
SCHUCK INSTALLATION/OPERATION MANUAL

Collector

Translation of the original German Operation Manual



Keep
for future
use!

Introduction

This manual is written for operating, maintenance and supervisory personnel.

This manual also describes components and auxiliary units that are not included or are only partially included in the scope of supply.

The illustration of systems, component groups and individual components may differ.

Project-specific designs and configurations are given in the supplied dimensional drawings and wiring diagrams as well as in the component supplier documentation.

The manual must be read, understood and observed by operating personnel. We emphasize that Franz Schuck GmbH assumes no liability for damage or malfunctions arising from non-compliance with this manual.

With regard to the illustrations and information in this manual, we reserve the right to make technical modifications which are required for the improvement of components.

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The copyright for this manual remains with Franz Schuck GmbH.

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1 Preliminary remarks

CAUTION

Danger of consequential damage due to incorrect operation, maintenance and/or handling!

We explicitly emphasize that we assume no liability for damage or malfunctions arising from non-compliance with this manual.

⇒ Therefore it is important to comply with all instructions in this manual!

This manual is to provide technicians and users with the necessary information for assembly and adjustment work and to help in performing work quickly and correctly.

For your own safety, read this manual carefully and pay particular attention to the highlighted tips. In any case, keep this manual to hand.

Pay special attention to all safety instructions in this manual. You will find the safety instructions in Chapter 2, in the introductions to chapters and before practical instructions. The General Terms and Conditions of the company apply exclusively to all deliveries and performances made by Franz Schuck GmbH, including any future transactions.

1.1 Legal notes

The component may only be installed and operated by skilled personnel.

Please check parts upon receipt for any possible damage that may have occurred during transport. Only undamaged parts may be fitted or used.

No warranty can be claimed if maintenance work is neglected or carried out incorrectly. Only original spare parts guarantee quality, reliability and exchangeability.

Any modification(s) of the component are in general prohibited by Franz Schuck GmbH. The manufacturer guarantee becomes void if this prohibition is not complied with!

1.2 Application range

This operation manual applies to the Franz Schuck GmbH product described in this manual.

The appropriate operation manuals for optional accessories must also be observed.

These operation manuals are included in the overall documentation if the accessories belong to the scope of supply from Franz Schuck GmbH.

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2 Safety

CAUTION

Dangers to the health and safety of operating and maintenance staff as well as to the functioning capacity of the valve. Dangers to the environment due to escaping gaseous or liquid media.

Danger to life due to escaping sour gas or sulphinic lye!

Non-compliance with these instructions jeopardizes the obligation by Franz Schuck GmbH to follow through on the warranty/guarantee.

⇒ The instructions in the "Safety" Chapter must be unconditionally observed!

2.1 Fundamental safety instructions

2.1.1 General

Modifications on valves and attachments which could affect safety may not be carried out without written permission from the manufacturer.

The guarantee becomes void if this prohibition is not complied with!



- This product has been manufactured according to the recognized rules of technology and according to internal Schuck quality standards; the product is shipped from the factory in a perfect technical condition
- Nevertheless, valves can cause hazards to people, material goods and the environment if operating personnel use them improperly or in a manner that is contrary to their intended use
- Any person dealing with assembly, commissioning, operation and/or maintenance of the valve must have read and understand this entire manual, and must be able to prove they possess professional qualifications for implementing the work
- Please observe the valid accident prevention regulations when installing the component
- Suitable protective gear must be worn when carrying out the works
- The manual must be kept safe and accessible at all times at the place where the valve is in use
- If malfunctions occur, notify Franz Schuck GmbH immediately and take appropriate measures
- Work on valves (such as inspection, servicing and/or maintenance work) may only be carried out in a depressurized state
- Valves must be effectively covered and/or protected when work is being carried out that could lead to contamination or damage to the valve, the assembled parts and/or the anti-corrosion protection

2.1.2 Intended use

The valve supplied is designed exclusively to distribute or collect the flow of a medium.

Depending on the drain valve used, the collector can be used both for gaseous or liquid media.

Any other media and/or applications outside the permissible pressure and temperature range can lead to damage and/or leaks.

Intended use includes observing the instructions in this operating manual and adhering to the operating conditions on the identification plate, the final inspection certification and drawings, as well as observing the locally applicable accident prevention guidelines and regulations for protecting the environment.

Any operating conditions or applications which differ from those prescribed are only valid with the agreement of Franz Schuck GmbH!

Start-up

Any operating conditions or applications which differ from those prescribed are only valid with the agreement of Franz Schuck GmbH!

To ensure that the permissible limit values (see above) can be complied with, the safety-related connection of the component must be carried out by the operator.

Prior to commissioning, the component must be tested as required by the national regulations, especially the safety installations and the installation must be checked by the responsible authority.

Operation

The above component may only be used and operated within the scope of the above mentioned technical specifications. For safety reasons a different use is not permissible.

This applies particularly for the pressure load the system is based on and the related load sequence.

It is the responsibility of the operator to ensure that the stated design temperatures cannot be exceeded/underrun. This applies particularly for outside installation.

In case hot pipeline surfaces create a hazard, contact with these surfaces must be avoided according to the hierarchy of measures by means of spatial separation, by wearing PPE or with organizational measures (such as identification marking).

2.1.3 Organizational measures

2.1.3.1 Special hazard points

There is no immediate danger from a valve that is installed and serviced according to instructions.

Life hazard in the case of escaping sour gas or sulphinic lye!



- Danger from escaping media
 - depending on the working medium, fire or explosion hazards can arise from electrical contact, naked flames, light and/or smoking
 - there is a risk of poisoning, chemical burns, scolding and environmental pollution

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- hazardous materials must be collected or sucked up, if necessary, and disposed of properly

2.1.3.2 Workplace and personal protective gear

Sufficient space is required for carrying out assembly and maintenance work safely. The operator must ensure that the workplace is clean and clearly arranged. If media (including residues) can escape in case the valve experiences failures or malfunctions, then the endangered persons must use suitable personal protective gear, as far as this is necessary.

Only use components in a technically perfect condition; use them according to specifications in a safety and risk-conscious manner while complying with the operation manual! Remedy faults in particular that could impair safety (or have them remedied)!

The operating manual must be supplemented by instructions which take into account supervisory and reporting duties with regard to work related particularities, e.g. in respect of how work is organized, working procedures and the personnel employed.

Staff commissioned to work on a component must have read the chapter on safety in this operating manual **before starting work**. Staff must already be aware of potential hazard sources when working to be in a position to react quickly and correctly. This applies in particular to staff who are only employed occasionally to work on a component, e.g. when setting up or servicing.

Observe all safety and hazard instructions for the equipment/the component!

Make sure all safety and hazard signs are complete and legible!

No modifications, attachments or conversions which could impair safety may be implemented without authorization from Franz Schuck GmbH!

Adhere to the prescribed deadlines, or the deadlines stated in the operation manual, for recurring tests/inspections!

Appropriate workshop equipment is essential for carrying out maintenance work.



Make sure the location or fire extinguishers is clearly indicated and operating instructions are available!

Make sure to observe the fire alarm and fire fighting instructions!

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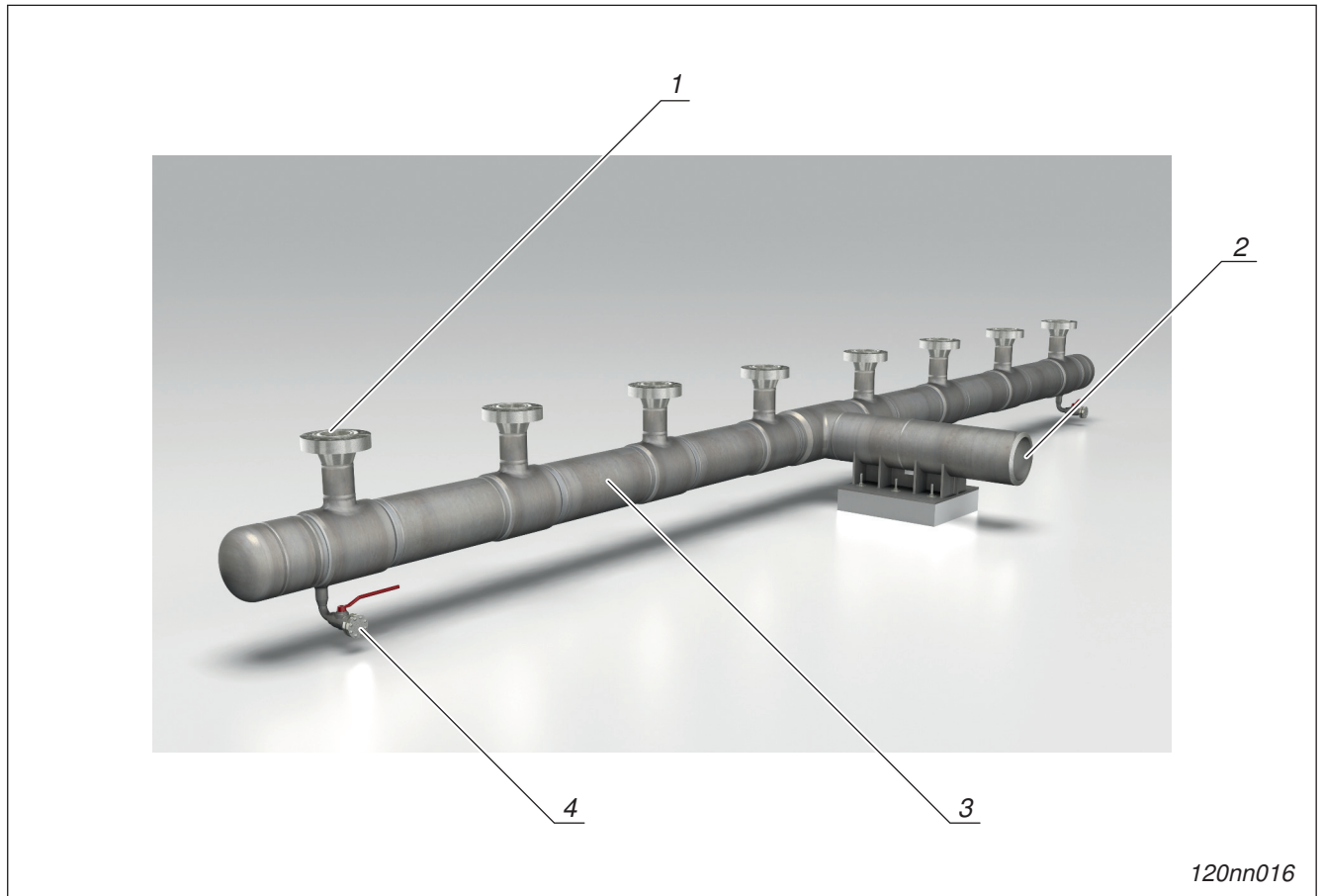
	 DANGER
	<p>Risk of injury from bursting components/system parts!</p>
	<p>If the permissible limit values are exceeded, the component/system can be destroyed, and as a consequence of this persons can be injured or killed!</p>
<p>⇒ Always operate components/system parts within the permissible limit values!</p>	

3 Description

3.1 System overview

Task

Depending on the design, the collector is used to distribute or collect gaseous or liquid media.



120nn016

Fig. 3-1 System overview collector

- | | |
|---|---|
| 1 Secondary connections, distribution or collection connection from the medium | 3 Base pipe |
| 2 Main connection, inlet or outlet of the total medium flow | 4 Drain valve to drain the collector |

Function

The main connection is used to feed in the medium or to discharge it. The secondary connections allow to distribute the medium in the base pipe or to collect it.

The drain valve (if necessary) is used to drain the collector.

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3.1.1 Construction and design

The collector is a pipeline component that is designed on customer request according to the station design.

The pressure-bearing walls, material, nominal width, pressure stage, inlets and outlets are custom-fit. The exact design data and application limits are stated in the corresponding documentation.

3.1.2 Accessories

Depending on the order, the collector can optionally be equipped with a drain valve for drainage ex factory.

3.1.3 Marking

Components

Manufacturer	SCHUCK
Date	----- -----
Declaration of conformity	CE
Reference no.	.0036
Nominal width	DN
Nominal pressure	PN
Operating pressure	PS
Operating temperature	min. Max.
Test pressure	PT
Connecting material	----- -----
Order number	----- -----
Ident. no.	----- -----
additional information	----- -----

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Fig. 3-2 Marking

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4 Installation

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	 DANGER
	Risk of injury from bursting components/system parts!
	If the permissible limit values are exceeded, the component/system can be destroyed, and as a consequence of this persons can be injured or killed!
⇒ Always operate components/system parts within the permissible limit values!	

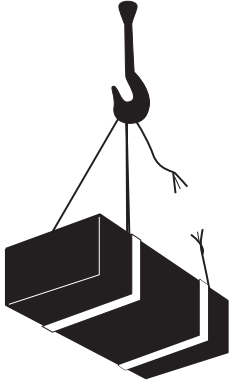

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	 DANGER
	Danger of electric shock!
	⇒ Do not connect the system to power before the earth resistance and the earthing connection has been tested, examined and approved by the customer.

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CAUTION
Danger of hardness increase of the steel when welding without pre-heating the weld junction at temperatures exceeding 80 °C!
⇒ Pre-heat the weld-on ends depending on the carbon equivalent (CEV) before starting the welding process.
⇒ Observe the notes on CEV (→ Page 7-3, Chapter 7.3).
⇒ Make sure to monitor the temperature when pre-heating and welding! Suitable measures (such as cooling, extending the weld-on ends without coating, dismantling, etc.) must be taken to avoid elevated temperatures in areas with coated surfaces. Temperatures of up to 100 °C are permissible for a short time.

4.1 Preparation

		DANGER
	LIFE HAZARD from suspended loads or shifting of loads!	
	Proceed cautiously when transporting the valve!	
	<ul style="list-style-type: none">⇒ To lift the ball valve only use appropriate lifting devices as well as the designated lifting points.⇒ Never hang or raise the ball valve on drive parts or piping systems!⇒ Lifting devices, industrial trucks and load-carrying equipment and must comply with the current regulations!	

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4.1.1 As-delivered condition

If no other contractual agreements have been made, the valves are supplied for transport under the following conditions:

- weld-on ends and mounted flange sides are coated with an anti-corrosive product
- the valves are packed on wooden pallets, lattice boxes or boxes

4.1.2 Inspection

Procedure

1. Check the delivery notes to make sure that the delivery is complete.
2. If there are any discrepancies, contact Franz Schuck GmbH immediately.
3. Check the delivery immediately on receipt for damage incurred during transport.
In the event of damage occurring, observe the stipulations of the insurance company which, among other things, prescribe that evidence of damage is confirmed immediately by the forwarding agent.
4. If applicable, photograph damage to proof evidence.

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4.1.3 Storage

If possible store the valve in its original packaging.

Take suitable measures to protect the valve against external influences, dirt and moisture.

4.1.4 Transport

		DANGER
	LIFE HAZARD from suspended loads or shifting of loads!	
	Proceed cautiously when transporting the valve!	

Procedure

1. Only use the original packaging for transporting the valve to its place of installation.
The valve can be damaged by incorrect handling.
2. Only use lifting devices that are appropriate to the weight being moved.
3. Use appropriate protective materials when using steel cables or chains in order to protect the outer coating.
4. Ensure the load does not tip sideways.
5. Never use fittings or pipes for erecting or lifting works.
6. When using suspension eyes, always use two eyes or more!

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4.2 Installation

CAUTION

Damage to the component in the case of mechanical overloading!
The component is not designed as fixed point/support of the pipeline.
⇒ Extra support on the pipeline is required.

4.2.1 General information

The current applicable legal regulations, especially the following regulations and rules must be complied with:

- Regulations by the government safety organization
- Technical specifications issued by inspecting authorities or that have to be observed due to the state of the art
- Specifications resulting from the documentation of this unit

4.2.2 General installation instructions

- This pressure equipment is exclusively designed for the installation agreed upon with the orderer. Pressure equipment designed to be installed inside buildings must not be installed outside.
- Welding works and heat treatments are not permissible on pressure-bearing walls of the pressure device.
- The unit must be installed in a way that guarantees that flange connections, valves, measuring spots and inspection openings are easily accessible and visible.
- The installation must be stress-free in terms of position (horizontal, vertical, sloping), the unit must be attached/supported with the provided fastening elements/support points.
- Additional forces must not be induced into the walls of the pressure equipment via fastening elements/supports.
- Vibration stress and corrosion at the pressure equipment induced from outside must be avoided with suitable measures.
- The operator is responsible for the medium-related selection of materials suitable for the seals.

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Checking the installation position

The valve must be installed in the pipeline free from mechanical stress.

Place the collector on a suitable foundation to avoid any bending, torsional, shear or tensile stress.

4.2.3 Insulating joints with flanges

For delivery, the flange sealing surfaces have been provided with anti-corrosion protection. The flange sealing surfaces must be carefully cleaned before being installed in the pipeline.

The flange seals and bolts must be suited for sealing strip shape, pressure, temperature and medium.

The pipeline counter flanges must be aligned plane-parallel and concentrically.

Retighten the screw connections crosswise and evenly with the appropriate tightening torque.

Recommended tightening sequence (→ Page 7-1, Fig. 7-1).

4.2.4 Welding ends version

For delivery, the weld ends are provided with anti-corrosion protection. The weld ends must be carefully cleaned before being welded into the pipeline.

Welding must be carried out using an appropriate process and must be in accordance with all requisite instructions and requirements (test procedure, welding test, welding plan, test plan, etc.). Apply an appropriate anti-corrosion protection as soon as possible after finishing the weld seams.

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4.2.5 Valve installation

Prerequisite

- The mechanical components of the system have been tested
- All damage was reported and remedied
- General safety instructions were observed prior to assembly/disassembly
- Preparatory measures (tabular, with tool overview) were taken
- Direct hazard sources (electric/temperature/mechanical/crush, etc.) are excluded

Procedure

1. Do not remove the packaging of the valve and the protective caps until installing the valve.
2. Carefully remove the anti-corrosion protection on the flange sealing surfaces or the weld-on ends using appropriate means.
3. Examine the pipelines for contamination and foreign particles before installation, and clean if necessary.
4. Ensure that no contamination or foreign body can enter the pipeline or the valve during assembly work.
5. Install the valve into the pipeline as stress-free as possible.
External tractive, compressive or bending forces must be avoided or reduced to a minimum using suitable measures (such as erecting a foundation).
6. Ensure that inner and outer coating are not damaged during installation.

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5 Operation

The component is a passive component. To this effect, operation only takes place in the form of maintenance works (→ Page 6-1, Chapter 6.1).



In either case, comply with the safety instructions and protective measures specified in chapter 2 as well as the applicable legal regulations.

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6 Maintenance

CAUTION

Dangers to health and safety of operating and maintenance personnel. Dangers to the environment.

Personnel can be harmed by external energy or stored energy. Escaping gaseous or liquid media can be harmful to personnel and the environment.

Life hazard in the case of escaping sour gas or sulphinic lye!

⇒ The safety instructions must be unconditionally observed!

For support in maintenance and optimization work, we recommend you contact the Franz Schuck GmbH service department.

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6.1 Inspection/Maintenance

6.1.1 Maintenance/servicing

According to the national regulations, the component must continually be tested and inspected by authorized persons.

Prior to that, the pressure equipment must be depressurized and the medium must be removed. The pressure equipment may only be opened when it is pressureless.

Welding works and heat treatments are not permissible on pressure-bearing walls of the pressure device.

In case hot pipeline surfaces create a hazard, contact with these surfaces must be avoided according to the hierarchy of measures by means of spatial separation, by wearing PPE or with organizational measures (such as identification marking).

6.1.2 Venting/drainage (optional)

CAUTION

Dangers to health and safety of operating and maintenance personnel.

During the venting and discharge/drainage procedures, medium can escape under high pressure and with a considerable noise.

⇒ Observe the blow-out direction!
Avoid contact with medium!

⇒ Wear ear protection!

7 Appendix

7.1 Tightening sequence for flange bolts

The bolt numbers represent the order in which they should be tightened.

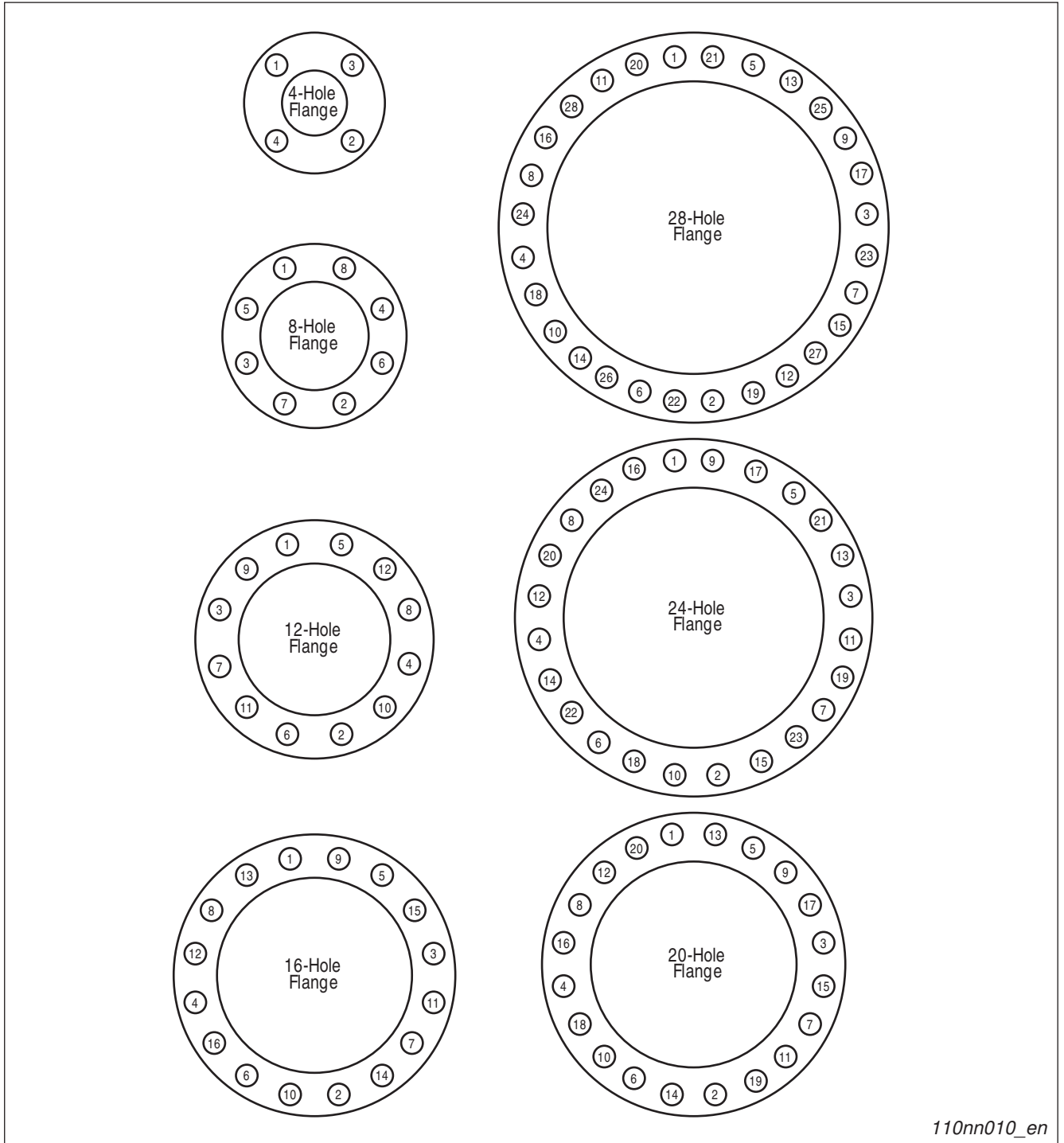


Fig. 7-1 Tightening sequence for flange bolts

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7.2 Conversion factors

Value	Unit	Conversion unit	Factor
Length	mm	in	0.03934
	in	mm	25.4
	m	ft	3.28084
	ft	m	0.3048
Weight	kg	lb	2.204622
	lb	kg	0.453592
Pressure	bar	psi	14.5035
	psi	bar	0.06895
	MPa	psi	145.035
	psi	MPa	0.006895
	bar	MPa	0.1
	MPa	bar	10
Temperature	°C	°F	$1.8 \text{ °C} + 32$
	°F	°C	$(\text{°F} - 32) \times 0.5556$
Volume	cm ³	in ³ (cubic inch)	0.06102
	in ³ (cubic inch)	cm ³	16.387

Tab. 7-1 Conversion factors

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7.3 Calculation formula to determine the carbon equivalent (CEV)

To avoid an increased hardness in the weld junctions during welding, it is required to pre-heat the weld-on ends depending among others on the carbon equivalent.

7.3.1 Calculation formula (standard)

The calculation formula applies for steels of the following consistency:

- Carbon **C**: up to 0.22%
- Manganese **Mn**: up to 1.6%
- Chromium **Cr**: up to 1.0%
- Nickel **Ni**: up to 3.5%
- Molybdenum **Mo**: up to 0.6%
- Copper **Cu**: up to 1.0%

The calculation formula for steels of the above-mentioned consistency is:

$$CEV = C + \frac{\% Mo}{4} + \frac{\% Cr}{5} + \frac{\% Mn}{6} + \frac{\% Ni}{15} + \frac{\% P}{2} + \frac{\% Si}{4} + \frac{\% V}{5} + \frac{\% Cu}{13} \%$$

Carbon Equivalent

Fig. 7-2 Steel consistency and the resulting calculation formula

Adjust the pre-heat temperature on an individual basis depending on carbon equivalent, welding consumable, product gauge, hydrogen content and heat input in compliance with the welding supervisor.



The following temperature is recommended after determining the CEV value:

CEV [%]	Recommended temperature for pre-heating [°C]
≤ 0.45	up to 100 °C
0.45 – 0.60	150 – 250 °C

Tab. 7-2 Recommended temperature for pre-heating

7.3.2 Calculation formula for steels with different consistencies

When using steels outside the above-mentioned consistency, adjust the heat input in compliance with the welding supervisor on an individual basis.

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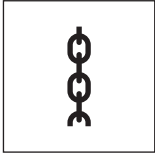


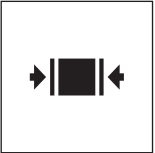
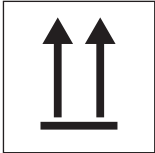









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7.4 Marking of packages

7.4.1 Marking of packages according to DIN 55402 and ISO R 780

Overview

Marking of packages according to DIN 55402 and ISO R 780

			
Electrostatic sensitive device	Do NOT use fork lift truck here	Sling here	Tear off here
			
Use no hooks	Clamp here	This way up	Center of gravity
			
Do not destroy barrier	NO hand truck here	Protect from heat and radioactive sources	Keep dry
			
Keep away from heat	Fragile, Handle with care	Stacking limitation	Temperature limitations

Tab. 7-3 Marking of packages according to DIN 55402 and ISO R 780

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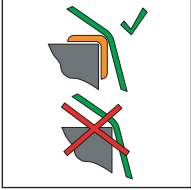

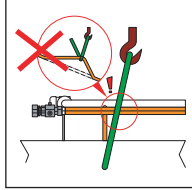
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7.4.2 Schuck symbols – transporting and unpacking packages

Overview

Schuck symbols – transporting and unpacking packages

			
Use edge protectors	Do not use chains	Do not destroy pipes	

Tab. 7-4 Schuck symbols – transporting and unpacking packages

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