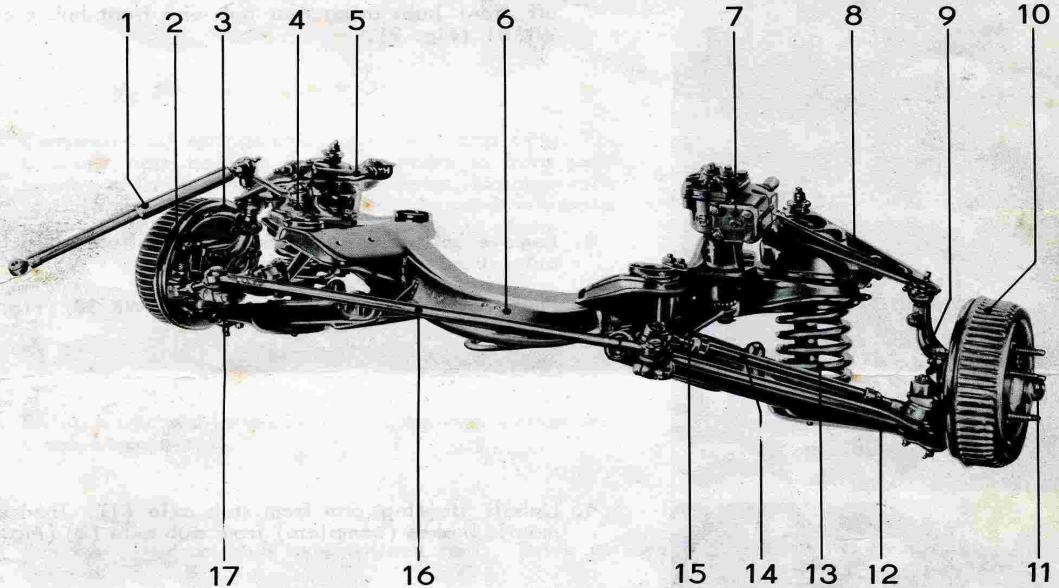




Isabella Front Axle
Dismantling (040 50)
and Assembling (040 60)

Bremen, 3.11.1960

Isabella Front Axle



- 1. Steering Damper
- 2. Steering arm (stub axle)
- 3. Brake backplate
- 4. Steering crank pivot
- 5. Upper wishbone bearing
- 6. Front axle beam

- 7. Steering Box
- 8. Upper wishbone
- 9. Stub axle carrier
- 10. Brake drum
- 11. Hub cap
- 12. Lower wishbone

- 13. Coil spring
- 14. Outer track-rod
- 15. Steering crank
- 16. Centre track-rod
- 17. Ball-joint

Technical Data

Front axle, type

Double wishbone i.f.s.

Camber

0° - 1°

Toe-in (wheels clamped)

Nil

Castor

3° ± 30'

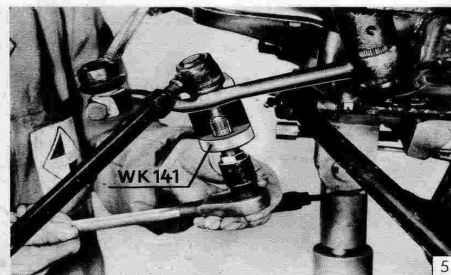
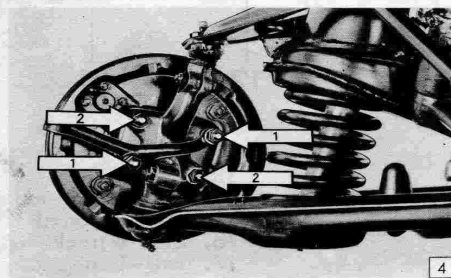
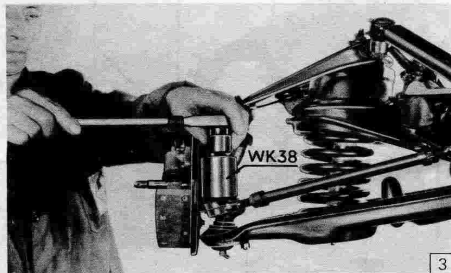
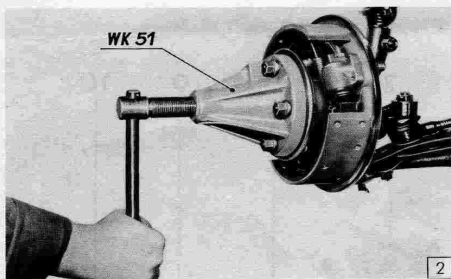
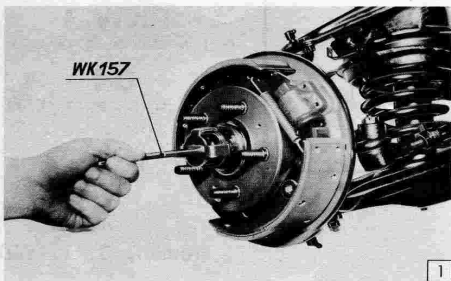
Kingpin inclination

6° ± 15'

Track differential (at 20° lock)

2° 40' ± 30'

Dismantling Front Axle



1. Remove brake drums and hub-caps using pull-lever for greasing cap (WK 157) (Fig. 1).

2. Remove split-pin and unscrew castellated nut from stub axle. Take off stub axle locking washers. Draw off front hubs using rear hub and front hub drawer WK 51 (Fig. 2).

3. Remove split-pins and unscrew castellated nuts from outer track-rod ball-joints.

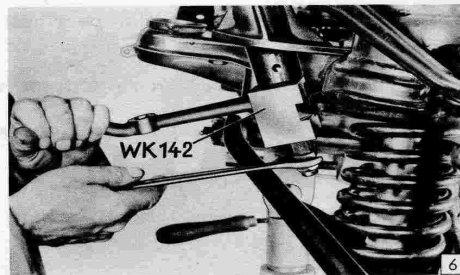
Draw ball-joints from steering arms (WK 38) (Fig. 3).

4. Unbolt steering arm from stub axle (1). Then dismantle brakes (complete) from stub axle (2) (Fig. 4).

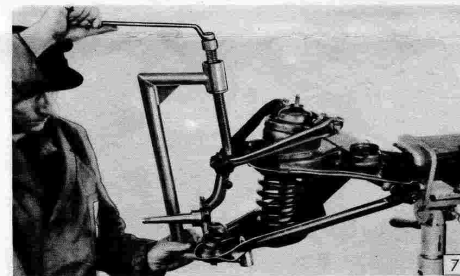
5. Separate outer track-rods from steering cranks (removing split-pins and unscrewing castellated nuts). Press ball-joints from steering cranks (WK 141) (Fig. 5).

6. Dismantle centre track-rod from steering cranks, removing retaining screws from steering cranks.

7. Remove split-pin and unscrew castellated nut from steering box spindle. Draw steering cranks from steering box spindle and steering crank pivot (Drop-arm drawer WK 142/1/2) (Fig. 6).

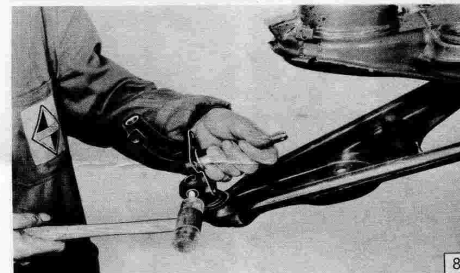


8. Dismantle steering box and steering crank pivot from front axle beam.



9. Compress coil springs using special clamp (Fig. 7). Unscrew nuts holding shock-absorbers to front axle beam and lower wishbone spring plates. Unscrew nuts of bolts holding stub axle carriers to upper wishbone ball-joints. Release springs by unscrewing clamp.

10. Swing lower wishbone downwards, remove springs and shock-absorbers.



11. Remove nuts from stub axle splined bolts. Drive splined bolts out of stub axles using hide-headed hammer (Fig. 8).

Remove stub axles with rubber cap and retaining ring from bearer ball-joints.

12. Remove upper wishbone (complete) from axle beam.

13. Remove lower wishbone (complete) from axle beam.

14. Unscrew grease nipples from upper wishbone ball-joints. Then remove ball-joints from upper wishbones.

15. Remove rubber buffers from upper and lower wishbones if necessary.

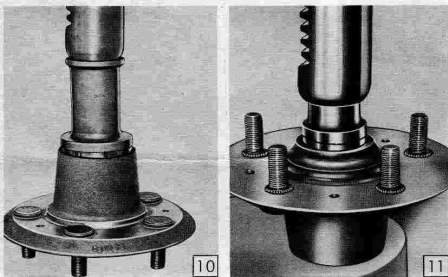
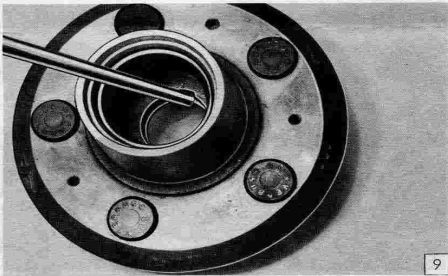
16. Remove outer taper roller bearings from hubs.

17. Drive circular packing rings from hubs.

Important! Circular packing rings will be damaged hereby and should never be re-used, but only replaced with new items.

18. Remove inner taper roller bearings from hubs.

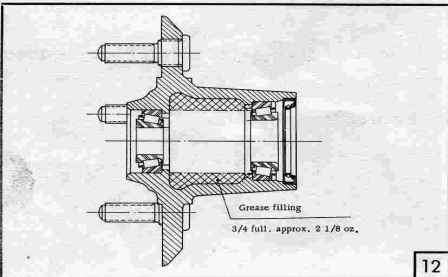
19. Drive outer bearing shells of inner and outer taper roller bears from hubs (Fig. 9).



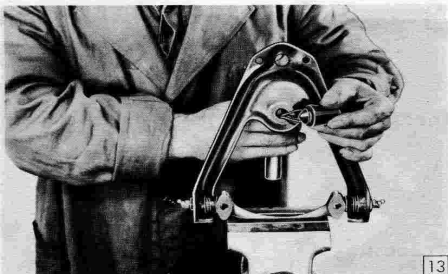
Assembling Front Axle

1. Press outer and inner taper bearing outer shells into hubs (Fig. 10 and 11).

2. Place greased inner taper roller bearings in hubs.



3. Insert circular packing rings in hubs (use suitable press).

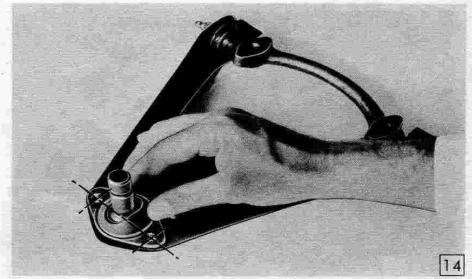


4. Fill hubs with grease (Fig. 12), then fit outer taper roller bearings in hubs.

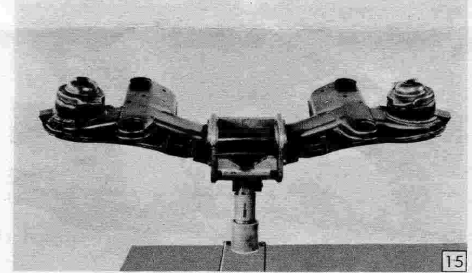
5. Draw rubber buffers into upper and lower wishbones (Fig. 13).

6. Fit ball-joints to upper wishbones.

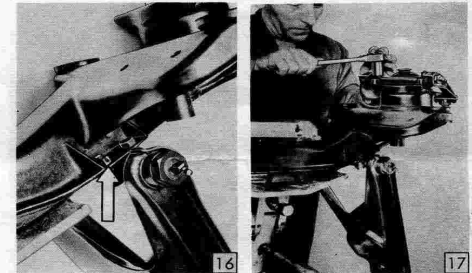
Important! The holes in the flange are offset from the centre line (Fig. 14). Fit with narrow side outwards. Insert retaining screws, screw on castellated nuts, tighten and secure with split-pins.



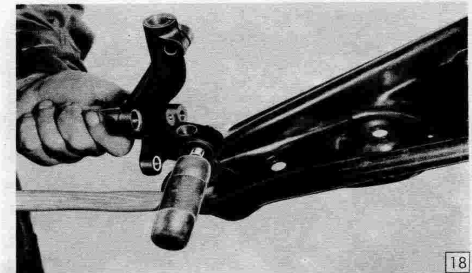
7. Mount front axle beam in assembly stand (Fig. 15).



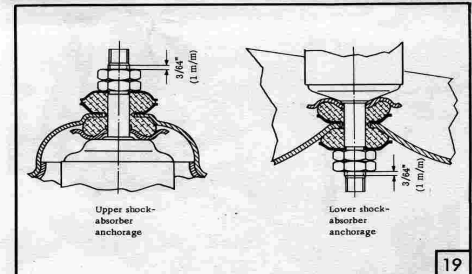
8. Fit lower wishbone bearings to axle beam. Take care that the inner retaining bolts on the front side of the axle beam are inserted from below (Fig. 16).



9. Fit upper wishbone to front axle beam (Fig. 17).

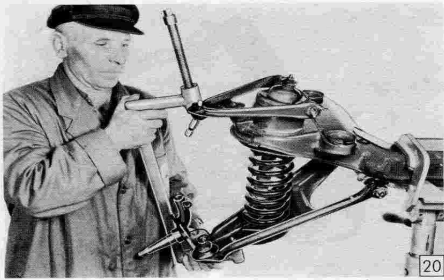


10. Fit rubber cap with retaining ring and rupper washer to stub axle bearer ball-joints. Place stub axle on bearer ball-joints and drive in splined bolts. (Fig. 18). Screw on new self-locking nuts and tighten.



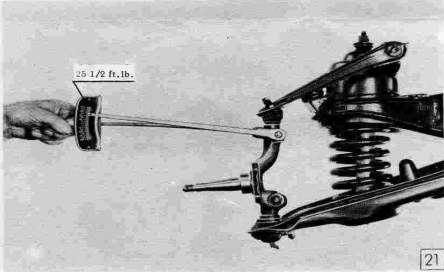
Important! Observe assembly measurements carefully (Fig. 19)!

The rubber bushing should be compressed by tightening the nuts until the correct measurements register on upper and lower shock-absorber retaining bolts.



20

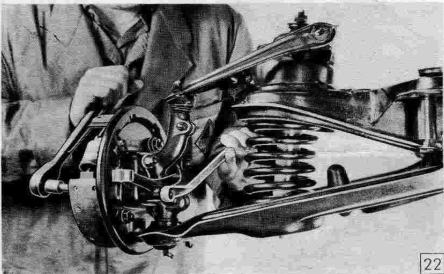
12. Fit coil springs and compress using clamp (Fig. 20). Insert ball-joint pins with bearing bushes and compression springs in stub axles.



21

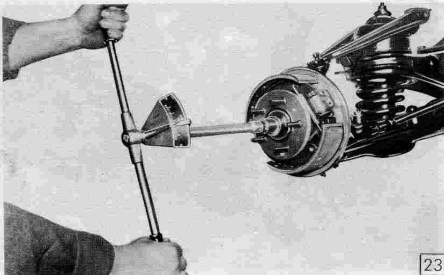
13. Secure ball-joint pins in stub axles by M 8 x 40 screws. Remove clamp. Screw on new self-locking nuts and tighten to a torque of 25 1/2 ft. lb. (3,5 mkg) (Fig. 21).

14. Secure shock-absorber to lower wishbone spring plate (see Fig. 19 p. 5).



22

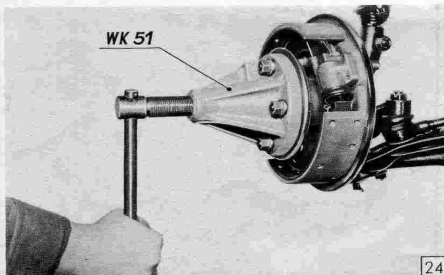
15. Mount brakes complete with steering arms on stub axles (Fig. 22).



23

16. Remove outer taper roller bearing from hub and drive front hub on to stub axle with a suitable piece of tube. The drive outer taper roller race onto stub axle.

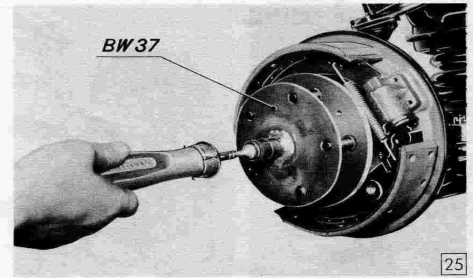
17. Fit stub axle washers, screw on castellated nuts and tighten to 22 ft. lb. (3 mkg).



24

18. Unscrew castellated nut 1/6 turn. Using hub-drawer WK 51, draw back hub until inner shell of outer taper roller bearing bears on inner face of castellated nut (Fig. 24).

19. Test friction of hub bearings using torsionmeter (Fig. 25). The torque necessary to overcome the resistance of the bearing, after lining up the split-pin hole, should be between 1/2 and 1 ft.lb. (6 and 12 cmkg).



20. After adjusting front hub, secure castellated nuts with split-pins.

21. Fill hub caps with grease and insert in hubs.

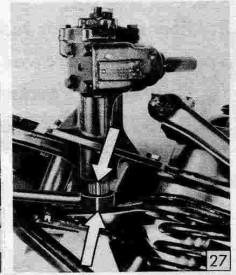
22. Fit brake drums.

23. Fit steering crank bearing to front axle beam. Insert bolts from below, screw on new self-locking nuts and tighten.

24. Fit steering box to front axle beam. When fitting steering box as well as the steering crank bearing, assemble rubber buffers and washers with them.

25. Fit steering cranks to bearing and steering box spindles. When fitting right-hand steering crank to bearing spindle, ensure that key fits into keyway (Fig. 26).

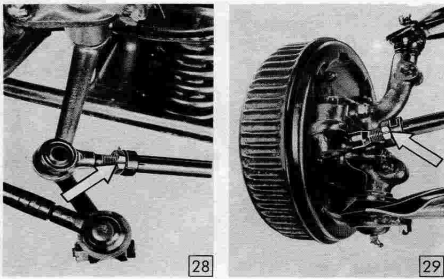
26. When fitting left-hand (serrated) steering crank, fit big tooth of crank to corresponding groove in the spindle (Fig. 27).



After fitting steering cranks, screw on castellated nuts, tighten and secure with split-pins.

27. Fit centre track-rod to steering cranks and secure using clamping screws. (Insert clamping screws into steering cranks from outside.)

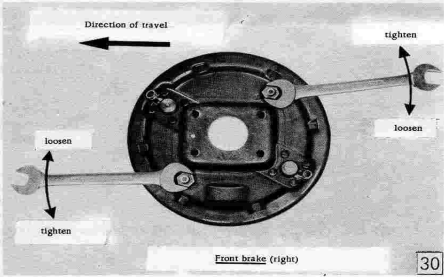
28. Fit outer track-rods to steering cranks and to steering arms on stub axles. Screw castellated nuts onto ball-joints and secure with split-pins.



Important! The track-rods are fitted with left-hand threads at one end. (The lock-nuts are distinguished by a groove in one flat.)

Fit left track-rod with marked end to steering crank (Fig. 28).

Fit right track-rod with marked end to steering arm on stub axle (Fig. 29).



29. Adjust brakes.

Undo eccentric adjusters until wheel turns freely. The tighten adjuster until brake shoe lining touches drum. Then back off adjuster until the drum turns freely. Repeat the procedure with second adjuster.

Important! Turn adjuster in direction of wheel rotation to tighten (Fig. 30). (Right-hand side depicted.)

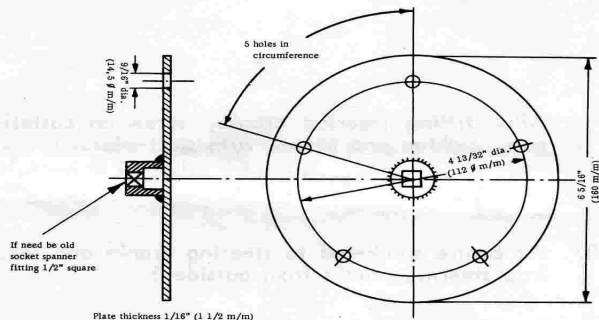
30. Grease front axle in accordance with instructions in the lubrication chart.

Special Tools:-

1. Ball-joint drawer WK 38
2. Front and rear hub drawer WK 51
3. Ball-joint drawer WK 141
4. Drop-arm drawer WK 142 A/1/2
5. Pull-lever for greasing cap in front wheel hub WK 157

Special Jigs (Homemade):-

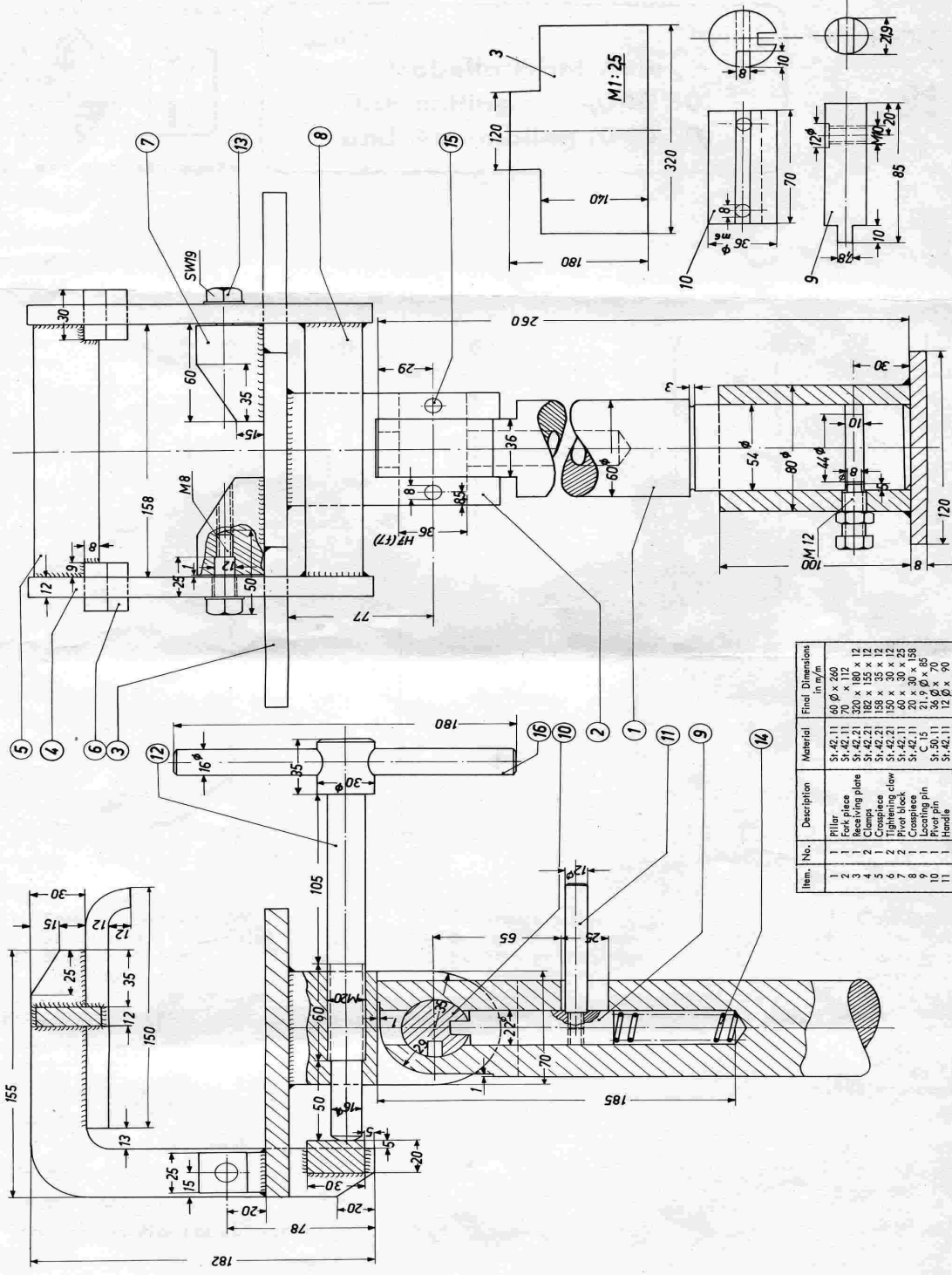
BW 37 Front hub adjuster jig



Commercial Tools:-

1. Torsionmeter
2. Torque wrench
3. Special screw clamp Max: 15 3/4" (400 m/m) depth of action 9 7/8" (250 m/m) (Made by Firm Neurod and Hausmann, Remscheid-Lüdringhausen, Germany)

Front Axle Assembly Jig BW 13
(All Dimensions are metric)



Item No.	Description	Material	Final Dimensions in mm
1	Roller	St.42.11	40 ϕ x 260
2	Fork piece	St.42.11	70 ϕ x 112
3	Receiving plate	St.42.21	320 x 180 x 12
4	Clamp	St.42.21	188 x 155 x 12
5	Crosspiece	St.42.21	158 x 35 x 12
6	Tightening claw	St.42.11	46 x 30 x 25
7	Pivot pin	St.42.11	46 x 30 x 25
8	Crosspiece	St.42.11	20 x 30 x 158
9	Locating pin	C.15	21.9 ϕ x 85
10	Pivot pin	St.20.11	35 ϕ x 70
11	Shoulder screw	St.30.11	30 ϕ x 250
12	Tightening screw	St.30.11	19 ϕ x 50
13	Shoulder bolt	St.30.11	19 ϕ x 80
14	Spring	Spring steel	8 ϕ x 80
15	Pin	St.50.11	10 ϕ x 180
16	Handle	St.50.11	10 ϕ x 180