# CLS009

01-2016

# Eccentric-Lever-Clamp

Double acting, max. 250 bar working pressure

DA | 250 bar

## Advantages:

- ✓ **Compact Design**
- ✓ **Including Pneumatic Control**
- ✓ **Top-Flange- / Bottom-Flange-Models**
- ✓ **Simple Counter Contour**
- ✓ **Thread and manifold connection**
- ✓ **Variable Mounting Position**

## Recommendations for use:

The eccentric lever clamp has a relatively high clamping force with a small base area. For this reason, this solution is suitable for machines with high power and challenging spaces.

Oil supply through drilled channels or via the unitary thread M10x1.

For the installation of the clamping cylinder, the flange surfaces should be adapted to the height of the workpiece.

These clamps are particularly suitable when no lateral swiveling of the clamping lever is possible.

The flow rate of about 1.8 l / min should not be exceeded.

When customer's tension levers are used, they should be equipped with a thrust bolt or hardened on the clamping / support surface.

As medium we recommend hydraulic oils according DIN 51524 (HL, HLP).

As already mentioned, the eccentric lever clamp generate high forces. Workpieces and fixtures have to be designed for such loads.

During operation consists a danger of crushing.
The accident prevention regulations must be strictly adhered therefore.

The clamps should be regularly checked for contamination and cleaned if necessary.

The use side goose-necked clamping levers is not recommended.

## Description:

The eccentric lever clamp is a double-acting pressure cylinder, in which the clamping lever is moved over a eccentrically mounted rotary point to clamp the workpiece.

The type with bottom-side connection can be powered with pressure oil by drilled channels, as well as with the laterally integrated connecting threads.

All standard versions are equipped with the possibility to use a **pneumatic position detection** for clamping and unclamping.
The actual movement process can only be carried out hydraulically.

It is not necessary to cure the clamping lever, but they are designed to allow a case hardening. The default levers are case-hardened.

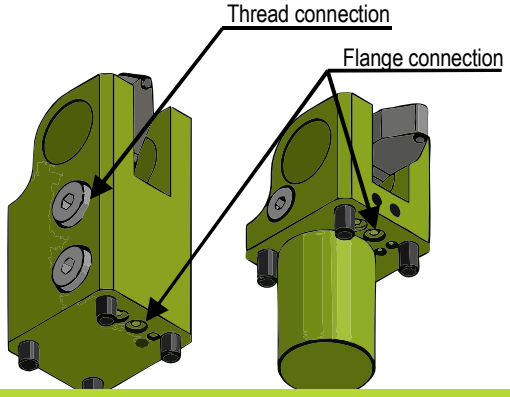
When the standard clamping lever is used, this one does not constitute an interference contour in relation to the base area.

For reliable position detection of the clamping lever, the position of the eccentric is queried.

These workholding elements have no losable parts.

With this solution, no complicated mounting contours have to be produced.

Seals, fastening and locking screws are included in the scope of supply!




## Contact

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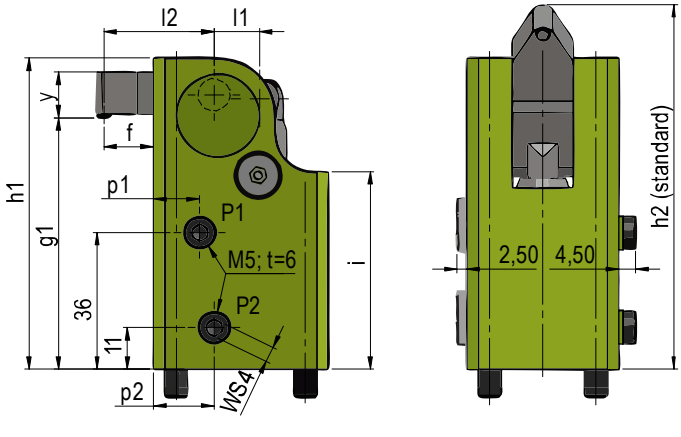
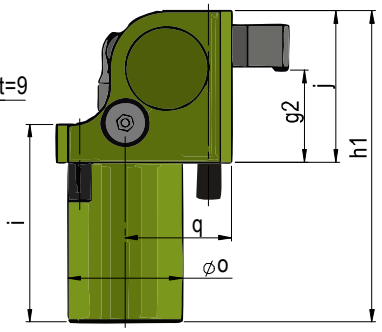
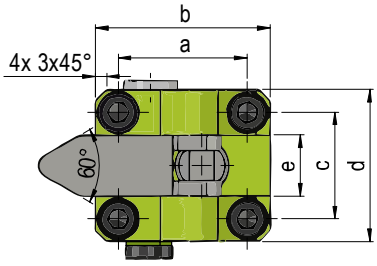
## Details

### Bottom-Flange Type (IELCXX-001)

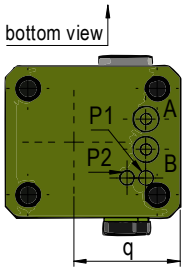


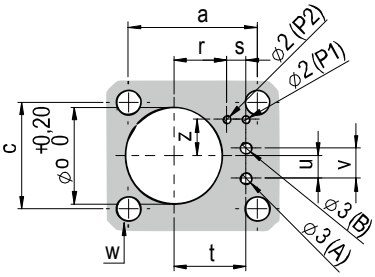

### Top-FlangeType (IELCXX-002)




A = Clamping
B = Unclamping
P1= Control clamping
P2= Control open

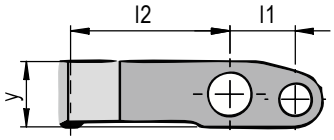



### Mounting contour

- If flange bottom type is used, „o“ is not required
- P1 and P2 only required when a pneumatic control is used
- If only thread connection is used, „w“ is not necessary

### Lever-standard




### Lever-semifinished

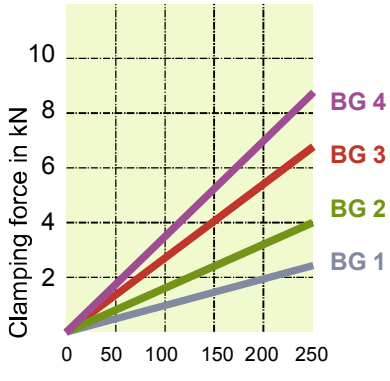

## Notes

### Clamping force

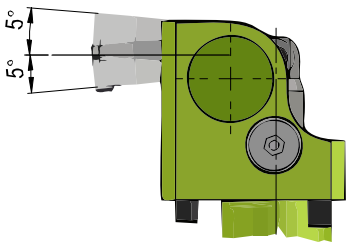
**Calculation - Clamping force**

Clamping $F_S = \frac{F_K \times l1}{l2;\ l3}$

Clamping force depending on the operating pressure when using the standard clamping lever

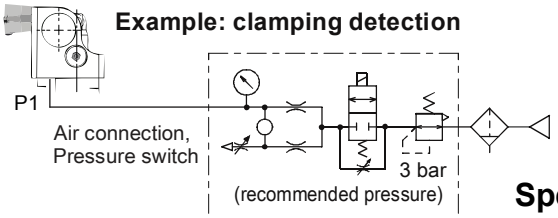



### Clamping position

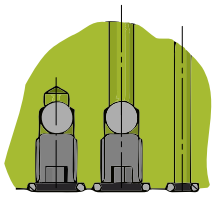



In order to create the maximum clamping force and minimum transverse force, a variation of the horizontal clamping position of the lever of a maximum of +/- 5 ° is recommended.
**The pneumatic detection is only working in this area.**

**Example: clamping detection**




### Sealing



Only applies to flange-bottom type

If the manifold connection is chosen for supplying pressure oil, the set screws (M5) and the balls must be removed!

**For size BG 1 this additional type of sealing is not integated.**

For mounting of these elements it is generally recommended to keep the seals at the bottom.

**Special solutions on request!**

## Dimensions and part numbers

| Size | Unit | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| Piston force at 250 bar | [kN] | 5,0 | 9,5 | 15,4 | 20,1 |
| Piston force at 100 bar | [kN] | 2,0 | 3,8 | 6,2 | 8,0 |
| Clamping force at 250 bar with stand.-lever * | [kN] | 2,3 | 3,9 | 6,7 | 8,5 |
| **Piston-Ø** | **[mm]** | **16** | **22** | **28** | **32** |
| Min. air pressure for clamping control | [bar] | 3 | 3 | 3 | 3 |
| a | [mm] | 29 | 34 | 40 | 46 |
| b | [mm] | 40 | 46 | 55 | 64 |
| c | [mm] | 25 | 28 | 35 | 40 |
| d | [mm] | 36 | 40 | 50 | 56 |
| e | [mm] | 14 | 16 | 20 | 24 |
| f * | [mm] | 13 | 13 | 16 | 16 |
| g1 * | [mm] | 62 | 66 | 76 | 80,5 |
| g1 min. * | [mm] | 59,5 | 63,5 | 72,5 | 77 |
| g1 max. * | [mm] | 64,5 | 68,5 | 79,5 | 84 |
| g2 * (**) | [mm] | 26 | 24 | 30 | 34,5 |
| g2 min. * | [mm] | 23,5 | 21,5 | 26,5 | 31 |
| g2 max. * | [mm] | 28,5 | 26,5 | 33,5 | 38 |
| h1 | [mm] | 75 | 82 | 97 | 104 |
| h2 | [mm] | 89,3 | 96 | 114 | 121,8 |
| i | [mm] | 19 | 52 | 57 | 57 |
| j ** | [mm] | 39 | 40 | 51 | 58 |
| k | [mm] | 14 | 15 | 18 | 19 |
| l1 | [mm] | 12 | 12 | 15 | 16 |
| l2 * | [mm] | 26 | 29 | 34,5 | 38 |
| l3 | [mm] | 43 | 46 | 54,5 | 59 |
| m | [mm] | 14,5 | 13,5 | 14 | 14 |
| n | [mm] | 36 | 38 | 44,5 | 45 |
| o ** | [mm] | 24 | 30 | 35 | 40 |
| p1 | [mm] | 11 | 12,2 | 14,5 | 16,5 |
| p2 | [mm] | 14 | 16 | 19,5 | 22 |
| q | [mm] | 25 | 30 | 33,5 | 38 |
| r | [mm] | 11 | 14 | 16 | 18 |
| s | [mm] | 4,5 | 4,5 | 5 | 6 |
| t | [mm] | 16 | 19 | 21 | 24 |
| u | [mm] | 6 | 6 | 9 | 8 |
| v | [mm] | 6 | 8 | 9 | 10 |
| w | [mm] | M5; 10 depth | M6; 12 depth | M8; 16 depth | M8; 16 depth |
| y | [mm] | 10 | 12 | 15 | 18 |
| z | [mm] | 8,5 | 9,5 | 11,5 | 14 |
| **Manifold Connection Bottom-Flange** | | **IELC16-001** | **IELC22-001** | **IELC28-001** | **IELC32-001** |
| **O-Ring with Top-Flange connection** | | **IELC16-002** | **IELC22-002** | **IELC28-002** | **IELC32-002** |
| **Lever standard** | | **2014010** | **2016010** | **2020010** | **2024010** |
| **Lever semifinished** | | **2014011** | **2016011** | **2020011** | **2024011** |

* Applies only for standard lever ** Applies only for Top-Flange type (...-002)