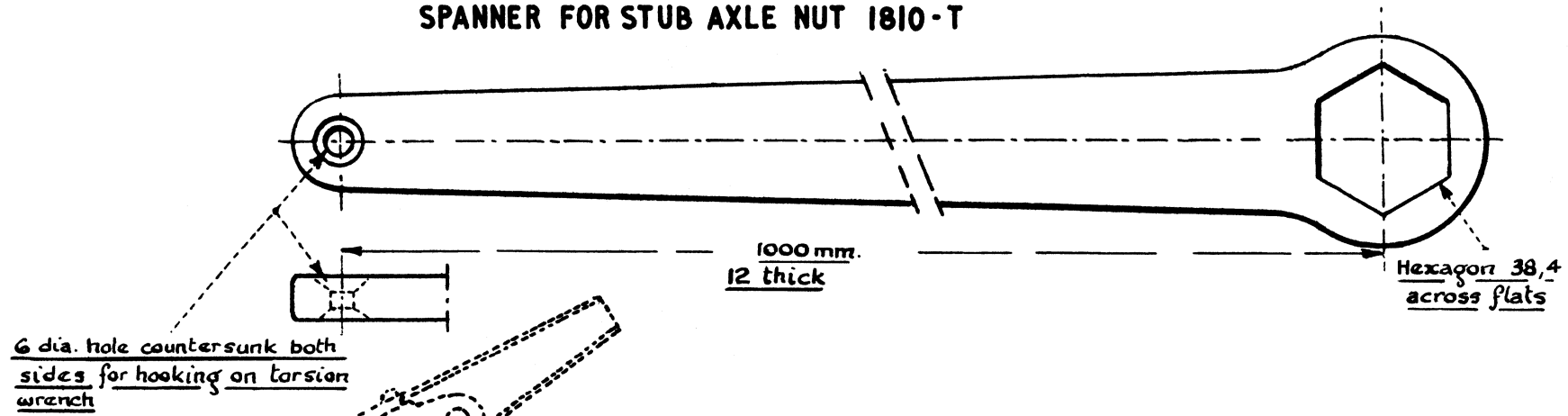
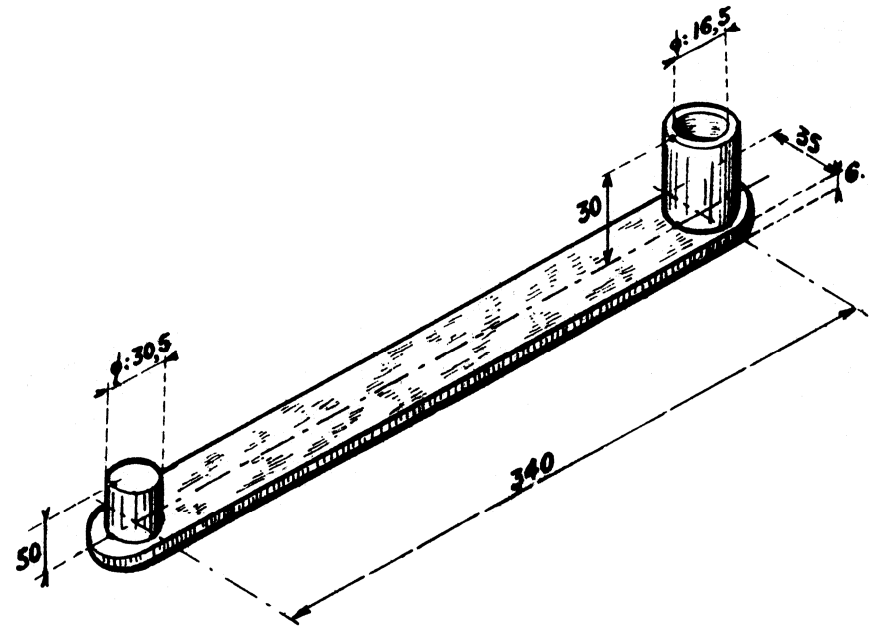
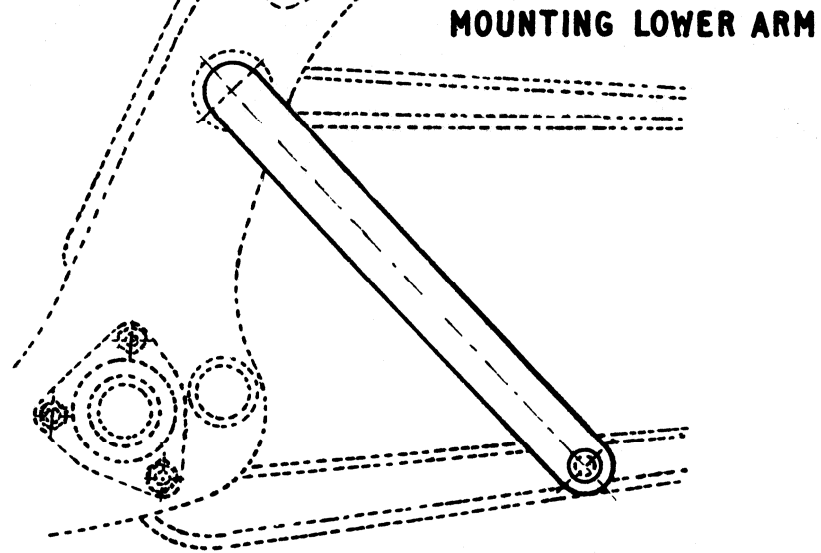


— FRONT AXLE —
— MOUNTING LOWER LINK —

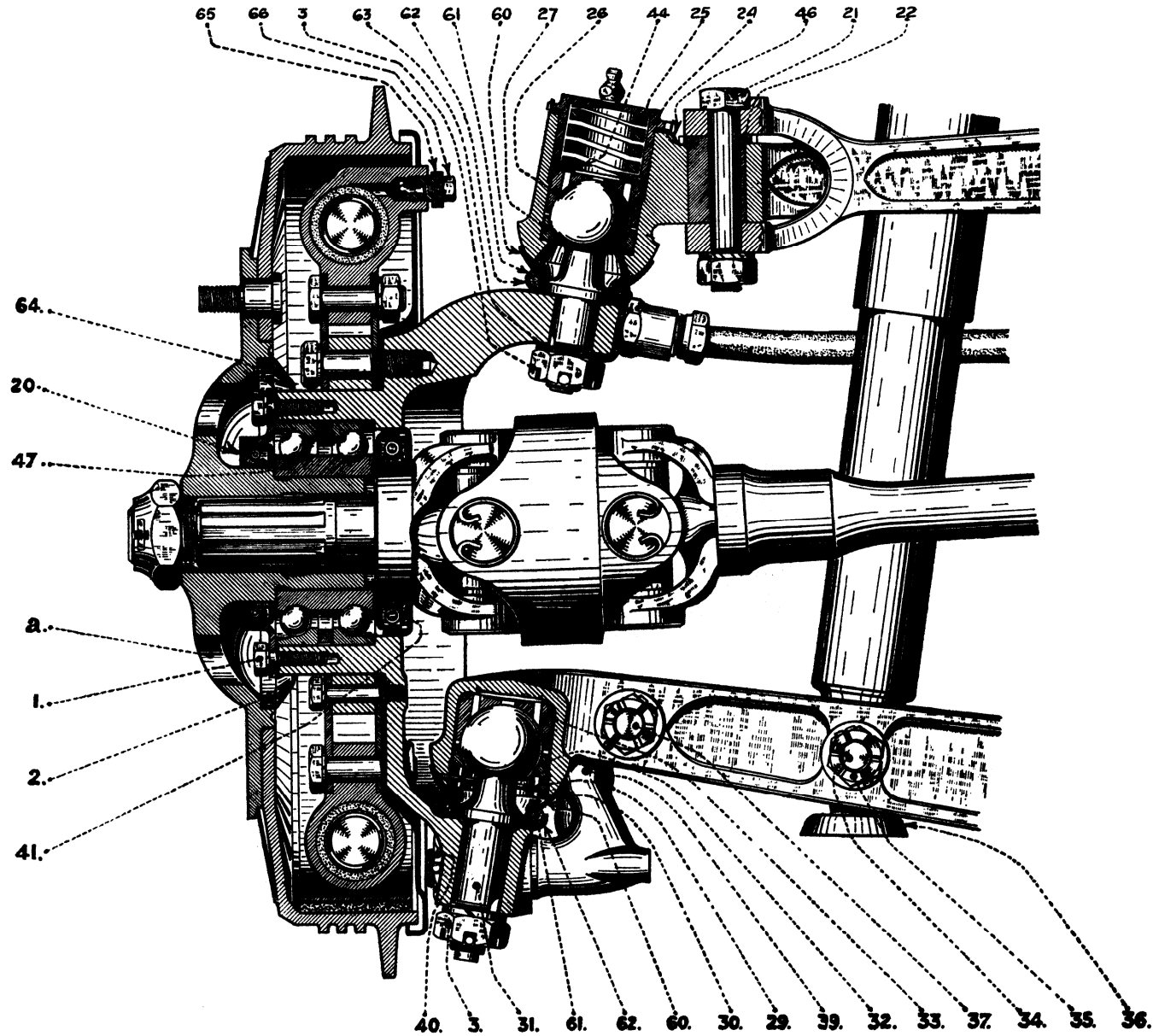
SPANNER FOR STUB AXLE NUT 1810-T



GAUGE MR.3447 FOR MOUNTING LOWER ARM



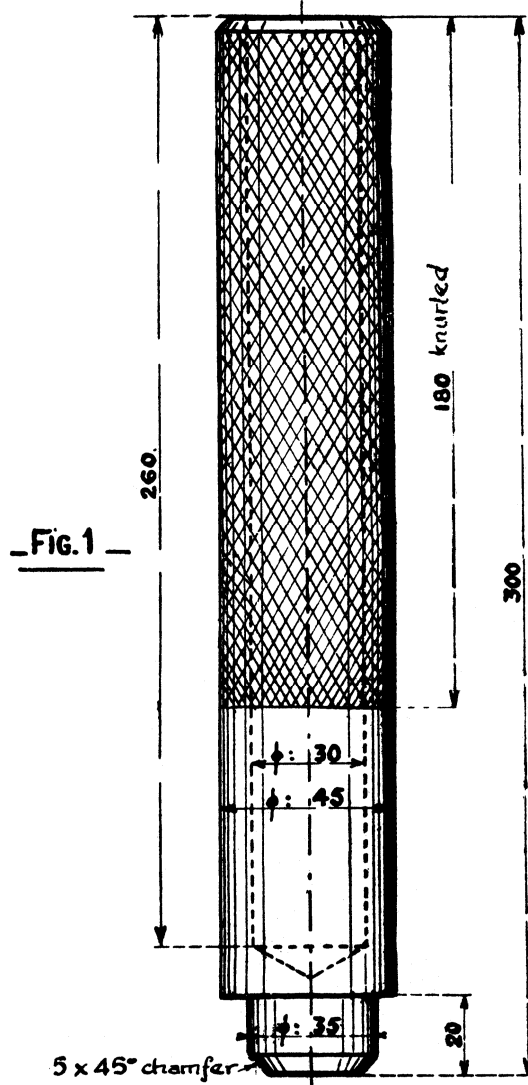
— FRONT AXLE —
— SECTION ON PIVOT CENTRE LINE —



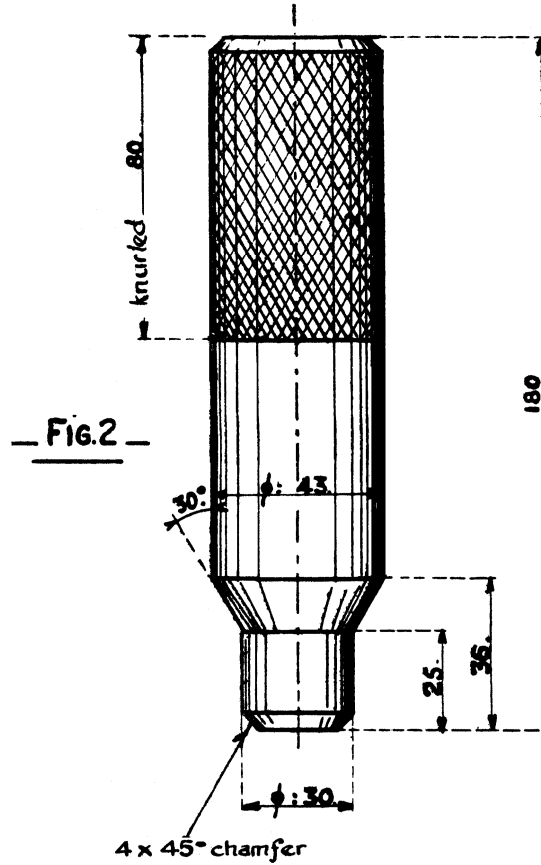
— FRONT AXLE —

— MANDRELS —

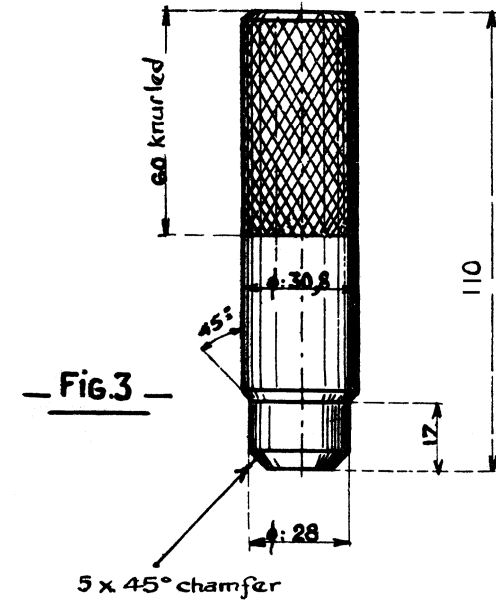
MANDREL MR.3432 FOR REMOVING
LOWER LINK SPLINED SHAFT.



MANDREL MR.3436 FOR REMOVING
FRONT HUB

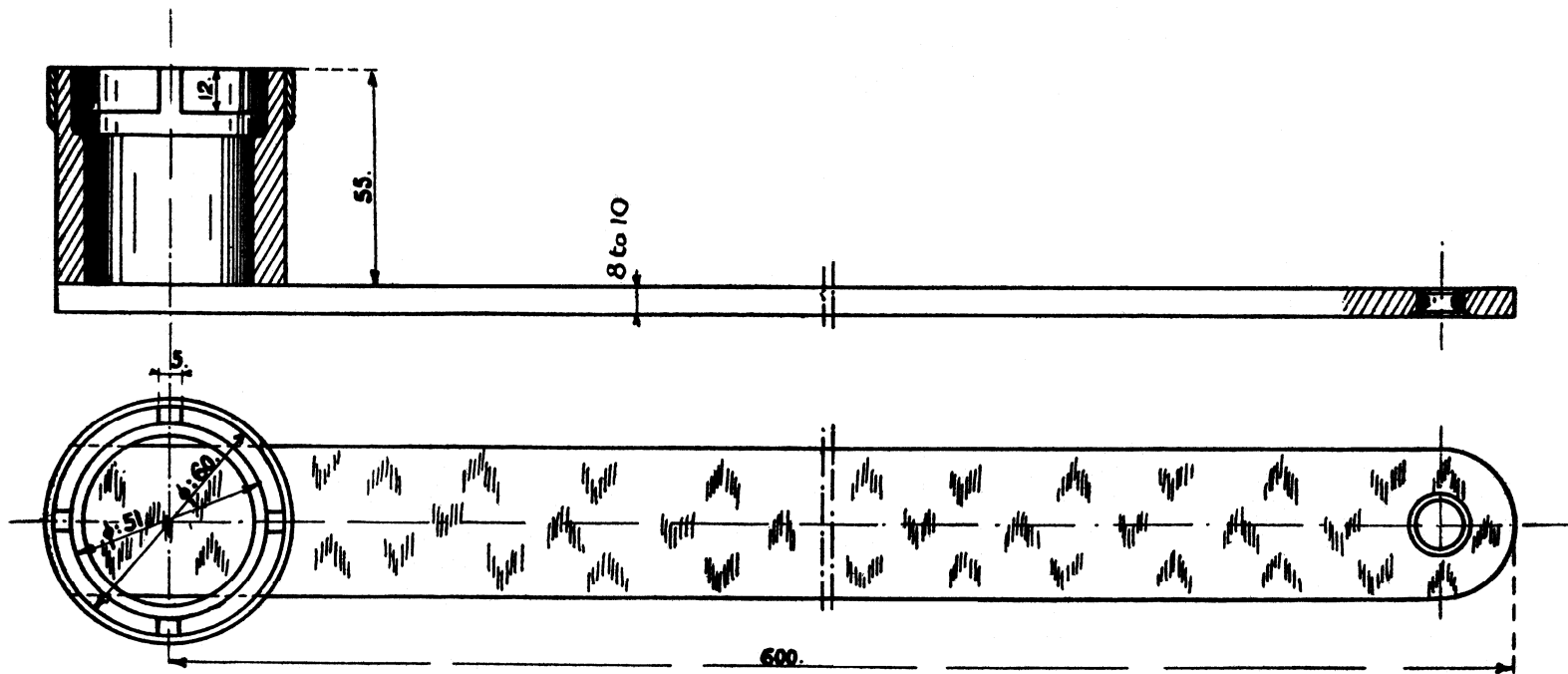


MANDREL MR.3431 FOR REMOVING
BALL PIN LOWER BEARING.



— FRONT AXLE —
— SPANNERS FOR UPPER LINK —

— Fig.1.— SPANNER FOR UPPER LINK SPINDLE SLOTTED RING NUT, 1861-T.



— FRONT AXLE —
— EXTRACTING UPPER LINK SPINDLE —

FIG. I.
USE OF EXTRACTOR

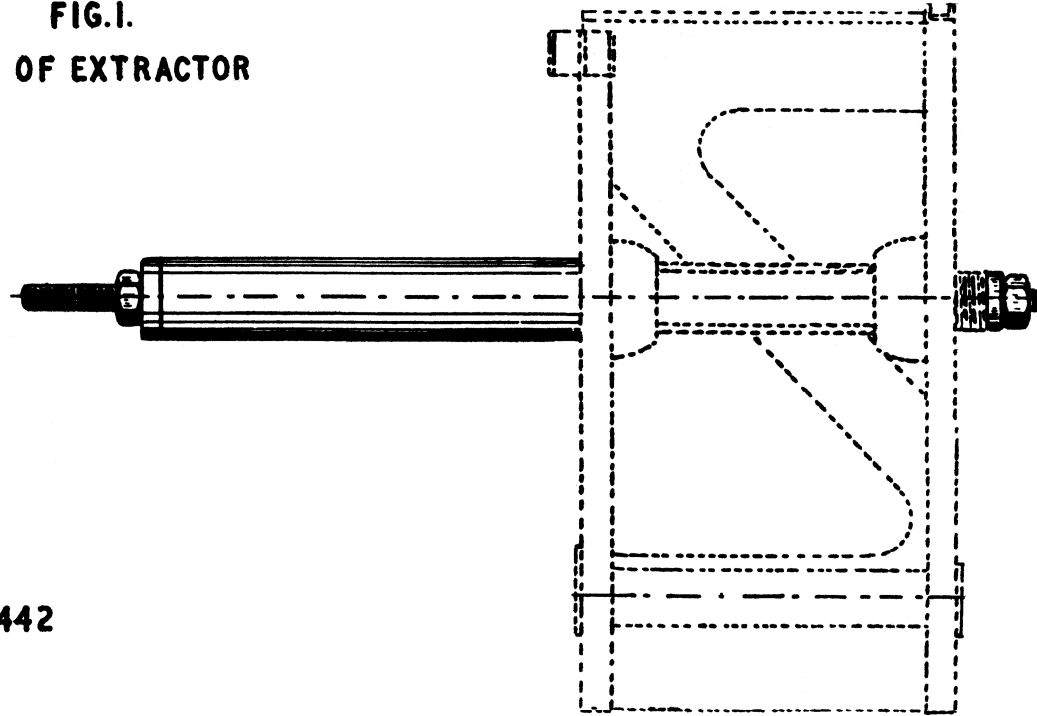
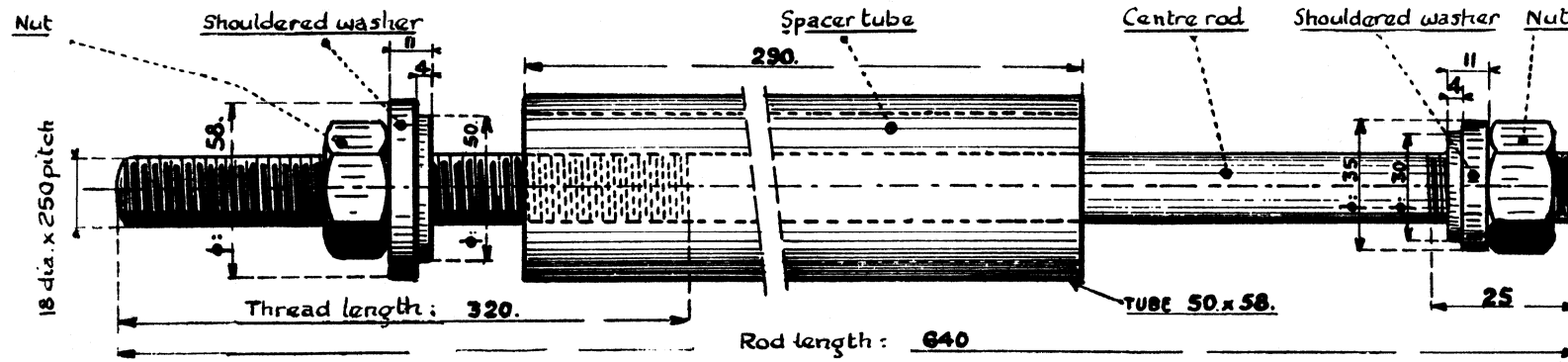
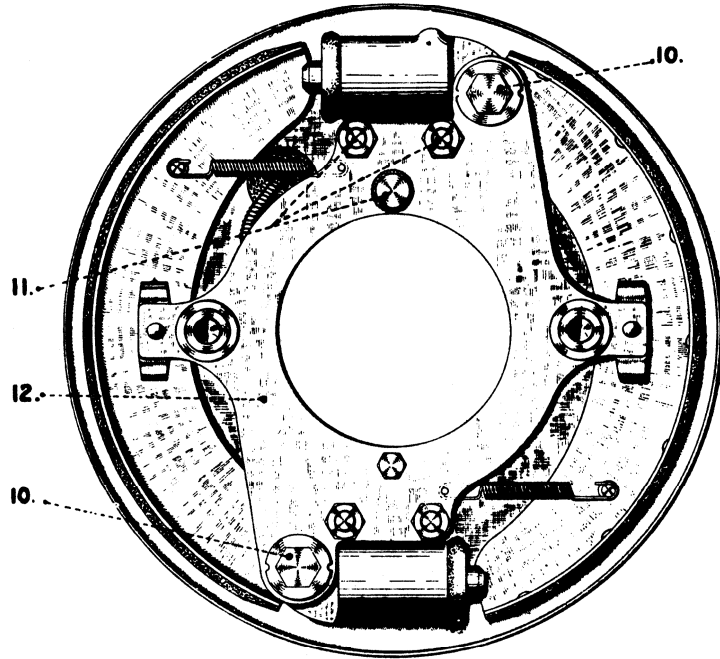


FIG. 2.
EXTRACTOR MR. 3442

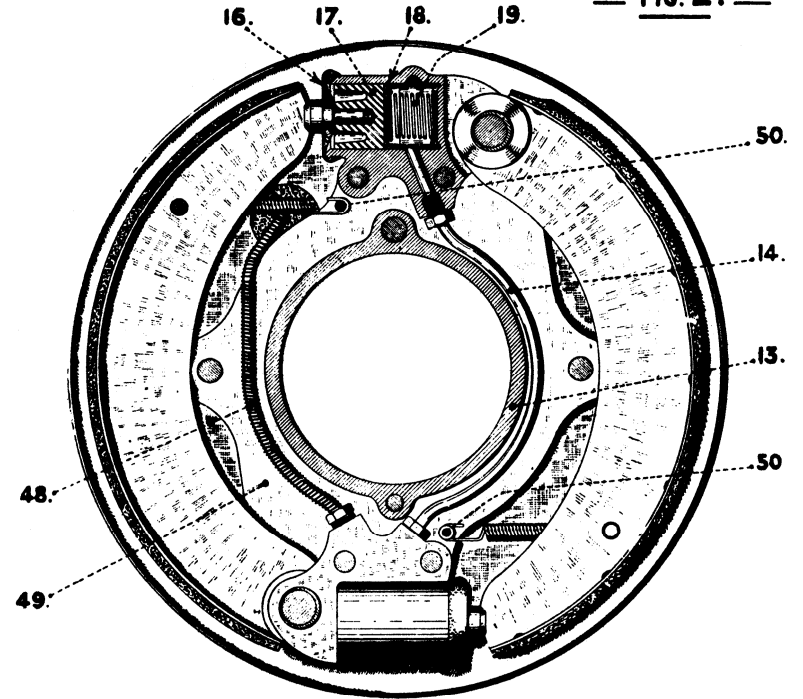


— FRONT AXLE —
 — BRAKE BACK PLATE —

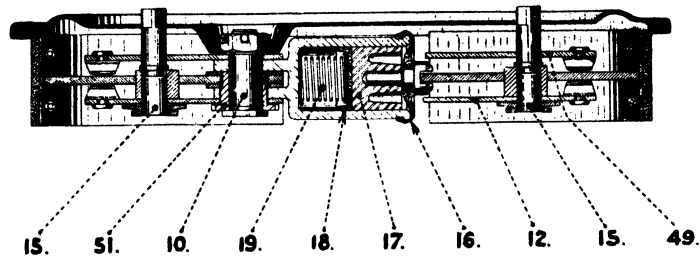
— Fig. 1. —



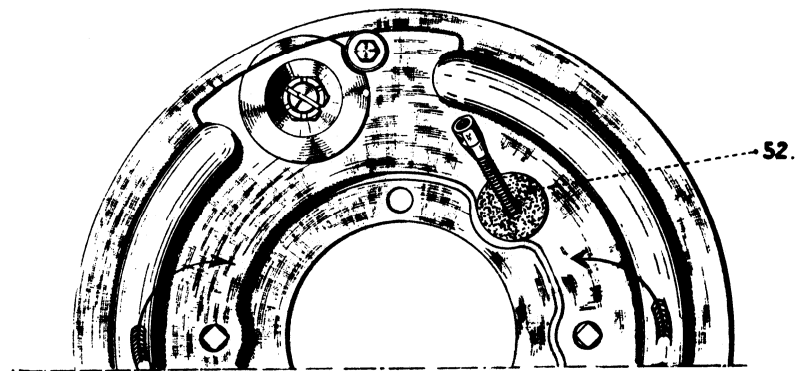
— Fig. 2. —



— Fig. 3. —

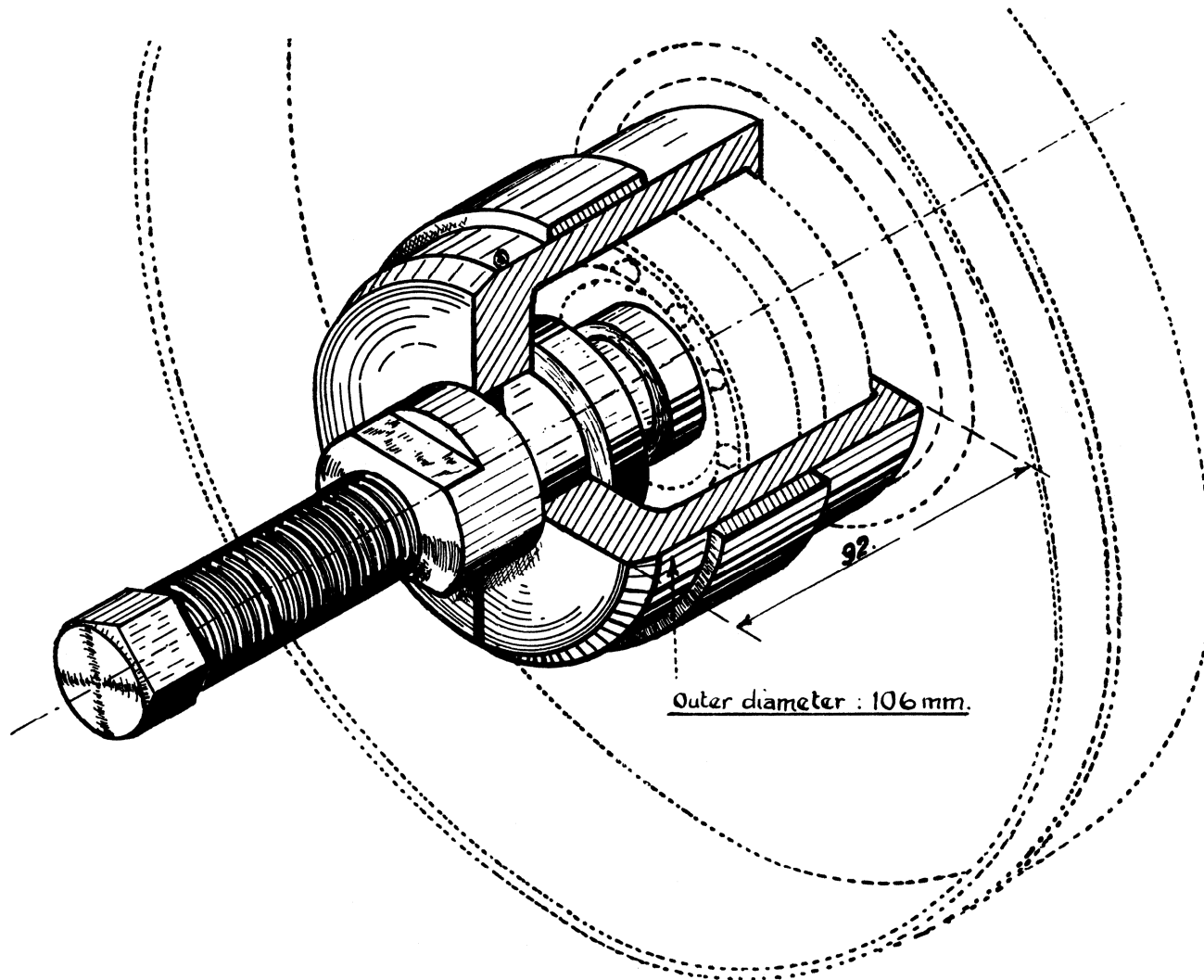


— Fig. 4. —

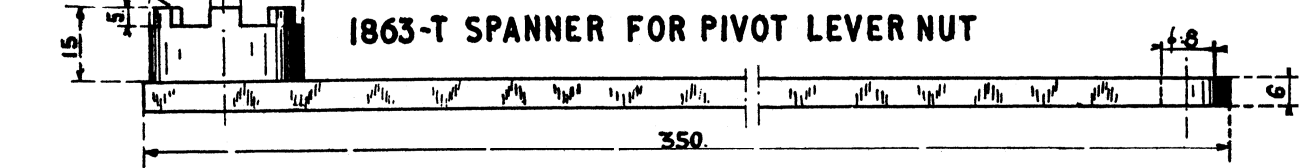
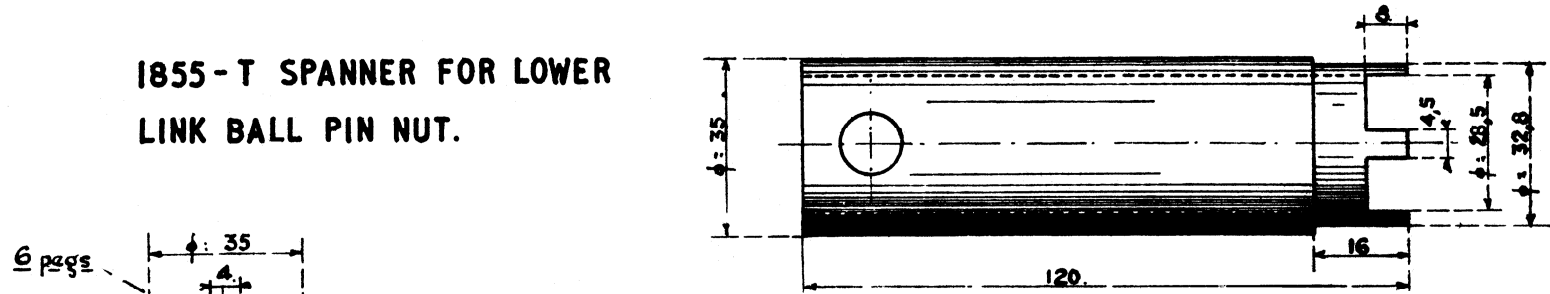
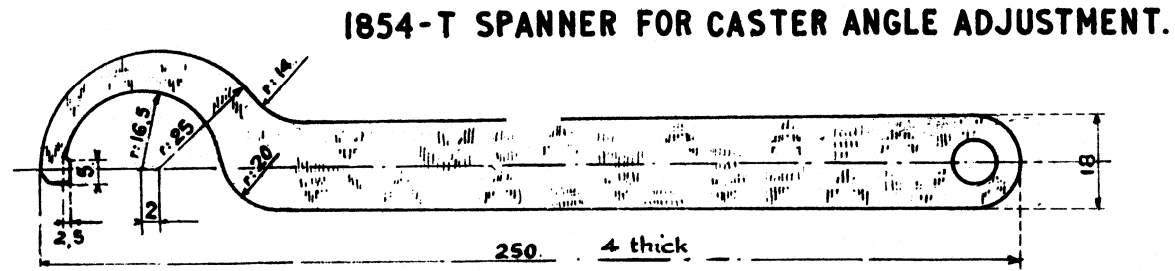
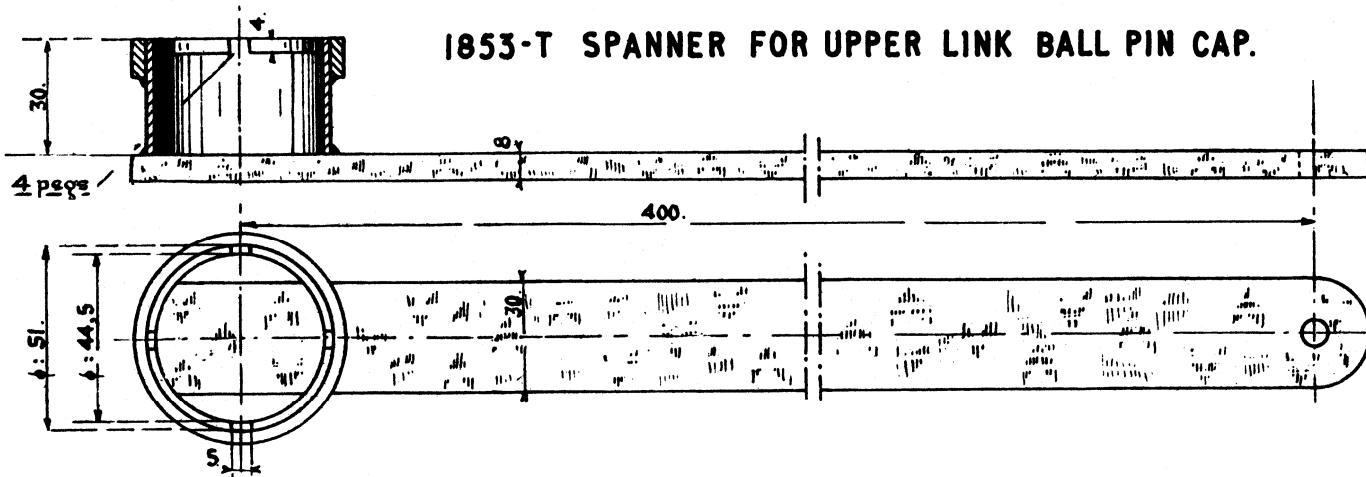


— FRONT AXLE —

BEARING EXTRACTOR 1750-T WITH
COLLETS, RING, AND BLOCK.



FRONT AXLE
SPANNERS



— FRONT AXLE —
 — ASSEMBLY OF UPPER LINK SILENTBLOC —

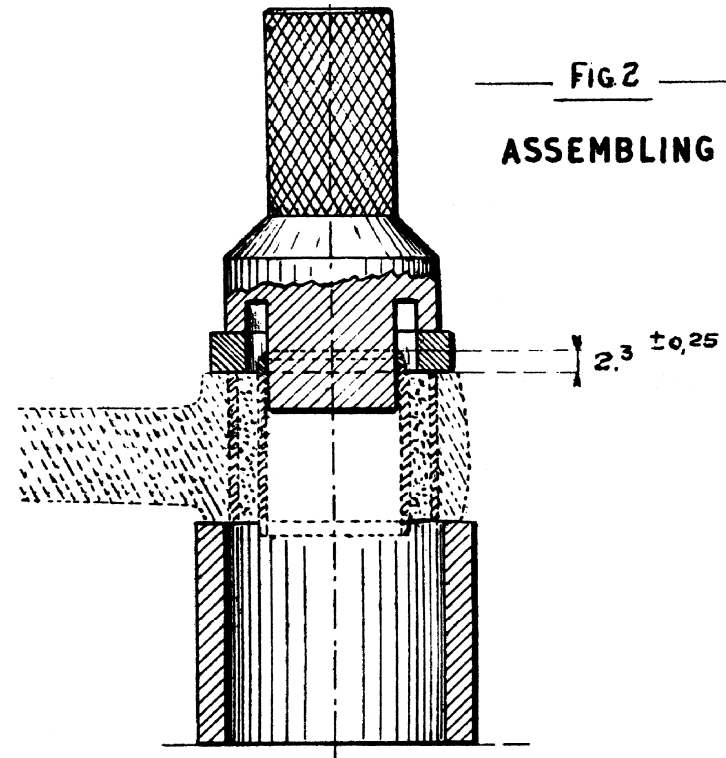
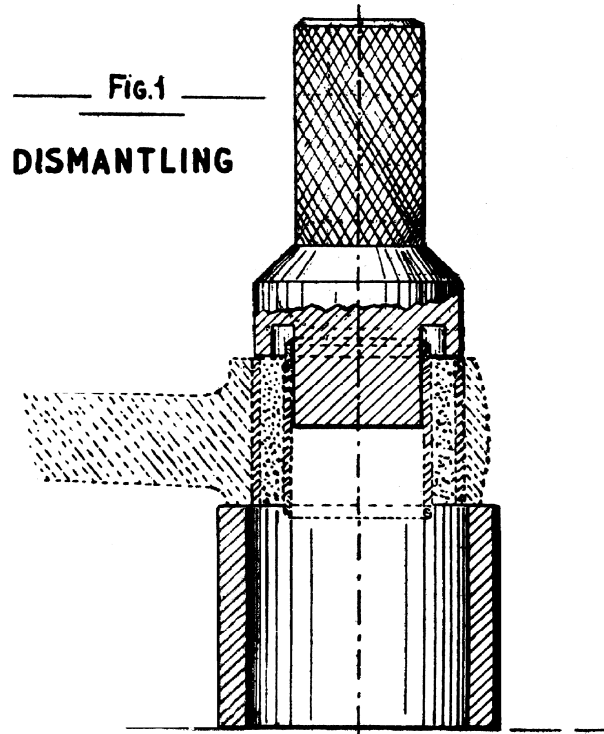
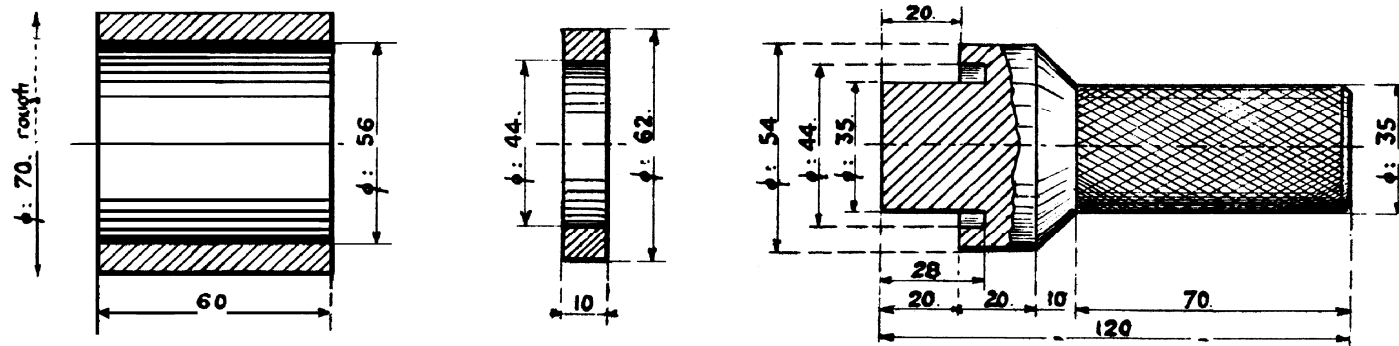


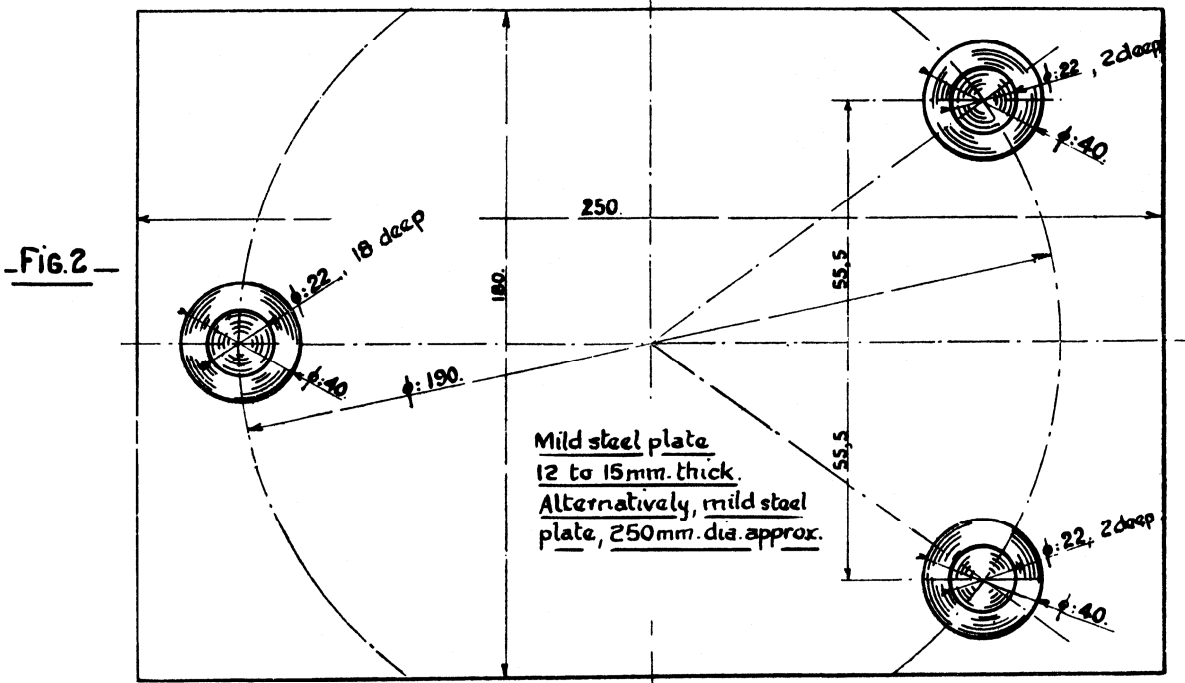
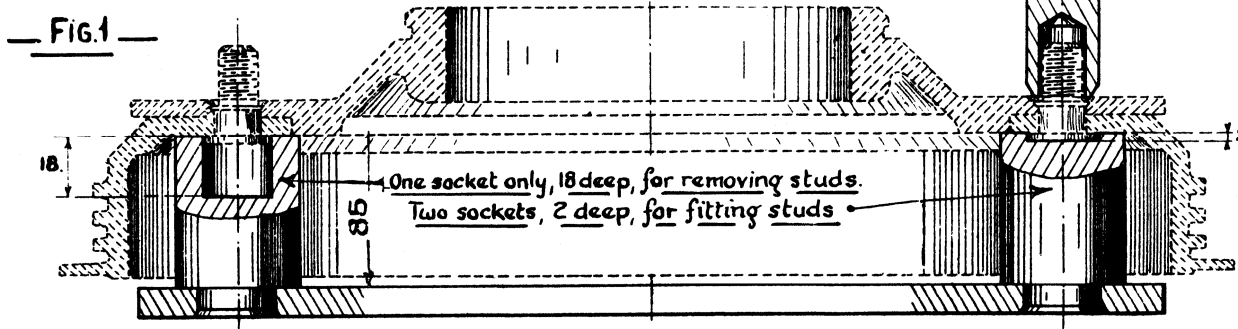
FIG 3 MR.3440 SLEEVE AND RAM



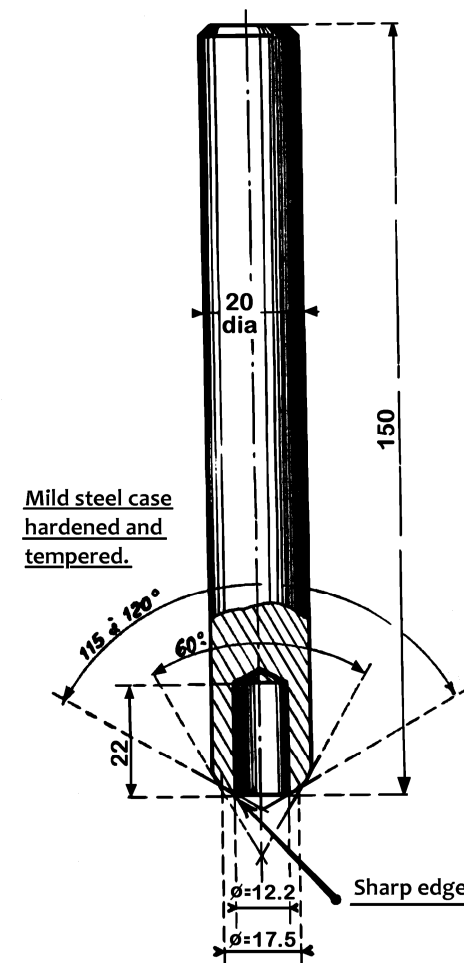
— FRONT AXLE —
— REPLACEMENT OF WHEEL STUDS —

FIG.1. USE OF FIXTURE

FIG.2. FIXTURE MR.3445 FOR REPLACEMENT OF WHEEL STUDS.



HOLLOW PUNCH MR. 3445-4 FOR LOCKING STUDS



—FRONT AXLE—
—RECTIFICATION OF FRONT BRAKE DRUMS—

FIG.1. USE OF MANDREL

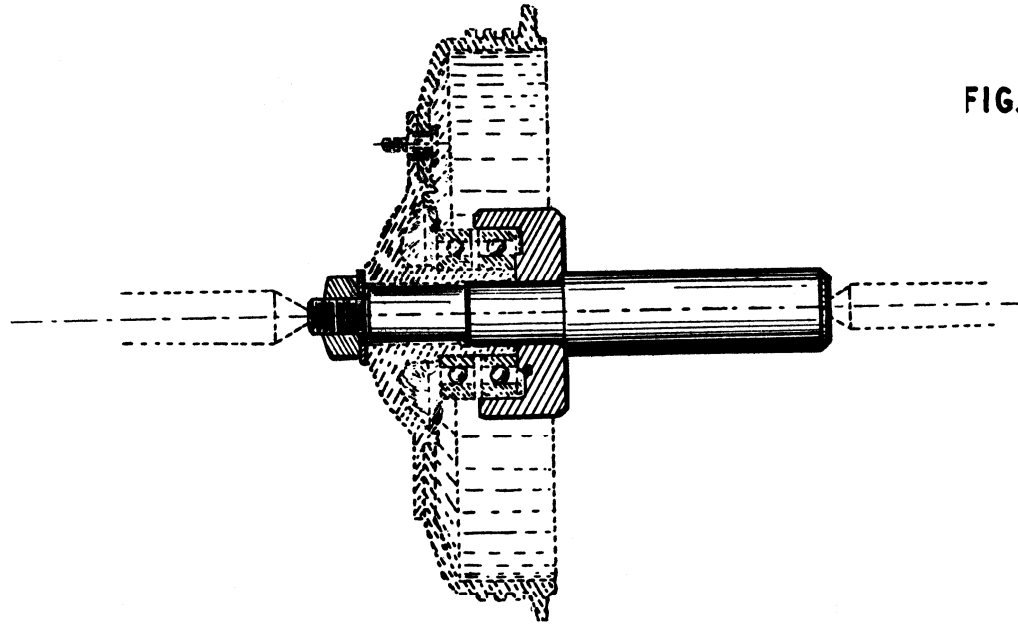
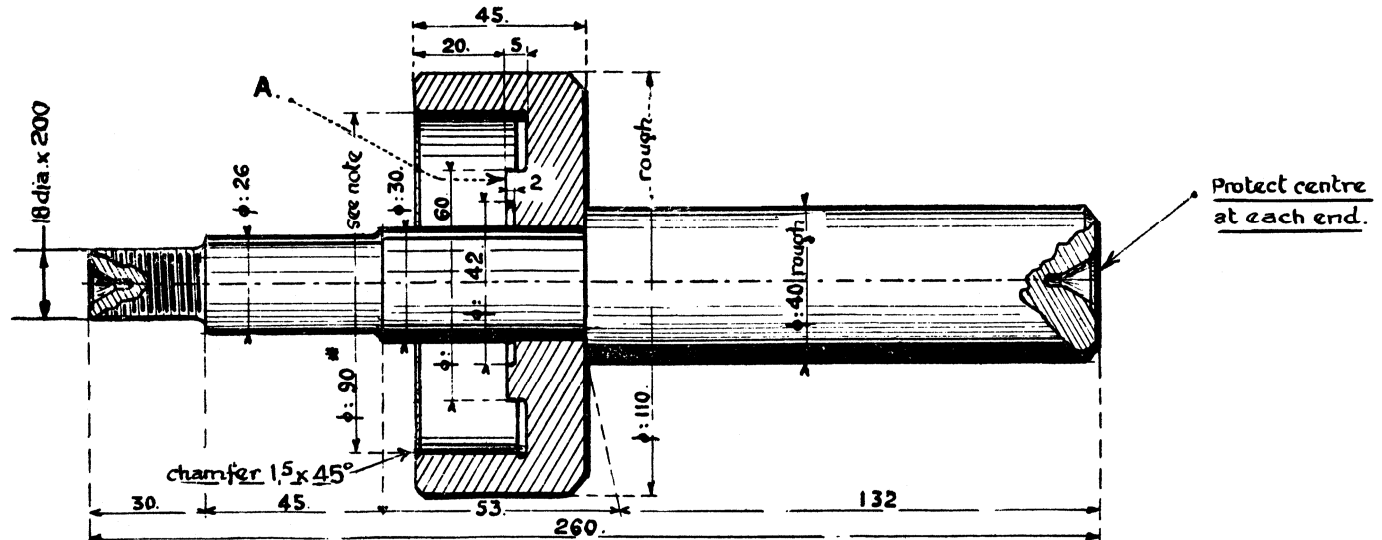


Fig2 MANDREL MR.3441



NOTE: Diameter 90* to be finished after ring is pressed on shaft. Face A to be trued up likewise. Diameter 90* must permit good fitting of ring on a greasy bearing.

— FRONT AXLE —
 — PEENING OVER BRAKE SHOE CAM PINS —

FIG. 1. USE OF FIXTURE
 MR. 3444.

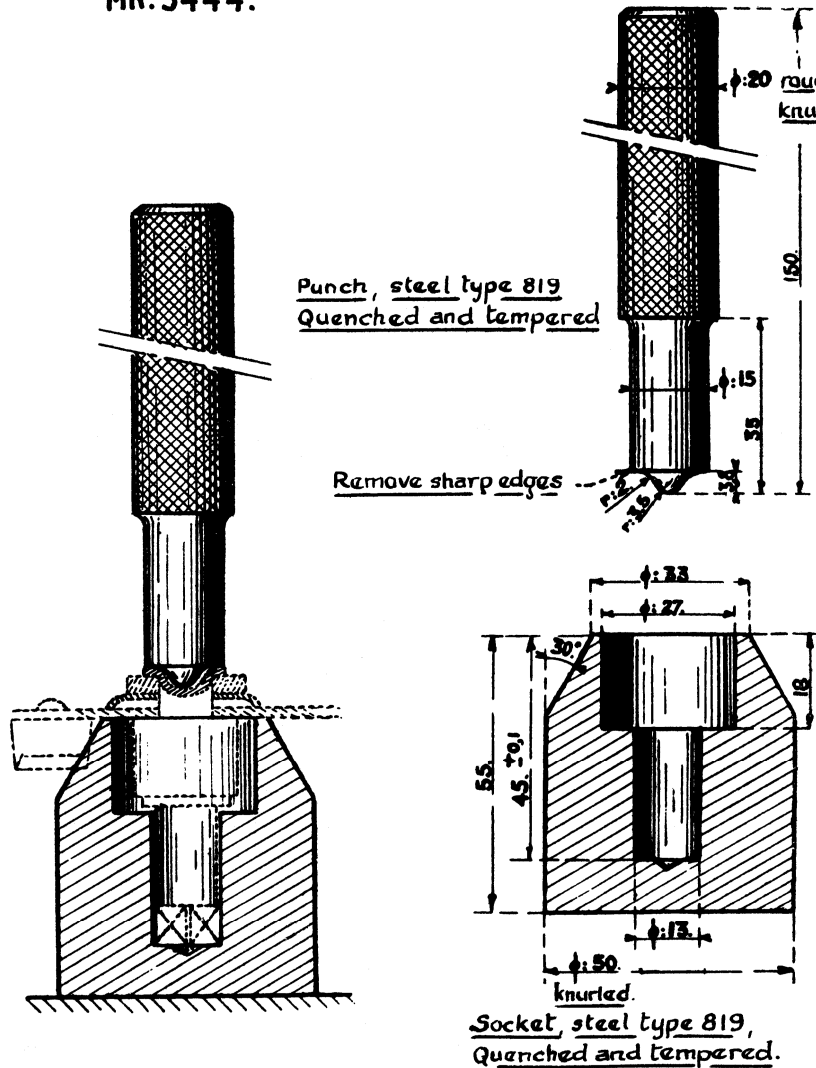


FIG. 2.
 FIXTURE MR. 3444.

FIG. 3. USE OF FIXTURE
 MR. 3354.

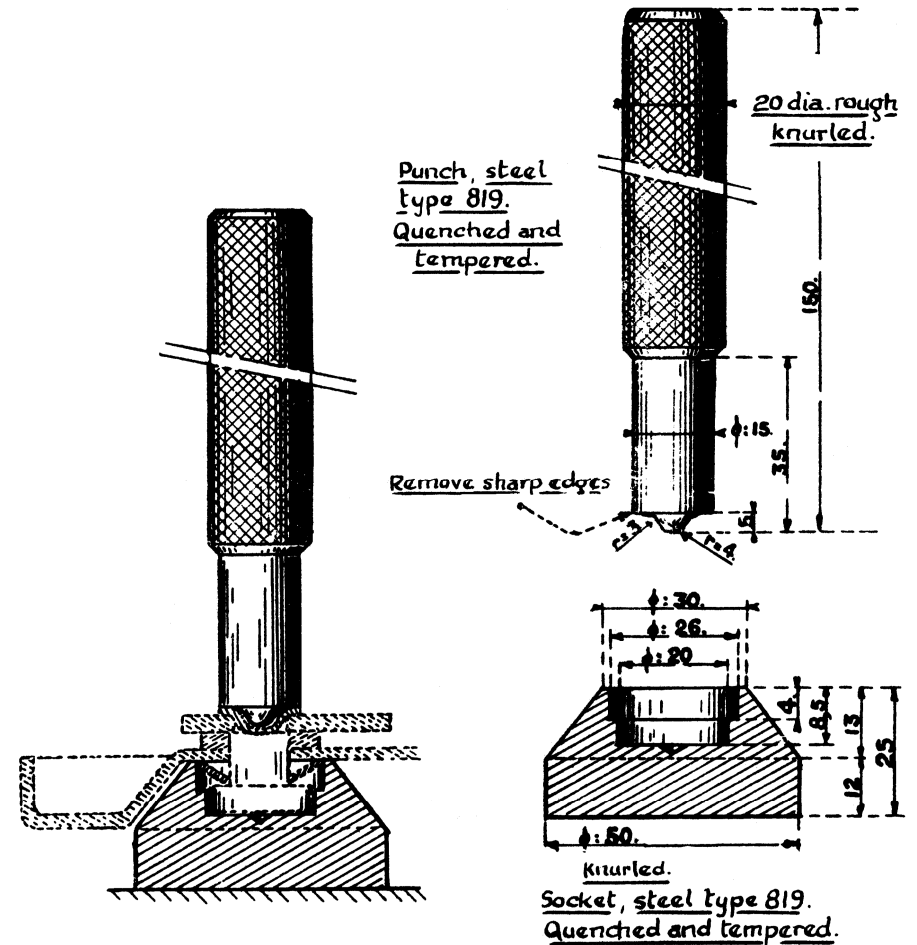


FIG. 4. FIXTURE MR. 3354.

— FRONT AXLE —
— CHECKING CONCENTRICITY OF BRAKES —

FIG.1. CHECKING BRAKE DRUM DIAMETER.

Place fixture on bearing.
Bring indicator "a" into contact with drum and describe a complete circle.
Lock indicator in the set position by means of screw b.

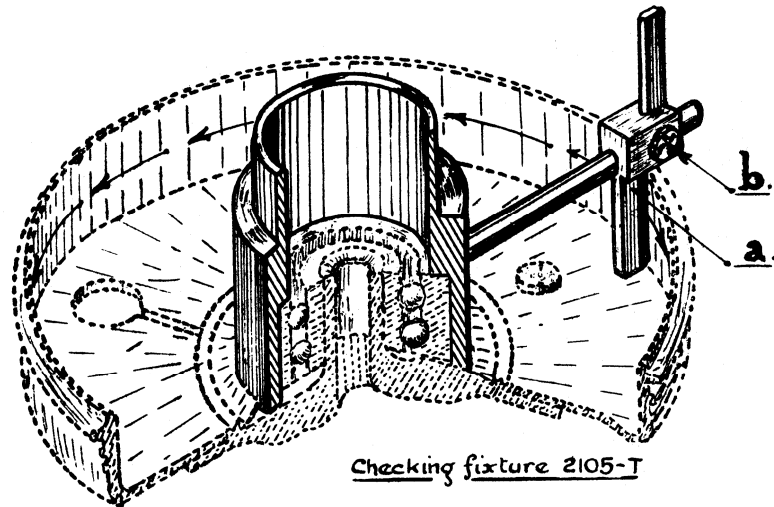
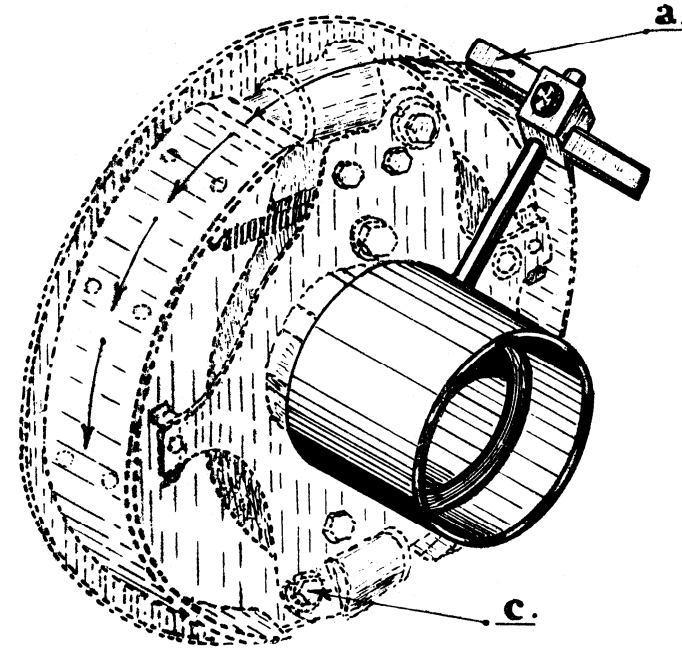
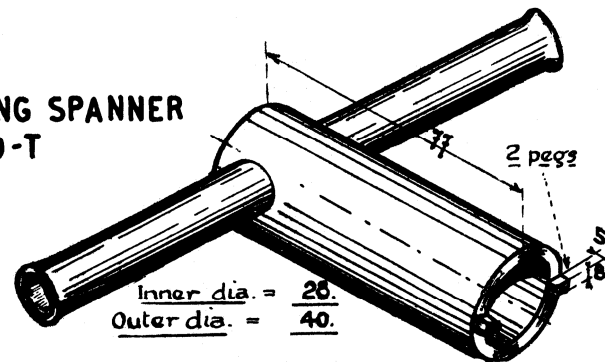


FIG.2. CHECKING CONCENTRICITY OF LININGS.



**FIG.3. ADJUSTING SPANNER
2120-T**

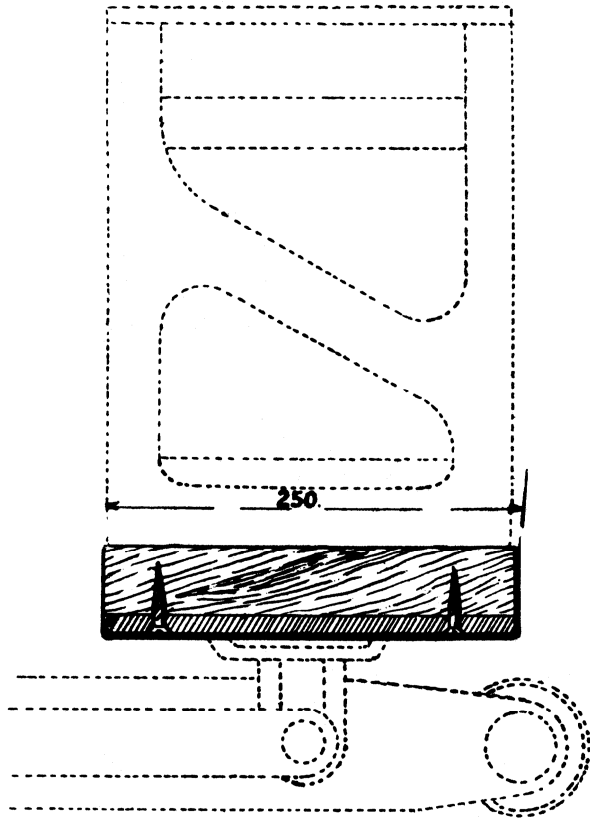
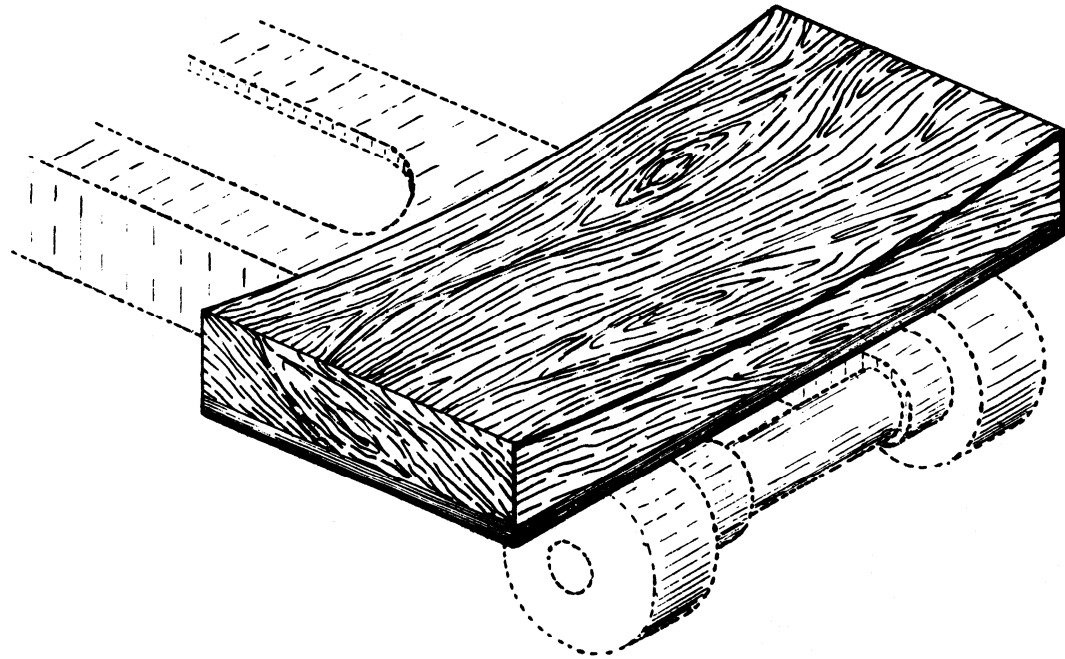


Place fixture in bore of bearing.
Offer up indicator "a" as set in the preceding operation, to the brake linings. Indicator must remain in contact throughout circumference.
(In order to obtain this condition, adjust linings by eccentric bushes "c", and adjusting cams at rear of backplate, not shown)
Remove burrs and high spots from linings with a rasp.

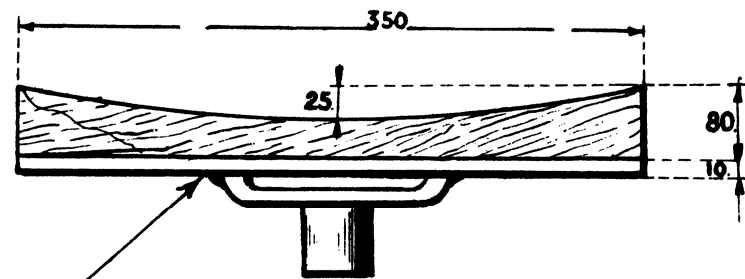
After checking, release cams to allow fitting of brake drum. (For final adjustment of cams, see Operation 749, paragraph 2.)

— FRONT AXLE —
— LIFTING FRONT AXLE —

APPLICATION

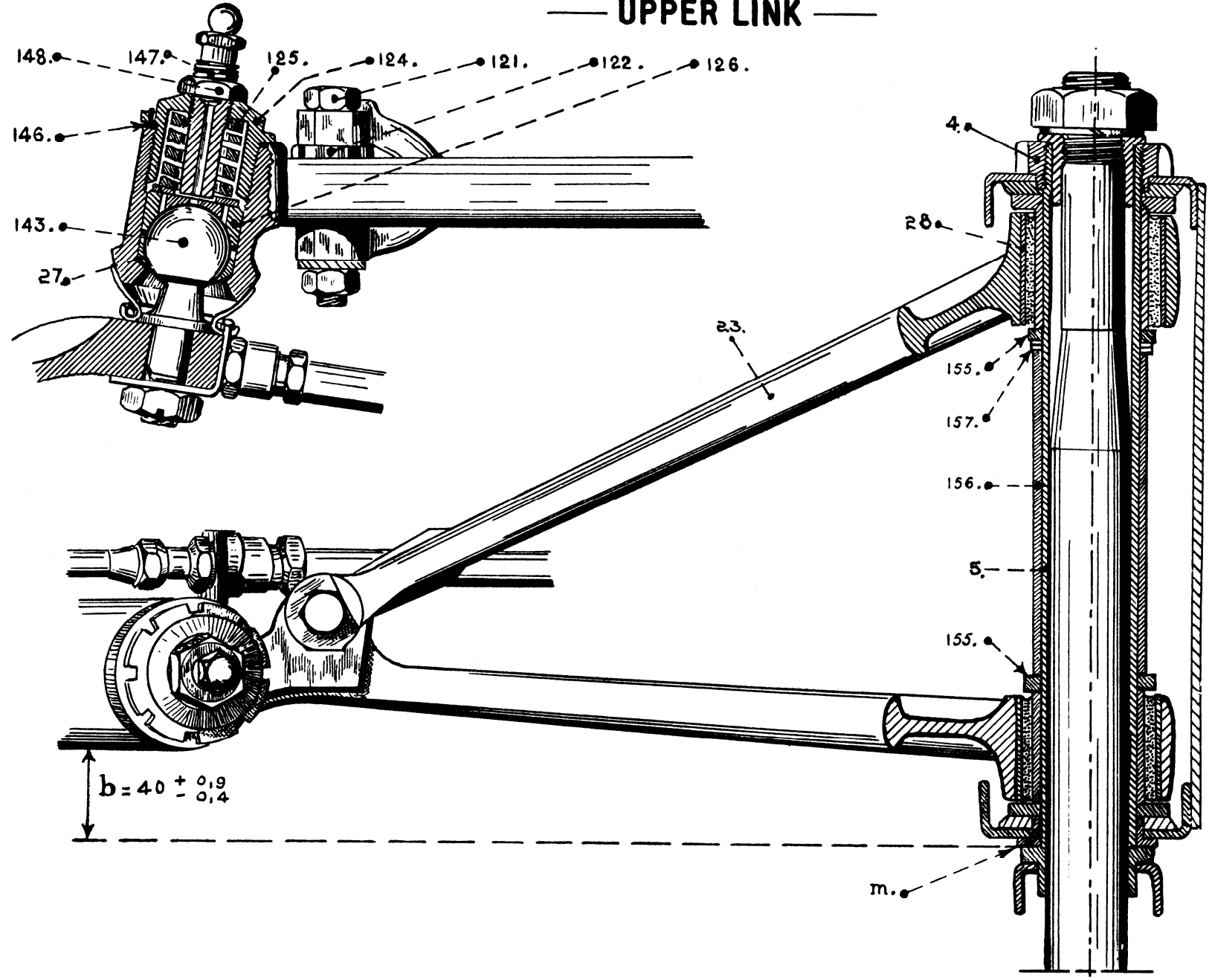


SPECIAL JACK HEAD MR.3300-90

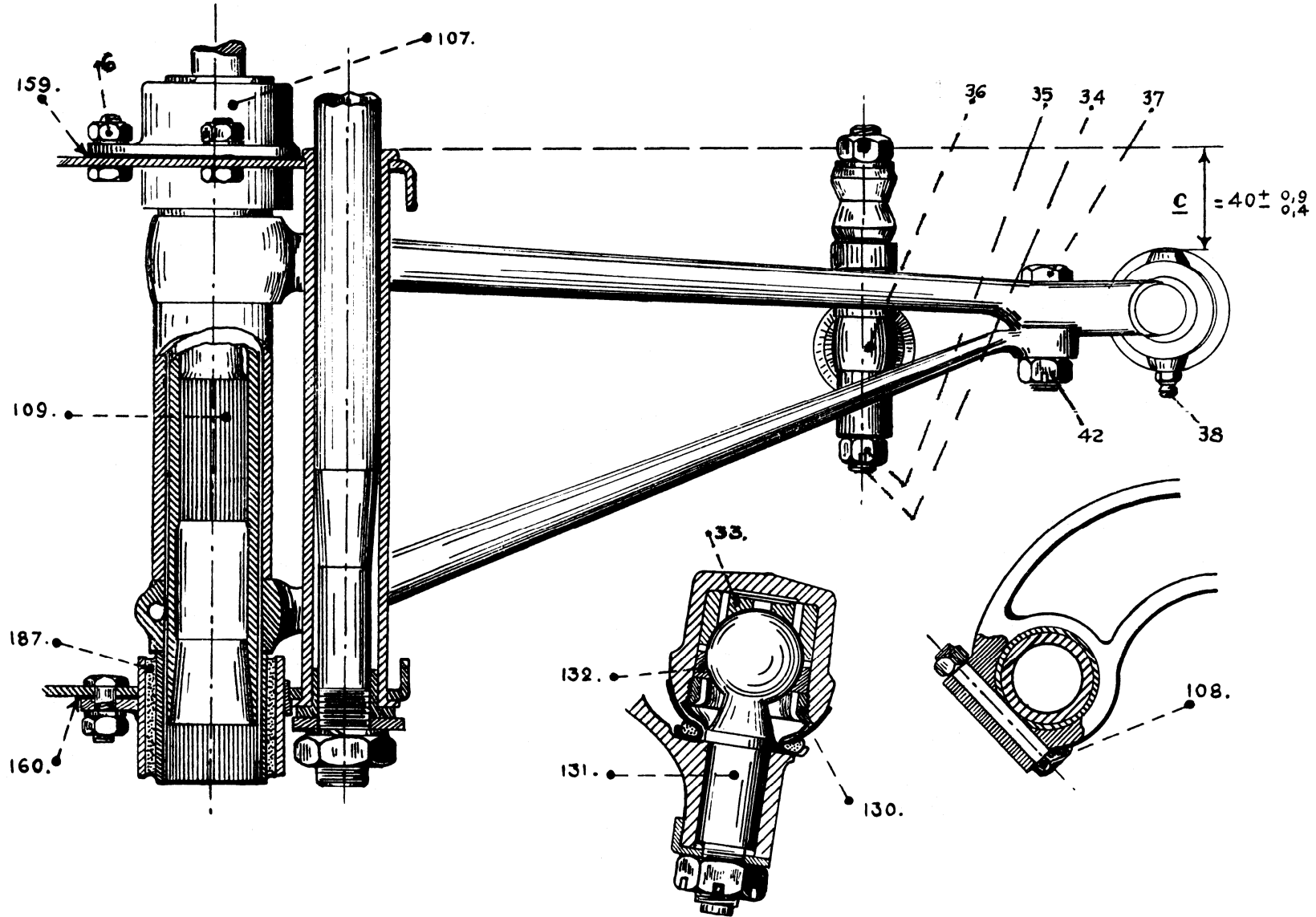


Steel plate welded to standard jack head

— FRONT AXLE —
— UPPER LINK —



— FRONT AXLE —
— LOWER LINK —



	REMOVING THE FRONT AXLE	
1	Remove the engine and gearbox assembly (see Operation 701, paragraphs 1 to 14).	
2	Block up the vehicle at a point under the scuttle pillars. (Use special jack head MR.3300-90) (Drawing 67).	Special jack head MR.3300-90
3	Take off the front wheels.	Wheelbrace
4	Disconnect track rods from axle pivot levers. (Use ball pin extractor 1964-T, see Drawing 69).	Universal joint spanner 21 Ball pin extractor 1964-T
5	Disconnect Lockheed pipes from unions on fixing plates on front axle cradle. Unscrew the nuts fixing the front axle cradle. (Use spanner 1880-T).	Spanner 1880-T
6	Unscrew the front torsion bar ball-headed adjusting screws. (Use spanner 2302-T). Remove circlips from rear end of torsion bars.	Spanner 2302-T
7	Remove the front axle from the four mounting studs. If necessary, use a large lever to assist the removal.	
	REFITTING THE FRONT AXLE	
8	Fit the torsion bars in the crossmember under engine (right hand bars have one paint identification mark and the left hand two) pushing them right through until they touch the hull closing plate. Fit circlip in the groove at-rear end of bars. Fit also circlips at front end of bars.	
9	Oil the four front axle mounting studs on hull. Engage the front axle on the studs, guide the Lockheed brake pipes through the cradle, fit the upper centering bushes on mounting studs, fit spring washers under nut and provisionally tighten the latter. (Use spanner 1880-T).	Spanner 1880-T
10	FIT THE TORSION BARS	
11	Using a large lever, lower one of the axle link arm and pivot assemblies in the limit permitted (approximately two splines), and engage the corresponding torsion bar in the forward splines (MAKE SURE THAT THE BALL HEADED ADJUSTING SCREW IS FULLY UNSCREWED AND IS BEARING ON THE ADJUSTING LEVER AT THE MOMENT THE TORSION BAR IS ENGAGED INTO FORWARD SPLINES). Carry out the same operation at the other side. Fit in place the circlips at the front end of the torsion bars.	
	Connect Lockheed brake pipes.	Flat spanner 14

<p>12 FIT TRACK RODS (see Drawing 71) Fit dust covers (5), with Belleville type washers and rubber washers, on tapers of track rod ball pins (4) (see fig. 4). Engage ball pins in tapered bores of axle pivot steering arms. Using feeler gauges, measure clearance 'a' between lever boss face and the Belleville type washers. Fit at this point shims (6) to give a clearance of 0 mm. to 0,25 mm. Tighten ball pin Nuts and secure with split pins.</p>	
<p>13 Adjust brake shoes eccentric pins (see Operatlon 749, paragraph 2).</p>	
<p>14 Bleed the Lockheed brake system (see Operation 749, paragraph 5).</p>	
<p>15 Fit front wheels.</p>	Wheelbrace
<p>16 Fit engine in vehicle (see Operation 701, paragraphs 15 and 17 to 25).</p>	
<p>17 Adjust body heights under hull (see Operation 750, paragraphs 1, 2, and 3)</p>	
<p>18 Adjust weight distribution (see Operation 750, paragraphs 4, 5, and 6).</p>	
<p>19 Adjust caster angle (see Operation 748, paragraphs 1, 2, and 3).</p>	
<p>20 Adjust toe-out of axle (see Operation 748, paragraphs 4 and 5).</p>	
<p>21 Adjust steering lock (see Operation 748, paragraphs 6, 7, 8, end 9).</p>	
<p>22 Tighten slotted ring nuts (4) (see Drawing 139) locking upper link spindles (THE VEHICLE STANDING ON GROUND), (Use spanner 1861-T, see Drawing 50). Tighten nuts locking cradle on upper mounting studs (use spanner 1880-T).</p>	Spanner 1861-T Spanner 1880-T
<p>23 Fit the assembly of front wings and radiator shell (see Operation 701, paragraph 26).</p>	
<p>24 Connect wiring to headlamps, horns, dynamo, and starter motor (see Drawing 110). Fit battery and connect cables.</p>	Box spanners 8-12 Flat spanner 14
<p>25 Fit air intake silencer, using rubber washers on both sides of fixing plates. Tighten nuts and secure with split pins.</p>	Flat spanner 12
<p>26 Fit interior heater tube.</p>	Flat spanner 12
<p>27 Fit the bonnet.</p>	

1	Fix the axle firmly in a suitable stand.	
2	Remove Lockheed brake pipes and brackets.	
3	Take off the shockabsorbers.	Flat spanners 10-14-17-1-9-21 Universal joint spanner 21
4	<p>TAKE OFF HUB AND BRAKE DRUM ASSEMBLIES</p> <p>(a) Unscrew the slotted hub fixing nuts. (Use spanner 1810-T, see Drawing 46). The nut for the left hand is threaded right hand and the nut for the right hand hub left hand.</p> <p>(b) Unscrew the eight bolts (1) fixing bearing thrust plate (2). Use a box spanner passing through one of the holes 'a' in the brake drum for this purpose.</p> <p>(c) Remove the transmission assembly from the drum by hand.</p> <p>(d) Remove the brake drum. When it is difficult to remove, tap the hub from the inside. (Use mandrel MR.3436, see Drawing 48).</p>	Spanner 1810-T Box spanner 14 Mandrel MR.3436
5	Take off the brake back plate assemblies.	Universal joint spanner 17 Flat spanner 17 Box spanner 12
6	Take off the pivots by unscrewing the ball pin locking nuts (3). The stem of the ball pins is easily removed from the parallel bores of the upper and lower link arms.	Elbow spanner 29
7	<p>TAKE OFF THE UPPER LINK ARMS (see Drawing 139).</p> <p>Unscrew the slotted nut (4) from the spindle (5). (Use spanner 1861-T, see Drawing 50). Withdraw the spindle. (Use extractor MR.3442, see Drawing 51).</p>	Spanner 1861-T Extractor MR.3442
8	<p>TAKE OFF THE LOWER LINK ARMS (see Drawing 140)</p> <p>(a) Remove the bolts (6) fixing silentblocs (187)</p> <p>(b) Remove bolt (108) fixing splined shaft (see fig. 2)</p> <p>(c) Knock out splined shaft (109). (Use mandrel MR.3432, see Drawing 48, fig. 1). Knock out shaft from second silentbloc.</p>	Universal joint spanner 17 Flat spanner 17 Mandrel MR.3432
9	<p>DISMANTLE THE BRAKE BACK PLATES (see Drawing 53) (dismantle both plates successively).</p> <p>(a) Remove the brake shoe anchor pins (10).</p>	Universal joint spanners 17-21 Flat spanner 17

	(b) Unhook the brake shoe return springs.	
	(c) Remove bolts (11) fixing upper wheel cylinder.	
	(d) Take off the wheel cylinder outer plate (12), distance piece (13) between plates, and the two wheel cylinders assembled with connecting pipe.	
	(e) Clean off riveting and remove eccentric adjusting pins (15).	
10	Dismantle the wheel cylinders. (All parts can be removed by hand). Remove dust cover (16), piston (17), cup (18), and spring (19).	
11	Withdraw the hub bearing (47) (see Drawing 47). (Use extractor 1750-T with collets, ring, and block 1827-T, see Drawing 54). Take out bearing thrust plate (2) and from it remove the oil seal (20).	Extractor 1750-T Collets, ring and block 1827-T,
12	DISMANTLE THE UPPER LINK ARMS (see Drawing 139) (a) Remove the eccentric pin (121), remove the front arm (23), and take out adjustment eccentric by hand). (b) Unscrew the pressure cap (124) for the ball pin spring. (Use spanner 1853-T, see Drawing 55). Take out spring (125) and upper bearing (126) of ball pin. (c) Knock out the ball pin lower bearing (27). (Use mandrel MR.3431, see Drawing 48, fig. 3). (d) Use a press to remove silentblocs (28). (Use sleeve and ram MR.3440, see Drawing 56).	Universal joint spanner 17 Spanner 1853-T Mandrel MR.3431 Sleeve and ram MR.3440
13	DISMANTLE THE LOWER LINK ARMS (see Drawings 47 and 140) (a) By means of a chisel remove metal of nut (130) peened into grooves of link arm (the nut is replaced by, a new one each time after dismantling). (b) Unscrew bearing locknut (130). (Use spanner 1855-T, see Drawing 55). Take out ball pin (131) and lower bearing (132). (c) Prise out the expanding oil seal washer with a scraper. Remove the ball pin upper bearing by loading the bore with grease and sharply tapping in a good fitting bronze rod. (d) Remove shockabsorber pin (34) by unscrewing nut (35).	Spanner 1855-T Universal joint spanner 17

	(e) Take out jacking pad (36) forming distance piece by cutting away fillet of weld with a Chisel. Remove bolt (37) assembling the two arms.	Universal joint spanner 17
	(f) Unscrew ball Joint greaser (38).	Flat spanner 11
14	Remove steering arm (39) from pivot by unscrewing nut (40). (Use spanner 1863-T, see Drawing 55). Knock out the oil seal (41). (see Drawing 47).	Spanner 1863-T
15	Clean the parts.	
	ASSEMBLING FRONT AXLE	
16	PREPARE THE PIVOTS (see Drawing, 47). (a) Fit steering, arm (39). Use alcohol to clean Grease from tapers of pivot bore and arm Pin. Tighten nut (40) to a tension of 10 mkg. (72½ foot pounds). (Use spanner 1863-T, see Drawing 55). Secure nut with a split Pin.	Spanner 1863-T
	(b) Fit the oil seal (41) in the pivot, the leather flange towards inside.	
17	PREPARE THE LOWER LINK ARMS (see Drawing 47 and 140) (a) Fit ball pin upper bearing (33) in bore in link arm. (Use mandrel MR.3451, see Drawing 48, fig. 3).	Mandrel MR.3431
	(b) Oil and fit the ball pin (131), fit ball pin lower bearing (132), and tighten the bearing locknut (130) to a tension of 0.3 mkg. to 0.5 mkg. (2¼ to 3½ foot pounds). The ball pin must rotate without play or evidence of high spots. (Use spanner 1855-T, see Drawing 55). Punch metal of the nut (130) into the two grooves in the link arm.	Spanner 1855-T
	(c) Coat the seatings of the expanding washer with Hermetical and fit into arm. Lock the washer by flattening with a hammer. Fit greaser (38).	
	(d) Connect the front and rear arms with the assembling bolt (37) and provisionally tighten the nut.	
	(e) Fit the jacking pad (36) forming distance piece. The pad must fit between the arms without play which would cause distortion when tightening up. The adjustment by means of a washer can only be made after the arm is assembled to the axle. Fit the shockabsorber pin (34) and tighten nuts (35 and 42) provisionally.	

<p>18 PREPARE THE UPPER LINK ARMS (see Drawing 139)</p> <p>(a) Fit ball pin lower bearing (27) in bore of link arm by use of mandrel MR.3431, see Drawing 48 fig. 3.</p> <p>(b) Oil and fit ball pin (143), fit ball pin upper bearing (126), spring (125), adjusting washers (181), lock washer (146) and tighten pressure cap (124). (Use spanner 1853-T, see Drawing 55). Screw up stop (147) and then slacken a quarter of a turn. Hold the adjusting screw and securely tighten locknut (148). (The movement of the ball pin measured during manufacture is from 0.2 mkg. to 0.3 mkg. (1½ to 2 foot pounds). Obtain correct adjustment by modifying thickness of adjusting washers (161). Choose washers of the necessary thickness from those in the range sold by our Spare Parts Department.</p> <p>(c) Fit silentblocs (28) in arms by means of a press. (Use sleeve and ram MR.3440 allowing the silentbloc bush to stand proud 7 mm., plus 0.6 mm., minus 0 mm. (see Drawing 56, fig. 2).</p> <p>(d) Assemble front and rear arms, oil and fit eccentric (122) in arm. Oil and fit pin (121) for eccentric, tighten nut with a spring washer fitted under.</p>	<p>Mandrel MR.5451</p> <p>Spanner 1853-T Flat spanners 12-23</p> <p>Sleeve and ram MR.3440</p> <p>Universal joint spanner 17</p>
<p>19 PREPARE HUB AND BRAKE DRUM ASSEMBLIES (see Drawing 47)</p> <p>(a) Replace the wheel studs, (Use fixture MR.3445, see Drawing 57). This fixture is necessary in order to ensure correct bearing of the drum when driving out studs and to prevent breaking the casting. NEVER COMPLETELY DISENGAGE THE HUB FROM THE BRAKE DRUM, REPLACE ONLY ONE OR TWO STUDS AT A TIME, Brake drums are trued up during manufacture with great precision and with the parts assembled. Faulty centering of the drum will cause the brakes to judder. Clinch in the wheel studs using a press of 8 to 10 tons capacity. (the studs may also be clinched over by hand using a hammer, though this method is not recommended.)</p> <p>(b) Drill hole for wheel stud dowel diametrically opposite to the old position. Make sure that dowel fits flush. Lock dowel with a centre punch.</p> <p>(c) Fit oil seal (20) in bearing thrust plate (2) (the leather flange towards the inside). Place the bearing thrust plate on the hub and, by means of a press, fit bearing (47). (First lubricate the bearing with grease similar to Mobilgrease 5).</p> <p>(d) True up the brake drum in a lathe. (Use mandrel MR,3441, see Drawing 58). THIS MANDREL CENTRES THE DRUM IN RELATION TO THE BEARINGS and not according to splined bore of hub. The maximum tolerance of ovality is 0.05 mm. Never increase the original diameter of 305 mm., plus or minus 0.1 mm. , by more than 2 mm. To ensure locking of the brake drum on the hub during this operation, fit a washer 4mm. Thick on each stud and secure with wheel nuts tightened to a tension of 5 mkg. (36 foot pounds).</p>	<p>Fixture MR.3445</p> <p>Mandrel MR.3441</p>

20	<p>PREPARE THE WHEEL CYLINDERS</p> <p>Use only alcohol or Lockheed fluid when cleaning the parts as any other substance will cause rapid deterioration of the rubber cups. Lubricate the cylinder and rubber cups with Lockheed fluid before reassembling. All items can be assembled by hand. (see Drawing 5 figs. 2 and 3, for position of parts).</p>	
21	<p>PREPARE THE BRAKE BACK PLATES. (Assemble both plates successively, see Drawing 53).</p> <p>(a) Fit connecting pipe (14), between upper and lower wheel cylinders, and pipe (48) from lower cylinder to axle pivot.</p> <p>(b) Fit the eccentric adjusting pins (15) and peen over. (Use fixture MR.3444. see Drawing 59, Figs. 1 and 2).</p> <p>(c) To the inner plate (49) fit the wheel cylinder assembly. Fit distance piece (13) and pins (50) for return springs. Fit the outer plate (12) and fit and tighten the two fixing bolts (11) of the upper wheel cylinder, Use spring washers under heads of bolts and under nuts. During tightening make sure that the holes in the distance piece and the plates are in line.</p> <p>(d) Fit the brake shoes and eccentric bushes (51), previously oiled. Hook on the return springs (springs can be easily hooked on with a pair of universal pliers).</p> <p>(e) Fit the assembly of plates and shoes on the brake back plate. Oil and fit the anchor pins (10) in the eccentric bushes (51). So that the eccentric bushes may be turned to adjust the brake shoes only tighten up the anchor pin nuts moderately. Fit the brake pipe protecting rubber washer (52).</p> <p>(f) Fit the back plate on the pivot and tighten bolts with spring washers fitted under heads.</p> <p>(g) Centre the brake shoes. (Use the checking fixture 2105-T and the adjusting spanner 2120-T, see Drawing 60). Tighten the pin nuts using spanner 2121-T, Secure nuts with split pins.</p>	<p>Flat spanners 12-17</p> <p>Fixture MR.3444</p> <p>Box spanner 17</p> <p>Flat spanners 12-17</p> <p>Fixture 2105-T</p> <p>Spanner 2120-T</p> <p>Spanner 2121-T</p>
22	<p>FIT THE UPPER LINK ARMS (see Drawing 139)</p> <p>(a) Turn up a pin with a pointed end.</p> <p>(b) Use grease to stick washers with studs (53) in the cradle.</p> <p>(c) Offer up the arms to the cradle. Fit a thrust washer (155), distance piece (156), and a second thrust washer (155). Keep the parts in position with the pin turned with a pointed</p>	<p>Pin 35.8 mm. dia., 300 mm. long</p>

end. Determine the thickness of shims (157) to be placed between distance piece (156) and thrust washer (155) so that there is no end play and the arms have no play in the cradle. Choose shims (157) from the range sold by our Spare Parts Department (see Drawing 139).

- (d) Remove the pin and the assembly of link arms, washers and distance piece.
- (e) For easy assembly open out the cradle a few millimetres by means of a jack placed between the cradle inner flanges at a height where the arms are to be fitted.
- (f) Finally fit the arms. To facilitate the operation engage the pin progressively while building up the parts. It is preferable to divide up the shims (152) selected on each side of the distance piece so that the arms are centralized in the cradle. Remove the jack and withdraw, the pin.
- (g) Fit the upper link spindle (5) and screw on spindle nut (4) without tightening. (Use spanner 1861-T, see Drawing 50). The final tightening will be made with the axle fitted to the car after the adjustment of body heights. This is in order to equalize the angular loading of the silentblocs.
- (h) With a straight edge placed on the rear face of the collar 'm', measure the distance 'b' (see Drawing 139). This dimension must be 40 mm., plus 0.9 mm., minus 0.4 mm., and is obtained by adjusting the eccentric (122). (Use spanner 1854-T, see Drawing 55). Tighten the nut of the eccentric pin (121) with a spring washer fitted under.

Spanner 1861-T

Universal joint
spanner 17
Spanner 1854-T

23 FIT THE LOWER LINK ARMS (see Drawing 140)

- (a) Oil the splined shaft (109) and engage in arms so that it protrudes 5 mm. to 6 mm. at the other end.
- (b) Offer up the shaft and arms assembly in the cradle and complete engagement of shaft in arms. (Use mandrel MR.3432, see Drawing 48, fig. 1). Fit shaft clamp bolt (108) using a lockwasher under head of bolt and under nut. Tighten the nut and turn back lockwasher tabs.
- (c) Position the arms (use gauge MR.3447, see Drawing 46, to obtain a dimension of 340 mm. between centres of upper link spindle and the lower shockabsorber pin.
- (d) Fit the rear silentbloc on the shaft using three shims (159), thickness 0.2 mm. between flange of silentbloc and the cradle. Provisionally tighten fixing bolts.
- (e) Place the front silentbloc on the shaft but do not fix.
- (f) Hold the link arm assembly with it resting on the rear silentbloc (107). Place a straight

Mandrel MR.3432
Flat and box
spanners 12

Gauge MR.3447

	<p>edge and the machined boss on the arm. This dimension must be 40 mm., plus 0.9 mm., minus 0.4 mm, and is obtained by varying the number of shims (159).</p> <p>(g) push the front silentbloc (187) against the arm. Measure the clearance between the flange of the silentbloc collar and the cradle. This clearance must be between, 0.4 mm. and 2 mm. If there is need to modify the clearance fit shims (160) between the collar and the cradle. NOTE. Carefully observe this clearance to ensure the necessary tightness of the link arms between silentblocs (107 and 187). On the other hand do not damage the silentbloc rubbers with excessive tightness.</p> <p>(h) Finally tighten the silentbloc fixing bolts using spring washers under the nuts.</p> <p>(i) Check the new dimension 'c'. This must be the same as determined previously (in paragraph "f") If it is not too strong a pressure will be exerted on silentbloc hubs, and the thickness of the shims (160) must be corrected.</p> <p>24 FIT THE PIVOTS (see Drawing 47) (mount pivots successively).</p> <p>(a) Fit dust cover (60), rubber bush (61) and bush cup on ball pin stem.</p> <p>(b) Fit pivot on ball pins, fit ball pin lockwasher (63), and tighten ball pin locking nuts (3) to a tension of 19 mkg., plus or minus 2 mkg. (137 foot pounds, plus or minus 14½ foot pounds). Never slacken the nut when fitting split pin. Turn back tab of lockwasher against flat of upper ball pin nut. Secure the lower ball pin nut with a split pin taking care not to damage the pins of the latter when opening.</p> <p>25 FIT THE HUB AND BRAKE DRUM ASSEMBLY (see Drawing 47)</p> <p>(a) Stick the paper gasket (64) on the front face of the pivot bearing housing by using Hermetical.</p> <p>(b) Fit the hub and brake drum assembly giving it a few light taps with a mallet to drive it right home if necessary.</p> <p>(c) Tighten the bolts (1), fixing the bearing thrust plate, to a tension of 3 mkg. (21¾ foot pounds) using spring washers under heads. (Use a box spanner passing through one of the holes provided in the brake drum.</p> <p>26 FIT THE TRANSMISSION</p> <p>Engage the transmission shafts (splines lightly oiled) in the hubs. Grease the face of the nut and tighten to a tension of 30 mkg. (217 foot pounds). (Use spanner 1810-T and torsion gauge 2472-T, see Drawing 46). Secure nuts with split pins which must be opened out against flats of nuts.</p>	<p>Flat and box spanners 17</p> <p>Elbow spanner 29</p> <p>Box spanner 14</p> <p>Spanner 1810-T Torsion gauge 2472-T</p>
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27	Fit the shock absorbers with silent blocs between two plain washers. Tighten nuts to a tension of 7 mkg. (50½ foot pounds) and secure with a split pin.	Universal joint spanner 21
28	Fit brackets for Lockheed pipes and fit pipes also.	Box spanner 17
29	Paint the axle.	Flat spanners
30	Remove axle from workshop stand.	10-14-17-19-21

	REMOVE TRANSMISSION (see Drawing 62)	
1	Remove hub cap from wheel. Unscrew hub nut. (Use spanner 1810-T. see Drawing 46).	Box spanner 16 Spanner 1810-T
2	Jack up vehicle at the front and block it up under lower link arms.	
3	Unscrew bolts (24) assembling drive shaft and flexible coupling, and also the nuts fixing coupling flange to driving flange on gearbox. (Use spanner 1832-T, see Drawing 60A).	Spanner 1832-T Flat spanners 14-17
4	Separate the drive shaft (1) from the flexible coupling. When necessary, dismantle the parts by tapping lightly with a mallet and if necessary finally disengage with a screwdriver or small lever.	
	Disengage the drive shaft from the hub and brake drum assembly. Next disengage the flexible coupling assembly and the sliding coupling.	
5	FITTING TRANSMISSION (see Drawing 62)	
6	Fit the flexible coupling assembly and the sliding coupling to the gearbox driving flange and provisionally tighten nuts fitted with shakeproof washers under each.	Flat spanner 17
7	Engage drive shaft (1) in hub and brake drum assembly after having lightly oiled the stub axle splines. (To ensure constant velocity of the transmission joints, it is essential for one of the crosshead pins in the single cardan coupling to be parallel with one of the double cardan couplings).	
8	Fit drive shaft to flexible coupling, tighten bolts (24), and turn back lockwasher tabs.	Flat spanner 14
9	TIGHTEN UP HARD THE NUTS FIXING COUPLING FLANGE to the gearbox driving flange. (Use spanner 1832-T, see Drawing 60A).	Flat spanner 17 Spanner 1832-T
10	Lower vehicle to the ground.	
	Lightly oil the face of the hub nut and tighten to a tension of 30 mkg. (217 foot pounds). (Use spanner 1810-T and torsion gauge 2472-T). Secure nut with a split pin.	Spanner 1810-T Torsion gauge 2472-T
12	Fit hub cap to wheel.	

DISMANTLING TRANSMISSION (see Drawings 61, 63, and 64)

- 1 Disconnect drive shaft (1) from 'Bibax' (flexible coupling).

Box spanner 14

DISMANTLE SLIDING COUPLING FROM STUB AXLE

- 2 Hold the assembly in a vice. Remove the four circlips (2) retaining the bearing cups (3) on the stub axle side.

With a scraper remove burrs of metal and paint likely to impede the extraction of bearing cups (see fig. 1).

By means of a bent screwdriver prise out the four sheet steel cups (4), thereby disengaging the needle bearing cups (3). Remove bearing cups with needles. (See fig. 2). Do not forget to remove the cork washers (5) fitted in cups (4), as well as the cups or the dismantling of the assembly will be obstructed (see Drawing 61).

Tilt the crosshead (6) so that its trunnions emerge from the double yoke by way of the release aperture. The crosshead being free, draw out stub axle (7) together with crosshead (6) and the ball joint assembly (8) (see fig. 3).

- 3 Remove drive shaft yoke. Remove bearing cups according to paragraph 2 (see figs. 1 and 2.)
Remove the double yoke. (9) by tilting crosshead (10), the latter remaining on the drive shaft (1) (see fig. 4).

- 4 Remove crosshead (6) from stub axle (see Drawing 64). Unsolder cup (11) from the ball joint projecting cups at the stub axle side. This cup is soft soldered. Remove grease retaining cups to allow, use of ball joint extractor. If protecting cups are unsoldered at the central joint, it is still necessary to unsolder cup (11) (fig. 5).

NOTE. THE BALL PINS ARE LOCKED BY EITHER DOWEL PINS OR GRUB SCREWS. THE PINS SHEAR THEMSELVES WITHOUT DIFFICULTY AT THE MOMENT OF EXTRACTION OF BALL PINS. GRUB SCREWS MUST BE REMOVED BEFORE EXTRACTING BALL PINS. (Grub screws are locked by centre punching at two points).

- 5 Remove the ball pin (12) with ball (13) remaining in ball pin cup. (Use extractor I900-T together with collets 1913-T. See fig. 6). To prevent distortion, place two bearing cups (3.) without needles into bearing cup housings (see fig. 6).

Extractor 1900-t
Collets 1913-T

- 6 Remove the crosshead (10) from drive shaft end. Use the method, described in paragraph 5. (Use extractor 1900-T with collets 1913-T (see fig. 7).

Extractor 1900-T
Collets 1913-T

ASSEMBLING TRANSMISSION (see Drawings 61-64-65-56)

- 7 PREPARE NEEDLE BEARING CUPS (3)

<p>Fill each needle bearing cup with grease similar to Mobilcompound . Fit twenty- five needles (15) in each cup.</p> <p>8 PREPARE CROSSHEADS (6 and 10) Fill the lubrication holes in each crosshead with grease similar to Mobilcompound .</p>	
<p>9 PREPARE THE STUB AXLE (see Drawing 65) Fit the crosshead (6). The hollow face 'a' must be facing away from the stub axle (see fig. 9). Fit to the ball pin (12), equipped with its protecting cups (assembly (8) sold by our Spare Parts Department), the sliding ball (16), cork washer (17), plain washer (18), and the spring (19) (see fig. 10). Make sure that the central hole in the stub axle and the stem or the ball pin (12) are perfectly clean. By means of a press fit the ball pin (12) so that it is right home in stub axle (the pressure required may be as much as 12 tons). Use an olc ball pin spindle (14) that has been modified. Grind down the diameter of the spindle ball so that it will pass easily into the protecting cups. Also grind away the corner radius at 'b' to prevent the modified spindle seizing in the inner ball (13) on assembly (see fig. 11). FIT THE ASSEMBLY IN THE VERTICAL POSITION TO PREVENT STRESS IN THE BALL PIN STEM. Check the position of the inner bail (13). (Use Three-point gauge 1908-T and two bearing cup housing gauges 1910-T, see fig. 12). If the baall pin is locked by a dowel, drill hole 'c' into centre of stub axle. (Use a 4 mm. diameter drill and drill to 22.5 mm. deep (see Drawing 61). Drive in dowel pin and file off flush. If the ball pin is locked by a grub screw, screw it right home and secure by centre punching at two points. Fill the protecting cups (8) with grease similar to Mobilcompound.</p>	<p>Three-point gauge 1908-T Bearing housing gauge 1910-T</p>
<p>10 PREPARE THE DRIVE SHAFT (see Drawings 65 and 66) Fit the crosshead (10). The hollow part 'a' must be facing away from the drive shaft (see fig. 13) Press the ball pin spindle (14) right home. (Use socket 1904-T, see fig. 14). FIT THE SPINDLE IN THE VERTICAL POSITION TO PREVENT STRESS IN THE STEM. Drill hole for dowel (4 mm. diameter drill to a depth of 17 mm.) or fit grub screw (see paragraph 4).</p>	<p>Socket 1904-T</p>
<p>11 FIT THE DOUBLE YOKE Fit the yoke (9) on the stub axle (z). If the double yoke has two different outside diameters fit it for preference with the larger diameter at the stub axle side (see fig. 15).</p>	
<p>12 FIT THE DRIVE SHAFT Fit drive (1) to the double yoke (9). This operation is best undertaken holding the parts vertically in a vice. Introduce a trunnion of the crosshead (10) on the drive shaft side into</p>	

the corresponding bearing cup housing of the double yoke (9). At the same time engage the ball pin spindle (14) into the inner ball (13) and position the second trunnion of the crosshead (10). This is a delicate operation and force must not be used. Make sure that the inner ball (13) is positioned correctly to receive the stem of spindle (14) (see fig. 16).

13 FIT THE NEEDLE BEARING CUPS (see fig. 17)

With the aid of a tube fit a sheet steel cup (4) fitted with a cork washer (5) coated with Hermetical. Fit the bearing cup MAKING SURE THAT THE NEEDLE BEARINGS ARE CORRECTLY PLACED. Fit circlip (2) and make sure that it is correctly seated. (Use gauge 1909-T, see fig. 18). Repeat these operations for the other bearing cups. Make sure, by operating by hand, that there is no play or tightness in the coupling.

Tube 20 x 24 x 100
Gauge 1909-T

RECONDITIONING CARDAN COUPLING ON GEARBOX SIDE

14 DISMANTLE COUPLING

Remove bearing cups, cork washers, sheet steel cups, and crosshead using the same method as for the drive shaft (see Drawing 63, figs. 1, 2 and 3, and paragraph 2).

15 ASSEMBLE COUPLING

Use same method as for assembling a drive shaft crosshead (see Drawing 66, figs. 17 and 18, and paragraphs 7, 8 and 13).

16 Fit "Bibax" flexible coupling to drive shaft (see Drawing 62)

Fit washer (20) for securing pins. Fit spring washers under heads of bolts and tighten. Fill the bore 'd' of the sliding coupling with grease of the Mobilcompound type. Grease also the sliding coupling splines. Engage sliding coupling in flexible coupling.

To ensure constant velocity of couplings, IT IS ESSENTIAL that one of the crosshead pins of the sliding yoke is parallel with a crosshead pin of the double yoke. Tighten cap (21) fitted with felt washer (22) and splined washer (23). Lock the cap by centre punching on the outside diameter of the threaded portion.