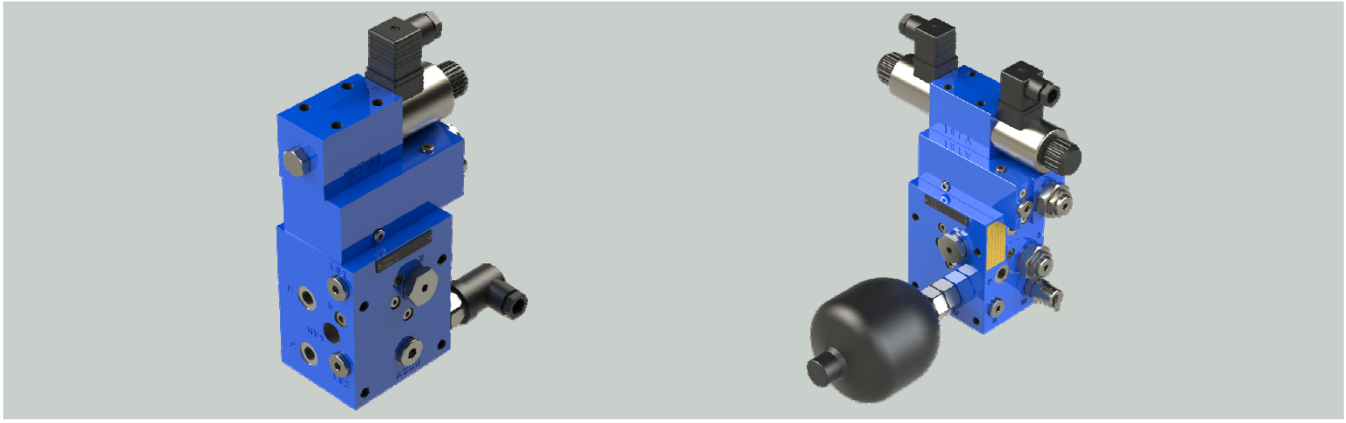


Table of Contents

1 Product Description

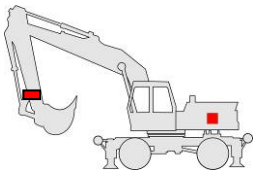
Quick coupler systems serve to easily change tools on construction machines without the driver having to leave the cabin to do so. The main functional part of the quick change system is a hydraulic cylinder that opens and closes the lock of the quick changer for the change-over procedure and locks the tool securely in place when closed.
The quick couple valve controls and actuates the quick couple cylinder and secures it from accidental opening. There are generally two methods for controlling quick couplers:

- The quick coupler valve opens and closes the quick coupler actively. The lock is held via spring force, check valves and pressure accumulators.
- The quick coupler valve opens the quick coupler actively. In the idle state of the valve, the coupler is closed hydraulically and held locked.

1.1 Application

The quick coupler valve controls and actuates the cylinder of a quick coupler system. Moreover, it blocks the cylinder in the locking position of the coupler leakage-free so that the tool coupled on the construction machine with the quick coupler is securely locked during operation.

1.2 Mounting location (Recommendation)



The quick coupler valve is normally installed in the engine compartment close to the pump or directly on the quick coupler.

1.3 Function

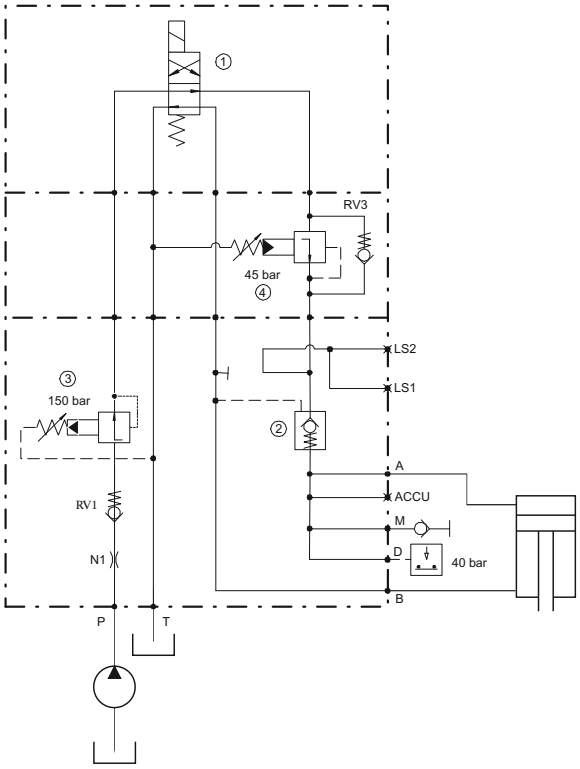
The pump pressure of the construction machine (connection **P**) is fed by a throttle via a check valve (**RV1**), a pressure relief valve (**3**) to a directional valve (**1**). Behind the directional valve, the pressure is forwarded via an optional second pressure relief valve (**4**) and an unlockable check valve (**2**) to the locking side of the cylinder (connection **A**).

A check valve (**RV1**) is integrated into the pump connection, so that quick coupler valve connection faults are displayed.
In order to control the locking and unlocking of the cylinder, a diaphragm is installed upstream of the valve (**N1**).
The first pressure reduction valve (**3**) reduces the overall system pressure in the quick coupler valve. Locking, unlocking and holding are thus achieved with limited force.
The second optional pressure reduction valve (**4**) also reduces the locking pressure and prevents the quick coupler from locking with too much pressure and clamping, if applicable.
A pilot operated check valve (**2**) maintains the pressure once the cylinder has completely extended and the quick coupler is locked, and thus ensures reliable locking.

The locking pressure can be monitored by means of an optional pressure switch (**D**) and secured by means of an optional accumulator (**ACCU**) as a further safeguard against a drop in locking force.
Locking pressure measurements can be taken at connection M. Optionally, a Minimess connection (**M**) is available.

Variant QCV-2N42
This is actuated by means of a 4/2 way valve, which must only be actuated to unlock the quick coupler. After starting the construction machine, the cylinder of the quick coupler system on the locking side (connection **A**) is immediately pressurized, automatically moves to the locking position, thus locking the quick coupler. This is unlocked by mean of the electrical actuation of the 4/2 way valve (**1**).

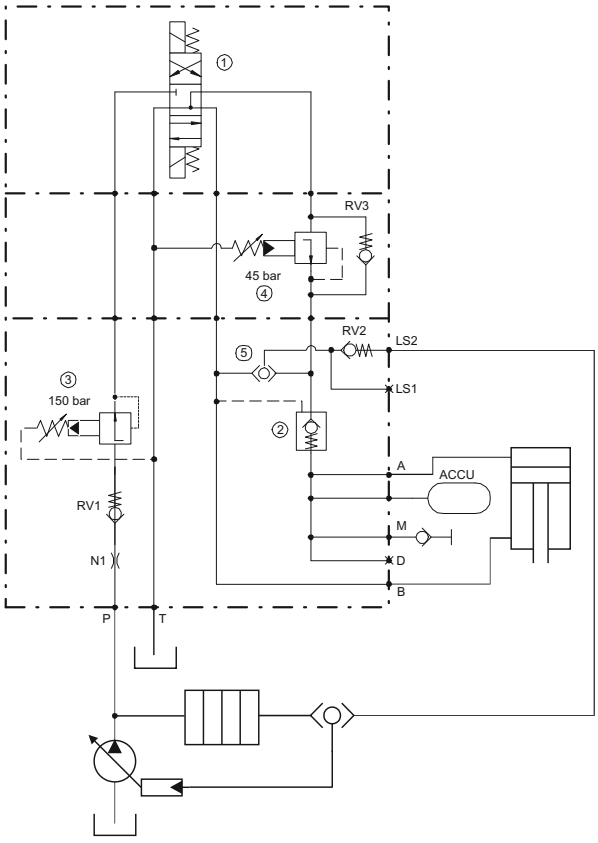
NOTE
The connections **LS1** and **LS2** may not be used as LS control line with this variant since the signal in the idle position of the directional valve 4/2 (**1**) cannot be released.



Variant QCV-2N43
This is performed by means of a 4/3 way valve. Both the locking and unlocking must take place actively by switching the directional valve (**1**).

NOTE
The connections LS1 and LS2 can be used with this variant as load-sending control signals. The LS signal is relieved in the idle position of the directional valve and is available for pump control in the locking and unlocking position.

NOTE
Automatic activation of the pump does not take place via the LS signal. The LS control signal is only available in both working positions of the directional valve 4/3 (**1**).



1.4 Characteristics

- Automatic locking by rising pump pressure (for variant QCV-2N42)
- Automatic locking hold by rising pump pressure (for variant QCV-2N42)
- Leakage free protection of the quick coupling cylinder by an additional pilot operated check valve
- Unlocking can only be performed "voluntarily" by actuating the valve (in variant QCV-2N42)
- Pressure relief throughout the valve - adjustable in high-pressure systems
- Avoidance of connection faults by check valve in the input line
- Flow rate restriction by means of an input diaphragm
- Optional locking pressure monitoring (pressure switch)
- Optional locking pressure maintenance (accumulator) for variant QCV-2N43
- Optional, lockable Minimess connection
- LS controller of the pump in the locking and unlocking position of the directional valve possible (only for variant QCV-2N43)

2 Technical Data

	Units	
Installation position		Any
Weight	kg	Between 11 and 15 depending on options
Max. input pressure (P, A)	bar	400
Adjustable, restricted pressure	bar	20 – 350 factory default setting see type code
Factory-set default flow rate (A, B)	l/min	Approx. 30
Flow rate accuracy (A, B)	%	System pressure-dependent
Maximum recommended tank pressure (T)	bar	< 10
Hydraulic fluid		Mineral oil (HL, HLP) conforming with DIN 51524, other fluids upon request
Hydraulic fluid pressure range	°C	-20 to +80
Ambient temperature	°C	< +50
Viscosity range	mm^2/s	2.8 - 500
Contamination grade		Filtering conforming with NAS 1638, class 9, with minimum retention rate $\beta_{10} \geq 75$
Supply voltage	VDC	12 or 24
Voltage tolerances	%	± 10
Solenoid switch power consumption	W	33
Solenoid switch flow rate consumption	A	2.9 at 12 VDC, 1.4 at 24 VDC
Solenoid switch duty cycle	%	100
Protection class according to DIN 40050		IP 65
Current supply		Standard: ISO 4400 angle plug or see type code

3 Ordering Information

3.1 Type code

QCV	2Nxx	03B	030	400				
00	01	02	03	04	05	06	07	08

00	Product group	Quick coupler valve	**QCV**
01	Variant	Standard const. type, 1 compact housing with add-on, built-in components, 4/2-way valve	**2N42**
		Standard const. type, 1 compact housing with add-on, built-in components, 4/3-way valve	**2N43**
02	Connections	Pump (P), outputs (A, B), return (T) G ¼ (ISO 1179-1)	**03B**
03	Input flow rate	Set via diaphragm, pressure-dependent, approx. 30 l/min	**030**
04	Max. permissible pressure	400 bar	**400**
05	Actuation	Electrical switching 12 VDC – connection via ISO 4400 angle plug connection	**12S001**
		Electrical switching 24 VDC – connection via ISO 4400 angle plug connection	**24S001**
06	DMV1 setting	Factory setting in bar	**150**
07	DMV2 setting	Factory setting in bar	**045**
08	Options	No optional components	**000**
		Point 1 (ACCU) = 1: Accumulator	**1xx**
		Point 2 (DS) = 1 – Pressure changeover switch	**x1x**
		Point 3 (M) = 1 - Measurement connection	**xx1**
		Example: 111 – with accumulator, pressure switch open and measurement connection	**111**

XXX – Permanent preset characteristics **XXX** – Characteristics adjustable by customer

3.2 Versions currently available

The versions listed below are available as standard. Further versions as part of the options given on the type code can be configured upon request.

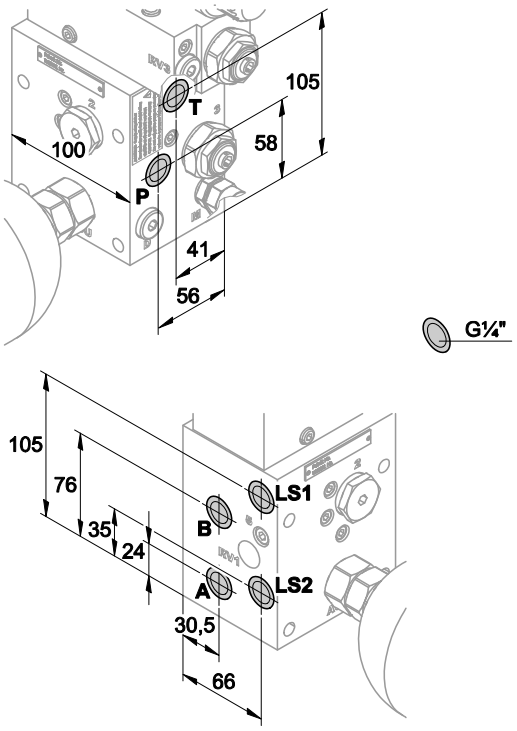
Type code									Name	Part No.
QCV	**2N42**	**03B**	**030**	**400**	**12S001**	**150**	**045**	**011**	QC valve S4/2, 12VDC, 150/45 bar, DMV1, DMV2, DS, M	221.211.634.9
QCV	**2N43**	**03B**	**030**	**400**	**24S001**	**150**	**045**	**101**	QC valve S4/3, 24VDC, 150/45 bar, DMV1, DMV2, ACCU, M	221.311.632.9
QCV	**2N43**	**03B**	**030**	**400**	**24S001**	**150**	**000**	**111**	QC valve S4/3, 24VDC, 150 bar, DMV1, ACCU, DS, M	221.311.633.9
QCV	**2N42**	**03B**	**030**	**400**	**24S001**	**150**	**045**	**011**	QC valve S4/2, 24VDC, 150/45 bar, DMV1, DMV2, DS, M	221.311.634.9

4 Description of Characteristics in Accordance with Type Code

4.1 Characteristic 1: Variant

The valve is built modularly and consists of a main housing into which optional components such as accumulator, pressure switch and gauge port are screwed or mounted. The directional valve is also mounted on the main housing. A component with the second, option pressure reduction valve can be integrated in between.

4.2 Characteristic 2: Connections



Connection	Connection sizes
A, B, P, T, D, M	G ¼ (ISO 1179-1)
ACCU	G3/8 (ISO 1179-1)

4.3 Characteristic 3: Input flow rate

The input flow rate is throttled by means of a diaphragm in connection P. This is unaffected by rising pressure at P. The flow rate is approx. 30 l/min at 300 bar.

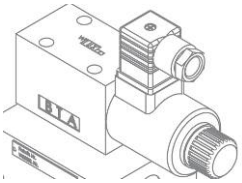
4.4 Characteristic 4: Maximum permissible pressure

The maximum permissible input (P) pressure is 400 bar. The input pressure is limited internally by means of an adjustable pressure relief valve.

Note
It must be ensured that the pressure which occurs at the pressure relief valve does not exceed the maximum permissible pressure of the quick coupler system.

4.5 Characteristic 5: Actuation

The quick coupler valve is actuated electrically (12 VDC or 24 VDC). The electrical connection is achieved by means of an ISO 4400 angle plug.



4.6 Characteristic 6: Setting the pressure relief valve 1

The input pressure (connection P) is limited internally by means of an adjustable pressure relief valve 1.

WARNING
It must be ensured that the pressure which occurs at the pressure relief valve does not exceed the maximum permissible pressure of the quick coupler system.

4.7 Characteristic 7: Setting the pressure relief valve 2

The locking pressure is reduced internally by means of an adjustable pressure relief valve 2.

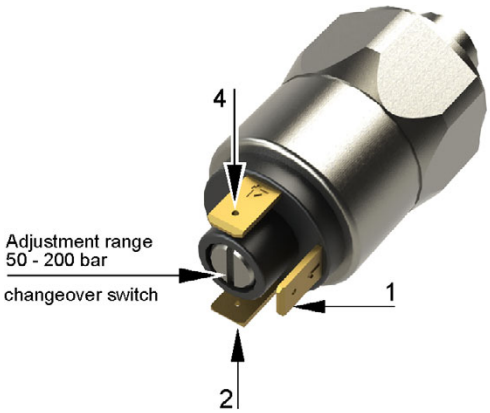
WARNING
Make sure that the pressure which occurs at the pressure relief valve 2 does not exceed the maximum permissible locking pressure of the quick coupler system (risk of jamming of the lock)

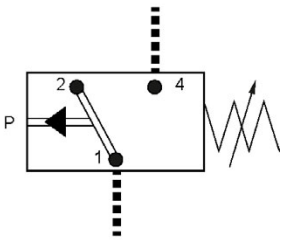
4.8 Characteristic 8: Options

Accumulator
An accumulator can be added on to ensure the locking pressure.

WARNING
When operating the quick coupler valve with an added-on accumulator, the pressure relief valve must wherever possible be set to the maximum pressure applied at the accumulator.

Pressure switch
An adjustable pressure switch (either opening or closing contact) can be optionally inserted to electrically monitor the locking pressure. The customer is responsible for setting the pressure switch.





Gauge port
A lockable Minimess connection can optionally be added on to measure the locking pressure.

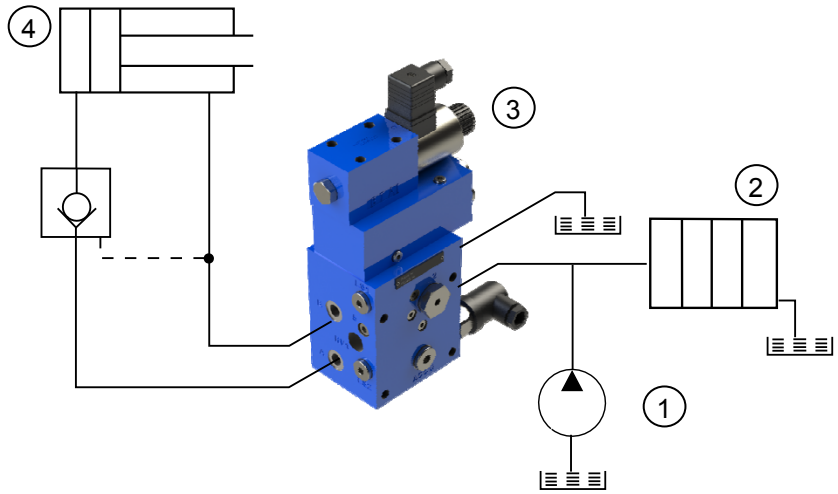
5 Installation

5.1 General remarks

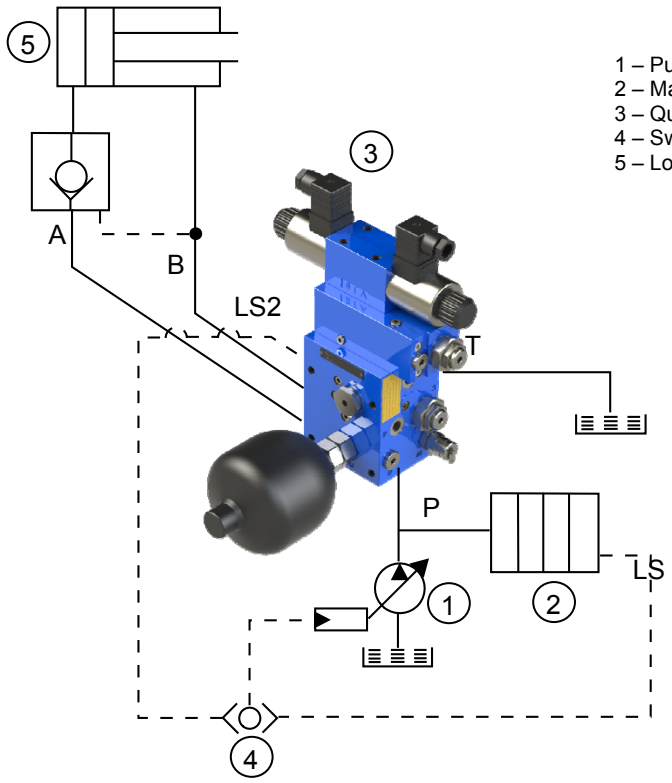
- Observe all installation and safety information of the construction machine manufacturer.
- Only technically permitted changes are to be made on the construction machine.
- The user has to ensure that the device is suitable for the respective application.
- Application exclusively for the range of application specified by the manufacturer.
- Before installation or dismantling, the hydraulic system is to be depressurized.
- Settings are to be made by qualified personnel only.
- May only be opened with the approval of the manufacturer, otherwise the warranty is invalidated.
- The included connection recommendations are not guaranteed. The functionality and the technical specifications of the construction machine must be checked.

5.2 Connection recommendations

NOTE
The included connection recommendations are not guaranteed. The functionality and the technical specifications of the construction machine must be checked. It must be ensured that the construction machine is suitable in terms of technology and safety for the operation of the attachment.



1 – Pump
2 – Main control unit
3 – Quick coupler valve 2N-42
4 – Locking cylinder with corres. RV



1 – Pump with LS controller
2 – Main control unit
3 – Quick coupler valve 2N-43
4 – Switch valve
5 – Locking cylinder with corres. RV

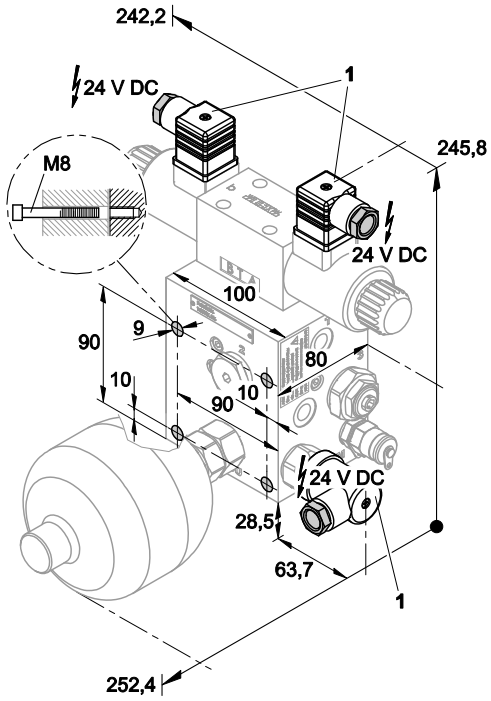
5.3 Installation - space

- The installation is done using four M8 bolts onto a level support element.
- Ensure that the support element is level.
- Ensure that the valve is not bent during installation.
- Ensure that there is sufficient free space for setting and installation work.

a. Install the quick coupler valve using M8 bolts on the supporting element.
b. Make electrical connections.
c. Secure connector with screw (1).

- Observe the connection labels.
- Observe the strength category and torsional moment of the clamp bolts.
- Do not damage seals and flange surface.
- The air must be exhausted from the hydraulic system.
- Ensure that the support element is level.
- Ensure that the valve is not bent during installation.
- Ensure that there is sufficient free space for setting and installation work.

CAUTION!
Hydraulic hoses must not come into contact with the flow control valve as they will suffer thermal damage.

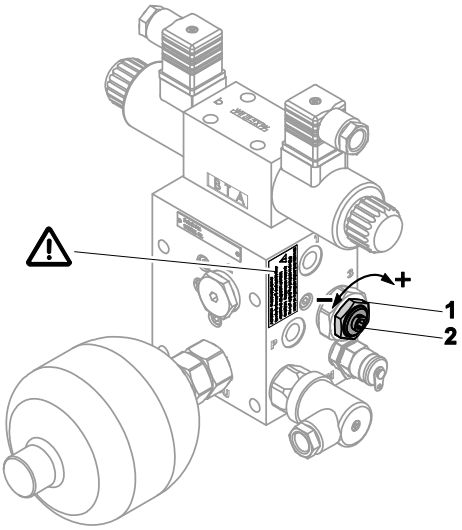


5.4 Setting the pressure relief valves

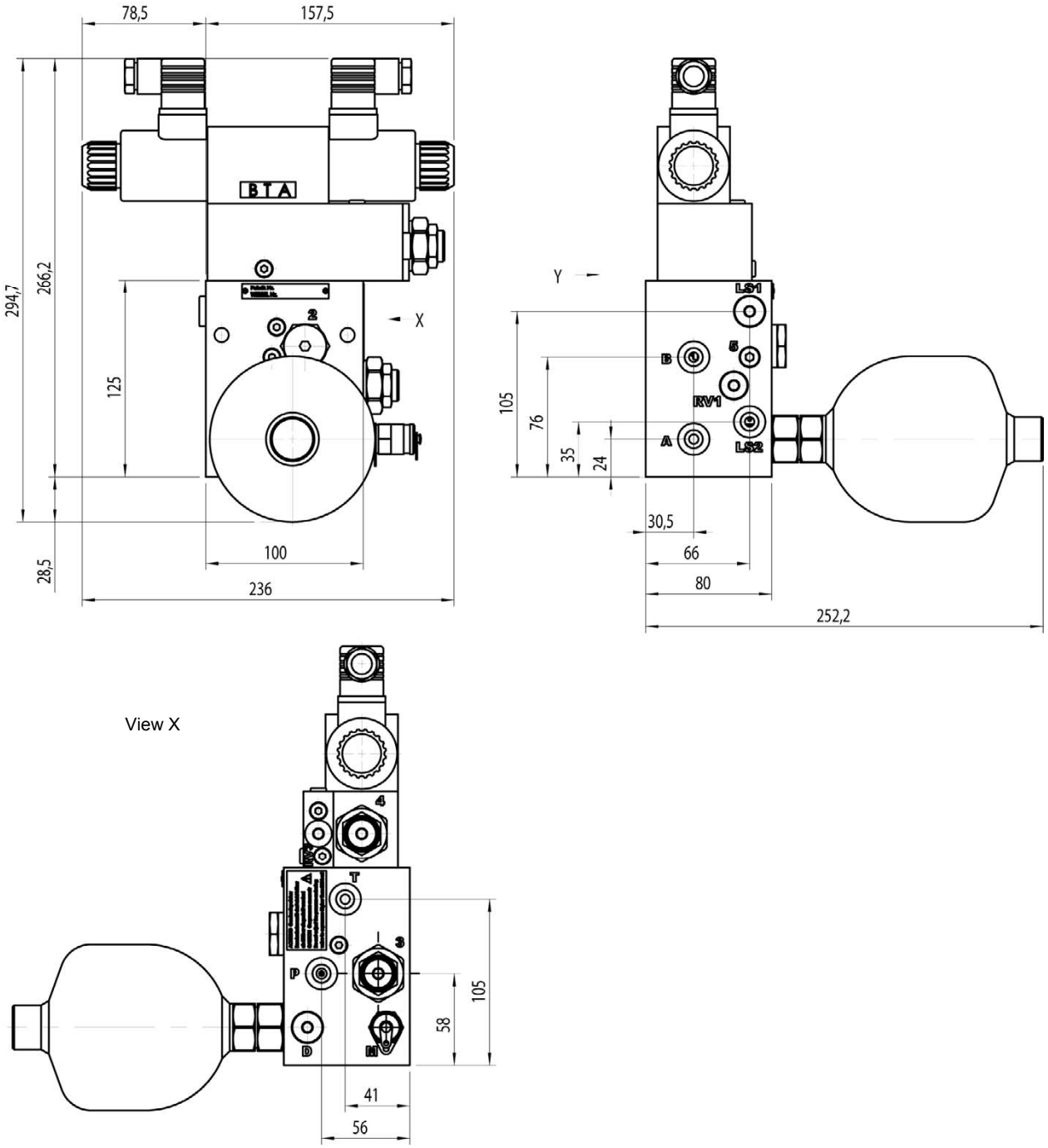
Pressure relief valve 1: Generally reduces the pressure in the quick coupler valve (line a and line B.
Pressure relief valve 2: Reduces the locking pressure in the pressure relief valve (line A). The unlocking pressure (line B) remains at the pressure set on the pressure relief valve 1.
Also see Chapter 4.6 and 4.7: Function of the pressure relief valves

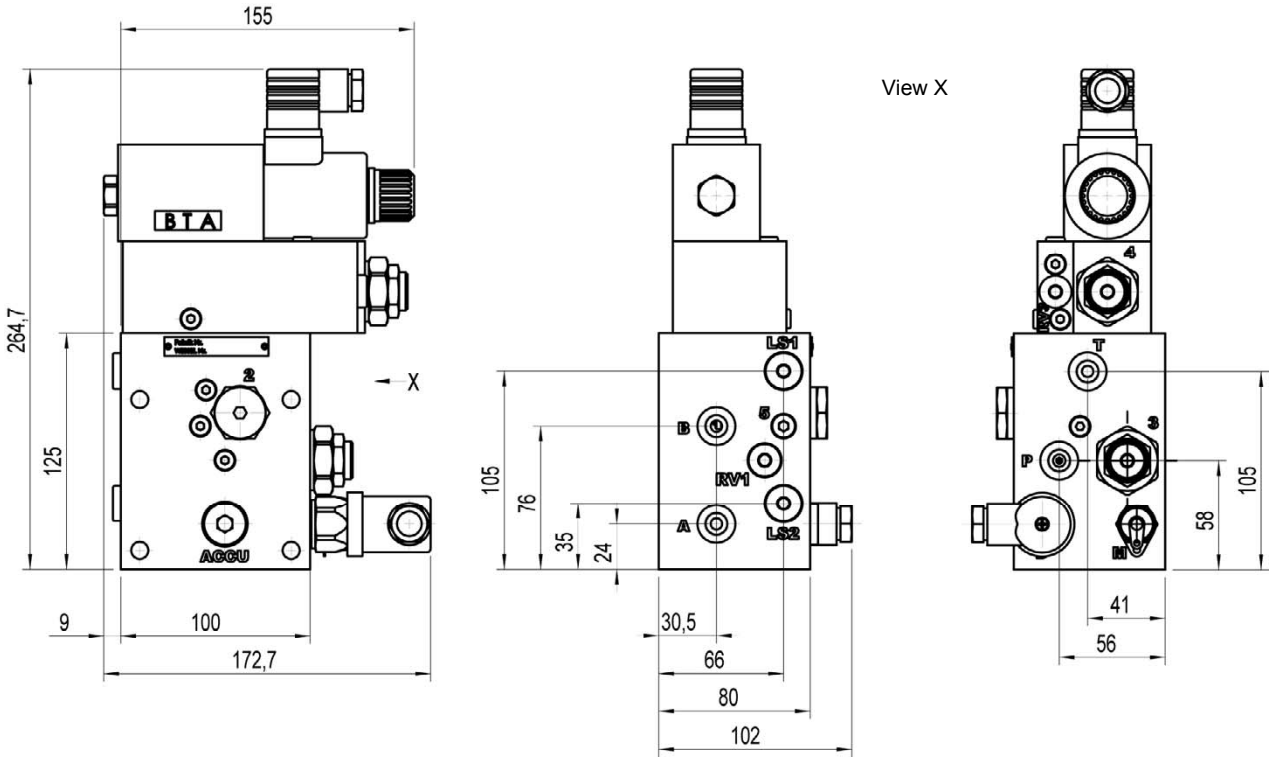
WARNING
It must be ensured that the pressure which occurs at the pressure relief valve 1 does not exceed the maximum permissible pressure of the quick coupler system.
It must be ensured that the pressure which occurs at the pressure relief valve 2 does not exceed the maximum permissible pressure for the locking.
When operating the quick coupler valve with an added-on accumulator, the pressure relief valve 1 must wherever possible be set to the maximum pressure applied at the accumulator.

a. The pressure can be set between 20 – 350 bar
b. Undo the counter-nut (1).
c. Increasing the pressure: Turn the set-screw (2) to the right.
d. Reducing the pressure: Turn the set-screw (2) to the left.
e. Tighten the counter-nut (1).



5.5 Dimensions

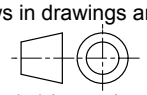



155
264,7
125
9
100
172,7
BTA
ACCU
X
LS1
P
RV1
A
LS2
105
76
35
24
30,5
66
80
102
View X
T
P
105
58
41
56

6 Notes, Standards and Safety Requirements

6.1 General remarks

The views in drawings are shown in accordance with the European normal projection variant



A comma (,) is used as a decimal point in drawings
All dimensions are given in mm

6.2 Standards

The following standards must be observed when installing and operating the valve:

- DIN EN ISO 13732-1:2008-12, Temperatures on accessible surfaces

6.3 Storage technology

If a pressure accumulator is operated on the quick coupler valve, the following use and safety instructions should be noted:

Instructions for use

This pressure equipment complies with the provisions of Article 3 Paragraph 3 of the equipment directive (97/23/EC) and must not therefore bear a CE mark.

NOTE
This pressure equipment must only be commissioned in conjunction with a machine or system.

NOTE
Under the provisions the pressure equipment must only be used according to the operating instructions of the machine or system.


Pressure equipment (accumulator) is pressurized.*


Repairs, maintenance and commissioning must only be carried out by specialists. Do not touch the pressure equipment until cool. Carry out the directions in the operating instructions of the machine or system. The pressure equipment (accumulator) must only be charged with nitrogen.* A charging unit from the supply company must be used for this purpose.


Attention! Do not open the pressure equipment (accumulator) before the gas-side and the fluid-side are released of pressure. Equipment contains nitrogen(danger of asphyxiation).*


No modifications may be made to the pressure equipment (welding, drilling; forced opening...).

* Installed fluid silencers (Series: SD) do not work with a nitrogen gas cushion and accordingly they would not be charged with gas.

NOTE
The pressure vessel used has a fatigue strength if it was selected on the basis of the operating parameters and in accordance with criteria specific to accumulator type. The maintenance instructions must be taken in account.

7 Accessories

CAUTION!
If the pressure is too low, the cylinder may not lock securely!

The pressure switch is preset to 150 bar and can be adjusted by rotating the front-side screw (first remove the connector (1)) to the desired control pressure.