



SAVEL

7-Series Fuel Pump User's Guide



SAVEL

**TABLE OF CONTENTS**

Title	Page No
1. Introduction	4
2. Savel Feul Pumps	4
2.1 General Features	4
2.2 Technical Features	4
2.2.1 Data Processing Unit	5
2.2.2 Display	5
2.2.3 Keyboard	5
2.2.4 Motor	6
2.2.5 Pump Unit	6
2.2.6 Meter	6
2.2.7 Selenoid Valve	7
2.2.8 Fuel Nozzle and Hose	7
2.2.9 Totalizer	7
2.2.10 General	8
3. General Safety Information	8
4. Installation	8
4.1 Mechanical Installation	8
4.2 Electrical Installation	9
5. Security measures should be taken	9
6. First Run	9
6.1 Control	9
6.2 Special conditions	9
6.3 Record	10
6.4 Programming (Price Adjustment)	10
7. Important Notices	10
8. Usage	10
8.1 Manual Filling	10
8.2 Presetted Amount Filling	11
8.3 Presetted Liter Filling	11
9. Protective Treatments	11
9.1 Commissioning of the pump	12
9.2 Removing the pump from the circuit	12
9.3 Cleaning exterior of the pump	12
9.4 Changing filters	12
9.5 Replacing the lamp lighting	12
9.6 Fuel Spill Control	12
9.7 Control of Fuel Hoses	12
10. User Menu	13
10.1 Passwords	13
10.2 Shortcut Menu Access	13
10.3 Price Adjustment	13
10.4 Total Vision	13
10.5 Seeing the last sales	13
10.6 Seeing the flow	13
10.7 Money Programmed Sales	14



SAVEL 7-Series Fuel Pump User's Guide

10.8 Liter Programmed Sales	14
10.9 Emergency Stop	14
10.10 Display Usage	14
10.11 Menu Codes	14
11. Error Codes	15
12. Technical Drawings	16
13. Brain (Computing Unit) Connections	18

Important Note

No part of this manual is written partially or totally, can not be changed or reproduced without the permission of the manufacturer in any way. All rights reserved.



1.Introduction

This guide will explain all details of Savel 3 series fuel pumps.

2. Savel Fuel Pumps

2.1 General Features

3 Series fuel pumps is designed, for the fuel stations and vehicles to filling fuel types of 4.5 l / min to 45 l / min for different flow rates.

2.2 Technical Features

2.2.1 Data Processing Unit

The computing unit (Sav5CPU) which is developed by Savel, controls with two different electronic cards on both sides of the fuel pump. Processing Unit's general features, are summarized, as follows.

- Compatibility with the CANBUS Technology
- 2 noozles working at the same time
- Programmable feature on the cards
- RS485 or Current-loop Communication option
- • 10-digits for electronic total
- Menu system can be used in 7 different languages (Tur, En, Fr, Ru, Geo, Ar, Az)
- Auto Electronic Calibration (in grams)
- Compability with all the cash register
- Compability with Savel multimedia module
- Operating 170-240 VAC voltage ranges without error
- 1-wire and 2-wire special communication system
- Card design according to the EMC tests
- Automatic error detection and display error codes

2.2.2 Display

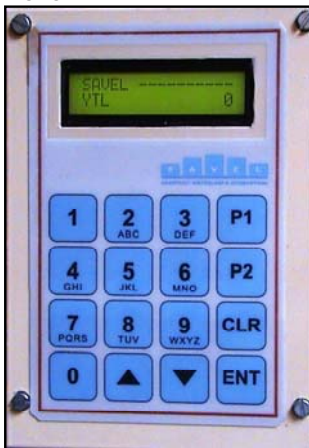
3 x 6 digit 1 "(25.4 mm) heighted LCDs are used. Liquid crystal displays work with a printed card which is connected to them. The general features of the display unit, are as follows.

- Separate screens for price, liter and amount
- 1 "digit height
- 6 x 6 x 6 digit display
- Compatible with existing pumps
- Backlit
- Card design suitable for EMC tests



2.2.3 Keyboard

Easy adjustment with 2x16 display and 4x4 keypad. Entering unit prices, seeing all the totals, monitoring the last sales and briefly You could do all other menu transactions from here.



2.2.4 Motor



380 V / 50 Hz three-phase (single-phase 220 V optional), 0.75 kW 1400 rpm, flame proof (explosion proof) electric motor with high reliability.

2.2.5 Pump Unit



This is a centrifugal unit with pallet system which is rotary typed, V-Belt driven, with integrated air separator and has a positive displacement, It has a by-pass safety valve and is a suction line filter typed. It has 50-90 l / min flow capacity.

2.2.6 Meter



All fuel pumps capable of being calibrated, positive displacement piston-type, four-piston, up to a value of $\pm 0.25\%$ are equipped with adjustable meters.

2.2.7 Solenoid Valve



Electronic fuel pumps have 24 V DC, dual-level (stage) nad Ex-proof Solenoid valves are used, for the realization of the pre-setting function.



2.2.8 Fuel Nozzle and Hose



According to the flow rate of $\frac{3}{4}$ " or an 1" automatic trigger device with aluminum bodied fuel Nozzles are used. The hose is determined according to the flow rate of $\frac{3}{4}$ " or 1" respectively. 360° swivel Nozzles behind the fuel used in the joints and breakway are standard accessories.

2.2.9 Totalizer



Our fuel pump has 12-digit and 7 digit electronic and electromechanical totalizer.

2.2.10 General

According to customers' requests our fuel pumps are produced in the suction and pressure types.

Outer panels are galvanized with corrosion-resistant steel and painted with electrostatic powder paint.

3. General Safety Information

To apply the following written rules in your gas station will make you and business more secure.

- You have to be taken appropriate security precautions in according to National and international standards.
- Just give allowance for the intervention of Equipments to only authorized technical service personnels.
- Hang the following warning signs as to where you may see.
 1. Do not smoke!
 2. Stop the engine during the filling!
 3. Turn off mobile phones during the filling!
 4. Hang the Nozzle its place after the filling!



4. Installation

Be careful about the fuel pumps and equipment to be provided substantially and completed. Please contact your service provider, in the case any technical deficiency or distortion.

4.1 Mechanical Installation

The pumps' installation places should be determined in accordance by the Savel technical service teams' recommendations..

4.2 Electrical Installation

The pump's connection to the electricity network, must be performed by an authorized person. Computing unit of the pump should be fed with a regulator or uninterruptible power supply (UPS).

5. Security measures should be taken

It should be noted the high risk fuel transport. Everything in this guide was written to protect you and your assets' safety. To strictly fulfill them will give you a smooth working environment.

1. Do not smoke and do not let smoke at environment of the gas station pumps and tanks.
2. Turn off the electrical connector from the emergency stop button or the control panel, in case of any leakage.
3. Fire extinguishers need to be immediately ready for use at a location near here.
4. Only authorized personnel to allow the response to problems with electricity.
5. The technical interventions for the pumps has to be made the Savel technical service provider. Otherwise it will not take any responsibility.
6. Hang the following warning signs as to where you can see easily.
 - Do not Smoke!
 - Stop the engine during the filling!
 - Turn off mobile phones during the filling!
 - Hang the Nozzle its place after the filling!
7. In case of fire;
 - Position your station to the emergency stop situation.
 - Leave the danger zone
 - call the fire department and report the situation
 - Follow instructions; Fire and emergency

6. First Run

6.1 Control



if all electrical and mechanical connections are made correctly or not, to make sure that the necessary checks had been made with your hands and eyes.

6.2 Special conditions

The moving parts of pumps should be checked against snow and ice.

6.3 Record

Please note for electronic and mechanical total before the first use, after you run your pump.

6.4 Program (Price adjustment)

Press the ENTER key two times to gain access, via the keypad. The following menu screen will be reached.

```
Menu 11  Shortcut  
Code:      .....
```

Code 211 for the first Nozzle, code 212 for the second Nozzle, code 213 for the third Nozzle, code 214 for the fourth Nozzle and code 215 for the fifth Nozzle shortcuts are used. For price changes, enter one of these shortcuts, press ENTER to see what the current price is, then by pressing again the ENTER key and write Password1 and record some new value, confirm with the ENTER key and exit.

```
Menu 211 Adjustment  
Price T1  003500
```

7. Important Notices

Dear customer, technical interventions, needs to be done by Savel technical service which are specially trained in this area . In addition, the technical interventions that may arise as a result of any inconvenience would be entirely your responsibility.

8. Usage

Fuel filling instructions are as follows.

8.1 Manual Filling

1. Remove the Nozzle.
2. The unit price of the removed Nozzle's product, will be shown in the bottom line the screen.
3. Put the nozzle to your vehicle's fuel tank's entry.
4. Pull the trigger of the nozzle.



- Current flow could be edited through the trigger. Trigger could be fixed 1, 2, 3 positions.
 - Fuel nozzle has a full auto trigger and it will cut itself when the storage is full.
5. Put back nozzle its place in the pump, when the filling is finished.
 6. The amount of fuel received, the basic price and the price which is need to be paid, will continue to be shown on the screen.
 7. For the prevent deformation of the hose, need to be placed back and not to been on the ways of vehicles.

8.2 Pre-adjusted amount filling

1. Remove the nozzle.
2. The unit price of the product of the removed nozzle, will be shown at the bottom line of the display.
3. Enter the amount you want to fill with the keyboard and press the Enter key.
4. Put the nozzle to your vehicle's fuel tank's entry.
5. Pull the trigger of the nozzle.
 - Current flow could be edited through the trigger. Trigger could be fixed 1, 2, 3 positions.
 - Fuel nozzle has a full auto trigger and it will cut itself when the storage is full.
6. Put back nozzle its place in the pump, when the filling is finished.
7. The amount of fuel received, the basic price and the price which is need to be paid, will continue to be shown on the screen.
8. For the prevent deformation of the hose, need to be placed back and not to been on the ways of vehicles.

8.3 Pre-adjusted liter filling

1. While the nozzle is turned off, press the "0" button.
2. This will provide to adjust if the filling program will be money or liter.
3. Select the filling program and enter the amount you want with the 0-9 keys.
4. Put the nozzle to your vehicle's fuel tank's entry.
5. Pull the trigger of the nozzle.
 - Current flow could be edited through the trigger. Trigger could be fixed 1, 2, 3 positions.
 - Fuel nozzle has a full auto trigger and it will cut itself when the storage is full.
6. Put back nozzle its place in the pump, when the filling is finished.
7. The amount of fuel received, the basic price and the price which is need to be paid, will continue to be shown on the screen.
8. For the prevent deformation of the hose, need to be placed back and not to been on the ways of vehicles.



9. Protective Treatments

Operator's maintenance and cleaning work to be done is as follows. All other works and interventions to be performed by qualified service personnel only Savel.

9.1 Daily operation of the pump

- Nozzle open the locks of the funnel of the nozzle (if exists)
- Open the Control and energy supply for the motor
- Check if the nozzle been put in their place or not.

9.2 To disable the pump

- Disconnect the pump from the power supply control panel.
- Lock the funnels of the nozzle.

9.3 Exterior cleaning of the pump

To prevent static electricity the exterior of the pump should be cleaned with a damp cloth.

9.4 Replacement of the filters

Fuel filters should be replaced from the first run two weeks later, or at the latest annually. But if the flows are declining due to pollution, may be necessary to change them earlier. During this process gloves should be worn, to prevent the fuel's contact with skin.. To change the filter;

1. Remove the fuel pump circuit (turn off the power supply)
2. Turn on with the key, the cover of the front of the hydraulic housing.
3. For Fuel to flow back set the filter cover slightly and then remove it (at the high-efficiency pumps remove the filter cover and air the valve)
4. Remove the filter
5. Insert the new filter
6. Close the fitler cover
7. Turn on the Centrifuge or submersible pump and check the fuel flow.

9.5 Changing lights

The lamps are in the pump's screen enclosure and outside the danger zone, but still the measures should be taken by the changing. The measures are as follow;

1. Disconnect the power supply
2. Open the display panel
3. Replace the lamp with new one
4. Close the display panel
5. Turn on the power supply



9.6 Fuel leakage control

All the hydraulic pump through the fuel elements and connections should be checked carefully, should be remedied immediately in case of any leakage, the pump should not be used if necessary.

9.7 Control of the fuel hose

The availability hose damage, fracture points, or bubble formation, should be checked regularly. Damaged fuel hoses should be replaced. In the event of spills or leaks on the pump, it should not be used.

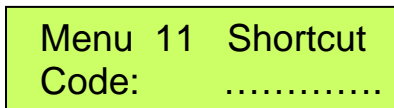
10. User Menu

10.1 Passwords

Password1: 1000
Password 2: 2000 < Reseller password >
Password 3: 3000 <Service password>
Special code: xxxxxxxx

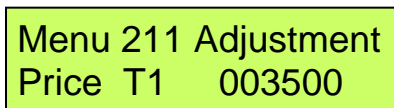
10.2 Shortcut Menu Access

Press the ENTER key two times to gain access, via the keypad. The following menu screen will be reached.



10.3 Price Adjustment

Code 211 for the first Nozzle, code 212 for the second Nozzle, code 213 for the third Nozzle, code 214 for the fourth Nozzle and code 215 for the fifth Nozzle shortcuts are used. (Hereinafter simply be called a shortcut 211-5) For price changes, enter one of these shortcuts, press ENTER to see what the current price is, then by pressing again the ENTER key and write Password1 and record some new value, confirm with the ENTER key and exit.



10.4 Total Vision

Call the shortcut menu. Write one of the 511-5 shortcuts and press the ENTER key, to see the total liters of nozzles. It can be seen the money totals by the same way with the 521-5 shortcuts.



Menu 511 Total B
LT T1 0000002356

Menu 523 Total B
PR T3 0000235670

10.5 Seeing the last sales

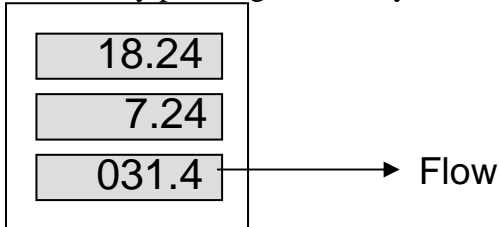
Each nozzle's 8 sales are backwards. In total, the sales can be seen 40 of them backwards. Call the shortcut menu. To see the first last sale, write one of the 611-5 shortcuts and then press ENTER. F1 (+) and F2 (-) keys could be used to monitor all of the other sales.

Menu 6111 Total B
Sls T1-1 00013.56

Menü 6124 Total B
Sls T2-4 00017.11

10.6 Seeing the flow

The flow is monitored by pressing the P1 key while during the sales. Normal display position is taken by pressing the P2 key.

**10.7 Money Programmed Sales**

While the nozzles turned off could be done by entering the desired values from the keypad.

10.8 Liter Programmed Sales

Liter Programmed Sales could be done, by pressing the "0" key and writing the desired values, while the nozzles turned off.

10.9 Emergency Stop

It is used in very urgent cases. When you faced with problems breaking nozzles, hose etc. while giving fuel, press the "CLR" button on the keyboard and stop the pump.

10.10 Display Usage

All the menu operations can also be seen on the big screen at the same time.

10.11 Menu Codes

We have a few menu described in detail above. All the same logic with the following codes can be reached to the desired menus and done everything.

Enter the Price:	211-5 < Password 1 is used >
Set Relay Model:	221-5
Standby pulse rate:	231-5
Standby working pulse rate:	241-5
Liter sensitivity:	251-5
Price sensitivity:	261-5
Amount sensitivity:	271-5
Pulser direction selection:	281-5

Electronic calibration:	311-5
Pulser calibration:	321-5

-----Mekanik total varmı:	331-5
Liter preset values:	341-5



Price preset values:	351-5	
Pass from slow valve to rapid valve:	361-5	
Pass from rapid valve to slow valve:	371-5	
the numbers of the hidden pulses:	381-5	
Make ATC active/passive :	41	< It has to be written 2000 to the record section>
Determine butane/propane ratios:	42	
Time setting:	43	
Date setting:	44	
Seeing liter total:	511-5	
Seeing price total:	521-5	
Seeing shift liter total:	531-5	
Seeing price liter total:	541-5	
Erase shift totals: 55		< Password 1 is used, It has to be written 100 to the record section >
Seeing the last sales:	6111-51	< can be seen the other sales by the arrow keys >
Seeing the last unit price:	6211-51	< can be seen the other sales by the arrow keys >
Seeing last errors :	6211-51	< can be seen the other sales by the arrow keys >
Determine the type of pump:	71	
Set the operating mode:	72	<automation- manual-multimedia>
Determine the Address:	73	
Determine the Protocol:	74	
Determine unit of measurement:	75	
Determine the language of Pump:	76	
Determine the display model:	77	
Set baud:	78	
Change Password 1:	81	
Change Password 2:	82	
Change Password 3:	83	
Automatic calibration:	9710	
Return to factory settings:	9720	< it could not been deleted, if the record value is 100, if it is 200 even the totals can be deleted >
Reset per liter of total:	9730	< Record values should be 100 >
Reset per price of total:	9740	< Record values should be 100 >
Reset last sales:	9750	< Record values should be 100 >
Bring to cash register mode:	9760	<Password 2 is used, record values should be 100 >

11. Error Codes

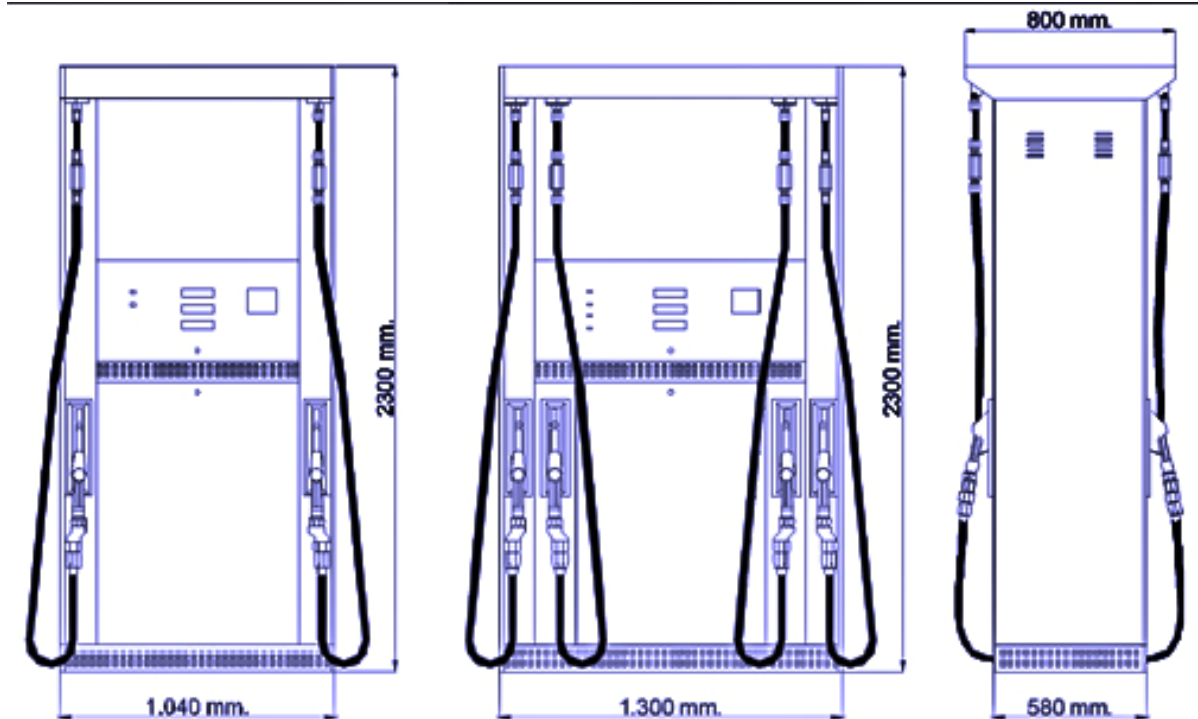
- E 50 : Power cut on sales
- E 51 : Power cut
- E 52 : Missing or defective mechanical total
- E 53 : Missing or defective Pulser
- E 54 : No automation connection
- E 55 : The waiting time-out with total
- E 56 : The waiting time-out without total



- E 57 : Pulser free movement during working
- E 58 : Not entered the unit price
- E 59 : Pulser free movement
- E 60 : Nozzle remained open
- E 61 : Short-circuit on mechanical total
- E 62 : Short-circuit on Solenoid valve
- E 63 : Pulser channel failure
- E 64 : Preset value is exceeded
- E 65 : CPU reset
- E 66 : E2 is defective or missing
- E 67 : Timer is defective or missing
- E 68 : Emergency stop
- E 69 : Pump was stopped by automation
- E 70 : pre-set sales over, time-out or no total
- E 71 : pre-set sales over, time-out or yes total
- E 72 : pre-set sales over, Pulser free movement
- E 73 : Full
- E 74 : ATC sensor failure
- E 75 : Calibration error
- E 76 : Pulse calibration error
- E 77 : Voltage Problem

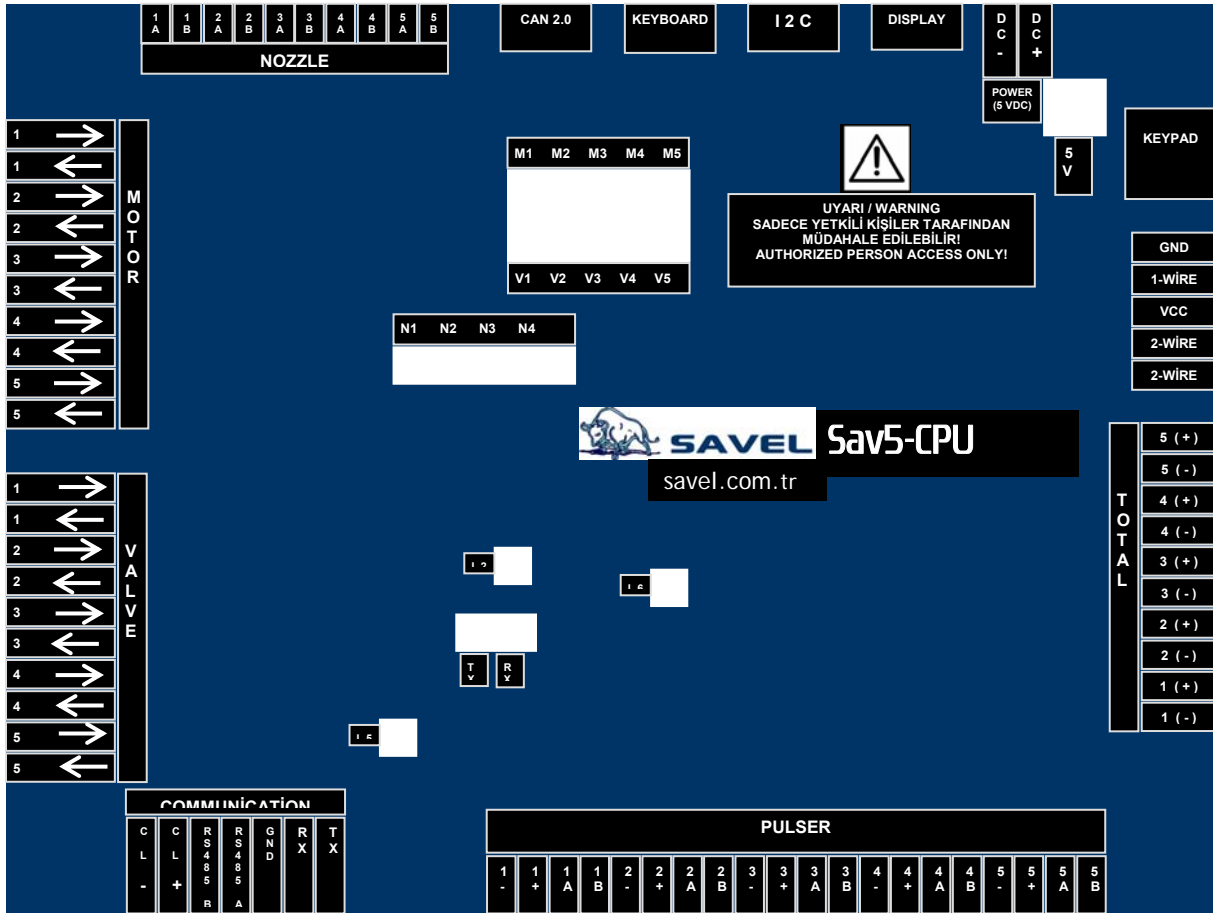
12. Technical Drawings

3 Series





13. Central processor unit (CPU) connections SAV5-CPU



SAV2-CPU

