

---

# INTEGRAL HYDRAULIK

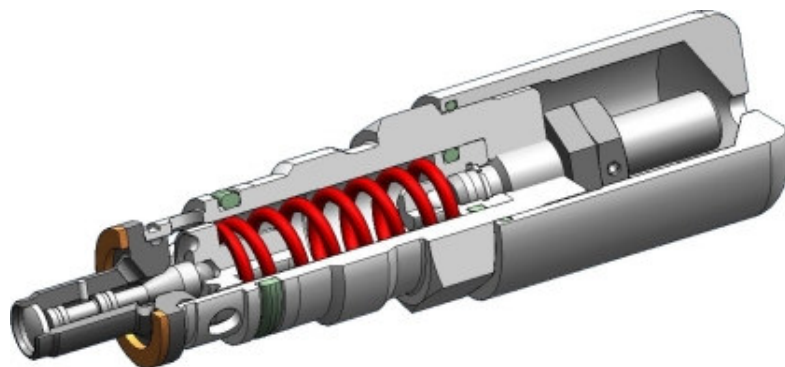
Anlagen + Systeme

---



## Operating instructions

for pressure relief valves used for their intended use



# 1 Table of contents

1	TABLE OF CONTENTS	2
2	IMPORTANT BASIC INFORMATION	2
2.1	Conventions	2
2.2	Responsibility and safety	2
2.2.1	Manufacturer's responsibility	2
2.2.2	Operator's responsibility	3
3	PRODUCT INFORMATION	3
3.1	Manufacturer	3
3.2	Brief description	3
3.3	Intended use	3
4	TRANSPORT AND STORAGE	3
4.1	Transport	3
4.2	Storage conditions	3
4.3	Packaging	3
5	ASSEMBLY AND DISASSEMBLY	3
5.1	Assembly personnel qualifications	3
5.2	Requirements for the housing in which the valve is installed	4
5.3	Other important conditions	4
5.4	General assembly instructions	4
5.5	Tightening torque	4
5.6	Installation procedure	4
5.7	Disassembly procedure	5
6	COMMISSIONING	5
6.1	Commissioning the DBE-6S-.../..., setting pressure matching the max. setting pressure	5

6.2	Commissioning the DBE-6S-.../..., setting pressure lower than the max. setting pressure	5
-----	-----------------------------------------------------------------------------------------	---

7	OPERATION AND MAINTENANCE	6
---	---------------------------	---

7.1	Operation	6
-----	-----------	---

7.2	Changing the pressure setting	6
-----	-------------------------------	---

7.3	Maintenance and repairs	6
-----	-------------------------	---

## 2 Important basic information

### 2.1 Conventions

The following signs and symbols are used to identify particularly important information and hazards.



Note: Indicates supporting information



Danger: Indicates hazards for people, materials, machines and the environment

### 2.2 Responsibility and safety

#### 2.2.1 Manufacturer's responsibility

When used for its intended use, the design, technology and function of the **INTEGRAL HYDRAULIK** pressure relief valve match the current state of the art. The basic health and safety requirements are met. The DBE pressure relief valves are designed, manufactured and tested based on the many years of practical, operational experience of the experts involved and in accordance with:

- the EC Machinery Directive (2006/42/EC),
- the EC Pressure Equipment Directive (2014/68/EU),
- the applicable European and national standards (EN and DIN),
- the applicable provisions of the German Product Safety Act,
- the results of a comprehensive hazard and ignition source analysis,
- modern production and testing methods, and
- a quality management system in accordance with DIN EN ISO 9001:2015.

The above aspects are the responsibility of INTEGRAL HYDRAULIK and guarantee the highest level of product quality and safety.

## 2.2.2 Operator's responsibility



The operator/user of the DBE pressure relief valve is responsible for the intended use of the product in full compliance with these operating instructions.

### 2.2.2.1 Personnel qualifications

The personnel who integrate the pressure relief valve into a hydraulic system and maintain it must meet the following minimum requirements:

- They must be trained and qualified professionals.
- They must master the generally applicable technical rules.
- They must know and comply with the applicable regulations and standards.

## 3 Product information

### 3.1 Manufacturer

Manufacturer INTEGRAL HYDRAULIK GmbH & Co. KG  
Hanns-Martin-Schleyer-Straße 20  
D-47877 Willich

### 3.2 Brief description

**INTEGRAL HYDRAULIK** pressure relief valves are designed and manufactured in accordance with the EC Machinery Directive (2006/42/EC) and the EC Pressure Equipment Directive (2014/68/EU). According to the EC Machinery Directive, the pressure relief valves described here are considered safety components.

They are designed as direct-acting, spring-loaded seat valves with damping pistons in the shape of screw-in cartridges. The seat valve ensures a leak-free seal of the pressure chamber below the setting pressure. Within the control range, the damping piston prevents uncontrolled self-vibrations of the valve cone. The optimised flow path enables the valve to achieve high flow rates.

### 3.3 Intended use

The pressure relief valve (DBE) is used either as a control valve to maintain a constant pump pressure or as an overpressure/safety valve to protect hydraulic systems.

When used as a pressure relief/safety valve, it protects hydraulic units and the components they contain from excessively high fluid pressures. According to the Pressure Equipment Directive, such a valve is a piece of equipment with a safety function which must be used for this task exclusively. This means that an additional,

independent pressure relief valve or another suitable actuator must be provided to adjust the pressure in the hydraulic circuit.



In principle, the pressure relief valve (DBE) is a non-electrical device

### Parameters:



**Operating the valve outside the parameters specified on the data sheet is not allowed!**



The following is not allowed:

- Using gases or other hydraulic fluids than those specified.
- Transporting the valve in packaging other than that supplied.
- Making any changes to the valve.
- Opening or repairing the valve. Non-destructive opening or repair is not possible.
- Removing the seal (DBE-6S-.../...).

## 4 Transport and storage

### 4.1 Transport

The valve may only be stored and transported in the packaging supplied to protect it against damage and dirt.

### 4.2 Storage conditions

The valve may only be stored in the packaging supplied in a dry atmosphere that is free from dust, aggressive vapours, mists and gases. The maximum storage time is 5 years. The ambient temperature should be between +5 and +40 °C.

### 4.3 Packaging



The packaging consists of a conductive plastic bag and a cardboard box. It prevents dangerous electrostatic charges and protects the valve from mechanical damage.

## 5 Assembly and disassembly

### 5.1 Assembly personnel qualifications

The valve must be installed by trained and qualified professionals.

The personnel must be familiar with and follow the generally applicable technical rules and the applicable standards and regulations.

## 5.2 Requirements for the housing in which the valve is installed

This screw-in valve must be screwed into a screw-in housing that is suitable for its intended use; the mounting hole must fulfil the requirements shown in Figure 1.

The dimensions of the housing must be such that it has sufficient strength, rigidity and stability against static and dynamic pressure loads.

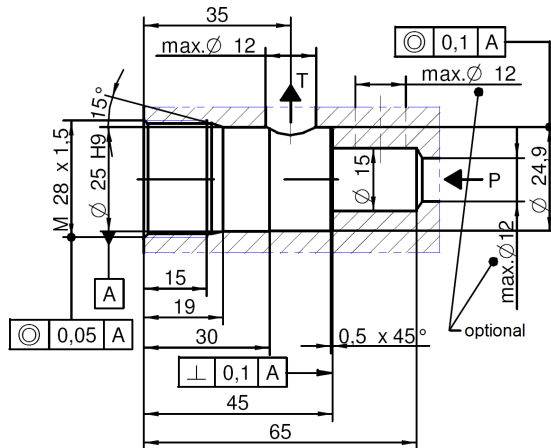


Figure 1: DBE mounting hole dimensions

## 5.3 Other important conditions



Since the temperature of the hydraulic fluid flowing through the valve must not exceed the maximum temperature specified in the technical data sheet, continually monitoring the fluid temperature is recommended. If the maximum temperature specified is exceeded, the system must be shut down immediately.



If the pressure relief valve is tripped, i.e. if the setting pressure of the valve is reached, a throttling process occurs in the valve, resulting in the temperature of the fluid increasing. This can lead to surface temperatures on the valve that are higher than the temperatures of the liquid flowing in.



Suitable measures, e.g. installing a roof or regular dusting, must be taken to prevent dust from depositing on the valve.



If there is a source of radiant heat in the immediate vicinity, suitable measures must be taken to prevent the radiated heat from acting directly on the valve (e.g. shielding the valve).

## 5.4 General assembly instructions

The valve must not be removed from the packaging until just before it is installed. The packaging and all parts of the packaging must be removed carefully and completely.

After removing the packaging, thoroughly inspect the valve visually for any obvious damage.



If any deformations or other types of damage are found, the valve must not be installed.

The integrity of the O-ring (fig. 3, item 8) and the Usit ring (fig. 3, item 2) must be checked extra carefully.



Use only the Usit ring included in the scope of delivery.



Apply a thin film of oil to the valve body, and particularly the thread and O-ring, before starting assembly.

## 5.5 Tightening torque

The valve must be screwed in with the protective cap applied, using a torque spanner.



The tightening torque is specified at **50+5 Nm**.

Use only the housing hexagon (fig. 3, item 1a) and spanner size **SW 30** to install the valve.

## 5.6 Installation procedure

Before starting installation, make sure that the system is depressurized.



The system must be depressurized

- Remove the valve from the packaging.
- Compare the type designation/rated values on the housing hexagon (fig. 2) to the application requirements.

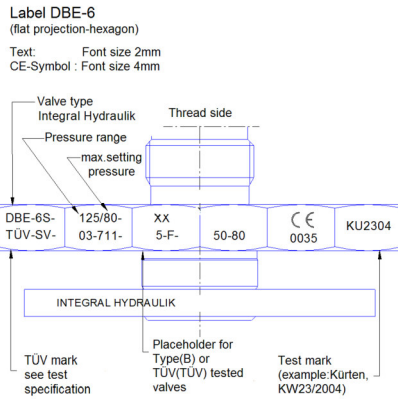


Figure 2: Valve label

- Visual inspection for any damage
- Moisten the thread and O-ring with oil
- Check that the O-ring, Usit ring and protective cap are seated correctly
- Screw in the valve to the specified tightening torque

## 5.7 Disassembly procedure

Before starting disassembly, make sure that the system is depressurized.



The system must be depressurized

- Remove the protective cap (fig. 3, item 7)
- Unscrew the valve at the housing hexagon (fig. 3, item 1a)
- Check that the Usit ring (fig. 3, item 2) has been removed from the screw-in housing hole
- Pack the valve in shockproof packaging that protects it against dust and electrostatic charges

## 6 Commissioning

The DBE-6S.../... can be operated either with the specified maximum setting pressure or with a lower pressure than the preset maximum setting pressure. The two different procedures for commissioning are described below.

### 6.1 Commissioning the DBE-6S-.../..., setting pressure matching the max. setting pressure

The system must be depressurized at the start of commissioning. Procedure:

- Compare the stamped information on the hexagon with the documentation supplied and the operating conditions (fig. 2 and fig. 3, item 1a)

- Remove the protective cap (fig. 3, item 7)
- Visually check the seal (fig. 3, item 5) and the seal wire for damage.



In case of damage:

- **Do not install the valve**
- **Replace the valve**

- Correctly apply the protective cap (fig. 3, item 7)
- Activate the pressure supply
- Visually check the valve for leaks



If leaks are detected, the hydraulic system must be shut down and the valve replaced immediately.



If unusual noises (pressure vibrations) occur at the valve, the hydraulic system must be shut down and the valve replaced immediately.

No further function test of the valve is planned or necessary.



Trouble-free operation is guaranteed by the individual acceptance test and is documented by the seal and the enclosed documents.

### 6.2 Commissioning the DBE-6S-.../..., setting pressure lower than the max. setting pressure

The system must be depressurized at the start of commissioning. Procedure:

- Compare the stamped information on the hexagon (fig. 3, item 1a) with the documentation supplied and the operating conditions.

- Remove the protective cap (fig. 3, item 7)
- Visually inspect the seal (fig. 3, item 5) for any damage



In case of damage:

- **Do not install the valve**
- **Replace the valve**

- Loosen the lock nut (fig. 3, item 3) and seal nut (fig. 3, item 4)
- Turn the adjusting spindle (fig. 3, item 6) in an anti-clockwise direction (hexagon socket **SW5**) until it has reached the stop (setting: depressurized)

- Activate the pressure supply
- Set the desired pressure by turning the adjusting spindle (fig. 3, item 6) in a clockwise direction while using a suitable operating pressure indicator.
- Tighten the lock nut (fig. 3, item 3) on the valve body (fig. 3, item 1) to lock this setting.
- Apply the protective cap (fig. 3, item 7) to cover the adjusting spindle (fig. 3, item 6)
- Carry out a visual inspection for leaks when the desired pressure has been reached



If leaks are detected, the hydraulic system must be shut down and the valve replaced immediately.



If unusual noises (pressure vibrations) occur at the valve, the hydraulic system must be shut down and the valve replaced immediately.

No further function test of the valve is planned or necessary.



Trouble-free operation is guaranteed by the individual acceptance test and is documented by the seal and the enclosed documents.

## 7 Operation and maintenance

### 7.1 Operation

During operation, the valve must be checked for leaks and unusual noises at regular intervals.



Inspection interval: once daily (visual inspection)



If leaks or mechanical damage are visible on the valve, the hydraulic system must be shut down and the valve replaced immediately.



If unusual noises (pressure vibrations) occur at the valve, the hydraulic system must be shut down and the valve replaced immediately.

### 7.2 Changing the pressure setting

The pressure setting can only be adjusted in the range below the maximum setting pressure. The maximum setting pressure is fixed by the sealing nut with a pin and seal. The procedure is as follows:

- Remove the protective cap (fig. 3, item 7)
- Visually check the seal (fig. 3, item 5) and the seal wire for damage.



In case of damage:

- **Replace the valve**

- Loosen the lock nut (fig. 3, item 3) and seal nut (fig. 3, item 4)
- Turn the adjusting spindle (fig. 3, item 6) in an anti-clockwise direction (hexagon socket **SW5**) until it has reached the stop (setting: depressurized)
- Activate the pressure supply
- Set the desired pressure by turning the adjusting spindle (fig. 3, item 6) in a clockwise direction while using a suitable operating pressure indicator.
- Tighten the lock nut (fig. 3, item 3) on the valve body (fig. 3, item 1) to lock this position.
- Apply the protective cap (fig. 3, item 7) to cover the adjusting spindle (fig. 3, item 6)
- Visually check the valve for leaks



If leaks or mechanical damage are visible on the valve, the hydraulic system must be shut down and the valve replaced immediately.



If unusual noises (pressure vibrations) occur at the valve, the hydraulic system must be shut down and the valve replaced immediately.

### 7.3 Maintenance and repairs

Maintenance by the operator is limited to regular visual inspections (see above) and checking the trip pressure at regular intervals. The intervals for regular inspections are to be determined by the operator according to the operating conditions and must be carried out at the latest whenever external or internal inspections of the corresponding pressure vessel are carried out.



Inspection interval: trip pressure once a month



Since the valve body has been designed such that it cannot be opened without damaging it, repairs by the operator are not intended nor possible.



If the valve malfunctions or is damaged, it must no longer be used. **It must be replaced, it cannot be repaired.**

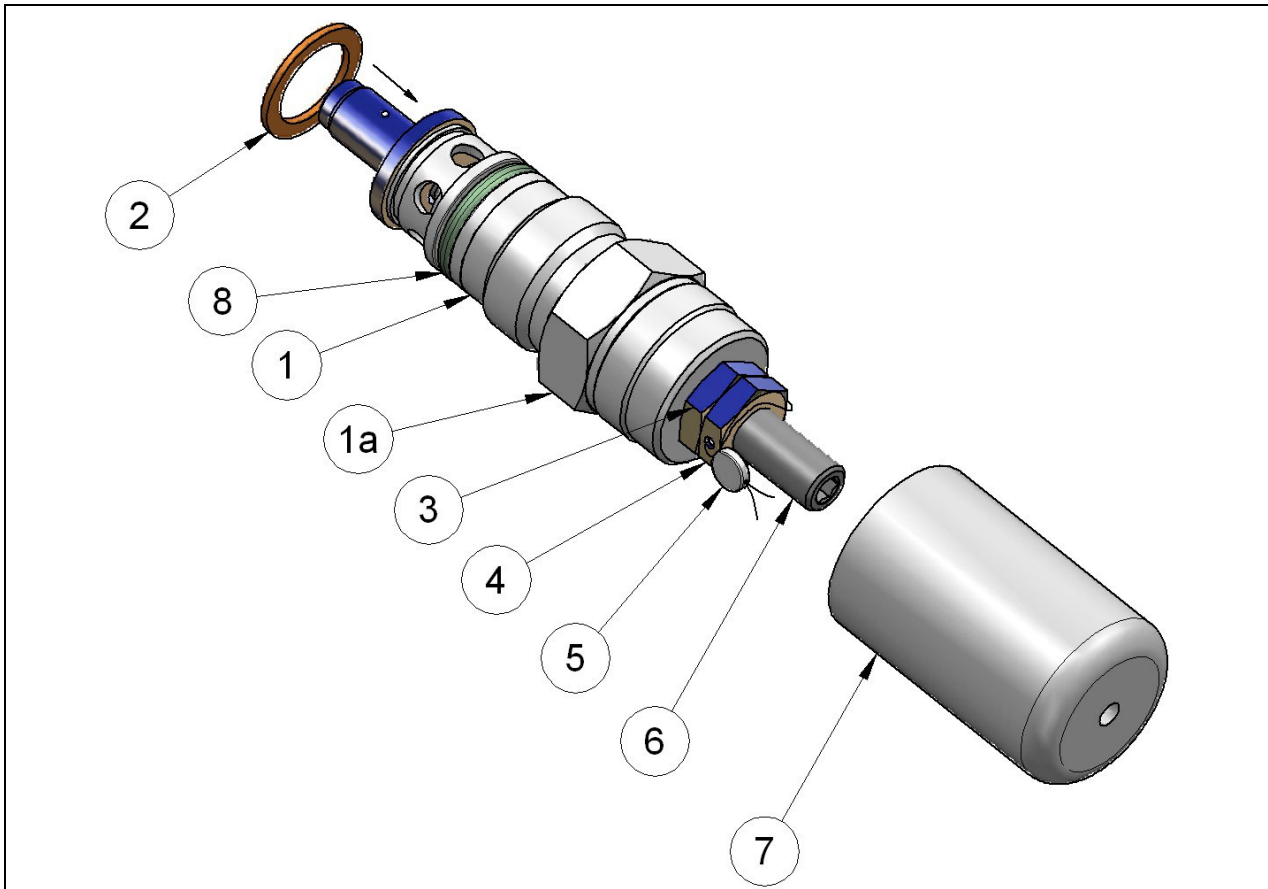


Figure 3: DBE pressure relief valve

- 1: Valve body
- 1a: Housing hexagon
- 2: Usit ring
- 3: Lock nut
- 4: Seal nut
- 5: Seal
- 6: Adjusting spindle
- 7: Protective cap
- 8: O-ring