters in the vaporizer are working. When the green light is off it means that the vaporizer is heated to the preset temperature.
- The red light is connected to the safety thermostat in the vaporizer and it is activated in the case of a failure in the system. It should not normally be alight when the system is on.
- The pressure in the outlet of the first stage regulator should be set by the user. After allowing the gas through to the suction line, any remaining air should be discharged.

- The pressure in the tank can be read from the manometer located on the multivalve. The pressure should read max 4-6 bars in hot weather and 2-2,5 bars in normal weather conditions.



VERY IMPORTANT NOTICE!!

- In cold weather, at weekends and on holidays, the multivalve should be closed and the remaining gas should be used or discharged, otherwise the gas will become liquid due to the cold weather. The vaporizer should be switched on 30-45 minutes before working hours.

Appendix A – Telephone and Internet Assistance

If you have any questions regarding this manual or the installation of your vaporizer, you may call our technically trained customer service department at **+90 216 473 54 04**. Our normal office hours are from 8:30 A.M. to 6:00 P.M. EST, Monday thru Friday.

Please be prepared to give us the model number and the serial number of your vaporizer when you call. You can also submit your question or request for support via e-mail. The address for this is info@nebimak.com.tr

Our website at <http://www.nebimak.com> contains an updated version of this manual. Go to <http://www.nebimak.com/brochures.htm> to view and/or download the latest version.

Appendix B – Trouble Shooting and Maintenance

- The vaporizers, just like any other LP gas equipment, should be maintained periodically. The conditions in your area and quality of the LP gas liquid may dictate a more stringent maintenance, but whatever your schedule, remember that maintenance is of paramount importance for trouble free operation of the vaporizer.



VERY IMPORTANT NOTICE!!



- **LPG Feed Back Vaporizer must be pressurized by means of inert(nitrogen etc) gas for ventilation before START UP after maintenance for safe operation**

The equipment described in this manual is designed to operate with LP gas, a flammable fuel under pressure. The nature of the application involves inherent hazards that could result in injury. ONLY a trained and fully qualified person should service this equipment.

1 MECHANICAL FAILURE

1.1 There is not enough gas phase for the suction units

- 1.1.1 The capacity of the goods are bigger than the capacity of the energy which is produced by the vaporizer system. The system should be extended to be able to handle the capacity of the suction equipment.
- 1.1.2 The excess flow valve in the multivalve is damaged or blocked.
- 1.1.3 There is a heater failure in the vaporizer.

1.2 The system stops suddenly when suction begins

- 1.2.1 Excess flow valve is blocked or damaged.
- 1.2.2 Excess flow valve is shut off due to high suction .

1.3 The suction equipment flame is poor and/or yellow

- 1.3.1 The adjustment of the regulator is set too high.
- 1.3.2 The membrane of the regulator is damaged.
- 1.3.3 The tank is overfilled.
- 1.3.4 Gas remained in the suction line in cold weather.
- 1.3.5 The radius of the suction line is incorrect.
- 1.3.6 There is liqualization in the suction line.

1.4 The outside shell of the vaporizer is too hot and the gas line which goes to the tank from the upper flange of the vaporizer is too cold

- 1.4.1 There is some test water left in the system.

1.5 To read the pressure in the tank

- 1.5.1 It could be read from the manometer located on the multivalve.
- 1.5.2 It should read 2-5 bars in normal weather conditions.

2 ELECTRICAL FAILURE

2.1 The failure light (red) is flashing on the electric box

- 2.1.1 The RL25 valve which is located bottom of the tank should stay open. If this valve is not open, and energy is given to the system, the failure light (red) located on the electric box will flash. In this case RL 25 must be switched on and the reset button located on the electric box should be pressed to stop the failure light flashing.
- 2.1.2 The ball valve which is located on the gas line connected from the upper flange of the vaporizer to the tank should stay opened. May be causing the failure light (red) to flash when energy is given to the system. In this case the ball valve should be opened and the reset button located on the electric box should be pressed.
- 2.1.3 The thermostat, located in the vaporizer could be damaged.
- 2.1.4 The contactor in the electric box could be damaged.

2.2 The outside shell of the vaporizer and the upper shell of the tank is hotter than it should be under normal conditions.

- 2.2.1 The thermostat, located inside the vaporizer, could be damaged.
- 2.2.2 The contactor in the electric box could be damaged.
- 2.2.3 The thermostat, located inside the vaporizer, is set too high.



**NEBİMAK ROUTINE TEST
REPORT FOR ALUMINUM COVER
Over pressure routine test report**



TS EN ISO 9001:2008
Sertifika No.: 20 100 102005217

Product code : NBH XX SERIES

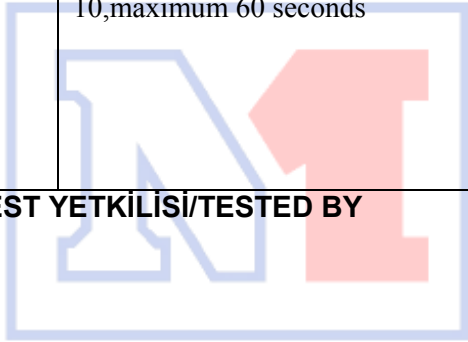
Serial number:

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No	APPLIED TEST METHODS	RESULTS	EVALUATION
1	Overpressure Tests and desired values		
2	EN 60079-1 Item 15.1.3.1 Enclosures with volume ≤ 10 cm ³ ,group IIA 10 bar > 10 cm ³ ,group IIA 15 bar Must be pressurized for min 10,maximum 60 seconds		

TEST YETKİLİSİ/TESTED BY

KONTROL EDEN/CONTROLLED BY



NEBİMAK
MAKİNA LİKİT GAZ İMALAT İNŞ.
SANAYİİ ve TİCARET LTD.ŞTİ



NEBİMAK
MAKİNA LİKİT GAZ İMALAT İNŞ.
SANAYİİ ve TİCARET LTD.ŞTİ

**NEBİMAK ROUTINE TEST
REPORT
NBH XX SERIES**



TS EN ISO 9001:2008
Sertifika No: 20 100 102069217

SERIAL NUMBER :

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ROUTINE CONTROL REPORT (EN 60079-0,1)

DATE :

PRODUCT CODE : NBH SERIES

SERIAL NO

SN.	Final Quality Control	Yes		No		Discord No:	Description
1.	SHELL(GÖVDE)	1-1	CHECK NEBİMAK LOGO/LOGO KONTROL ET	<input type="checkbox"/>	<input type="checkbox"/>		
		1-2	CHECK PAINT QUALITY/BOYA KONTROL ET	<input type="checkbox"/>	<input type="checkbox"/>		
		1-3	EARTHING BOLT IS CONNECTED/TOPRAKLAMA VİDASI TAKILI	<input type="checkbox"/>	<input type="checkbox"/>		
		1-4	RELIEF VALVE IS CONNECTED/EMNİYET VALFİ TAKILI	<input type="checkbox"/>	<input type="checkbox"/>		
		1-5	EARTHING BOLT IS IN CONTACT WITH SHELL/TOPRAKLAMA VİDASI TEMASLI	<input type="checkbox"/>	<input type="checkbox"/>		
		1-6	MANOMETER BALL VALVE IS ASSEMBLED/KÜRESEL VANA TAKILI	<input type="checkbox"/>	<input type="checkbox"/>		
		1-7	MANOMETER IS CONNECTED/MANOMETRE TAKILI	<input type="checkbox"/>	<input type="checkbox"/>		
		1-8	VENT VALVE IS CONNECTED/PRÜJÖR TAKILI	<input type="checkbox"/>	<input type="checkbox"/>		
		1-9	FLANGES ARE INSTALLED/GİRİŞ VE ÇIKIŞ FLANŞI BAĞLI	<input type="checkbox"/>	<input type="checkbox"/>		
2.	COVER(KAPAK)	2-1	CONTROL CABLE IS CONNECTED/KONTROL KABLOSU TAKILI	<input type="checkbox"/>	<input type="checkbox"/>		
		2-2	RST CABLE CON.CONTROL/ENERJİ KABLOSU TAKILI	<input type="checkbox"/>	<input type="checkbox"/>		
		2-3	CABLES CONNECTED TO HEAT.S/KABLOLAR ISITICIYA BAĞLI	<input type="checkbox"/>	<input type="checkbox"/>		
		2-4	THERMOSTAT CABLES CONTROL/TERMOSTAT KABLOSU OK	<input type="checkbox"/>	<input type="checkbox"/>		
		2-5	CHECK LABEL AND WARNING/ETİKET VE UYARI TAMAM	<input type="checkbox"/>	<input type="checkbox"/>		
		2-6	CABLE GLANS ARE CONNECTED/GLENDLER BAĞLI	<input type="checkbox"/>	<input type="checkbox"/>		
		2-7	BUSHINGS ARE CONNECTED/BUSHINGLER BAĞLI	<input type="checkbox"/>	<input type="checkbox"/>		
3.	ELECTRICAL CONNECTION	3-1	ELECTRIC BOX DIMENSIONS/PANO İSTENİLEN ÖLÇÜDE	<input type="checkbox"/>	<input type="checkbox"/>		
		3-2	CONTACTOR CONTROL/KONTAKTÖR UYGUN	<input type="checkbox"/>	<input type="checkbox"/>		
		3-3	CABLES ARE PREWIRED/KABLOLAR TAKILI	<input type="checkbox"/>	<input type="checkbox"/>		
		3-4	LIGHTS ON WHEN ENERGIZED/ENERJİ VERİLDİĞİNDE IŞIKLAR YANIYOR	<input type="checkbox"/>	<input type="checkbox"/>		
		3-5	POWER CHECK ON CLAMP 1/KLEMENS 1 ENERJİLİ	<input type="checkbox"/>	<input type="checkbox"/>		
		3-6	WHEN ENERGIZED,POWER IS ON CLAMP 2/ENERJİ VERİLDİĞİNDE 2 NOLU KLEMENSE ENERJİ GELİYOR	<input type="checkbox"/>	<input type="checkbox"/>		
		3-7	CONTACTOR IS ENERGIZED WHEN CLAMP 1 AND 2 IS CONNECTED/1 VE 2 NOLU KLEMENS KÖPRÜLENDİĞİNDE KONTAKTÖR ÇEKİYOR	<input type="checkbox"/>	<input type="checkbox"/>		
		3-8	HEATER LIGHT IS ON WHEN CONTACTOR IS ENERGIZED/KONTAKTÖR ÇEKİLDİĞİNDE ISITICI LAMBASI YANIYOR	<input type="checkbox"/>	<input type="checkbox"/>		
		3-9	FAILURE LIGHT IS ON WHEN CLAMP 3 IS ENERGIZED/3 NOLU KLEMENSE ENERJİ VERİLDİĞİNDE ARIZA LAMBASI YANIYOR	<input type="checkbox"/>	<input type="checkbox"/>		

Functional test made by according to EN 60079- 1 (5.1 and 5.2) EN 60079-0 İtem 29.2

CONTROLLED BY

APPROVAL

PROCESS CONTROLLED BY

QUALITY MANAGER