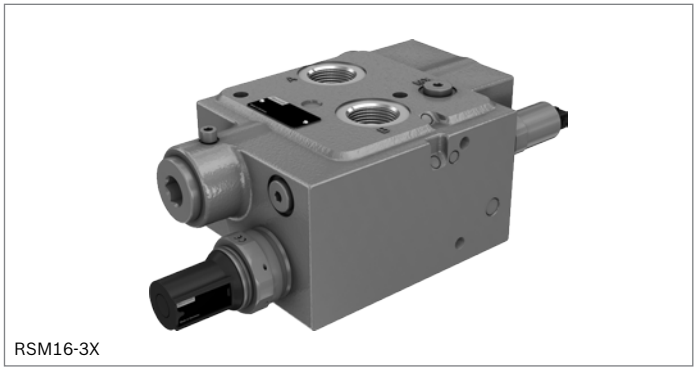
Stabilizing module
RSM16

RE 64627
Edition: 03.2015
Replaces: RE 64617



RSM16-3X

- Size 16
- Series 3X
- Max. working pressure
  - Consumer ports **A**, **B** 420 bar
  - Accumulator port **X2** 350 bar
- Maximum flow 150 l/min

Features

The RSM stabilizing module reduces pitching movements on wheeled vehicles that effect the drivers and machine. For this the lifting line is connected, via an on/off valve, to a hydro-pneumatic accumulator that absorbs the loads caused by the pitching movements.

Benefits

- Higher transport speeds
- Higher handling rates
- Stable steering characteristics
- Shorter braking distances
- Higher comfort for the driver
- Lower mechanical loading of the entire machine
- Fewer repairs or standstill periods with identical handling rates

Fields of application

- Wheeled loaders
- Telehandlers

Contents

Functional description

The stabilizing module basically comprises of a housing (**1**) into which are built:

- Control spool (**2**)
- Accumulator pressure balance spool (**3**) (optional)
- 3/2-way directional valve, solenoid operated (**4**)
- Emergency drain screw (**5**)
- Pressure relief valve (EC type-examination tested) (**6**)

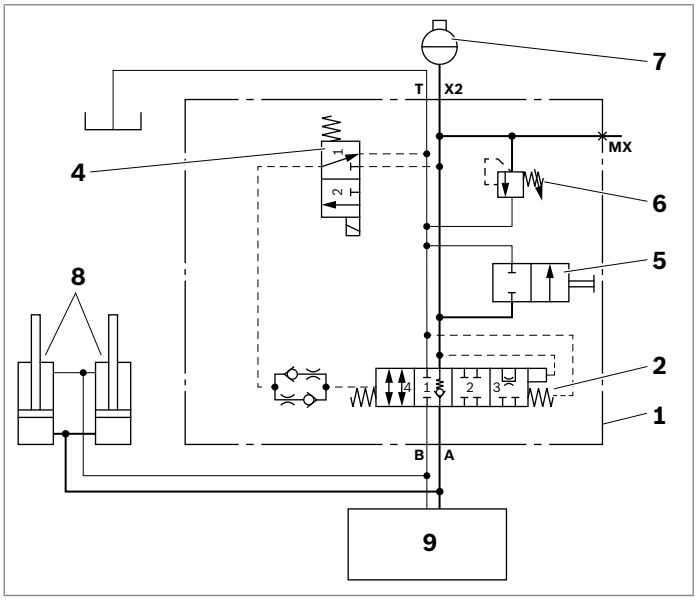
If the stroke cylinder (**8**) has pressure applied to the piston side, then the pressure is also applied to the check valve in the control spool (**2**) and the accumulator (**7**).
Dependent on the design (see type code)

- B090 → from 90 bar,
- B120 → from 120 bar or
- B160 → from 160 bar

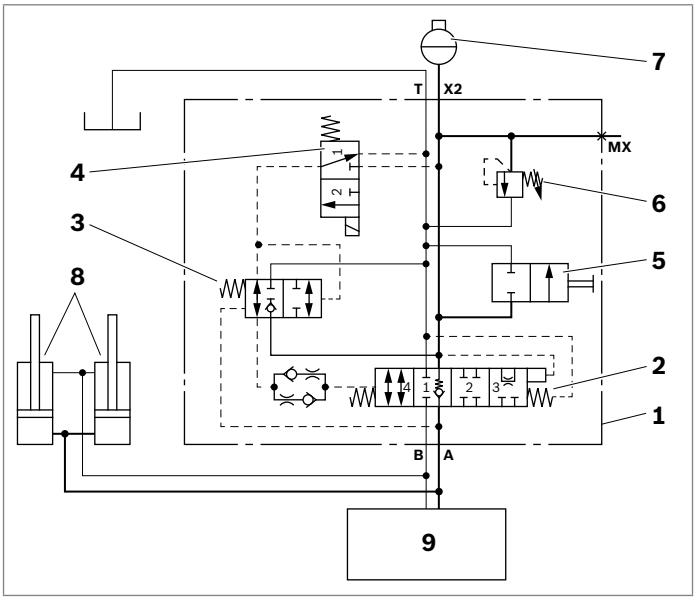
the connection from the stroke cylinder (**8**) to the accumulator (**7**) via the control spool (**2**) is interrupted (switching position 2).

A pressure limiting function for the accumulator (**7**) is integrated in the control spool (**2**) (switching position 3). The cracking pressure lies approx. 30 bar higher than the cut-off pressure (switching position 2).
The damping valve can be automatically activated via the travel speed. The 3/2-way directional valve (**4**) is switched into the switching position 2. In the version with accumulator pressure balance function (version **E**) the accumulator pressure in the stroke cylinder is balanced via the accumulator pressure balance spool (**3**). The control spool (**2**) is switched to the switching position 4 and connects the piston side of the stroke cylinder (**8**) with the accumulator (**7**) as well as the rod side of the stroke cylinder (**8**) with the reservoir.
The pressure relief valve (**6**) prevents impermissible high pressures in the accumulator
(cracking pressure < permissible accumulator pressure).

▼ **Schematic RSM16, without accumulator pressure balance function**



▼ **Schematic RSM16, with accumulator pressure balance function**



1 Housing
2 Control spool
3 Accumulator pressure balance spool
4 3/2-way directional valve, solenoid operated
5 Emergency drain screw
6 Pressure relief valve
7 Accumulator
8 Stroke cylinder
9 Control block

Technical data

General				
Weight			kg	19.5
Installation position				see type code on page 4
Consumer connection type				Pipe thread in accordance with ISO 228/1
Ambient temperature range		θ	°C	–20 to +80
Priming (standard)				One-coat paint RAL 5010

Hydraulic				
Maximum working pressure at port	A, B	p_{max}	bar	420
	X2	p_{max}	bar	350
	T	p_{max}	bar	30
Maximum flow at port	A, X2	q_{Vmax}	l/min	150
Hydraulic fluid				Mineral oil (HL, HLP) according to DIN 51524, other hydraulic fluids, e.g. HEES (Synthetic ester) according to VDMA 24568 and hydraulic fluids as specified in data sheet 90221, on request
Hydraulic fluid temperature range		θ	°C	-20 to +80
Viscosity range		ν	mm²/s	10 to 380
Maximum admissible degree of contamination of the hydraulic fluid, cleanliness level according to ISO 4406 (c)				Class 20/18/15, we recommend a filter with a minimum retention rate of $\beta_{10} \geq 75$

Electric				
Control voltage			V	12; 24
Power consumption (solenoid)			W	14.4

Note
Please contact us if the unit is to be used outside the specified range of values.

Type code

01	02	03	04		05	06	07	08	09	10	11	12	13
RSM	**16**	**B**	**3X**	**/**							**V**	**01**	*****

Series

01	Stabilizing module	**RSM**

Size

02	Size 16	**16**

Design

03	Block installation	**B**

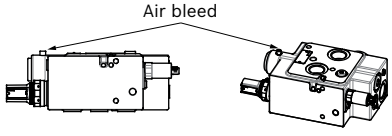
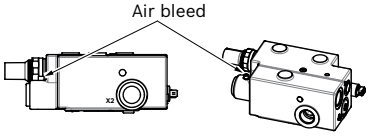
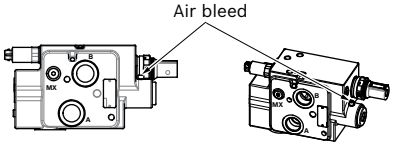
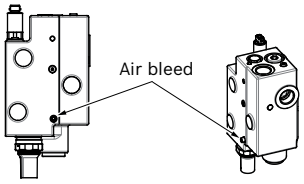
Series

04	30 to 39 (unchanged installation and connection dimensions)	**3X**

Accumulator pressure balance function

05	Without accumulator pressure balance spool	**Z**
	With accumulator pressure balance spool	**E**

Installation position (the position of the air bleed screw varies depending on the installation position)

06	Standard 	**1**		**3**
		**2**		**4**

Accumulator pressure limitation

07	Without		**A000**
	Pressure relief valve with EC type-examination test	210 bar	**A210**
		250 bar	**A250**
		280 bar	**A280**
		315 bar	**A315**

Pressure limitation

08	90 bar	**B090**
	120 bar	**B120**
	160 bar	**B160**

Supply voltage

09	12 V DC	**G12**
	24 V DC	**G24**

Electric port

10	Connector, 2-pin, Junior Timer	**C4**
	Connector, 2-pin, Junior Timer and Diode P6KE30CA (12 V)	**K41L**
	Connector, 2-pin, Junior Timer and Diode P6KE30CA (24 V)	**K42L**

Sealing material

11	FKM (fluoroelastomer)	**V**

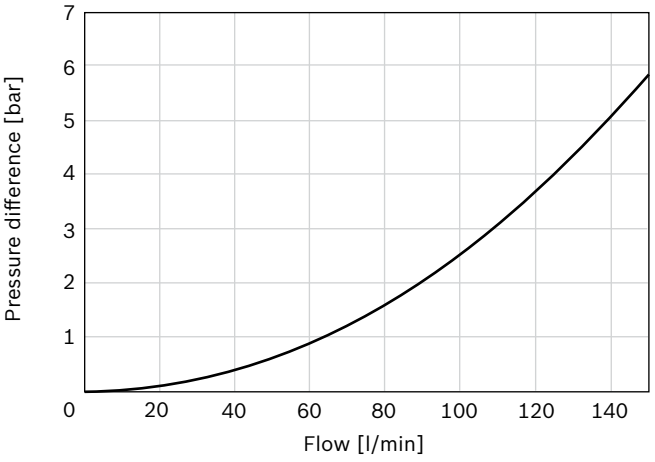
Consumer ports

12	Pipe thread in accordance with ISO 228/1	**01**

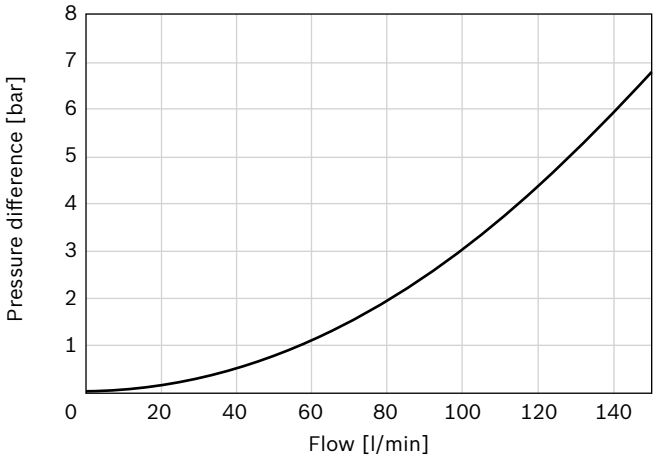
13	Further specifications in plain text	*

Characteristic curves

▼ **Flow direction A → X2**



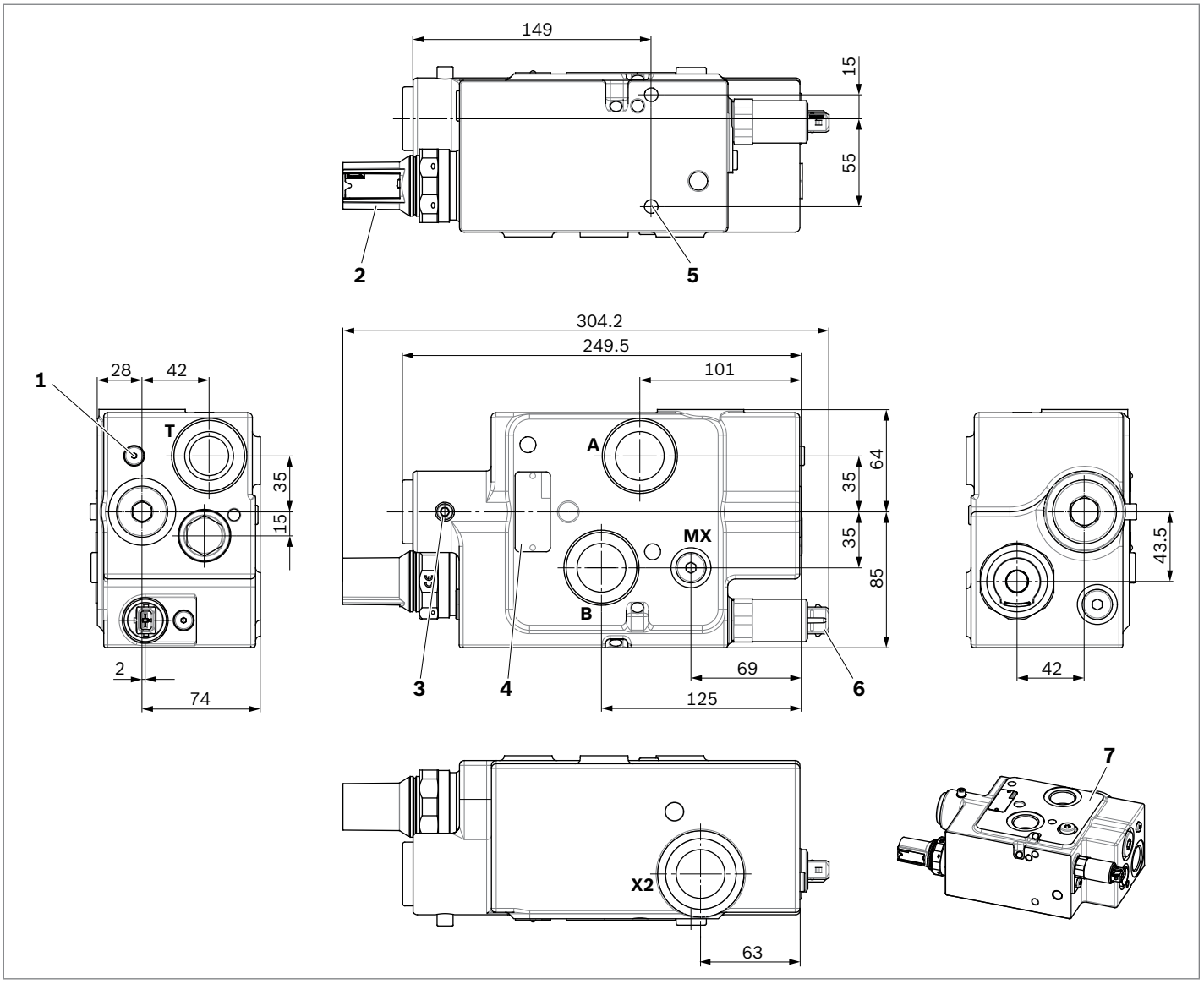
▼ **Flow direction B → T**



Note
Characteristic curves measured with HLP68, at θ = 40±5 °C).

Dimensions

▼ **RSM16, Standard version**



1 Emergency drain screw
2 Pressure relief valve
3 Air bleed screw, tightening torque $M_A = 5^{\pm 0.5}$ Nm.
the position of the air bleed screw varies depending on the installation position (see information regarding installation on page 7).
4 Name plate
5 Two fastening threads M10, 22 deep
6 Electrical connection, 2-pin connector, Junior Timer (AMP)
7 Installation position (air bleed screw upwards)

Ports		Size
A, B	Consumer	G 1
T	Reservoir	
X2	Accumulator	
MX	Measuring port	G 1/4

Parking the vehicle, maintenance and service work

Via the emergency drain screw (**1**) (shown in the schematic as a mechanically operated 2/2-way directional valve) it is possible to unload the accumulator so that the above mentioned work can be carried out.

Note
The safety technical requirements of the machine have to be taken into account! The lifting system must firstly be secured against lowering.

Legal requirements and safety instructions

Pressure accumulators are required for the RSM stabilizing module. If, due to the operation situation of the machine, the danger exists that the accumulator‘s permissible pressure limit can be exceeded, then a pressure relief valve is to be fitted. For this system regularity requirements and those from the authorities have to be complied with.
The RSM is fitted with a type-examination tested pressure relief valve which complies with the pressure component directive 97/23/EC.

If a RSM is ordered without a pressure relief valve (example: RSM216B2X/A000...), Bosch Rexroth assumes that the appropriate pressure limitation has been foreseen by the machine manufacturer or that accumulator pressure overloads are prevented in a different manner within the machine‘s design.
In addition other national and international regulations may apply for the machine.
The entire responsibility lies with the machine manufacturer.

Notes regarding installation

- The number of accumulators is dependent on the stroke cylinder size. Accumulators are not included in the scope of delivery and must be ordered separately.
- The pressure limitation setting (safety valve for the pressure vessel) must be lower than the permissible accumulator pressure.
- Vent the RSM before commissioning.
  The position of the air bleed screw varies depending on the installation position.

Note
Before carrying out any maintenance work the accumulators must be unloaded (depressurized).
For this, unscrew the emergency drain screw then rotate the valve spindle located below the screw (SW 3), two turns anti-clockwise. The lifting system must first be secured against lowering.