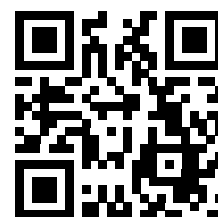


CCL CENTRIC ELEMENT

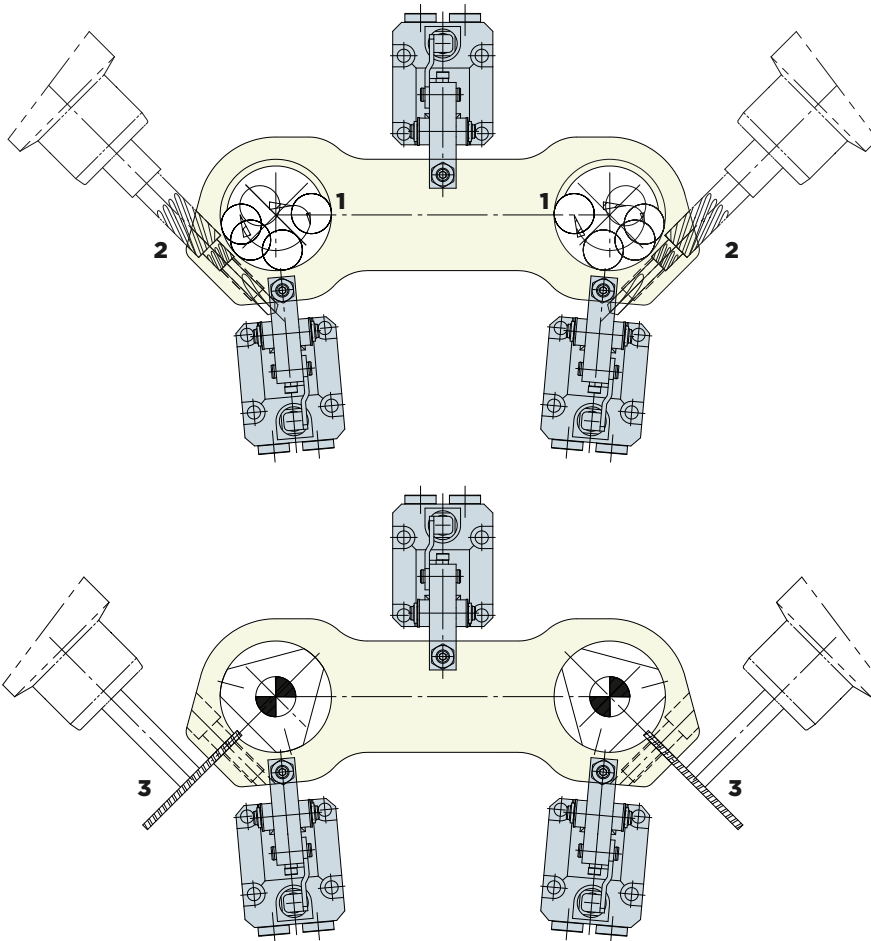


GENERAL INFORMATION ON CCL CENTRIC ELEMENTS

USE OF CENTRIC DEVICE:

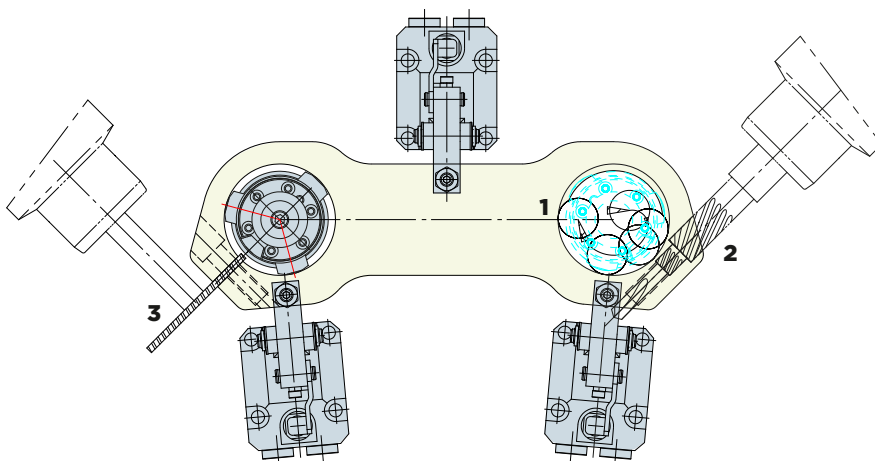
The CCL centric element was developed for final machining of workpieces in a single working cycle without the need to reposition the workpiece again in the fixture, which helps to reduce faults and downtimes.

CONVENTIONAL FIXTURE WITH TWO MACHINING PHASES



Many parts are usually machined in several phases. Final machining often requires repositioning of the workpieces, which inevitably reduces productivity, so that more machines with appropriate equipment are necessary in order to achieve the requested number of pieces. The resulting investment cost increase the production costs and affect the competitiveness in an increasingly aggressive market environment. As HYDROBLOCK has always been committed to supporting its customers in the solution of upcoming production problems, we have continuously invested in new products in order to optimize clamping and machining cycles, avoid downtimes and improve cutting and machining parameters. The CCL centric element is designed to machine workpieces that usually involve at least a second clamping process and two machining cycles in a single working cycle without any repositioning of the workpiece being required. As shown on the following pages, a finished workpiece with excellent machining parameters can be produced from the raw material in a single machining cycle.

FIXTURE WITH CCL FOR A SINGLE MACHINING PHASE



This cylinder version can be delivered with customized mounting dimensions and in tailored configurations. It is suitable for machining a wide range of diameters and ensures stable clamping at a force adapted to the specific requirements and a flexible working stroke that can be adjusted during machining. Please contact HYDROBLOCK for more detailed information on the available versions of this cylinder type.

The CCL centric element allows new machining solutions to be implemented in the fixtures and thus enhances our customer's productivity.



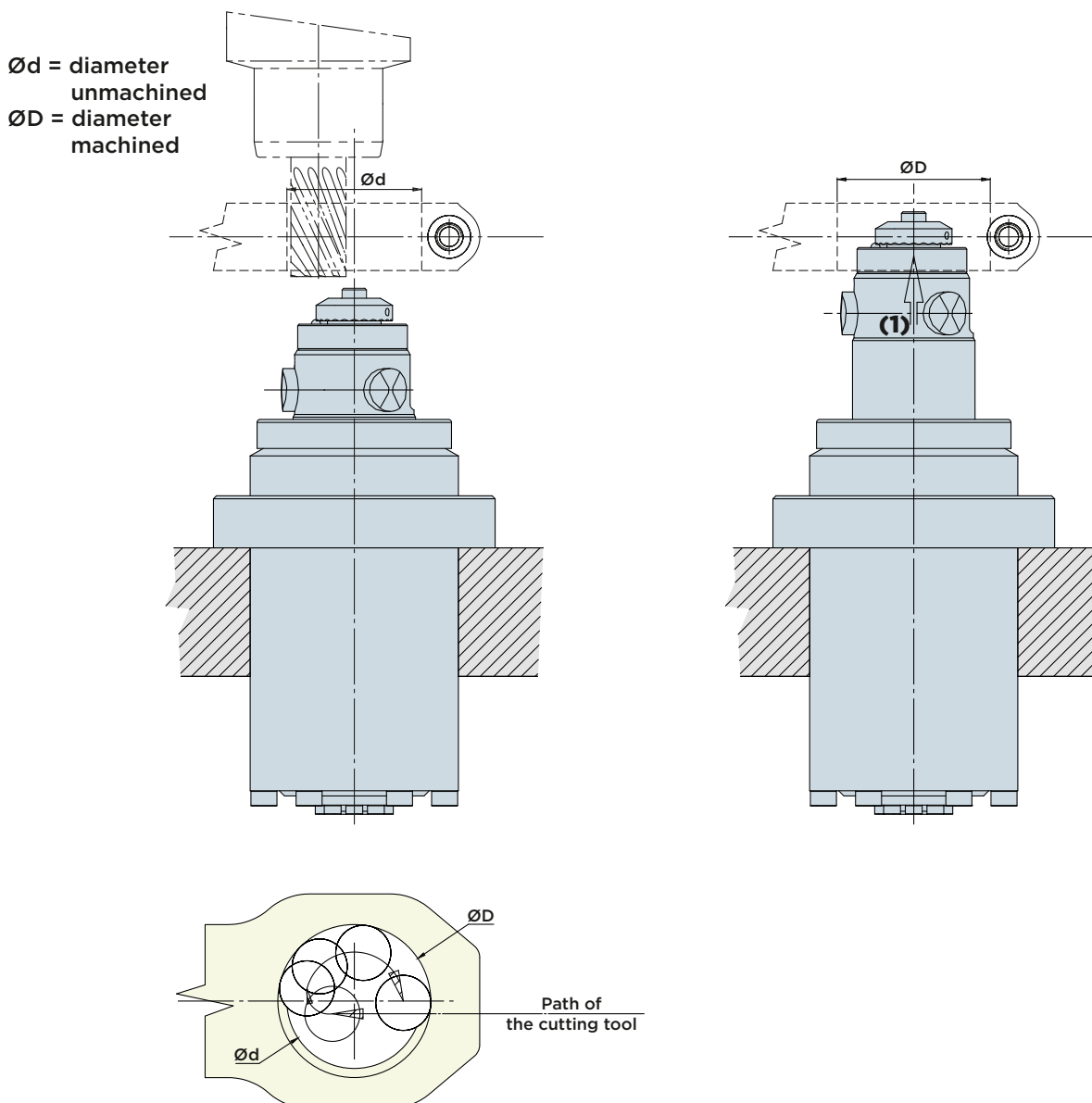
APPLICATION OF THE CCL ELEMENT (EXAMPLE)

1

The workpiece to be machined is clamped in the usual way in the fixture for the first machining phase. The CCL element for axial machining (diameter "D") must be placed so that the bolts are aligned relative to the centre line of the workpiece during the advance motion. Now, the final diameter machining of the workpiece is performed as with conventional machining processes.

2a

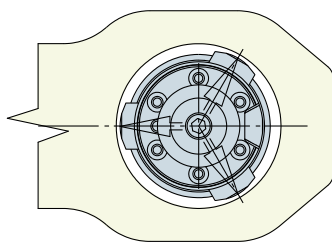
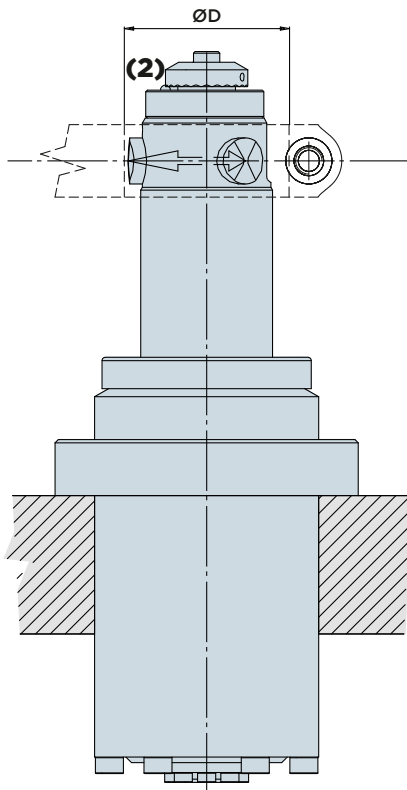
After having machined the diameter "D" in the appropriate position, the cylinder is pressurized and extended up to the limit stop. (1) (ADVANCE OF THE CENTRING UNIT TO THE LIMIT STOP)



APPLICATION OF THE CCL ELEMENT (EXAMPLE)

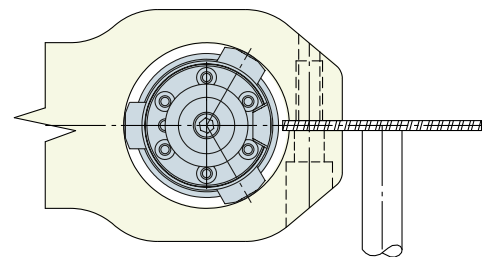
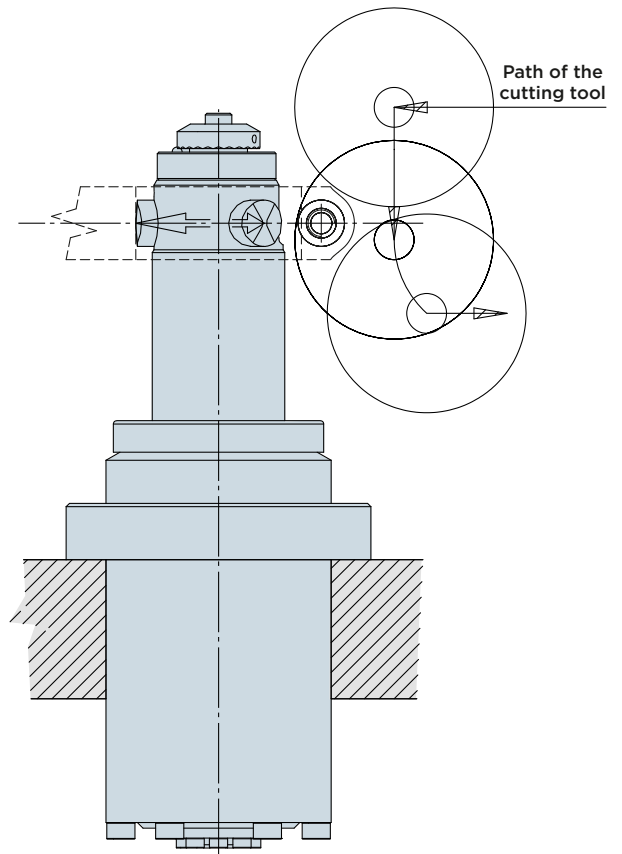
2b

During the advance motion, the bolts of the CCL for the diameter "D" (2) are automatically extended as soon as the limit stop is reached. SELF-ADJUSTING up to the diameter "D" (2).



3

After having reached the diameter "D", the bolts of the CCL contact the diameter and adapt to it automatically compensating any possible minor deviation caused by poor machining or positioning. Workpiece deformations are thus minimized (SELF-ADJUSTMENT ON THE WORKPIECE DIAMETER/CLAMPING ON THE WORKPIECE). At this point, the next machining steps can be performed.



APPLICATION OF THE CCL ELEMENT (EXAMPLE)

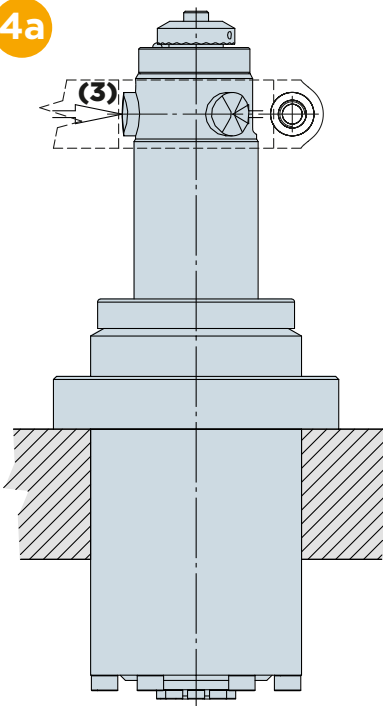
4

As soon as all machining steps are completed, the CCL element is released and moved back into the retracted position: the bolts (3) are automatically retracted and the cylinder moves back into the initial position (4).

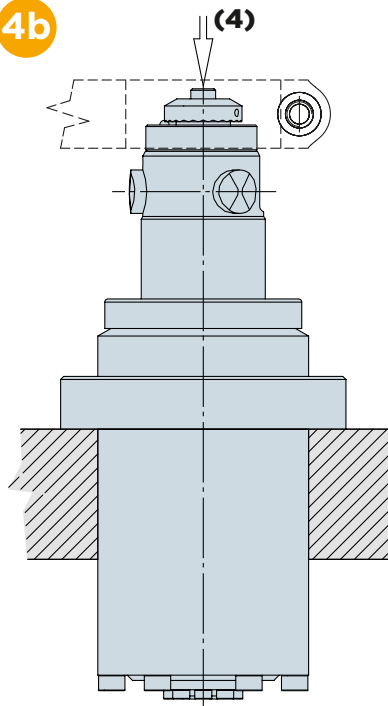
5

As soon as the CCL has reached its initial position, the conventional clamping systems can be opened, the finished workpiece can be removed and replaced by a new workpiece.

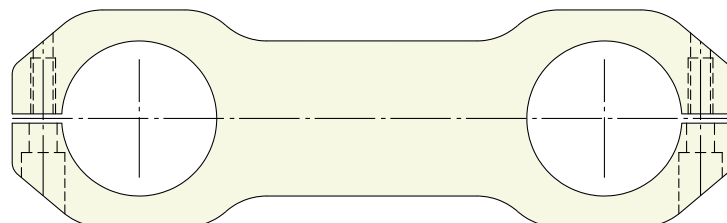
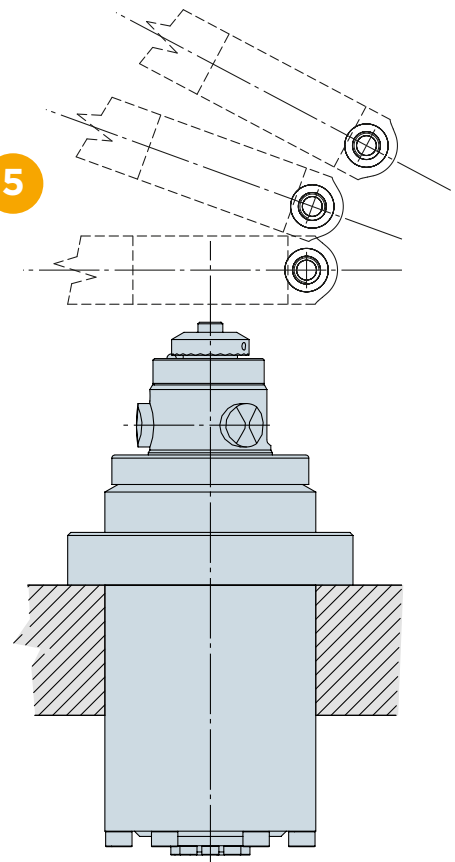
4a



4b



5



Due to the wide range of different workpieces requiring a customized design, there are no cylinders with standard working strokes, clamping diameters and forces. Please contact HYDROBLOCK for more detailed information on mounting dimensions and seats. As indication, the workpiece gripping diameters can be made with the same dimensions and extension strokes of the CCA devices as on page 238



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