LUBRICATION AND MAINTENANCE INSTRUCTIONS FOR S84U STEER AXLE

MANUAL SECTION A

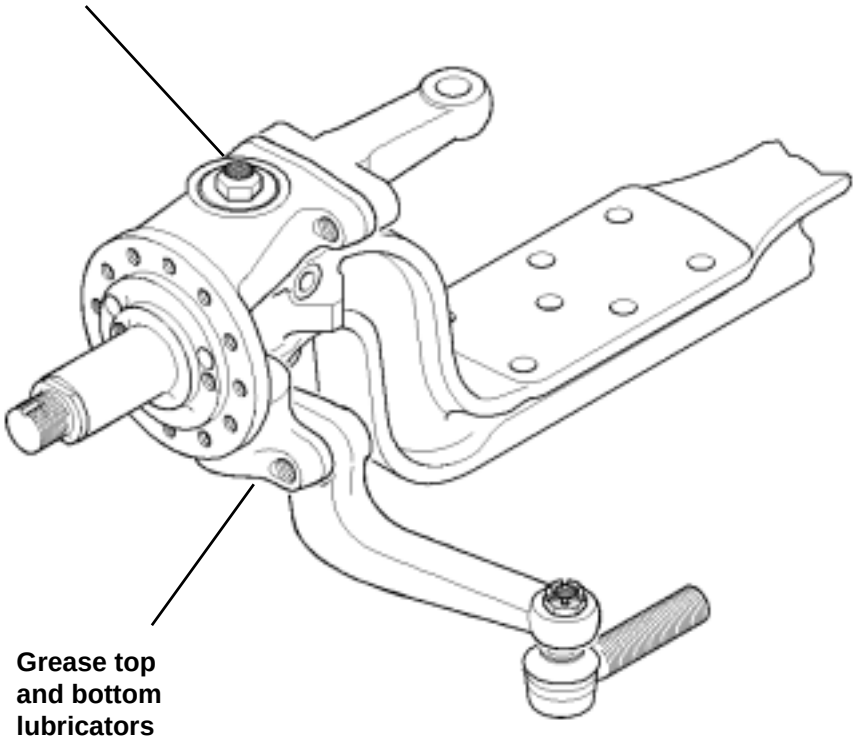
LUBRICATION AND ROUTINE MAINTENANCE FOR NDS AXLE RANGE

SECTION 1 LUBRICATION

1.1 GREASING PERIODS

1.1.1 ON HIGHWAY APPLICATIONS
Pressure lubricate every 6 months or 30000 miles (48000 km)
A more frequent lubrication cycle is required for axles used in on/off highway, refuse, or other severe service applications.

1.1.2 Grease points as shown in fig.no.1.



Greasing points
Fig.No.1

NOTE :- ALL OTHER COMPONENTS IN THE NDS RANGE OF AXLES ARE GREASED FOR LIFE AND REQUIRE NO FURTHER LUBRICATION DURING THE LIFE OF THE COMPONENT.

Recommended lubrication - LITHIUM BASE ROLLER BEARING GREASE NLGI NUMBER 2

1.2 Recommended Greases

Use greases to grade "F" in lubrication manual

SECTION 2 ROUTINE MAINTENANCE

2.1 Hub bearing check should be carried out every 30000 miles (48000 km)

a) Before commencing checks, apply parking brake, raise wheels off ground and support axle on stands. and remove brake drum (if fitted) .

WARNING!
NEVER WORK UNDER A VEHICLE SUPPORTED ONLY BY JACKS!
ALWAYS USE SUITABLE AXSLE STANDS!

b) Place magnetic base of a dial indicator on brake shoe / caliper and position dial indicator stem against a convenient marked spot on face of Hub flange

c) With dial indicator in position pull hard but steadily on Hub flange and oscillate at same time until a steady reading is achieved.

d) Without releasing the pressure, turn bearing so that dial indicator stem contacts marked spot and note reading on indicator.

e) Push bearing flange hard and oscillate as before until a steady reading is achieved.

f) Without releasing the pressure, turn bearing so that indicator stem again contacts the marked spot and note new reading on indicator.

g) The difference between readings is amount of mounted end play in bearing unit .

h) The mounted end play figure should not exceed 0.20mm for a bearing,which has been in service.

NOTE:-
For assembly procedure of existing / new hub bearing unit see manual NDS 10.

2.2 To check front wheel ' Toe In '

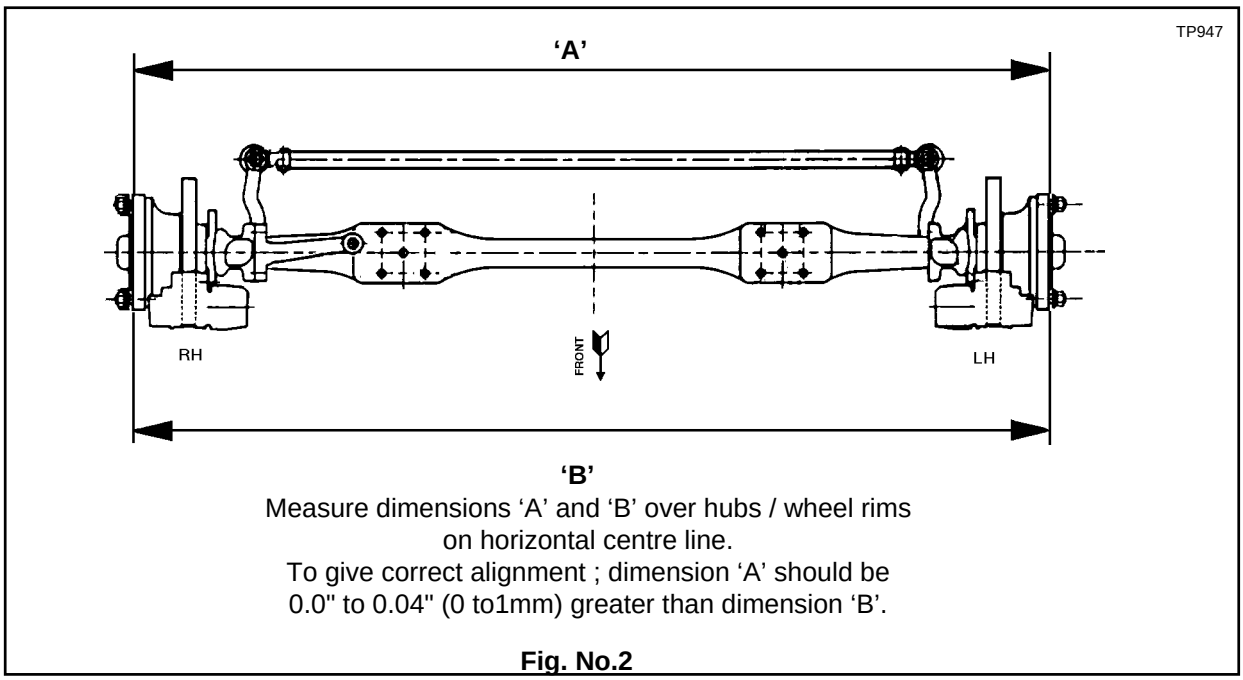
a) To preserve correct steering and avoid excessive tyre wear, tracking (or alignment) of front wheels should be checked periodically, as follows :-
Set front wheels in straight ahead position and at points level with wheel centre, measure distance over hubs / wheel rims, both in front and behind axle centre.
For correct 'Toe In' front measurement 'B' should be 0" to 0.04" (0 to1mm) smaller than rear measurement 'A' .

b) To allow for inaccuracies in wheels, same check should be made with vehicle moved an equivalent to half of a wheel revolution (180°). Any adjustment required can be effected by backing off clamp bolts in ball sockets and rotating tie (track) rod tube.
After adjustment, tighten clamp bolts to specified torque.

All steer axles supplied by Spicer Speciality Axle Division have their lockstops set to customer requirements.

It is important that when the power assisted steering is fitted, the steering gear is adjusted so that the hydraulic assistance cuts out just before the lockstops come into contact with the axle beam, to avoid excessive loads being transmitted through the steering linkages.

Incorrectly adjusted steering could lead to premature failure or shortened life of all steering components.



Measure dimensions 'A' and 'B' over hubs / wheel rims on horizontal centre line.
To give correct alignment ; dimension 'A' should be 0.0" to 0.04" (0 to1mm) greater than dimension 'B'.

Fig. No.2

2.3 Check condition of brake pads as described in relevant brake manufacturers service manual.

SECTION 2 ROUTINE MAINTENANCE Cont.

2.4 Check permissible slackness in swivel (king) pins every 30000 miles (48000 km) as follows :-

Aspects to be considered are :-

a) Lateral slackness.
b) Vertical slackness.

Before commencing checks, apply parking brake, raise wheels off ground and support axle on stands.

a) Checking lateral slackness

Whilst this is being carried out the brake must be applied.
Place a set -square with its stock on ground and its blade against tyre wall.
Place a mark on ground to indicate position of stock end.
Insert a lever through bottom cut-out of wheel and lever it upwards thus moving set-square outboard.
Mark changed position of stock end.
Maximum allowable stock displacement is given as follows:-

for 17.5" wheels	=	6mm.
for 19.5" wheels	=	7mm.
for 22.5" wheels	=	8mm.
for 24.0" wheels	=	9mm.

If displacement exceeds stated allowance then need for bush / bearing attention and possible renewal, is in evidence.

b) Checking vertical slackness

This is measured by a dial indicator anchored to axle beam and having its pointer placed vertical against swivel top.
Place a jack against underside of swivel and, whilst applying a lifting force, observe any movement on indicator dial.
If vertical movement is evident and it exceeds 0.040" (1.02mm) then re-adjustment of swivel is required by adjusting thickness of bearing adjusting washers.

2.5 Every 6 months, check for movement in ball joints as follows :-

NOTE :-
THIS TEST IS TO BE CARRIED OUT WITH VEHICLE IN LOADED CONDITION,
DO NOT JACK UP VEHICLE

a) Axial end float (axial travel)

End float in direction of axis of ball pin, as shown in fig. no.3 should be within limits of 0.4mm to 2.0mm max. using a test force of 850N.

b) Radial end float (radial travel)

Radial end float at right angles to axis of ball pin as shown in fig. no. 4 should be within limits of 0.4mm to 0.8mm max. using a test force of 6000N.

Replace ball joints if outside limits given in a) and / or b).

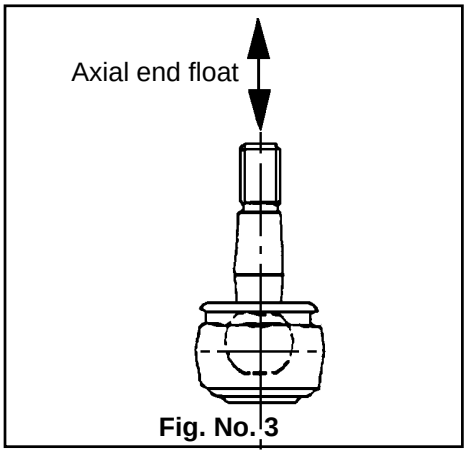


Fig. No. 3

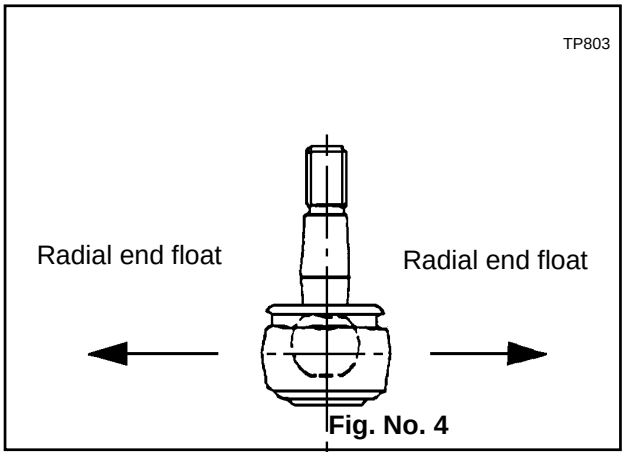


Fig. No. 4

SECTION 2 ROUTINE MAINTENANCE Cont.

2.6 Every 6 months inspect ball joints for corrosion as follows :-

NOTE:-
INSPECTION OF BALL JOINTS IS IMPORTANT, ESPECIALLY THOSE IN OLDER VEHICLES. DAMAGED SEALING BOOTS, SALT ON ROADS IN WINTER AND CLIMATIC CONDITIONS CAN CAUSE LOSS OF THE CORROSION PROTECTION COATING APPLIED DURING MANUFACTURE.

Inspection instructions:-

Ensure that ball joint is in an easy access-position.
Carefully clean the sealing boot contact area, to ensure that pollutants cannot get under the sealing boot during the following inspection procedure.
Use an appropriate inspection sheet-metal-tool, eg. spatula with cut out, (fig. no.5) to push up the sealing boot (without damaging it) until ball pin surface is visible. Degrease the ball pin surface.

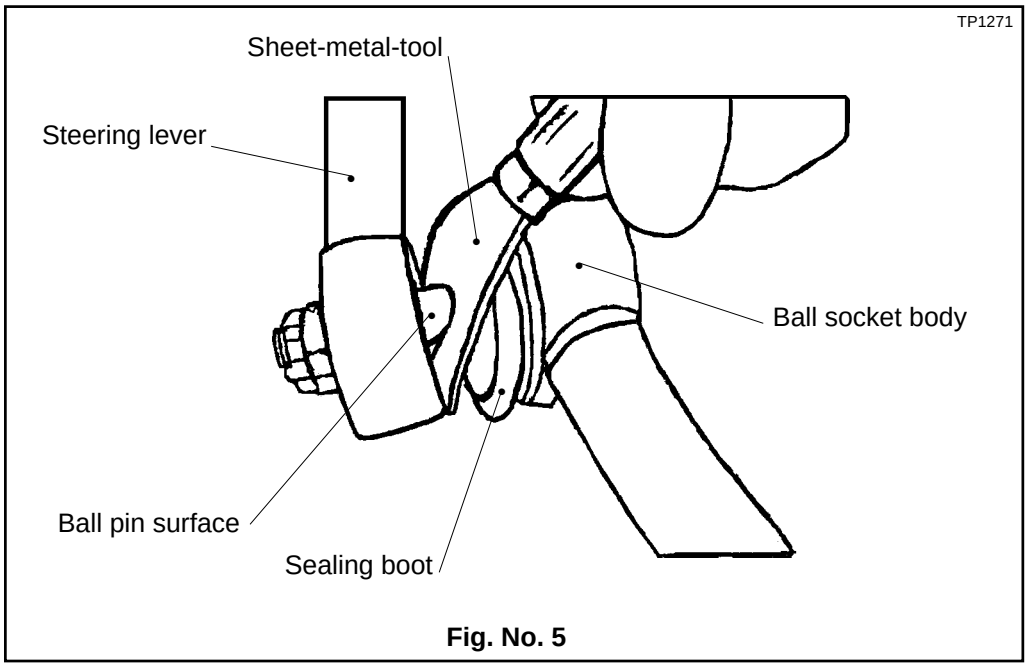


Fig. No. 5

If there is corrosion of the ball pin or the sealing boot has deteriorated through ageing or is damaged, replace the ball joint in question, or the complete tie rod or drag link as appropriate.

If there is corrosion of the steering lever area which is in contact with the sealing boot, clean and eliminate all surface irregularities.

If there is no corrosion or damage to the sealing boot, smear the steering lever surface with Lithium grease and push the sealing boot back into its properly seated position.

When dismantling tie rods, drag links or drop arms ensure that no damage is caused to the sealing boots or ball joint housings.

SECTION 3 CARE OF WHEELS AND FIXING FACES (ALL AXLES WITH SPIGOT FIXING)

At approximately 100 miles after fitting wheels, wheel nut torque should be checked with wheel ends in " cold " condition (ie not after prolonged braking.).
If any relaxation of original torque **(see specification)** has occured, re-tighten.
Relaxation of initial torque may occur because of " **Bedding Down**" of hub and wheel surfaces.

NOTE:-
TIGHTENING SHOULD NOT BE DONE IMMEDIATELY AFTER PROLONGED BRAKING I.E. WHEN WHEEL ENDS ARE HOT. A RELAXATION OF WHEEL NUT TORQUE DOES OCCUR WHEN WHEEL END IS HOT BUT SHOULD REVERT BACK TO THE ORIGINAL SETTING AS THE WHEEL END COOLS DOWN. RE- TIGHTENING WHEN HOT WILL PRODUCE A HIGHER TORQUE READING WHEN COLD!

Although this single re-tightening after first 100 miles should be sufficient to ensure wheels stay tight, extra checks are recommended within at least the first 1000 miles to check that wheel assembly is stable and that no further relaxation is occuring.

see graphic on following page for correct tightening sequence of wheel nuts

3.1 Care of wheels :-

Check for **CRACKS** in wheels, especially around the fixing holes, and in studs, nuts and washers.
If in doubt **RENEW** .
DO NOT simply re-tighten very loose wheel fixings or wheels which are continualy becoming loose.
Find out why they are loose and whether any damage has been caused.
Use **TRAINED** personnel and keep **RECORDS** of all attention to wheels and fixings, including which parts were renewed and when.

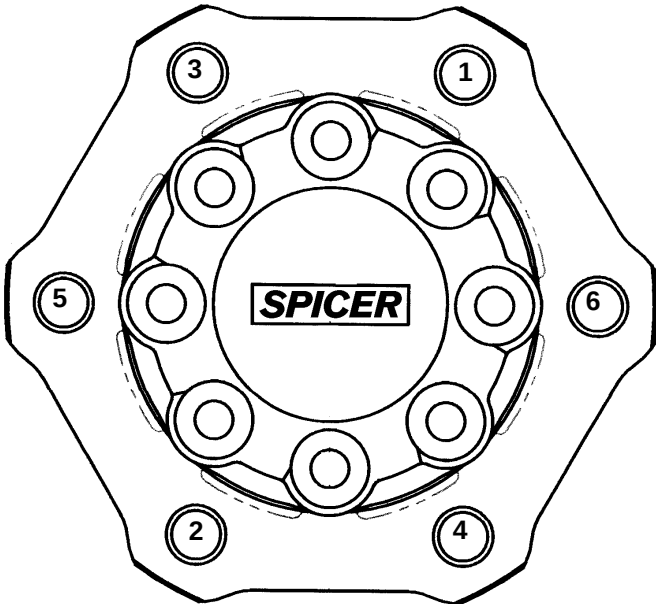
NOTE :-
FURTHER DETAILS ARE GIVEN IN BRITISH STANDARD CODE OF PRACTICE FOR THE SELECTION AND CARE OF TYRES AND WHEELS FOR COMMERCIAL VEHICLES:- BSAU50 : PART2 : SECTION 7A : 1995

3.2 PROTECTION OF SPIGOT WHEEL FIXING DIAMETERS AND PRESSURE SURFACES.

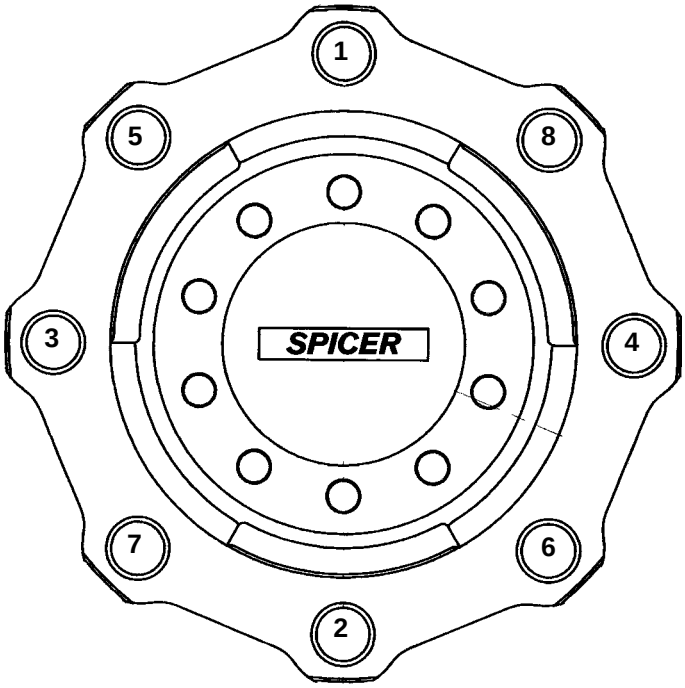
Although **Spicer Speciality Axles Division** apply an initial surface coating to wheel rim mating faces on spigot to stop rusting and facilitate easy removal of wheels. The application of P.B.C. grease such as 'Rocol Tufgear' or equivalent to wheel register is recommended.

The above P.B.C. grease is available from Rocol Ltd., Rocol House, Wakefield Road, Swillington, Leeds, UK. Phone: 44 (113) 2322600. Fax: 44 (113) 2322740.

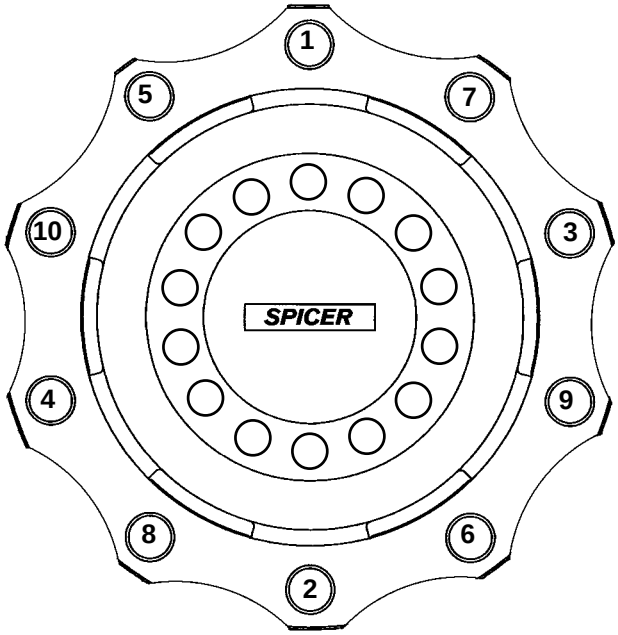
WHEELNUT TIGHTENING TORQUE SEQUENCE
6 - STUD FIXING



WHEELNUT TIGHTENING TORQUE SEQUENCE
8 - STUD FIXING



WHEELNUT TIGHTENING TORQUE SEQUENCE
10 - STUD FIXING



SECTION 4 Guidance standards for acceptable brake drum crazing (if fitted).

Every 30000 miles (48000 km) or whenever brake drums are removed for axle maintenance purposes they should be checked for crazing.

Brake drums with crazing in excess of that shown in fig.6 below, and which are of Spicer Speciality axle division manufacture should not be re introduced into service.

Figs.7 & 8 show examples of unacceptable crazing.

fig.6

fig.7

fig.8

EVALUATION OF BRAKE DISC SURFACE

TP1627

Fig. 9

Upon removal of brake disc Fig. 9. It's surface should be checked for defects. Inspection should cover both sides of the braking surface as well as the outer diameter of the disc.
Brake disc thickness should be checked in accordance with manufacturers dimensional recommendations.

You should inspect for the following:-
- Heat checking
- Cracks
- Grooves - scoring
- Blue marks - Banding
- Polished discs

Heat checking can be light or heavy,

If **light heat checking** type cracks (fine and light) are found as shown in Fig.10 the disc can continue to be used.

If **heavy heat checking** type cracks (deep and wide) are found the disc **must be replaced.**

TP1628

Fig. 10

Cracks can be of 2 types **Radial or Through.**

If any **radial** cracks are found in the brake disc surface as shown in fig. 11. then the disc **must be replaced.**.

TP1629

Fig. 11

If any **Through** cracks are found in the brake disc as shown in fig. 12. then the disc **must be replaced.**.

TP1630

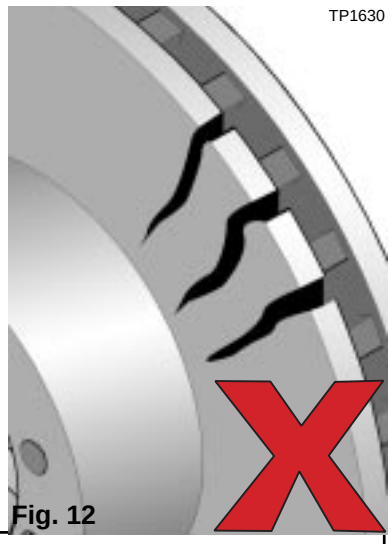


Fig. 12

EVALUATION OF BRAKE DISC SURFACE CONTINUED

Grooving - Scoring can be light or heavy,

If **light** grooving is found as shown in Fig. 13 then the disc can continue to be used.

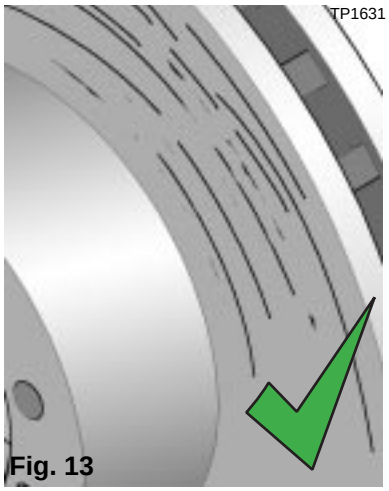


Fig. 13

If **Heavy** grooving is found as shown in Fig. 14 then the disc must be replaced.

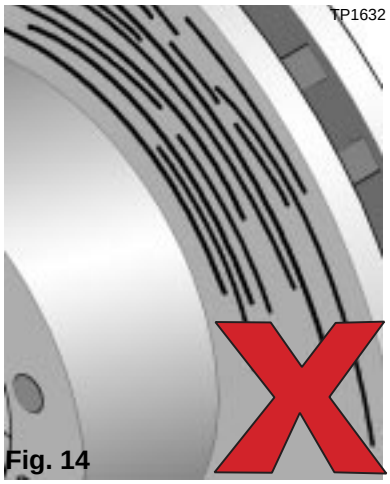


Fig. 14

Blue marks - banding indicates that the disc has been exposed to very high temperatures.
If **Blue marks - banding** are found, the reason for the high temperatures must be investigated and corrected.
Refer to the Brake manufacturer for details.
if left uncorrected the formation of heavy heat checking / cracks will occur.

Fig. 15

Polished discs indicate the use of improper lining material or that the disc has been re- machined to too fine a surface finish.
The **Gloss / polish** should be removed using (80) grit Emery cloth and the brake manufacturer should be contacted for an alternate liner material.

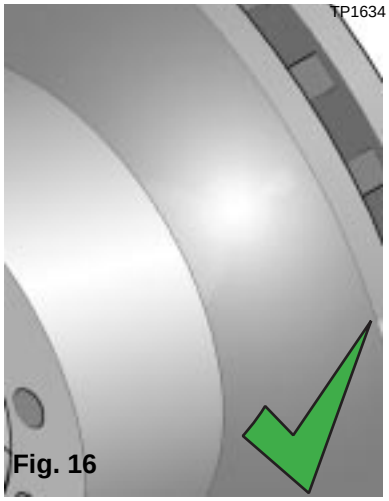
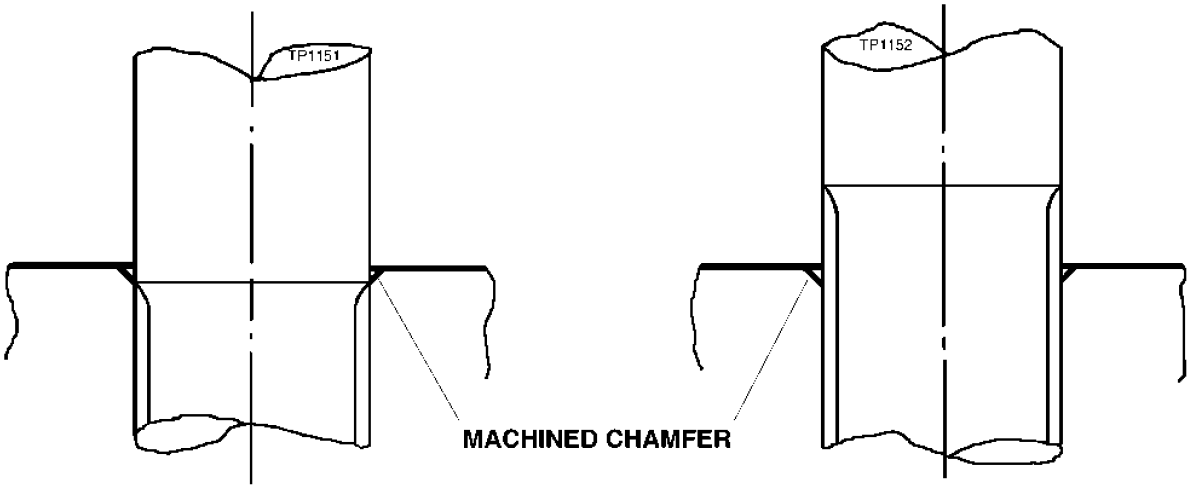


Fig. 16

SPICER SPECIALITY AXLE DIVISION

STANDARD STUDS - FITTED INTO MACHINED CHAMFERED HOLES

STUDS TO BE INSERTED UNTIL THREAD RUN-OUT LOCKS INTO PARENT METAL



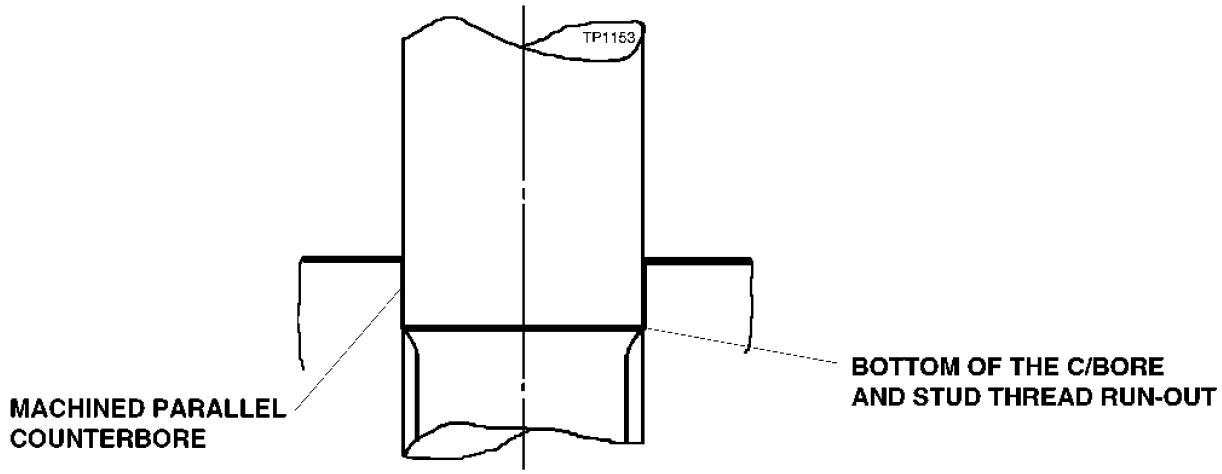
CORRECT

INCORRECT

IMPORTANT :- THIS STUD FITTING PROCEDURE IS TO BE USED IN LIEU OF STATED TORQUE VALUES ON EXISTING ARRANGEMENTS.
NEW ARRANGEMENTS WILL SPECIFY TD183/1 FROM THE DATE OF ISSUE.

SPECIAL STUDS - FITTED INTO MACHINED PARALLEL COUNTERBORE

STUDS TO BE INSERTED UNTIL CORRECT TORQUE VALUE IS OBTAINED -
AS SHOWN ON RELEVANT ARRANGEMENT DRAWING



THIS SPECIFICATION IS FOR STUD FITTING ONLY ;
NUTS & SETSCREWS MUST BE TORQUED TO VALUE SPECIFIED

Alteration Numbers									
ISSUE A									

DISTRIBUTION		
Front Axle B.U. Drive Axle B. U. Production	**STUD FITTING PROCEDURES**	**TD183/1** SHT 1 OF 1

SWIVEL / AXLE BED TIGHTENING TORQUES

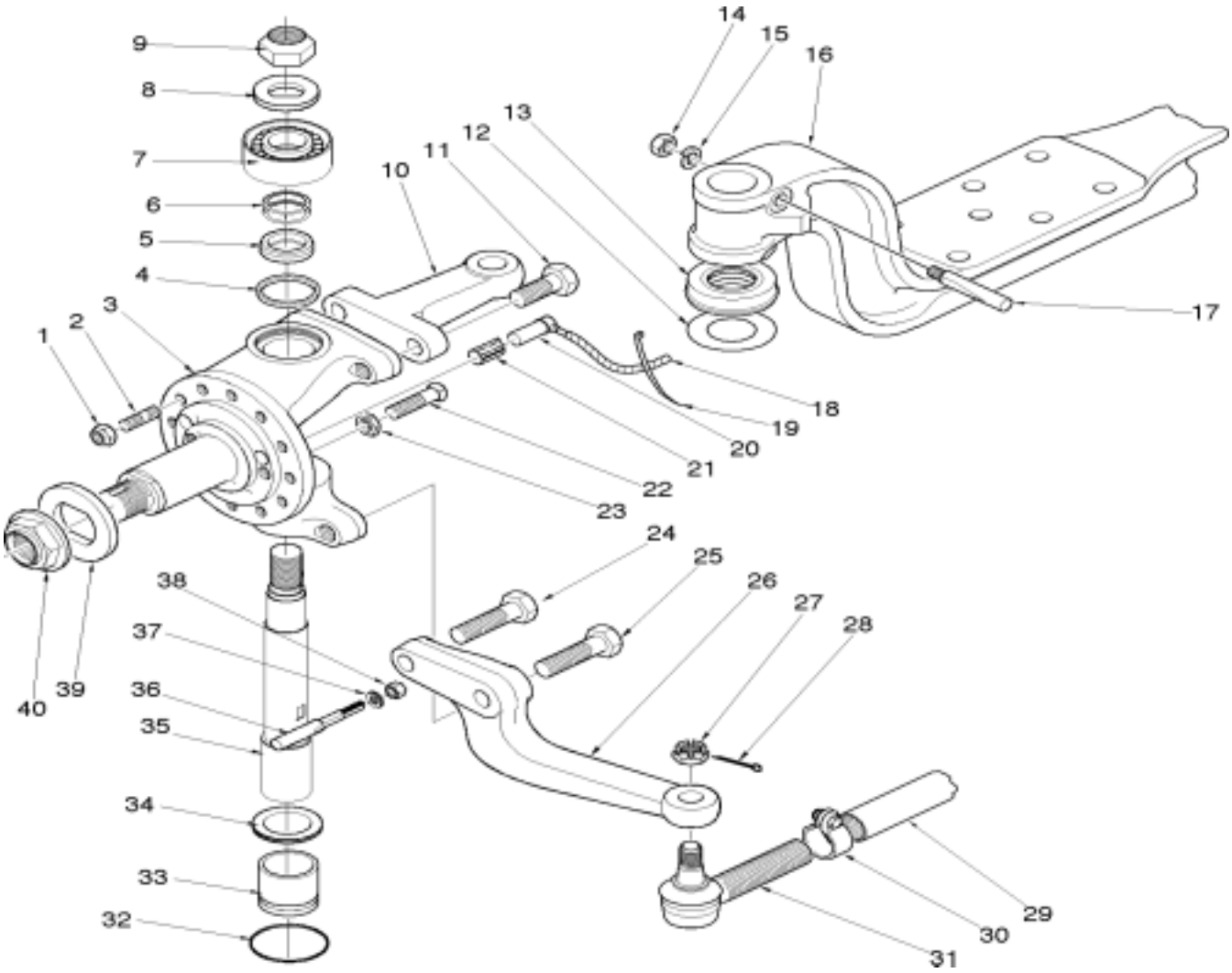


Fig.No.17

PART N^{O}	DESCRIPTION	TIGHTENING TORQUE		
1	Brake backplate nut 1/2" UNF	85 - 103 lbs.ft	115 - 140 NM	(All axles)
2	Brake backplate stud 1/2" UNF	See TD 183/1		(All axles)
9	Swivel top cap lubricator	96bs.ft	130 NM	(All axles)
11	Top lever bolts M20 x 2.5 grade 10.9	433 - 479 lbs.ft	587 - 649 NM	(NDS 35/41/56)
	Top lever bolts M20 x 2.5 grade 12.9	520 - 575 lbs.ft	705 - 780NM	(NDS 56)
	Top lever bolts M24 x 3 grade 10.9	751 - 830 lbs.ft	1018 - 1125 NM	(NDS 80)
14	Cotter pin nut 1/2" UNF	51 - 61 lbs.ft	69 - 82 NM	(All axles)
23	Lockstop nut	90 - 120 lbs.ft	122 - 162 NM	(All axles)
24 & 25	Bottom lever bolts M20 x 2.5 grade 10.9	433 - 479 lbs.ft	587 - 649 NM	(NDS 35/41/56)
	Bottom lever bolts M20 x 2.5 grade 12.9	520 - 575 lbs.ft	705 - 780NM	(NDS 80)
	Bottom lever bolts M24 x 3 grade 10.9	751 - 830 lbs.ft	1018 - 1125 NM	(NDS 80)
27	Ball pin nut (F4845T assembly)	155 - 170 lbs.ft	210 - 230 NM	(All axles)
	Ball pin nut (F4109T assembly)	184 - 206 lbs.ft	249 - 279 NM	(All axles)
	Ball pin nut (F4779S assembly)	100 - 170 lbs.ft	135 - 230 NM	(All axles)
	Ball pin nut (F4897S assembly)	190 - 220 lbs.ft	257 - 298 NM	(All axles)
30	Socket pinch bolt (F4845T assembly)	33 - 37 lbs.ft	45 - 50 NM	(All axles)
	Socket pinch bolt (F4109T assembly)	52 - 59 lbs.ft	70 - 80 NM	(All axles)
	Socket pinch bolt (F4779S assembly)	65 - 75 lbs.ft	88 - 102 NM	(All axles)
	Socket pinch bolt (F4897S assembly)	118 - 155 lbs.ft	160 - 210 NM	(All axles)
41	Hub nut	350 - 400 lbs.ft	475 - 542 NM	(NDS 35/41/56)
	Hub nut	575 - 626 lbs.ft	778 - 849 NM	(NDS 80)

SWIVEL / HUB END TIGHTENING TORQUES

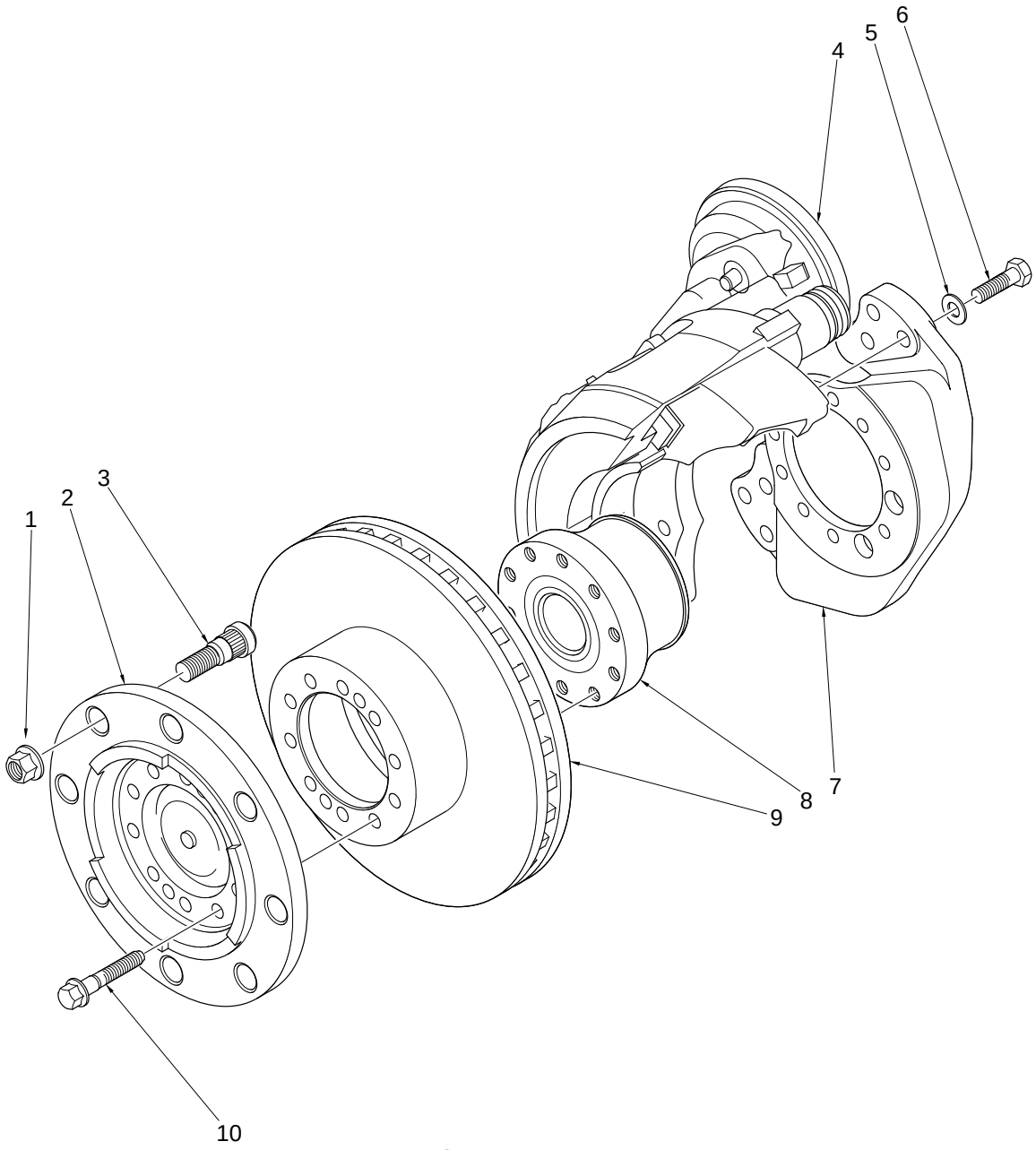


Fig.No.19

PART N^{O}	DESCRIPTION	TIGHTENING TORQUE	
1	Wheel nut M18 x 1.5	235 - 260 lbs.ft	318 - 352NM
	Wheel nut M20 x 1.5	285 - 315 lbs.ft	386 - 427NM
	Wheel nut M22 x 1.5	475 - 525 lbs.ft	644 - 712NM
6	Brake Caliper Mounting Bolt M14 x 1.5	174 - 192 lbs.ft	236 - 260NM
	Brake Caliper Mounting Bolt M16 x 1.5	266 - 294 lbs.ft	360 - 399NM
	Brake Caliper Mounting Bolt M18 x 1.5	372 - 412 lbs.ft	504 - 559NM
	Brake Caliper Mounting Bolt M20 x 1.5	520 - 574 lbs.ft	705 - 778NM
4	Brake air cylinder retaining nuts M16 X 1.5	133 - 155 lbs.ft	180 - 210NM
10	Hub flange retaining bolt M14 x 1.5	174 - 192 lbs.ft	236 - 260NM

SWIVEL / HUB END TIGHTENING TORQUES

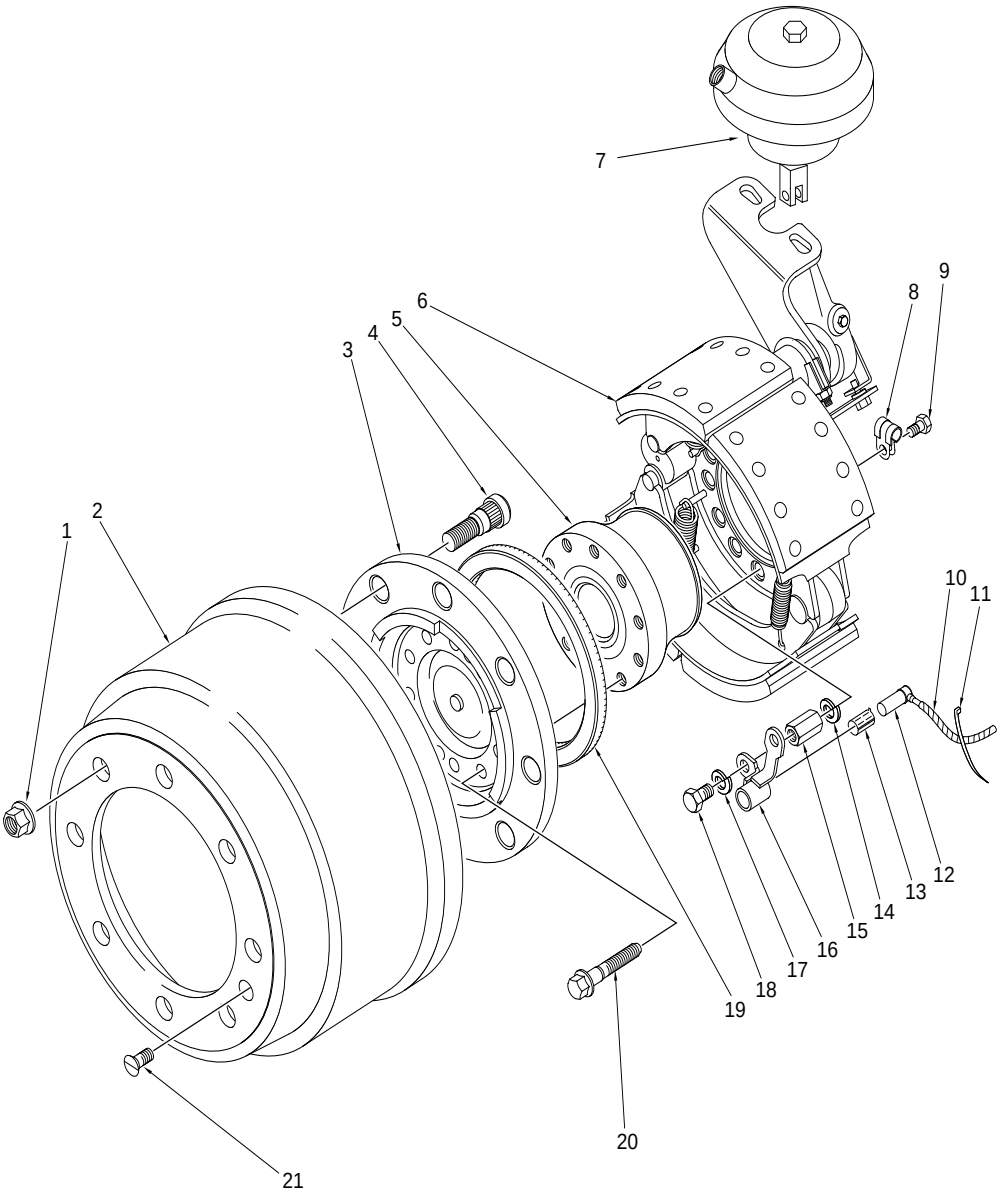


Fig.No.20

PART N^{O}	DESCRIPTION	TIGHTENING TORQUE	
1	Wheel nut M18 x 1.5	235 - 260 lbs.ft	318 - 352NM
	Wheel nut M20 x 1.5	285 - 315 lbs.ft	386 - 427NM
	Wheel nut M22 x 1.5	475 - 525 lbs.ft	644 - 712NM
8	Hub flange retaining bolt M14 x 1.5	174 - 192 lbs.ft	236 - 260NM
9	Brake drum retaining screw	26 - 32 lbs.ft	35 - 43NM

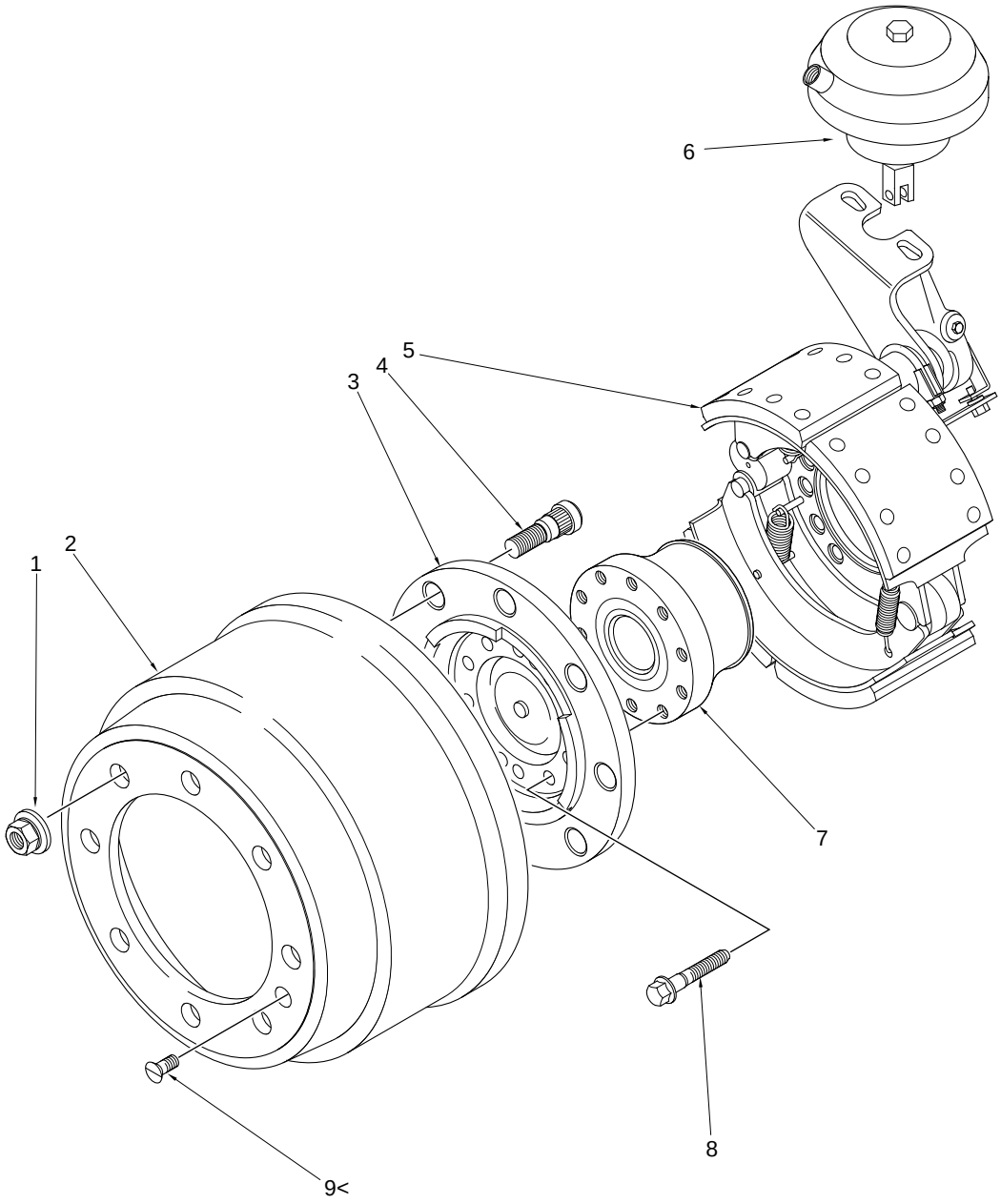


Fig.No.21

PART N^{O}	DESCRIPTION	TIGHTENING TORQUE	
1	Wheel nut M18 x 1.5	235 - 260 lbs.ft	318 - 352NM
	Wheel nut M20 x 1.5	285 - 315 lbs.ft	386 - 427NM
	Wheel nut M22 x 1.5	475 - 525 lbs.ft	644 - 712NM
20	Hub flange retaining bolt M14 x 1.5	174 - 192 lbs.ft	236 - 260NM
21	Brake drum retaining screw	26 - 32 lbs.ft	35 - 43NM

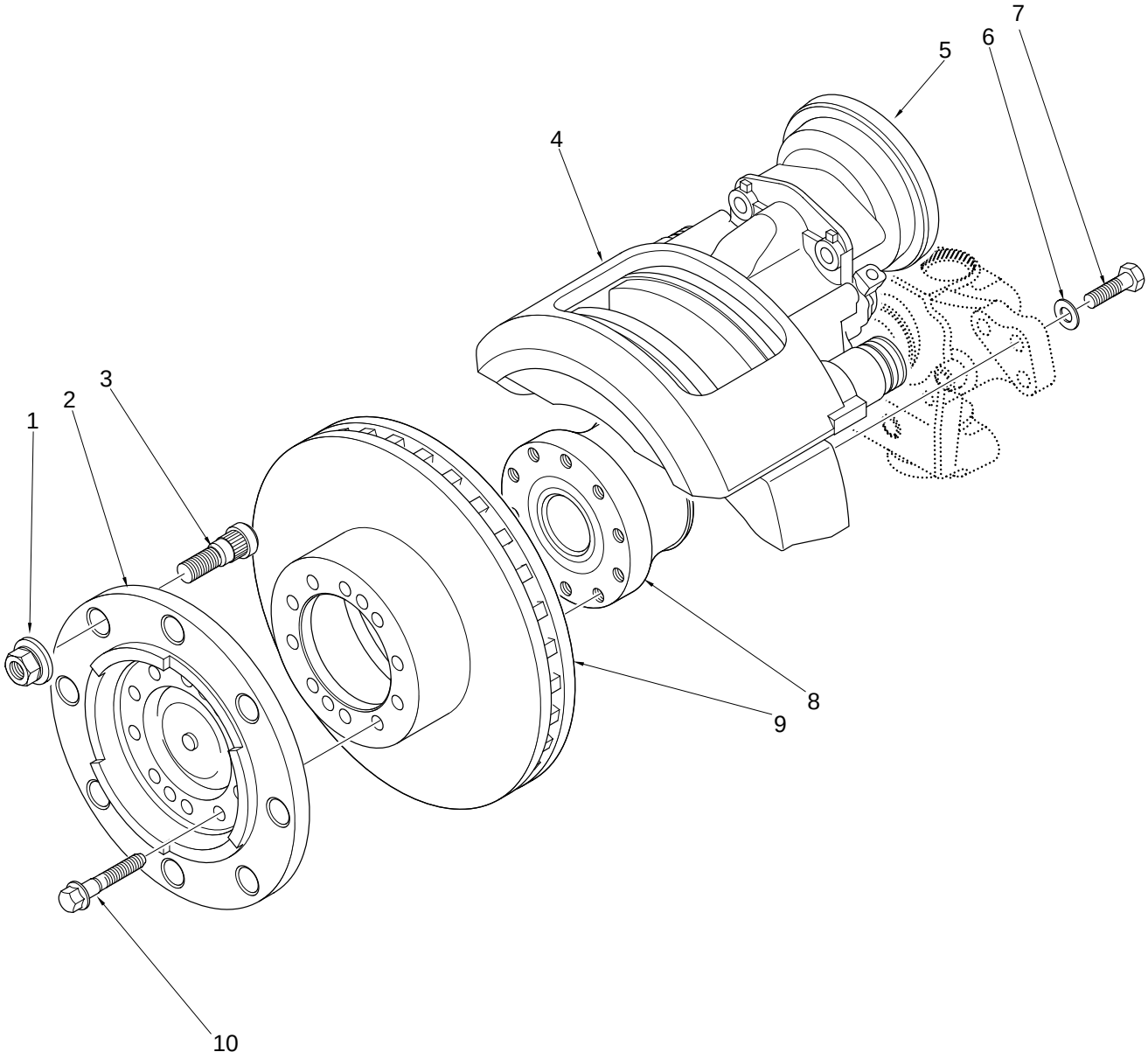


Fig.No.22

PART N^{O}	DESCRIPTION	TIGHTENING TORQUE	
1	Wheel nut M18 x 1.5	235 - 260 lbs.ft	318 - 352NM
	Wheel nut M20 x 1.5	285 - 315 lbs.ft	386 - 427NM
	Wheel nut M22 x 1.5	475 - 525 lbs.ft	644 - 712NM
5	Brake air cylinder retaining nuts M16 X 1.5	133 - 155 lbs.ft	180 - 210NM
6	Brake Caliper Mounting Bolt M14 x 1.5	174 - 192 lbs.ft	236 - 260NM
	Brake Caliper Mounting Bolt M16 x 1.5	266 - 294 lbs.ft	360 - 399NM
	Brake Caliper Mounting Bolt M18 x 1.5	372 - 412 lbs.ft	504 - 559NM
	Brake Caliper Mounting Bolt M20 x 1.5	520 - 574 lbs.ft	705 - 778NM
10	Hub flange retaining bolt M14 x 1.5	174 - 192 lbs.ft	236 - 260NM

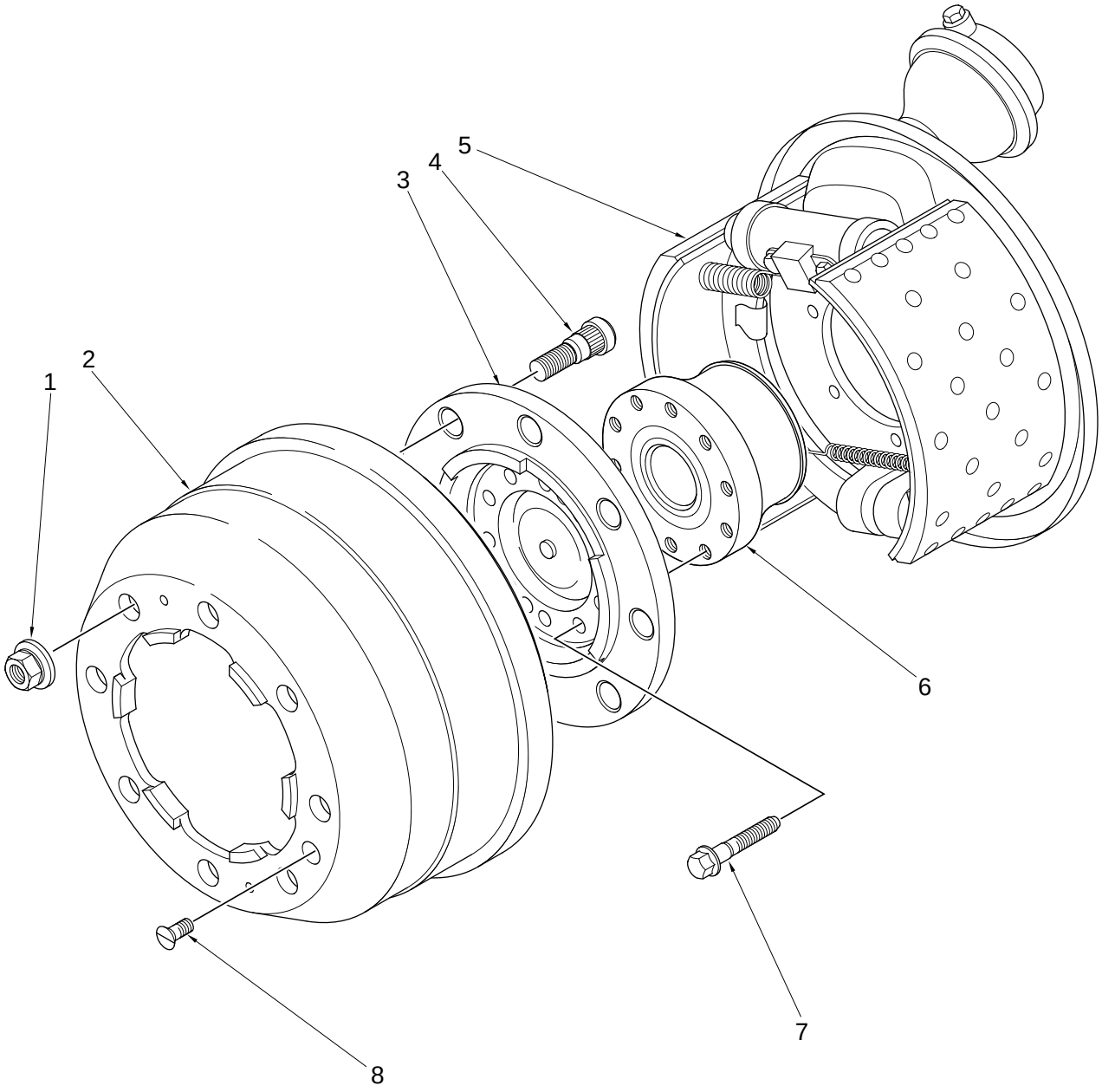


Fig.No.23

PART N^{O}	DESCRIPTION	TIGHTENING TORQUE	
1	Wheel nut M18 x 1.5	235 - 260 lbs.ft	318 - 352NM
	Wheel nut M20 x 1.5	285 - 315 lbs.ft	386 - 427NM
	Wheel nut M22 x 1.5	475 - 525 lbs.ft	644 - 712NM
7	Hub flange retaining bolt M14 x 1.5	174 - 192 lbs.ft	236 - 260NM
8	Brake drum retaining screw	26 - 32 lbs.ft	35 - 43NM

NOTES

PARTS & SERVICE INSTRUCTIONS FOR S84U HUB UNIT(OIL FILLED) WITH KNORR DISC BRAKE

ILLUSTRATION No. F75

MANUAL SECTION B

PARTS AND SERVICE INSTRUCTIONS FOR TYPE S84U HUB UNIT

DESCRIPTION

The suspension upright carries a stub axle on a parallel king pin with steep angle roller bearing at top and phosphor bronze bush at bottom.
Hubs run on taper roller bearings and are secured and adjusted by means of a special pinch nut and washer arrangement.
Brakes can be of Dana or proprietary manufacture and can be serviced without disturbing the hub.

VITON 'O' RINGS AND SEALS (FLUORO-ELASTOMERS) - SAFETY HAZARDS.

It has been brought to our attention that 'Viton' material used in manufacture of oil seals and 'O' rings, produces a highly corrosive acid (hydrofluoric) when subjected to temperatures above 315° C.
The resulting contamination can have extreme consequences on human tissue since it is almost impossible to remove after contact.
We therefore recommend the following procedure when it is necessary to inspect any equipment that has been subjected to a high temperature i.e. fire.

a) **Visually** inspect for any gaskets or seals which have suffered from heat ; they will appear black and sticky.
b) If this is affirmed :- **Do Not Touch**.
c) Make enquiries to ascertain material composition.
Any fluoro-elastomer (Viton, Fluorel or Tecmoflon) should be considered dangerous but natural rubber and nitrile are non-hazardous.
d) If fluoro-elastomer seals have been used, then the affected area **MUST** be decontaminated before undertaking further work.
e) Disposable heavy duty gloves (neoprene) **MUST** be worn and the affected area decontaminated by washing thoroughly with limewater (calcium hydroxide solution).
f) Any cloths, residue and gloves used **MUST** be safely discarded after use.

Note:- Burning of discarded items is NOT RECOMMENDED, except in an approved incineration process where gaseous products are treated by alkaline scrubbing.

TOOLING / SEALING COMPOUND LIST

Swivel pin dummy nut	SL225/15
Swivel pin oil seal bumper	E660
Loctite Superflex	E659
Loctite 638	E661
Loctite 405	E657
Loctite 7070 cleaning fluid	

SECTION 1 DRAINING THE OIL

1.1 Before attempting to remove road wheels, drive vehicle onto a level concrete floor, preferably after a short run to warm the oil.
1.2 Chock road wheels to be left on ground and apply parking brake.
1.3 Back off, but **do not remove** wheel nuts (5 posn.).
1.4 Raise vehicle and support on axle stands.
1.5 Remove wheel nuts (5 posn) followed by road wheels.
1.6 Place a drip tray under hub unit, turn hub until drain plug in hub cap (59) is at B.D.C. then remove filler and drain plugs to drain oil.
1.7 When hub is completely drained of oil, remove drip tray and dispose of old oil.

OVERHAUL PROCEDURES

SECTION 2

PREPARATION

Prepare for axle overhaul as follows:

1 Set parking brake and block drive wheels to prevent vehicle movement.

2. Raise vehicle until tyres are off the ground. support raised vehicle with safety stands.

WARNING!

NEVER WORK UNDER A VEHICLE SUPPORTED ONLY BY A JACK. ALWAYS USE SAFETY STANDS.

SECTION 3

HUB END DISASSEMBLY

1. Disconnect brake connections and ABS sensor from vehicle.
Fit plugs to connections to prevent dirt ingress.

2. Loosen but do not remove, brake caliper retaining bolts

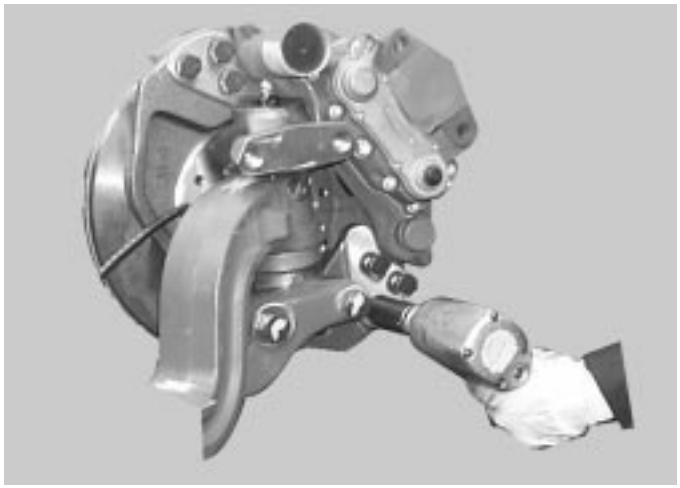
3. Using suitable lifting equipment, support the brake caliper.

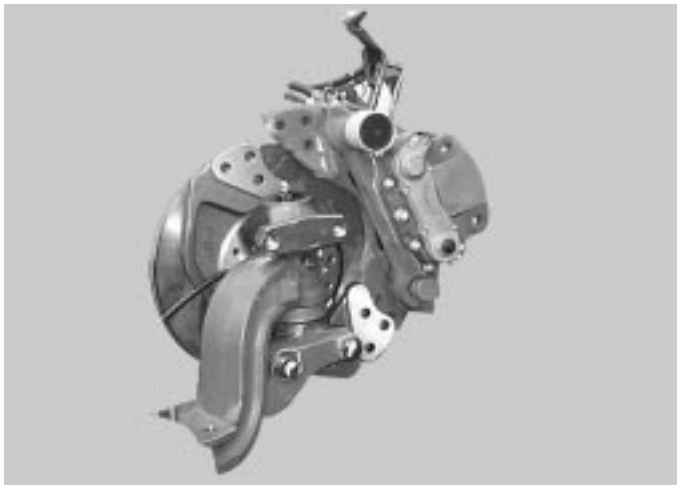
Remove brake caliper retaining bolts and remove brake caliper from axle.

WARNING!
BRAKE CALIPER IS HEAVY
ENSURE WEIGHT IS FULLY SUPPORTED BEFORE REMOVING RETAINING BOLTS.
REMOVE TOP BOLT LAST TO AVOID CALIPER SWINGING AND TRAPPING FINGERS.

NOTE:-
BRAKE CALIPERS ARE HANDED!
SPICER SPECIALITY AXLE DIVISION RECOMMENDS MARKING CALIPERS WITH PAINT OR MARKER PEN TO FACILITATE CORRECT REFITTING

REFER TO THE BRAKE MANUFACTURERS MANUAL FOR DETAILS OF CALIPER SERVICE.





OVERHAUL PROCEDURES

SECTION 3 CONT'D

HUB END DISASSEMBLY

5. Loosen but do not remove hub flange bolts.

6. Remove 2 diametrically opposed hub flange bolts.

7. Replace 2 diametrically opposed hub flange bolts with 2 studs (loosely fitted).

NOTE!
REPLACEMENT STUDS SHOULD PROTRUDE BEYOND FRONT FACE OF HUB FLANGE TO AID REMOVAL

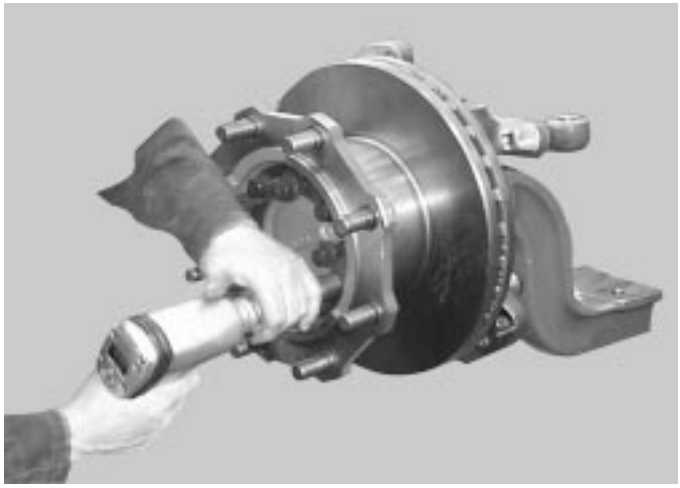
8. Gently tap hub flange outwards using a hide faced hammer.

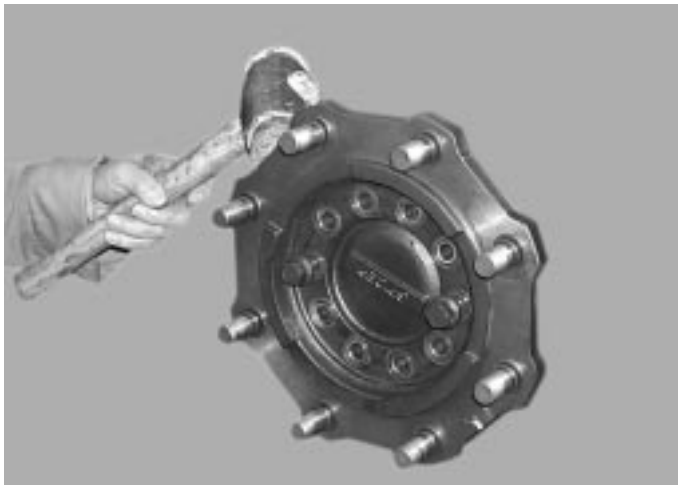
9. Support weight of hub flange and remove hub flange retaining bolts.

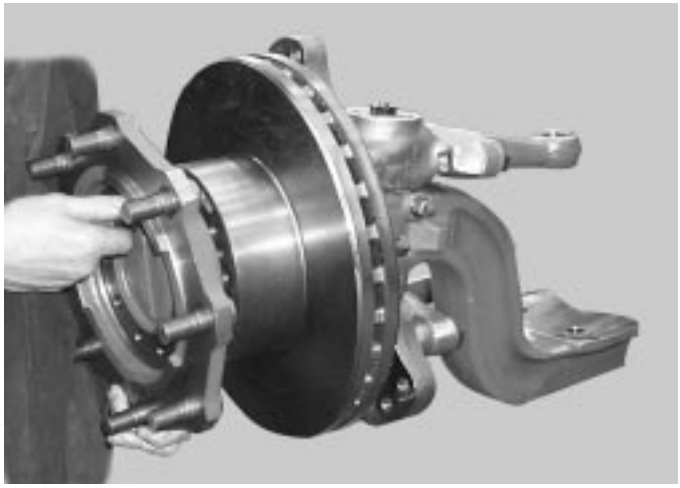
10. Remove hub flange and place on a suitable workbench.

WARNING!
COMPONENT IS HEAVY
ENSURE WEIGHT IS FULLY SUPPORTED BEFORE REMOVING RETAINING BOLTS.

11. Inspect wheel studs and remove for replacement, any that are found to be defective.







OVERHAUL PROCEDURES

SECTION 3 CONT'D

HUB END DISASSEMBLY

12. Once hub flange has been removed, insert two bolts into brake disc extraction holes

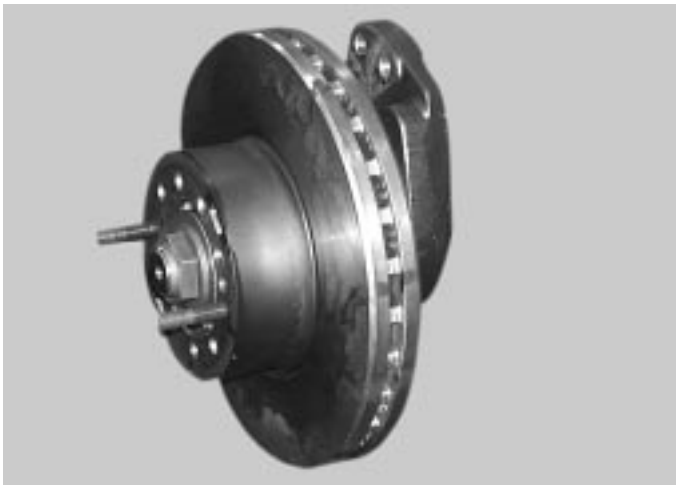
13. Tighten to free brake disc from hub bearing.

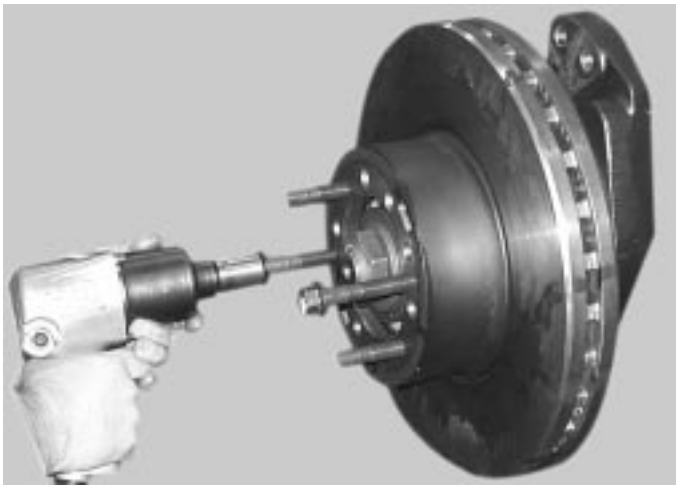
14. Support weight of brake disc and carefully slide along dummy studs to remove.

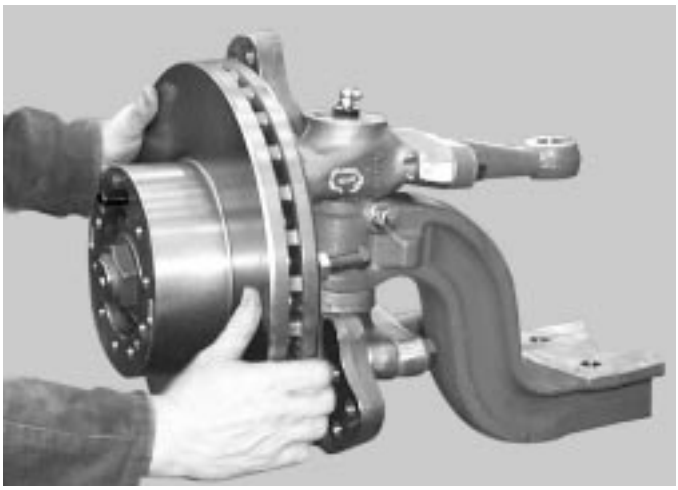
WARNING!
COMPONENT IS HEAVY
ENSURE WEIGHT IS FULLY SUPPORTED BEFORE REMOVING .

15. Place brake disc on a suitable work bench and inspect for cracks and defects, Replace if necessary.
(See Lubrication and maintenance section for details of typical defects and acceptability)
Check brake disc thickness is within manufacturers specifications.
Refer to table below for Acceptable dimensions:

WARNING!
DO NOT ALLOW BRAKE DISC TO WEAR BELOW MINIMUM THICKNESS!







Brake disc type	Original thickness	Minimum thickness
SB5000	34MM	28MM
SB6000	45MM	37MM
SB7000	45MM	37MM

OVERHAUL PROCEDURES

SECTION 3 CONT'D

HUB END DISASSEMBLY

16. Using a small ended chisel, pry off the "staking" on the hub nut.

17. Remove hub nut and discard.

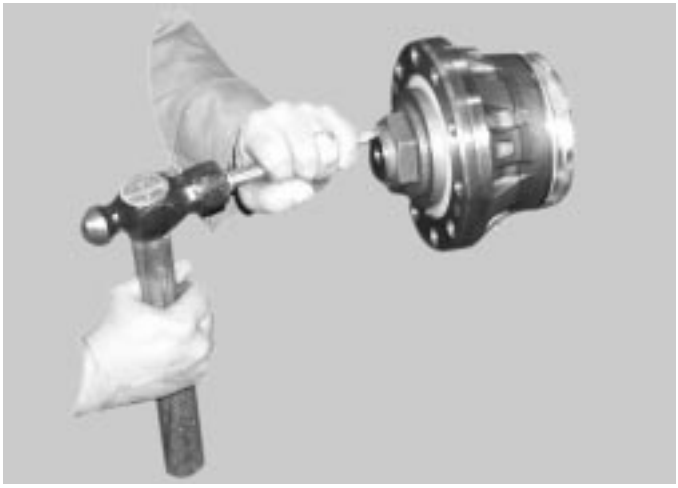
18. Remove bearing thrust washer.

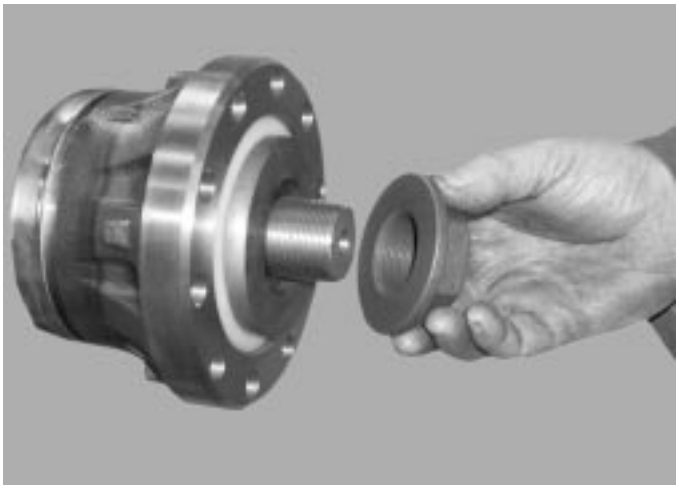
19. Fit bearing guide sleeve onto swivel thread. (See chart at front of swivel assembly)

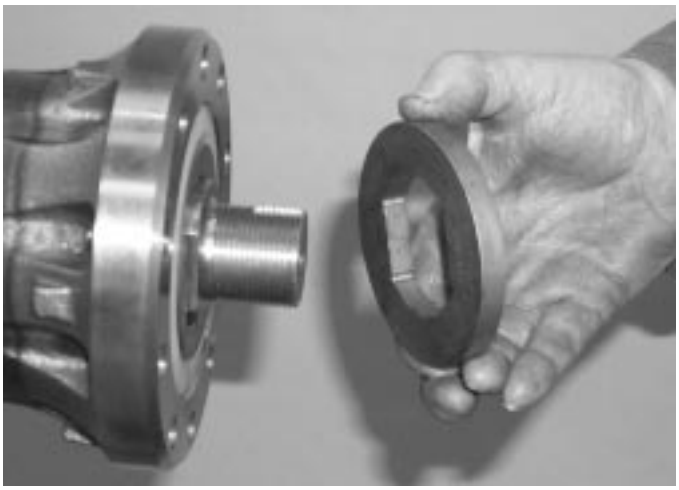
20. Carefully pull unitised hub bearing assembly towards end of swivel stub and remove.

21. Place on a suitable workbench and inspect for wear / damage, taking care not to damage the ABS exiter ring in the process.

NOTE:-
THE UNITISED BEARINGS USED ON THE NDS RANGE OF AXLES, ARE NON SERVICABLE ITEMS.
BEARINGS ARE PRE ADJUSTED, LUBRICATED AND HAVE SEALS FITTED AS PART OF THE MANUFACTURING PROCESS.
THE BEARINGS ARE GREASED FOR LIFE AND THERE IS NO NEED OR FACILITY FOR RE-LUBRICATION.







OVERHAUL PROCEDURES

SECTION 3 CONT'D

HUB END DISASSEMBLY

22. Loosen and remove brake bracket locknuts

Discard locknuts.

NOTE!
SPICER SPECIALITY AXLE DIVISION RECOMMENDS THAT ALL METAL LOCKNUTS ARE USED ONCE ONLY

24. Tap brake bracket with a hide mallet and pull it off its locating studs.

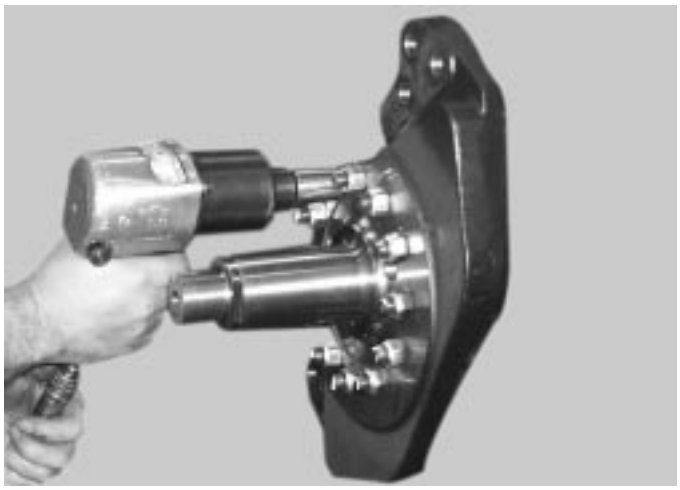
25. Place on a suitable work bench and inspect for wear / damage.

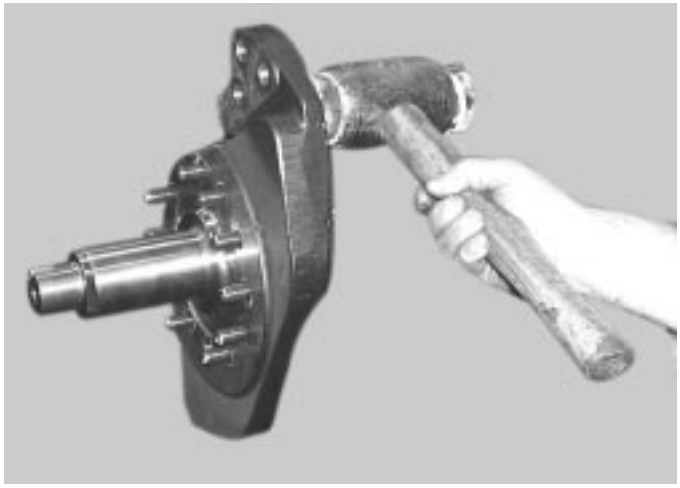
26. Inspect brake bracket studs for wear / damage replace if required.

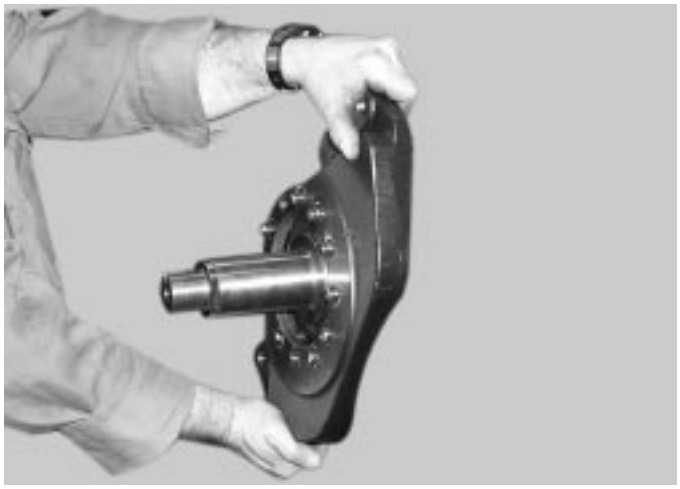
27 Inspect lockstop screws for wear / damage and remove for replacement if required.

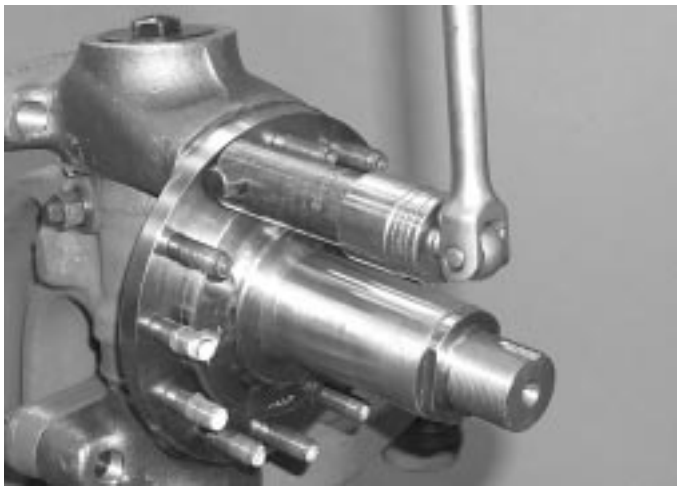
28. Remove ABS sensor and sensor bush inspect for wear / damage and replace if necessary.

Stripdown remainder of axle as described in swivel assembly removal and refitting instructions.









SECTION 4

OVERHAUL PROCEDURES

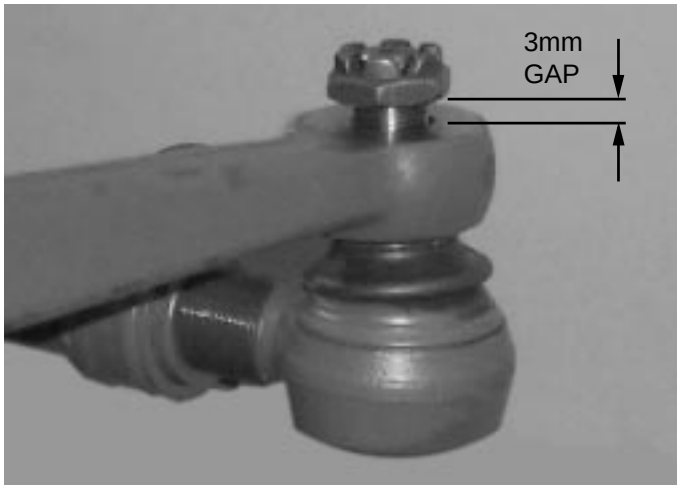
SWIVEL / AXLE BED DISASSEMBLY

3. Remove split pin (if fitted) and loosen but do not remove ball socket nuts on tie rod.

FOR EASE OF DISASSEMBLY:-
WHEN LOOSENING SELF LOCKING BALL PIN NUTS.
INSERTION OF A HEXAGONAL KEY (ALLEN KEY) INTO THE END OF THE BALL PIN ITSELF WILL AID IN REMOVAL.

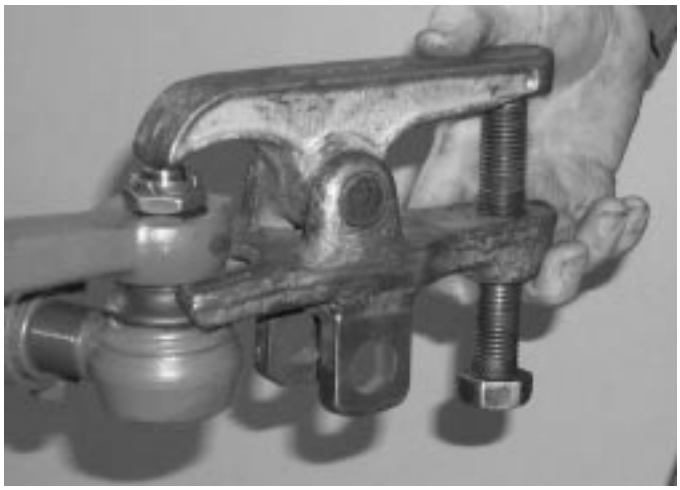
IF FOR SERVICE REASONS THE TIE ROD ONLY IS TO BE REMOVED IN ISOLATION WITHOUT REMOVING ANY OTHER PARTS.
IT MAY BE NECESSARY TO USE A LONG REACH THIN WALLED SOCKET IN CERTAIN APPLICATIONS.

4. Back off nuts approximately 3 - 4 mm



5. Using a suitable extraction tool, disconnect ball sockets from bottom steering lever.

6. Disconnect steering linkages from top steering lever, using a suitable extraction tool as in steps 3, 4, & 5



NOTE:-
WHEN SEPARATING BALL JOINTS FROM STEERING LEVERS, NEVER STRIKE AREAS AROUND BALL PIN TAPERS WITH A HAMMER, DUE TO POSSIBLE DEFORMATION OF BALL PIN TAPER.

ALSO TAKE CARE NOT TO TRAP THE RUBBER BOOT DURING REMOVAL OF SOCKET ASSEMBLY. AS THIS WOULD REQUIRE REPLACEMENT OF THE ENTIRE SOCKET ASSEMBLY.

7. Inspect rubber boots of socket assemblies as decribed in routine maintenance section. if damaged replace entire socket assembly.

SECTION 4 CONT'D

OVERHAUL PROCEDURES

SWIVEL / AXLE BED DISASSEMBLY

8. Remove lubrication nipples from top and bottom caps.

9. Remove top and bottom caps.
Discard Spacer and foam inserts.

NOTE:-
ON EARLIER AXLES AN 'O' RING MAY BE FITTED INSTEAD OF SPACER, THIS SHOULD BE DISCARDED ALONG WITH THE TOP/ BOTTOM CAP AND A NEW CAP AND SPACER SHOULD BE USED UPON REASSEMBLY.

10. Remove Cotter pin nut and washer, then drive out cotter pin using a soft metal drift.

11. Drive kingpin out of swivel / axle bed with a hide faced / brass hammer and a suitable drift.

Carefully remove swivel from axle beam.

WARNING:-
COMPONENT IS HEAVY.
CARE SHOULD BE TAKEN WHEN REMOVING.
ALSO TAKE CARE NOT TO DROP BEARING AND SHIMS WHEN SLIDING SWIVEL FROM AXLE BED

CLEANING

Once swivel has been removed clean all parts as below:-

1. Castings / forgings and rough parts
• Clean with wire brush or steam clean.

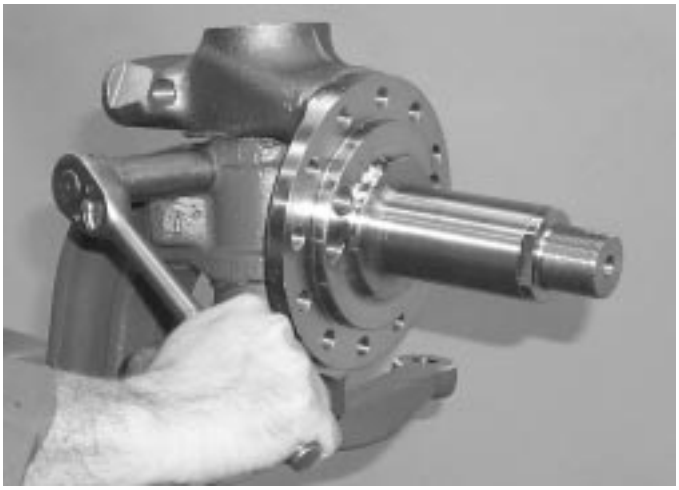
2. Steel parts
• Clean with suitable cleaning agent.
• Rinse thoroughly.
• Dry off using Clean rags.

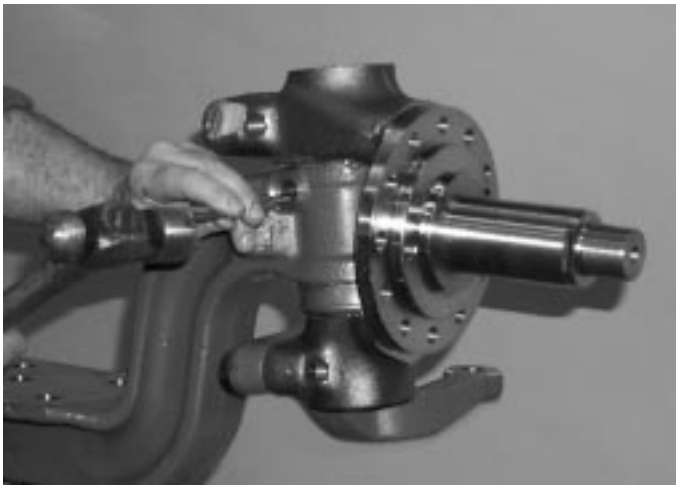
3. Inspect rubber boots of socket assemblies as decribed in routine maintenance section. if damaged replace entire socket assembly.

WARNING!

NEVER USE PETROL (GASOLINE) TO CLEAN PARTS DUE TO EXTREME COMBUSTABILITY!

DO NOT CLEAN HUB BEARING ASSEMBLY DUE TO POSSIBILITY OF SEAL DAMAGE.
TAKE CARE NOT TO USE WIRE BRUSH TO CLEAN BEARING JOURNALS ON SWIVEL.





SECTION 5

OVERHAUL PROCEDURES

SWIVEL DISASSEMBLY

1. Measure and record for later use the length of swivel stops.

2 Remove swivel stops and put in a safe place

3. Remove king pin bush dirt seals from swivel using a suitable tool.

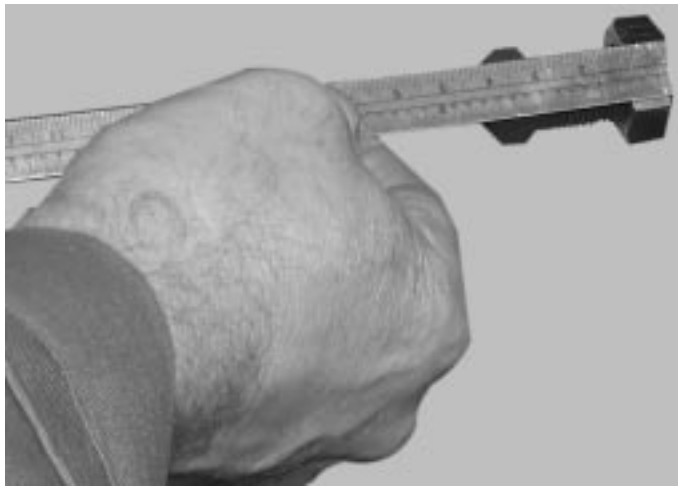
4. **Discard seals.**

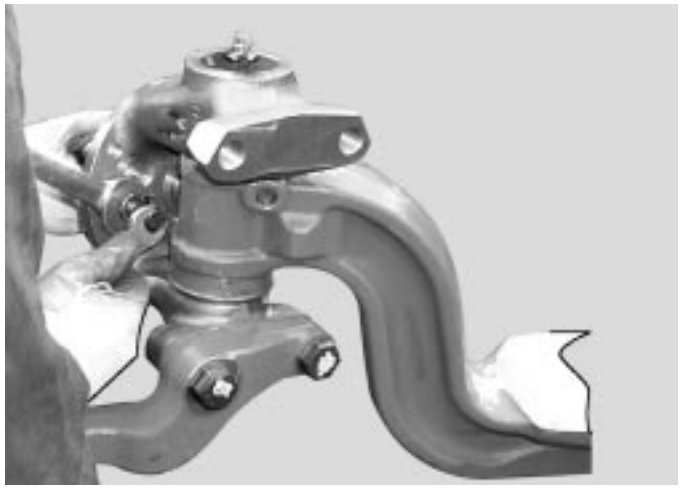
5. Remove swivel / king pin bushes using correct service tool
(see chart at front of this section)

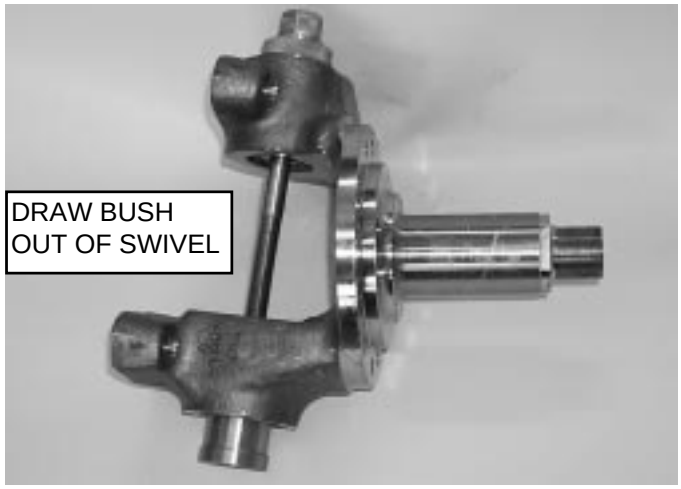
6. **Discard bushes.**

7. Remove swivel lock stops and check for wear / damage.
Replace if found to be faulty.

8. Thoroughly clean seal / bush area using a wire brush and suitable cleaning agent.







SECTION 6

OVERHAUL PROCEDURES

REMOVAL AND REFITTING OF STEERING LEVERS (THIS PROCEDURE CAN BE PERFORMED WITH EL EITHER ON OR OFF AXLE)

NOTE:-
THE FOLLOWING INSTRUCTIONS SHOULD BE STRICTLY ADHERED TO. FITMENT OF STEERING LEVERS IS ONE OF THE MOST SAFETY CRITICAL FACTORS ON THE VEHICLE

Removal

1. Using a suitable socket, loosen but do not remove the steering lever bolts.

2. Using a hide faced mallet, tap the steering lever to loosen it fromthe swivel face if required. Do not strike the steering lever with a steel hammer.

3. Carefully remove steering lever bolts and steering lever.

4. Discard steering lever bolts.

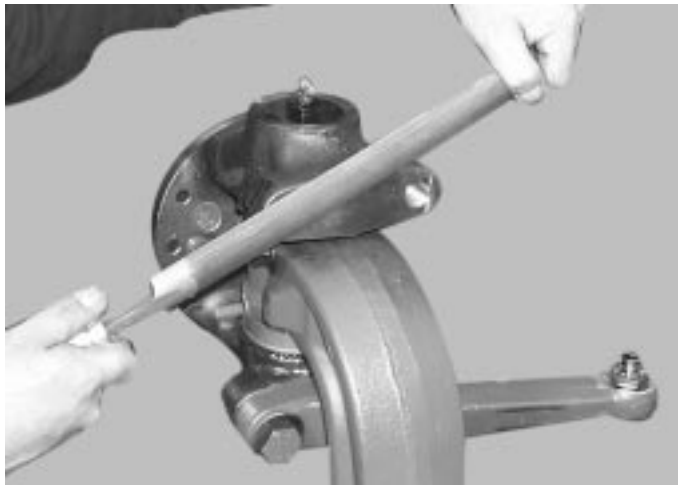
5. Clean and check the screw thread in the swivel, the thread should be un damaged

6. Clean and degrease the mating surfaces of steering lever and swivel

Refitting

1. Apply a small amount of Loctite 275 to new steering lever bolt threads.

2. Refit steering lever and tighten new bolts to specified torque



SECTION 7

SWIVEL REASSEMBLY

1. Lightly lubricate outside of replacement bushes with clean grease.

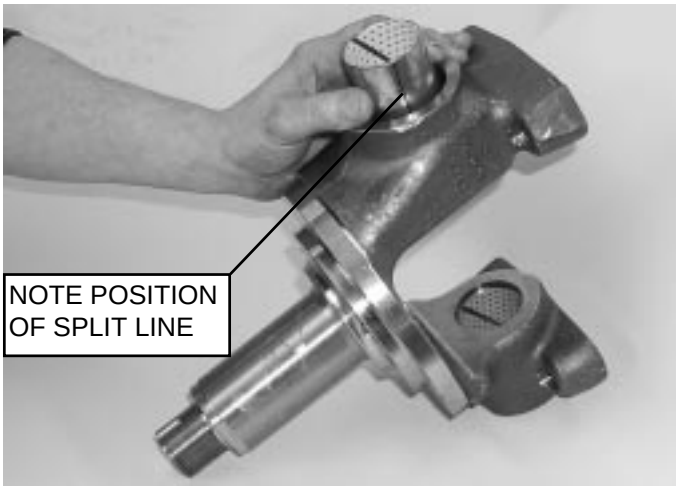
Hand start replacement bush in swivel bore.

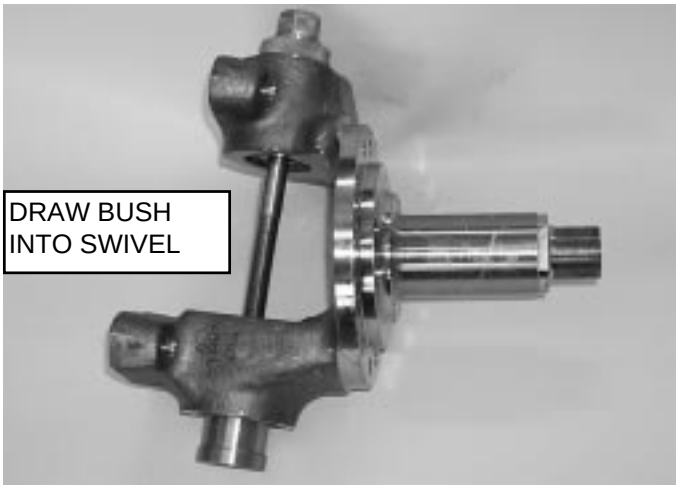
NOTE:-
ENSURE SPLIT LINE IN REPLACEMENT BUSH IS POSITIONED AS SHOWN IN DIAGRAM ON PAGE 11

3. Draw bush into swivel using correct service tool **(see chart at front of this section).**

4. Check bushes are to correct depth by tapping into position using top section of correct service tool **(see chart at front of this section)**.

5. Use same procedure for both upper and lower bushes.





SECTION 7 CONT'D

SWIVEL REASSEMBLY CONTINUED..

8. Install new upper and lower swivel seals using correct service tool **(see chart at front of this section)**. as follows:-

NOTE:-
USE OF CORRECT TOOL ENSURES THAT THE SEAL IS SEATED AT THE CORRECT DEPTH.
INCORRECT FITTING OF SEAL CAN CAUSE PROBLEMS WHEN FITTING THE SWIVEL ASSEMBLY TO AXLE BED.

A) Place seal onto tool, open side fist **see diagram on page 11** to check correct orientation.

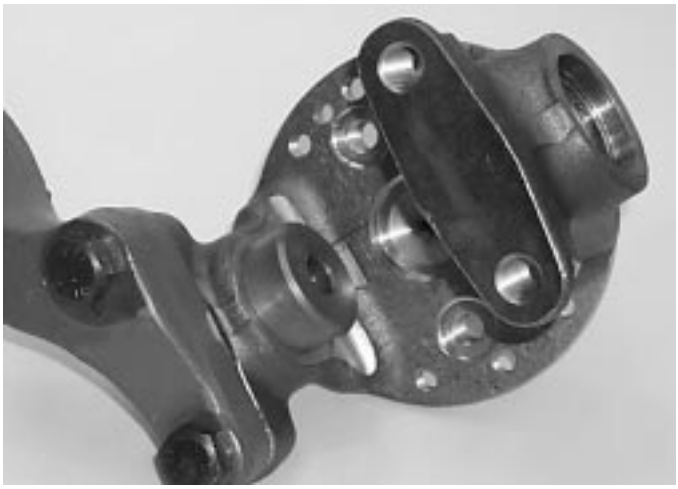
B) Position tool, into seal / bush bore in swivel as shown.

C) Insert remainder of tool, through swivel as shown.

D) Gently tap seal into swivel bore to depth.

NOTE:-
ENSURE LIP OF SEAL IS POSITIONED AS SHOWN IN DIAGRAM ON PAGE 11

SEAL SITS 0.25mm BELOW SWIVEL FACE. THIS HELPS TO PREVENT DAMAGE DURING ASSEMBLY OF SWIVEL ONTO AXLE BEAM.



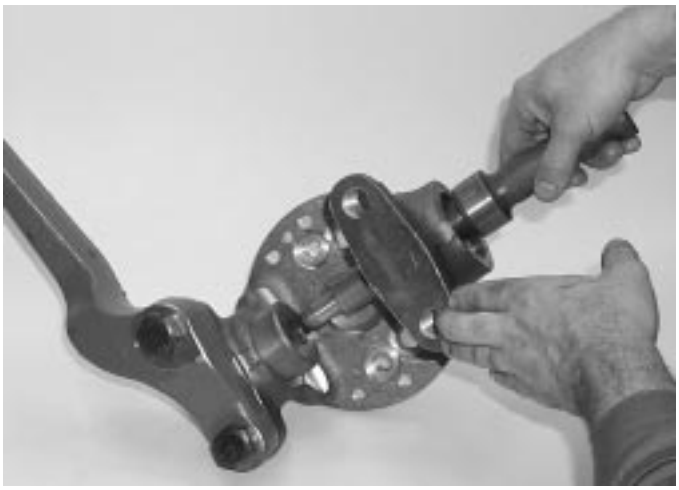
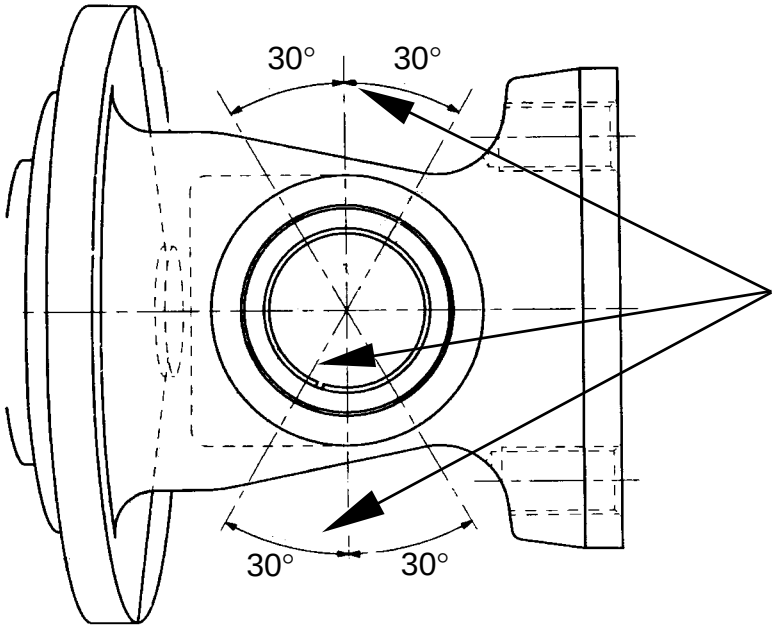
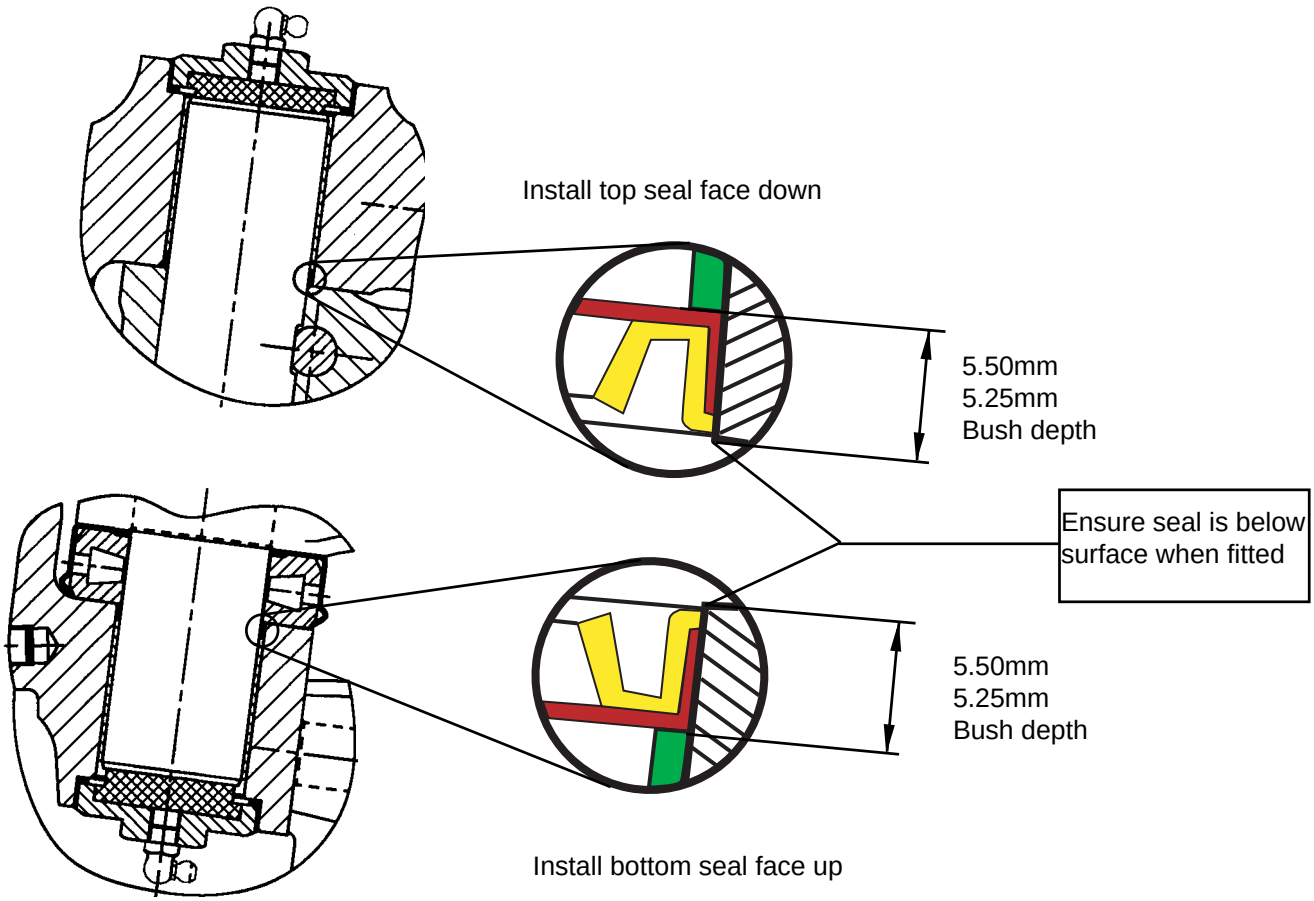


DIAGRAM SHOWING CORRECT BUSH SEAL INSTALLATION.





SECTION 8

OVERHAUL PROCEDURES

SWIVEL / AXLE BED REASSEMBLY

NOTE:-

ALWAYS REPLACE KINGPIN AND THRUST BEARING IF FOUND TO BE FAULTY.

1. Lightly lubricate the following components with clean grease before assembly:-

   • Thrust bearing areas of swivel
   • Axle beam ends
   • Kingpin bore of axle bed

2. Prepack dimples in bushing bores with grease.
   Also pack thrust bearing with grease, by manually kneading grease into rollers.
   (see lub. section for correct spec.)

NOTE:-

DO NOT DISASSEMBLE WHEN PACKING ON NO ACCOUNT SIMPLY WIPE GREASE AROUND INSIDE OF BEARING. ROLLERS MUST BE FULLY PACKED WITH GREASE TO AVOID FAILURE IN SERVICE.

3. Select a nominal shim pack of 0.13mm thickness.

4. Place shim pack onto bottom of swivel.

5. Place thrust bearing onto top of shim pack, ensuring that the bearing is the correct way up (see photograph.)

6. Insert setting tool **(see chart at front of this section)**. into bottom bore of swivel, thorugh bush, shims and thrust bearing. (this serves to assist in placing swivel onto axle bed).

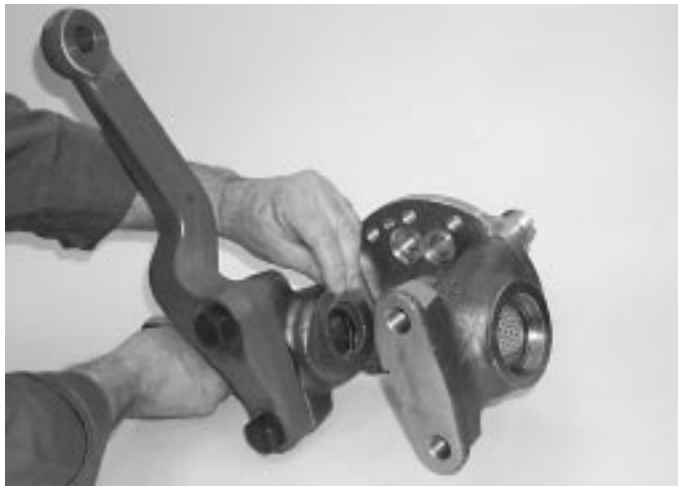
NOTE:-

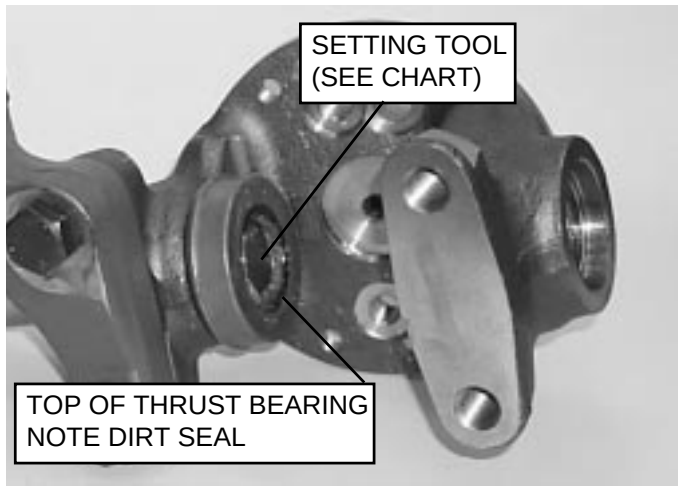
USE SETTING TOOL (SEE CHART AT FRONT OF THIS SECTION).
NOT KING PIN TO ALIGN BEARING AND SHIMS. THIS PREVENTS BEARING DIRT SEAL FROM BEING PUSHED UPWARDS AND CAUSING DIRT SEAL TO BECOME TRAPPED UPON ASSEMBLY OF SWIVEL TO AXLE BEAM.

7. Offer swivel, shims, thrust bearing and setting tool, up to axle beam.

WARNING:-

COMPONENT IS HEAVY. CARE SHOULD BE TAKEN WHEN LIFTING.





SECTION 8 CONT'D

OVERHAUL PROCEDURES

SWIVEL / AXLE BED REASSEMBLY

8. Position kingpin in top of swivel. Align slot in kingpin with cotter pin hole in bed.

FOR EASE OF FITTING!

SUGGEST THAT SLIGHTLY TURNING SWIVEL PIN WILL AID WHEN COTTER PIN IS TO BE FITTED LATER.

9. Drive kingpin down through the swivel and axle bed using a hide faced / brass hammer and a suitable drift until bottom of kingpin is flush with bottom of lower swivel bush. **(see diagram on page 11.)**

NOTE:-

AT THIS POINT IT IS NECESSARY TO CHECK THE VERTICAL PLAY IN THE SWIVEL AND ADJUST IF NECESSARY

END PLAY CHECKING / ADJUSTMENT

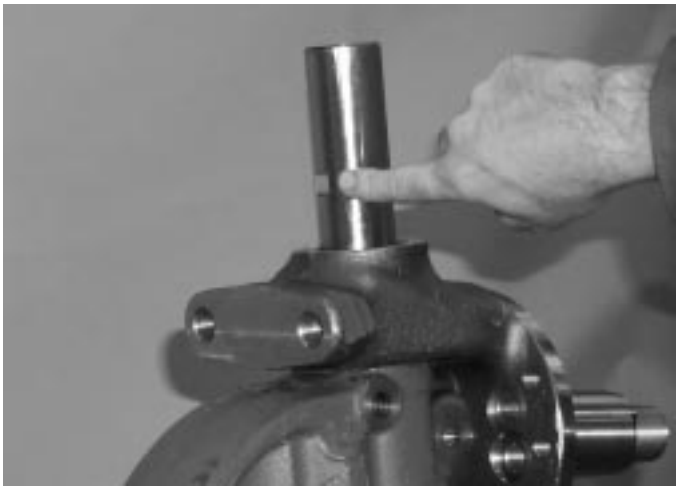
A. Position swivel in straight ahead position.

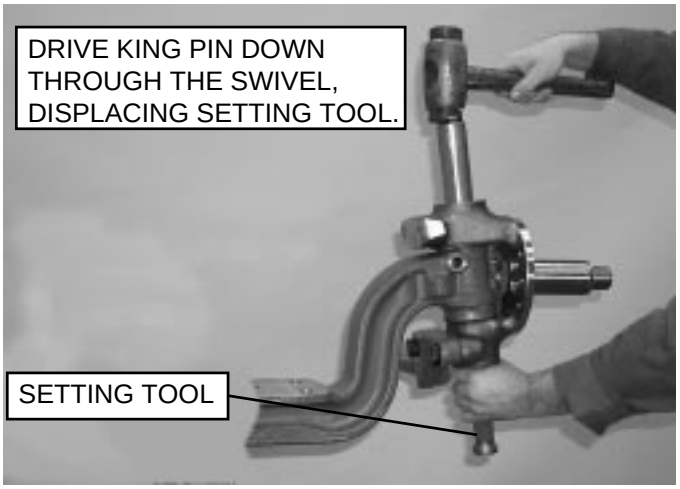
B. Mount a D.T.I on axle bed with stylus positioned on top face of swivel.

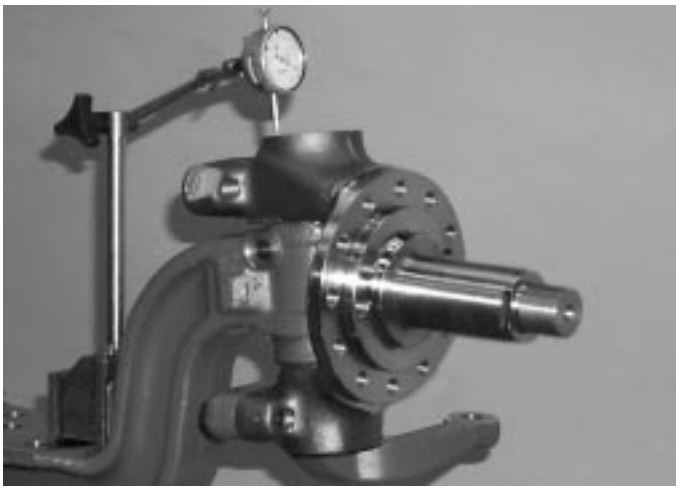
C. Position a suitable pry bar between axle bed and swivel and check for lift.

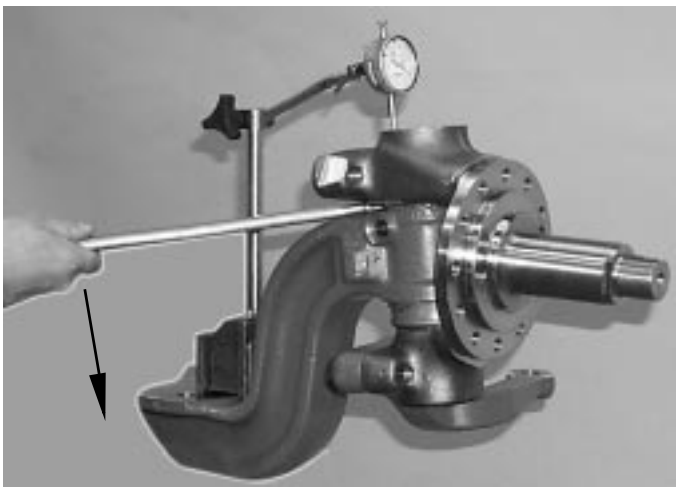
Correct reading should be between 0.05mm to 0.13mm.

D. Add or remove shims until correct D.T.I reading is obtained.









SECTION 8 CONT'D

OVERHAUL PROCEDURES

SWIVEL / AXLE BED REASSEMBLY CONTINUED.

10. Once vertical play adjustment is correct, check alignment of kingpin flat and cotter pin hole.

11. Install a new cotter pin.

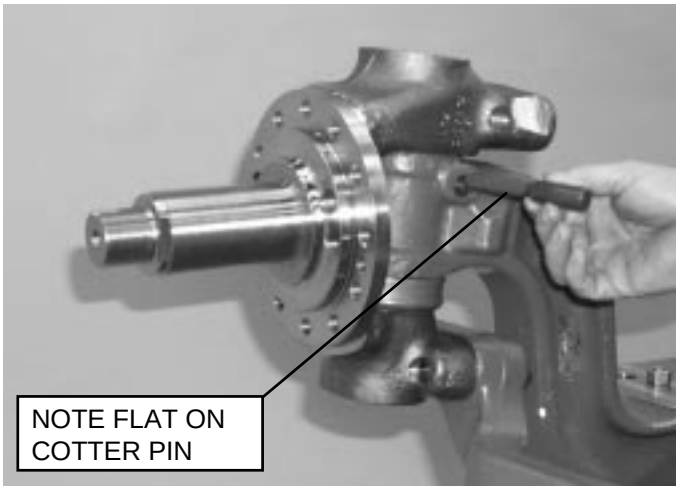
NOTE:-
COTTER PIN IS FITTED FROM REAR OF AXLE.

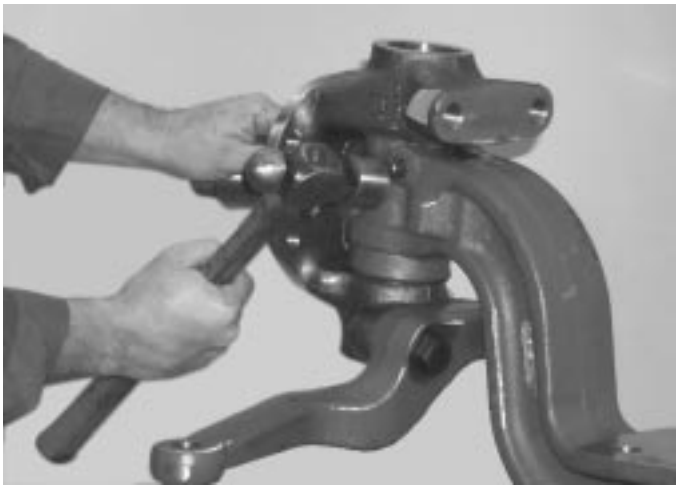
12. Drive cotter pin home using a hammer and a drift if necessary.

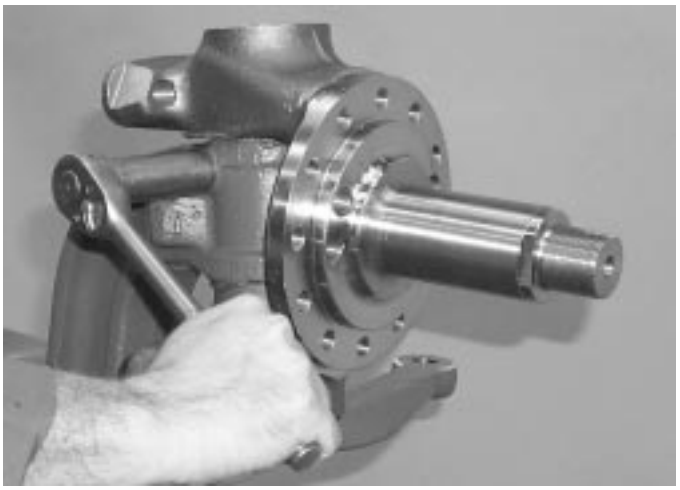
13. Fit new cotter pin washer and new nut. Tighten nut to correct torque.

14. Check cotter pin is correctly seated by tapping further with hammer and punch.

15. Re-check torque on cotter pin nut.







SECTION 8 CONT'D

OVERHAUL PROCEDURES

SWIVEL / AXLE BED REASSEMBLY CONTINUED.

16. Lightly grease spacer bores in top and bottom of swivel.
(This helps to hold the spacer in place)

17. Place a new spacer into top and bottom bores in swivel, and new foam insert lightly lubricated using clean oil on each top and bottom cap.
(this helps to prevent foam insert from deforming upon fitment of top / bottom caps)

18. Install new king pin top and bottom caps.

NOTE:-
SHOULD EXISTING TOP AND BOTTOM CAPS BE IN GOOD CONDITION. IT IS POSSIBLE TO RE-USE THEM; PROVIDED THE FOLLOWING PROCEDURE IS FOLLOWED:-

1) REMOVE ALL EXISTING SEALANT USING A WIRE BRUSH.
2) APPLY A BEAD OF LOCTITE 577 TO SECOND THREAD FOR 180° AND REFIT SPICER SPECIALITY AXLE DIVISION DOES NOT RECOMMEND RE USE OF TOP / BOTTOM CAPS WITH ORIGINAL SEALANT.

FOR EASE OF ASSEMBLY!
SUGGEST USING A SOCKET AND RATCHETING SPANNER TO PRESS DOWN TOP / BTM CAP AND TIGHTEN AT THE SAME TIME.
ON NO ACCOUNT USE AN AIR POWERED GUN TO TIGHTEN TOPCAPS DUE TO POSSIBILITY OF STRIPPING THREADS

19. Tighten top and bottom caps to correct torque.

20. Refit top and bottom cap lubricators, tighten to correct torque and orient in correct direction.

NOTE:-
TOP & BOTTOM CAP LUBRICATORS ARE SELF TAPPING.
TAKE CARE WHEN FITTING TO AVOID STRIPPING THREADS

21. Charge top and bottom bushes with grease until grease seepage is evident at both the swivel / axle bed interface and thrust bearing axle bed interface.

NOTE:-
IF GREASE IS SEEN TO SEEP FROM TOP AND BOTTOM CAP THREADS, THE '0' RING SEAL HAS BECOME DAMAGED AND MUST BE REPLACED.

SECTION 8 CONT'D

OVERHAUL PROCEDURES

SWIVEL / AXLE BED REASSEMBLY CONTINUED.

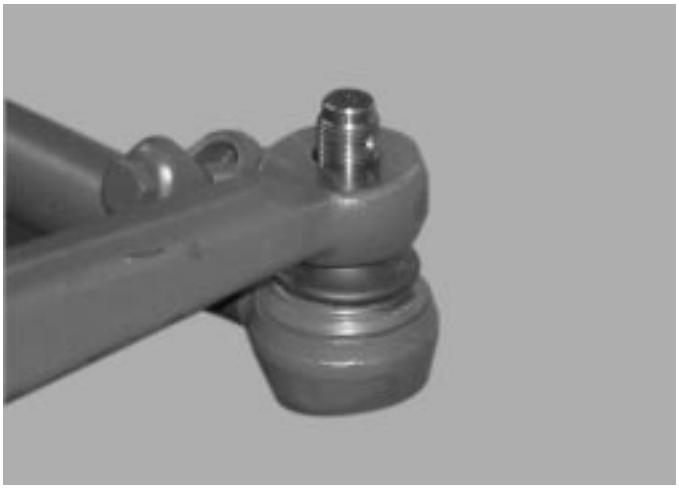
22. If Top and bottom steering levers have been removed for replacement / Checking, Refit to swivel using bolts and tighten to specified torque.

23. Offer tie rod assembly up to bottom steering lever.

24. Fit Ball socket nuts and tighten to specified torque.

NOTE:-

SUGGEST INITIAL TIGHTENING OF BALL PIN NUT TO LOWER TORQUE FIGURE. THEN TIGHTEN JUST ENOUGH TO ALIGN SPLIT PIN HOLE.
DO NOT EXCEED MAXIMUM TORQUE FIGURE.



SECTION 8 CONT'D

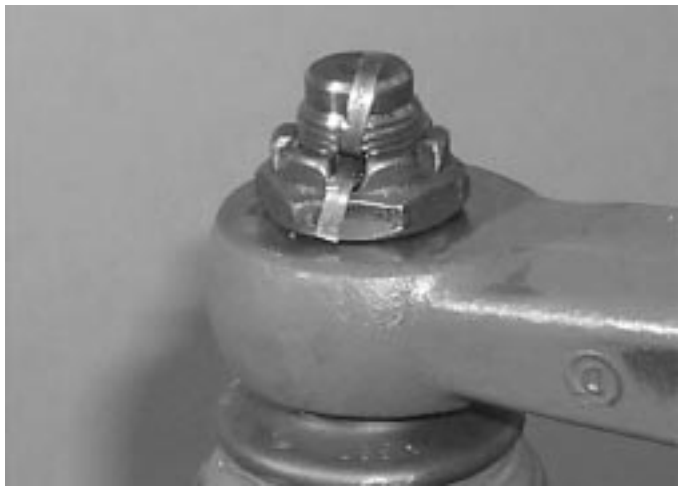
OVERHAUL PROCEDURES

SWIVEL /AXLE BED REASSEMBLY CONTINUED.

25. Check alignment of split pin holes in nut and ball pin. If necessary tighten ball pin nut to align holes.

26. Insert a new split pin into ball pin.

27. Using suitable pliers, bend new split pin to secure ball pin nut.



SECTION 9 TO ASSEMBLE HUB UNIT

Note :- Prior to assembly lightly oil all gears and oil seal faces, also pack all taper bearings withgrease (Shell Retinax LX or equivalent) using a bearing packer or manually kneading grease between rollers, race and cage before setting and rotated whildt being set.

OVERHAUL PROCEDURES

HUB END REASSEMBLY

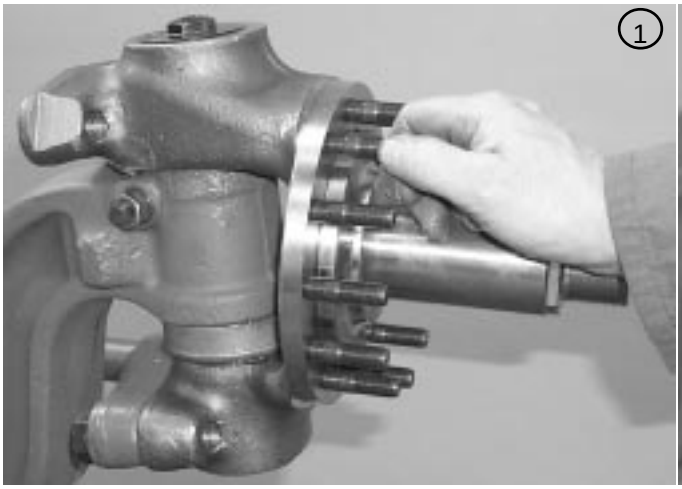
1. Follow instructions contained in swivel / axle bed reassembly section, before attempting to reassemble hub end.

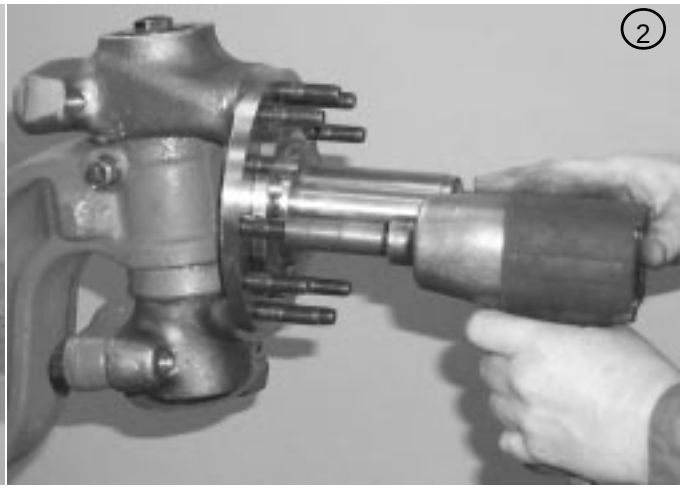
2. Once swivel has been refitted to axle bed, reftit any brake bracket studs that have been removed.

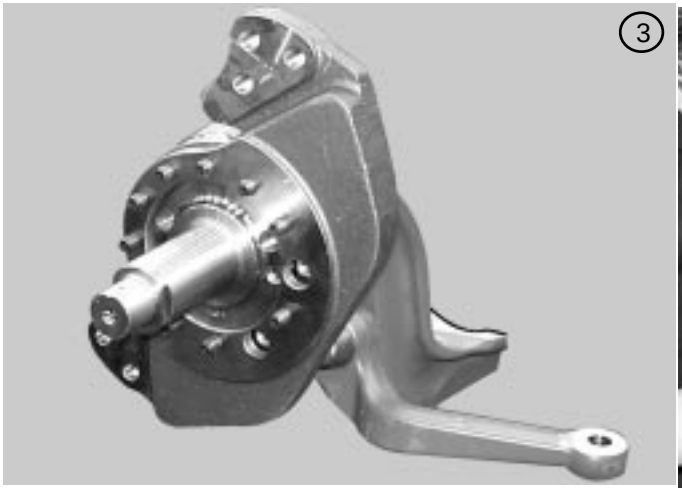
3. Tighten using a suitable stud runner to procedure shown on page 20.

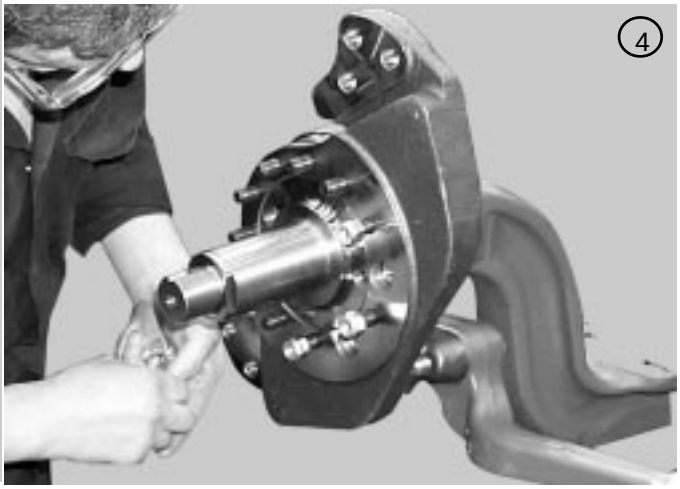
4. Offer brake bracket onto studs.
(Refer to hub / installation arrangement for correct orientation).

5. Fit brake bracket locknuts onto brake bracket studs and tighten in correct sequence (as shown on following page)
to specified torque.



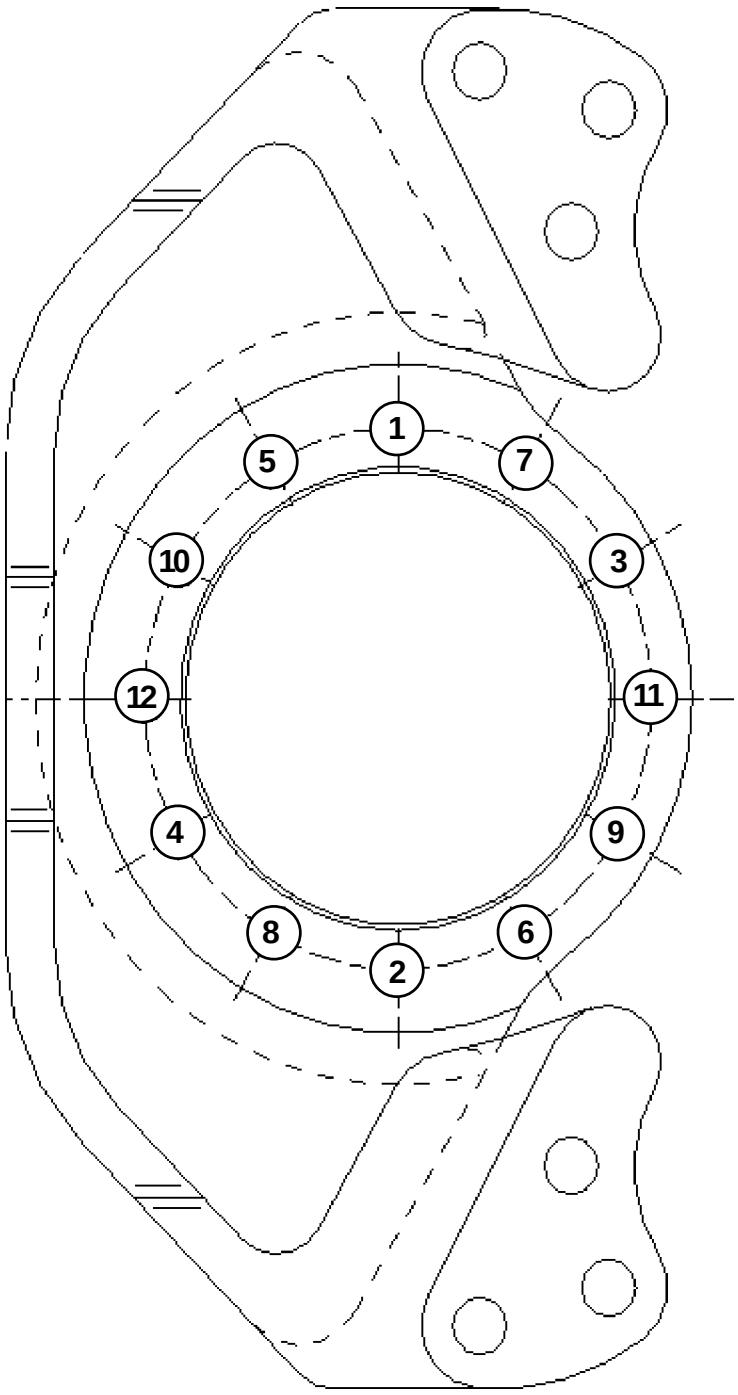






TIGHTENING TORQUE SEQUENCE FOR 12 STUD BRAKE FIXING

TP1636



OVERHAUL PROCEDURES

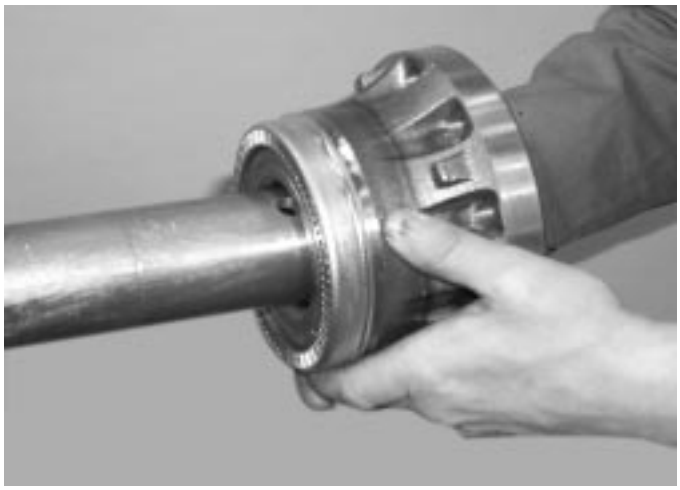
SECTION 9 CONT'D

HUB END REASSEMBLY CONTINUED

6. Fit Unitised hub bearing guide sleeve onto swivel stub .
(see chart at front of swivel section)

7. Lightly smear the axle stub bearing journal with a thin layer of anti-fretting assembly paste, white
i.e Optimol Paste White T (Castrol) or equivalent.

8. Offer new unitised bearing onto swivel stub.



OVERHAUL PROCEDURES

SECTION 9 CONT'D

HUB END REASSEMBLY CONTINUED

9. Place unitised hub bearing thrust washer onto axle stub.

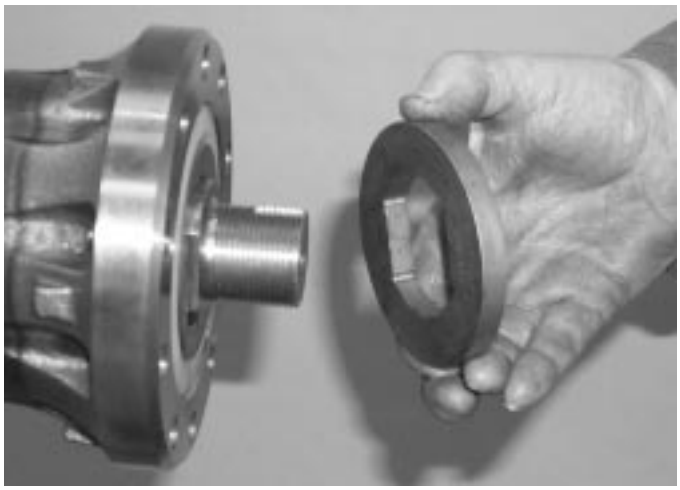
10. Fit hub nut.

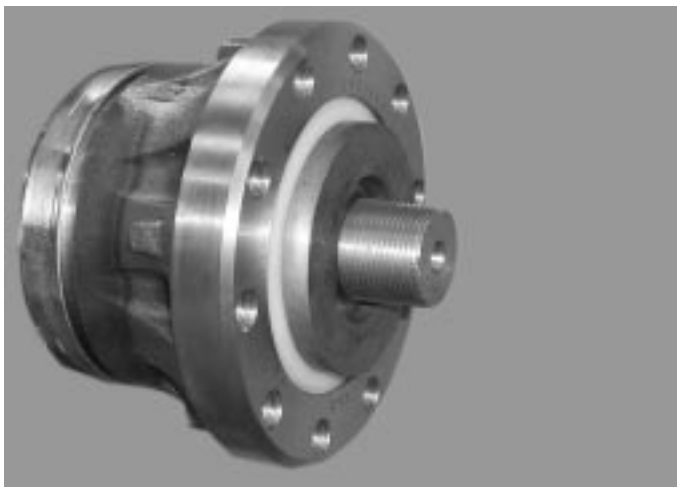
Tighten to specified torque.

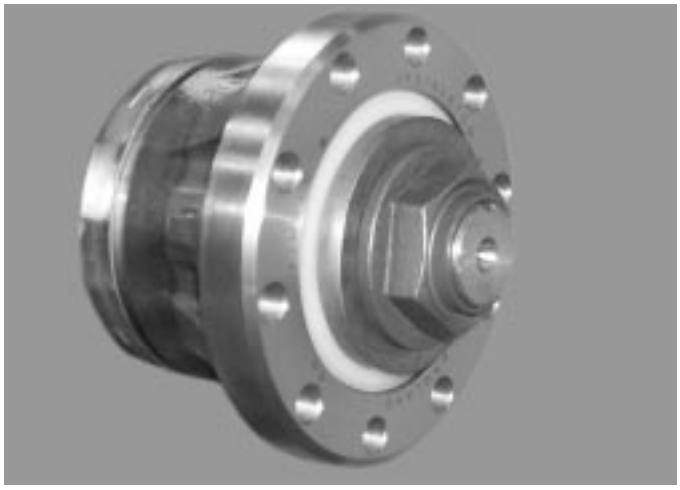
NOTE:-
ROTATE UNITISED HUB BEARING WHILST TIGHTENING.
DO NOT STAKE HUB NUT AT THIS STAGE.

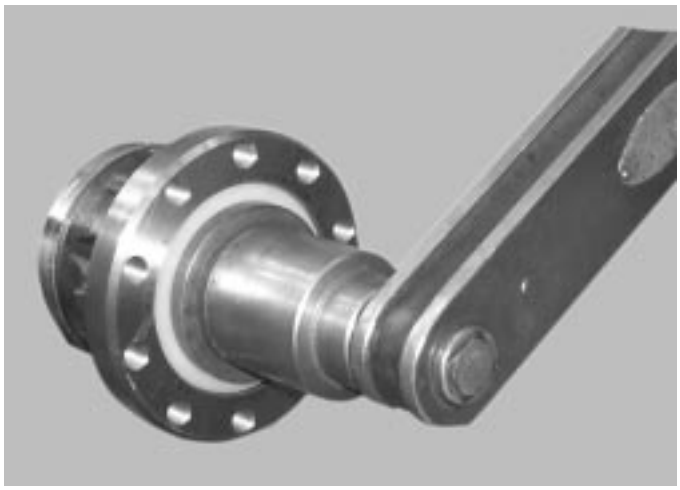
12. Check the bearing end play as described in section 2 (Routine maintenance manual NDS 2). If a new bearing is fitted, the end play figure should not exceed 0.050mm.

NOTE:-
IF ORIGINAL BEARING UNIT IS REFITTED / A NEW UNIT IS FITTED, AND END FLOAT IS MEASURED AT 1mm, WITH HUB NUT FULLY TIGHTENED TO CORRECT TORQUE, THEN THE RETAINING CLIP WITHIN THE UNIT IS DAMAGED / DISPLACED AND A NEW UNIT MUST BE FITTED.





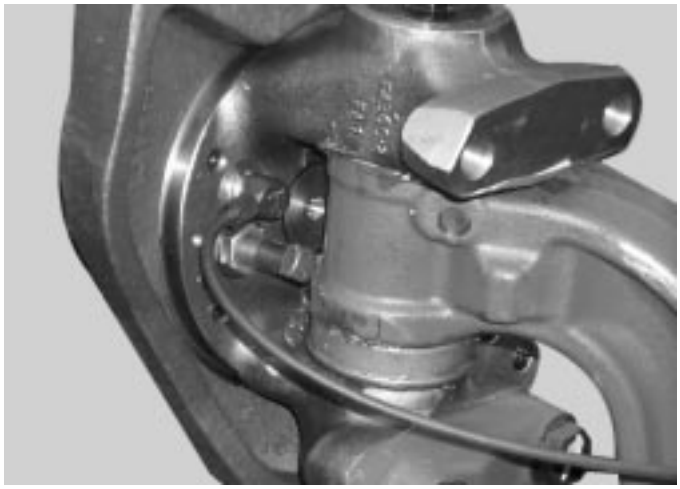




OVERHAUL PROCEDURES

SECTION 9 CONT'D

HUB END REASSEMBLY CONTINUED



13. Refit ABS sensor bush and sensor into swivel

NOTE:-
A NEW SENSOR BUSH SHOULD BE FITTED WHENEVER A NEW SENSOR IS FITTED.
IF FITTING A NEW SENSOR AND BUSH INTO AN ABS READY AXLE. SENSOR AND BUSH SHOULD BE SUPPLIED FROM THE SAME MANUFACTURER.

14. Push sensor through bush until it comes into contact with polewheel on hub bearing assembly.

15. Insert 1 - off modified hub flange bolt (IE with bolt head removed) or a stud into unitised bearing assembly hand tight, to serve as a winding handle.

16. Rotate hub bearing assembly through at least one revolution.

THIS SERVES TO SET THE CORRECT GAP BETWEEN SENSOR AND POLEWHEEL.

OVERHAUL PROCEDURES

SECTION 9 CONT'D

HUB END REASSEMBLY CONTINUED

17. Check A.B.S. sensor performance as follows :-

a) Insert the probes from a volt-meter into the two plugs in the sensor connector.

b) set the voltmeter to read mili-volts AC.

c) Rotate the hub in any direction at a constant speed of 60Hz (7Kph).
To determine this speed use the following calculation ;

$$RPM = \frac{60Hz}{z} \times 60 \text{ secs}$$

where z = the number of teeth on the pole wheel.

Note :- The reading may not be steady due to the possibility of pole wheel run out and the inconsistent speed of the wheel.

d) The maximum reading (Vmax) must not be more than 80% greater than the minimum reading (Vmin). ie.

$$\frac{Vmax}{Vmin} \leq 1.8$$

If the following is true then it is likely that there is excessive pole wheel runout. The pole wheel installation will therefore need to be inspected and remounted or replaced.

$$\frac{Vmax}{Vmin} > 1.8$$

e) The minimum reading must be greater than the voltage threshold (Vt) ie.

$$Vmin. > Vt$$

$$Vt. = 60mV$$

If this is not the case, then the sendsor gap is too large or there may be excessive pole wheel runout. The pole wheel will therefore need to be inspected and remounted or replaced.

f) If sections d) and e) are satisfied, then the installation can be considered as satisfactory.

Note :- The above test procedure is as recommended by A.B.S. manufacturers.

OVERHAUL PROCEDURES

SECTION 9 CONT'D

HUB END REASSEMBLY CONTINUED

18. Once ABS has been checked and found to be correct, Stake the hub nut by deforming with a round nosed chisel.

19. Using the modified hub flange bolt as a guide. carefully position brake disc onto unitised hub bearing.

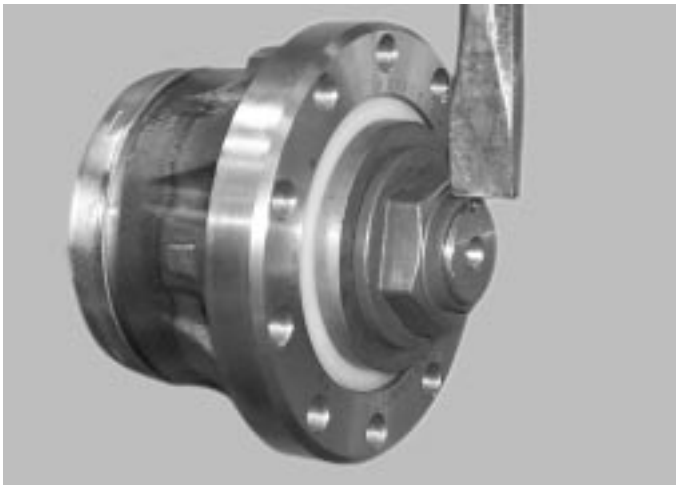
20. Tap securely home
(using a hide faced hammer to avoid damaging the brake disc itself.)

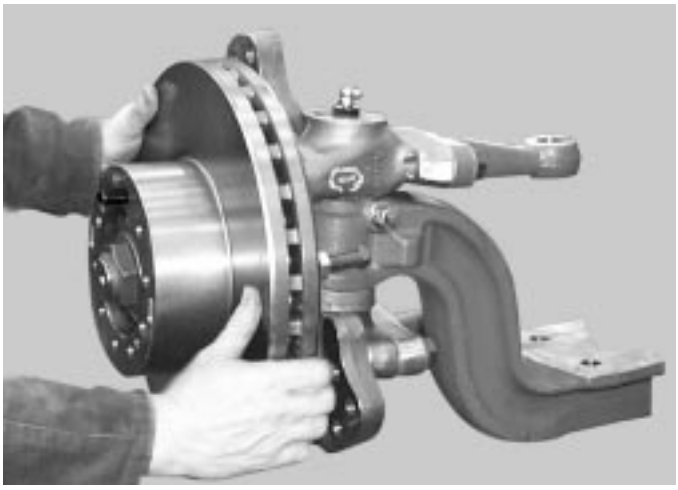
21. Remove the modified hub flange bolt at this point.

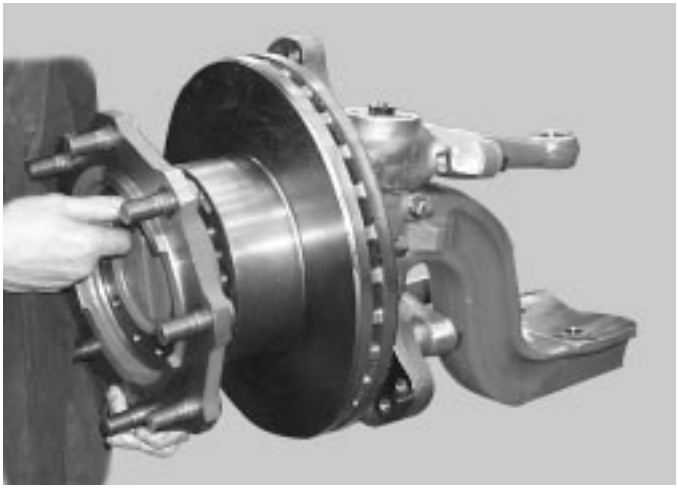
22. Carefully offer hub flange up to
brake disc / unitised hub bearing assembly and hold in position by inserting 1 - off hub flange bolt and tightening hand tight.

23. Insert remainder of hub flange bolts.

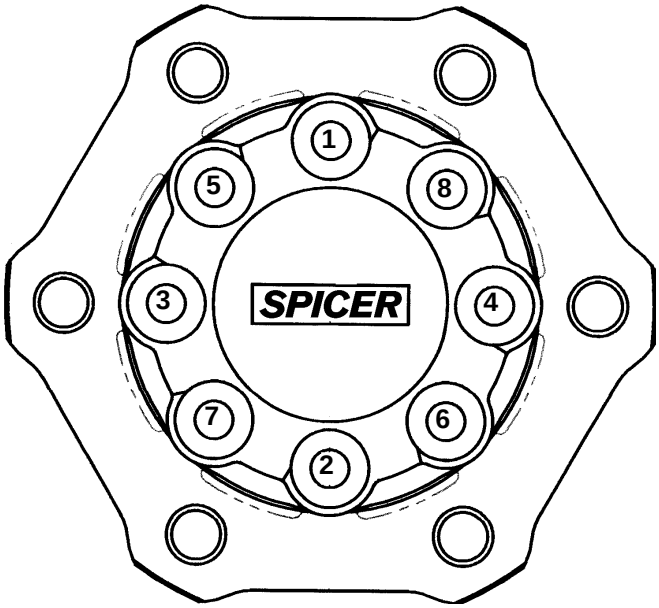
24. Tighten to correct torque using selection procedure as shown on following page.



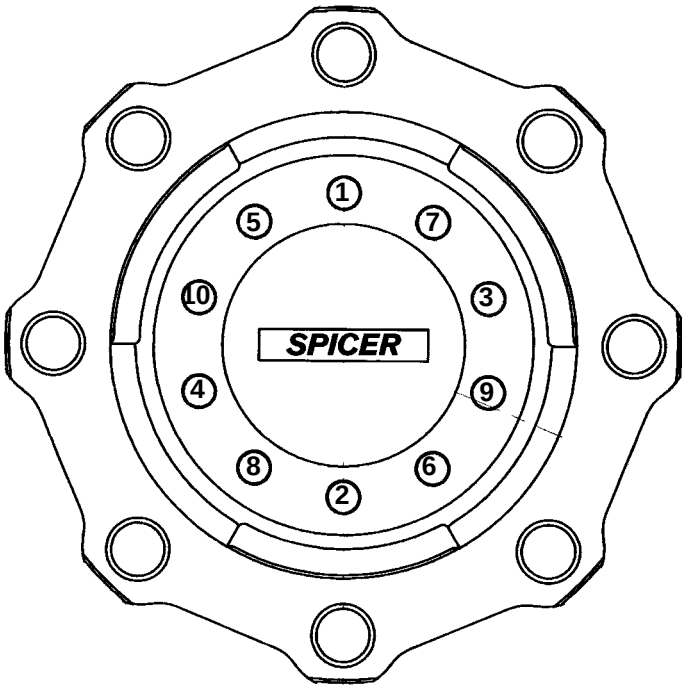




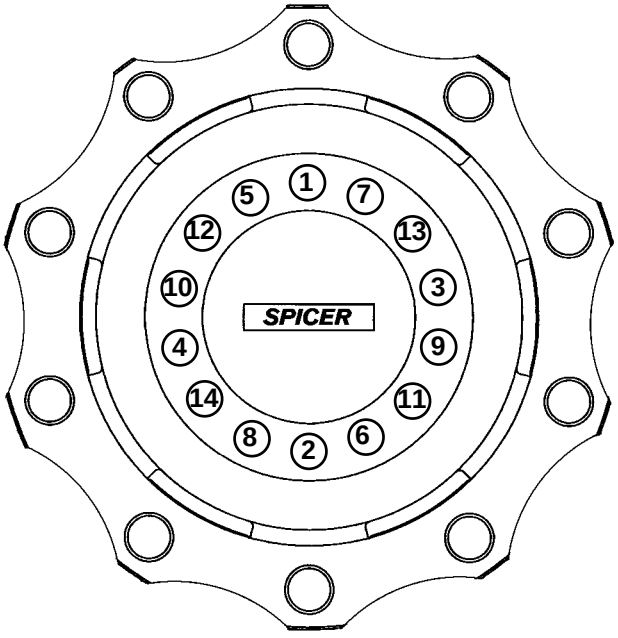
HUB FLANGE BOLT TIGHTENING TORQUE SEQUENCE FOR 8 BOLT FIXING



HUB FLANGE BOLT TIGHTENING TORQUE SEQUENCE FOR 10 BOLT FIXING



HUB FLANGE BOLT TIGHTENING TORQUE SEQUENCE FOR 14 BOLT FIXING



OVERHAUL PROCEDURES

SECTION 9 CONT'D

HUB END REASSEMBLY CONTINUED

25) Once the hub flange has been correctly fitted; it is necessary to check the axial run out of the brake disc.

26) Position a metric dial test indicator onto axle in a suitable position as shown.

NOTE:-
POSITION MAY VARY DEPENDENT ON AXLE SPECIFICATION

27) Position stylus of dial test indicator onto brake disc as shown.

28) Rotate the hub through 360° and note any movement of the dial test indicator.

NOTE:-
MAXIMUM AXIAL RUNOUT IS 0.1mm

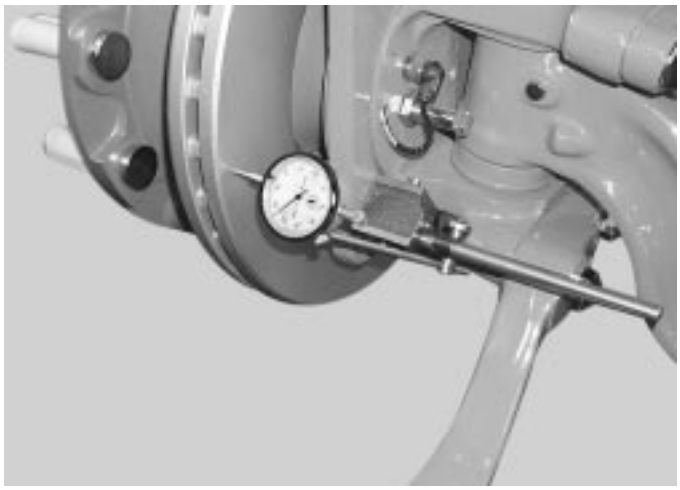
29) Should axial runout exceed 0.1mm. the brake disc is out of specification .

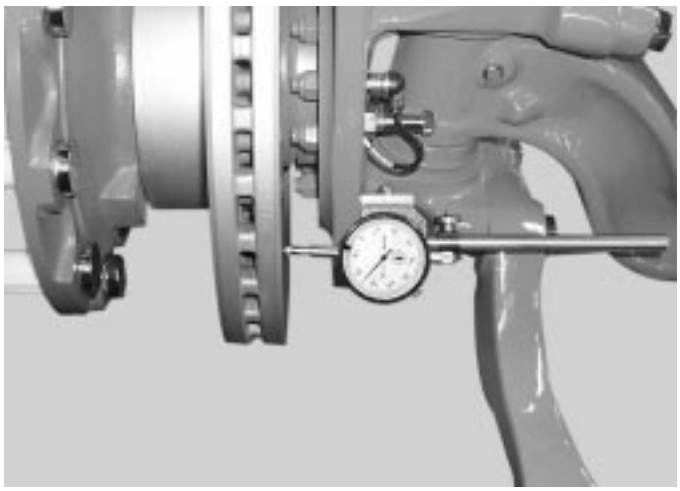
30) Remove and check out of specification disc to ensure no damage has occured to the mounting faces, or that no dirt is present.

31) Remove any dirt found on the mounting faces and refit and re check disc.

NOTE:-
DAMAGED DISCS SHOULD BE REPLACED AS A MATTER OF COURSE!

32) Should it be found that a cleaned and refitted disc is still out of specification; it must be replaced.





OVERHAUL PROCEDURES

SECTION 9 CONT'D

HUB END REASSEMBLY CONTINUED

33. Using suitable lifting equipment, support the brake caliper.

WARNING!
BRAKE CALIPER IS HEAVY.

34. Offer brake caliper up to brake bracket. (Ensure correct hand of brake caliper is selected)

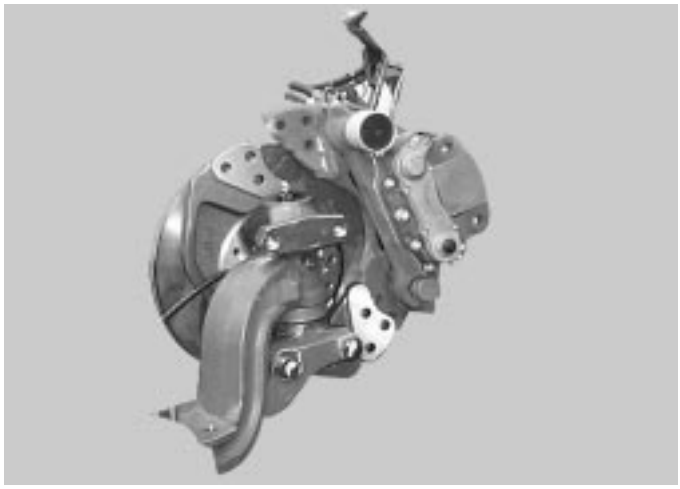
35. Insert brake caliper retaining bolts and tighten hand tight.

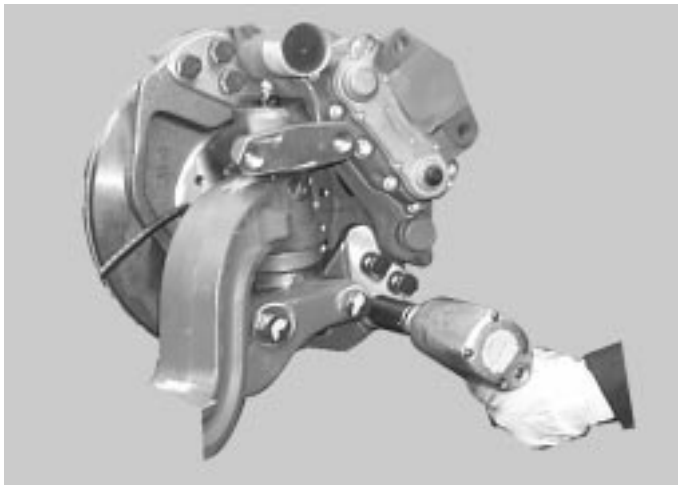
36. Tighten brake caliper bolts to secure assembly.

Remove caliper lifting equipment

WARNING!
BRAKE CALIPER IS HEAVY
ENSURE WEIGHT IS FULLY SUPPORTED BY RETAINING BOLTS BEFORE REMOVING LIFTING EQUIPMENT.

38. Tighten brake caliper bolts to correct torque.





OVERHAUL PROCEDURES

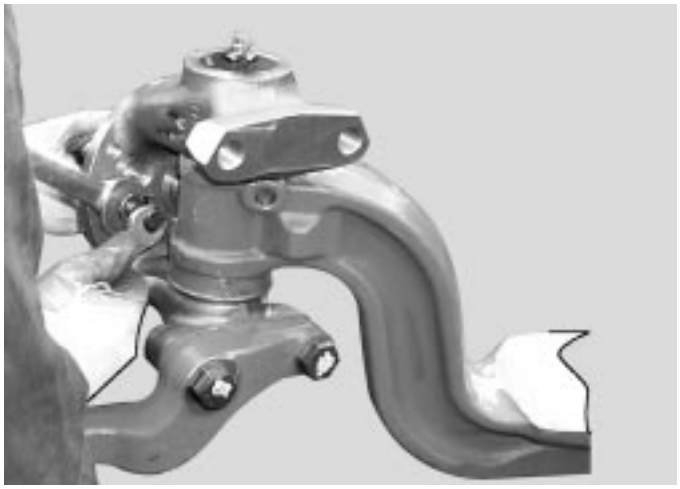
SECTION 9 CONT'D

HUB END REASSEMBLY CONTINUED

39. Refit lockstop screws and adjusting nuts

40. Reset lockstop screws to achieve correct lock angles as shown on installation drawing or vehicle manufacturers specifications.

NOTE:-
DO NOT ALLOW LOCKSTOP THREADS TO PROTRUDE THROUGH FRONT FACE OF SWIVEL.



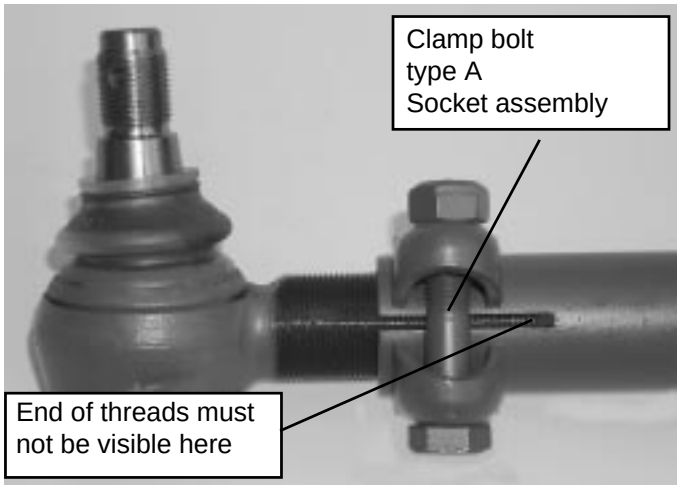
41. Check wheel alignment as follows :-

a) Set axle in straight ahead position.

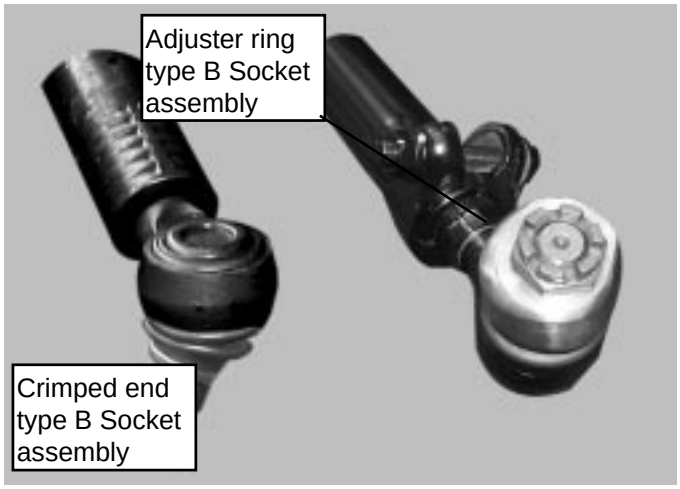
b) At a point level with wheel centre, measure distance over hubs / wheel rims, both in front and behind axle centre.

c) Front measurement 'B' should be 0.0" to 0.04" (0.0 to 1mm) **LESS** than rear measurement 'A'.

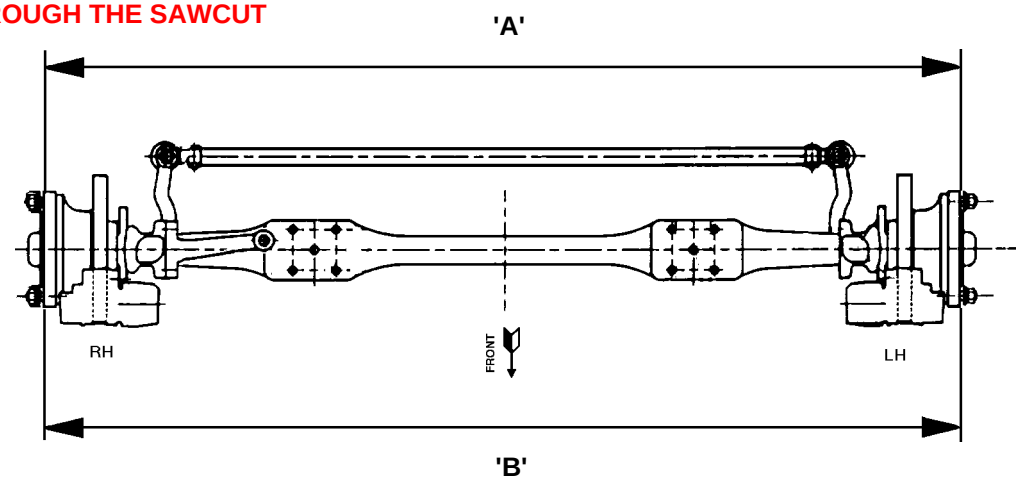
d) Any adjustment on type A socket and tie rod assemblies can be effected by slackening clamp bolts in ball sockets and rotating track rod tube.
For type B socket and tie rod assemblies, slacken the clamped end of the assembly and use the adjuster ring.



e) After adjustment, tighten clamp bolts to specified torque.



NOTE:-
WHEN ADJUSTING TYPE A TIE RODS, ENSURE SOCKET THREADS ARE EQUALLY POSITIONED IN EACH END OF THE TIE ROD AND THAT THE END OF THE SOCKET THREAD IS NOT VISIBLE THROUGH THE SAWCUT



OVERHAUL PROCEDURES

SECTION 9 CONT'D

HUB END REASSEMBLY CONTINUED

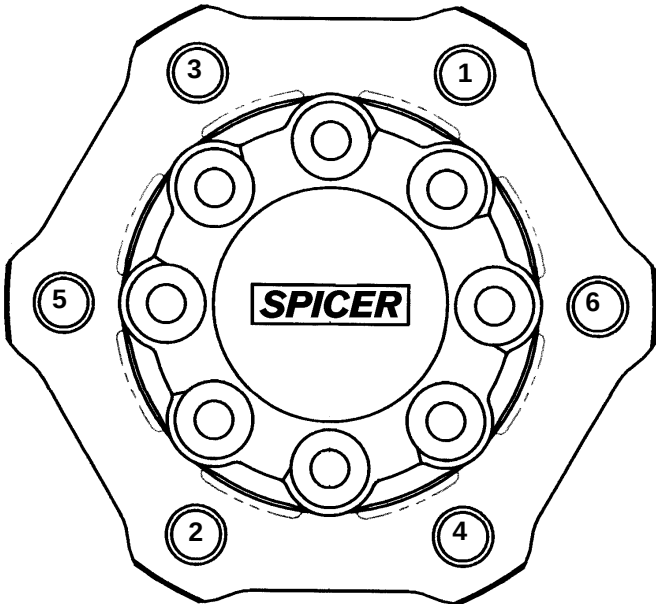
42. Re-connect brake to vehicle hydraulic system as recommended in brake manufacturer's manual.

43. Clean interfaces of wheelnuts, wheel rim & hub then re-fit road wheels securing with wheel nuts and tighten in correct sequence (as shown on following page) to specified torque.

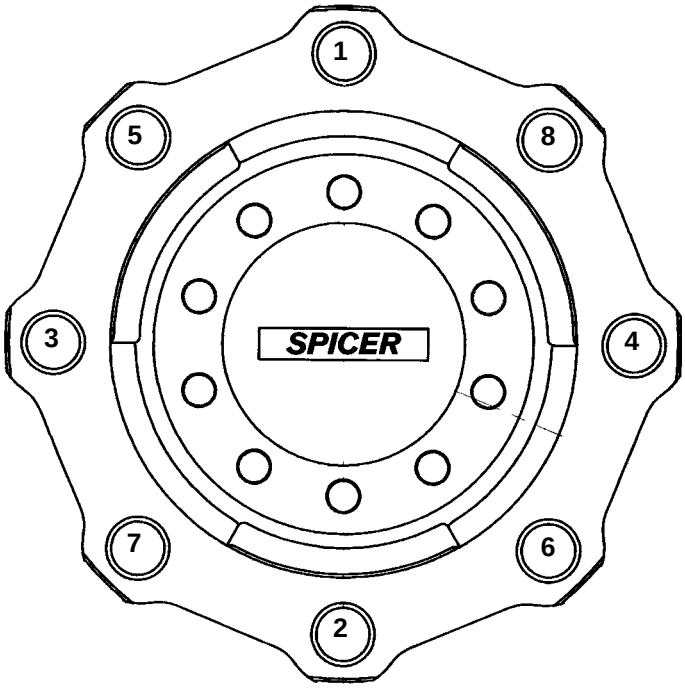
NOTE:-
INTERFACES MUST BE FREE FROM DIRT, INCLUDING BRAKE LINER MATERIAL DEBRIS, RUST AND PAINT. FAILURE TO KEEP INTERFACES CLEAN CAN AND WILL CAUSE WHEEL RIM TO DISTORT UPON TIGHTENING OF WHEEL NUTS
FOR FURTHER DETAILS SEE BS AU50 : part 2 : section 7A : 1995

44. Remove axle supports and lower vehicle to ground.

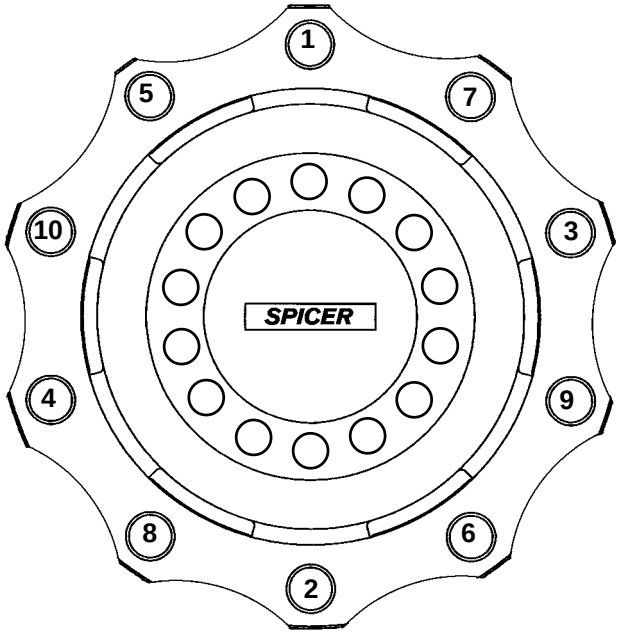
WHEELNUT TIGHTENING TORQUE SEQUENCE FOR 6 STUD FIXING



WHEELNUT TIGHTENING TORQUE SEQUENCE FOR 8 STUD FIXING



WHEELNUT TIGHTENING TORQUE SEQUENCE FOR 10 STUD FIXING



SECTION 10 FINAL ASSEMBLY

10.1 Position brake caliper unit (12) over brake disc (57) and secure with bolts and washers (15 & 14), tightening bolts to 433 / 479lbs.ft. (587 / 649Nm.).
102 Re-connect brake caliper to air system.
10.3 Re-fit road wheels, securing with wheel nuts (5 posn.).
10.4 Check axle supports then lower vehicle to ground.
10.5 Remove chocks and jacks.
10.6 Fill hub unit with clean gear oil - see lubrication instructions at front of this manual, page A3.
10.7 Fit filler plug in hub cap (59).

TORQUE TABLE FOR NDIFS80P HUB UNIT WITH KNORR AIR DISC BRAKE

Item No	Description	Torque
1	Hub pinch bolt nut	26 / 32 lbs ft (35 / 43 Nm)
15	Brake caliper setscrew	433 / 479lbs. ft. (587 / 649Nm.)
22	Top cap setscrew	51 / 62 lbs. ft. (69 / 84 Nm)
26	Swivel pin nut	500 / 700lbs.ft. (678 / 949Nm.)
28	Caliper bracket nut	85 / 103lbs.ft. (115 / 140Nm)
30	Stop nut	85 / 103lbs.ft. (115 / 140Nm)
35	Bottom lever nut	285 / 315 lbs ft (386 / 427 Nm)
36	5th link lever nut	285 / 315 lbs ft (386 / 427 Nm)
43	Cotter pin nut	51 / 62lbs.ft. (69 / 84Nm.)
49	Bottom cap setscrew	26 / 32 lbs ft (35 / 43 Nm)
56	Caliper bracket nut	85 / 103lbs.ft. (115 / 140Nm.)
58	Brake disc setscrew	222 / 246lbs.ft. (301 / 334Nm.)
61	Hub cap setscrew	26 / 32lbs.ft. (35 / 43Nm.)

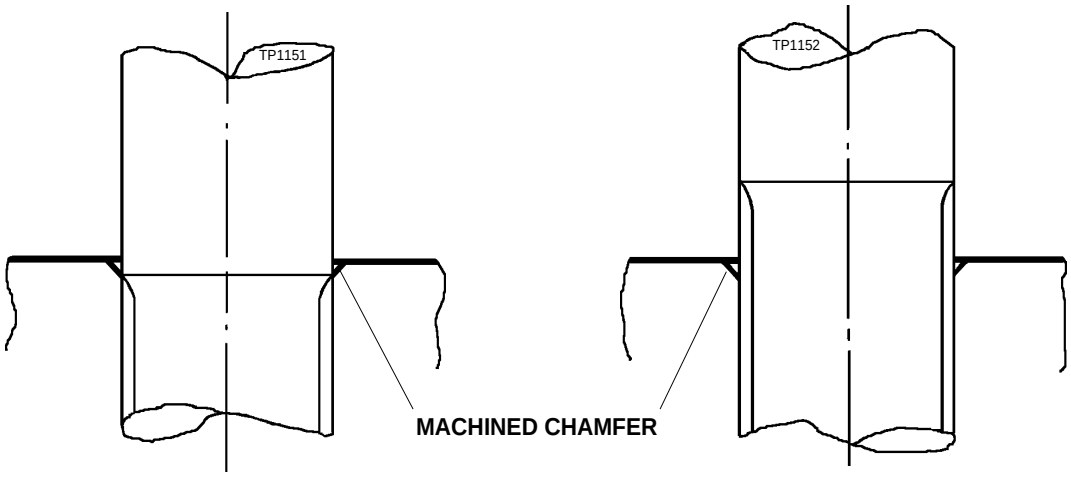
Note :- for stud fitting / setting procedures see page B12.

TP1193

KIRKSTALL SPECIALITY AXLE DIVISION

STANDARD STUDS - FITTED INTO MACHINED CHAMFERED HOLES

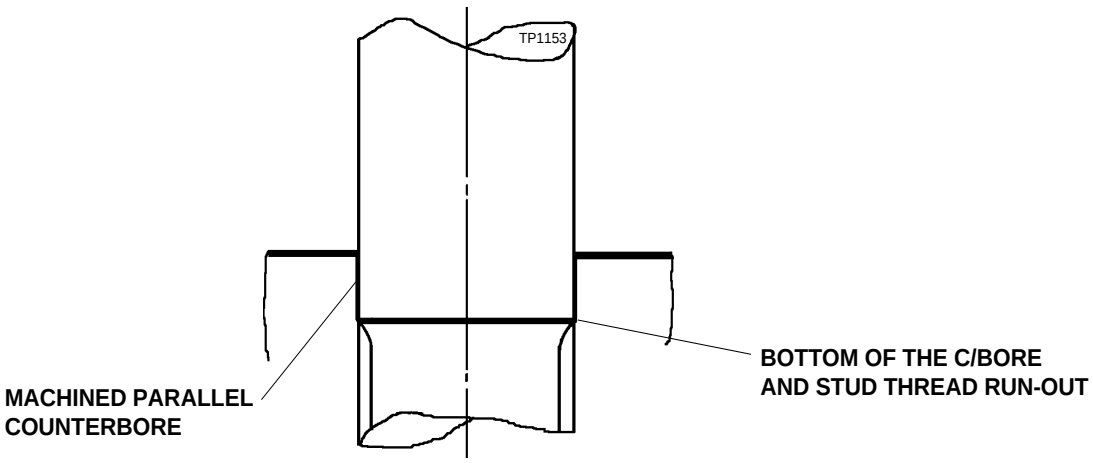
STUDS TO BE INSERTED UNTIL THREAD RUN-OUT LOCKS INTO PARENT METAL



IMPORTANT :- THIS STUD FITTING PROCEDURE IS TO BE USED IN LIEU OF STATED TORQUE VALUES ON EXISTING ARRANGEMENTS. NEW ARRANGEMENTS WILL SPECIFY TD183/1 FROM THE DATE OF ISSUE.

SPECIAL STUDS - FITTED INTO MACHINED PARALLEL COUNTERBORE

STUDS TO BE INSERTED UNTIL CORRECT TORQUE VALUE IS OBTAINED -
AS SHOWN ON RELEVANT ARRANGEMENT DRAWING

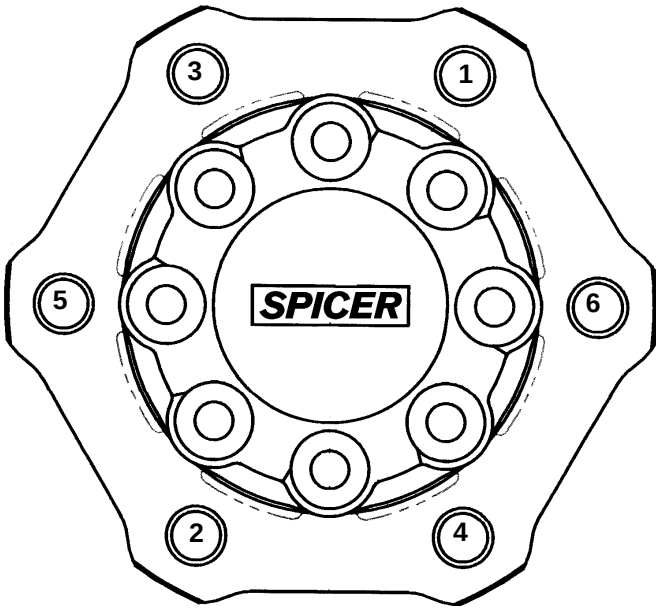


THIS SPECIFICATION IS FOR STUD FITTING ONLY ; NUTS & SETSCREWS MUST BE TORQUED TO VALUE SPECIFIED

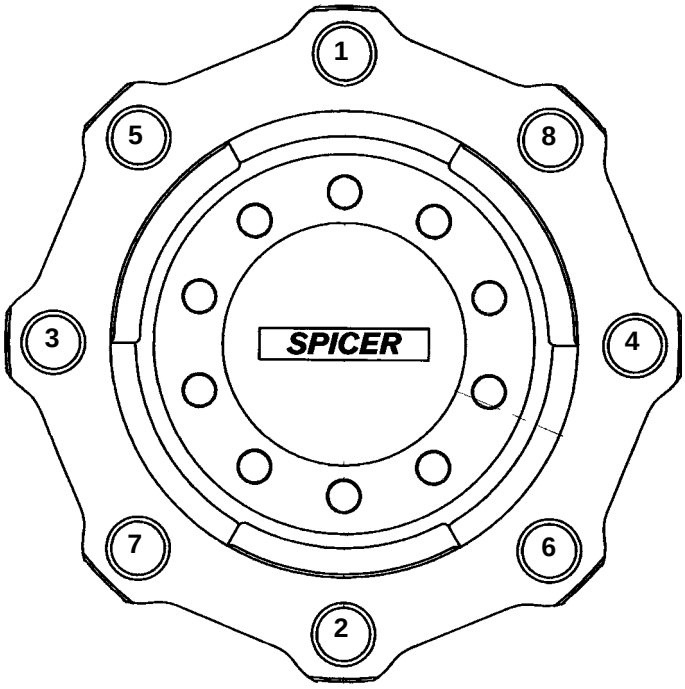
Alteration Numbers									
ISSUE A									

DISTRIBUTION		
Front Axle B.U. Drive Axle B. U. Production	**STUD FITTING PROCEDURES**	**TD183/1** SHT 1 OF 1

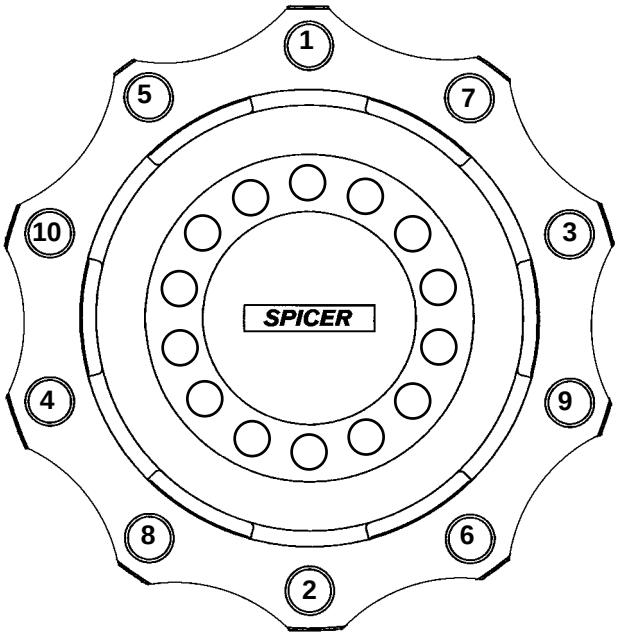
WHEELNUT TIGHTENING TORQUE SEQUENCE FOR 6 STUD FIXING

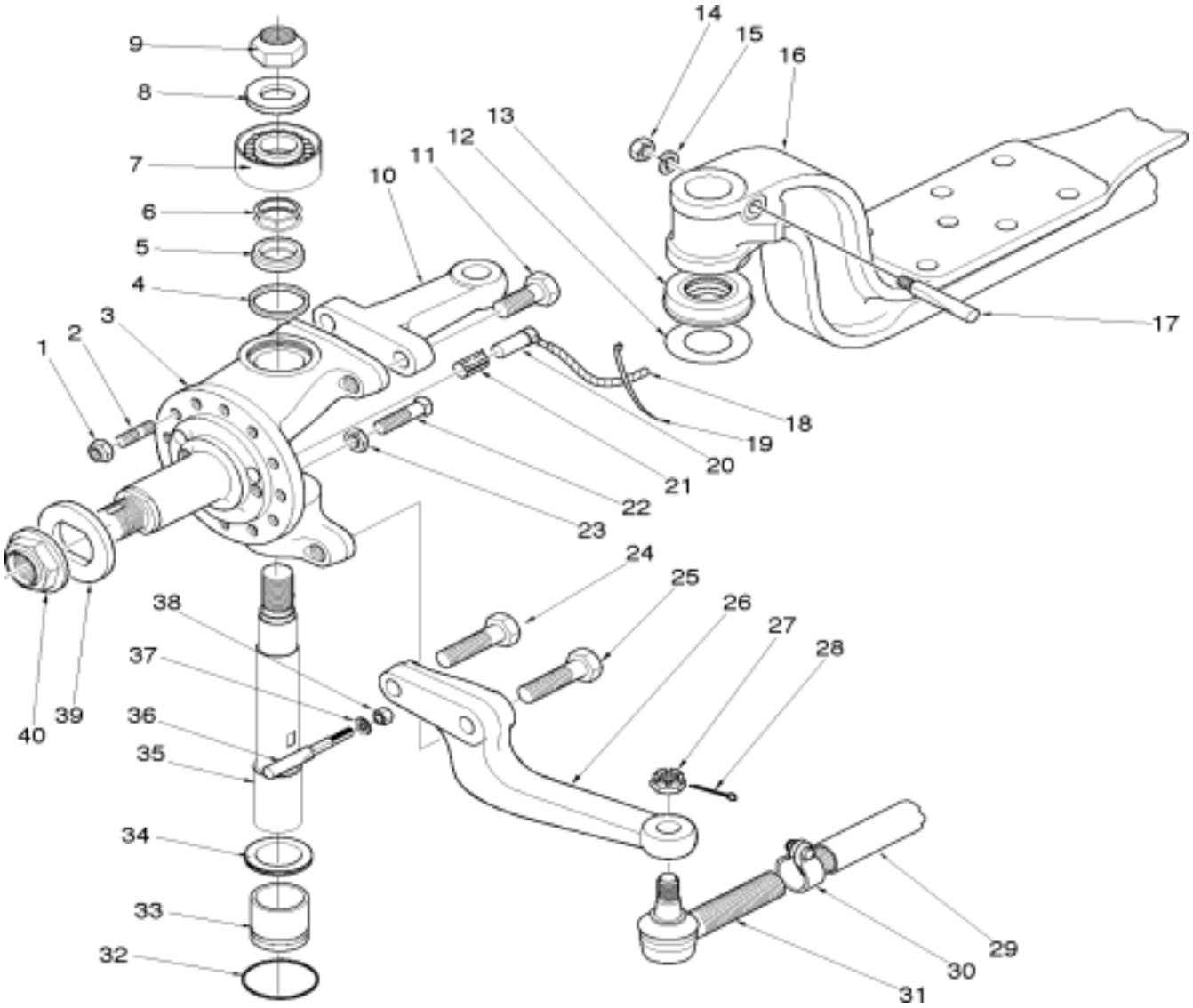


WHEELNUT TIGHTENING TORQUE SEQUENCE FOR TYPE FOR 8 STUD FIXING



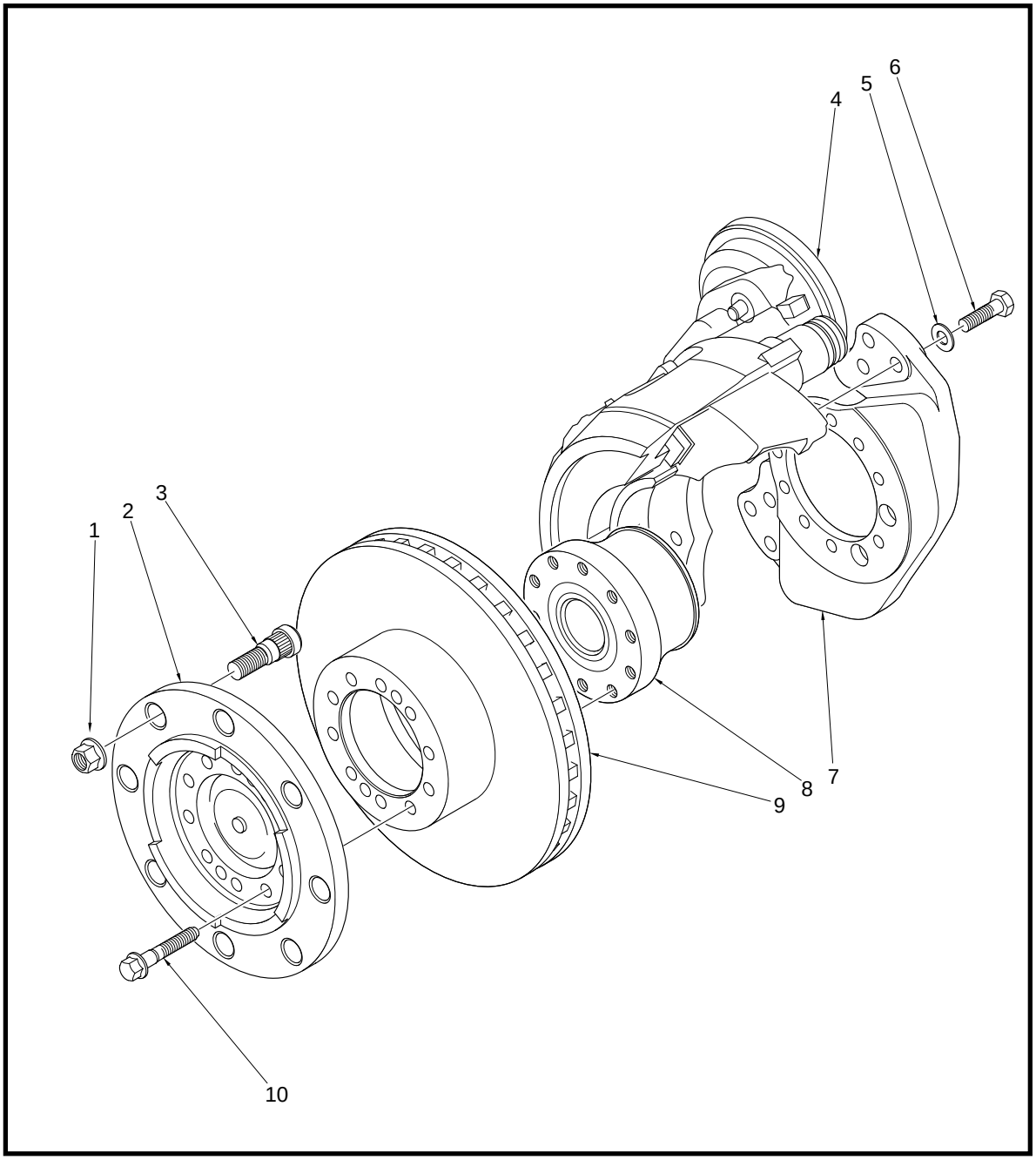
WHEELNUT TIGHTENING TORQUE SEQUENCE FOR 10 STUD FIXING





ITEM No	DESCRIPTION	ITEM No	DESCRIPTION
1	Brake bracket lock nut	22	A.B.S sensor bush
2	Brake bracket stud	23	Lockstop screw
3	Swivel	24	Lockstop washer
4	Swivel bearing seal (top)	25	Bottom lever stud
5	Swivel bearing sleeve (top)	26	Bottom lever stud
6	Swivel bearing adjusting shim	27	Bottom lever nut
7	Swivel bearing cup and cone	28	Ball pin nut
8	Swivel pin washer (Top)	29	Split pin
9	Swivel pin nut (Top)	30	Tie rod
10	Top steering lever R/H	31	Socket pinch bolt
11	Top lever stud	32	Socket assembly
12	Top lever nut	33	Bottom cap "O" ring
13	Swivel bearing shims	34	Swivel pin bush
14	King pin thrust cup and pad	35	Swivel bush "V" ring
15	Cotter pin nut	36	Swivel pin
16	Cotter pin washer	37	King pin
17	Axle bed	38	King pin washer
18	Cotter pin	39	King pin nut
19	Cable protector	40	Hub bearing thrust washer
20	Tie rod	41	Hub nut
21	A.B.S sensor		

ILLUSTRATION OF NDS HUB END WITH SEPARATE BRAKE BRACKET

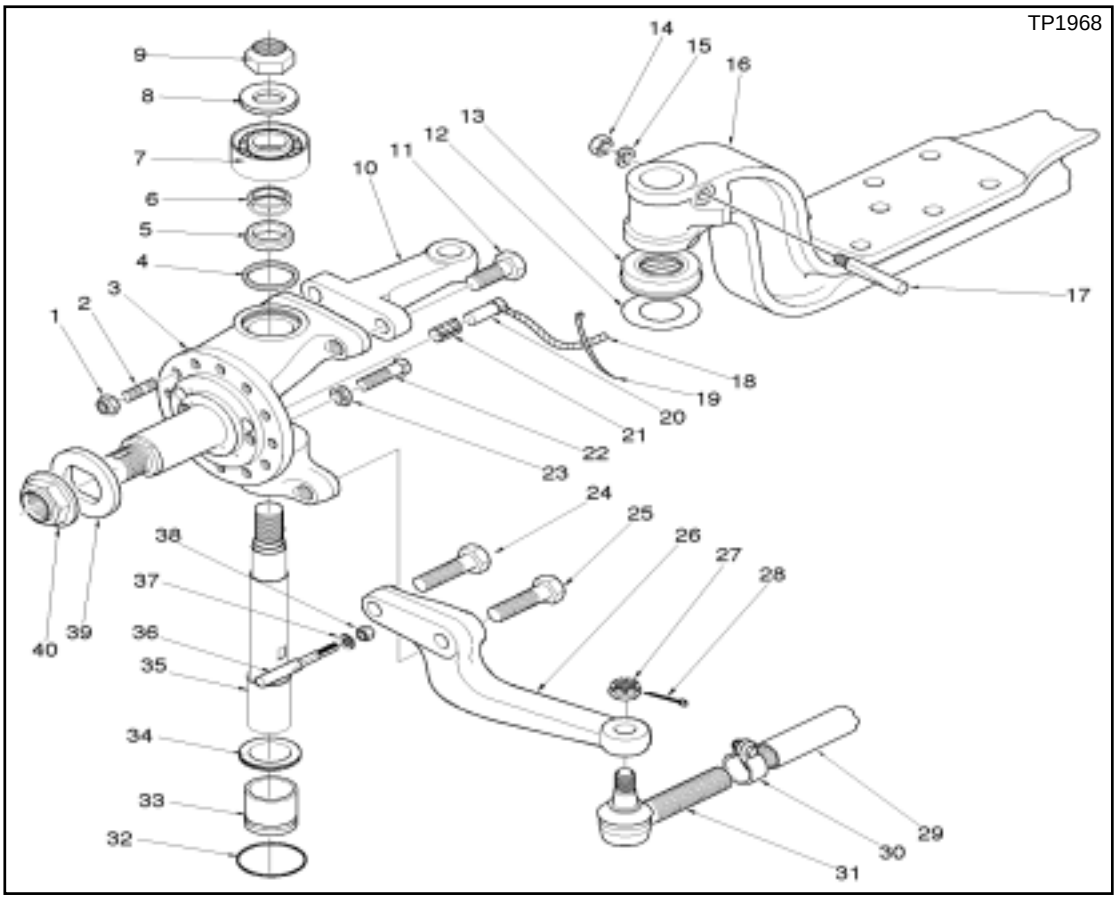


PART NUMBER	DESCRIPTION
1	Wheel nut (Not Supplied By Spicer Speciality Axles)
2	Hub flange
3	Wheel stud
4	Brake Caliper
5	Brake Caliper Mounting Washer
6	Brake Caliper Mounting Bolt
7	Brake Bracket
8	Unitised Hub Bearing
9	Brake Disc
10	Hub Flange Retaining Bolt

PARTS LIST FOR AXLE TYPE S84U SWIVEL ASSEMBLY

CUSTOMER : PREVOST **ASSEMBLY NUMBER : 26631**

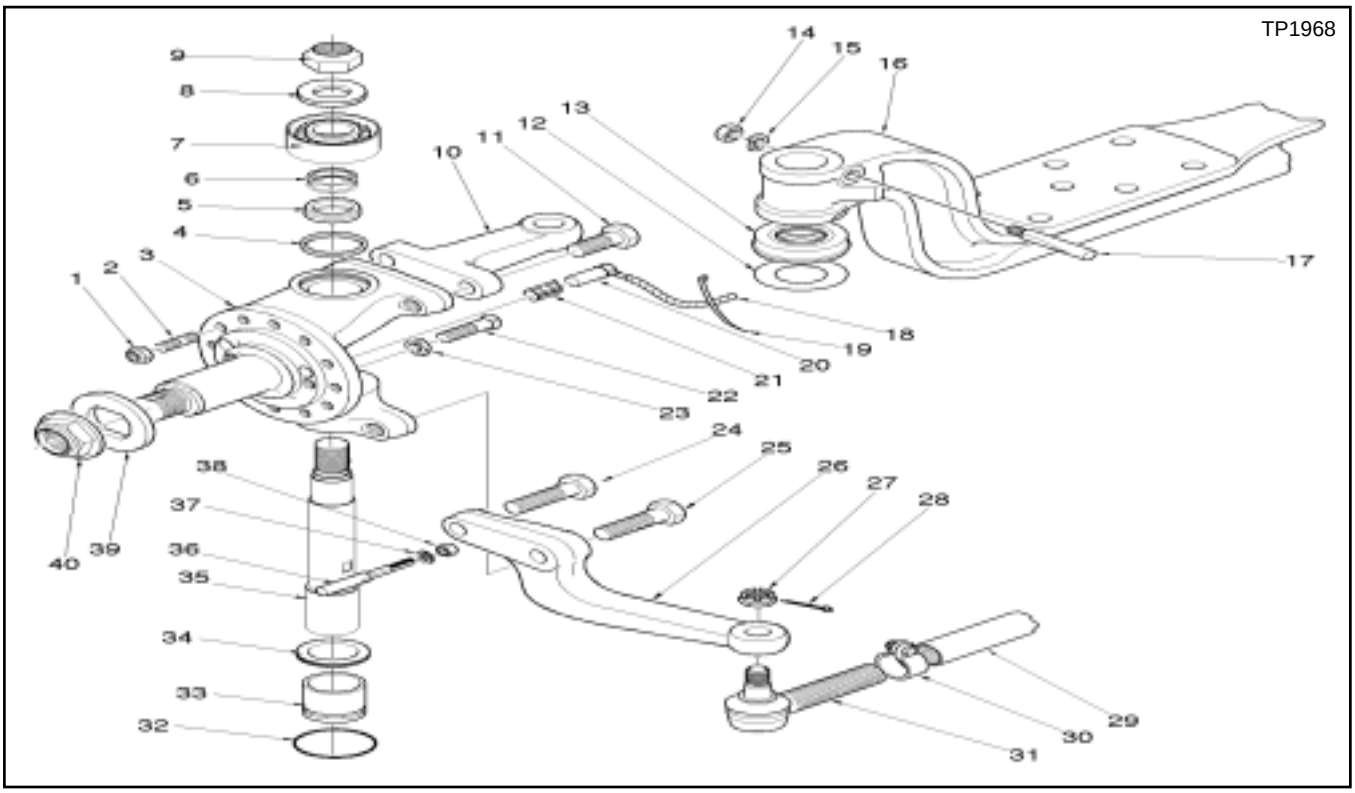
Item No	Description	Qty per Axle	Part Number	Recommended Spares holding 25 axles	50 axles	100 axles
1	Brake bracket lock nut	20	SL228/6	12	12	24
2	Brake bracket stud	20	SL736/7	12	12	24
3	Swivel	2	F4978/3	1	2	3
4	Swivel bearing seal (top)	2	F4477/32	2	4	6
5	Swivel bearing sleeve	2	F4477/19	2	4	6
6	Swivel bearing adjustimg shim	as reqd.	4493/119	3	6	12
7	Swivel bearing cup	2	SL289/47	2	4	6
	Swivel bearing cone	2	SL289/48	2	4	6
8	Swivel pin washer	2	7433/30	2	4	6
9	Swivel pin nut	2	F4477/15	1	2	3
10	Top steering lever (RH)	1	F4651/9A	1	2	3
11	Top lever stud	4	SL778/11	4	8	12
	Top lever nut	4	SL222/9	4	8	12
12	Swivel brg. setting shims	as reqd.	4493/119A	3	6	12
			4493/119B	3	6	12
			4493/119D	3	6	12
			4493/119E	3	6	12
13	King pin thrust cup	2	7157/153	2	4	6
	King pin thrust pad	2	7157/156	2	4	6
14	Cotter pin nut 7/16" UNF	2	SL221/5	2	4	6
15	Cotter pin washer	2	SL241/5	2	4	6
16	Axle bed	1	F4865/1	1	2	3
17	Cotter pin	2	F4722/57	2	4	6
18	Not required on this application					
29	Not required on this application					
20 & 21	ABS KIT Wabco	2	SM483/18K	2	4	6
Also required but not illustrated						
	Plastic plug (ABS)	2	SL209/16	2	4	6



PARTS LIST FOR AXLE TYPE S84 U
CONTINUED.....

CUSTOMER : PREVOST **ASSEMBLY NUMBER : 26631**

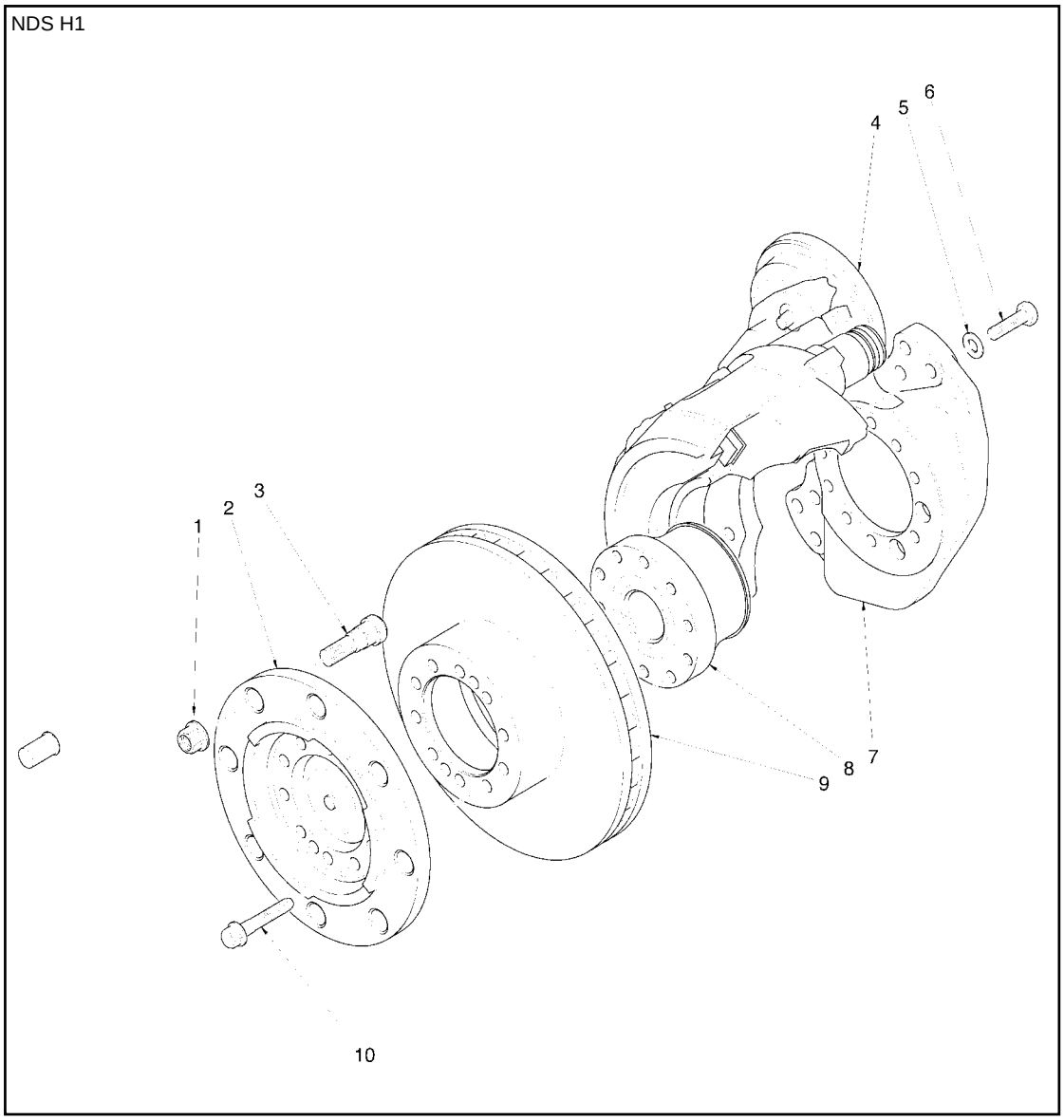
ItemNo	Description	Qty per axle	Part No	Spares holding per 25 axles	50 axles	100 axles
22	Lockstop screw L/H & R/H	2	F4693/44H	2	4	6
	Lockstop screw L/H	1	F4693/44B	1	2	3
23	Lockstop washer	As reqd.	SL246/151	3	6	9
			SL246/152	3	6	9
			SL246/153	3	6	9
24	Bottom lever stud	2	SL778/13	2	4	6
	Bottom lever nut	4	SL222/9	4	8	12
25	Bottom lever stud	2	SL778/18	2	4	6
	Bottom lever nut	4	SL222/9	4	8	12
26	Bottom lever R/H	1	F4651/7	1	2	3
	Bottom lever L/H	1	F4651/8	1	2	3
27	Ball pin nut	2	SL222/9	2	4	6
28	Split pin	2	SL251/36	2	4	6
29	Tie rod	1	F4560/12	1	2	3
30	Socket pinch bolt	2	ML6012/60S	2	4	6
31	Socket assy. R/H	1	F4845S	1	2	3
	Socket assy. L/H	1	F4846S	1	2	3
32	Bottom cap "O" ring	2	R3937/149	2	4	6
33	Swivel pin bush (bottom)	2	F4477/20A	2	4	6
34	Swivel bush seal "V" ring	2	F4921/32	2	4	6
35	Swivel pin	2	F4477/14	2	4	6
36	Kingpin	2	F4722/57	2	4	6
37	Kingpin washer	2	SL241/5	2	4	6
38	Kingpin nut	2	SL221/5	2	4	6
39	Thrust washer (hub bearing)	2	F4567/30	2	4	6
40	Hub nut	2	F4567/77	2	4	6
Required but not illustrated:						
	Swivel bottom cap	2	F4477/34	2	4	6



PARTS LIST FOR TYPE S84U HUB AND BRAKE ASSEMBLY

CUSTOMER: PREVOST **ASSEMBLY NUMBER 26631**

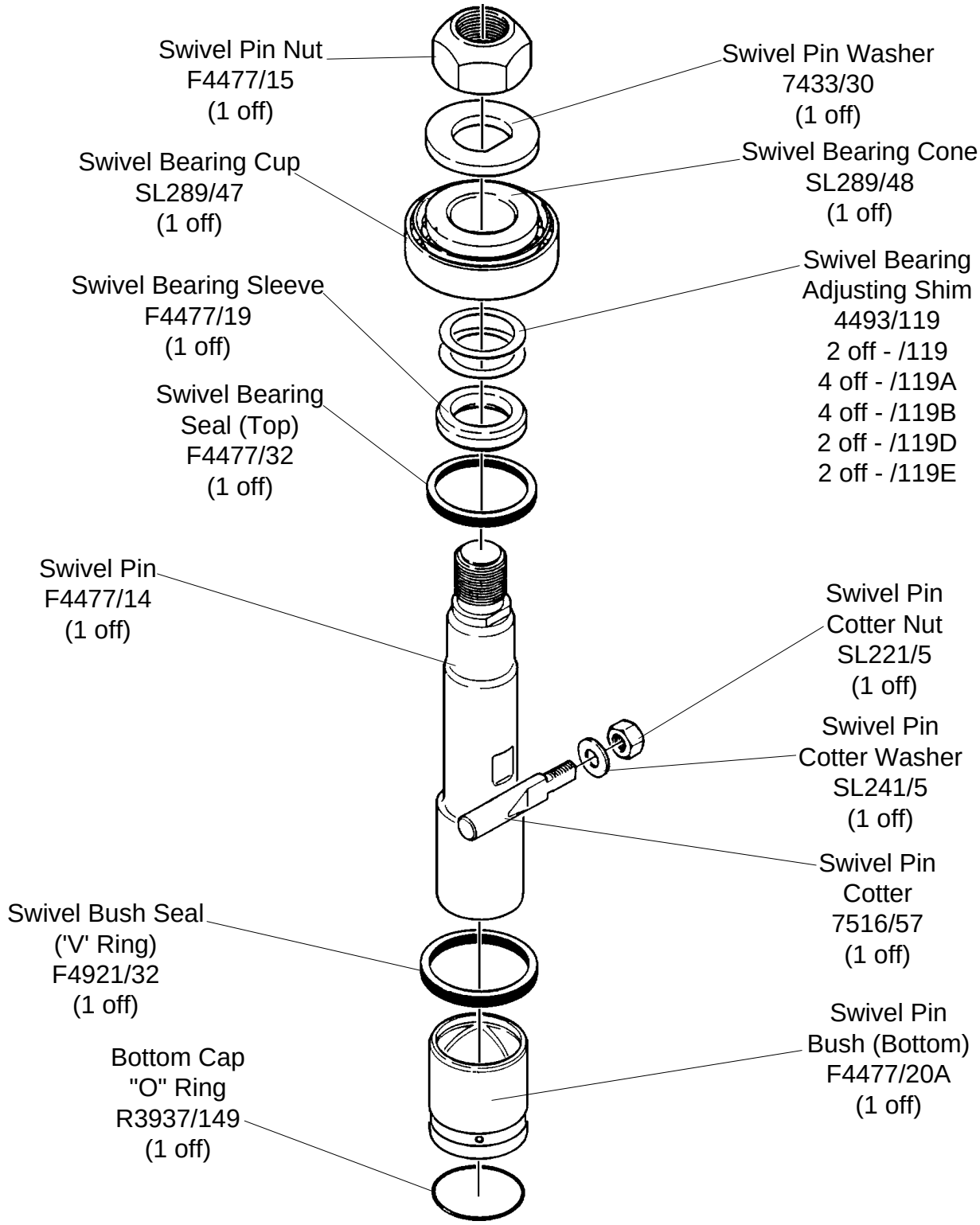
Item No	Description	Qty Per Axle	Part number	Recommended Spares holding per 25 axles	50 axles	100 axles
1	Wheel nut (Not Supplied)					
2	Hub flange	2	F4974/28	2	4	6
3	Not required on this application (supplied by customer)					
4	Brake Caliper assembly L/H	1	SM486/17K	1	2	3
	Brake Caliper assembly R/H	1	SM486/16K	1	2	3
	Air chamber (supplied with 4)					
5	Brake Caliper retaining Washer	12	N70040	12	24	48
6	Brake Caliper retaining Bolt	12	N70251	12	24	48
7	Not required on this application (part of package)					
8	Unitised Hub Bearing	2	SL284/9	2	4	6
9	Brake Disc	2	F4974/88	2	4	6
10	Hub Flange Bolt	28	F4860/55A	20	40	60



SPICER SPECIALITY AXLE DIVISION

TP1942

Note :- 'Loctite Superflex Sealant' or an equivalent sealant to be applied to Cylinder Bracket / Top Cap clamp face before assembling to the Swivel.



IMPORTANT :- It is recommended that a Dummy Nut is used to set the Swivel Bearing Pre-load, before fitting F4477/15. The Stiff Nut should only be removed & re-fit one time - after which, a new nut must be used. Tightening Torque for Stiff Nut is 500 - 700lbs.ft. (678 - 949Nm.)

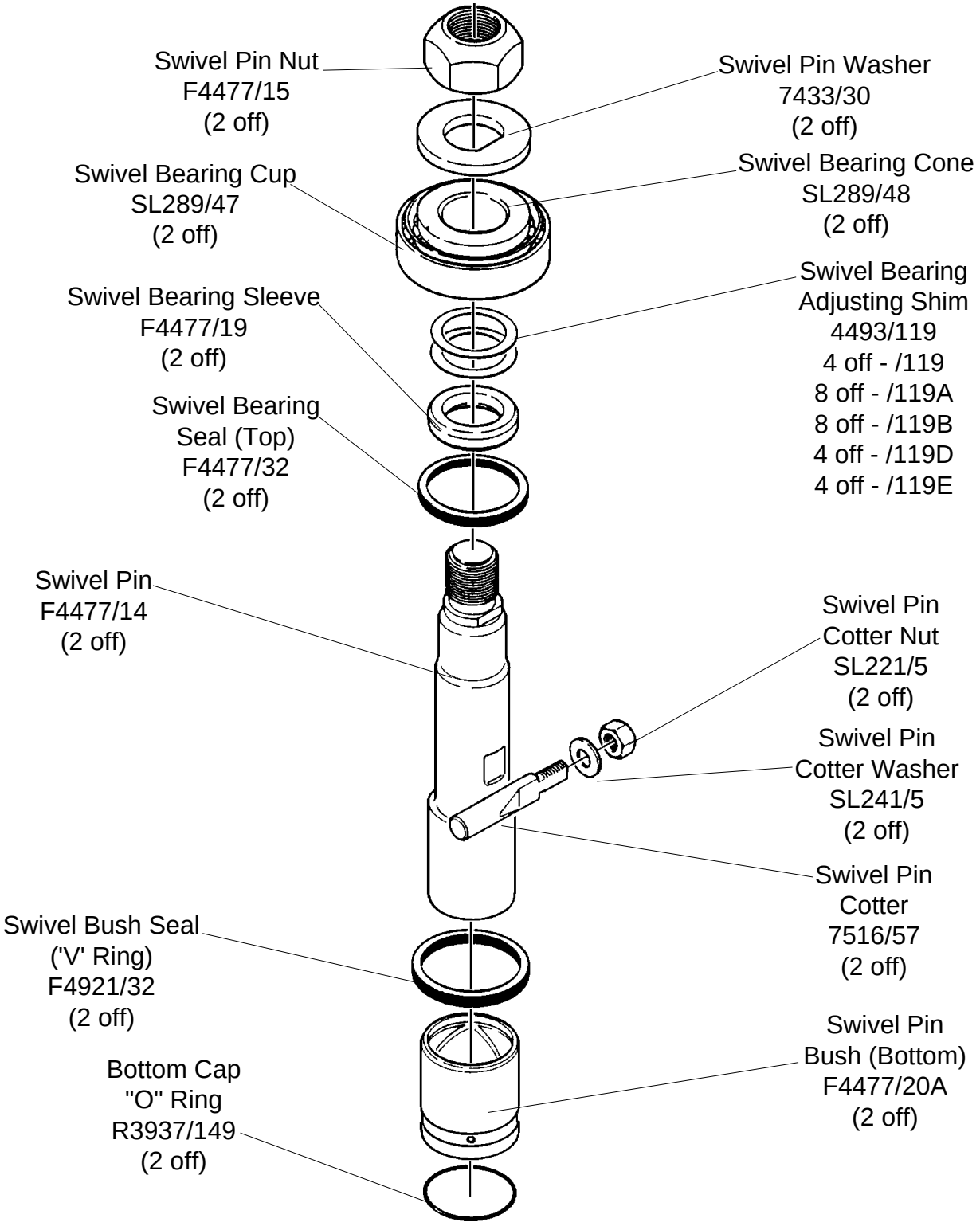
Alteration Numbers								
Issue A		ECN08386						

Distribution :- Spares dept. Service	Swivel Pin Kit List No. 10283/1	Axle Type S84	Kit Arrgt. No.10283/1A

SPICER SPECIALITY AXLE DIVISION

TP1942

Note :- **'Loctite Superflex Sealant' or an equivalent sealant to be applied to Cylinder Bracket / Top Cap clamp face before assembling to the Swivel.**



IMPORTANT :- **It is recommended that a Dummy Nut is used to set the Swivel Bearing Pre-load, before fitting F4477/15. The Stiff Nut should only be removed & re-fit one time - after which, a new nut must be used. Tightening Torque for Stiff Nut is 500 - 700lbs.ft. (678 - 949Nm.)**

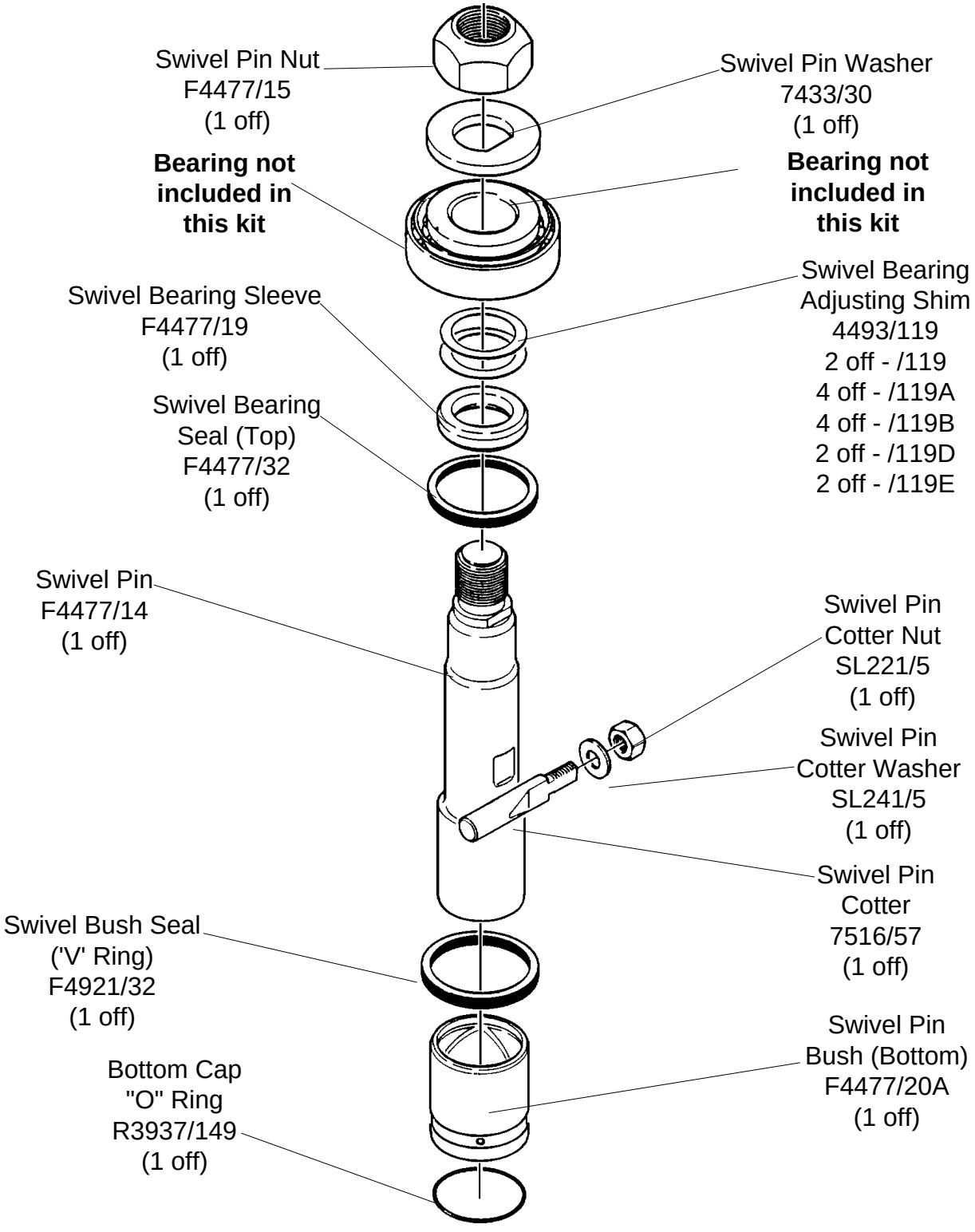
Alteration Numbers								
Issue A		ECN08386						

Distribution :- Spares dept. Service	Swivel Pin Kit List No. 10283/2	Axle Type S84	Kit Arrgt. No.10283/2A

SPICER SPECIALITY AXLE DIVISION

TP1942

Note :- **'Loctite Superflex Sealant' or an equivalent sealant to be applied to Cylinder Bracket / Top Cap clamp face before assembling to the Swivel.**



IMPORTANT :- **It is recommended that a Dummy Nut is used to set the Swivel Bearing Pre-load, before fitting F4477/15. The Stiff Nut should only be removed & re-fit one time - after which, a new nut must be used. Tightening Torque for Stiff Nut is 500 - 700lbs.ft. (678 - 949Nm.)**

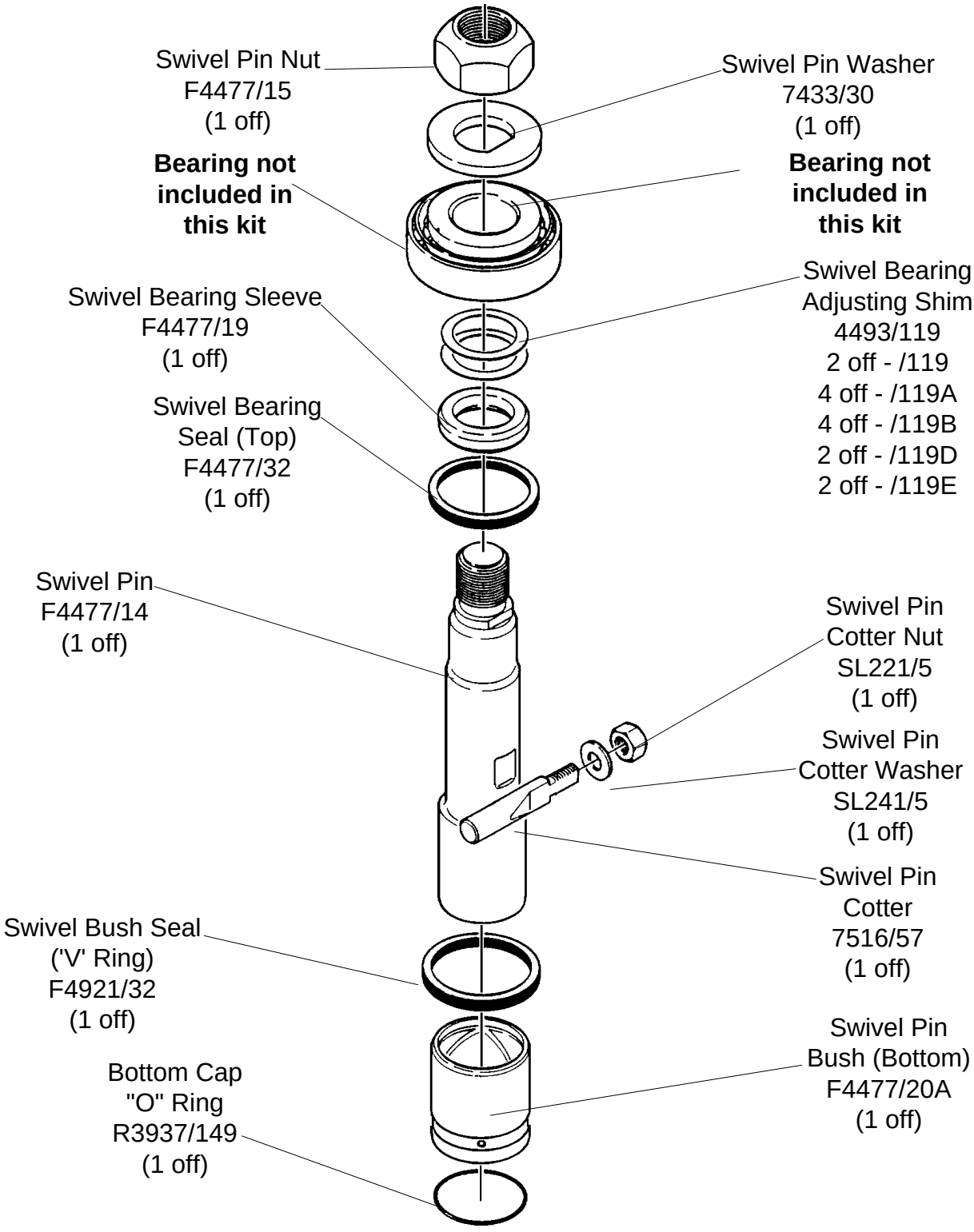
Alteration Numbers								
Issue A		ECN08386						

Distribution :- Spares dept. Service	Swivel Pin Kit List No. 10283/3	Axle Type S84	Kit Arrgt. No.10283/3A

SPICER SPECIALITY AXLE DIVISION

TP1942

Note :- **'Loctite Superflex Sealant' or an equivalent sealant to be applied to Cylinder Bracket / Top Cap clamp face before assembling to the Swivel.**



IMPORTANT :- **It is recommended that a Dummy Nut is used to set the Swivel Bearing Pre-load, before fitting F4477/15. The Stiff Nut should only be removed & re-fit one time - after which, a new nut must be used. Tightening Torque for Stiff Nut is 500 - 700lbs.ft. (678 - 949Nm.)**

Alteration Numbers								
Issue A		ECN08386						

Distribution :- Spares dept. Service	Swivel Pin Kit List No. 10283/4	Axle Type S84	Kit Arrgt. No.10283/4A

NOTES