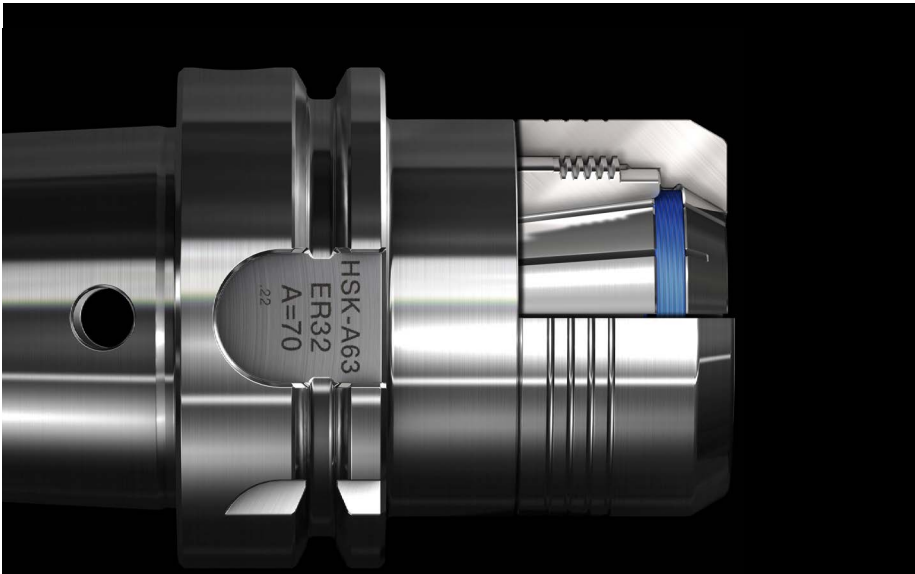




Operating Instructions

Precision Collet Chucks
CENTRO|P



Foreword

These operating instructions will help you to use the Precision Collet Chucks CENTRO|P, which are suitable for the universal and high-precision use, both

- as intended
- and safe.

Before using them, please read the operating instructions and keep them at hand for the operating personnel.

If you do not understand individual pieces of information in these operating instructions or if there is a lack of information, ask your responsible contact person or contact us.

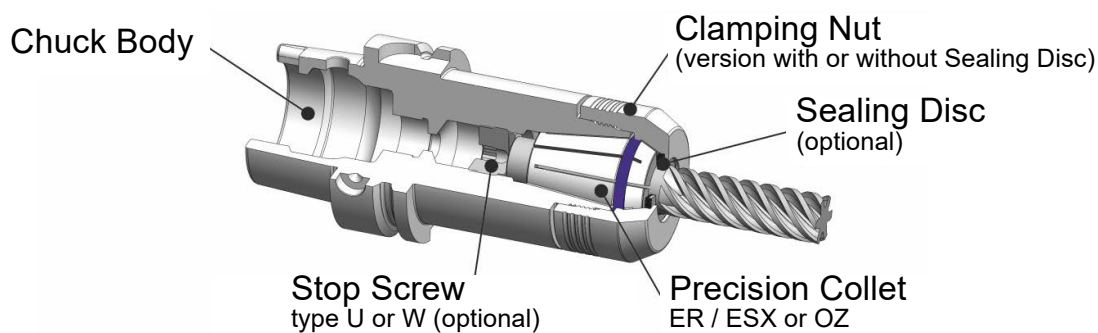
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Important Hints

- i** Only clamp tool shanks with nominal diameter of the collet and shank tolerance up to h10 in the CENTRO|P!
- i** Before clamping, the CENTRO|P chuck body, collet, clamping nut as well as the tool shank must be cleaned properly (follow care instruction page 9). Impurities affect the clamping force, precision and service life of the clamping system.
- i** The shank of the cutting tool must be clamped over 3/4 of the clamping bore length at least (completely in case of small \emptyset). Otherwise, concentricity problems or a loss of holding force may occur.



General Hints

- i** **System Accuracy**
In order to guarantee the system accuracy of $3\mu\text{m}$, original FAHRION Precision Collets DIN ISO 15488 (ER/ESX) GERC-HP/-HPD/-HPDD or DIN ISO 10897 (OZ) form B must be used, since they are perfectly matched to the chuck.
- i** **Clamping Nuts**
The Clamping Nuts are available in two versions:
 - Version HPC without Sealing Disc and
 - Version HPC-DI with Sealing Disc – for inner coolant supply as well as to avoid ingress of dirt and swarf into the chuck.
- i** **Collets**
The CENTRO|P is available in two versions for different collets:
 - CENTRO|P GER – for Precision Collets DIN ISO 15488 (ER/ESX) GERC-HP (standard) / GERC-HPD (with seals for inner coolant supply) / GERC-HPDD (with seals for inner coolant supply and jet holes) as well as Tap Collets with internal square drive similar to DIN ISO 15488 GERC-GBD (with seals for inner coolant supply) / GERC-GBDD (with seals for inner coolant supply and jet holes). Tap Collets by competitors may only be used in the Tapping Chucks SYNCHRO|T with minimum length compensation.
 - CENTRO|P GOZ – for Precision Collets DIN ISO 10897 (OZ) form B.

All collets for the CENTRO|P GERC are supplied with the FAHRION|Protect coating which provides a long-term protection against corrosion.



Mounting



Before installing the components, they must be inspected and cleaned (follow care instruction page 9), especially when replacing individual components. In order to ensure the high concentricity, attention must be paid to highest cleanliness. Damaged and/or worn parts must be replaced. Only clamp tool shanks with nominal diameter of the collet and shank tolerance up to h10!

Assembly

1. If necessary, insert the sealing disc (the vulcanised side must locate against the collet face).
2. Press the collet axially into the clamping nut until the collet head clips into the extraction groove (note: no eccentric).
3. Position the cutting tool into the collet.



Before assembling the collet with the chuck body, the collet must be inserted into the clamping nut.

4. Screw on the clamping nut by hand loose on the chuck body.
5. Insert the cutting tool to the correct length or until it reaches the stop.

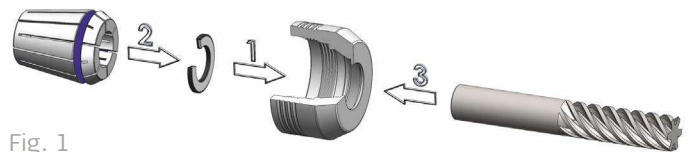


Fig. 1

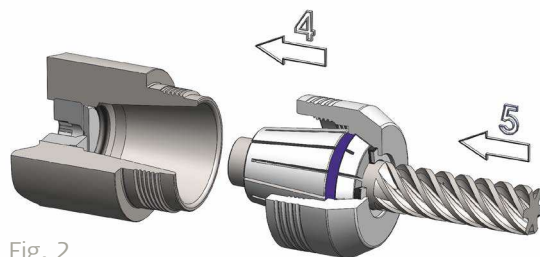


Fig. 2



In the case of short chucks, make sure that the cutting tool does not contact the chuck at the rear, as otherwise the concentricity will be impaired.

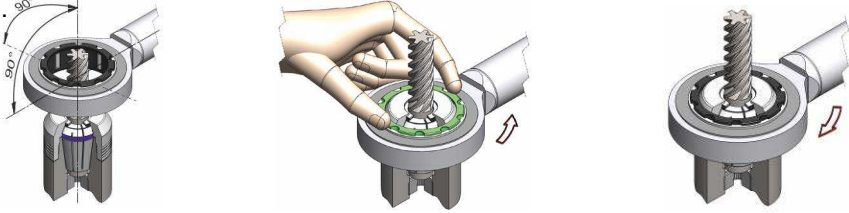


When loosening the clamping nut the collet is extracted out of the chuck body. Having removed the cutting tool from the collet, lateral pressure to the collet will aid removal from the clamping nut.

Clamping / Releasing

i We recommend the use of a torque setting wrench with the corresponding roller bearing head for clamping to achieve the optimum clamping force, particularly for milling.
Do not overtighten the recommended torques!
A roller bearing wrench with a handle should be used to open the clamping nut.
It is not recommended to open the clamping nut with a torque setting wrench.

i In order to ensure an immediate hold of the roller bearing wrench, the roller cage must be twisted against the pulling direction.



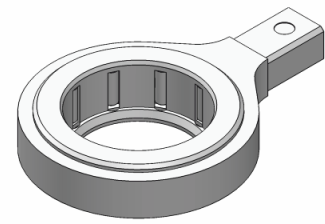
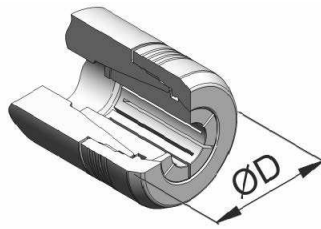
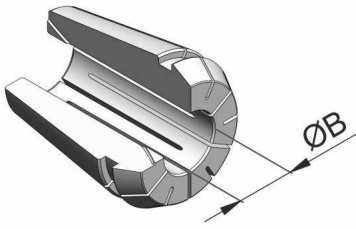
1. Attaching **2. Twisting of the cage** **3. Tightening**

i The maximum torques can be read on page 6 and on the clamping nuts.
Please note, however, the smaller the diameter to be clamped, the smaller the clamping torque required.

i For heavy roughing, we recommend tightening the clamping nut 5 times in order to achieve the optimal holding force.

i In the case of finishing operations we recommend tightening the clamping nut to 50-70% of the maximum tightening torque in order to achieve the optimum machining results by means of higher cushioning; otherwise, the maximum tightening torques on page 6 – referenced to the diameter to be clamped – can be used.

Clamping Torques



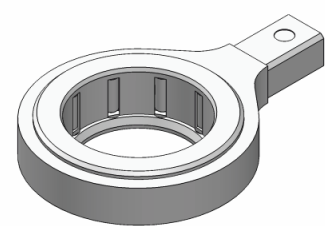
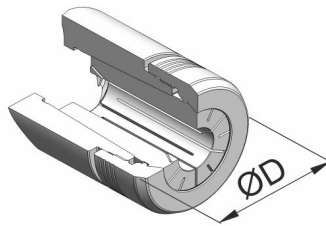
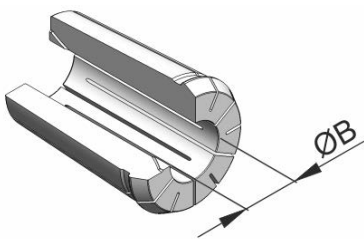
Collets GERC

CENTRO|P

Wrenches

Collets	Chucks	Clamping Ranges	Clamping-Ø and Clamping Torques				Roller Bearing Wrenches	Roller Bearing Heads
GERC8	CP8M	1-5	Ø 1 - Ø 5				ROD10N	-
GERC11	CP11M + CPC11M	1-7	Ø 1 - Ø 2,5	Ø 3 - Ø 7			RH16	DRH16 (9×12 mm)
			10 Nm	20 Nm				
GERC16	CP16M + CPC16M CPC16 CP16	1-10	Ø 1 - Ø 4,5	Ø 5 - Ø 10			RO22	DRO22 (9×12 mm)
			20 Nm	30 Nm			RO24	DRO24 (9×12 mm)
			30 Nm	80 Nm			RO30	DRO30 (14×18 mm)
GERC20	CP20	1-13	Ø 1 - Ø 5,5	Ø 6 - Ø 13			RO32	DRO32 (14×18 mm)
GERC25	CP25	1-16	Ø 1 - Ø 5,5	Ø 6 - Ø 16			RO40	DRO40 (14×18 mm)
			40 Nm	90 Nm				
GERC32	CP32	2-20	Ø 2 - Ø 5,5	Ø 6 - Ø 15,5	Ø 16 - Ø 19,5	Ø 20	RO50	DRO50 (14×18 mm)
			40 Nm	120 Nm	140 Nm	180 Nm		
GERC40	CP40	3-26	Ø 3 - Ø 9,5	Ø 10 - Ø 19,5	Ø 20 - Ø 26		RO63	DRO63 (14×18 mm)
			70 Nm	180 Nm	200 Nm			

All clamping torques indicated are the maximum for GERC collets.



Collets GOZ

CENTRO|P

Wrenches

Collets	Chucks	Clamping Ranges	Clamping-Ø and Tightening Torques				Roller Bearing Wrenches	Roller Bearing Heads
FM25DG	CP225DG	2-25	Ø 2 - Ø 9,5	Ø 10 - Ø 19,5	Ø 20 - Ø 25		RO50	DRO50 (14×18 mm)
			40 Nm	180 Nm	200 Nm			
FM32DG	CP432DG	4-32	Ø 4 - Ø 11,5	Ø 12 - Ø 15,5	Ø 16 - Ø 19,5	Ø 20 - Ø 32	RO63	DRO63 (14×18 mm)
			70 Nm	180 Nm	200 Nm	260 Nm		

All clamping torques indicated are the maximum for FM collets.

Technical Indication



Tool Length Pre-Setting

Tool length pre-setting is possible from the front as well as from the rear through the chuck body using an optionally available adjustable stop screw.



Adjustable Stop Screws

In order to clamp the cutting tool in the optimum position (i.e. as short as possible, but as long as necessary), we offer two types of adjustable stop screws as options:

1. type U, for long tool shanks that go through the collet into the collet chuck and
2. type W, when the tool shank ends in the collet.



Coolant Supply

CENTRO|P with adaptor DIN 69871, MAS/BT and CAT are supplied in form AD or AD/B. In the case of AD/B the delivery condition is form AD (centrally through the pull stud).

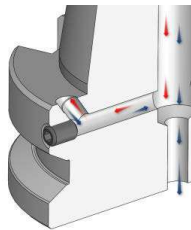


Fig. 1

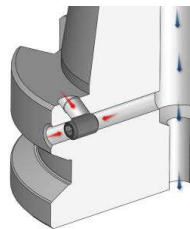


Fig. 2

If form B (coolant supply through the collar) is required, the two grub screws at the Vee flange must be screwed out, however, they must still remain in the chuck body (figure 1 and 2).

In some AD/B versions the grub screws have to be screwed out completely for form B.



Balancing

Most CENTRO|P chucks are balanced as standard to G2.5 at 25,000 rpm or $U \leq 1$ gmm.

In cases where the balancing quality is relevant to safety or is prescribed by the machine manufacturer, the complete clamping system including the cutting tool must be checked for unbalance and rebalanced if necessary.

Safety

In order to ensure the reliable use, the following instructions and technical data must be observed!

During the Assembly



The tools may have sharp cutting edges and can cause cuts.
Wear protective gloves for tool change!
When used under rotation, protective covers according to EC Machinery Directive must be considered.



Only use pull studs and holders that are suitable for the machine spindle.

During the Machining



Observe the recommended cutting speeds of the tool manufacturers.



Be aware of the safety instructions of the machine or other tools used! Never work with open machine door, especially at high speed or when using HSK tapers. Collisions at high speed could result in breakage of the cutting tool or collet chuck causing serious injury. The maximum speed must never be exceeded.



Do not continue machining if vibrations or chattering can be noticed.



Never touch the chuck or the cutting tool while the spindle is running.



In cases where the balancing quality is relevant to safety or is prescribed by the machine manufacturer, the complete clamping system including the cutting tool must be checked for unbalance and rebalanced if necessary.

General Notes



Intended Use

CENTRO|P is a precision tool and must be handled carefully accordingly.
Avoid mechanical, chemical or thermal influences beyond the loads of the intended use.



Clamping tools and inserting the collet into the chuck may only be performed by technically trained personnel.
In this connection, the technical data of the chuck must be observed.

Care and Storage

i Store CENTROIP and its components in a cleaned and slightly oil condition. The factory-provided lubricant/preservation film must not be removed on the inside of the clamping nut. In order to maintain the clamping nut, we recommend to rub it using a soft cloth without solvent-containing cleaning agents.

i Basically, in the case of heavy incrustations, the chuck bodies and collets can also be cleaned in solvents. If the clamping nut is cleaned in solvents, the trapezoid thread must subsequently be treated with suitable lubricant. We recommend Hölterol LW 1362.

! When cleaning, avoid permanent contact with aggressive and solvent-containing chemicals/cleaning agents. Solvents are, for example, contained in: Benzine, thinner, brake cleaner etc.

Source of Errors

Fault	Cause	Elimination
Unacceptable tool runout	Dirt/swarf in chuck body, clamping nut, collet or at the tool shank	Clean all parts intensively and care for absolute cleanness
	Cutting tool itself inaccurate, for example long drills	Check cutting tool accuracy
	Tool shank is not clamped sufficiently, minimum 3/4 (at small Ø completely) of the clamping length of the collet	Tool shank to be inserted the whole length of the collet
	Tool shank contacts the chuck (possible especially with short chucks)	Pull the cutting tool out a little
	A worn, damaged or third party collet is in use	Always use new original FAHRION precision collets
	Bearing in the pre-setter or in the accuracy check machine is not o.k.	Contact the service of the respective device
Milling cutter is pulled out	HPC clamping nut was degreased	Oil using universal oil (e. g. Hölterol LW 1362 or equivalent)
	Clamping nut tightened too weakly or too slowly	Dynamically tighten clamping nut with nominal torque
Unacceptable tool runout after automatic tool change	Bearing problem in the machine	Check the concentricity in the collet closing taper (without collet)
	Internal cone of the machine is worn or there is dirt/swarf	
	Automatic tool changer is not aligned to the machine spindle	Clamp chuck by hand to check
Coolant is escaping through the clamping nut	Wrong sealing disc is inserted – shank-Ø is smaller than the Ø to be sealed	Replace sealing disc for correct size
	Aggressive coolant	Replace sealing disc for new one
	Tool is inserted with the cutting edge through the sealing disc	Replace sealing disc if damaged and re-position tool
No coolant comes through the tool	Coolant bores in the chuck, stop screw or the coolant supply of the machine are impaired	Clean the coolant bores with a cleaning medium (not acidic, because of the rust)

FAHRION offers a wide selection of precision collets, precision collet chucks as well as precision products for workpiece clamping which fulfil maximum requirements in terms of concentricity, service life and manufacturing quality. In doing so, FAHRION pays particular attention to user-friendly technology oriented towards the practical requirements of the users, which is constantly advanced.

The latest catalogue information is available
at any times at www.fahrion.de

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