

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 < 2 ms
- 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
- 6 different measuring ranges up to 750 l/min.
- Recording of a p/Q characteristic curve with a load valve to determine hydraulic performance

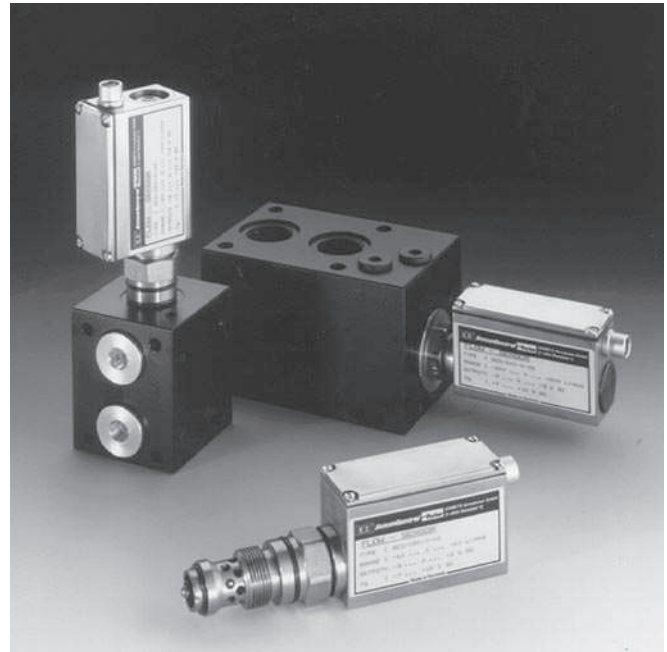
3 Gear flow meter type SCVF

- High precision flow measurement over a wide range of viscosity
- 4 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.

- **Measurement principle:**
spring/piston system
- **Flow measurement with**
direction indication
- **Response time < 2 ms**
- **Compact design**
- **Withstands pressures up to 420 bar**
- **Wide range of viscosity**
- **p/T/Q measurement possible**
with connection block



Flow measurement with direction indication for mobile and stationary measurement jobs

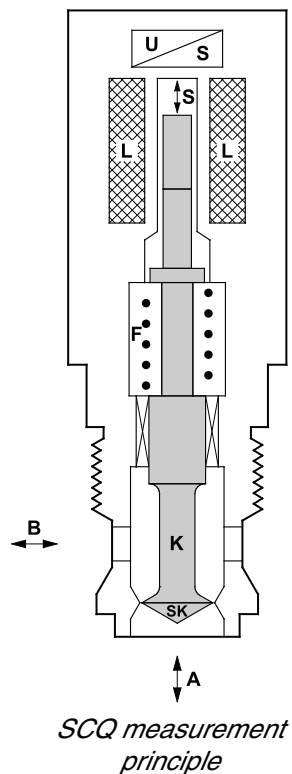
Function

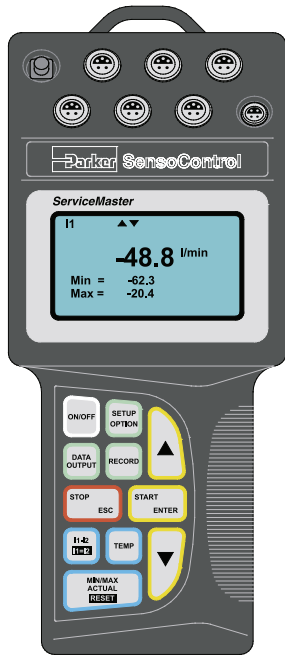
When there is a flow from A to B or B to A, the piston (K) is moved. When at rest, the spring (F) and piston (K) are in equilibrium. The stroke change (S) is proportional to the flow volume and is converted by the built-in electronics to a measured value. By the change in direction of the piston (B to A) flow directions can be shown (e.g. -45.8 l/min.). The response time of the piston movement is less than 0.002 s.

Application

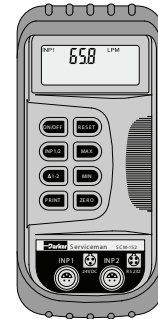
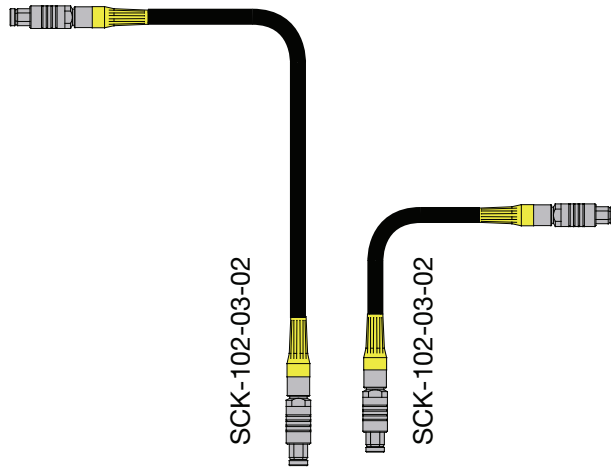
In the field of high pressure hydraulics, the rapid capture of the amount of flow is of great significance. The reaction times of the SCQ's enable the dynamic behaviour of hydraulic systems to be measured. The indication of direction is helpful when searching for faults in hydraulic systems. Rapid load changes, which can cause damage for example in valves and pumps, can be determined. Installation with a connection block permits the combined measurement of p, T and Q. Rapid assembly of the SCQ's is achieved with an in-line adaptor for tube or hose installation.

Robust design makes possible extreme condition applications, such as, for example, high load changes or rates of pressure increase.

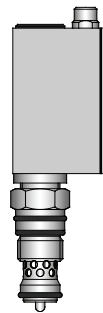




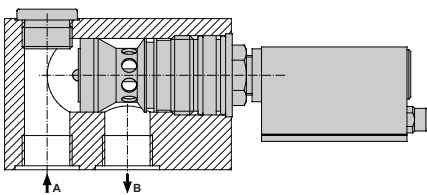
Service Master



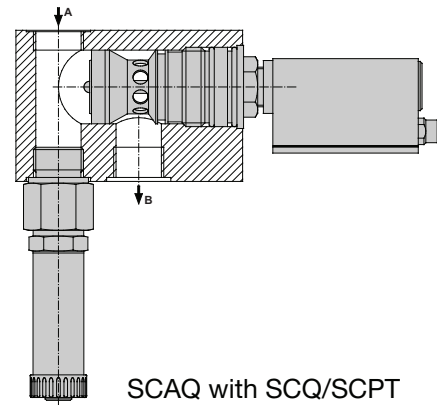
Serviceman
SCM-152-x-02



SCQ-xxx-0-02



SCAQ with SCQ



SCAQ with SCQ/SCPT

SCQ	#
0...60 l/min	SCQ-060-0-02
0...150 l/min	SCQ-150-0-02
(flow direction indication with Service Master only)	

Connection Cables	#
Serviceman (4 pin) 2 m	SCK-102-02-08
Serviceman/Service Master (5 pin) 3 m	SCK-102-03-02
Extension 5 m	SCK-102-05-12

#	SCQ-060	SCQ-150
Flow Range QN (l/min)	-60...+60	-150...+150
Accuracy (\pm %) FS @ 46cSt.	2,0	2,0
Operating Pressure PN (bar)	315	315
Ports	M24 (NG10)	M42 (NG16)
Pressure Drop P_{max} (bar) @ (FS)	Graphs	
Weight (g)	670	1050

FS = FullScale

Response Time (ms)	2
Q_{max} (l/min)	QN x 1,1
Overload Pressure P_{max} (bar)	420
Housing	Steel
Sealing	NBR
Parts in Contact with Media	Steel, NBR

Ambient Temperature (°C)	+10...+60
Storage Temperature (°C)	-20...+80
T_{max} Fluid (°C)	+80
Filtration (μ m)	25
Viscosity Range (cSt.)	15...100

#	SCAQ-GI-R-1/2	SCAQ-060	SCAQ-150
Ports (SCQ)	M24 (NG10)	M24 (NG10)	M42 (NG16)
Ports (A - B)	1/2" BSPP	1/2" BSPP	3/4" BSPP

