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Erfindergeist serienmäßig.

Flange Clamps

Weight and size optimised clamps for clamping operations on the flange area

Disadvantage of universal clamp concept

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- Standard clamp which can be used in all fixtures
- Reduction to 3 sizes (40 / 50 / 63)
- Clamp / cylinder additionally conceived for maximum opening angle (135°)
- Clamp arm only available from 140 mm in length
- Clamp force adjusted to this arm length for an effective force of ca. 25 – 50 kg

The univeral clamp is over-sized with respect to clamping operations on flanges

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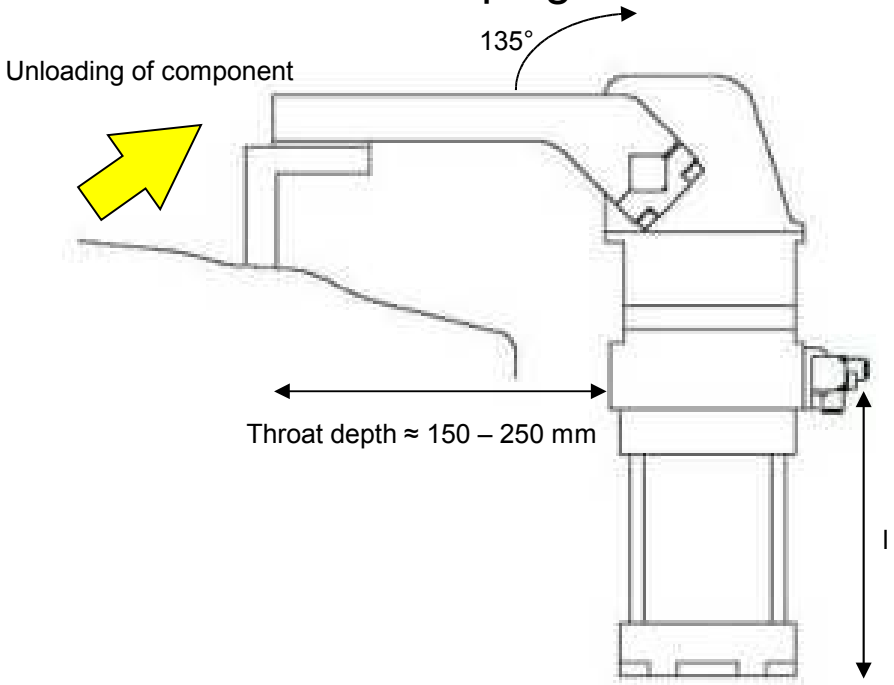
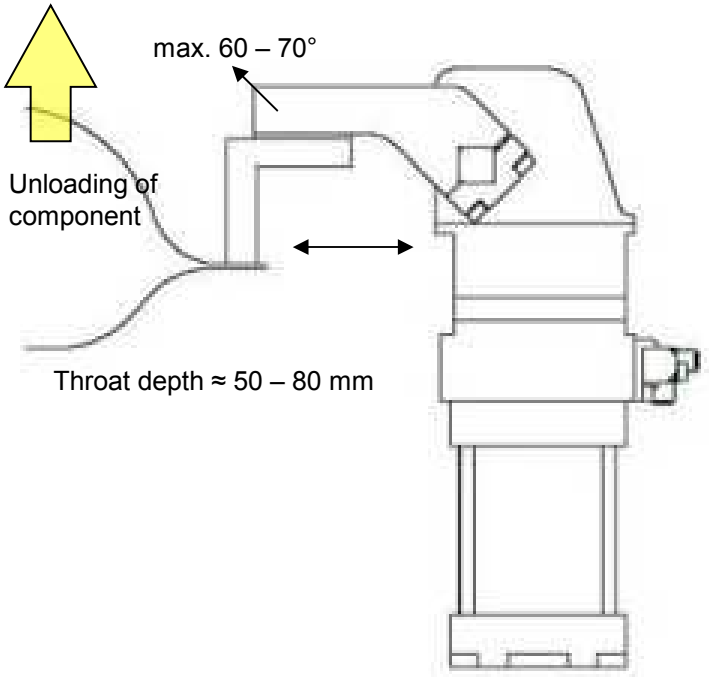
Standard clamping situation



- Opening angle from 0 to 135° required, subject to unloading direction of the component
- Min. throat depth 150 - 250 mm

Clamping on the flange



- Opening angle ≈ 60 - 70°with usual unloading direction
- Throat depth ≈ 50 - 80 mm

Difference between “Clamping“ and “Holding“

- **Clamping in a fixture:**

  The clamp must put the components in position with excessive force. In particular as to complex components and sheet thicknesses > 1.5 mm the clamp takes on the function of a “small press“ with clamping torques of >> 50 kg / 500 N.

- **Holding in a gripper:**

  The pre-tacked components are either transported or spot-welded by a column welding tong. Not so much the clamp force but a sufficient holding force, which in addition absorbes reactional forces due to “cap stickers“ on the gripper, is decisive ⇨ holding force >> 50 kg / 500 N.

Higher clamp force with shorter clamp arm

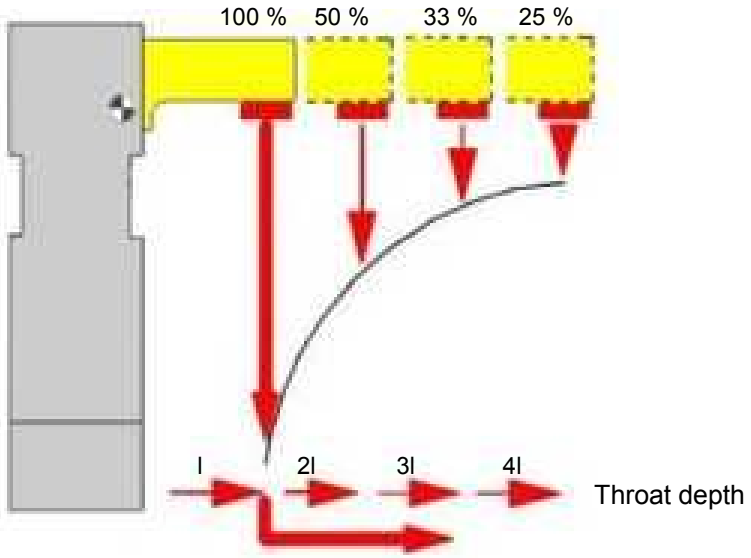
Clamps generate a constant torque at the drive shaft of the clamp arm (subject to mechanical transmission and cylinder size)

For example: V 50 ⇨ 160 Nm

Hence, the following applies: the shorter the arm, the higher the force

or

“If the arm is shortened, smaller clamps can be used while the force remains the same“



Flange clamp principle

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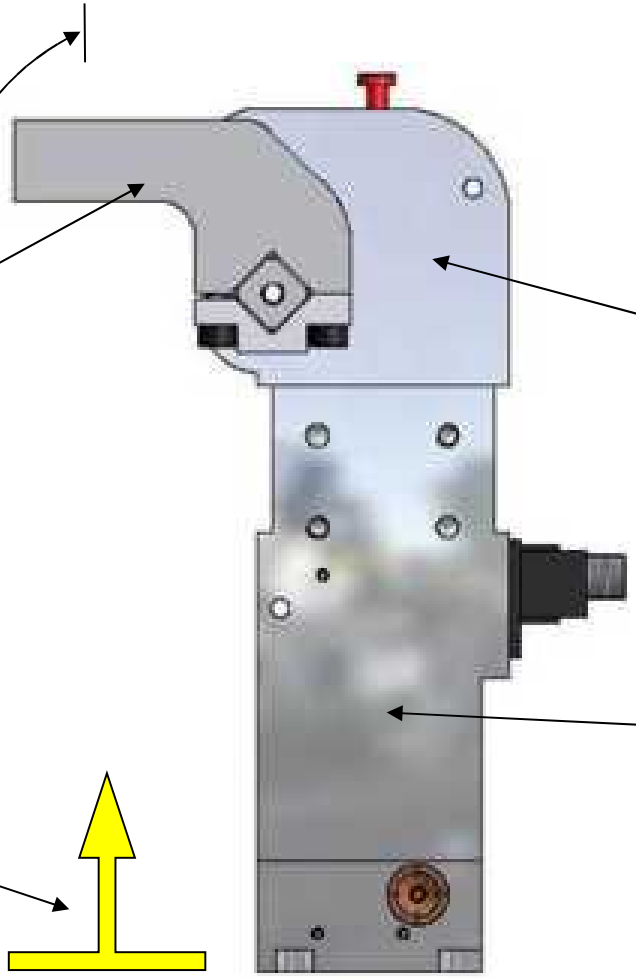
1. Reduced opening angle
   ⇨ 70° instead of 135°

2. Shortened clamp arm
   70 instead of 140 mm with transverse hole pattern



3. Reduced cylinder length, as less stroke is needed for 70°

4. Smaller toggle-joint mechanism, as lower torques are required;
   sufficient holding forces due to equivalently dimensioned housings

5. Reduced cylinder
   Ø 40 instead of 50 / 63 for low torque

Technical comparison of flange clamp and universal clamp

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Flange clamp						Universal clamp				
Type	Weight in kg	Length in mm	Holding force in N *)	Clamp force in N *)		Clamp force in N *)	Holding force in N *)	Length in mm	Weight in kg	Type
AFS 25	1.0	175.5	1,500	500	≈	1,000	3,000	235.0	2.0	**V 40**
AFS 40	2.2	234.0	4,200	1,650	≈	1,200	5,500	321.0	4.3	**V 50.1**
AFS 50	4.0	259.0	10,000	2,500	≈	2,600	10,000	361.0	5.7	**V 63.1**

*) at the clamp arm end

Flange clamps
- the product range

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APG 40

APG 40

APG 40 AS

AFS 25

AFS 40

AFS 50

Thank you for your attention.

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