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## 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.

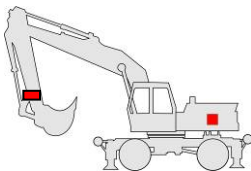
The quick couple valve controls and actuates the quick couple cylinder and secures it from accidental opening. There are generally two methods for controlling quick couplers:

- 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

#### Locking and Holding

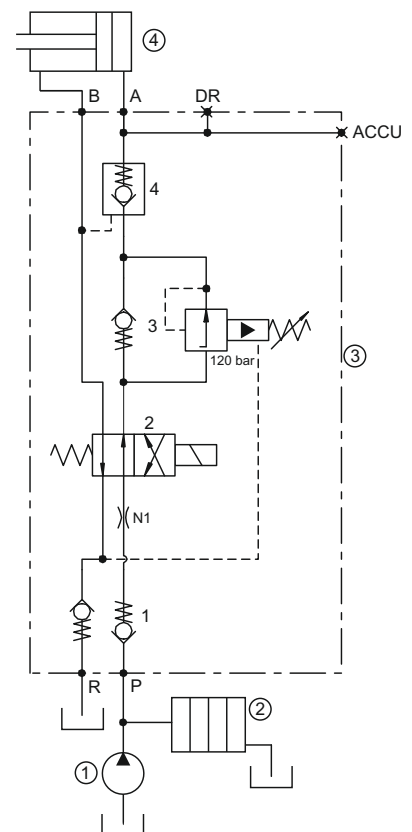
The pump pressure of the construction machine (connection **P**) is fed via a check valve (1) and a throttle (**N1**) to the directional valve (2). In the unswitched setting of the directional valve, the pressure is forwarded via a pressure relief valve (3) and an unlockable check valve (4) to the locking side of the cylinder (connection **A**). The unlocking side (connection **B**) of the quick couple cylinder is guided via the directional valve (2) and a check valve to the return (connection **R**).

#### Unlocking

In the switched position of the directional valve (2), the pressure is guided unreduced to the unlocking side (connection **B**) of the cylinder. The pressure in line B opens the unlockable check valve and line A can be diverted to the return (connection **R**).

The locking pressure can be monitored by means of an optional pressure switch (**DR**) and secured by means of an optional accumulator (**ACCU**) as an additional safeguard against a drop in locking force.

A	Quick couple cylinder locking side
ACCU	Connection for accumulator 8 Accessories 9
B	Quick couple cylinder unlocking side
DR	Connection for accumulator (accessories)
P	Pump connection
R	Return line to the tank
1	Pump
2	Main control unit
3	Quick coupler valve
4	Locking cylinder



#### 1.4 Characteristics

- Automatic locking by rising pump pressure
- Automatic locking hold by rising pump pressure
- 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
- Adjustable pressure reduction for the locking. Unlocking takes place with full pressure
- Avoidance of connection faults by check valves in the input line and return line
- Volume flow restriction through input throttle
- Connections for pressure accumulator and pressure switch for securing and monitoring the locking pressure

## 2 Technical Data

	Units	
Installation position		Any
Weight	kg	6.3
Max. input pressure (P, A)	bar	350 or 420
Adjustable, restricted pressure	bar	20 – 350 factory default setting see type code
Factory-set default flow rate (A, B)	l/min	Approx. 30 system pressure-dependent
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 <sup>2</sup> /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	3N	03B	030				000	000	
00	01	02	03	04	05	06	07	08	
00	Product group		Quick coupler valve					QCV	
01	Variant		Standard construction form, 1 compact housing					3N	
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		350 bar					350	
			420 bar					420	
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. Setting area: 20 ... 350 bar					120	
07	DMV2 setting		No second pressure relief valve available					000	
08	Options		No optional components available. See Accessories					000	

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.

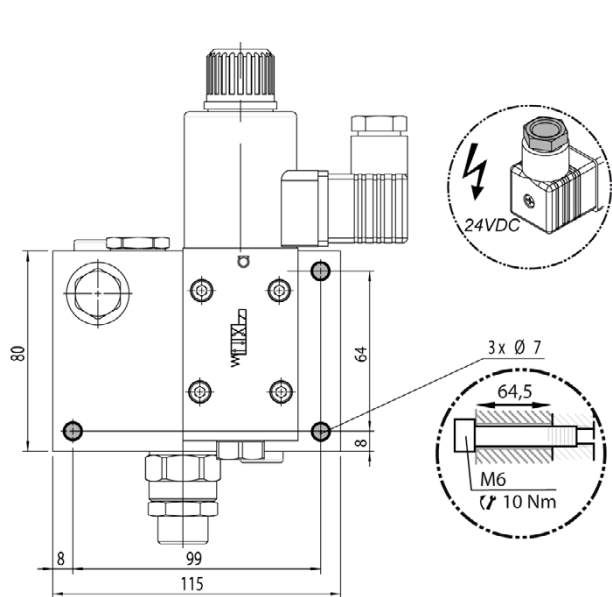
Type code									Name	Part No.
QCV	3N	03B	030	350	12S001	120	000	000	QC valve S4/2, 12VDC, 350 bar, DMV 120 bar	221.211.641.9
QCV	3N	03B	030	350	24S001	120	000	000	QC valve S4/2, 24VDC, 350 bar, DMV 120 bar	221.311.641.9
QCV	3N	03B	030	420	12S001	120	000	000	QC valve S4/2, 12VDC, 420 bar, DMV 120 bar	221.211.642.9
QCV	3N	03B	030	420	24S001	120	000	000	QC valve S4/2, 24VDC, 420 bar, DMV 120 bar	221.311.642.9

## 4 Description of Characteristics in Accordance with Type Code

### 4.1 Characteristic 1: Variant

The valve consists of a compact main housing and a directional valve. Additional components such as accumulator and pressure switch are available as accessories and can be installed by the customer.

### 4.2 Characteristic 2: Connections



Connection	Connection sizes
<b>A, B, P, T, DR</b>	G ¼ (ISO 1179-1)
<b>ACCU</b>	9/16-18 UNF - 2B ISO11926-1

### 4.3 Characteristic 3: Input flow rate

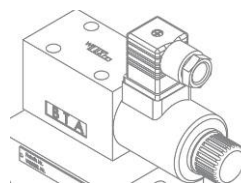
The input flow rate is throttled by means of a diaphragm in connection P. This is unaffected by rising pressure at P. The flow rate is approx. 30 l/min at 300 bar.

### 4.4 Characteristic 4: Maximum permissible pressure

The maximum permissible input (P) pressure is 350 or 420 bar.

### 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 locking pressure is reduced 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 locking pressure of the quick coupler.



**Note**

When using a pressure accumulator, make sure that the pressure which occurs at the pressure relief valve does not exceed the maximum permissible pressure of the pressure accumulator.

#### 4.7 Characteristic 7: Setting the pressure relief valve 2

A second pressure relief valve is not available for this variant of the quick couple valve.

#### 4.8 Characteristic 8: Options

No options are available for this variant of the quick couple valve. See Accessories.

## 5 Installation

### 5.1 General remarks

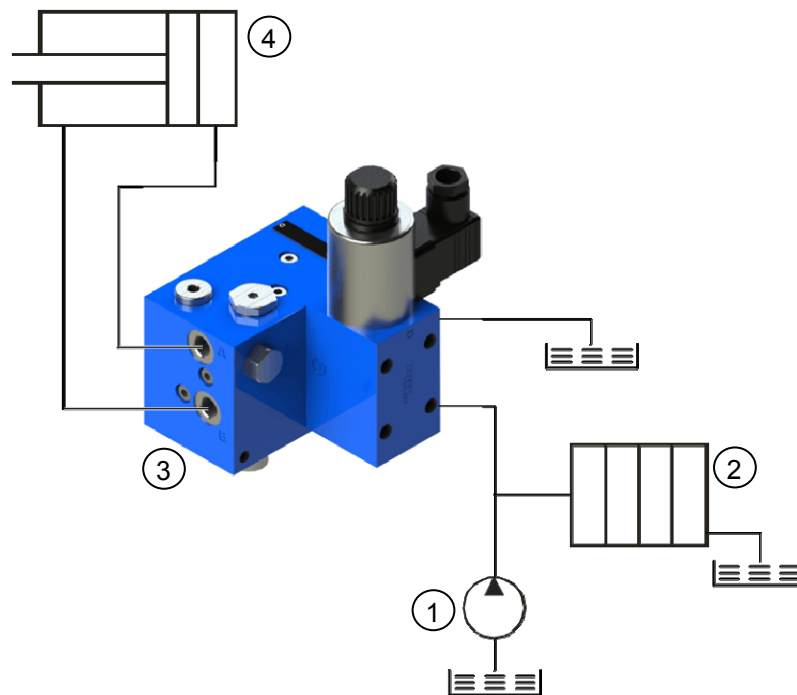
- Observe all installation and safety information of the construction machine manufacturer.
- Only technically permitted changes are to be made on the construction machine.
- The user has to ensure that the device is suitable for the respective application.
- Application exclusively for the range of application specified by the manufacturer.
- Before installation or dismantling, the hydraulic system is to be depressurized.
- The valve and the system may only be adjusted by specialists.
- The valve may only be opened with the approval of the manufacturer, otherwise the warranty is voided.
- 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.

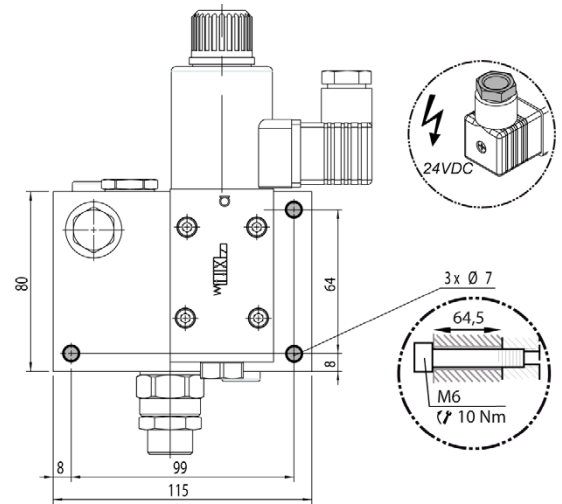


- 1 – Pump
- 2 – Main control unit
- 3 – Quick coupler valve
- 4 – Consumer



### 5.3 Installation - space

- The installation is done using three M6 screws on an even supporting 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 M6 bolts on the supporting element
  - b. Connect hydraulic lines
  - c. Make electrical connections.
  - d. 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 valve

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



**Note**

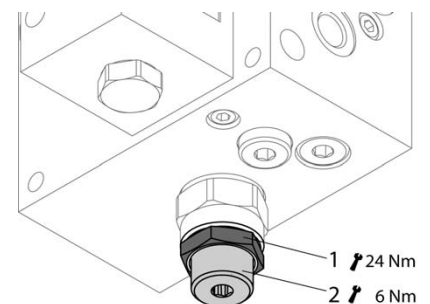
It must be ensured that the pressure which occurs at the pressure relief valve does not exceed the maximum permissible locking pressure of the quick coupler.



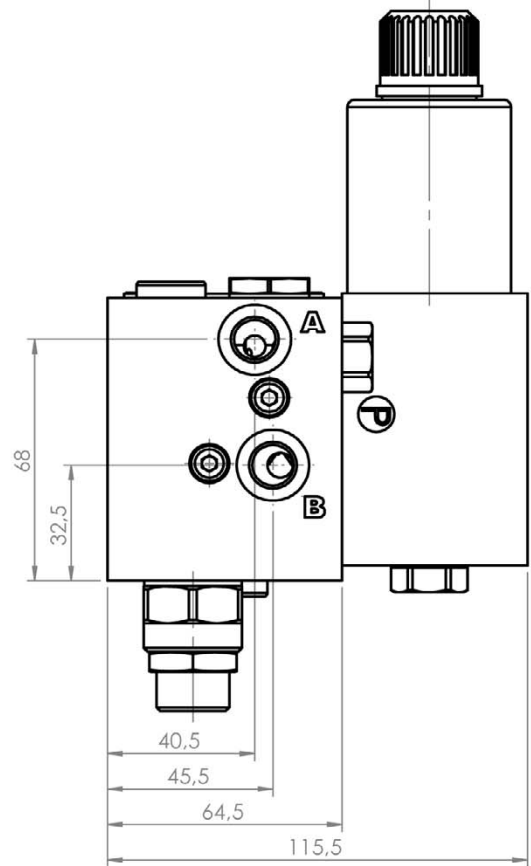
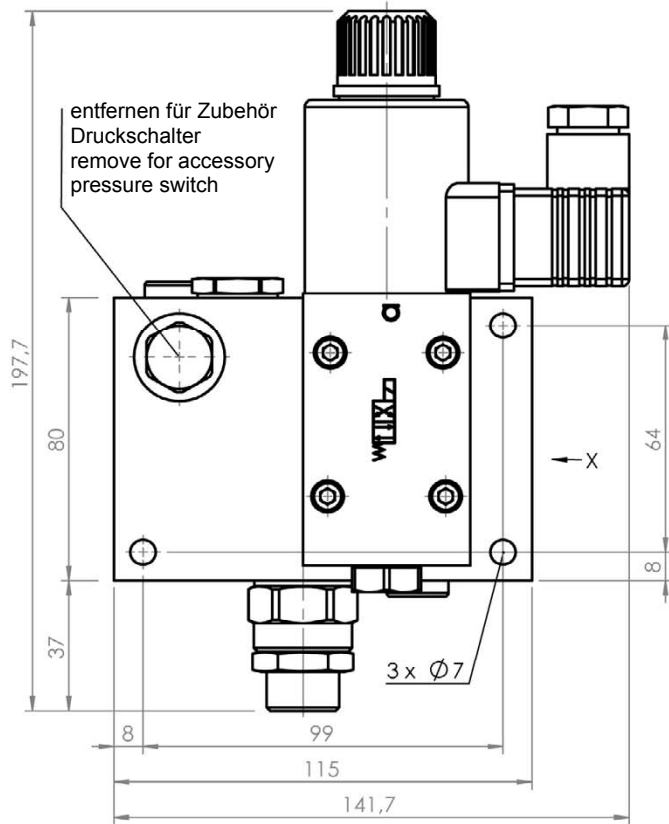
**Note**

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.

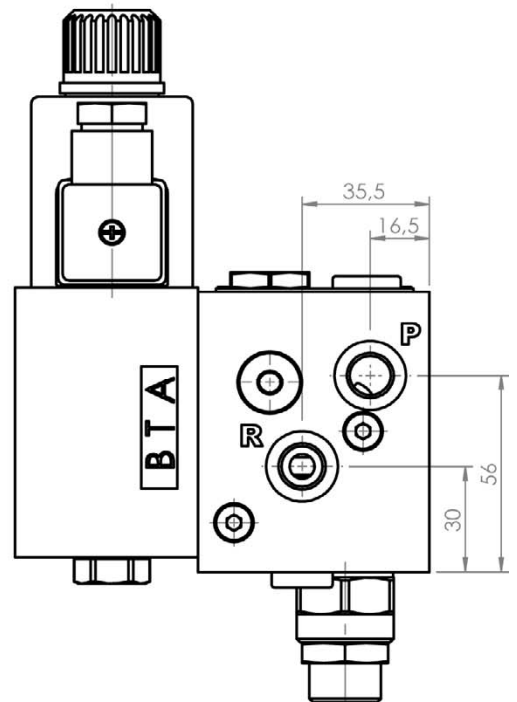
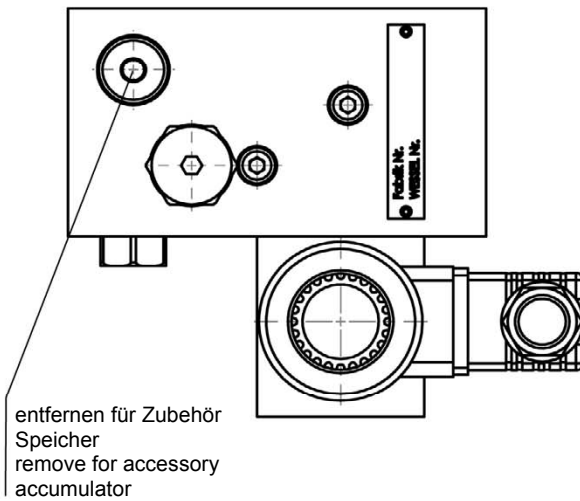
- a. The pressure can be set between 20 – 350 bar.
- b. Undo the counter-nut (1).
- c. Increasing the pressure: Turn the set-screw (2) to the right.
- d. Reducing the pressure: Turn the set-screw (2) to the left.
- e. Tighten the counter-nut (1).



5.5 Dimensions



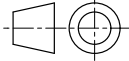
Ansicht/View X



## 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 included with the pressure accumulator should be noted:

## 7 Accessories

### 7.1 Accumulator

An accumulator is available as an accessory to ensure the locking pressure. The mounting and the eventual installation are performed by the customer at its own risk.

**Accumulator 0.5 l, 210 bar**  
**Parts No. 770.000.014.8**

### 7.2 Pressure switch

An adjustable accumulator is available as an accessory for electrical monitoring of the locking pressure. The mounting and the eventual installation are performed by the customer at its own risk.

**Pressure switch ( closing contact ) 50 ... 150 bar, preset to 60 bar**  
**Parts No. 770.000.013.8 including device socket**

