

Operating Instructions




Serviceman



SensoControl®

Contents

1	Introduction	2
1.1	Notes on safety / product selection	2
1.2	Device versions and range of delivery	2
2	Commissioning	3
2.1	Charging the battery / battery status indicator	3
2.2	Replacing the battery	3
3	Functions and keys	4
4	Connecting the sensors	5
4.1	Connecting the SCM-152-1-08/SCM-152-2-08:	5
4.2	Connecting the SCM-152-2-02:	5
5	Operating and setting	6
5.1	Selecting the unit of measurement	6
5.2	MIN-/MAX indication	6
5.3	Erasing MIN/MAX values	6
5.4	ZERO function	7
5.5	Auto power off	7
5.6	Error messages / warnings	7
6	Measuring differential values	8
6.1	Differential value indication	8
6.2	Differential value calibration	8
7	Uploading measurement values to a PC	9
7.1	Data interface (RS232)	9
7.2	Setting up data transfer	9
7.3	Pressing the  key to initiate data transfer	10
8	Accessories	10
9	Technical data	11

1 Introduction

1.1 Notes on safety / product selection

Correct functioning of the Serviceman in accordance with these operating instructions can only be guaranteed when the specifications detailed in these operation instructions are adhered to. In particular, specifications relating to the permissible measurement ranges must be observed.



Serious malfunctions leading to personal injury or damage to property can result from using the chosen product in applications that do not comply with the specifications or from disregarding the operating instructions.

Pressure sensors are particularly suitable for high-pressure applications. Please abide by the instructions and observe the correct torques (30 Nm) for the fittings or adapters used. Please observe the highest pressures detailed in the catalogues for hydraulic fittings (ER-METO) or hydraulic hoses from Parker.

For repairs or calibration of the measurement instruments, please contact a Parker sales branch.

1.2 Device versions and range of delivery

The Serviceman and sensors for

- Pressure, Δp (load sensing pumps) [bar/PSI]
- Temperature [$^{\circ}\text{C}/^{\circ}\text{F}$],
- Volumetric flow rate [LPM/GPM (U.S)]
- RPM [1/min],

make it possible for the user to measure all relevant parameters in a hydraulic system.

Automatic sensor recognition means the Serviceman is simple to operate.

Plug & Work is one of the more important characteristics of the device. It allows the device to be ready to operate in an instance, and excludes erroneous measurements.

Range of delivery	
Order No.	Description
SCM-152-1-08	Serviceman two-line display 2 inputs (4-pin) Power supply/recharger SCSN-450 110/220 VAC UK; US and EURO connector
SCM-152-2-08	Serviceman two-line display 2 inputs (4-pin) Power supply/recharger SCSN-450 110/220 VAC UK; US and EURO connector
SCM-152-2-02	Serviceman two-line display 2 inputs (5-pin) push-pull Power supply/recharger SCSN-450 110/220 VAC UK; US and EURO connector

2 Commissioning

The Serviceman is supplied with a factory-fitted, rechargeable battery. The rechargeable battery must be charged for at least 14 hours before being used for the first time. The Serviceman is then ready for use.

2.1 Charging the battery / battery status indicator

The battery must either be replaced or recharged when 'LOBAT' is displayed. The Serviceman can be operated using the external power supply/recharger SCSN-450 or the car adapter SCK-318-05-21. The battery can be directly recharged.

The recharging process begins as soon as the battery charger is connected.



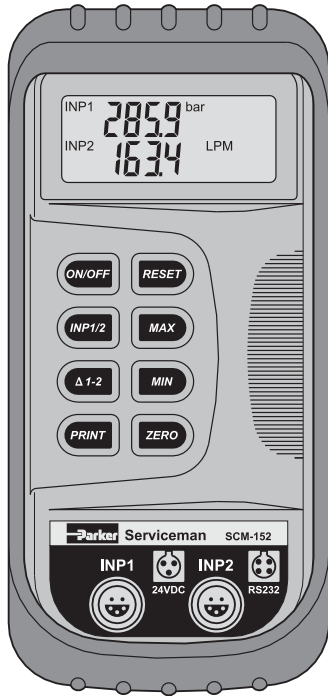
Please ensure that the Serviceman is fitted with a rechargeable (accumulator) battery when being operated using an external power supply. Do **not** use the external power supply when a non-rechargeable battery is fitted. Otherwise, the electronics could be destroyed!

2.2 Replacing the battery



When in continuous operation (without light), the service life of the battery is 8 hours.

3 Functions and keys



4-digit LC display

Two-line display INP1/ INP2

Input, measurement value, unit and battery status

ON/OFF Turns device on and off.

INP1/2 Displays INP1 / INP2.
Resets the Δ1-2 display.

Δ1-2 **INP1 - INP2** Displays differential value
2 inputs SCP-600-02-02 (600 bar)
2 inputs SCFT-060-01-02 (60 lpm)

Print function (SCM-152-2-02/SCM-152-2-08)

PRINT The ACT, MAX and MIN measurement values are printed in a numerical format.

The data can be uploaded to a PC using the PC Adapter Set SCSW-KIT-152.

RESET Erases the MIN/MAX values from the memory.

MAX Displays the highest (MAX) measured value. 500 measurement values are measured per second. The Serviceman measures all pressure peaks at an interval of 2 ms.

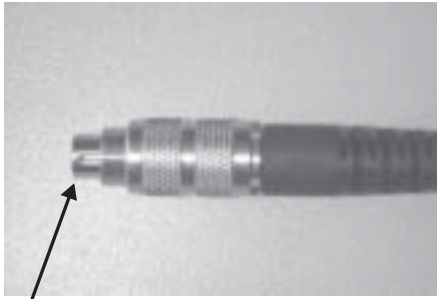
MIN Displays the lowest (MIN) measured value.
Zero point calibration.
The maximum range is 5% of FS.

INP 1 ↔ INP 2	To connect all sensors from the product program SensoControl Diagnose.
24VDC	To connect the external power supply/recharger: SCSN-450 (110VDC/220VDC) or car adapter SCK-318-05-21
RS232 (SCM-152-2-02)	PC connection

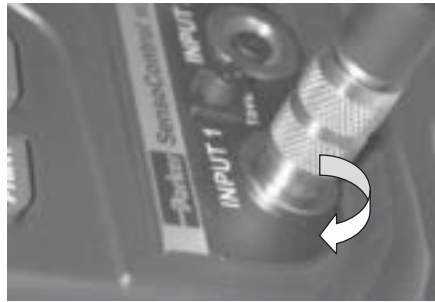
4 Connecting the sensors

When turned on, all functions are visible in the display. Automatic sensor recognition ensures that the measured value is indicated in the correct unit. No further settings to the device are required. 'noSE' is displayed if no sensor is connected to the device.

4.1 Connecting the SCM-152-1-08/SCM-152-2-08:



Please observe the guide pin.



Insert the circular connector and twist to correct position. Tighten the coupling nut.

4.2 Connecting the SCM-152-2-02:



Please observe the red dot.



Insert the push-pull connector.

i Please observe:

Connecting the sensor SCQ-xxx-0-02:	The volumetric flow rate is measured only in the positive direction Q.
Connecting the sensor SCPT-xxx-02-02:	The temperature is not displayed.

5 Operating and setting

5.1 Selecting the unit of measurement

The following units are set at the factory: bar; °C; LPM. These units can be changed:

Ensure the Serviceman is turned off.

Press and hold **RESET**

Press and release **ON/OFF**

unit is displayed

Release **RESET**

bar is displayed

Setting		Confirm
bar ↔ PSI	MIN ↔ MAX	ZERO
LPM ↔ GPM	MIN ↔ MAX	ZERO
°C ↔ °F	MIN ↔ MAX	ZERO
RPM for rotational speed measurement cannot be altered.		

The Serviceman then switches to the display mode.

5.2 MIN-/MAX indication

Press and hold **MAX**

The highest value is displayed

Press and hold **MIN**

The lowest value is displayed

The indicated value is stored to memory until it is overwritten with a new value. (Dynamic MIN/MAX memory).

5.3 Erasing MIN/MAX values

Press the **RESET** key to erase the MIN/MAX values.

5.4 ZERO function

Press **ZERO**

–00– is displayed

The Serviceman then switches automatically to the display mode. A span of 5% of the respective measurement range can be set to zero. ‘OL’ is displayed if the span is greater than 5% of the measurement range.



Ensure **no system pressure** is applied to the device when performing zero point calibration.

5.5 Auto power off

The Serviceman switches off automatically after approximately 15 minutes operating time. Press the **PRINT** key to deactivate the ‘Auto power off’ function.

5.6 Error messages / warnings

Display	Description	Remedial action?
%	Sensor recognition has been interrupted (cable breakage or input defective)	Connect the sensor with a different input. Send the Serviceman, sensor and connection cable to Parker.
LO BAT	The battery capacity is too low	Replace the battery. Recharge rechargeable battery.
Unit symbol ‘PSI’ flashes	The measurement value is greater than 9999 PSI, e. g., 10.000 PSI (690 bar)	The indicated value must be multiplied by 1000. Display = 10.0 Measurement value = 10.000 PSI
OL	Overload	The measurement value is not within the measurement range. The calibration value of the ZERO function is not within the permissible 5% FS span.
noSE	No Sensor	No sensor connected. No sensor signal.
rSt	Reset	Erase the MIN/MAX values.

6 Measuring differential values

6.1 Differential value indication

Press the $\Delta 1-2$ key to generate the **differential value** between INP1 and INP2. For differential pressure measurements, two pressure sensors are used employing the same scale. (INP1 – INP2) function available only with sensors using the same scale for example, SCP-1000-72-08 or SCP-600-72-02.

6.2 Differential value calibration

To adjust for pressure discrepancies between both pressure sensors during Δp measurements, the difference between the measurement values is set to 0.

Press $\Delta 1-2$
–diff– is displayed

Press $\Delta 1-2$ and **RESET** **simultaneously** then release
 $\Delta 1-2$ is displayed

A zero is indicated in the display. The tolerance between the two sensors has been calibrated. Now mount the pressure sensors at the required measuring point. In particular for Load Sensing control, it is possible to achieve extremely accurate measurement values.



Calibrate the pressure sensors at the operating pressure of the machine.

Two same-scale pressure sensors (SCP-600-72-02) are connected to a common pressure connection of a hydraulics system.

The tolerance of both sensors (± 3 bar) is set to zero by the Δp calibration.

This setting remains stored; it is only valid for the respective operating pressure of the hydraulics (e. g. 325 bar).

7 Uploading measurement values to a PC

7.1 Data interface (RS232)

Devices of the type SCM-152-2-02 (SCM-152-2-08) are equipped with an RS232 serial interface. The PC Adapter Set (SCSW-KIT-152) can be connected to the Serviceman. Please observe the respective user information.

7.2 Setting up data transfer

Ensure the Serviceman is turned off.

Press and hold **PRINT**

Press and release **ON/OFF**

Release **PRINT**

PC ↔ **Pr** is displayed

To select either PC or printer function, press **RESET**.

	Setting	Key	Confirm
Printer function	<i>Pr</i>	RESET	RESET
PC function	<i>PC</i>	RESET	RESET

P int is displayed

	Setting	Key	Confirm
Interval	<i>1. . 100 sec</i>	MIN ↔ MAX	ZERO

Press **PRINT** to start data transfer.


If the Serviceman is connected to a PC, the measurement data will be transferred to the PC at the set interval in a numerical format. If either of the printers SCPR-KIT-150 or SCPR-100 is used, the measurement data will be printed at the set interval in a numerical format.

Parker SensoControl			
I1 = bar			
I2 = LPM			
I	ACT	MAX	MIN
1	45.69	48.69	27.89
2	15.34	18.45	9.34

Attention!

The settings are stored. The MIN/MAX values are erased from the memory after printing.

7.3 Pressing the key to initiate data transfer

If the data is only to be printed when the key is pressed, set the interval **Print** = 0. Thus set, a single measurement value only is printed or transferred to a PC when the  key is pressed.

8 Accessories

		SCM-152-1-08 SCM-152-2-08 (4pin)	SCM-152-2-02 (5pin)
Connection cable		SCK-102-02-08 (2m)	SCK-102-xx-02 xx = 2 m/3m/5m
Extension (3m)		SCK-102-03-12	SCK-102-03-12
Extension (6m)		SCK-102-06-12	SCK-102-06-12
Sensors with connection socket (5pin)			
SCPT-xxx-02-02	bar / PSI	•	•
SCP-xxx-02-02			
SCQ-xxx-0-02	LPM	•	•
SCFT-xxx-01-02			
SCVF-xxx-00-02			
SCT-150-0-02	°C / °F	•	•
Sensors with fixed-cable connection (4pin)			
SCP-xxx-72-08	bar / PSI	Extension (3m) SCK-108-03-18	Adapter 4pin/5pin SCK-002-08
SCT-150-74-08	°C / °F	Extension (3m) SCK-108-03-18	Adapter 4pin/5pin SCK-002-08
SCRPM-210	RPM	Extension (3m) SCK-108-03-18	Adapter 4pin/5pin SCK-002-08
Sensors with fixed-cable connection (5pin)			
SCP-xxx-72-02	bar / PSI	x x	•
SCT-150-74-02	°C / °F	x x	•
SCRPM-220	RPM	x x	•

Power supply/recharger and PC accessories		
SCSW-KIT-152	PC Adapter Set	Data transfer to PC
SCSN-450	Power supply 110/220 VDC	EUR/UK/US compatible
SCK-318-05-21	Power supply 12/24 VDC	Car adapter
SC-811	Spare rechargeable battery	
SC-800	Battery charger 220 VDC	Recharges rechargeable battery

9 Technical data

Input	<ul style="list-style-type: none"> - Sensors from the SensoControl Parker Diagnose programme - Scanning rate 2 ms = 500 measurements/s. - A/D converter, 12 bit / 4096-level resolution - 600 bar = 0.15 bar - Measurement values for the positive flow direction (A-B) only are displayed when operating the 'flow sensor' type SCQ-xxx-0-02. - The oil temperature is not displayed when operating the pressure/temperature sensor of the types SCPT-xxx-02-02 and SCPT-xxx-0-02.
Accuracy	<p>± 0.25% FS (Full Scale = upper limit of the measurement range)</p> <p>± 2 digit</p>
Ambient conditions	<p>Temperature: 0 ... 50 °C</p> <p>Storage temperature: -20... +60 °C</p> <p>Rel. humidity: < 85%</p> <p>Protection class to EN 60529 / IP 54 (splashed water protection)</p>
Power supply	<ul style="list-style-type: none"> - Battery or rechargeable battery, 9 VDC (IEC 6F 22) - The rechargeable battery can be charged using the SCSN-450. - Car adapter (12VDC) SCK-318-05-21

ENGLISH

The ServiceJunior meets the guidelines of the European Community (EU). It is confirmed that this product is approved acc. to following standards:



DIN / EN 61000-6-2
DIN / EN 61000-6-3

Technical subject to change.

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