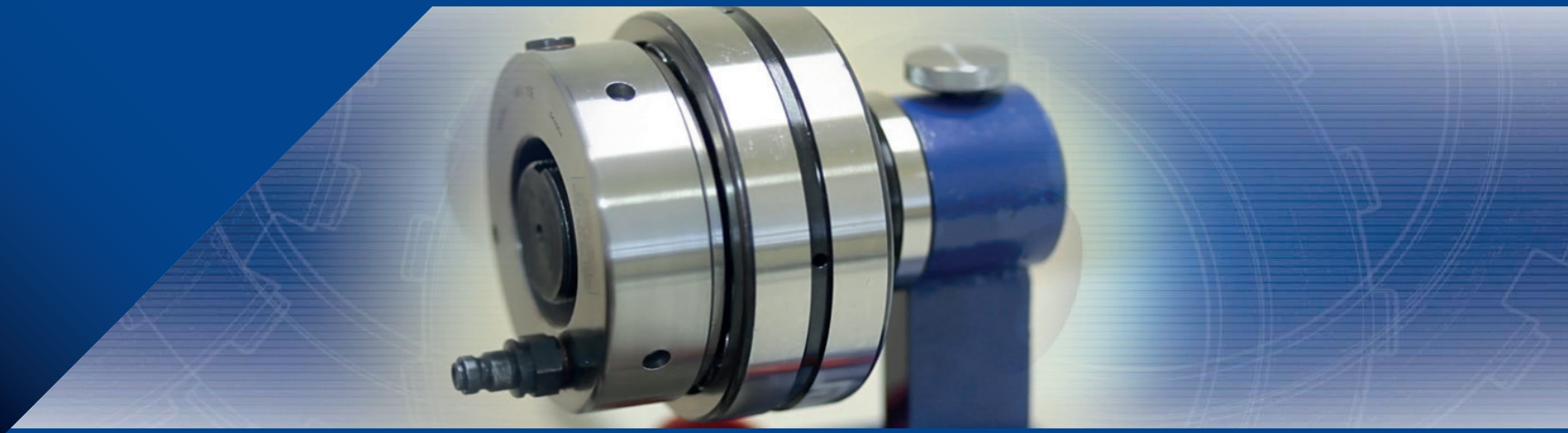
BERTOLOTO & GROTTA

Sleeve for Bearings

Instructions for Assembling and Disassembling Sleeves under Self-aligning Bearings with Tapered Bore



Video 05: ASSEMBLING of HYDRAULIC ADAPTER SLEEVE under self-aligning ROLLER BEARING with HYDRAULIC NUT

See the step-by-step procedure at **www.bgl.com.br/en/treinamento.htm**
Technical Videos- **Video 05**

BGL Application Engineering

Contents:

INITIAL ARRANGEMENTS

01

Keep the workplace dry and dust-free.

02

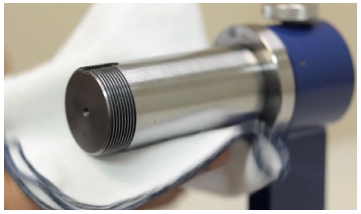
Select the adequate tools.

03

It is important that, before unpacking the parts, you compare the designation of the package with your needs.

04

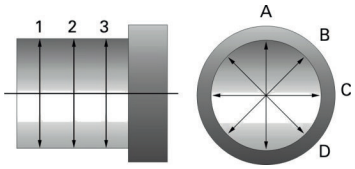
The shaft may show contact corrosion or abrasion and it must be carefully cleaned.



05

Next, check the dimensional precision and the shape of the shaft that will be in contact with the Sleeve.
The shaft dimension must be within the tolerance of maximum h10 and cilindricity IT5/2 or—at low rotations—IT7/2.

⚠ ATTENTION
The shaft diameter must be checked using a micrometer in four positions in two or three planes.



Video 05: **ASSEMBLING** of **HYDRAULIC ADAPTER SLEEVE** under self-aligning **ROLLER BEARING** with **HYDRAULIC NUT**

Assembling Procedures

06

Unpack and clean the Sleeve.

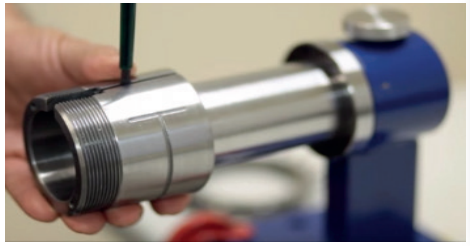
07

Put a fine film of oil on the internal surface of the Sleeve and also on the shaft.

Note: Depending on the type of the equipment demand, the assembling procedure can be done **with dry parts,** without using oil.

08

Put the Sleeve on the shaft. If necessary, enlarge it, inserting a screwdriver in the slot. Next, move it to its position on the shaft.



09

Remove the package from the bearing. Remove the protective oil from the bore and also from the external diameter.

Video 05: **ASSEMBLING** of **HYDRAULIC ADAPTER SLEEVE** under self-aligning **ROLLER BEARING** with **HYDRAULIC NUT**

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With a feeler gauge, measure the initial clearance between the external ring and the bearing roller which shows to be the most free and write it down for usage with the clearance reduction table.

Nominal measure of the internal diameter d (bore bearing)		Bearing Radial Clearance Before Assembly							
		Clearence Group							
		C2		Normal		C3		C4	
Greater than	Up to including	max.	min.	max.	min.	max.	min.	max.	min.
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
24	30	0,020	0,030	0,030	0,040	0,040	0,055	0,055	0,075
30	40	0,025	0,035	0,035	0,050	0,050	0,065	0,065	0,085
40	50	0,030	0,045	0,045	0,060	0,060	0,080	0,080	0,100
50	65	0,040	0,055	0,055	0,075	0,075	0,095	0,095	0,120
65	80	0,050	0,070	0,070	0,095	0,095	0,120	0,120	0,150
80	100	0,055	0,080	0,080	0,110	0,110	0,140	0,140	0,180
100	120	0,065	0,100	0,100	0,135	0,135	0,170	0,170	0,220
120	140	0,080	0,120	0,120	0,160	0,160	0,200	0,200	0,260

Radial Clearance Reduction Calculation Example:
Bearing: **22315 K/C3 with 75 mm bore**
Initial Clearance: **0.11 mm**

11

Next, put the bearing on the Sleeve.

Video 05: **ASSEMBLING** of **HYDRAULIC ADAPTER SLEEVE** under self-aligning **ROLLER BEARING** with **HYDRAULIC NUT**

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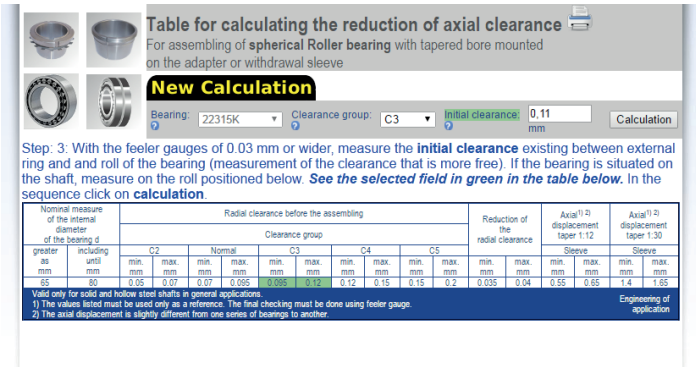
Perform the online calculation of clearance reduction accessing:

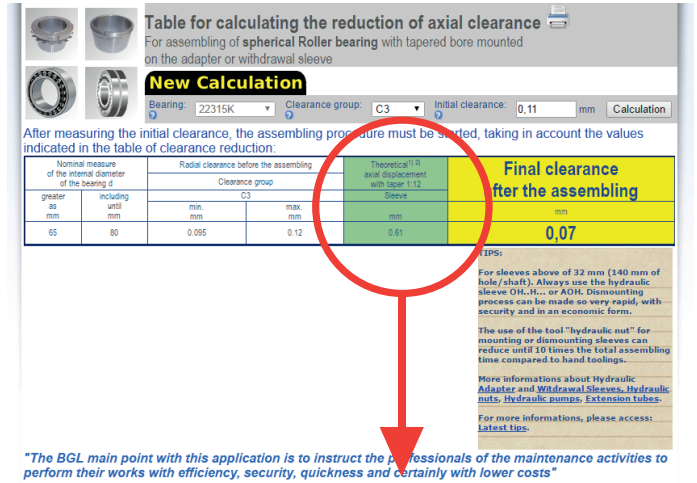
www.bgl.com.br/en/catalogo

Step 1

Step 2



Step 3



In this example, we are using the axial displacement value (0.61 mm) related to the use of Hydraulic Nut for assembling

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You can also to consult the Printed **Table of Radial Clearance Reduction** to assemble Self-Aligning Roller Bearings with Tapered Bore. Order yours from BGL.

Radial Clearance Reduction Calculation Example:

Bearing: **22315 K/C3 with 75 mm bore**

Initial Clearance: **0.11 mm**

Reduction: **0.04 mm**

Final Clearance: **0.07 mm**

Axial Displacement: **0.61 mm**

Nominal measure of the internal diameter d (bore bearing)		Bearing Radial Clearance Before Assembly										Reduction of Bearing Radial Clearance		Axial Taper "S" [1)2)]			
		Clearence Group												Axial Displacement Taper 1:12		Axial Displacement Taper 1:30	
		C2		Normal		C3		C4		C5							
Greater than	Up to including	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
24	30	0,020	0,030	0,030	0,040	0,040	0,055	0,055	0,075	-	-	0,010	0,015	0,250	0,290	-	-
30	40	0,025	0,035	0,035	0,050	0,050	0,065	0,065	0,085	0,085	0,105	0,015	0,020	0,300	0,350	–	–
40	50	0,030	0,045	0,045	0,060	0,060	0,080	0,080	0,100	0,100	0,130	0,020	0,025	0,370	0,440	–	–
50	65	0,040	0,055	0,055	0,075	0,075	0,095	0,095	0,120	0,120	0,160	0,025	0,035	0,450	0,540	1,150	1,350
65	80	0,050	0,070	0,070	0,095	0,095	0,120	0,120	0,150	0,150	0,200	0,035	0,040	0,550	0,650	1,4	1,65
80	100	0,055	0,080	0,080	0,110	0,110	0,140	0,140	0,180	0,180	0,230	0,040	0,050	0,660	0,790	1,650	2,000
100	120	0,065	0,100	0,100	0,135	0,135	0,170	0,170	0,220	0,220	0,280	0,050	0,060	0,790	0,950	2	2,35
120	140	0,080	0,120	0,120	0,160	0,160	0,200	0,200	0,260	0,260	0,330	0,060	0,075	0,930	1,100	2,300	2,800
140	160	0,090	0,130	0,130	0,180	0,180	0,230	0,230	0,300	0,300	0,380	0,070	0,085	1,050	1,300	2,65	3,2
160	180	0,100	0,140	0,140	0,200	0,200	0,260	0,260	0,340	0,340	0,430	0,080	0,095	1,200	1,450	3,000	3,600
180	200	0,110	0,160	0,160	0,220	0,220	0,290	0,290	0,370	0,370	0,470	0,090	0,105	1,300	1,600	3,3	4
200	225	0,120	0,180	0,180	0,250	0,250	0,320	0,320	0,410	0,410	0,520	0,100	0,120	1,450	1,800	3,700	4,450
225	250	0,140	0,200	0,200	0,270	0,270	0,350	0,350	0,450	0,450	0,570	0,110	0,130	1,600	1,950	4	4,85
250	280	0,150	0,220	0,220	0,300	0,300	0,390	0,390	0,490	0,490	0,620	0,120	0,150	1,800	2,150	4,500	5,400
280	315	0,170	0,240	0,240	0,330	0,330	0,430	0,430	0,540	0,540	0,680	0,135	0,165	2,000	2,400	4,95	6
315	355	0,190	0,270	0,270	0,360	0,360	0,470	0,470	0,590	0,590	0,740	0,150	0,180	2,150	2,650	5,400	6,600
355	400	0,210	0,300	0,300	0,400	0,400	0,520	0,520	0,650	0,650	0,820	0,170	0,210	2,500	3,000	6,2	7,6
400	450	0,230	0,330	0,330	0,440	0,440	0,570	0,570	0,720	0,720	0,910	0,195	0,235	2,800	3,400	7,000	8,500
450	500	0,260	0,370	0,370	0,490	0,490	0,630	0,630	0,790	0,790	1,000	0,215	0,265	3,100	3,800	7,8	9,5
500	560	0,290	0,410	0,410	0,540	0,540	0,680	0,680	0,870	0,870	1,100	0,245	0,300	3,400	4,100	8,400	10,300
560	630	0,320	0,460	0,460	0,600	0,600	0,760	0,760	0,980	0,980	1,230	0,275	0,340	3,800	4,650	9,5	11,6
630	710	0,350	0,510	0,510	0,670	0,670	0,850	0,850	1,090	1,090	1,360	0,310	0,380	4,250	5,200	10,600	13,000
710	800	0,390	0,570	0,570	0,750	0,750	0,960	0,960	1,220	1,220	1,500	0,350	0,425	4,750	5,800	11,9	14,5
800	900	0,440	0,640	0,640	0,840	0,840	1,070	1,070	1,370	1,370	1,690	0,395	0,480	5,400	6,600	13,500	16,400
900	1000	0,490	0,710	0,710	0,930	0,930	1,190	1,190	1,520	1,520	1,860	0,440	0,535	6,000	7,300	15	18,3
1.000	1.120	0,530	0,770	0,770	1,030	1,030	1,300	1,300	1,670	1,670	2,050	0,490	0,600	6,400	7,800	16,000	19,500
1.120	1.250	0,570	0,830	0,830	1,120	1,120	1,420	1,420	1,830	1,830	2,250	0,550	0,670	7,100	8,700	17,8	21,7
1.250	1.400	0,620	0,910	0,910	1,230	1,230	1,560	1,560	2,000	2,000	2,450	0,610	0,750	8,000	9,700	19,900	24,300
1.400	1.600	0,680	1,000	1,000	1,350	1,350	1,720	1,720	2,200	2,200	2,700	0,700	0,850	9,100	11,100	22,7	27,7
1.600	1.800	0,750	1,110	1,110	1,500	1,500	1,920	1,920	2,400	2,400	2,950	0,790	0,960	10,200	12,500	25,600	31,200

Video 05: **ASSEMBLING** of **HYDRAULIC ADAPTER SLEEVE** under self-aligning **ROLLER BEARING** with **HYDRAULIC NUT**

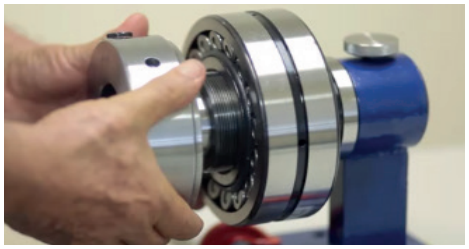
ATTENTION

The assembling of the Adapter Sleeve under the self-aligning bearing with internal diameter above 50 mm gets extremely easier when you use the Hydraulic Nut and the comparator dial.

Note: Order the HMV_E Hydraulic Nut, being the suffix exactly the same as the one of the Adapter Sleeve.

14

Insert the Hydraulic Nut in the Sleeve, with the plunger turned to the bearing, and screw it.



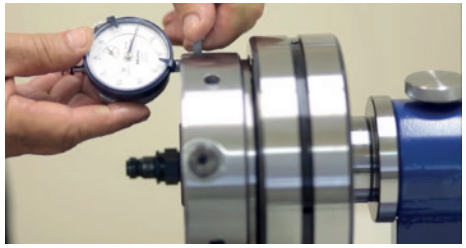
15

Use a straight pin spanner, to get a proper contact between the bearing, the Sleeve and the shaft.

Note: Starting point for Clearance Reduction (Zero Point).

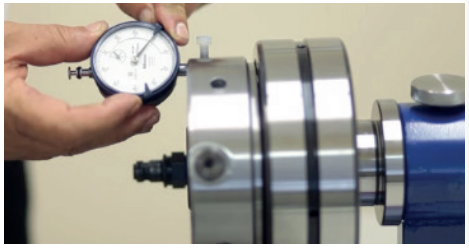
16

Next, insert the comparator dial into the Hydraulic Nut and tie it with the nylon screw.



17

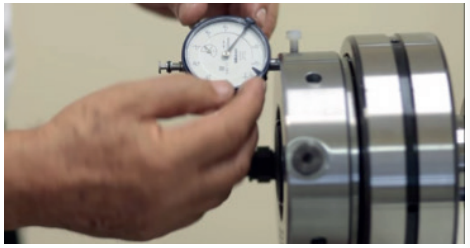
Set the comparator dial indicator to zero (0).



18

After that, consult the Axial Displacement Table to know the amount to be displaced and set the second marker to the figure in the table.

Axial displacement (0.61 mm)



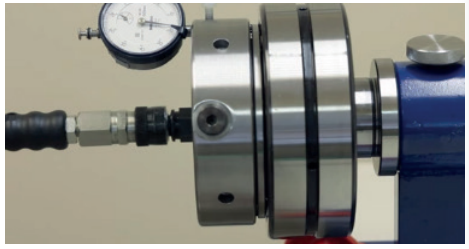
Video 05: **ASSEMBLING** of **HYDRAULIC ADAPTER SLEEVE** under self-aligning **ROLLER BEARING** with **HYDRAULIC NUT**

19

Tie the Pump hose to the quick coupling of the Hydraulic Nut.

20

Pump the oil to the Hydraulic Nut, displacing the plunger, observing on the comparator dial the clearance reduction by axial displacement.



21

Upon reaching the desired axial displacement, relieve the Pump pressure and remove the comparator dial.

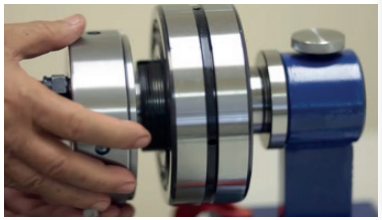
22

With the pin spanner, tighten the Hydraulic Nut moving back the plunger for the oil to return to the Pump.

Video 05: **ASSEMBLING** of **HYDRAULIC ADAPTER SLEEVE** under self-aligning **ROLLER BEARING** with **HYDRAULIC NUT**

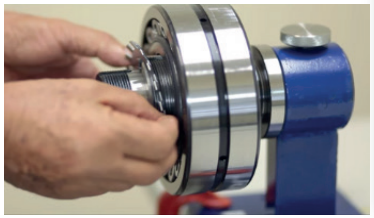
23

Disconnect the Pump and remove the Hydraulic Nut.



24

Check with the feeler gauge the final radial clearance.
Put the Lockwasher.



25

Tighten the Locknut firmly using the HN Hook Spanner.

26

Align the nearest notch of the Nut with the external jut of the Washer and, with the help of a pricker, bend it.

27

To finish, make sure the bearing can be turned easily with your hands.

To disassemble, see **Video 12** at **www.bgl.com.br/en/treinamento.htm**

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Online Reduction Calculation:
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Catalog Download:
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Reference Technical Standards:
ABNT NBR 16535-1: SLEEVES FOR BEARINGS
ABNT NBR 16535-2: LOCKNUTS AND LOCKWASHERS

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