

Yenen Mastermeter Installation and Operation Handbook

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### **Table of Contents**

1.0 About This Manual	3
2.0 Safety Precautions	3
3.0 Calibration Test	4
4.0 Cpu Parameters	8
Appendix A: DOs and DON'Ts notice	11

The following symbols are used throughout this manual to alert you to important safety hazards and precautions:



Notice: Indicates a special comment or instruction.



Warning: Indicates the presence of a hazard that can cause severe personal injury or property damage if not observed carefully.



This manual provides instructions and guidelines. The remarks and warnings inform the operator of the hazards involved in working with Yenen mastermeters. Reading these instructions and preventing hazardous situations is strictly in the hands of the operator of the equipment. Neglecting this responsibility is not within the control of Yenen.

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# 1. About This Manual

This manual provides instructions and guidelines. The remarks and warnings inform the operator of the hazards involved in working with Yenen mastermeters.



Reading these instructions and preventing hazardous situations is strictly in the hands of the operator of the equipment. Neglecting this responsibility is not within the control of Yenen.

This manuel is intended for LPG dispenser makers and field service personnel. It provides basic understanding of installing and maintaining Yenen mastermeters. It is not all inclusive. Therefore operators of Yenen LPG products should both be trained and authorized by Yenen or should have prior dispenser assembly and service experience.

# 2. Safety Requirements



Only trained and qualified personnel familiar with handling liquids under pressure, such as LPG, may service Yenen equipment.

- Make sure that all necessary safety precautions have been taken before commencing the calibration. Make sure that proper ventilation, fire prevention, evacuation and fire procedures are provided.
- Provide easy access to fire extinguishers. Understand and adapt all local safety codes.
- Read this manual as well as other available literature and drawings.
- Use protective clothing to prevent cold burns.
- See appendix DOs and DON'Ts notice.

### In the event of a gas leak:

- 1. Stop the leak by closing the nearest valve or shut-off device.
- 2. Use protective clothing to prevent cold burns.
- 3. Prevent accidental ignition.
- 4. Beware that LPG is heavier than air and therefore seeks lower level.
- 5. Evacuate all people from the danger zone.
- 6. Ensure that the area is safe before resuming the operation. If in doubt, notify the local fire department.

# In the event of a gas fire:

- 1. Stop the leak if it is within safe reach.
- 2. Notify the local fire department if it is a large fire that cannot be controlled safely.
- 3. In case of a small, contained fire, use the appropriate extinguisher. If in doubt, notify the local fire department.

### Safety equipment

- Fire extinguisher
- Safety cones and barrier tape
- Protective gloves, safety glasses and brightly colored vests.

#### **Required tools**

- · Prover or master meter certified by local weights and measures authorities.
- Stopwatch
- Seal pliers
- Adjustment pliers
- 10 11 wrench

# 3. Calibration Test

This calibration procedure should be applied by a certified technician or an engineer.



Take the necessary safety precautions around the work area. Take note of the safety requirements and the DOs and DON'Ts.



- Preferably, perform calibration tests between 0 30°C to minimize thermal expansion of LPG. A constant temperature will contribute to more reliable tests.
- ()

Preferably, arrange a shaded work area to reduce thermal expansion or contraction during the tests. Prevent direct sunlight into the cabinet while maintaining the safety requirements.



Circulate at least 100 liters through the dispenser and mastermeter to balance any temperature differences.

Limit the time intervals between tests to reduce the influence of temperature on the results.

# 3.1 Preparing for the calibration

- Record the totalizer readings from the dispenser in coordination with the station manager.
- Open the front and rear panel of the dispenser. The rear panel should be opened as well to ensure proper ventilation.
- Remove the plug from the dispenser test port.
- Connect the dispenser nozzle to the mastermeter.



• Connect the nozzle of the mastermeter to the maintenance port in the dispenser cabinet.



• If the mastermeter has an electronic register, connect the power supply to the mastermeter.



Make sure that the electric power connections are safe and secure.

A mastermeter with a mechanical register does not require power to operate.

- Activate the dispenser with the ON / OFF button and the mastermeter.
- Slowly open the valve on the master meter.
- Circulate at least 100 liters through the dispenser and mastermeter to balance temperature differences.
- While circulating LPG perform a few functionality tests (see appendix 4).





- While circulating LPG through the dispenser:
  - a. Determine whether the dispenser is equipped with automatic temperature compensation (ATC).
  - b. Determine whether the mastermeter is equipped with automatic temperature compensation (ATC).

During the calibration use both the dispenser and the mastermeter either with or without ATC. Operating one with and the other without ATC will corrupt the test results. Disengage the dispenser ATC if the mastermeter is not fitted with ATC.

 When at least 100 liters is dispensed and the dispenser passed the functionality tests: Turn off the valve of the mastermeter.
Immediately deactivate the dispenser with the ON / OFF switch.

The dispenser is now ready for calibration.

# 3.2 Calibrating the dispenser



Only trained and qualified personnel may calibrate meters and dispensers.



Proper understanding of the local weights and measures regulations is essential before calibrating meters and dispensers.



Take the necessary safety precautions around the work area. Take note of the safety requirements and the DOs and DON'Ts at pages 8 and 9.



During the calibration a series of tests will be executed. Limit the time intervals between tests to reduce the influence of temperature on the results.

- Activate the dispenser with the ON / OFF button and the mastermeter (also activate the ATC if necessary).
- Ensure that the display readings on the dispenser and the master meter reset to zero.
- Use the stopwatch to determine the flow rate per minute.
- Slowly open the valve on the master meter and start the stopwatch.
- When the required flow rate is dispensed, close the ball valve on the mastermeter.





- Stop the stopwatch.
- Deactivate the dispenser with the ON / OFF switch.
- Mastermeters with electronic registers: deactivate the master meter.
- Record the display readings of the dispenser and the master meter.
- Calculate the accuracy of the dispenser with this formula:

Error = (dispenservolume-mastermetervolume) mastermeter volume

#### 3.3 Tests for the dispenser

A series of accuracy tests have to be performed depending on local weights and measures regulations. Typical tests are for example:

- 1. 3 x dispensing 100 liters at Qmax.
- 2. 3 x dispensing 50 liters at Qmin.
- 3. 3 x dispensing 100 liters at Qmax.

The average of each series will be documented. Some authorities may require a minimum delivery and a flow interruption test as well. Local authorities state the permissible errors. OIML R117 states a maximum permitted error for LPG dispensers of 1.0%.

# 3.4 Adjusting the dispenser's accuracy

The dispenser needs to be adjusted if it does not meet the accuracy requirements stated by the authorities.

The dispenser is sealed against forbidden modification or removal of parts. Only trained and qualified personnel certified by the authorities may break and reseal dispensers.

- Remove the seal.
- Unbolt the adjustment cover on the flow meter.



Adjustment cover bolt

Fixing pin

disc

holes.

Adjustment

cover

Adjustment

Adjustment

Drawing right: side view of adjustment disc area.



 Calibration is accomplished with a series of holes at the adjustment disc. The disc contains 12 holes. To increase the quantity delivered, move the disc left or counter clockwise.

Turning the disc right or clockwise will decrease the volume delivered.

Moving the disc one hole in either direction will increase or decrease the quantity delivered with approximately 0.02 - 0.04%.

# 3.5 Reporting

Local regulations prescribe the reporting requirements.

Log the totalizer readings from the dispenser in coordination with the station manager once the tests are completed.



# 4. CPU PARAMETER SETTINGS

P1 is used for next parameter and P2 is used for previous parameter screen. P3 is used for entering new value. Enter key is used to save the entered value an DC key is used to quit.

	88888	ATC ON
LCD SCREEN SHOT		ATC OFF
		TEMPERATURE (°C)

### PARAMETERS

4.1 LANGUAGE SELECTION4.2 PULSER CH.4.3 ATC4.4 CALIBRATION

SCREEN

YENEN

LPG0.560

\_\_\_\_·

MENU ACCESS PASSWORD XXXXXXX PRESS THE ENTER KEY SCREEN

ENTER THE MENU CODE

\* \* \* \* \* \* \* \*

SERVICE PASSWORD XXXXXXX PRESS THE ENTER KEY

# 4.1 LANGUAGE SELECTION

SCREEN

LANGUAGE OLD XXX

"000 TURKISH" "001 ENGLISH"

----

4.2 PULSER CH.

SCREEN	
PULSER CH.	OLD
хххх	

\* 1 TOUR 1 LİTRE METERS 2X50 CHANNEL PULSER FOR XXXX = 500 \*\* 2 TOUR 1 LİTRE METERS 2X50 CHANNEL PULSER FOR XXXX = 1000 P3 PRESS SCREEN

PULSER CH.	NEW
xxxx	

ENTER THE VALUE PRESS THE ENTER SCREEN

REGIS	TERED
-------	-------

# 4.3 <u>ATC</u>

SCREEN

OLD

XXXX

ATC

99XX --- ATC OFF 00XX --- ATC ON XX : PRODUCT ASSIGNMENT (DENSITY) P3 PRESS SCREEN

NEW

XXXX

ATC

ENTER THE VALUE

# PRESS THE ENTER

REGISTERED

ATC Product Selection Settings:

PRODUCT CODE	PRODUCT
00	0540 LPG
01	0545 LPG
02	0550 LPG
03	0555 LPG
04	0560 LPG
05	0565 LPG
06	0570 LPG

# **4.4 CALIBRATION**

SCREEN

CALIBRATION

OLD

XXXXX

100000 ----- STANDARD VALUE P3 PRESS SCREEN

CALIBRATION NEW

XXXXX

ENTER THE VALUE PRESS THE ENTER SCREEN

REGISTERED

#### 4.5 ERROR MESSAGES

EE 01: NO PULSER CONNECTED EE 02: PULSER IDLE MOVEMENT OR VALVE LEAK EE 03: PULSER ROTATION OR CAHANNEL ERROR EE 09: ATC PROBE ERROR-NOT CONNECTED EE 10: CALIBRATION PARAMETER ERROR-ZERO EE 11: PULSE PARAMETER ERROR-ZERO EE 88: LCD DISPLAY ERROR (READ KEYBOARD LCD) EE 99: POWER FAILURE-LOW VOLTAGE (165 VAC)

# DO...

- Consult with station director or administrator about the project and procedures before servicing a dispenser.
- Review dangerous zones on the work site and determine necessary safety precautions relying on your safety training and experience.
- Locate extinguishers on the work site before commissioning any process involving LPG.
- Be informed of steam and other dangerous conditions.
- Disconnect and lock power supply before opening the dispenser for maintenance. Make sure that valves under the dispenser are closed BEFORE commencing maintenance.
- Be informed of relevant dangerous zone classifications.
- Utilize equipments like safety cones, barricades and barrier bands in order to isolate work site and protect technician.
- Wear safety clothing like phosphorescent vest, goggles and gloves.
- Check the perimeter of the work site.
- Place nozzle into the dispenser carefully.
- Get totalizer results and record them in co-ordination with station director or administrator.

# DON'T...

- Do not allow unauthorized persons to stay close to the dispenser or work site during demounting or gas discharge of the dispensers.
- Do not left the dispenser caps open after completing maintenance.
- Do not allow smoking, igniting or fire devices within the perimeter of the work site.
- Do not work outside of the barricaded area.
- Do not remove safety cones, barrier band or service vehicle until the work is completed.
- Do not leave station without having report signed by station director or administrator.

# NOTES:



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