Adjusting Suspension Arm Link Pins

5 ST

General

The suspension arm link pins should be checked at regular intervals, as set out in the maintenance plan. If necessary they should be adjusted.

Inspection

1. Jack car up
2. Rock the wheel by hand to check clearance between the suspension arm link and suspension arm. If excessive play is present, adjust suspension arm link pins

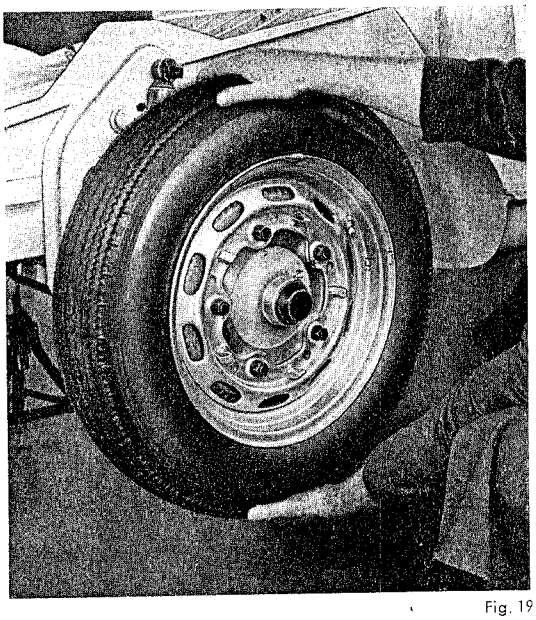

Fig. 19

Adjustment

1. Loosen hex. hd. clamping screws on suspension arm eyes

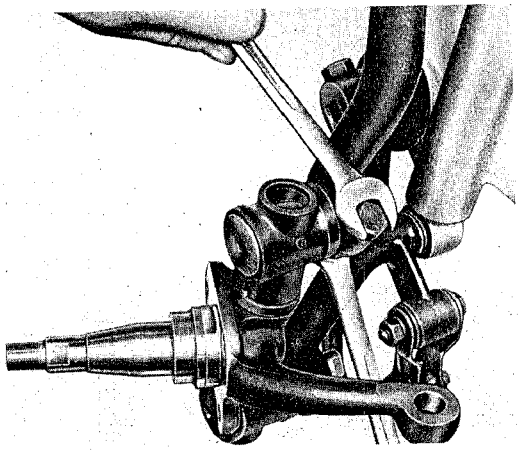

Fig. 20

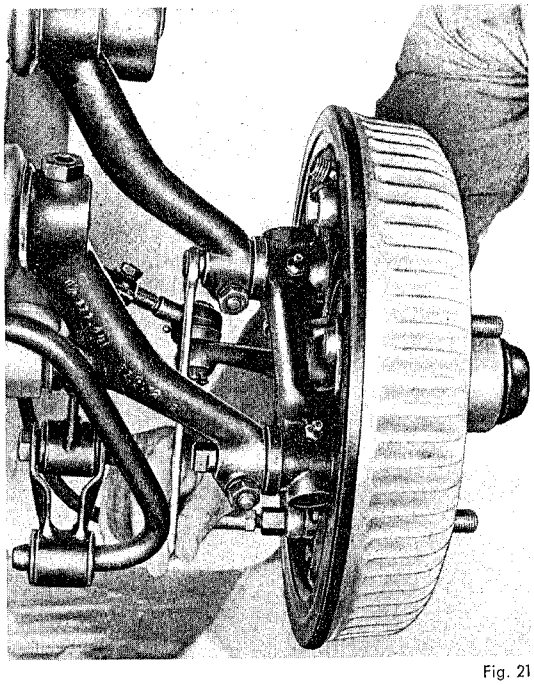

Fig. 21

2. Tighten suspension arm link pins to a degree which will still allow a free movement between the suspension arms and the suspension arm link pins. For this purpose tighten first the suspension arm link pins fully and then untighten slightly — at the most by approx. 1/8 turn. If no correct adjustment can be effected, the shims are worn and should be replaced by new ones. See procedure 6 St.

3. Tighten clamping screws.

Attention!

After every adjustment of the suspension arm link pins, check toe-in and if necessary re-adjust

Correct offset with shims of .0197" (0,5 mm) thickness

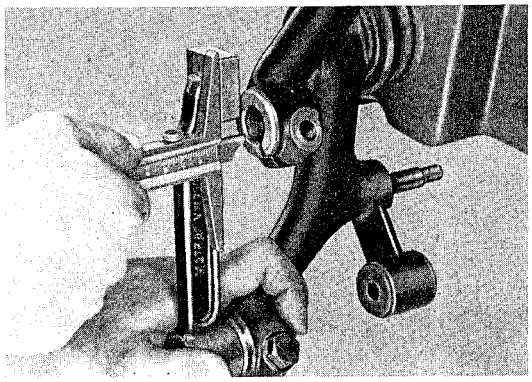

Fig. 26

Arrangement of shims on Suspension arm link pins

Offset in (mm)	Number of shims on Upper suspension arm inner (A)	Upper suspension arm outer (B)	lower suspension arm inner (C)	lower suspension arm outer (D)
.200 (5)	3	7	7	3
.217 (5,5)	4	6	7	3
.236 (6)	4	6	6	4
.246 (6,5)	5	5	6	4
.276 (7)	5	5	5	5
.295 (7,5)	6	4	5	5
.315 (8)	6	4	4	6
.335 (8,5)	7	3	4	6
.354 (9)	7	3	3	7

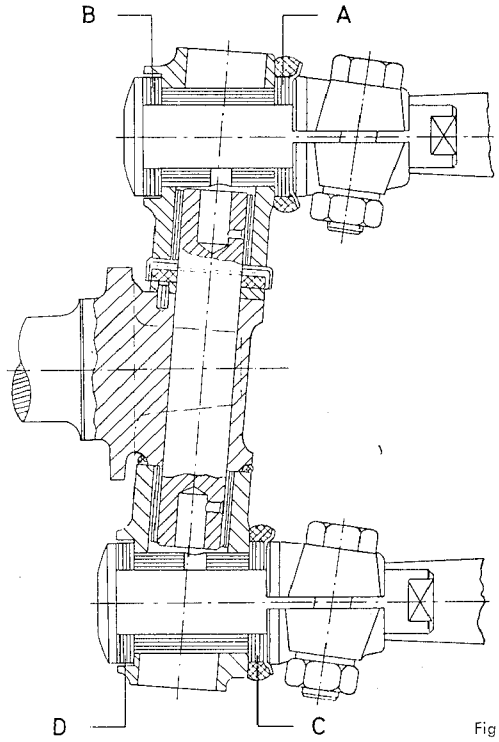

Fig. 27

Note:

a) Always 10 shims must be fitted to **one suspension arm link;** this includes also the sectional shim for the suspension arm eye. Make sure that the lug of the sectional shim is fitted in the clamping slot of the suspension arm eye.

b) If the offset amounts to .276" (7 mm) the same number of inner und outer shims (5 required) should be added

c) If the offset exceeds .276" (7 mm) add shims to A and remove from C

d) If the offset is less than .276" (7 mm) take off shims from A and add to C

e) The total number of shims at B and D should always be added up to 10

Example:

a) Offset measured was .327" (8,3 mm). The value measured is to be rounded out to the nearest value indicated in the table, in this case to .335" (8,5 mm)

b) The difference from the correct value .276" (7 mm) is .335" — .276" = .059" (8,5 — 7 = 1,5 mm)
This value corresponds to the thickness of 3 shims of .020" each

c) The shims must be arranged as follows:

Upper Suspension Arm		Lower Suspension Arm	
Inner (A)	Outer (B)	Inner (C)	Outer (D)
7	3	4	6

If the discrepancy from the required value exceeds ± .78" (2 mm) it is not permissible to correct by adding more shims. Misalignment can be determined by removing the suspension arms and checking them on test plate P 70. The front axle should be checked for alignment by means of the front axle tube alignment gauge VW 256 a.

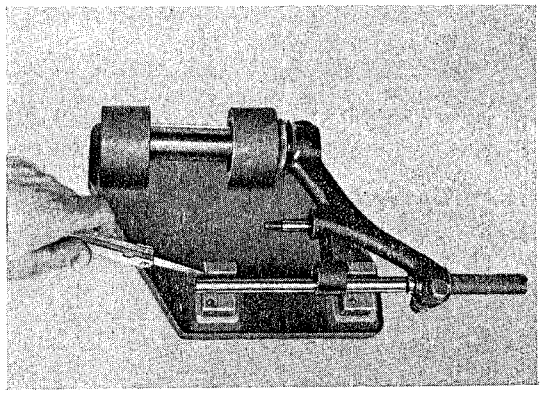

Fig. 28

4. Twisted suspension arms must be in any case repla-

ced. For safety reasons no attempt should be made to straighten them.

5. Grease suspension arm link pin and shims with multi-purpose grease and install. If the offset has been corrected as outlined above, the suspension arm link pins can easily be pushed into the suspension arm eyes and the faces of the upper and lower suspension arms simultaneously make perfect contact

6. Adjust suspension arm link pins

7. After installation of the brake anchor plate, secure retaining screws with wire (fig. 29)

8. Check camber and toe-in of front wheels

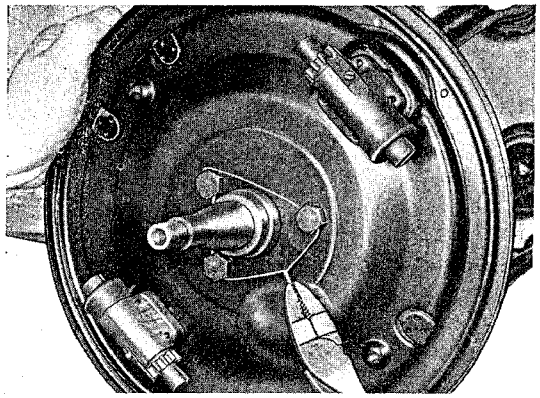

Fig. 29

7 ST

Removing and Installing Suspension Arm Link Pin Bushings

Special tools:

VW 133 Suspension arm link pin pilot drift, or
VW 400 Repair press with
VW 434 Arbor
VW 408 Punch and
VW 401 Thrust plate
VW 418 Tube or installing suspension arm link pin bushing in connecting with aforementioned tools
VW 259 Suspension arm link gauge

Removal

1. Remove suspension arm link and stub axle (6 St)

2. Press out suspension arm link pin bushings (with pilot drift VW 133 or VW repair press with arbor VW 434 in connection with VW 408 and VW 401)

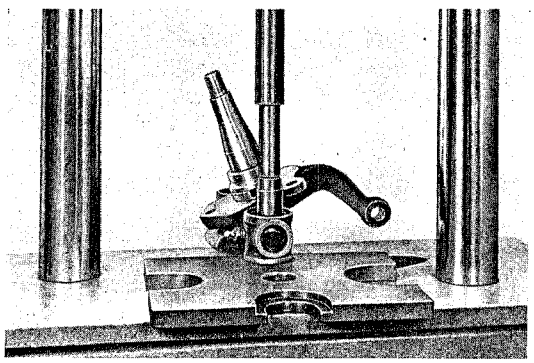

Fig. 30

Installation

When installing suspension arm link pin bushings, attention should be paid to the following points:

1. Check suspension arm link for correct offset, using gauge VW 259

2. Check depth of bores for suspension arm link pin bushings by means of gauge VW 259

3. Check clearance of king pin in bushings. If necessary, replace king pin and bushings (9 St)

4. Install suspension arm link pin bushings on

VW repair press with punch VW 408 in connection with VW 401 and VW 418. The bushings must be a press fit in the suspension arm link.

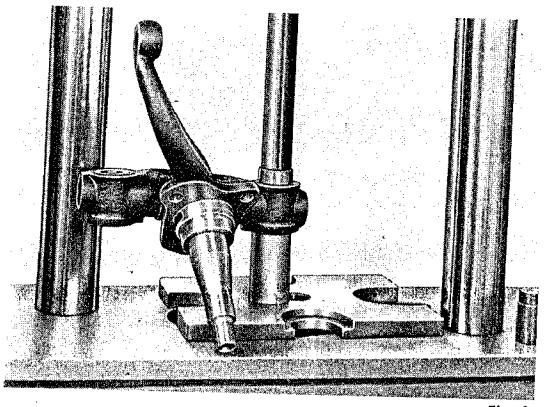

Fig. 31

Note:
When installing the suspension arm link pin bushings, make sure that the radial bore of the bushing is in line with the grease hole in the suspension arm link.

Removing and Installing Stub Axle

8 ST

Special tools:

VW 400	Repair press
VW 401	Thrust plate with
VW 411	Punch and
VW 418	Tube for removing king pin
P 69	Stub axle gauge
VW 259	Suspension arm link gauge
VW 434	Arbor in connection with VW 401, 411 for installation of king pin

Removal

1. Press out suspension arm link pin bushings from suspension arm link (7 St)

2. Drive out king pin on VW repair press with punch 411 in connection with VW 401 and VW 418. In order to prevent damage, the stub axle should be heated to 176—194° F (80—90° C) in an oil bath

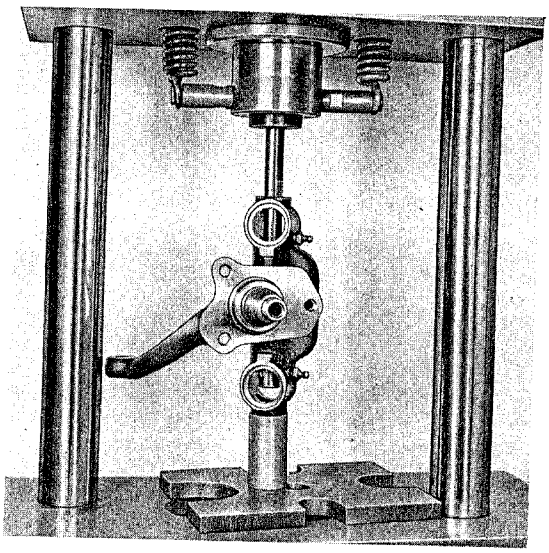

Fig. 32

3. Take out stub axle, thrust washer, cover (thrust bearing) and rubber seal from suspension arm link

Checking Stub Axle

1. Check stub axle for bends and twisting on alignment gauge P 69. Place stub axle in gauge and check position of seating surface on bore for the tie rod end. The bore in the steering arm of the stub axle should align with the hole in the gauge. No attempt should be made to straighten bent stub axles, they must always be replaced.

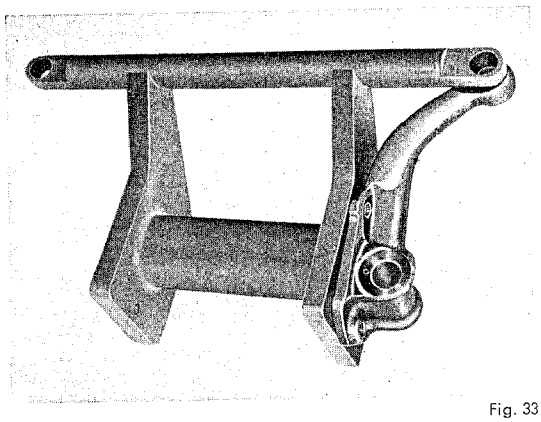

Fig. 33

2. Check thrust washer contact surface of the stub axle for smoothness and remove any burrs

3. Check front wheel bearing surfaces of stub axle.

4. Check bore for king pin (press fit); in case of wear due to seizure of the king pin, replace stub axle

Checking Suspenion Arm Link

1. Check suspension arm link for correct offset, using gauge VW 259

Correct value	.276" (7 mm)
Tolerance limit	.00787" (0,2 mm)

Place gauge and suspension arm link in a vise and measure offset, using a depth gauge resting against the back of the gauge plate; a dimension of .787" (20 mm) up to the recessed face in the torsion arm link corresponds to an offset of .276" (7 mm). Discrepancies from the correct value should be taken into account when determining the suspension arm offset

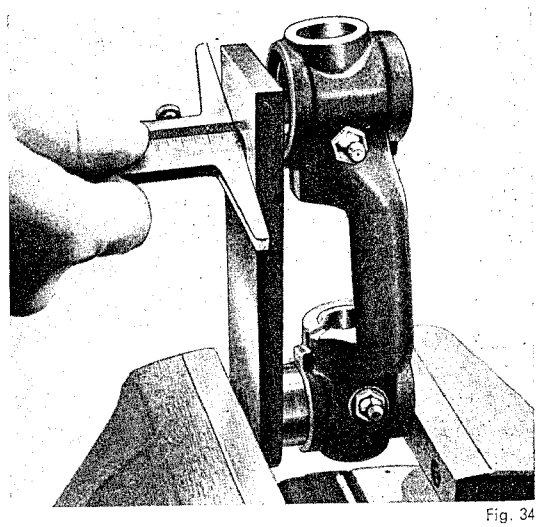

Fig. 34

3. Check depth of bores for suspension arm link pin bushings, using gauge VW 259. Replace suspension arm links, if the depth of the bores is below tolerance limit.

Installation

When installing stub axle, proceed in reverse order, observing the following points:

1. Check king pins for wear. If necessary, replace together with suspension arm link pin bushings

2. Check fit of thrust washer dowel pin in stub axle

3. Replace rubber seal

4. Fit suspension arm link together with stub axle and thrust bearing (thrust washer, friction washer and cover) so that no end play is felt. Existing play should be eliminated by inserting a thicker washer. For this purpose steel thrust washers 3,65, 3,75, 3,85, 3,95 through 4,5 mm in thickness are available. The thrust washer dowel pin is located in the stub axle and the cover is secured in position by grooves in the suspension arm. The rubber seal is on the opposite side.

5. Heat stub axle in oil bath to approx. 176° F (80° C) and press in king pin on VW repair press with arbor 434 in connection with thrust plate VW 401 and punch VW 411.

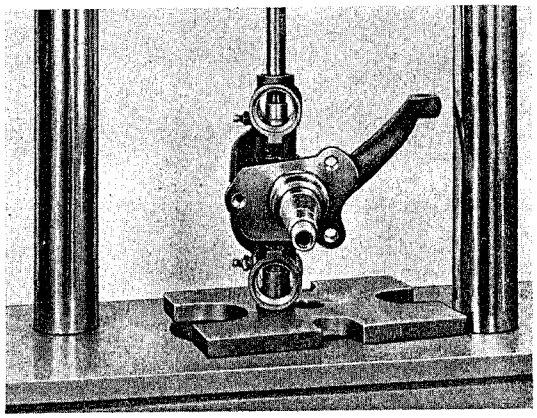

Fig. 35

Suspension arm link and stub axle must swivel freely when being moved by hand. If movement is stiff, tap slightly with an aluminium hammer

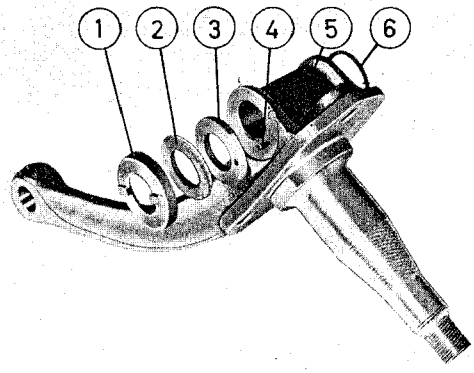

Fig. 36

① Bearing cap
② Friction washer
③ Thrust washer

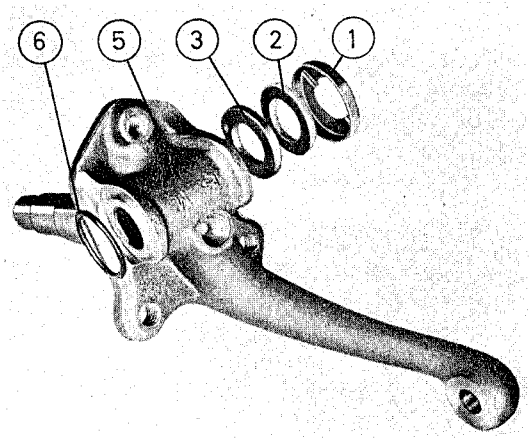

Fig. 37

④ Dowel pin
⑤ Stub axle
⑥ Rubber seal

Removing and Installing King Pin Bushings

9 ST

Special tools:

VW 131 King pin bushing pilot drift
VW 400 Repair press
VW 401 Thrust plate
VW 411 Punch with
VW 422 Tube and
VW 423 Tube for removing king pin bushing
VW 224 King pin bushing reamer
VW 431 Thrust pad with
VW 432 Thrust pad in connection with VW 401, 411, for installation of king pin bushings

Removal

1. Remove stub axle (8 St)

2. Press king pin bushings out of suspension arm link, using pilot drift VW 131, or on repair press with punch VW 411 in connection with VW 422 and VW 423

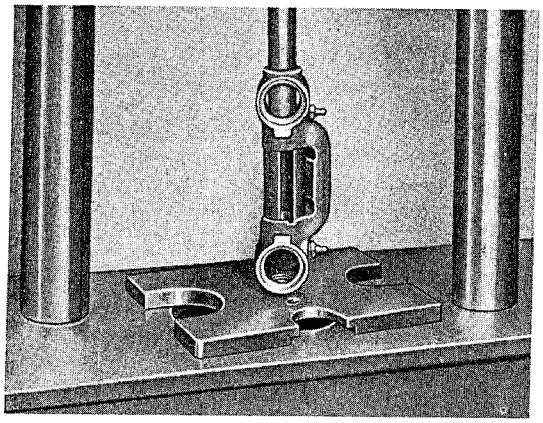

Fig. 38

Installation

When installing king pin bushings, attention should be paid to the following points:

1. Press in new bushings from inside of suspension arm link on VW repair press with punch VW 411 in connection with VW 431, VW 432 and VW 401

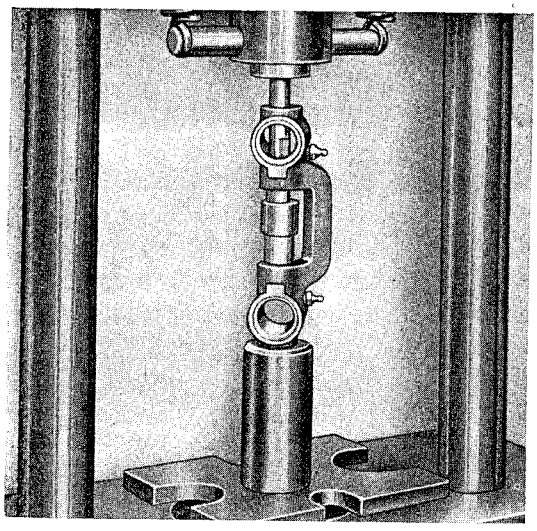

Fig. 39

2. When fitting upper bushing, take care that the groove in the bushing is in line with the groove in the suspension arm link. If not provided, file groove into the bushing after installation

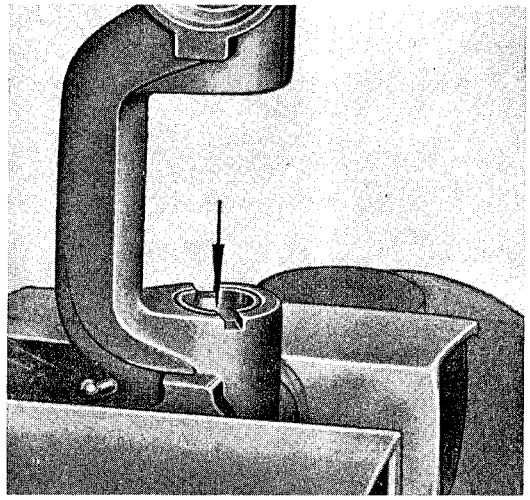

Fig. 40

3. Ream out bushings with reamer VW 224 (18 to 21 mm dia.). The tapered bushing of the reamer serves as a guide

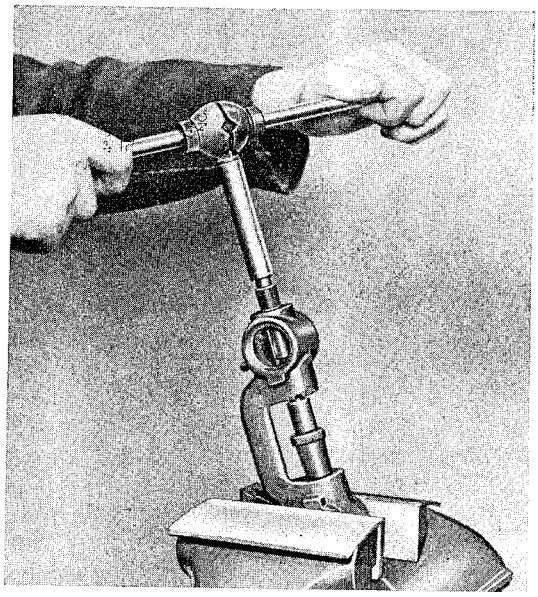

Fig. 41

Final size: 18.034 mm dia. to 18.016 mm dia.

The bushings are correctly reamed, if they are not scored and free from chatter marks, the king pin can be turned by hand and no clearance is felt in the bushings.