



Diagnostic Test Equipment for Hydraulics

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Catalogue 4054/UK

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For further information on other Parker Products, call the European Product Information Centre free of charge on 00800 2727 5374.



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All the instruments meet the guidelines of the European Community (EU).
It is confirmed that these products are approved acc. to following standards.



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

Note!

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- Long-term stability
- Rugged design
- Easy operation
- Flexible use on site
- Documentation of measured values

SensoControl® handmeters and complete measuring systems are perfectly suitable measuring tools for every application. Whether they are used in the industrial area, in mobile hydraulics, for service or repair: measuring and processing of hydraulic values is the basis of safe trouble shooting. The systematic search for errors with modern aids is something the service engineer simply cannot do without.

High-speed processes, such as switching valves, cylinder strokes, pressure peaks, differential pressures and flow changes must be measured and evaluated simultaneously.



The SensoControl® handmeters have been specially developed for the following applications:

- Measurement and display of all hydraulic values, such as pressure, differential pressure, pressure peaks, temperature and flow, as well as speed.
- They are perfectly suitable for the mobile recording of measured values and feature high precision combined with easy operation.

All measuring devices as well as their accessories are manufactured and tested in our own plants. Our ever-increasing insistence on quality and flexibility make Parker a reliable partner.

Choosing the Right Product

Choice/ features	ServiceJunior	Serviceman	ServiceMaster
Measuring and read out			
Read out	ACT - MIN/ MAX (Peak-Hold)	ACT - MIN/ MAX	ACT - MIN/ MAX
2 inputs	—	●	●
3 inputs	—	—	●
4 inputs	—	—	○
6 inputs	—	—	○
Pressure peaks	10 msec	2 msec	1 msec
Pressure	●	●	●
Differential Pressure (P1-P2)	—	●	●
Connection sensors			
Socket 4-pin	—	●	—
Socket 5-pin	—	○	●
Temperature/ RPM/ Flow	—	●	●
Electrical signals 48VDC/ 1,5ADC	—	—	●
External sensors (0/4. . 20mA)/ (0. . 10VDC)	—	—	●
Functions			
Rechargeable battery	battery	●	●
Interface	—	○	●
OnLine-Function	○	○	●
Data recording	—	—	●
Print out graphs	—	—	●
External power supply	—	●	●

- not available
- optional
- standard

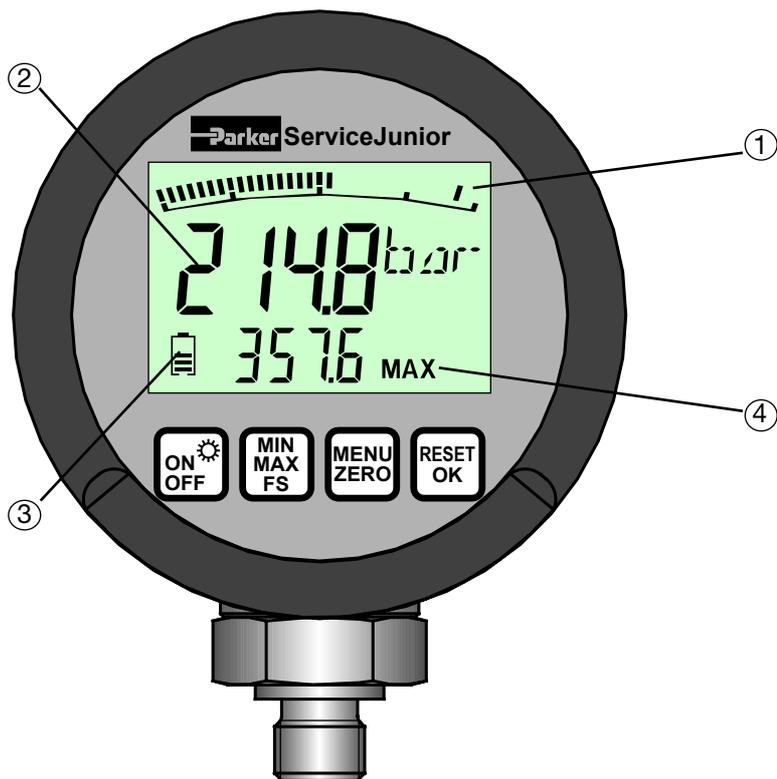
- Digital pressure measurement and display
- Accuracy ± 0,5 % FS (Full Scale)
- Display with bar graph (trailing indicator) with peak hold function
- Pressure peaks captured – 10 msec scanning rate
- Easy operation
- Long-term stability
- Back-lit measured value display
- Pressure ports stainless steel G1/4 BSPP



Technical Data ServiceJunior				
Input	Sensor element ceramics (relative) Strain gauge pressure measurement cell (absolute) Pressure ports stainless steel 1.4404, G1/4 (BSPP), ISO 1179-2 10 msec. scanning rate Accuracy ± 0,5 % FS (typ.) A/D converter 12 bit 4096 steps resolution			
Range (bar)	-1...16	0 ...100	0 ...400	0 ...600
Overload pressure P _{max}	40 bar	200 bar	800 bar	1200 bar
Burst Pressure	50 bar	800 bar	1700 bar	2200 bar
Display	LC text display 4 ½ digits 50x34 mm Digit size: 15 mm Units: bar, PSI, Mpa, kPa, mbar Back lit illumination Bar graph (trailing indicator) with peak & hold function			
Operation	4 keys with embossed edges (ON/ OFF) (MIN/ MAX - FS) (RESET - OK) (MENU-ZERO)			

Technical Data ServiceJunior	
Interface	On request
Functions	Units: bar, PSI, Mpa, kPa, mbar MIN/ MAX - FullScale Battery level display Auto power Off/On Zero (zero point equalization) Reset (Delete MIN/ MAX)
Ambient conditions	Operating range -10. . +50°C Fluid temperature -20. . +80°C Storing temperature -20 . .+60°C Rel. humidity < 85% Protection EN60529 (IP 67) Vibration IEC 60068-2-6/ 10. . 500Hz; 20g Shock IEC 60068-2-29/ 50 g; 11 msec.
Power Supply	2 x 1,5 V alkaline batteries Battery life typ. 1.500 Std.
Housing	Ø = 80 mm; T = 33 mm Zinc die casting with rubber TPE protection cover

FS = FullScale



- ① Display with bar-graph due to peak & hold function
- ② Actual value back-lit display (15 mm)
- ③ Battery level display
- ④ Display of MIN/ MAX or Full scale display (FS)

Menu functions

-  On/ off switch
Back-lit display
-  Minimum/ maximum value
FullScale
-  Menu: auto shut-off
Choice of units
Zero: Zero point equalisation
-  Delete MIN/ MAX value
Confirm menu function

ServiceJunior Digital Pressure Gauge	SCJN-xxx-01 (xxx = range)
<p>Range: -1 . . 016 bar (relative) 0 . . 100/ 400/ 600 bar (absolute) 0 . . 1.000 bar on request</p>	<p>Standard ServiceJunior delivery includes: 1 ServiceJunior (acc. to pressure range) 2 batteries 1.5 VDC AA alkaline 1 Adaptor (G1/4 BSPP - M16x2)</p>
ServiceJunior-Kit	SCJN-KIT-xxx (xxx = range)
1 ServiceJunior	SCJN-xxx-01
1 Adaptor 1/4 BSPP - M16x2	SCA-1/4-EMA-3
1 Adaptor M16x2 - M16x2	SCA-EMA-3/3
1 Test hose 1.500 mm	SMA3-1.500
1 Equipment case with 2 drawers for ServiceJunior	SCC-120

- Easy operation
- Prevention of measuring errors due to automatic sensor recognition
- Printer and PC connection
- Two-line display
- Rugged design



The Serviceman has 2 inputs for sensors. This enables a differential pressure measurement by pressing only one key. Fast comparisons of actual and set values are done very easily.

The Serviceman is extremely robust and insensitive to dirt, so that it can be used in even the toughest conditions. The digital display avoids reading errors.

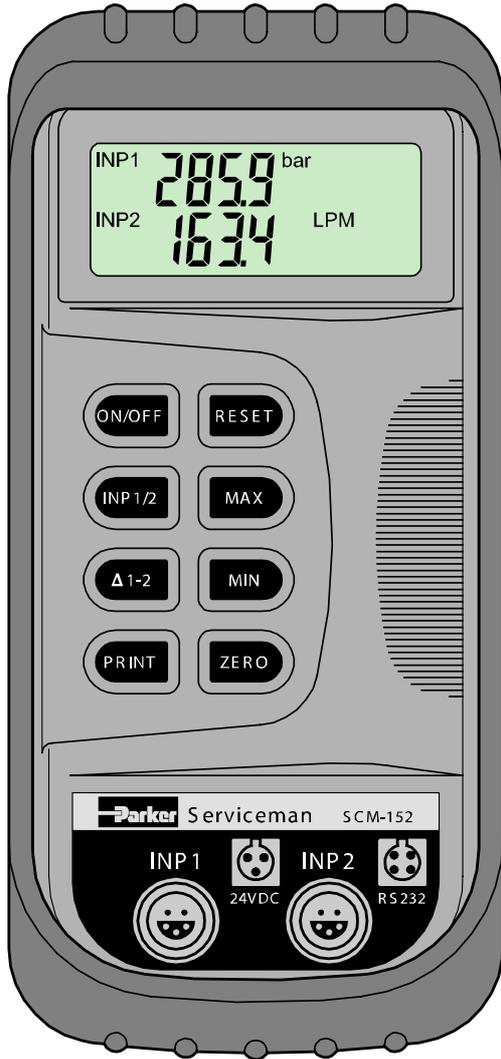
The Serviceman is small and light:
perfect for mobile applications.

Serviceman incl. external power supply
2 Inputs (4-pin)
2 Inputs (5-pin) incl. PC Interface

The data output can be used to connect a printer or PC. Data printout is valid under the documentation obligatory under ISO 9001.

The Min/ Max memory permits the reading of peak values. Pressure peaks which could lead to damage are avoided.

Like all other SensoControl® measuring devices, the Serviceman is provided with sensor recognition. The measuring ranges are automatically scaled and units shown on the display. This avoids measuring errors and time-consuming adjustment work.



- Display Display (two line)
INP1 and INP2; ΔP display
Battery level display
MIN: Minimum value
- ON/OFF** On/ off switch
- INP 1/2** Select button for input
- Δ 1-2** Differential value display
e.g. P1 - P2 = ΔP
- PRINT** Data transfer to PC
- RESET** Delete MIN/ MAX-readings
INP1 = INP2:
Equalisation of ΔP-measuring
- MAX** Maximum value (pressure peaks)
- MIN** Minimum value
- ZERO** Zero point equalisation
- INP1/INP2 Sensor inputs
4-pin = SCM-152-1-08
5-pin = SCM-152-2-02
- 24VDC Power supply or
automotive cable adaptor
SCK-318-05-21
- RS232 PC interface
SCM-152-2-02

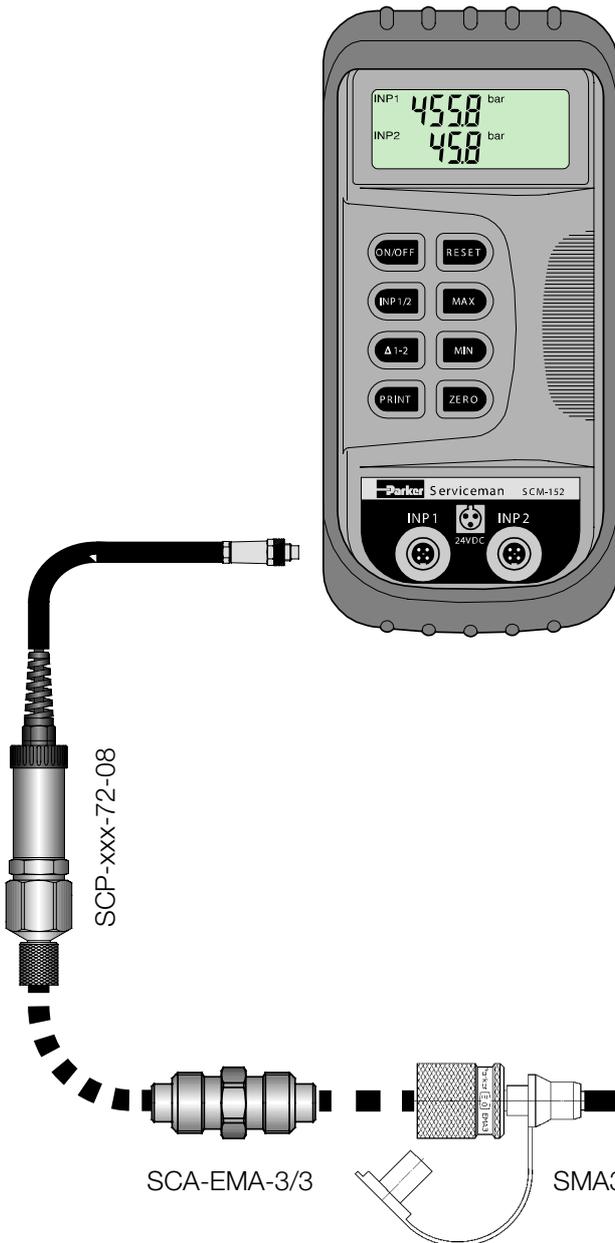
Type	SCM-152-1-08	SCM-152-2-02
Socket (4-pin)	●	—
Socket (5-pin)	—	●
PC interface	—	●
Standard delivery includes SCSN-450 (power supply 110/220 VAC)	●	●

Accessories		
Automotive cable adaptor (24VDC) SCK-318-05-21	●	●
PC-Software Kit SCSW-KIT-152	—	●
Spare battery SC-811	●	●
Charging Unit (220 VAC) for SC-811	●	●

— not available ● serial

	Serviceman	SCM-152-1-08	SCM-152-2-02
Input	2 sensor inputs (4-pin)	●	—
	2 sensor inputs (5-pin) push-pull	—	●
Display	LC text display (4 digit), 2 line, digit size 8 mm	●	●
Interface	RS232 (4-pin)	—	●
Functions	MIN-/ MAX display Zero point equalisation INP1-INP2 differential reading Battery level display Auto power off (15 min)	●	●
Ambient conditions	Operating temperature: 0 ... +50 °C Storage temperature: -20 ... +60 °C Rel. humidity: < 85% Protection according to (EN 60529) (IP 54)	●	●
Power supply	External power supply SCSN-450 or automotive cable adaptor SCK-313-05-21 (24 VDC) Internal battery 9 V/ 110 mA/h Battery life 5 hrs	●	●
Housing	ABS with rubber protection Dimensions: 145 x 70 x 40 mm (L/ B/ H) Weight: 330 g	●	●

— not available ● serial



**Pressure
Differential pressure**



**Pressure
Pressure**



Pressure/ flow

Pressure test with Serviceman (4-pin) SCM-152-1-08

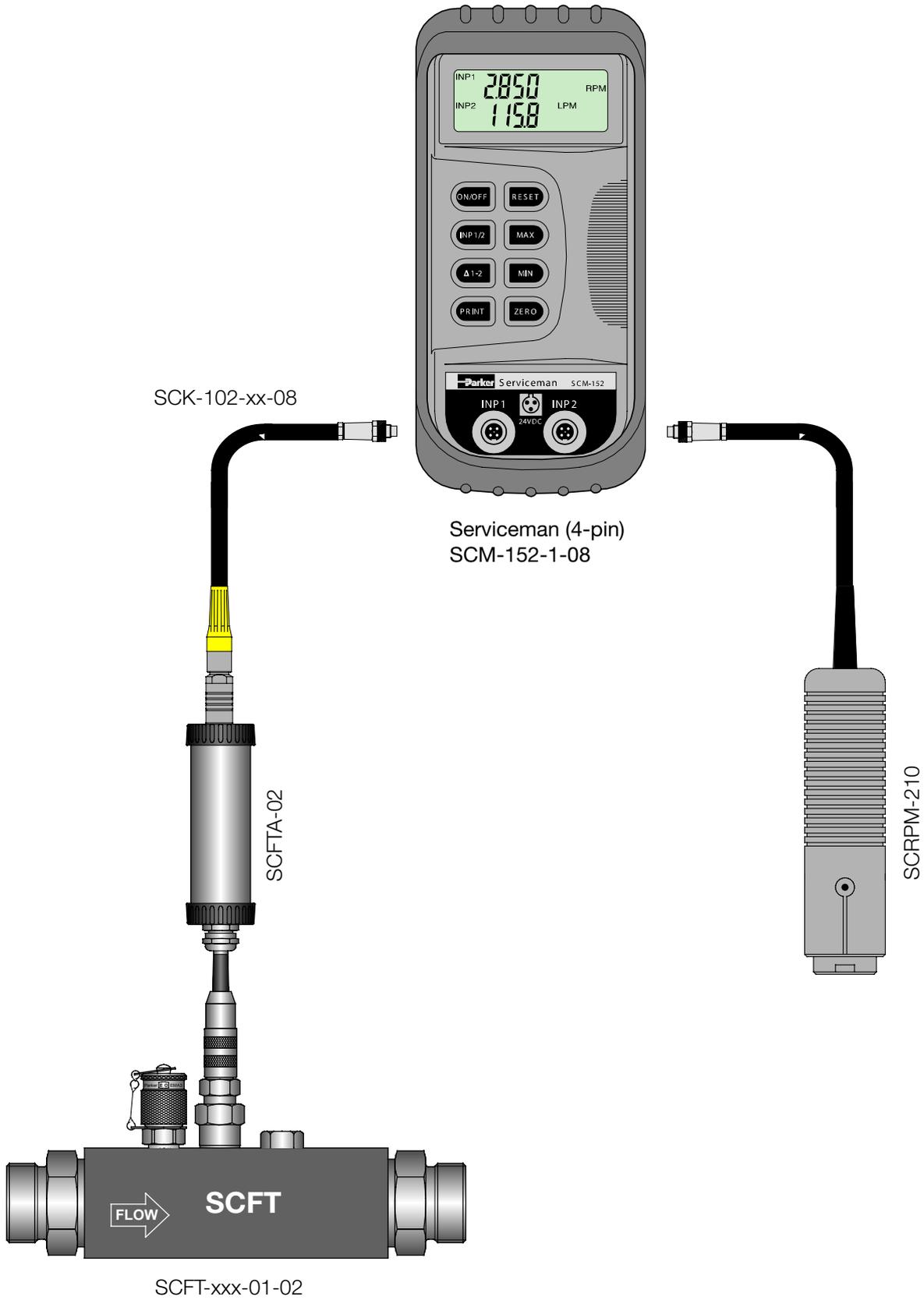
SCP Pressure Sensors

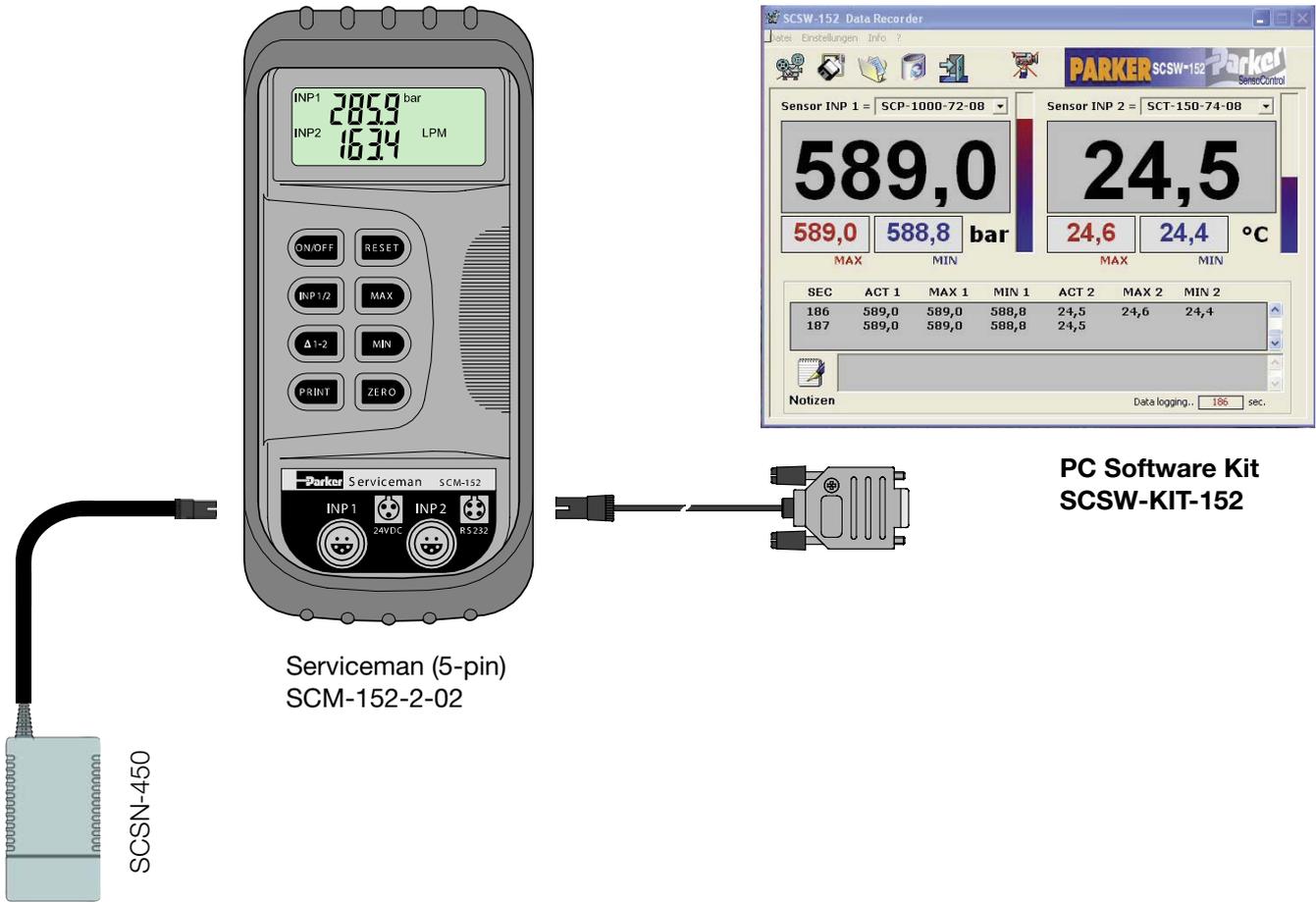
There is a selection of various measuring ranges for pressure measurement. Sensors are available for pneumatic applications and also for measuring pressure peaks up to 1,000 bar

Range	Applications
-1 . . 15 bar	Pneumatics/ low pressure
0 . . 100 bar	Medium pressure
0 . . 400 bar	Operating pressure hydraulics
0..1000 bar	High pressure peaks

Diagnostic couplings:

All pressure sensors in a measurement case (kit) are provided with a factory-assembled SCA-1/2-EMA-3 diagnostic adaptor. The pressure sensors can be adapted to all standard measuring connections with the help of diagnostic couplings supplied. They are perfectly suitable for a quick and flexible diagnoses in hydraulic applications.





Serviceman (5-pin)
SCM-152-2-02

PC Software Kit
SCSW-KIT-152

- Easy operation
- Self running installation
- On-line data recording
- Storage of readings in MS Excel format
- Analysis of data with standard software
- Print out readings on site

Data transfer from Serviceman to PC or laptop is possible with the PC Software Kit.

The software included is compatible with MS Windows 3.11/ 95/ 98/ 2000/ XP.

Recorded data can be further processed and analysed with standard software (e.g. MS Excel).

- Sturdy carrying case
- Easy operation
- Automatic sensor recognition
- PC connection
- Not dependent on main power supply
- Extensive program of sensors
- Adaptable to every hydraulic and pneumatic system

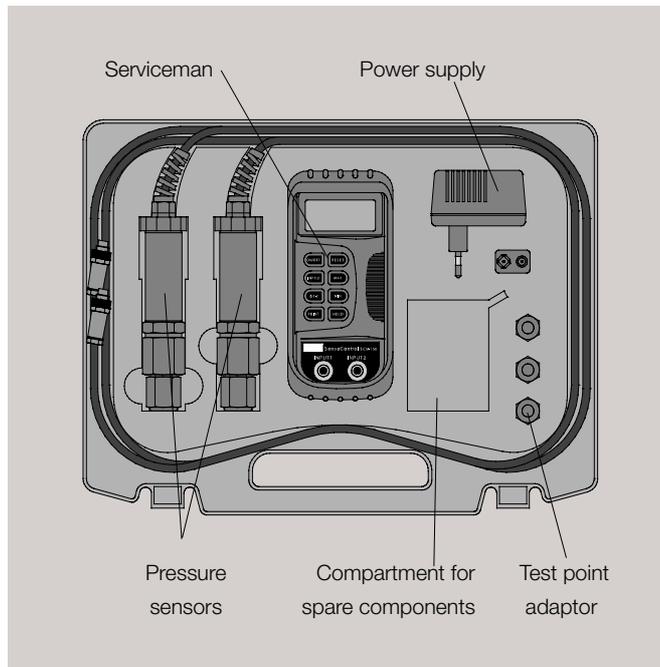


Serviceman Kits

Serviceman Kits meet the requirements of modern industrial hydraulic systems as well as those of complex mobile hydraulics.

All hydraulic parameters, such as differential pressure, flow and hydraulic power can be measured, displayed and processed.

Serviceman Kits are an ideal tool for all fitters in maintenance departments who need simple hydraulic test equipment for mobile as well as industrial hydraulics. Fast diagnosis in the fields of hydraulic machinery can be done very easily.



Serviceman Kit

- All Serviceman Kits have been developed to give an optimum cost/benefit ratio and are thus an important basic tool for hydraulic services.
- Thanks to the software the readouts can be transferred to a PC and important hydraulic readings can be saved easily.

The models described on page 15 are available ex stock.

Serviceman Kits	Order code
Serviceman Kit pressure measurements	SC-500-01
1 Serviceman equipment case	SCC-150
1 Serviceman (4-pin) with power supply	SCM-152-1-08
1 Pressure Sensor 0..1000 bar with cable (2 mtr.)	SCP-1000-72-08
1 Adaptor G1/2 - EMA-3 (M16x2)	SCA-1/2-EMA-3
1 Test Point Coupler EMA-3/1 (M16x2 - Pin Lock)	SCA-EMA-3/1
1 Test Point Coupler EMA-3/2 (M16x2 - S12)	SCA-EMA-3/2
1 Test Point Coupler EMA-3/3 (M16x2 - M16x2)	SCA-EMA-3/3
1 Test Hose 1.500 mm	SMA3-1500
Serviceman Kit differential pressure	SC-500-02
1 Serviceman equipment case	SCC-150
1 Serviceman (4-pin) with power supply	SCM-152-1-08
2 Pressure Sensor 0..1000 bar with cable (2 mtr.)	SCP-1000-72-08
2 Adaptor G1/2 - EMA-3 (M16x2)	SCA-1/2-EMA-3
2 Test Point Coupler EMA-3/1 (M16x2 - Pin Lock)	SCA-EMA-3/1
2 Test Point Coupler EMA-3/2 (M16x2 - S12)	SCA-EMA-3/2
2 Test Point Coupler EMA-3/3 (M16x2 - M16x2)	SCA-EMA-3/3
2 Test Hose 1.500 mm	SMA3-1500
Serviceman Kit differential pressure - PC-Software Kit	SCKIT-152-02
1 Equipment case drawer for SCPR-150	SCC-550
1 Serviceman (5-pin) with power supply	SCM-152-2-02
1 PC Adaptor incl. Software + PC data cable	SCSW-KIT-152
2 Pressure Sensor 0..600 bar with cable (2 mtr.)	SCP-600-72-02
2 Adaptor G1/2 - EMA-3 (M16x2)	SCA-1/2-EMA-3
2 Test Point Coupler EMA-3/1 (M16x2 - Pin Lock)	SCA-EMA-3/1
2 Test Point Coupler EMA-3/2 (M16x2 - S12)	SCA-EMA-3/2
2 Test Point Coupler EMA-3/3 (M16x2 - M16x2)	SCA-EMA-3/3
2 Test Hose 1.500 mm	SMA3-1500
Serviceman Kit pressure, flow measurements	SCKIT-152-PQ
1 Equipment case drawer for SCFT-150-DRV	SCC-530
1 Serviceman (5-pin) with power supply	SCM-152-2-02
1 PC Adaptor incl. Software + PC data cable	SCSW-KIT-152
1 Pressure Sensor 0..600 bar with cable (2 mtr.)	SCP-600-72-02
1 Adaptor G1/2 - EMA-3 (M16x2)	SCA-1/2-EMA-3
1 Test Point Coupler EMA-3/1 (M16x2 - Pin Lock)	SCA-EMA-3/1
1 Test Point Coupler EMA-3/3 (M16x2 - M16x2)	SCA-EMA-3/3
1 Test Hose 1.500 mm	SMA3-1500
1 Flow-Turbine 7,5. . 150 l/min incl. Pressure Control Valve with Non Return protection $P_{max} = 400$ bar	SCFT-150-DRV
1 Connection Cable (2 mtr.)	SCK-102-02-02

- Instruments with 3-channel, 4-channel and 6-channel technology
- Easy operation due to automatic sensor recognition
- PC connection
- Powered by rechargeable battery
- Rugged design



The ServiceMaster is a multi-channel hand meter for the simultaneous measuring of important hydraulic values:

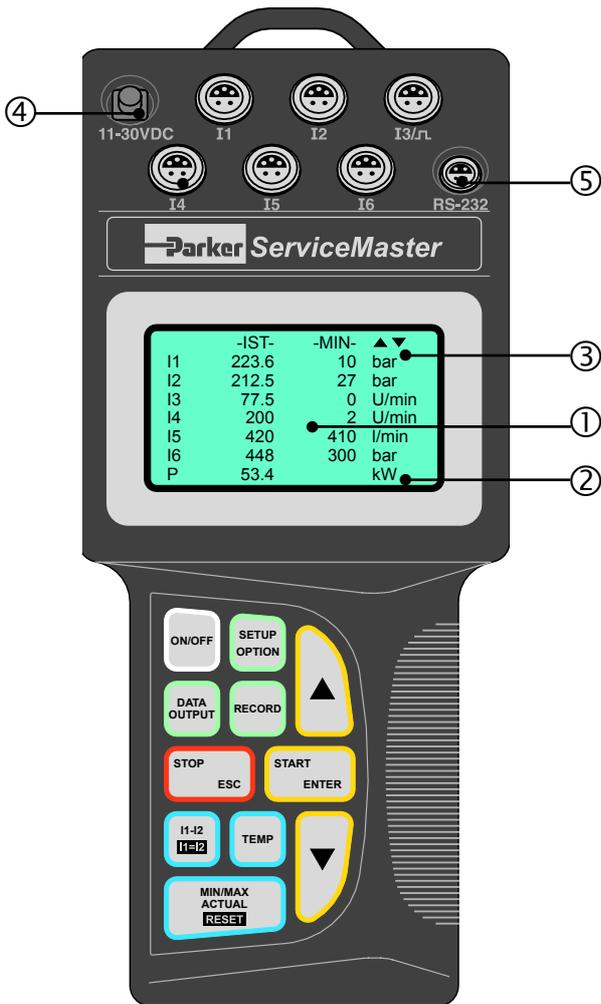
All hydraulic parameters such as pressure, differential pressure, flow and hydraulic power can be measured, displayed, stored and processed.

To meet the requirements of both modern industrial hydraulics and complex mobile hydraulics, we offer a range of different models:



ServiceMaster SCM-250 (3 inputs/ channels)	ServiceMaster SCM-400 (6 inputs/ channels)
Memory capacity = 60,000 MIN and MAX points Max. 60 single graphs storable (1-channel operation) Max. 20 different measurements storable (3-channel operation)	Frequency measurement (I3) Memory capacity = 125,000 MIN and MAX points Max. 120 single graphs storable (1-channel operation) Max. 20 different measurements storable (6-channel operation)
ServiceMaster SCM-360 (4 inputs/ channels)	ServiceMaster SCM-450 (6 inputs/ channels)
Frequency measurement (I3) Memory capacity = 125,000 MIN and MAX points Max. 120 single graphs storable (1-channel operation) Max. 30 different measurements storable (3-channel operation)	Frequency measurement (I3) Memory capacity = 250,000 MIN and MAX points Max. 240 single graphs storable (1-channel operation) Max. 40 different measurements storable (6-channel operation)

	SCM	250	360	400	450
Input	Sensor inputs	3	4	6	6
	With sensor recognition (p/ T/ Q/ n) Adaptor for external sensors with SCMA-VADC Plug-in connection: 5-pin, push-pull Sample rate: ≥ 1 ms = 1,00 measurement values/ sec. Resolution: 12 bit + sign = 4,096 steps	●	●	●	●
	Frequency input via input socket I3 for flow turbine or tachometer Frequency range: 0.5 Hz ... 30 kHz Signal input: depends on frequency $6.5 V_{pp}$ (max)		●	●	●
Display	Graphic LC Resolution: 128 x 64 pixels Visible area: 72 x 40 mm Automatic adjustment of digit size Digit size: 4.2 mm (for 8 line display) Accuracy of display: < 0,25 % of Full Scale	●	●	●	●
	Graphic curve representation	●	●	●	●
Operation	Via 11-key membrane keyboard With mechanical tactile touch and embossed edges	●	●	●	●
Interface	RS232C (4-pin, push-pull) Baud rate: 1,200 ... 38,400.8 data bits, 1 stop bit Online data transmission to the PC Transferring recorded data to PC with SensoWin® 4.0	●	●	●	●
Functions	I1-I2 indication of differential values Indication of MIN/ MAX/ ACTUAL values Indication of TEMP values (SCPT/ SCT) Auto power off/ battery level control Hydraulic power/ outflow volume	●	●	●	●
Measured value memory	Memory capacity (60,000 MIN and MAX points)	●			
	Memory capacity (125,000 MIN and MAX points)		●	●	
	Memory capacity (250,000 MIN and MAX points)				●
	Variable storage interval (e.g. = 10 ms) Number of points per channel (e. g. 4,000 Min-Max) Variable recording time (2 s ... 100 h) Trigger: slope/ manual/ external/ time Pre trigger External trigger with additional device SCMA-TR	●	●	●	●
Ambient conditions	Temperature range: 0 ... +50 °C Storage temperature: -25 ... +60 °C Temperature error: < 0.02 %/ °C Rel. humidity: < 80 % Protection according to DIN 40050: IP 54 (water spray/ oil)	●	●	●	●
Power supply	Internal: NiCd-battery 7.2 V/ 700 mAh Battery charging circuit Battery service capacity: 5 h approx. External: with SCSN-450 (220/ 100 VDC) Automotive cable adaptor as equipment (12/ 24 VDC)	●	●	●	●
Housing	Material: glass ball-reinforced polyamide Dimensions: 235 x 106 x 53 mm (L/ W/ H) Weight: approx. 530 g	●	●	●	●



- I1 – I6 Sensor inputs with automatic sensor recognition (p/ T/ Q/ n). External sensors with SCMA-VADC-250 V/A Measuring voltage/ current with SCMA-VADC-400
- I3/ I_Δ Frequency input
- ① Graphic LC Display: shows measured values, operation menus and graphs
- ② Additional line: Indication of hydraulic power or outflow volume
- ③ Status line: shows the actual, min and max values and menu settings
- ④ External power supply via power unit SCSN-450 or automotive cable adaptor
- ⑤ PC interface: RS232 External trigger module with SCMA-TR-250

- Switches the instrument on and off
- System settings, date/ time, storage operation
- Menu
- Start measurements
- Stop measurements
- Differential function I1-I2 Zero point equalisation (Tara-Function) I1=I2
- SCPT temperature measuring sensors
- Data output to PC or graphic display On-line test (200 msec)
- Recording and saving of measurements (program or start/ Stop)
- ACT-, MIN- und MAX-display RESET deletes MIN/ MAX-values

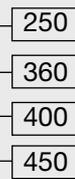
Order code

ServiceMaster

(Delivery includes SCSN-450 power unit)

Number of measuring channels	Frequency measuring	MIN and MAX value memory
3	—	60.000 points
4	●	125.000 points
6	●	125.000 points
6	●	250.000 points

SCM-XXX-1-01



Automotive cable adaptor 12/24 VDC

SCK-318-05-21

The ServiceMaster can be used as a measuring instrument in three different versions:

1. Measuring and readout

Through automatic sensor recognition all measured values are shown immediately on the display. Each input can be used as required. The display switches automatically to the appropriate line size.

■ Peak pressure measurement (MIN/ MAX display)

The scanning rate of 1,000 measurement values/ sec. captures rapidly occurring pressure peaks within the space of a millisecond.

■ Differential pressure measurement

Exact Δp measurement is achieved by means of the Δp adjustment. Under operating pressure the deviation of the pressure sensors relative to each other is corrected. For load sensing control the exact Δp setting is a prerequisite for trouble-free functioning of the hydraulics. A combination of Δp (bar) and flow Q (l/ min) is displayed as hydraulic power P (kW).

■ External sensors

Analogue signals such as those from a force or stroke sensor (external sensor) can also be measured and evaluated with the Service Master. The measurement of electrical currents or voltages (for example proportional valves) up to 1.5 ADC or 48 VDC. External modules make the Service-Master a multifunctional measuring instrument.

SCMA-VADC-250	Signals (0. .20mA or 0. .10 VDC)
SCMA-VADC-400	V/A measurement (1,5 ADC or 48 VDC)
SCMA-TR-250	external trigger signal

3. Online Operation

In On-line operation all measurement values are transferred directly from the ServiceMaster to a PC and subsequently stored. The current graphic display in SensoWin® allows the hydraulics to be set (valve position or pressure load) whilst the test is running.

With the SCMA-AO-400 the measurement values are documented as analogue signals (0...20mA) on an external device (for example, graphic recorder or oscilloscope). The sensor signals can be processed directly by an external A/D converter or PLC control unit.

2. Data logging and recording

The recording (storage) of measurements provides documentation of settings and the actual condition of the hydraulics.

Measurements can be printed or further processed on a PC with SensoWin® software. This is ideal for customer care or service since the measurements can be called up at any time.

With the special storage technology of the Service-Master, all pressure peaks in the hydraulic system can be captured independently of the set measurement time (storage time). The storage interval (time interval between storage points) is automatically adapted within the base setting of the ServiceMaster. Within each storage interval one min. and one max. value is stored. The user has only to pre-select the measuring time (storage time = 100 h. max.).

Individual setting of the storage interval is likewise available (for example, 10 ms).

■ Start-stop function

The start and finish of measurements are controlled by the start/stop key only

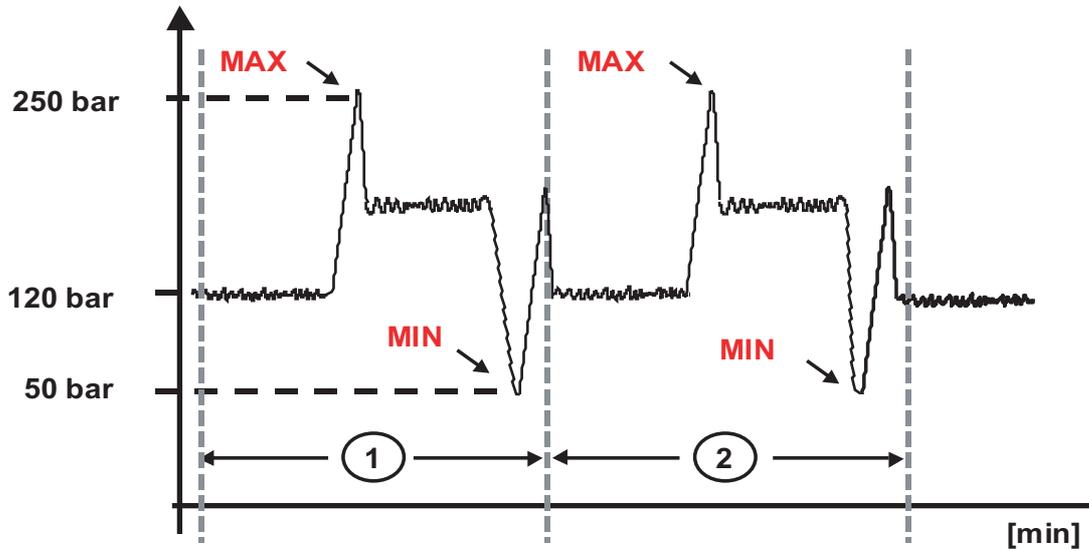
■ Program-controlled recording

Four programs may be selected:

- Flank trigger
Recording starts by pressure increase (60 bar, increasing slope)
- Manual
Start by pressing enter key
- External trigger
Starts recording by external signal (e.g. rely contact)
- Clock time
Start at e.g. 14.25 h

In each programme the recording time (2s...100 h) and the corresponding start function are selected. All the connected channels (sensors) are measured and stored. Program-controlled storage is particularly advantageous during the search for faults in hydraulic machinery. The point when the cause of damage occurs (for example, pressure peak or pressure drop) is not as a rule foreseeable.

With the help of SensoWin® the recording can be subsequently analysed exactly.

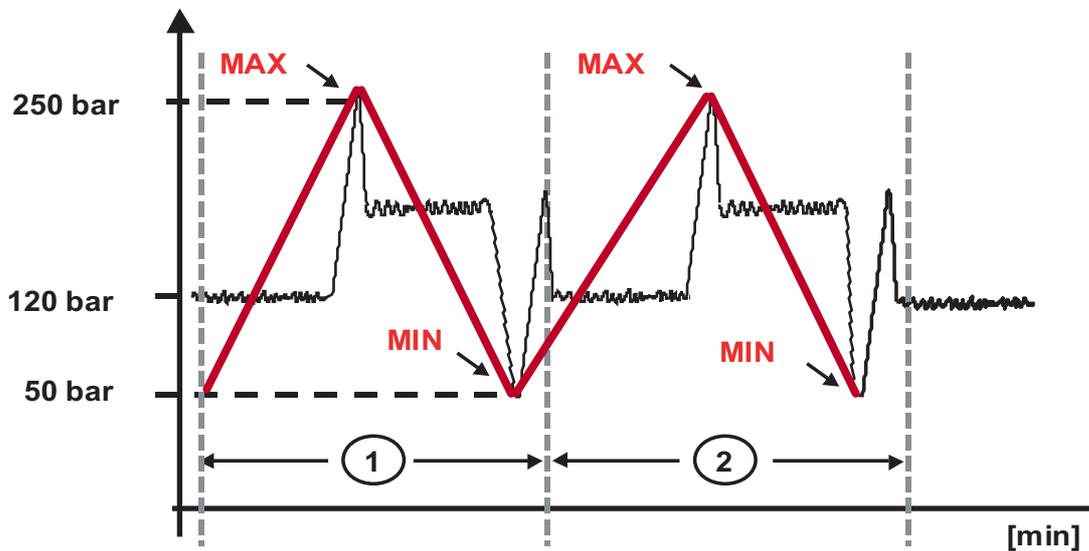


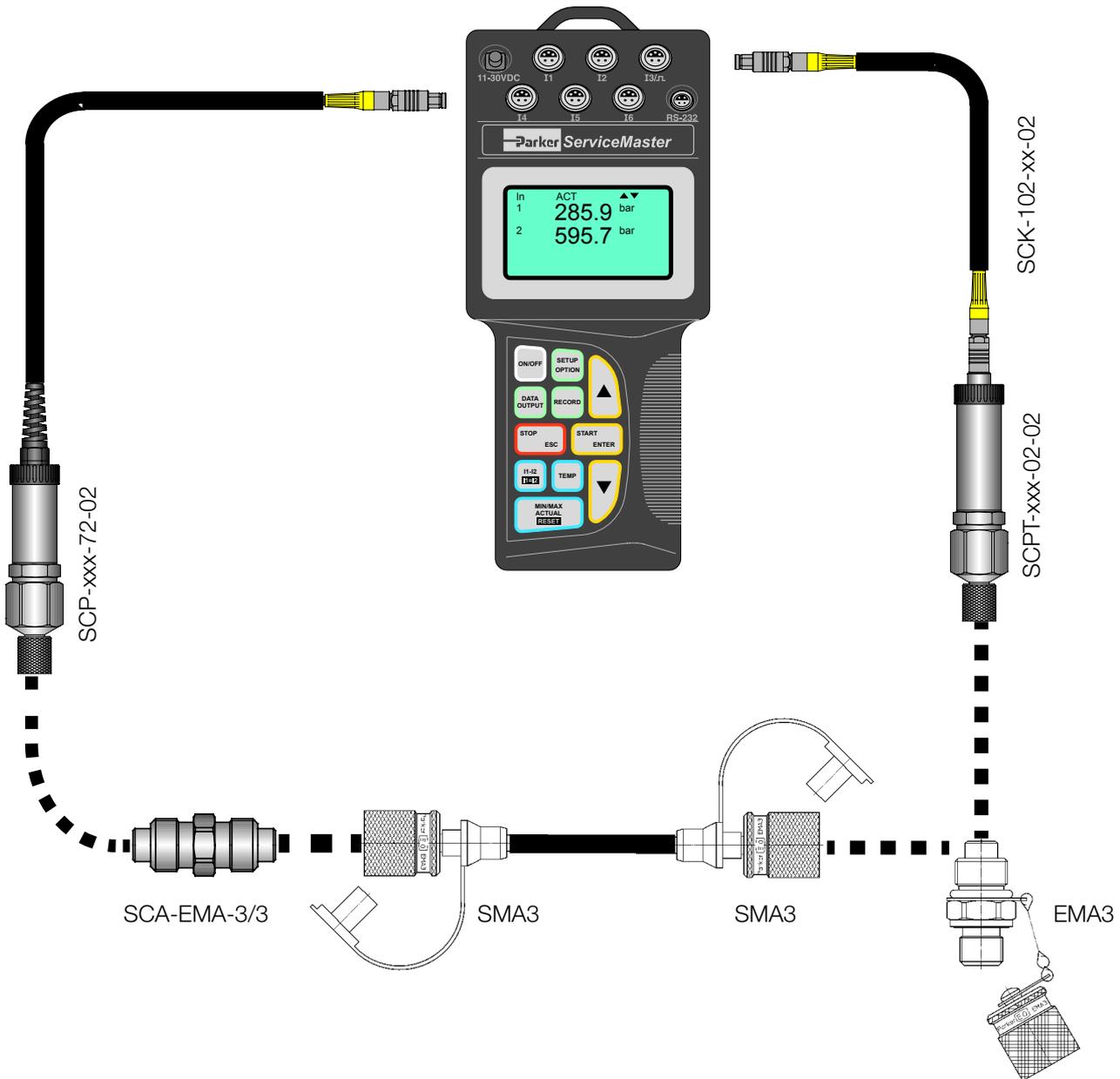
With the ServiceMaster up to 6 sensors can be measured, displayed and recorded simultaneously. Each sensor (channel) enables up to 4,000 memory intervals to be created. Each memory interval will save a pair of data points. The pair consists of one MIN and one MAX reading.

Running a constant scanning rate of 1,000 readings/ sec this will correspond to 150 readings (interval).

The highest (max) and lowest (min) will be carried to the measurements memory. The connection of these data points creates a measured graph and guarantees the capture of pressure peaks.

In a recording session of 10 min and 4,000 intervals, the length of each storage interval is 150 msec.



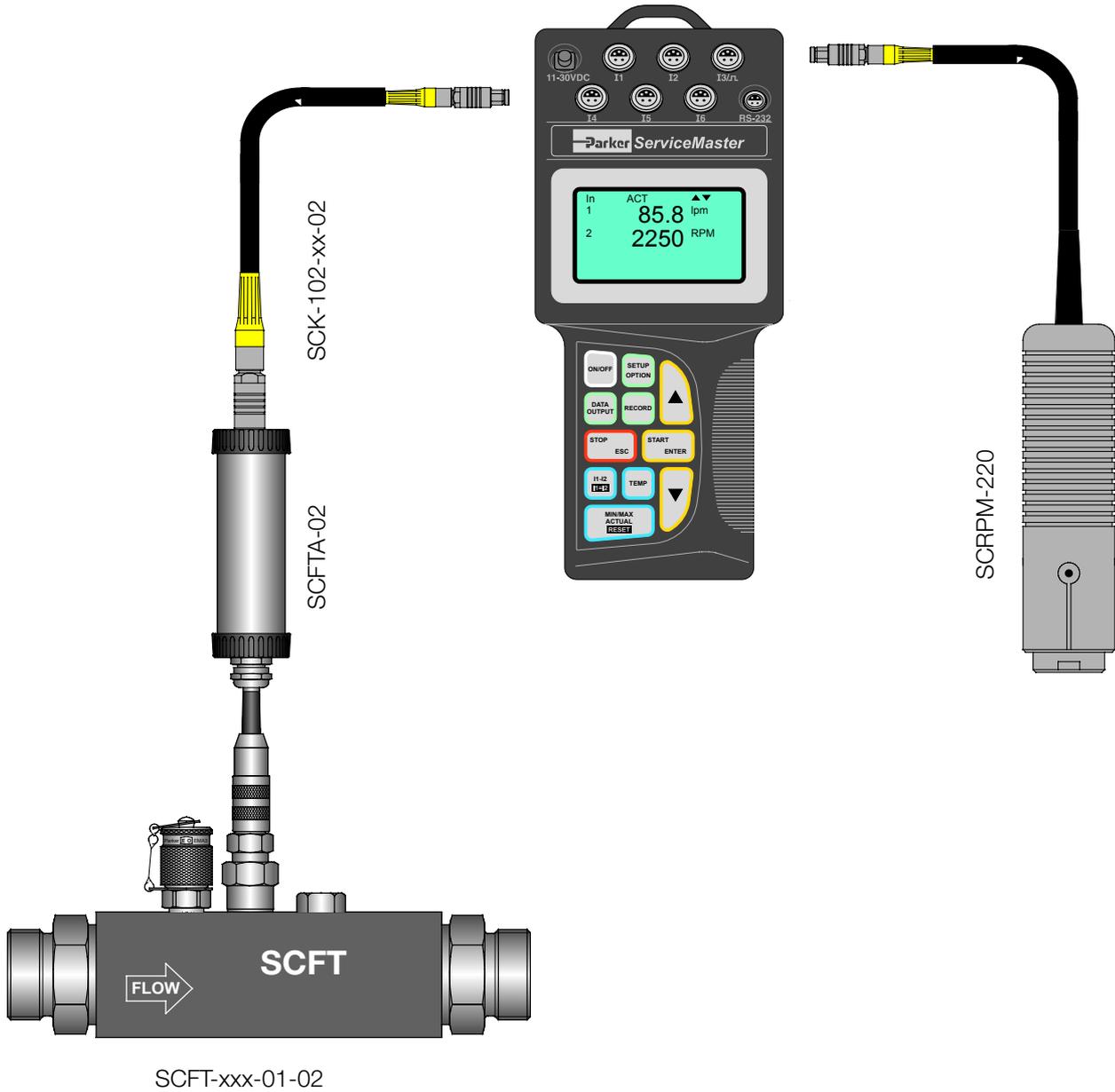


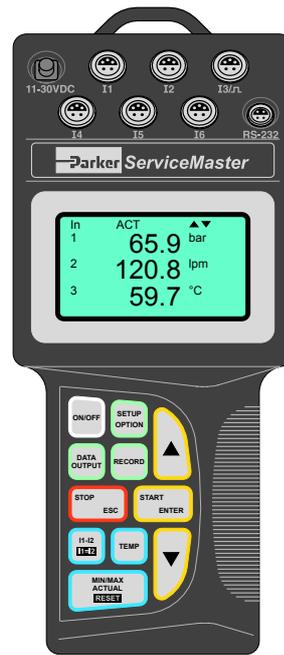
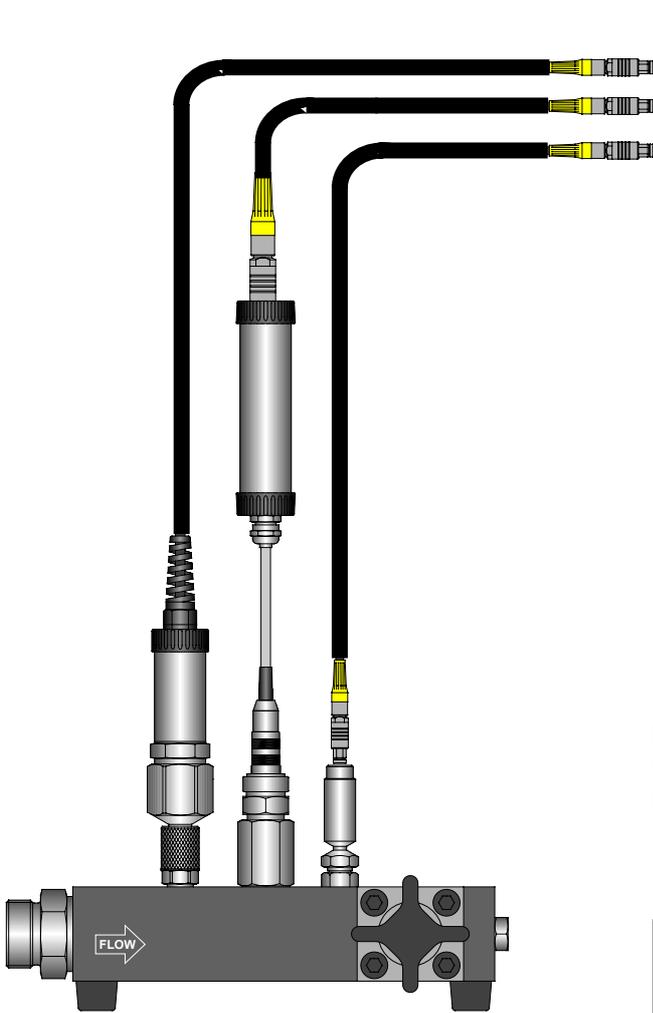
SCPT/ SCP pressure measurement

There is a selection of various measuring ranges for the measuring of pressures. Sensors can be used for pneumatic applications and also for measuring pressure peaks up to 600 bar. The pressure/ temperature sensors of the SCPT series additionally have a temperature channel which is retrieved via the TEMP key.

Diagnostic adaptors

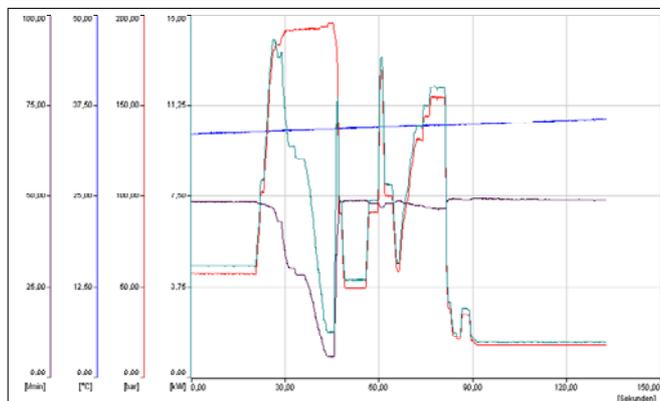
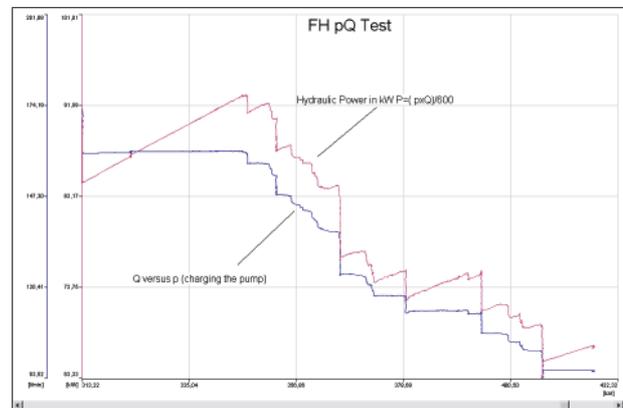
All pressure sensors in a kit are provided with a factory-assembled SCA-EMA-3 diagnostic adaptor. The pressure sensors can be adapted to all standard measuring connections with the diagnostic couplings supplied. They are perfectly suitable for quick and flexible diagnoses in hydraulic applications.





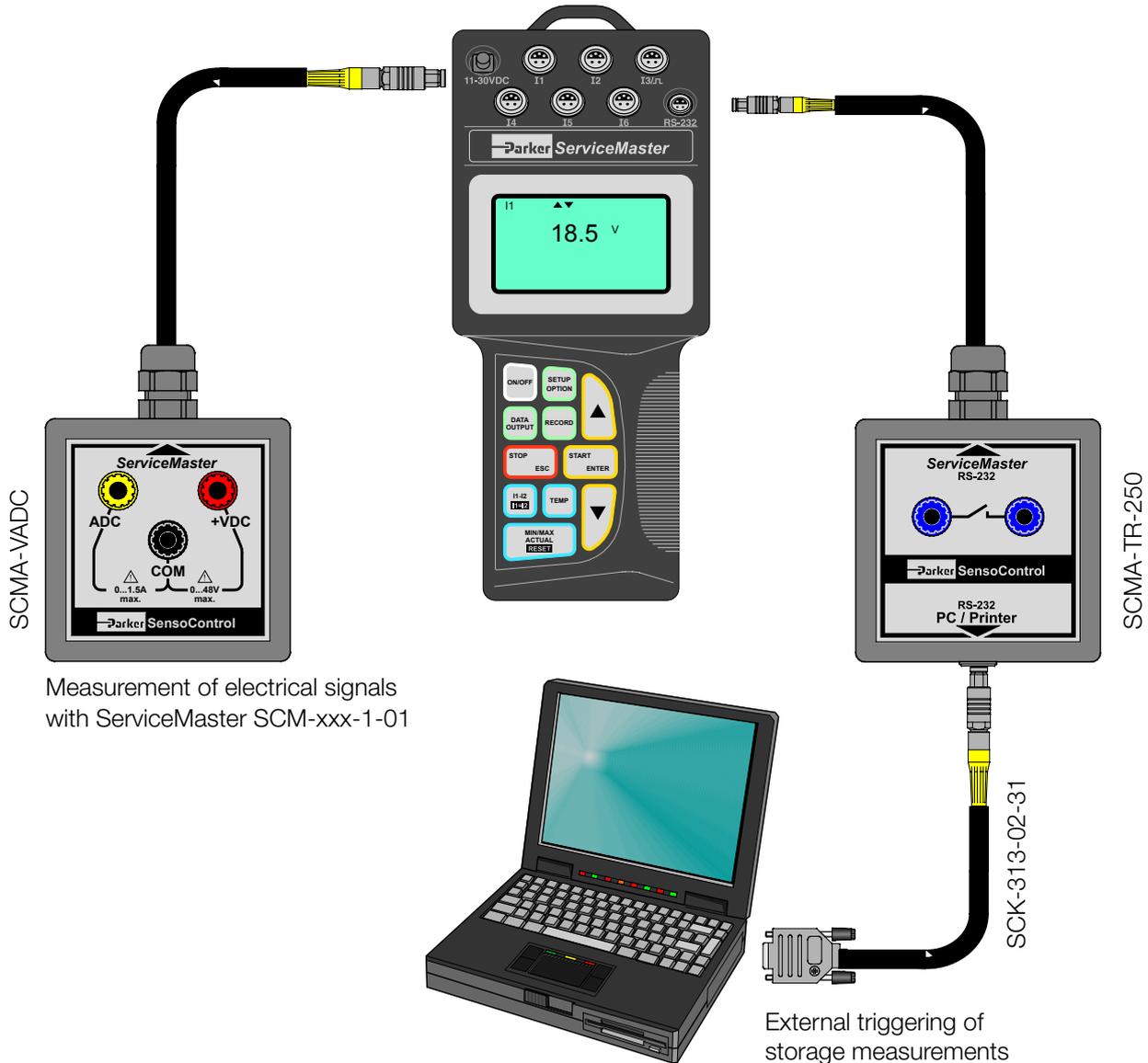
Measurement of pressure, flow and temperature using ServiceMaster SCM-xxx-1-01 and hydraulic-tester SCLV-PTQ (cat 4051)

The p-Q diagram (to the right) shows the power determined. Especially in hydraulic pump (load sensing) systems the speed-dependent load is important to analyze. The evaluation in SensoWin® will be done quickly and simply.



The hydraulic power of a system can be analyzed by a combined measurement of pressure and flow (to the left). The diagram shows an application with a hydraulic-tester SCLV-PTQ. Pressure in the system is generated by the integrated loading valve.

In the evaluation power will be calculated from the flow volume and pressure of the pump.



Measurement of electrical signals with ServiceMaster SCM-xxx-1-01

External triggering of storage measurements

■ **Measurement of external signals
SCMA-VADC-250**

Signals such as 0/ 4...20 mA or 0...10 V from external sensors, for example, for torque, power or stroke, are connected to the ServiceMaster.

Typical applications:

- Power/ stroke graphs
- Torque/ flow volume nominal lines

■ **Current/ voltage measurement
SCMA-VADC-400**

Electric currents up to 1,5 ADC and voltages up to 48 VDC can be measured with this module.

Applications:

- Current consumption of a proportional valve
- Measurement of switch status in motors/ pumps

■ **SCMA-TR-250**

External signals such as relay contacts, for example, can be used as starting signals for measurement recording (storage). The measurement recording begins with the opening of a valve or the start-up of a pump. In order that during on-line measurement the external relay triggering is working, the SCMA-TR-250 is connected directly to the PC.

■ **Analogue Output 0. . 20mA**

With the SCMA-AO-400 (not shown) the measurement signals are emitted as analogue signals to external devices. The measurement value is graphically registered on a graphic recorder. The analogue signal can be processed in the hydraulic control as an actual value signal.

- Easy operation
- Windows 95/ 98/ 2000/ NT® / XP
- Simultaneous representation of 16 curves
- Zoom functions
- Linking of measuring curves
- Tabular listing of measured values
- Calculation of extreme value
- Curve shifting function
- Free selection of units and measuring ranges
- Cursor functions
- Transmission of set-up parameters from the ServiceMaster



Example for SensoWin®-
Graphic on page 23

General

The SensoWin® software is an easy to operate software package for reading and processing the measured curves recorded by the ServiceMaster. Documentation and certificates can be created easily and at low cost as SensoWin® can make use of all Windows facilities and advantages.

Functions

Up to 16 different curves can be represented in a diagram. The curve shifting function allows exact hydraulics analysis. A power performance curve can be created to evaluate a pump. Leaks and pressure losses can be detected with the help of the generation of a Δp function. With the cursor, an hydraulic procedure can be examined time-dependent.

For each curve, extensive information is provided, i.e. the ServiceMaster measurements can be reproduced at any time. The change of the ranges and units allows later adjustment for presentation in a diagram. Tabular presentation of MIN and MAX values, smoothing of the measurement curve and mathematical links are important functions in the analysis of the hydraulic system. Date and time are documented with each measurement. This considerably facilitates later allocation of values. Direct transmission of measured values from the ServiceMaster to the PC is also possible. Current events (pressure peaks, etc.) are visible while the process is running (on-line function).

- ServiceMaster Kits in 3-channel, 4-channel and 6-channel technology
- Easy operation
- PC software
- Powered by rechargeable battery
- Rugged design for on-site operation
- Make up your own individual Kit



ServiceMaster Kit

To be able to meet the requirements of modern industrial hydraulic systems as well as those of complex mobile hydraulics, we provide customised solutions for each user.

All hydraulic parameters, such as pressure, differential pressure, flow and hydraulic power can be measured, displayed, stored and processed.

This allows fitters in mobile hydraulics as well as in construction and agricultural machinery to make exact diagnoses. Furthermore, comparisons between set and actual values can be made and documented.

By the combination of hydraulic power and rotational speed measurement detailed statements can be made about the drive and hydraulic power.

With the SensoWin® software, the data can be processed on a PC.

**The models described on page 27
are available ex stock**

ServiceMaster Kits	Order code
ServiceMaster Kit 3 Inputs SensoWin®	SCKIT-250-02
1 Equipment Case insert for SCPR-150/400	SCC-750
1 ServiceMaster 3 Inputs 60.000 MIN/ MAX	SCM-250-1-01
1 SensoWin® Kit (ServiceMaster) PC software + PC connection Cable	SCSW-KIT-400
2 Pressure/ Temperature Sensor 0. . 600 bar	SCPT-600-02-02
2 Connection Cable (2 mtr.)	SCK-102-02-02
2 Adaptor G1/2 - EMA-3 (M16x2)	SCA-1/2-EMA-3
2 Test Point Coupler EMA-3/1 (M16x2 - Pin Lock)	SCA-EMA-3/1
2 Test Point Coupler EMA-3/2 (M16x2 - S12)	SCA-EMA-3/2
2 Test Point Coupler EMA-3/3 (M16x2 - M16x2)	SCA-EMA-3/3
2 Test Hose 1.500 mm	SMA3-1500
ServiceMaster Kit 4 Inputs SensoWin®	SCKIT-360-02
1 Equipment Case insert for SCPR-150/400	SCC-750
1 ServiceMaster 4 Inputs 125.000 MIN/ MAX	SCM-360-1-01
1 SensoWin® Kit (ServiceMaster) PC software + PC connection Cable	SCSW-KIT-400
2 Pressure/ Temperature Sensor 0. . 600 bar	SCPT-600-02-02
2 Connection Cable (2 mtr.)	SCK-102-02-02
2 Adaptor G1/2 - EMA-3 (M16x2)	SCA-1/2-EMA-3
2 Test Point Coupler EMA-3/1 (M16x2 - Pin Lock)	SCA-EMA-3/1
2 Test Point Coupler EMA-3/2 (M16x2 - S12)	SCA-EMA-3/2
2 Test Point Coupler EMA-3/3 (M16x2 - M16x2)	SCA-EMA-3/3
2 Test Hose 1.500 mm	SMA3-1500
ServiceMaster Kit 4 Inputs, (Δp, T, Q) SensoWin®	SCKIT-360-PTQ
1 Equipment Case insert for SCFT-150-DRV	SCC-530
1 ServiceMaster 4 Inputs 125.000 MIN/ MAX	SCM-360-1-01
1 SensoWin® Kit (ServiceMaster) PC software + PC connection Cable	SCSW-KIT-400
2 Pressure Sensor 0. . 600 bar with cable (2 mtr.)	SCP-600-72-02
2 Adaptor G1/2 - EMA-3 (M16x2)	SCA-1/2-EMA-3
2 Test Point Coupler EMA-3/3 (M16x2 - M16x2)	SCA-EMA-3/3
2 Test Hose 1.500 mm	SMA3-1500
1 IN-LINE Sensor (M10x1) with female connector (5 pin)	SCT-150-04-02
1 Flow-Turbine 7,5. . 150 l/min incl. Pressure Control Valve with Non Return protection $P_{max} = 400$ bar	SCFT-150-DRV
2 Connection Cable (2 mtr.)	SCK-102-02-02
ServiceMaster Kit 6 Inputs SensoWin®	SCKIT-400-02
1 Equipment Case insert for SCPR-150/400	SCC-750
1 ServiceMaster 6 Inputs 125.000 MIN/ MAX	SCM-400-1-01
1 SensoWin® Kit (ServiceMaster) PC software + PC connection Cable	SCSW-KIT-400
2 Pressure/ Temperature Sensor 0. . 600 bar	SCPT-600-02-02
2 Connection Cable (2 mtr.)	SCK-102-02-02
2 Adaptor G1/2 - EMA-3 (M16x2)	SCA-1/2-EMA-3
2 Test Point Coupler EMA-3/1 (M16x2 - Pin Lock)	SCA-EMA-3/1
2 Test Point Coupler EMA-3/2 (M16x2 - S12)	SCA-EMA-3/2
2 Test Point Coupler EMA-3/3 (M16x2 - M16x2)	SCA-EMA-3/3
2 Test Hose 1.500 mm	SMA3-1500

- Robust stainless steel design
- Response times of 1 msec
- Capturing of pressure peaks
- Accuracy $\pm 0,25$ % typ.
- Flexible operation
- SCP sensors with fixed cable 2 mtr. for Serviceman/ ServiceMaster
- SCPT sensors with 5-pin socket for Serviceman/ ServiceMaster



SCPT/ SCP pressure sensors have been developed for diagnosing hydraulics.

Fast response times guarantee the safe capture of pressure peaks in hydraulic systems. The robust stainless steel construction allows a variety of applications, for example cooling water or pneumatics.

All pressure sensors are delivered with a diagnosis adaptor (M16x2) installed. Connection to the hydraulic system takes place quickly and safely. Times for installation are reduced.

SCP-xxx-72-08 (Serviceman) and SCP-xxx-72-02 (ServiceMaster) have a fixed cable, there is no need of an additional connection cable.

Serviceman (4-pin)

SCP-xxx-72-08

SCP Pressure Sensor with fixed cable 2 mtr. (4-pin)	-1...15 bar	015
	0...100 bar	100
	0...400 bar	400
	0...1000 bar	1000

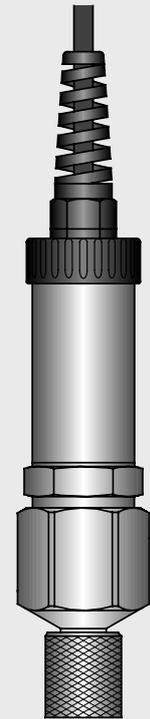
Incl. Diagnostic Adaptor SCA-1/2-EMA-3 (G1/2 - M16x2)
 Extension cable 3 mtr _____ SCK-108-03-18

Serviceman (5-pin)/ ServiceMaster

SCP-xxx-72-02

SCP Pressure Sensor with fixed cable 2 mtr. (5-pin)	-1...15 bar	015
	0...100 bar	100
	0...400 bar	400
	0...600 bar	600

Incl. Diagnostic Adaptor SCA-1/2-EMA-3 (G1/2 - M16x2)
 Connection cable 3 mtr. _____ SCK-102-03-12
 Connection cable 6 mtr. _____ SCK-102-06-12



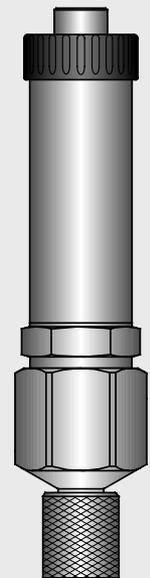
Serviceman/ ServiceMaster

SCPT-xxx-02-02

SCPT Pressure/ Temperature Sensor with push-pull connector (5-pin)	-1...10 bar	010
	0...060 bar	060
	0...150 bar	150
	0...400 bar	400
	0...600 bar	600

Incl. Diagnostic Adaptor SCA-1/2-EMA-3 G1/2 - M16x2)

Connection cable	Order code
Serviceman (4-pin)	SCK-102-02-08
Serviceman (5-pin)/ ServiceMaster xx = 2 mtr./ 3 mtr./ 5 mtr./ 8 mtr.	SCK-102-xx-02
Extension 3 mtr.	SCK-102-03-12
Extension 6 mtr.	SCK-102-06-12



Serviceman (4-pin)	SCP-	015-72-08	100-72-08	400-72-08		1000-72-08
Serviceman (5-pin)/ ServiceMaster	SCP-	015-72-02	100-72-02	400-72-02	600-72-02	
Pressure measuring range	(bar)	-1...015 relative	0...100 absolute	0...400 absolute	0...600 absolute	0...1000 absolute
Overload pressure	(bar)	20	150	800	1000	1000
Burst pressure	(bar)	45	500	1200	1800	1800
Hysteresis	(±%) FS	typ.	0,10	0,10	0,08	0,05
		max	0,25	0,20	0,15	0,10
Repeatability	(±%) FS	typ.	0,08	0,08	0,08	0,08
		max	0,15	0,15	0,15	0,15
Accuracy	(±%) FS	typ.	0,25	0,25	0,25	0,25
		max	0,50	0,50	0,50	0,50

* Tolerance band adjustment valid to 2/3 FS

FS = Full Scale value

Serviceman/ ServiceMaster SCPT-xxx-02-02	SCP	010-02-02	060-02-02	150-02-02	400-02-02	600-02-02
Pressure measuring range	(bar)	-1...010 relative	0...060 absolute	0...150 absolute	0...400 absolute	0...600 absolute
Temperature measuring range	(±%) FS	-25...+105	-25...+105	-25...+105	-25...+105	-25...+105
Overload pressure	(bar)	20	150	250	1000	1000
Burst pressure	(bar)	45	500	500	1800	1800
Hysteresis	(±%) FS	typ.	0,10	0,05	0,10	0,08
		max	0,25	0,10	0,20	0,15
Repeatability	(±%) FS	typ.	0,08	0,13	0,13	0,10
		max	0,15	0,25	0,25	0,20
Accuracy	(±%) FS	typ.	0,25	0,20	0,20	0,28
		max	0,50	0,40	0,40	0,55

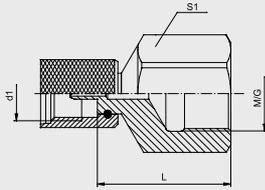
FS = Full Scale value

Output	Ambient conditions	Pressure connection
Temperature Deviation ± 0,03 % FS/°C	Ambient -20...+85°C	Housing Stainless steel
Response time < 1 ms	temperature range	1.430
Vibration resistance to IEC 68-2-6 at 10...500 Hz	Fluid temp. range -25...+105°C	Weight 200 g
	Compensated range 0...+85°C	Male stud G1/2 BSPP
Long-term stability < 0,2% FS/a	Storage -40...+125°C	ISO 1179-2
Shock load to IEC 68-2-29	temperature range	Seal ED soft seal
Service life 10 Mio.		FKM (Viton)

FS = Full Scale value

Dimensions	SCP-xxx-72-08/02	SCPT-xxx-02-02
Length (mm) [15 bar]	71,5 [88,5]	88,5
Diameter Ø	27	27
Hexagon SW (hex)	27	27

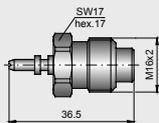
Diagnostic adaptor



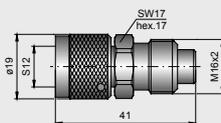
Pressure Sensors	PN	d1	S1	L	M/G	Order code
SCP-xxx-72-08 SCP-xxx-72-02 SCPT-xxx-02-02	630	M16x2	30	39	G1/2 BSPP	SCA-1/2-EMA-3
ServiceJunior	630	M16x2	24	32	G1/4 BSPP	SCA-1/4-EMA-3

$P_{max} = 1.200 \text{ bar}$

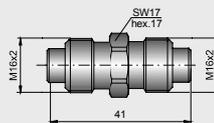
Diagnostic couplings



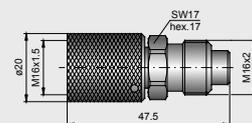
SCA-EMA-3/1



SCA-EMA-3/2

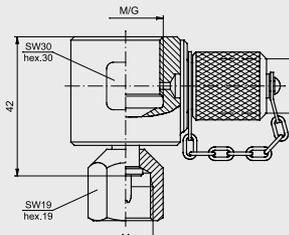


SCA-EMA-3/3



SCA-EMA-3/4

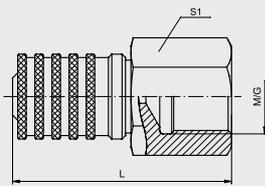
90° Twin connector, ventable



Pressure Sensors:	PN	M/G	M	Order code
SCP-xxx-72-08 SCP-xxx-72-02 SCPT-xxx-02-02	630	G1/2 BSPP	M16x2	SCA-1/2 EMA-3-EL

- 90° elbow connector with VSTI (see catalogue 4100)
- Δp -adjustment for exact differential pressure measurement
- Venting of hydraulics with SMA3 (see catalogue 4100)

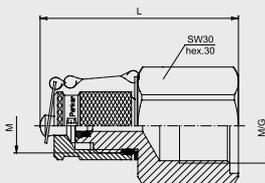
Parker Diagnostic quick couplings



Pressure Sensors:	PN	M/G	S1	L	Order code
SCP-xxx-72-08 SCP-xxx-72-02 SCPT-xxx-02-02	400	G1/2 BSPP	30	64	SCA-1/2-PQC

please pay attention to pressure range

Sensor connections for hose



Pressure Sensors:	PN	M/G	M	L	S1	Order code
SCP-xxx-72-08 SCP-xxx-72-02 SCPT-xxx-02-02	630	G1/2 BSPP	M16x2	58	24	SCA-1/2 EMA-3-S
ServiceJunior	630	G1/4 BSPP	M16x2	54	30	SCA-1/4 EMA-3-S

- SMA-3 diagnostic hose (see catalogue 4100)

5 Temperature Measurement

- High pressure-proof temperature sensor
- Measurement of oil temperatures up to 125 °C
- Flexible operation screw-in or manual sensor
- Screw-in sensor with fixed cable (2 mtr.) for Serviceman
- Screw-in sensor with socket for Serviceman and ServiceMaster



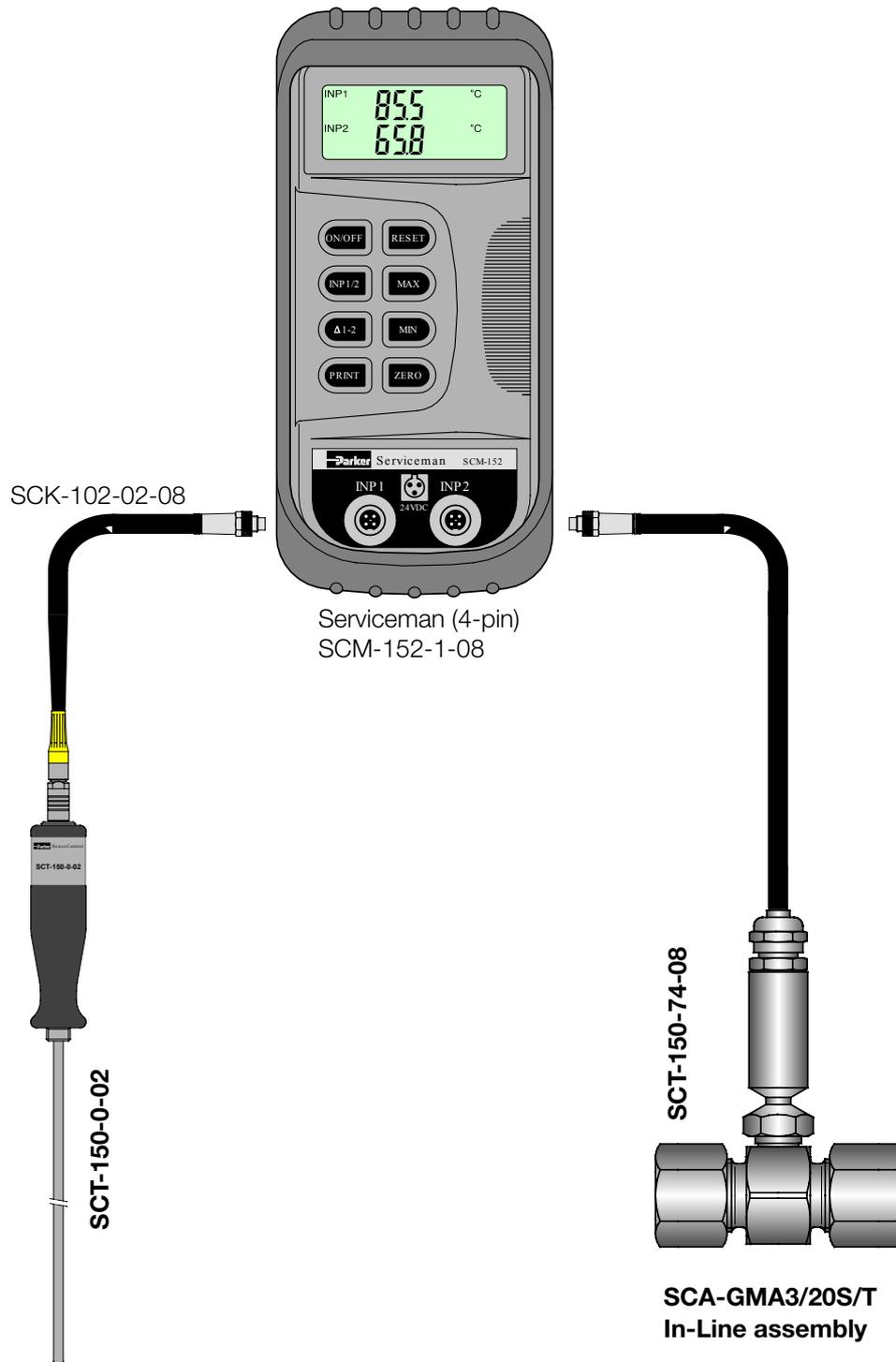
In hydraulics, temperature measurements serve to locate faults and avoid the kind of damage caused by excessive oil temperatures in critical parts such as pumps and proportional valves.

To get the exact temperature, the measurement is done directly in the tube or hose line.

The screw-in sensors SCT-150 are compatible with flow measurement turbines SCFT-xxx-01-02.

High temperature-proof thermocouple-sensors are used for the measurement of exhaust-gas temperatures up to 1,000 °C in diesel engines.

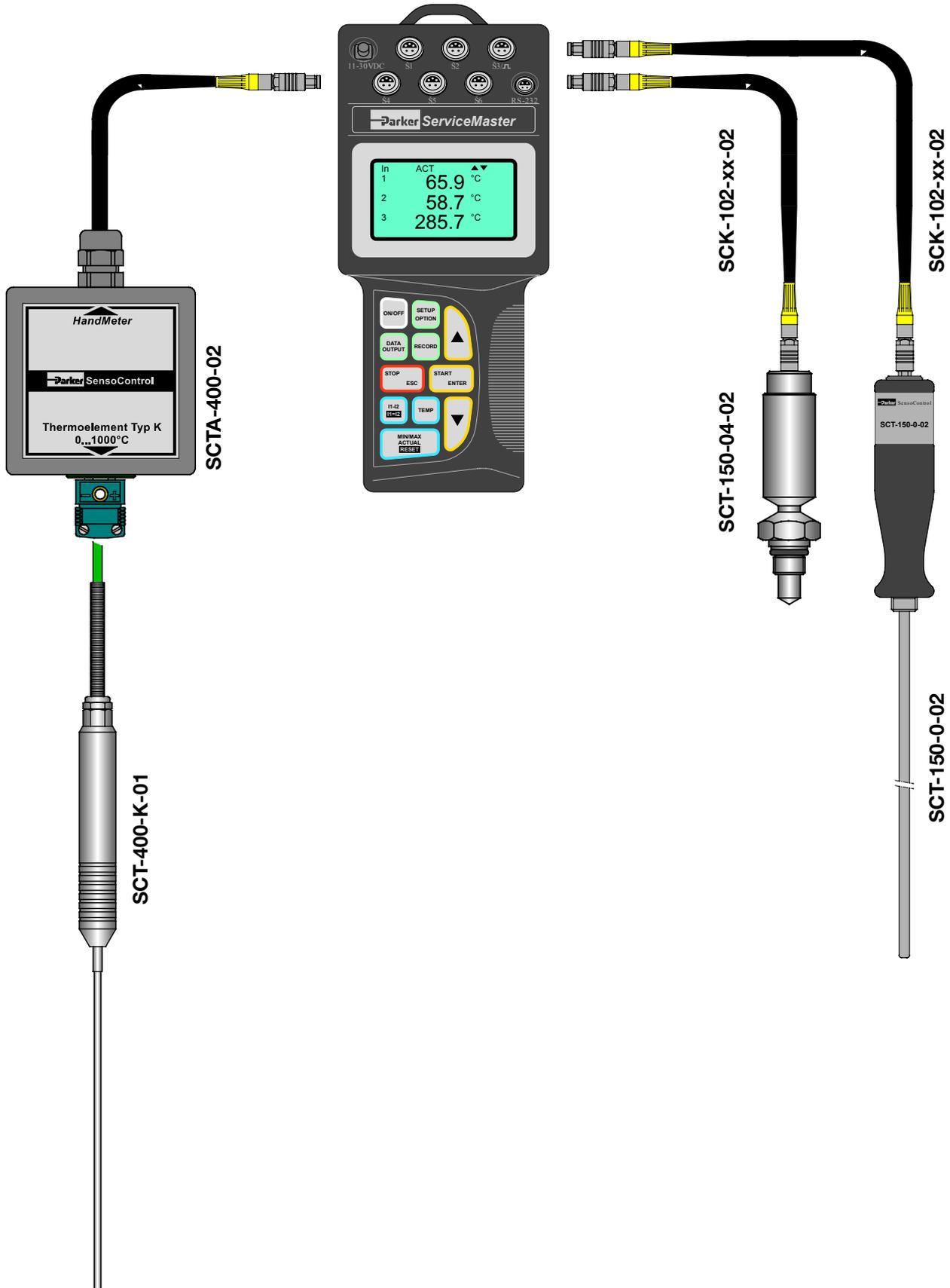
The converter SCTA-400 is compatible with all thermocouple-sensors of the model K.

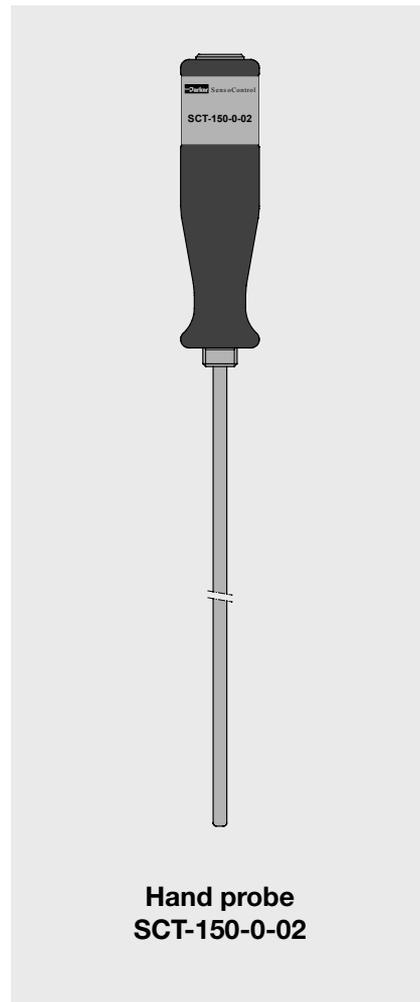
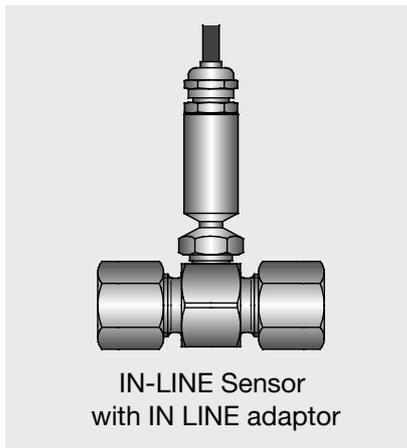
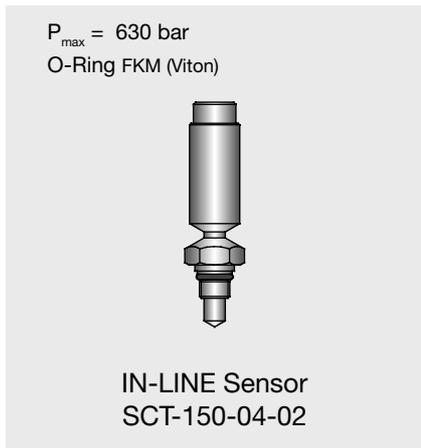


Temperature Measurement with the SCT-150 (-25°C . . +125°C)

Oil temperatures in tanks and containers are measured with the help of hand probe SCT-150-0-02

The temperature sensor SCT-150-74-08 can be adapted to the hydraulic system up to a system pressure of 630 bar. The male stud is compatible with the test points of the GMA3/20 series and with flow turbine SCFT-xxx (see catalogue 4051).





SCT IN-LINE Sensor M10x1	Order code
SCT-150 with fixed cable (2 mtr): Serviceman (4-pin)	SCT-150-74-08
Connection cable for Serviceman (4-pin)	SCT-108-03-158
SCT-150 with female connector (5-pin)	SCT-150-04-02
IN-LINE adaptor with M10 port	SCA-GMA3/20S/T
SCT-150 IN-LINE Adaptor Tube assembly (5-pin)	SCT-150-0-02

Connection cables	Order code
Serviceman (4-pin)	SCK-102-02-08
Serviceman (5-pin)/ ServiceMaster (5-pin) xx = 2 mtr./ 3 mtr./ 5 mtr./ 8 mtr.	SCK-102-xx-02
Extension 3 mtr.	SCK-102-03-12
Extension 6 mtr.	SCK-102-06-12

	SCT-150-04-02 SCT-150-74-08	SCT-150-0-02	SCT-400-K-01	SCTA-400-02
Measuring range (°C)	-25. . +125	-25. . +125	0. .1.000	0. .1.000
Accuracy	± 1,5°C	± 1,5°C	± 1,5°C	± 1,0%FS
Response time T0,9 (sec.)	13,5	9.1		
Storage temperature (°C)	-25. . +80	-25. . +80	-20. .+80	-25. .+60
Ambient temperature (°C)	-25. . +70	-25. . +70	-20. .+150	-20. .+150
Housing	steel C15K galvanized	probe: stainless steel 1.4304 grip: Delrin	stainless steel	ABS
Media	oil, air	oil, air, water	oil, air, water	—

FS = Full Scale Range

6. Determination of Flow Volume

Depending on the measurement job to be done, various measuring instruments are available to the hydraulic technician:

1 Flow meter type SCQ

- Flow measurement with direction indication
- Very fast reaction time <2msec.
- Wide viscosity range
- Screw-in cartridge in connector block SCAQ

2 Turbine flow meter type SCFT

- Very low flow resistance
- Built-in measurement points for pressure and temperature
- Very simple installation into a hydraulic system
- 5 different measuring ranges up to 600 l./min.
- Recording of a p/Q characteristic curve with a load valve to determine hydraulic performance

3 Gear flow meter type SCVF

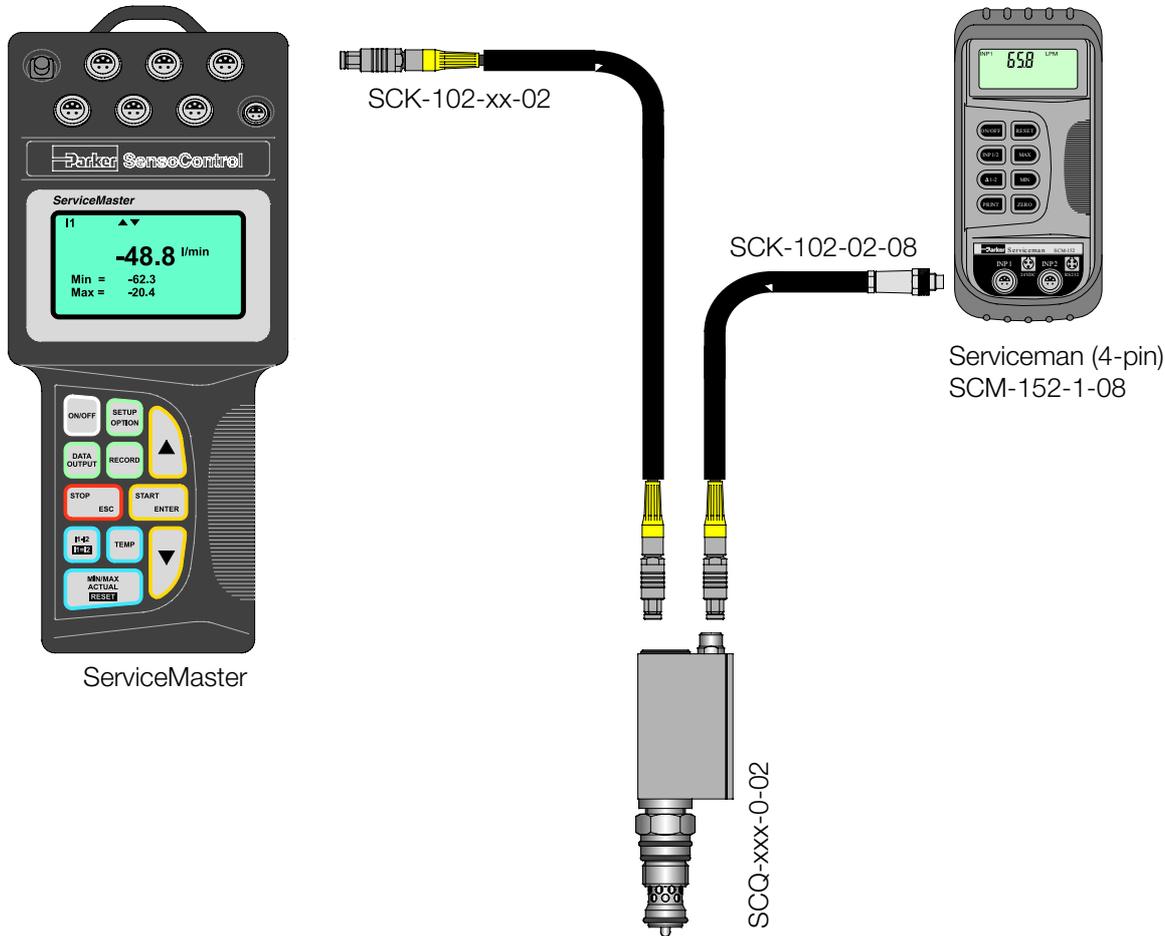
- High precision flow measurement over a wide range of viscosity
- 6 measuring ranges up to 300 l./min.
- flexible use with various fluids



In addition to pressure measurement, the precise determination of flow volume in hydraulic equipment gives important evidence of the condition of the hydraulics. The efficiency of hydraulic drives such as hydrostatic units or variable pumps depends on the amount of flow. Hydraulic performance is determined by pressure and flow. The degree of wear in a hydraulic drive can be ascertained by comparing nominal and actual values. The resulting measurements can be used, for example, in preventive maintenance for systematic servicing and cost reductions. In mobile hydraulics, the efficiency of the machine is continually checked and documented. The diagnosis of pressure and flow thereby gives a total analysis.

Determination of flow volume with Serviceman/ ServiceMaster
 (automatic scaling with sensor recognition; direction indication with ServiceMaster only)

For more technical details, please see Catalogue 4051 (Measurement technology for flow volume).



SCQ	Order code
0. . 60 l/min	SCQ-060-0-02
0. . 150 l/min	SCQ-150-0-02
(flow direction indication with ServiceMaster only)	

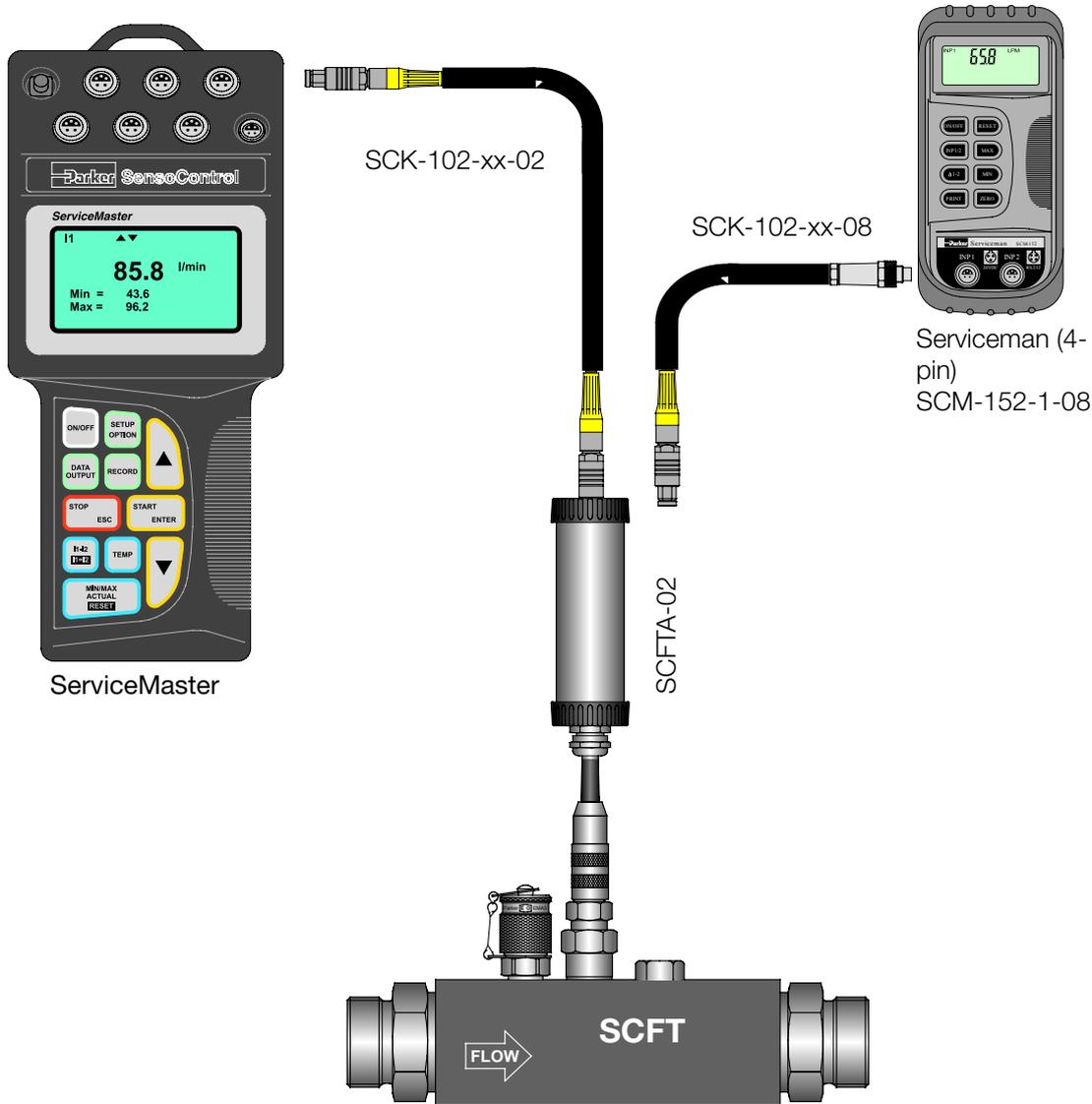
Accessories SCQ	Order code
Spacer ring (C-Ring SCQ-060)	SC-910
Seals SCQ-060	SC-911
Seals SCQ-150	SC-912

Connection Cables	Order code
Serviceman (4-pin)	SCK-102-02-08
Serviceman (5-pin)	SCK-102-xx-02
ServiceMaster	
xx = 2 mtr./ 3 mtr./ 5 mtr./ 8 mtr.	
Extension 3 mtr.	SCK-102-03-12
Extension 6 mtr.	SCK-102-06-12

Screw Plugs SCAQ-060	Order code
SCQ Connection	SCQ-M24x1.5
A-B Connection	SCQ-R1/2-ED

Screw Plugs SCAQ-150	Order code
SCQ Connection	SCQ-M42x1.5
A-B Connection	SCQ-R3/4-ED

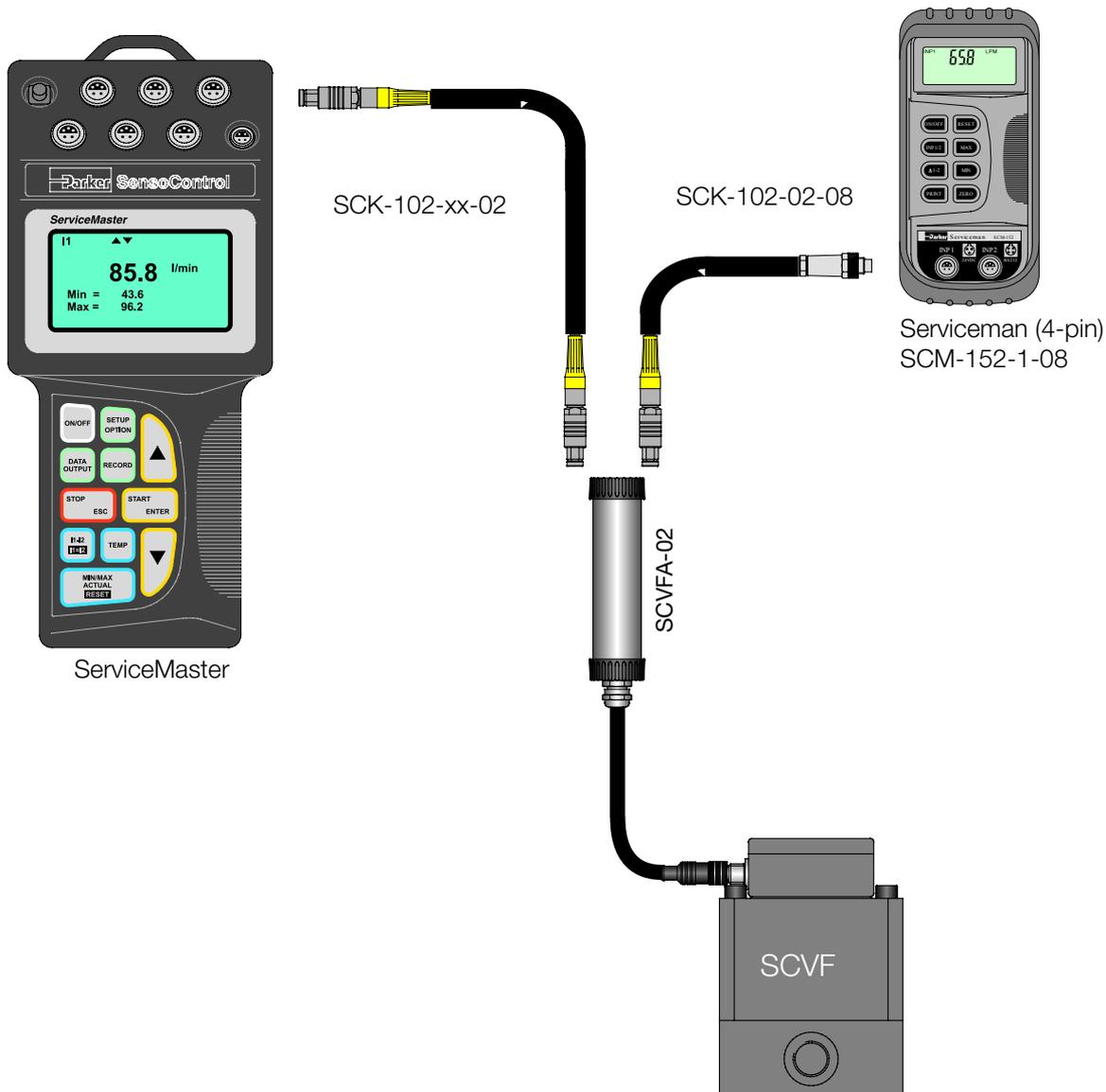
Flow-measuring turbine with hand measuring instrument (automatic scaling with sensor recognition)
 For more technical details, please see Catalogue 4051 (Measurement technology for flow volume in hydraulics).



SCFT Flow-Turbine with Signal Converter SCFTA-02	
Range (l/min):	1,0 ... 015/ 7,5 ... 060/ 7,5 . . 150/ 15 ... 300/ 25 ... 600
for Serviceman/ ServiceMaster	SCFT-xxx-01-02
Connection Cables	Order code
Serviceman (4-pin)	SCK-102-02-08
Serviceman (5-pin)/ ServiceMaster	SCK-102-xx-02
xx = 2 mtr./ 3 mtr./ 5 mtr./ 8 mtr.	
Extension 3 mtr.	SCK-102-03-12
Extension 6 mtr.	SCK-102-06-12

SCFT Flow-Turbine with Frequency Output Signal	
Range (l/min):	1,0 ... 015/ 7,5 ... 060/ 7,5 . . 150/ 15 ... 300/ 25 ... 600
(without signal converter)	SCFT-xxx-01
Connection Cables	Order code
Connection cable 2mtr.	SCK-102-02-11
ServiceMaster (SCM-360; SCM-400; SCM-450)	

For more technical details, please see Catalogue 4051 (Measurement technology for flow volume in hydraulics).



SCVF Gear Flow Meter with Signal Converter SCVFA-02 and Connection Block	
Range (l/min):	0,1 ... 015/ 0,4 ... 060/ 0,4 . 150/ 1,0 ... 300
for Serviceman/ ServiceMaster	SCVF-xxx-00-02
Connection Cables	Order code
Serviceman (4-pin)	SCK-102-02-08
Serviceman (5-pin)/ ServiceMaster	SCK-102-xx-02
xx = 2 mtr./ 3 mtr./ 5 mtr./ 8 mtr.	
Extension 3 mtr.	SCK-102-03-12
Extension 6 mtr.	SCK-102-06-12

SCVF Gear Flow Meter with Frequency Output Signal and Connection Block	
Range (l/min):	0,0 ... 002/ 0,0 ... 004/ 0,16 . 015/ 0,6 ... 080/ 0,6 ... 150/ 0,6 300
(without signal converter)	SCVF-xxx
Connection Cables	Order code
Connection cable 2mtr. ServiceMaster (SCM-360; SCM-400; SCM-450)	SCK-102-02-07

7. Speed Measurement

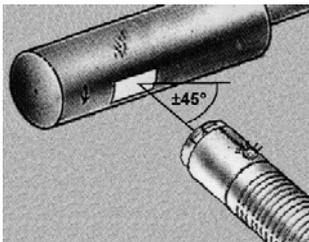
- Contact less measurement of rotational speed
- Measurement of rotational speed up to 10,000 rpm
- Tachometer with fixed cable (2 mtr.) for Serviceman or ServiceMaster



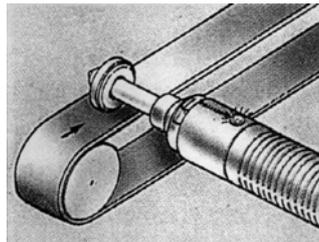
Rotational speed-dependent data, such as delivery from a variable pump, are determined ideally in combination with the pressure and flow-test of a hydraulic drive.

Contact-less measurement (opto-electronic principal) can be done quickly and easily.

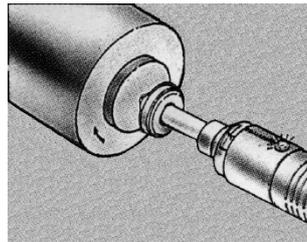
Rotational speed is detected, for example, at a main drive shaft (e. g. power take-off shaft of a tractor), and displayed on the hand-held device. Installation or adjustment is not necessary.



Rotating shaft - non-contact measurement of rotational speed.



Contact measurement of rotational speed with the contact adaptor



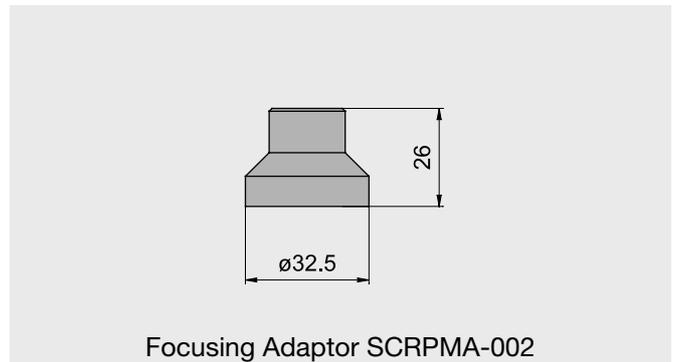
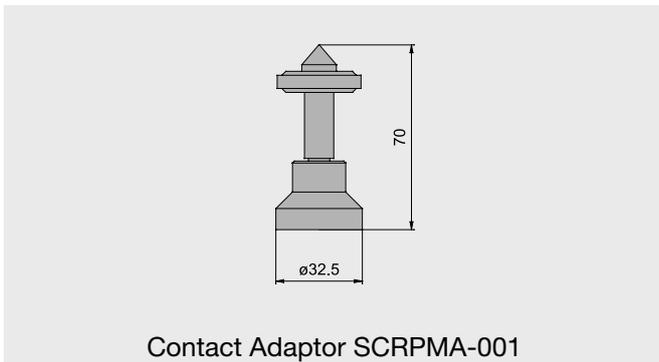
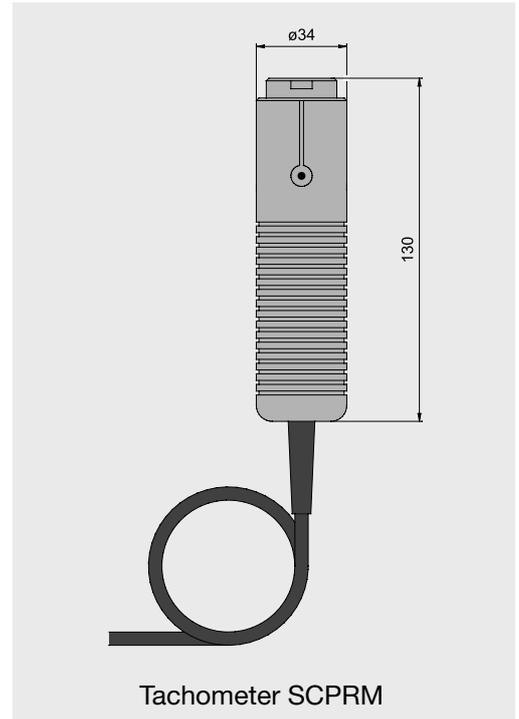
Front face measurement of rotational speed with contact adaptor.

For accurate acquisition of the opto-electronic signal, please use the supplied reflecting strips.

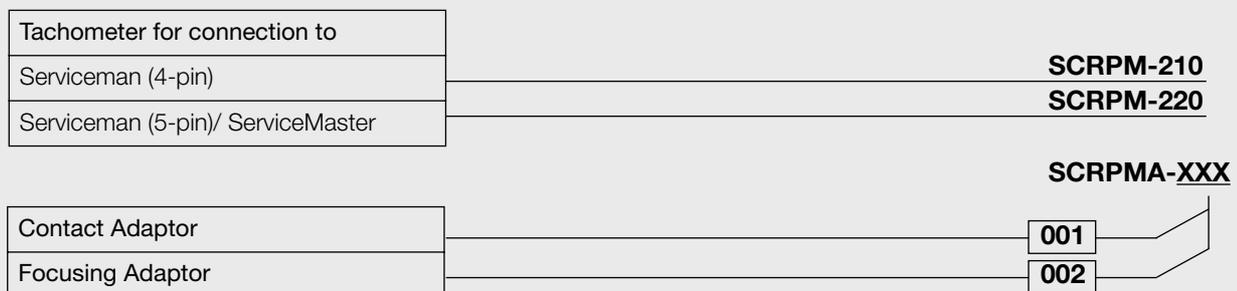
For a shaft or belt, the rotational speed is measured directly with the contact adaptor.

Technical Data	
Input	
Measuring distance	25...500 mm
Measuring angle	± 45°
Type of measuring	optical, red LED
Output	
Measuring range	20...10.000 RPM
Accuracy	< 0,5% FS
Resolution	± 5 RPM
Electrical connection	
Fixed cable 3 mtr.	5-pin push-pull/ 4-pin
Ambient temperature	0 . . 70 °C
General	
Material	ABS
Dimensions	∅ 34 mm/ L = 130 mm
Weight	230 g

FS = Full Scale Range



Order references



8 Calibration Services

Diagnostic Products with Calibration Certificate acc. to ISO 9001

New instruments can be supplied on request with a calibration certificate to ISO 9001.

Type	Order code
ServiceJunior	K-SCJN-xxx-01
Serviceman	K-SCM-150-1-01
ServiceMaster	K-SCM-xxx-1-01
Pressure Sensors	K-SCP-xxx-72-08
	K-SCP-xxx-72-02
	K-SCPT-xxx-02-02
Temperature Sensor	K-SCT-150-04-02
Flow Sensors	K-SCFT-xxx-01-02
	K-SCQ-xxx-0-02
	K-SCVF-xxx-00-02

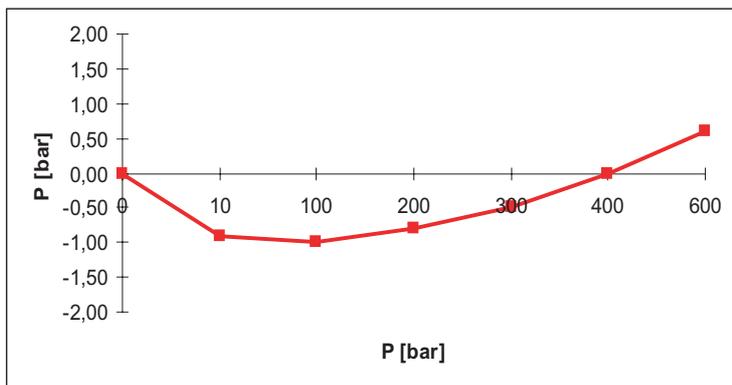
Certificate No. 3143

Description: Pressure Sensor
 Model: SCP-600-72-02
 S/N: B1253S

Operating Range: 0. . 600bar
 Accuracy: $\pm 0,5\%$ FS

Reference1: Budenberg S/N 15404
 Reference2: HP 3497A Data Logger

Cal. No. NO94 DKD-KO5801
 Cal. No. 8370831402



Nominal (bar)	Actual (bar)	Deviation (bar)
0	0	0,00
10	9,1	-0,90
100	99	-1,00
200	199,2	-0,80
300	299,5	-0,50
400	400	0,00
600	600,6	0,60
0	0,1	0,10



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Parker Hannifin is a leading global motion-control company dedicated to delivering premier customer service.

A Fortune 500 corporation listed on the New York Stock Exchange (PH), our components and systems comprise over 1,400 product lines that control motion in some 1,000 industrial and aerospace markets.

Parker is the only manufacturer to offer its customers a choice of hydraulic, pneumatic, and electromechanical motion-control solutions. Our Company has the largest distribution network in its field, with over 7,500 distributors serving nearly 400,000 customers worldwide.

Parker's Charter

To be a leading worldwide manufacturer of components and systems for the builders and users of durable goods.

More specifically, we will design, market and manufacture products controlling motion, flow and pressure. We will achieve profitable growth through premier customer service.

Product Information

Customers seeking product information, the location of a nearby distributor, or repair services will receive prompt attention by calling the Parker Product Information Centre.

The Centre can be called toll free from France, Germany, Austria, Switzerland or the United Kingdom. You will be answered by a Parker employee in your own language. Call Freephone: 00800-2727-5374 (00800 C PARKER H).

The Aerospace Group

is a leader in the development, design, manufacture and servicing of control systems and components for aerospace and related high-technology markets, while achieving growth through premier customer service.



The Climate & Industrial Controls Group

designs, manufactures and markets system-control and fluid-handling components and systems to refrigeration, air-conditioning and industrial customers worldwide.



The FluidConnectors Group

designs, manufactures and markets rigid and flexible connectors, and associated products used in pneumatic and fluid systems.



The Seal Group

designs, manufactures and distributes industrial and commercial sealing devices and related products by providing superior quality and total customer satisfaction.



The Hydraulics Group

designs, produces and markets a full spectrum of hydraulic components and systems to builders and users of industrial and mobile machinery and equipment.



The Filtration Group

designs, manufactures and markets quality filtration and clarification products, providing customers with the best value, quality, technical support, and global availability.



The Automation Group

is a leading supplier of pneumatic and electromechanical components and systems to automation customers worldwide.



The Instrumentation Group

is a global leader in the design, manufacture and distribution of high-quality critical flow components for worldwide process instrumentation, ultra-high-purity, medical and analytical applications.

