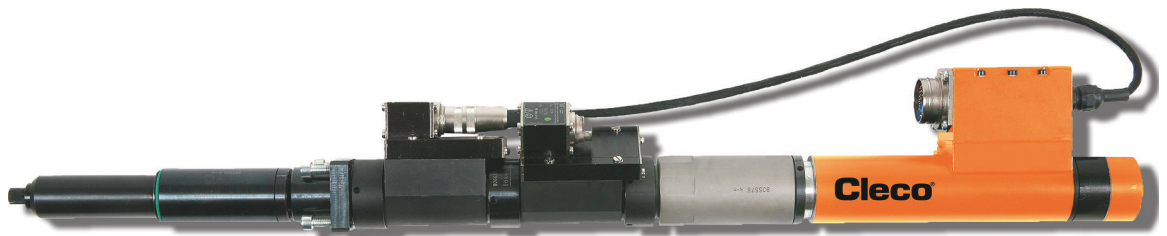




Service Manual  
P2090WA  
2019-09

## Fixtured Spindle Series BB



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# 1 About this document

The original language of this description is German.

This document is only valid in conjunction with the Assembly instructions.

## Secondary information

Order no.	Sort
P2055MA	Assembly + Safety Instructions
P1713E	System handbook Intelligent Spindle
P2102JH	Installation Instructions Cable Management
P3223H	Declaration of Incorporation for Incomplete Machines

## Symbols in the text

<i>italic</i>	Menu options (e.g., <i>Diagnostics</i> ) input fields, check boxes, radio buttons or drop-down menus.
>	Indicates selection of a menu option from a menu, e.g., <i>File &gt; Print</i>
<...>	Specifies switches, pushbuttons or the keys of an external keyboard, e.g., <F5>
Courier	Filenames and paths, e.g., <b>setup.exe</b>
•	List
-	List, level 2
a)	Options
b)	Options
→	Result
1. (...)	Action steps
2. (...)	Action steps
▶	Single action step
Sales & Service Centers	Cleco Production Tools Sales & Service Center, see last page.
Spindle	Stands for all versions of the <i>Intelligent Spindle</i> described here.

# 2 Safety

## 2.1 Warnings and Notes

Warning notes are identified by a signal word and a pictogram:

- The signal word describes the severity and the probability of the impending danger.
- The pictogram describes the type of danger



### Danger

A symbol combined with the word **Danger** indicates a hazard with a **high level of risk** which, if not avoided, will result in death or serious injuries.



### Warning

A symbol combined with the word **Warning** indicates a hazard with a **medium level of risk** which, if not avoided, could result in death or serious injury.



### Caution

A symbol combined with the word **Caution** indicates a hazard with a **low level of risk** which, if not avoided, could result in minor or moderate injury.



### Note

A symbol combined with the word **Note** indicates a potentially **harmful situation** which, if not avoided, could result in damage to property or the environment.



**General instructions** include application tips and useful information, but no warnings against hazards.

## Structure Of Warnings



### Caution

**Type and source of danger.**

Possible consequences of non-observance.

▶ Measures to avoid danger.

## Service schedule

Only trained personnel are permitted to perform maintenance. Regular maintenance reduces operating faults, repair costs and downtime. In addition to the following service plan, implement a safety-related maintenance program that takes the local regulations for repair and maintenance for all operating phases of the tool into account.


When operating at (...%) of the maximum torque		Actions	
80 %	100 %		
<b>Generally applies to all types</b>			
3 Mio.	1 Mio.	General design of all types except ... (see the following lines). After achievement of the fastening cycles a general overhaul is required. ▶ Send spindle for examination, lubrication and recalibration to <i>Sales &amp; Service Centers</i> .	
<b>Exceptions</b>			
After ... fastening cycles	500.000	250.000	Following types • Size 4 with straight attachment ...-4Z2800..., ...-4Z1250..., ...-4Z1600... ▶ Send for examination, lubrication and recalibration to <i>Sales &amp; Service Centers</i> ..
	1 Mio.	500.000	Following types • Size 4 with angle attachment ...-4WK...M ▶ Send for examination, lubrication and recalibration to <i>Sales &amp; Service Centers</i> ..
	1 Mio.	700.000	Following types • Size 2 with angle attachment ...-2WK2M • Size 3 with angle attachment -...-3WK2M • All sizes with offset attachment ...-VK ▶ Send for examination, lubrication and recalibration to <i>Sales &amp; Service Centers</i> ..

### 3.1

#### Lubrication

- ▶ In order to ensure faultless functioning and a long service life, use the right type of oil.

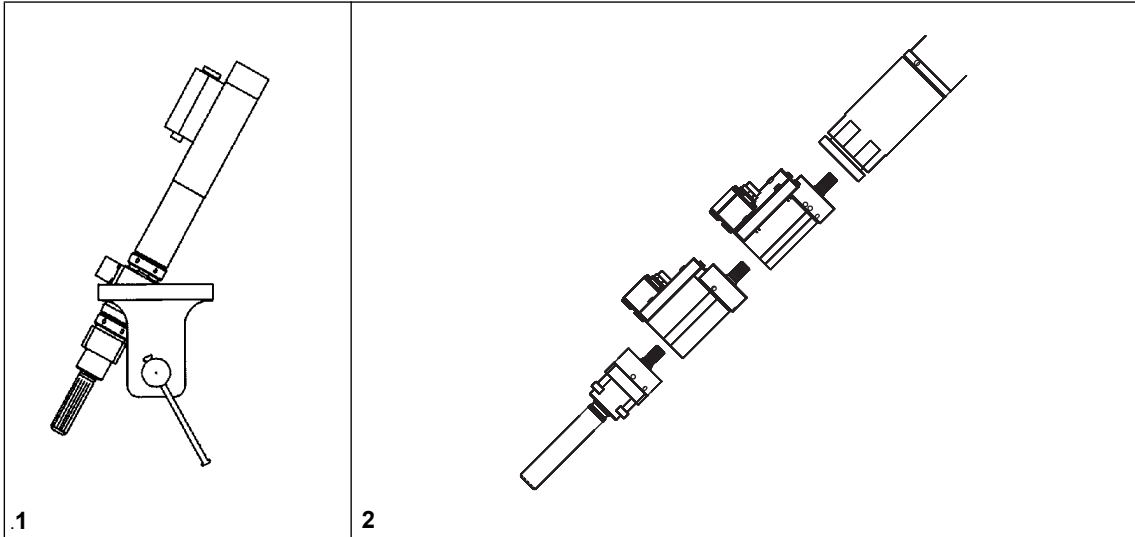
#### Grease lubricants according to DIN51502/ISO3498

Part no.	Pack.Unit [kg]	DIN 51502	
933027	1	KP1K	Microlube <sup>a</sup> GL 261

a Initial lubrication Apex Tool Group

## 4 Removing the spindle

1. Loosen and remove plug connectors.
2. Remove the complete spindle from the fastening station.
3. Secure the spanner contact surfaces on the nutsetter spindle or component in a vice.  
Place in position, do not tighten!
4. Turn the cap nut counterclockwise. Hook wrench, see Table 1.1 – Attachment, transducer, gear, Page 7.
5. Loosen the components.



## 5 Installing the spindle



### Note

Before replacing a component

- ▶ Always carry out a machine capability study (MFU).

After assembly

- ▶ Check the calibration of the torque transducer.
- ▶ Check the function of the angle encoder.
- ▶ We recommend servicing by *Sales & Service Centers*.

If space is confined by positioning multiple spindle, you can:

- Turn size 1 in 15° increments.
- Turn sizes 4 to 2 in 10° increments.
- ▶ Position the spindle components together via flat toothed interfaces. Place in position, do not tighten!

# 6 Tightening torques

## 6.1 Components

Assemble the components in reverse order to the removal sequence.

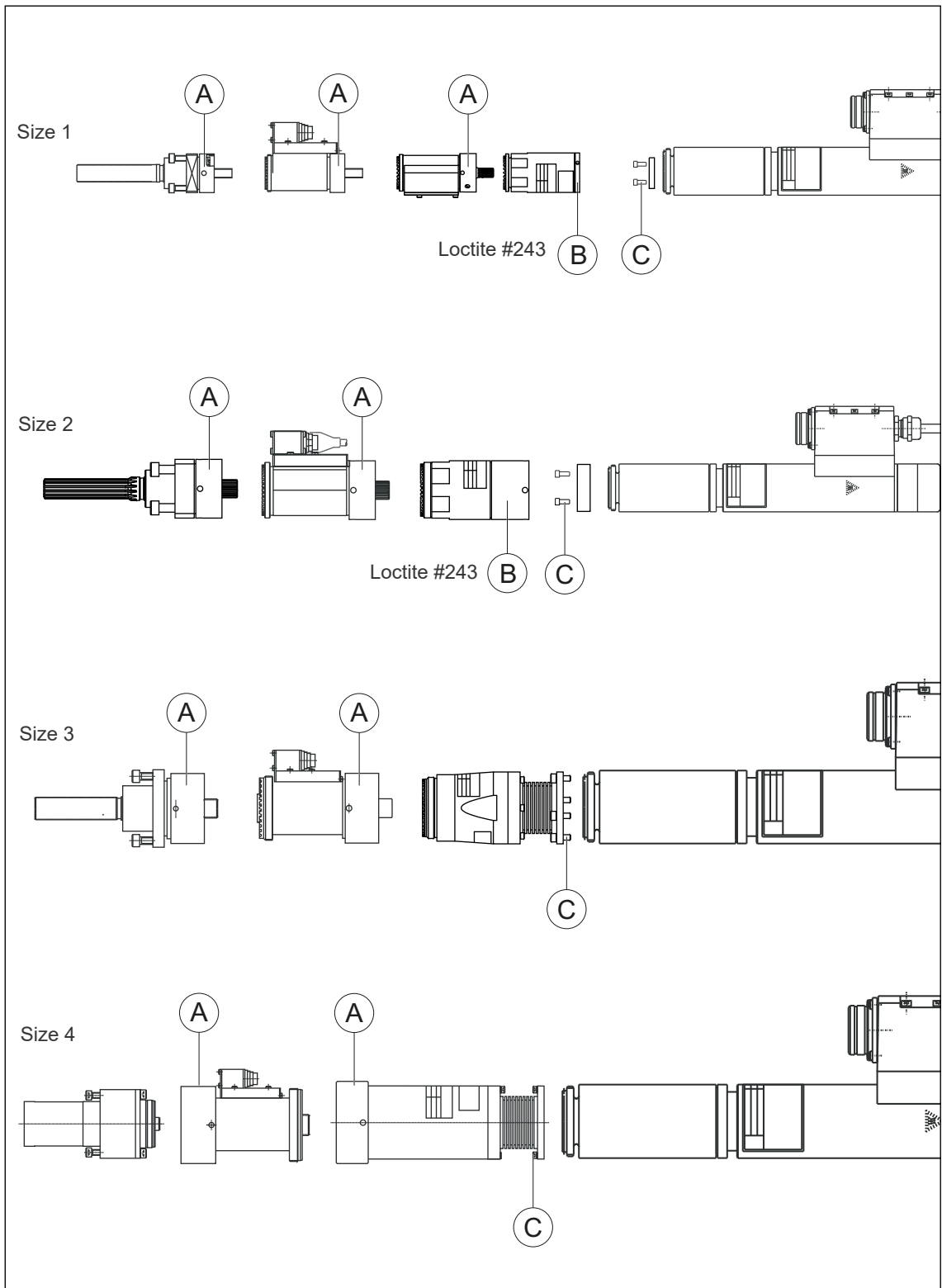


### Caution

Risk of flying parts.

Components of the spindle may rotate, come loose and cause injury.

- ▶ Observe the tightening torque of the lock nuts.




	Size	Tightening torque ft-lbf (Nm)	Tightening torque adjustment <sup>a</sup> ft-lbf (Nm)	Hook wrench		Torque wrench Order no.
				Order no.		
A	1 <sup>b</sup>	41–44 (55–60)	35–39 (48–53)	933336	9 × 12	933340
	2	59–66 (80–90)	50–58 (68–78)	933337		
	3	59–66 (80–90)	50–58 (68–78)	933338		
	4	77–85 (105–115)	64–72 (87–97)	933339		
B	1	37–41 (50–55)	32–35 (43–48)	933336		
	2	30–37 (40–50)	24–32 (33–43)	933337		

Table 1.1 – Attachment, transducer, gear

a Different setting due to leverage effect of the hook wrench

b If this overprint is missing on the union nut:



then different setting. See table:


	Size	Tightening torque ft-lbf (Nm)	Tightening torque adjustment <sup>a</sup> ft-lbf (Nm)	Hook wrench		Torque wrench Order no.
				Order no.		
A	1	37–41 (50–55)	32–35 (43–48)	933336	9 × 12	933340

Table 1.2 – Attachment, transducer, gear

a Different setting due to leverage effect of the hook wrench

	Size	Tightening torque ft-lb (Nm)	Angle screwdriver	
			Order no.	Size
C	1	2–3 (3–4)	913947	3
	2	2–3 (3–4)		
	3	7–8 (9–11)	920533	5
	4	7–8 (9–11)		

Table 1.3 – Gear, motor

## 7 Recalibrating the nutsetter data

The nutsetter data is stored in the service memory. The service memory is located in the transducer components, offset attachment and angle head attachment in the spindle.



### Note

There is a risk that data without a system reference is stored in the service memory of a transducer (e.g. incorrect nutsetter type and serial number, incorrect fastening count, incorrect repair data, etc.).

Only trained personnel are permitted to replace these components.

The service memory of new components does not contain nutsetter data (installation possible in different types of spindle). As a spare part, the transducer is not configured for self-identification via the nutsetter control unit. In this case, the nutsetter data must be entered in the service memory manually using the nutsetter control unit. No limits are imposed on the torque and angle measuring functions.

- ▶ To recalibrate the type-specific nutsetter data, send the spindle to *Sales & Service Centers*. Only this will ensure that after the service work, any required nutsetter data update is carried out properly.

## 8 Disposal

The spindle contains components that can be reused as well as components that require special disposal.

- ▶ Separate the components and dispose of them by segregating them clearly.
- ▶ Catch auxiliary materials (oils, greases) when drained and dispose of them properly.
- ▶ Separate the components of the packing and dispose of them by segregating them clearly.
- ▶ Follow the locally applicable regulations.



Observe generally valid disposal guidelines such as, in Germany, the Electrical and Electronic Equipment Act (ElektroG):

- ▶ Hand in the spindle at your company collection point or return to *Sales & Service Centers*.






# POWER TOOLS SALES & SERVICE CENTERS

Please note that all locations may not service all products.

Contact the nearest Cleco® Sales & Service Center for the appropriate facility to handle your service requirements.

 Sales Center

 Service Center

## NORTH AMERICA | SOUTH AMERICA

### DETROIT, MICHIGAN

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