

Mobile Technology Hoist Stabilization Unit HSE-10...

1. DESCRIPTION

1.1. APPLICATIONS

- Yard loaders
- Wheel loaders
- Material handling machines

1.2. GENERAL

HSE10 represents a hoist suspension for utilization on a wheel loader or similar vehicles.

The hoist stabilization unit HSE10 reduces pitching vibrations on vehicles.

Switching valves are used to connect the load-bearing line with one or more hydropneumatic accumulators.

The accumulator(s) has/have the effect of a hydropneumatic suspension and thus decouple the vibrations of the load from the rest of the vehicle and thus also from the driver.

The simulation of the accumulator should take place together with HYDAC so that an optimum overall system can be achieved.

1.2. ADVANTAGES

- Greater transport and travel speeds
- Greater handling capacity
- More stable steering behaviour
- Shorter braking distances
- Improved comfort
- Lower mechanical loads
- Shorter downtimes
- Compliance with occupational safety directives
- Accumulator pressure always at load level, even with load handling via tilting cylinder
- Hoist does not move when the suspension is connected



2. TECHNICAL SPECIFICATIONS

2.1. GENERAL DATA

Installation position	No orientation restrictions
Ambient temperature range	-20 °C to +60 °C
Weight	approx. 6.2 kg

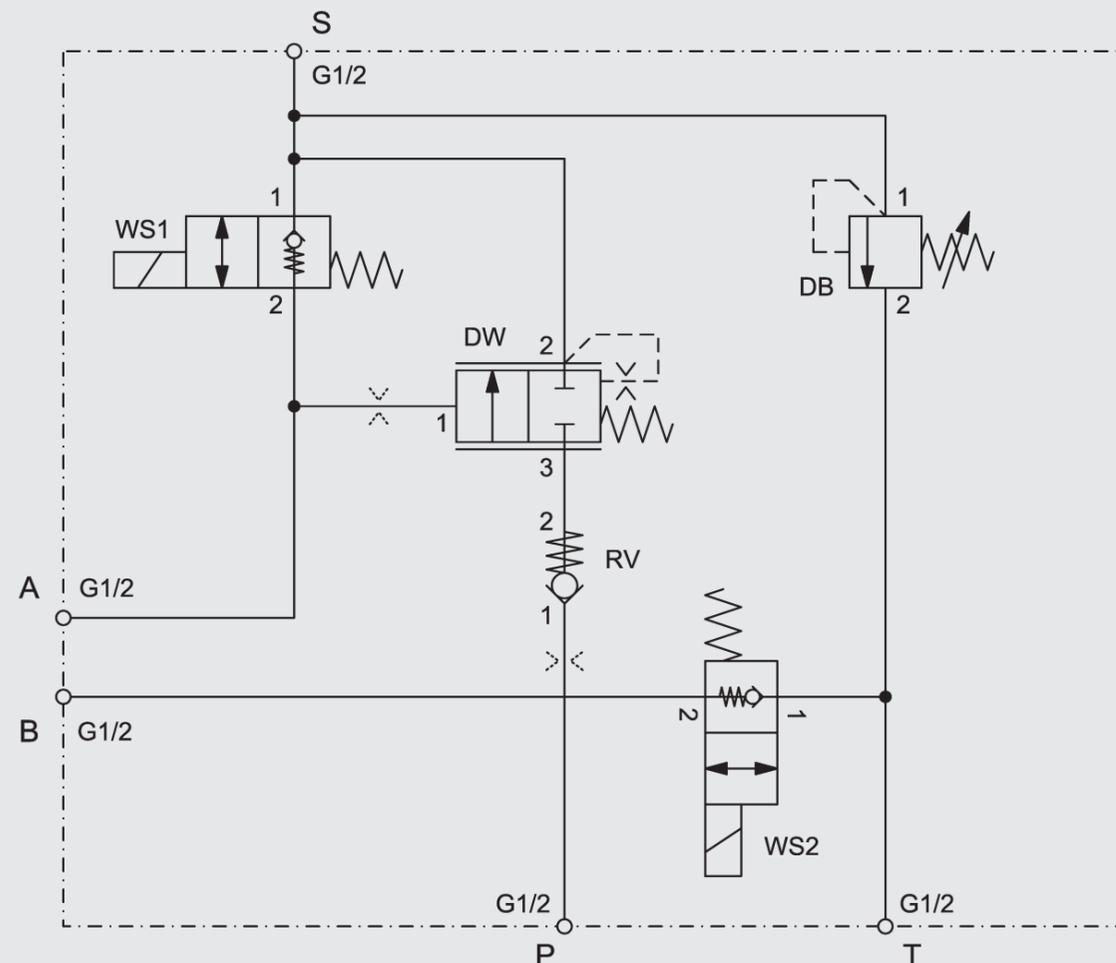
2.2 HYDRAULIC SPECIFICATIONS

Operating pressure	Connection A, B,P	max. 250 bar
	Connection Sp	max. 250 bar
	port T	max. 30 bar
Volume flow, all connections	80 L/min at 10 bar (see curve point 4.)	
Operating fluid	Mineral oil (HL, HLP) per DIN 51524; other liquids upon request!	
Temperature range of operating fluid	-20 °C to +80 °C	
Viscosity range	10 to 380 mm ² /s	
Degree of contamination (max. permissible)	ISO 4406 (c) class 20/18/15	

2.3 ELECTRICAL SPECIFICATIONS

Control voltage (DC voltage)	12 V or 24 V
Power consumption (magnet)	18 W

CIRCUIT DIAGRAM



2.4. FUNCTION

2.4.1 Design

The HSE essentially consists of:

- 2x 2/2-way seat valve (WS1 / WS2), solenoid actuated
- Pressure compensator (DW) pressure relief valve (DB)
- Check valve (RV)

2.4.2 Function

Port A -> Lifting cylinder piston side

Port B -> Lifting cylinder ring side

Port P -> Direction control valve block pump input (pump pressure)

Port T -> Tank (free return!)

The task of the HSE (hoist stabilization unit) is to block and release the connections from the piston side of the lifting cylinder to the suspension accumulator (A to S) and the connection of the rod side of the lifting cylinder to the tank (B to T). In the blocked state, the pressure in the suspension accumulator is adapted to the operating pressure in the lifting cylinder.

In the de-energized state, the connection from A to S and from B to T are closed. The valve WS1 has a recoil function the connection direction S to A. Therefore, the accumulator pressure cannot be greater than the pressure in the piston chamber of the lifting cylinder. If the pressure in the lifting cylinder is reduced by load reduction, the accumulator pressure is also relieved when the lifting cylinder moves.

The pressure compensator DW compares the pressure in the lifting cylinder to the accumulator pressure. If the pressure in the lifting cylinder is greater than the accumulator pressure plus spring pressure of the pressure compensator (10 bar), the pressure compensator opens the connection P to S. When the working pump is activated, the accumulator is charged from port P via DW. If the accumulator is filled to the pressure of the lifting cylinder minus spring pressure (10 bar), DW closes the connection from P to S. The accumulator charging process is completed. Thus, the accumulator is always charged close to the load pressure of the lifting cylinder when the stabilization unit is activated/engaged, even if the load was not absorbed by the lifting cylinders but instead by the tilting cylinders.

To activate the suspension, the two valves WS1 and WS2 are activated. Then, the piston side of the hoist cylinder is connected with the accumulator and the rod side of the hoist cylinder with the tank.

The pressure limiting valve DB protects the accumulator from unacceptably high pressure.

The pressure setting of this valve must be less than the permissible working pressure of the accumulator while adhering to the permissible load ratio of the accumulator design (see 2.4.3).

2.4.3 Installation

The total storage volume is oriented toward the geometric sizes of the hoist cylinder, its connection and toward the desired curve of the suspension. HYDAC technical personnel provide advice on dimensioning based on standard HYDAC accumulators (diaphragm or piston accumulators).

2.4.4 Shutting down the machine for maintenance work



Attention:

Observe safety technology requirements of the vehicle!

The lifting device must be secured against dropping at the beginning of the maintenance work!

2.4.5 Statutory requirements and

Safety instructions

Pressure accumulators are needed for the HSE. If from machine operating situations there is a danger of exceeding the permissible pressure limit of the connected accumulator, it is absolutely mandatory that a pressure relief valve be installed. For this equipment, there may be a requirement to comply with statutory or official regulations.

The HSE is equipped with a pressure limiting valve and if damaged may only be replaced with an identical valve!

Additional national and international regulations may be applicable for the vehicle.

This is fully the responsibility of the vehicle manufacturer!



Caution:

Never carry out welding operations on or in the direct vicinity of this block!

This also applies for all valves and accumulators!

3. MODEL CODE

(also order example)

HSE - 10 - 250 - 24 - DT - N 00 - 0

HSE generation

Nominal size
10 = NG10

Accumulator pressure limit
Example 1: 090 = 90 bar Example 2: 330 = 330 bar

Supply voltage
12 = 12 V direct current
24 = 24 V direct current

electrical connection
DG = to EN 175301
DT = Junior Timer; 2-pin; radial
DU = Junior Timer; 2-pin; axial
DN = German plug

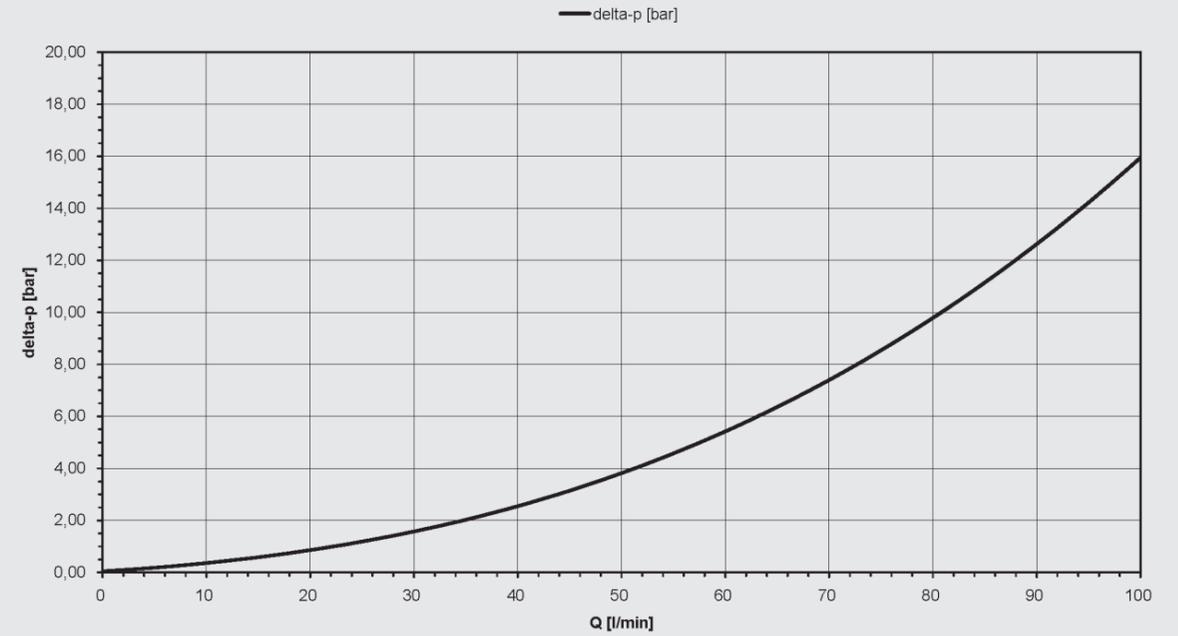
Sealing compound
N = NBR
0 = additional data in plain text

Variant
00 = G1" - pipe thread per ISO 3852-2
(standard version)

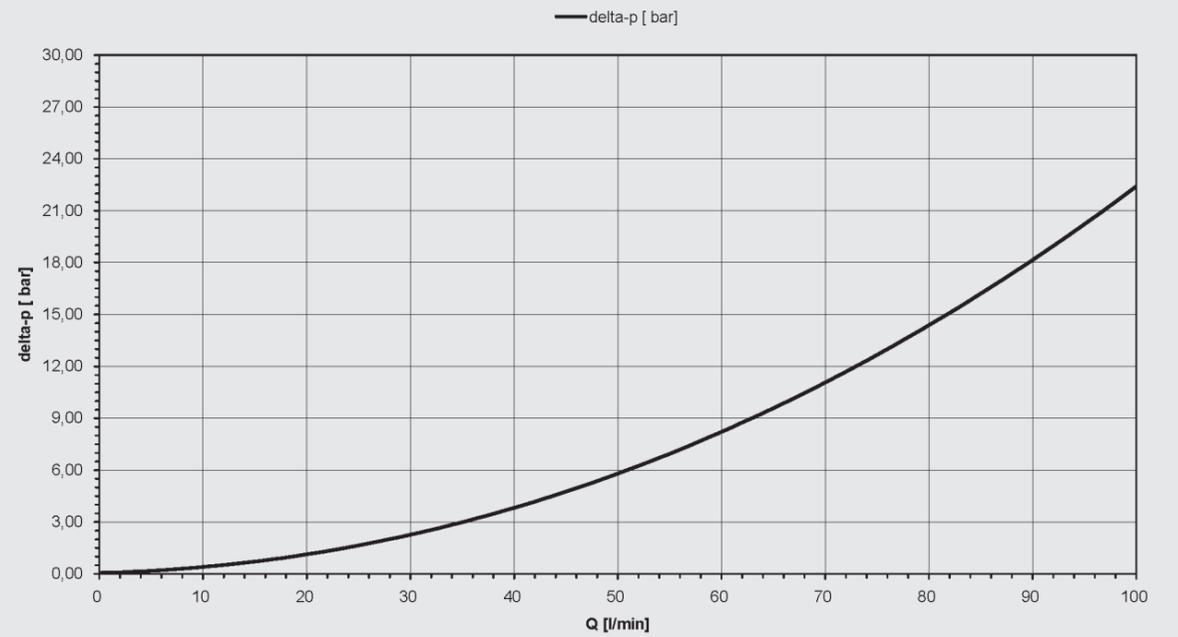
Other data in plain text
0 = no additional data

4. CURVES

4.1. DELTA-P/Q CURVE FROM A TO S



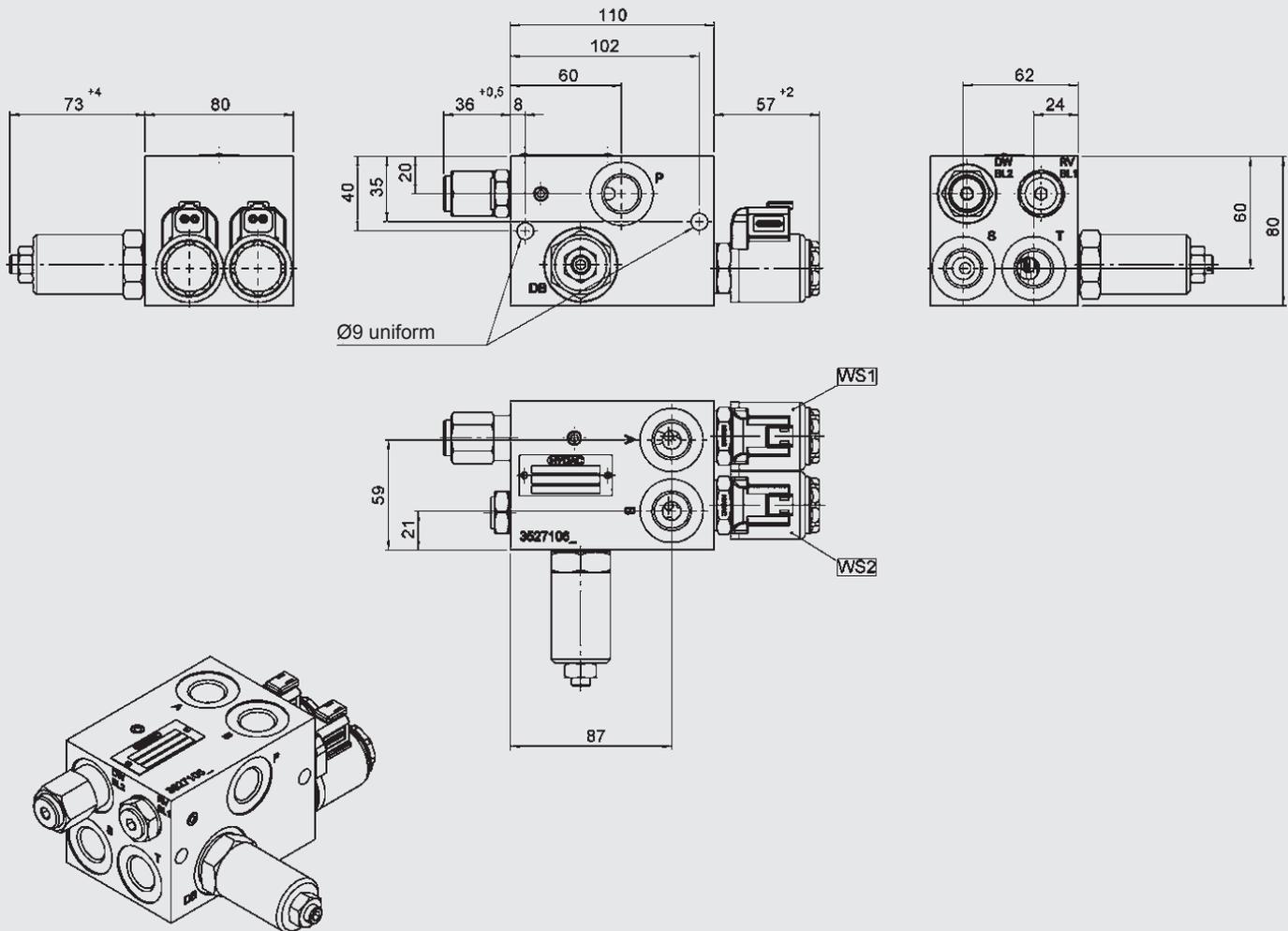
4.2. DELTA-P/Q CURVE FROM B TO T



5. DIMENSIONS

Shown variant (according to type key):

HSE-10-250-12DN-N-00-xxx



6. NOTE

The information in this brochure relates to the operating conditions and applications described. For applications or operating conditions not described, please contact the relevant technical department. Subject to technical modifications.

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