





# GAMFIOR

## Spindle repairing

## Working Instruction

Prepared by A. Panaccione

2012-07-15



# 1

## Hand Tooling

# Tooling for disassembly

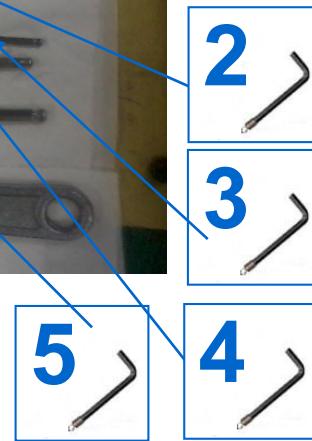
Front bearing extractor



Rear bearing tightening tool

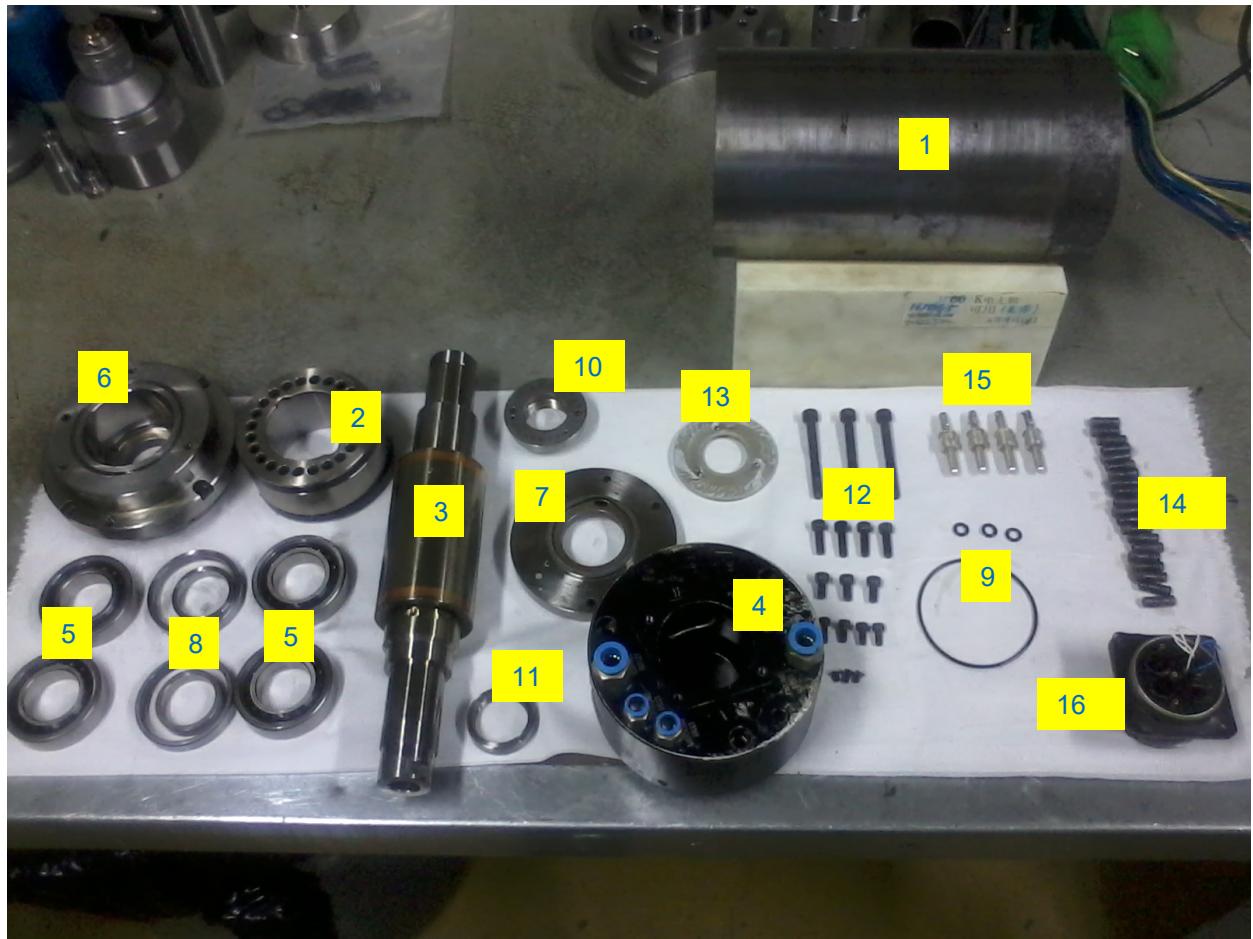
Compass wrench "3"

Key



# Tooling set

1. Spindle body
2. Rear bearing bush
3. Rotor
4. Rear flange
5. Rear and front bearings
6. Front bearing holder flange
7. Front flange
8. Front and rear spacers
9. O-rings
10. Clamping ring front bearings.
11. Clamping ring rear bearings.
12. Screws
13. Front flange protection
14. Springs
15. Connettori
16. Pin connector holder



# 2

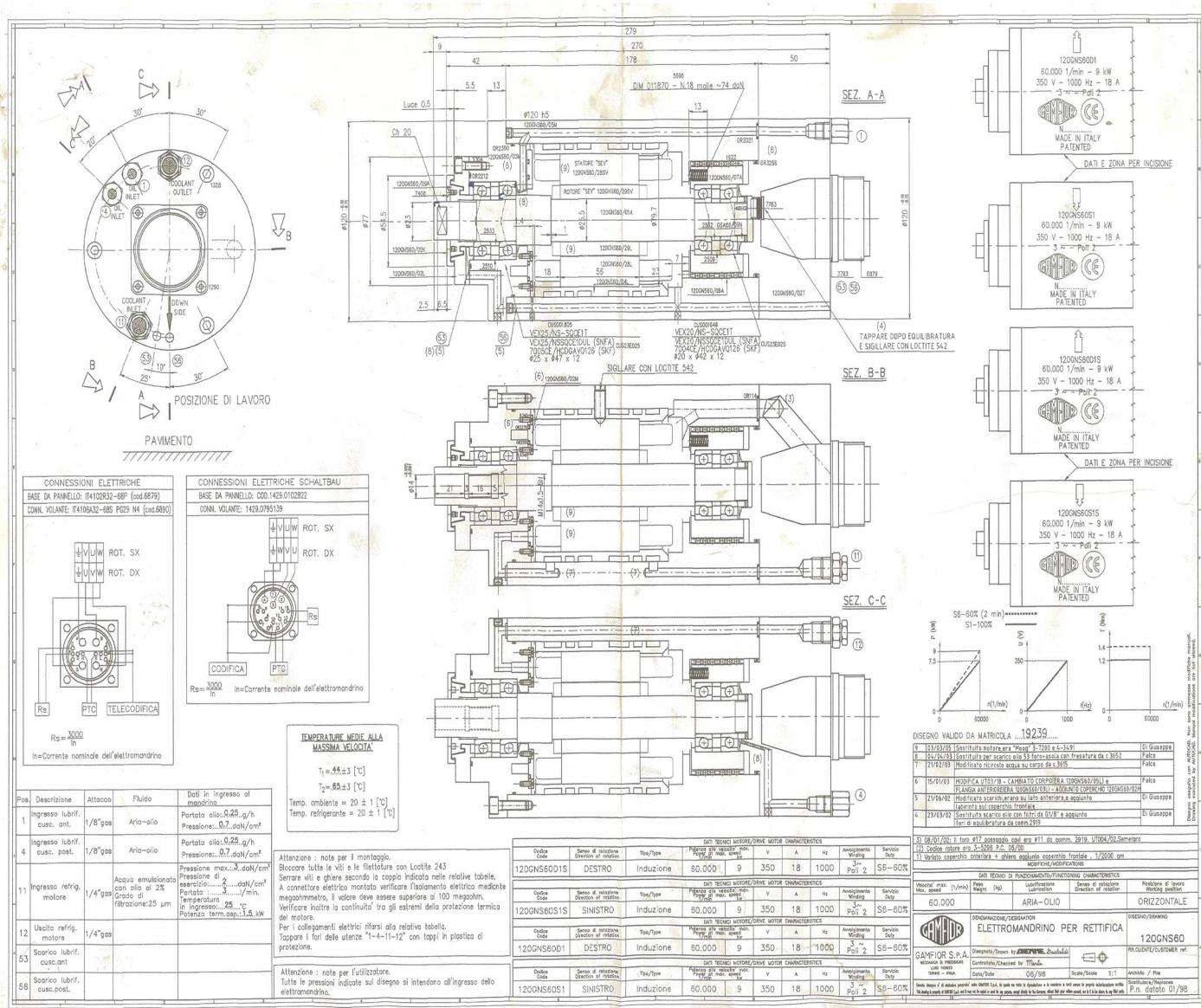
## Basic Sequence



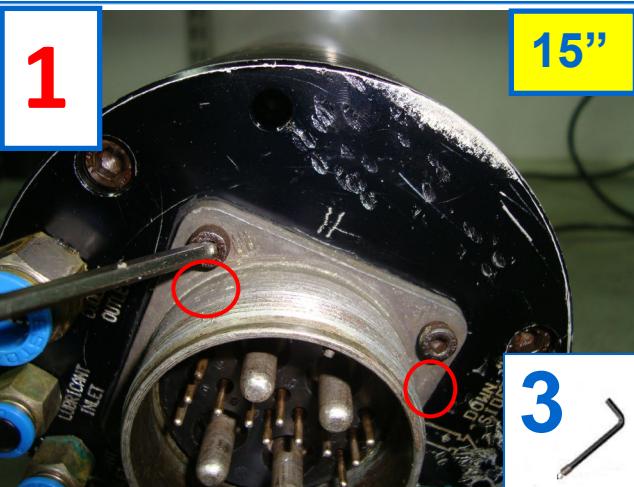
# Basic Sequence

SKF Six Sigma

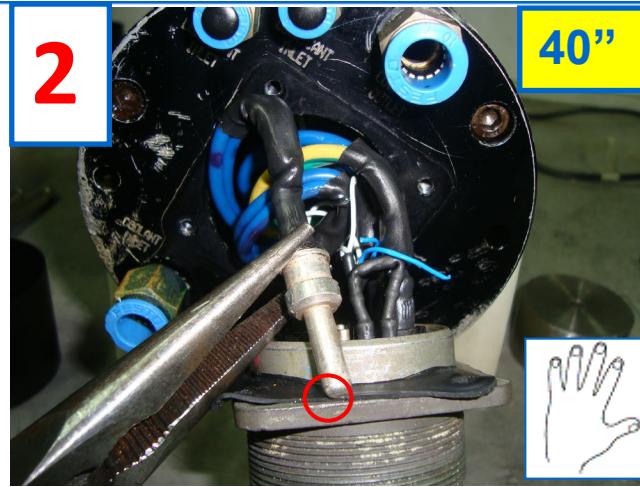
	Operazione	Tempo	Tool		
1	Rear and front flange disassembly	4' 91"			
2	Front and rear bearing disassembly	3' 41"			
3	Components washing				
4	Front bearing holder parallelism control	60"			
5	Front and rear bearing assembly	9' 41"			
6	Do's & Don'ts				
	TOT	12' 45"			



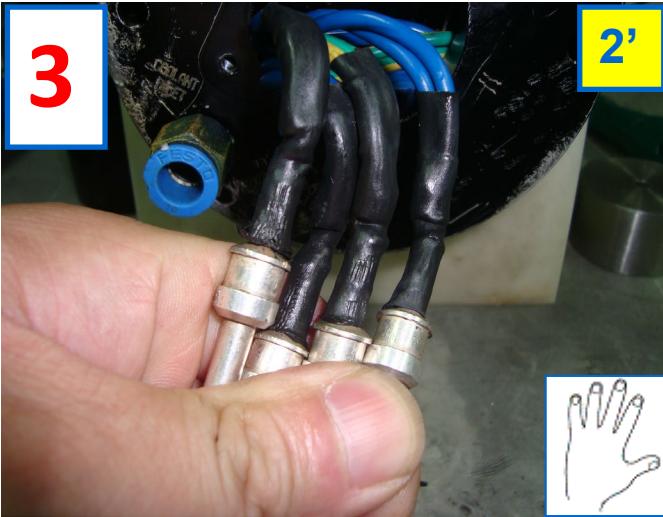
# 1 – Rear and front flange disassembly



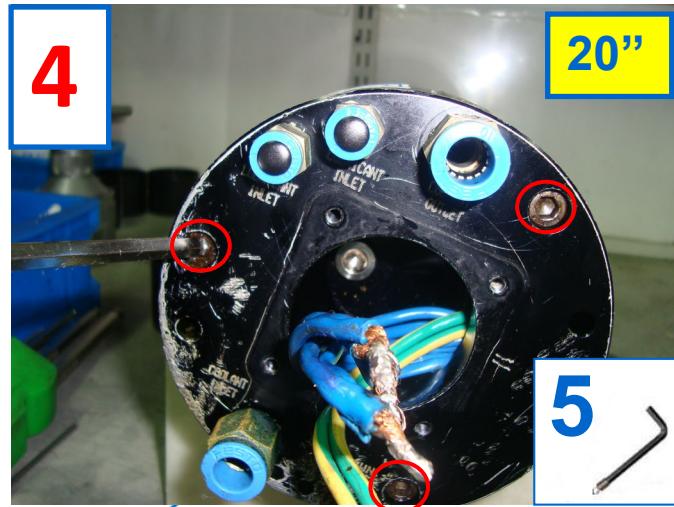
Remove the four screws° from pin holder (n.16 tooling set)



Remove 4 connectors from the pin holder (N. 15 tooling set)



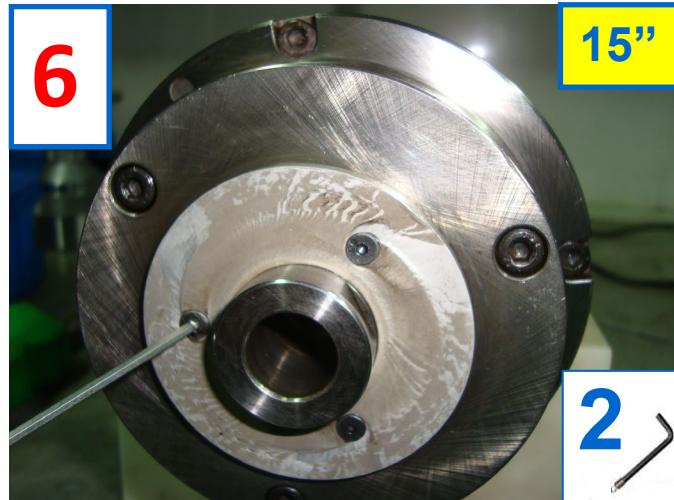
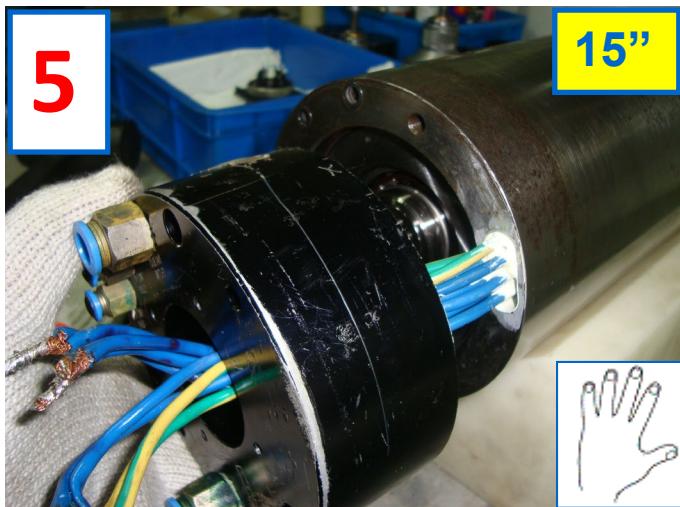
Unsolder the 4 connectors by tin soldering device



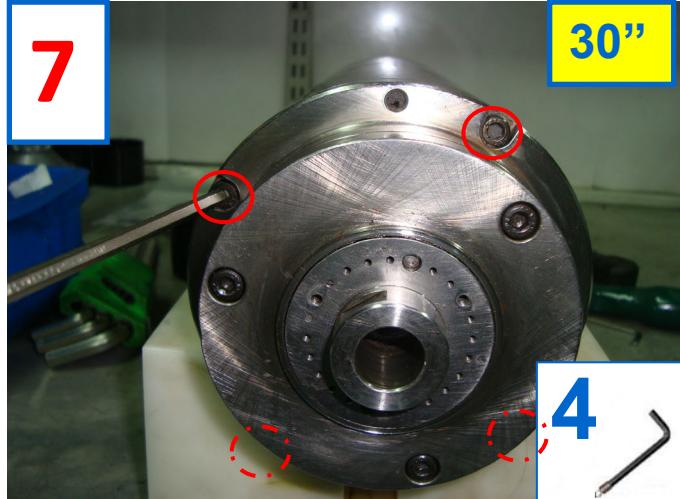
Remove the 3 screws

**SKF**®

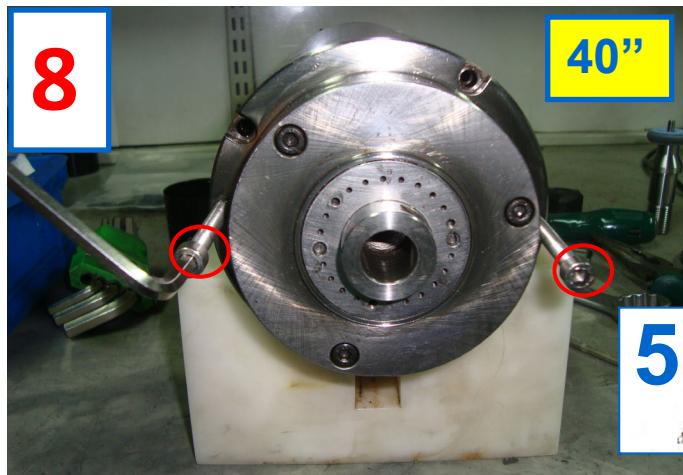
# 1 – Rear and front flange disassembly



Unscrew the 3 screws and remove the front flange protection  
(N.13 tooling set)

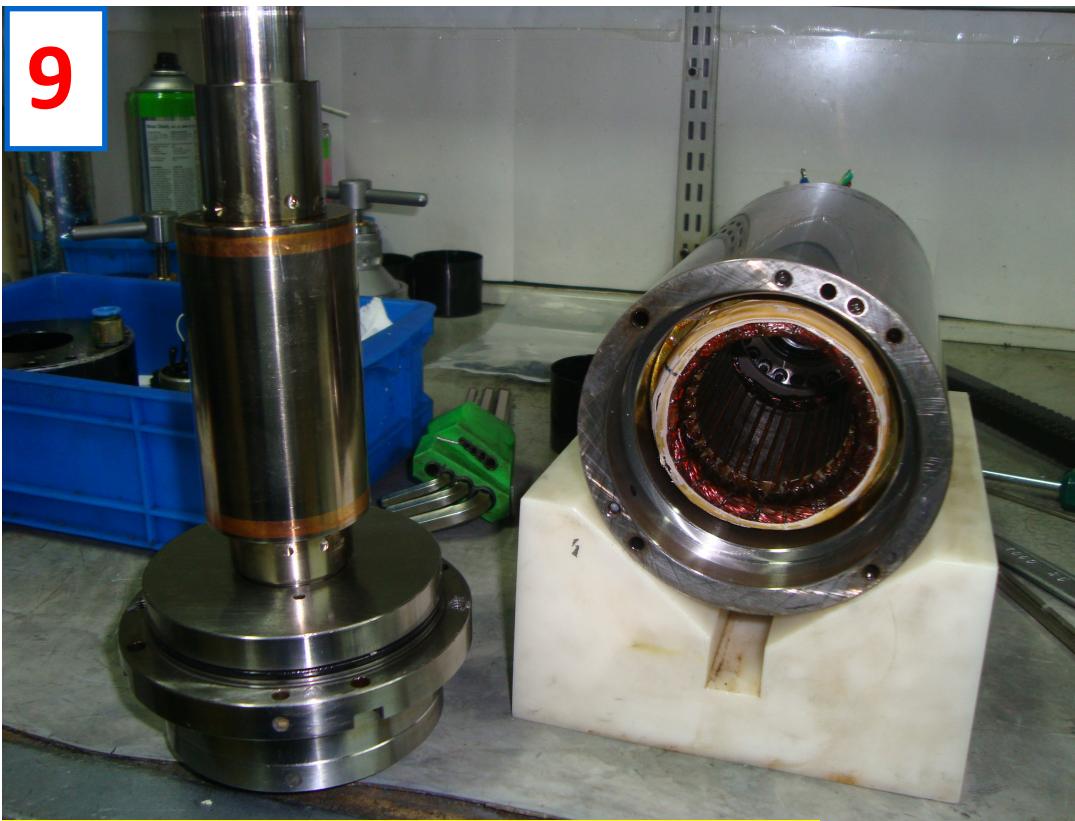


Remove the 4 screws as shown in the picture



Inster the two extraction screws and remove the front bearing holder .

# 1 – Rear and front bearings disassembly

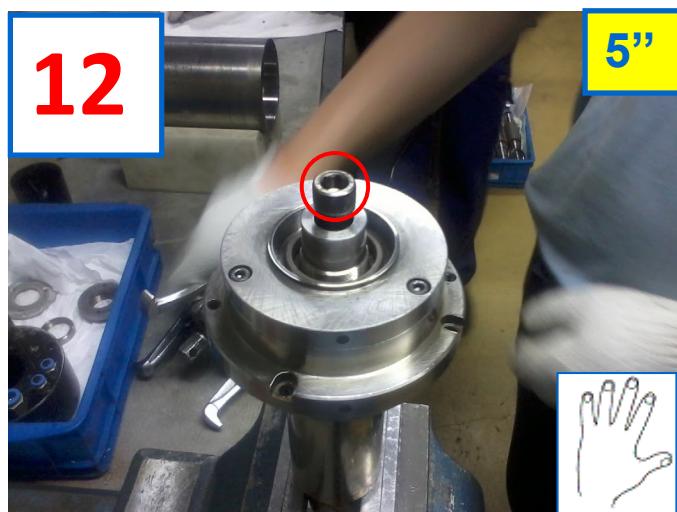


This is the condition after the extraction of the front holder bearing

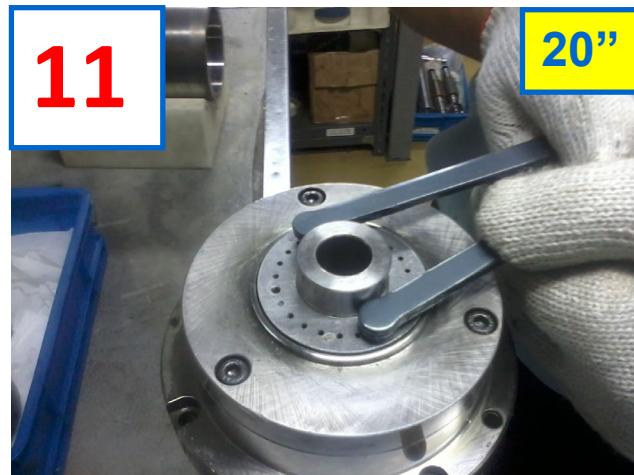
## 2 – Front and rear bearing disassembly



Put the unit onto jaw



Insert the front rotor protection



Unscrew the bearing tightening nut (N.4 tooling set)



After mounting the extractor, remove the flange and the bearings

## 2 – Front and rear bearing disassembly

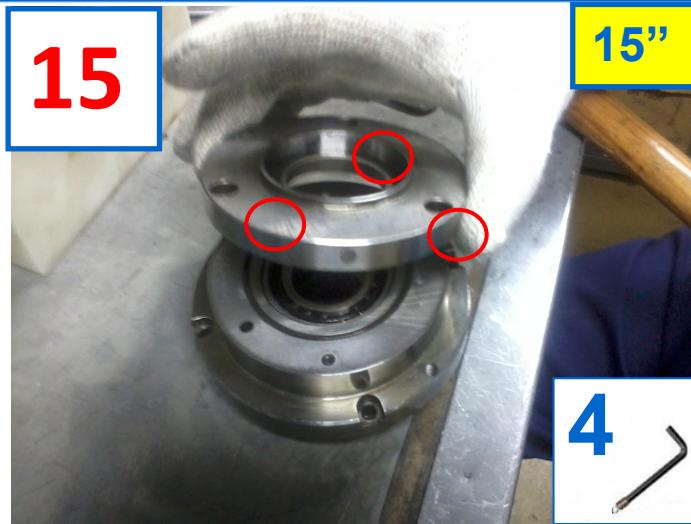
14



10"

Take out the flange (N.6 tooling set)

15



15"

4

Unscrew the 3 screws and remove the front flange (N.7 tooling set)

16



10"

Take out the first bearing

17



5"

Take out the spacers and remove the second bearing.



## 2 – Front and rear bearing disassembly

SKF Six Sigma

18



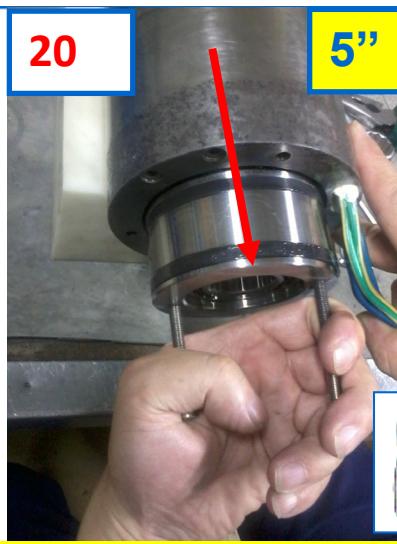
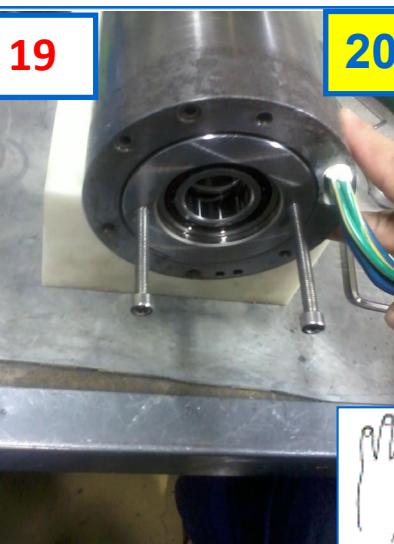
Condition after removing the front bearings



Unscrew the rear bearings tightening nut (N.11 tooling set) by proper tool (N.3 tooling for disassembly)



## 2 – Front and rear bearing disassembly



**SKF**®

## 4 - Front bearing holder parallelism control

23



60''

23/A



Ripristinare valori corretti parallelismo  
strofinando il distanziale su carta abrasiva  
grana non inferiore a 1000



Check the size and parallelism of the two spacer pairs.

Parallelism: 0 – 0,002; Width: 0 – NB The inner spacer width must be the same of the outer or minus two microns, NEVER PLUS.

## 5 - Front and rear bearing assembly



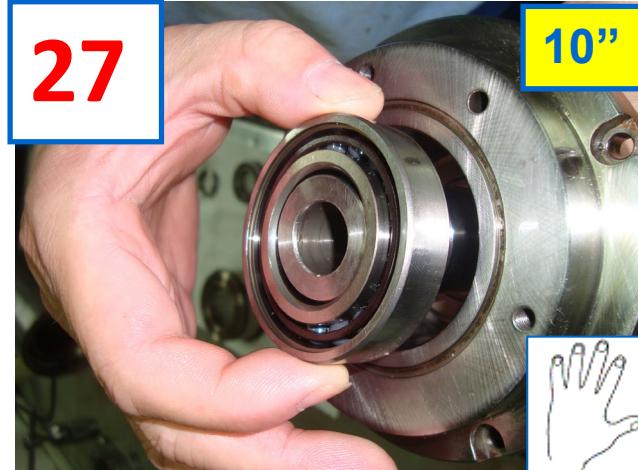
Insert the flange inside the front side of the rotor (N.6 tooling set)



Heat the inner ring



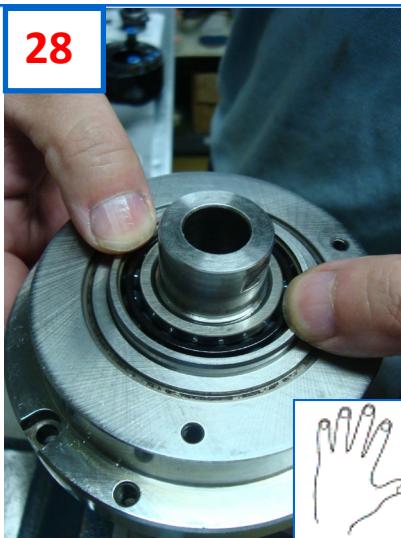
Lubricate the bearings housing



Insert the bearing

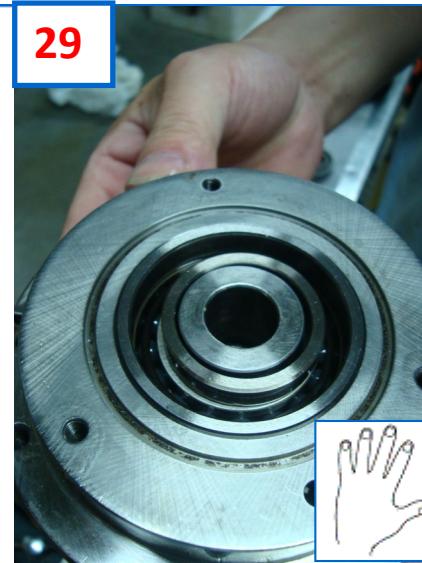
## 5 - Front and rear bearing assembly

28



5"

29



10"

N.B. Insert gently the outer ring first, then push the inner ring

30

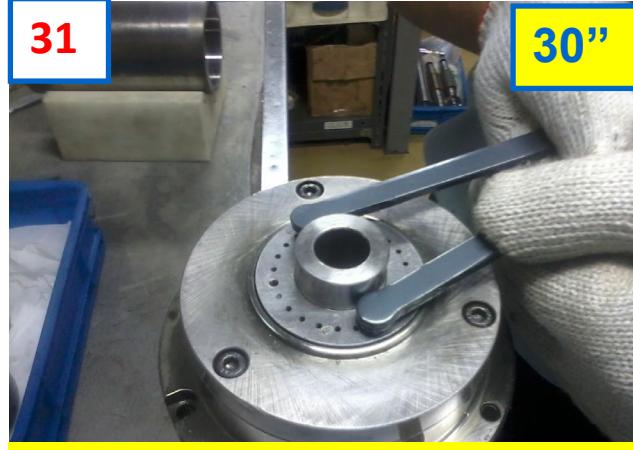


15"

4

Screw the front flange (N-7 tooling set)

31



30"

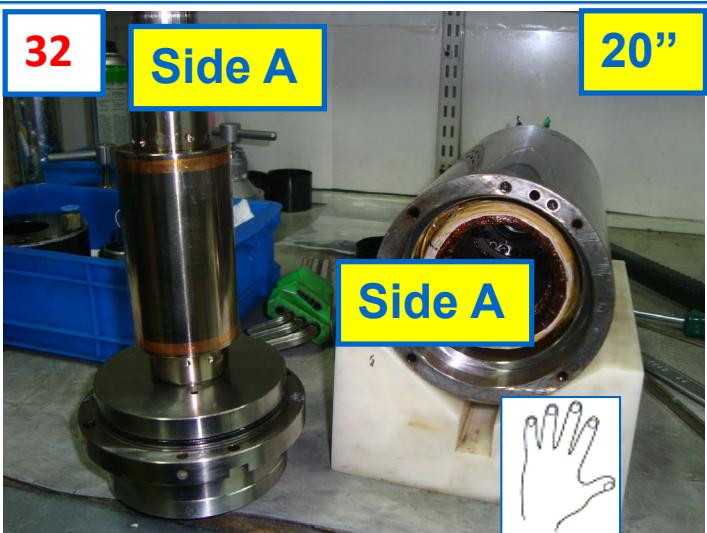
Screw the bearing tightening nut (N.4 tooling set)

# 5 - Front and rear bearing assembly

32

Side A

20"



Insert the rotor inside the spindle body

34

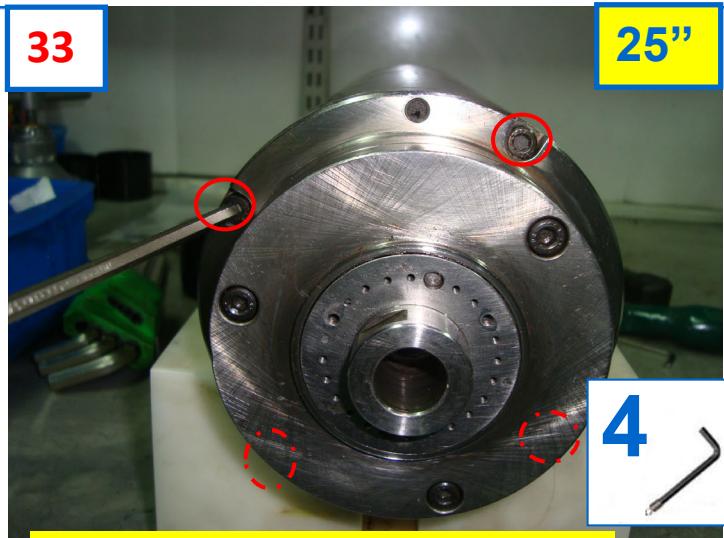
20"



Insert the rear flange by the aid of two 6 mm screws (N-2 tooling set)

33

25"



Screw the four screws as shown in the picture

35

40"



N.B. Gently insert the outer ring first;  
Then push the inner ring of the first bearing; then insert the spacers  
and the second bearing

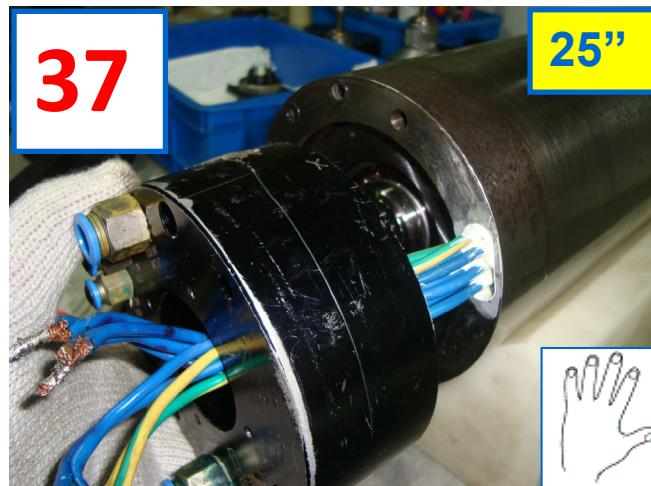
## 5 - Front and rear bearing assembly

36



25"

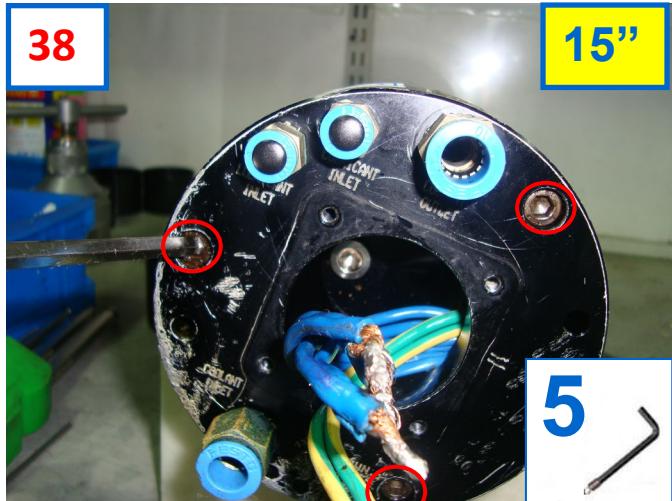
37



25"

Screw the rear bearing tightening nut, (N 11 of the tooling set)  
by proper tool ( N 3 tooling for disassembly)

38



15"

5

Screw the screws

39



120"

Solder the four connectors

**SKF**<sup>®</sup>

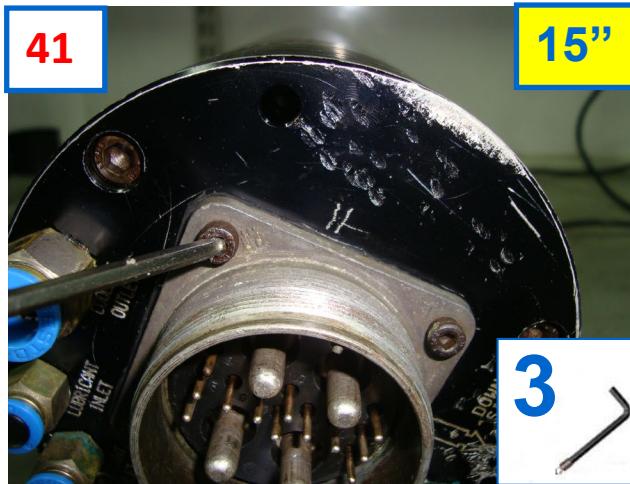
## 5 - Front and rear bearing assembly

40



40"

41



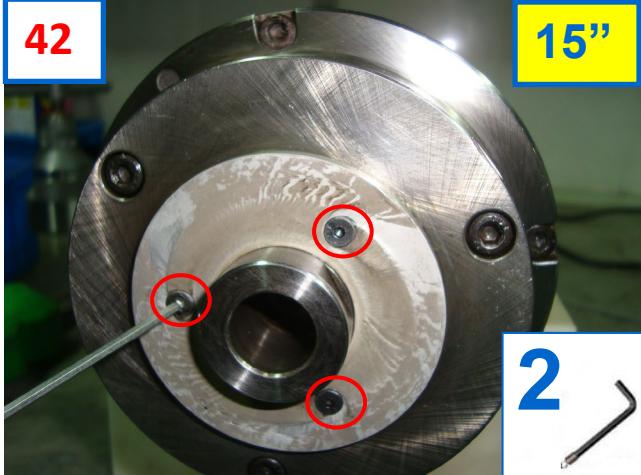
15"

Insert the connectors inside the connector holder

3

Tight the connector holder

42



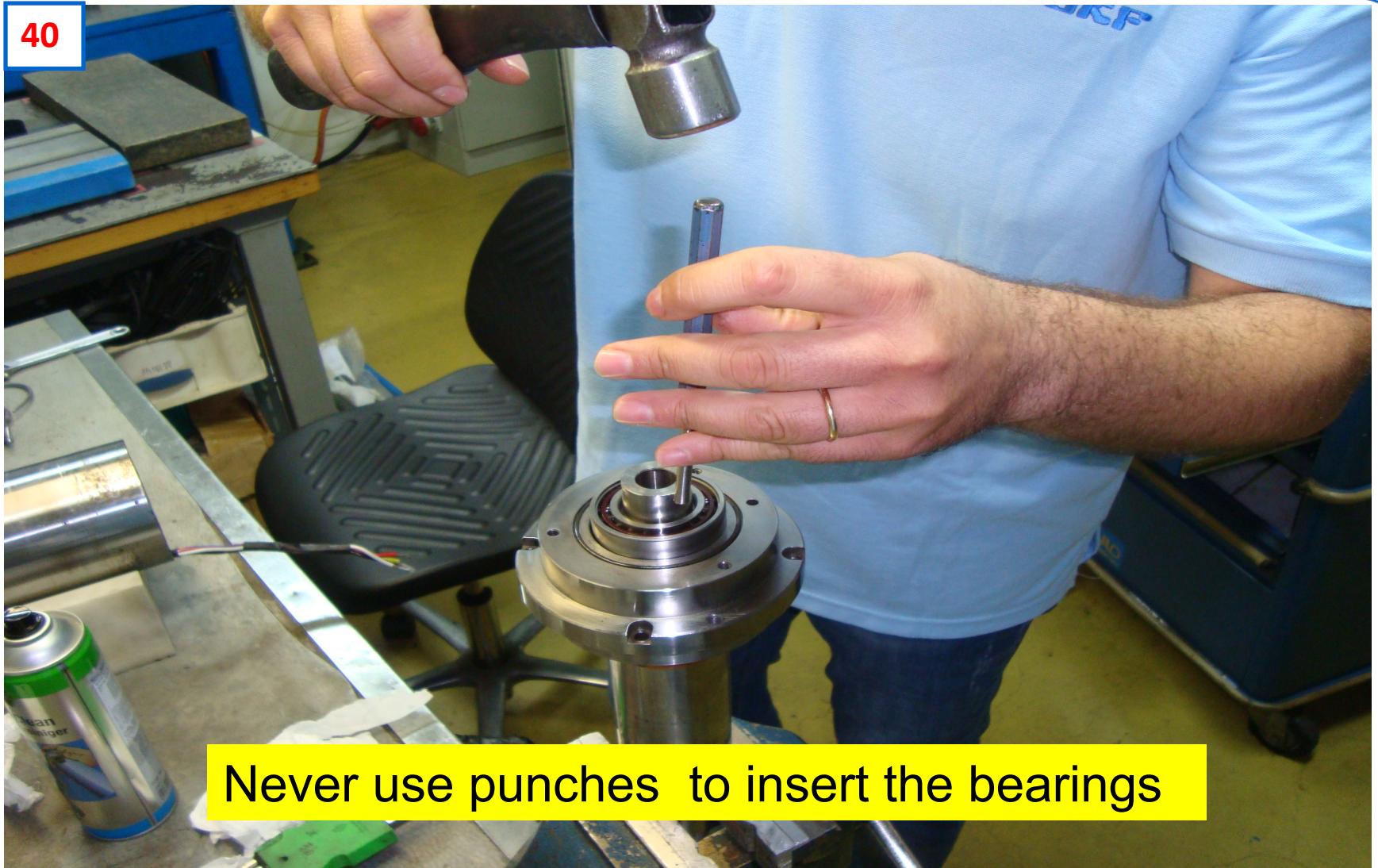
15"

2

Uncross the 3 screws and remove the front flange protection (N.13 tooling set)

## 5 – Not to be done

40



Never use punches to insert the bearings

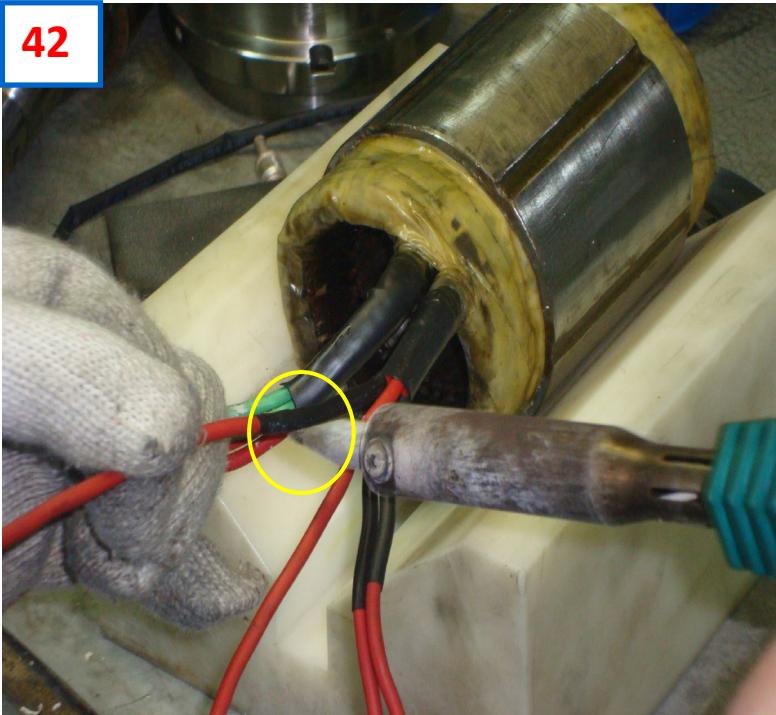
## 5 – Not to be done



Do not use compressed air in the vicinity of the spindle overhaul.

## 5 – Not to be done

42



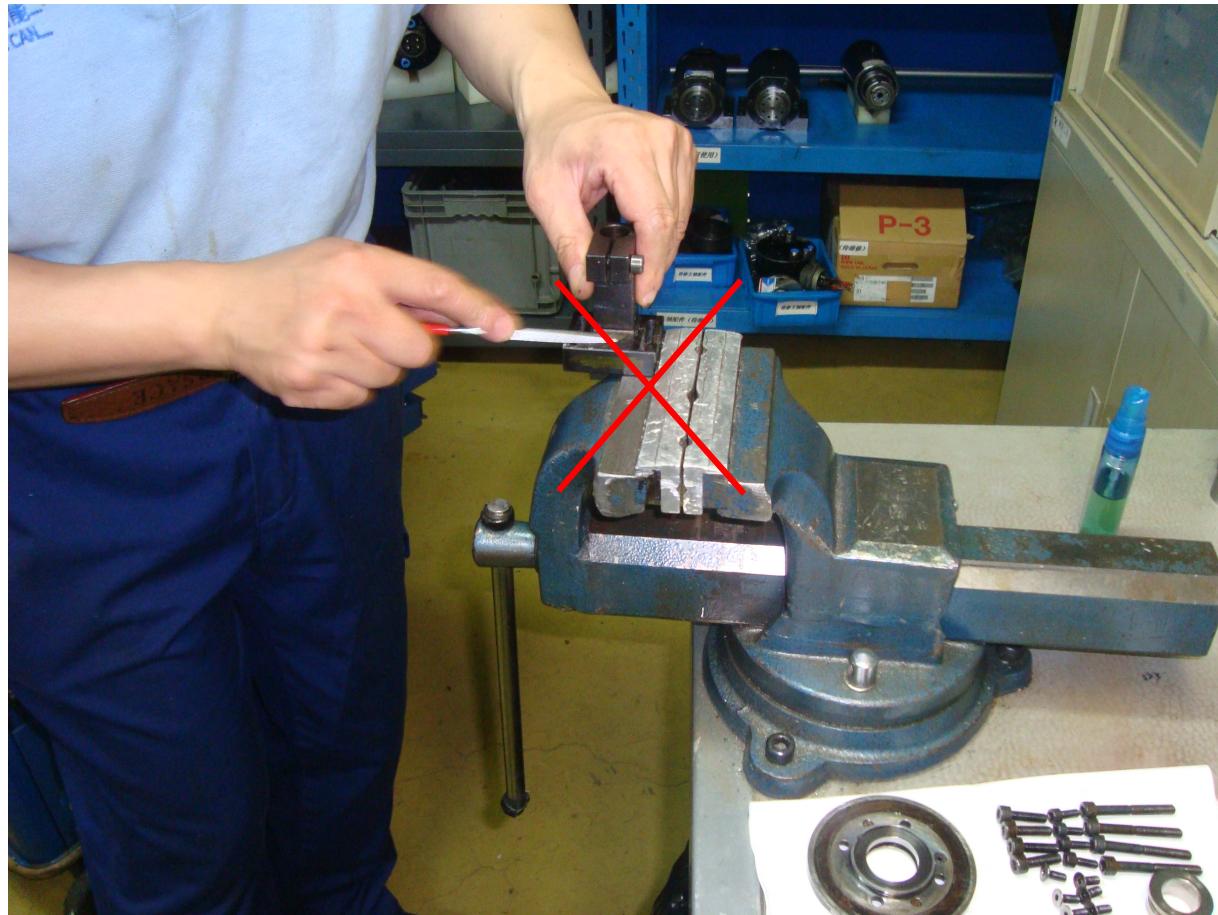
Do not use welder to heat the shrinking sheath but the special heating gun.

## 5 – Not to be done



Workbench **MUST** be  
Free from dirt and burrs

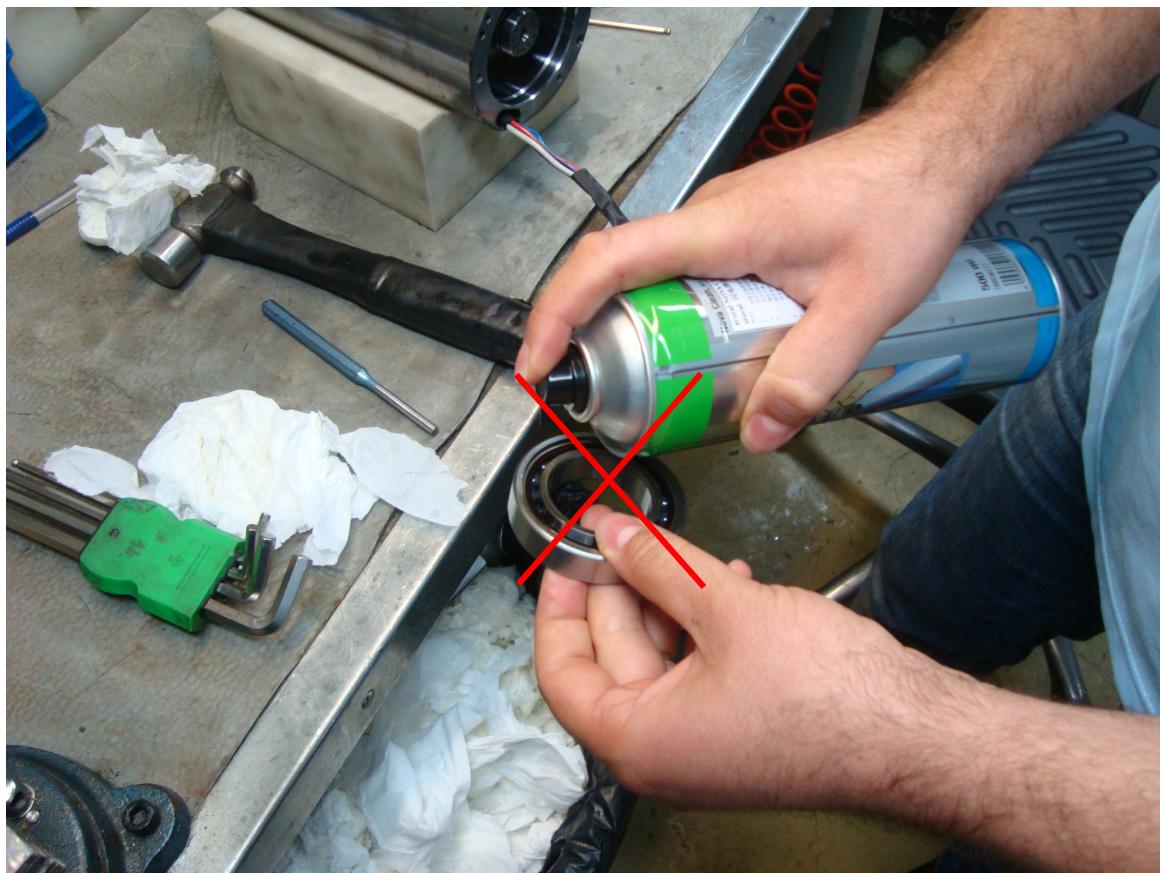
## 5 – Not to be done



DIRTY OPEARITION  
ARE STRICTLY  
FORBIDDEN INSIDE  
THE ROOM



## 5 – Not to be done



IT IS STRICTLY  
FORBIDDEN  
REWASH NEW  
BEARINGS.  
BEARINGS MUST  
NOT BE REMOVED  
FROM THE  
ORIGINAL PACKAGE  
UNTIL READY TO  
USE



## 5 – Not to be done



IT IS STRICTLY  
FORBIDDEN THE  
USAGE OF  
COMPRESSED AIR  
INSIDE THE ROOM.  
THIS IS AVAILABLE  
OUTSIDE IN THE  
WORKSHOP AREA



dreamstime.com