



**PARTS AND SERVICE MANUAL FOR
STEER AXLE TYPE NDIFS 80P
WITH KNORR DISC BRAKE SB7000**

**CUSTOMER PREVOST
AXLE ASSEMBLY Nos. 26630**

REF. DRAWING Nos.

**HUB F4974A
INSTL F4974E**

Compiled by Craig Dowling



The description, testing procedures, and specifications contained in this parts / service publication were current at time of printing. This manual will not be updated. If in doubt about any aspect of maintenance or servicing of the axle please contact the vehicle builder or our service department direct.

Kirkstall Specialist Axle Division reserve the right to discontinue or modify its procedures and to change specifications at any time without notice and without incurring obligation.

The recommendations of the vehicle manufacturer should be considered as the primary source of service information regarding this Kirkstall product. This manual is intended to be used as a supplement to such information.

Any references to brand names in this publication is made simply as an example of the types of tools and materials recommended for use and, as such, should not be considered as an endorsement. Equivalents, if available, may be used.



MANUAL ISSUE SHEET

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All	A	New Manual		Jun. 2003

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**PARTS & SERVICE INSTRUCTIONS FOR
NDIFS80P HUB UNIT(OIL FILLED)
WITH KNORR DISC BRAKE**

ILLUSTRATION No. F73

MANUAL SECTION B



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.

SECTION 2 TO REMOVE HUB UNIT

- 2.1 Disconnect air line from brake caliper (12).
- 2.2 Remove brake caliper setscrews with washers (15 & 14) then lift off brake caliper assembly (12).
- 2.3 Remove hub cap setscrews and washers (61 & 60).
- 2.4 Remove hub cap (59) from hub (7).
- 2.5 Remove hub bearing pinch bolt nut (1) and bolt (3), then remove hub bearing nut (2) along with hub bearing washer (4).
- 2.6 Pull hub / brake disc assembly (6 to 11, 57 & 58) from axle stub (16), place on clean bench and lift out outer bearing cone (6A).
- 2.7 Remove brake disc bolts (58) then pull brake disc (57) from hub (7).
- 2.8 Remove pole wheel (11) using suitable drift.
- 2.9 Remove seal (10) and inner bearing cone (9A) from hub (7).
- 2.10 Drive out hub bearing cups (6 & 9) from hub (7).

SECTION 3
OVERHAUL PROCEDURES
**SWIVEL / SUSPENSION UPRIGHT
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.**

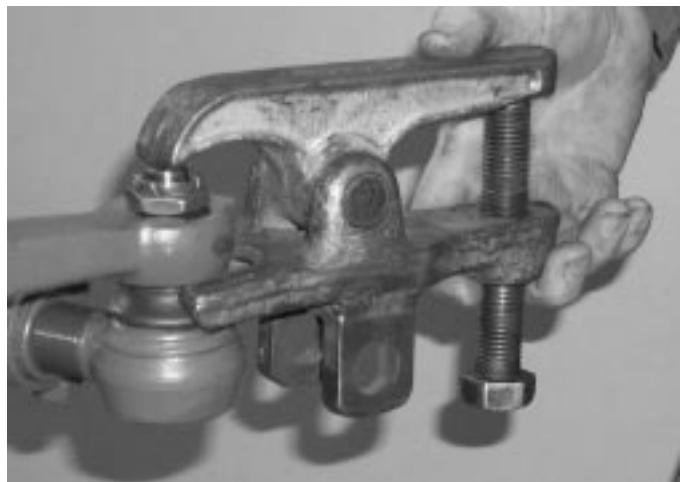
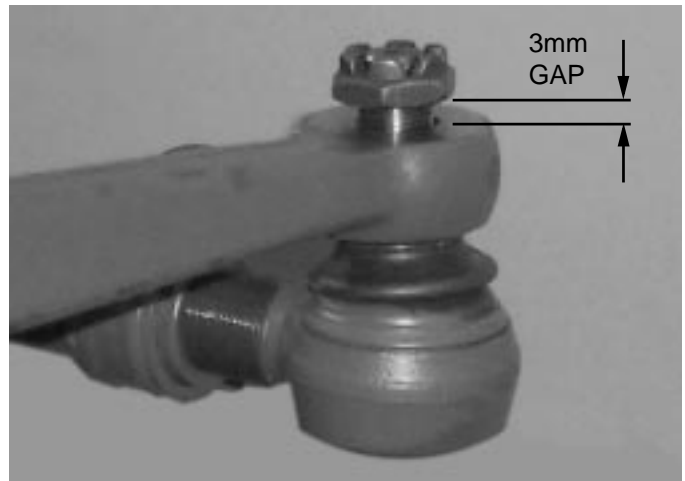
4. Back off nuts approximately 3 - 4 mm
5. Using a suitable extraction tool, disconnect ball sockets from bottom steering lever.
6. Disconnect steering linkages from top steering lever, using a suitable extraction tool as in steps 3, 4, & 5



**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 described in routine maintenance section. if damaged replace entire socket assembly.



SECTION 3 CONT'D
OVERHAUL PROCEDURES
SWIVEL / SUSPENSION UPRIGHT 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

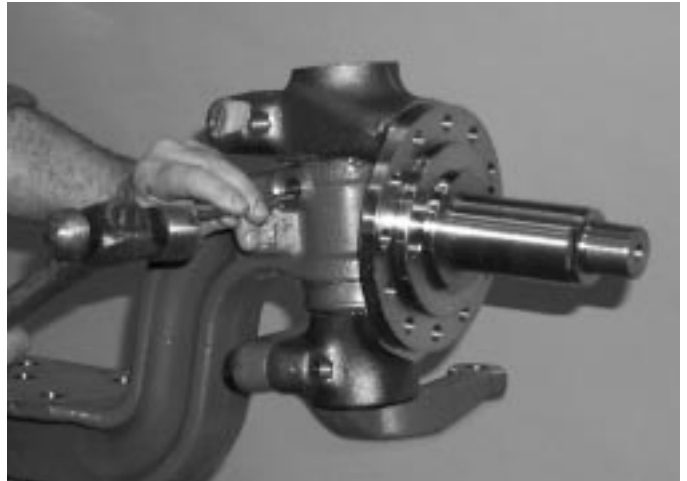
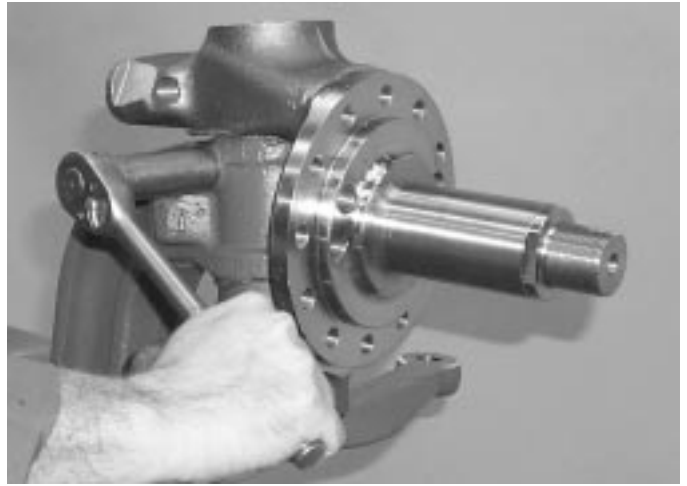
Once swivel has been removed clean all parts as below:-

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.

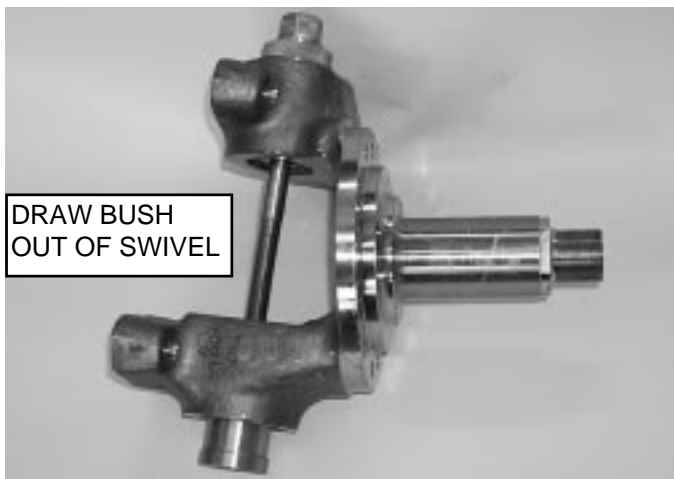
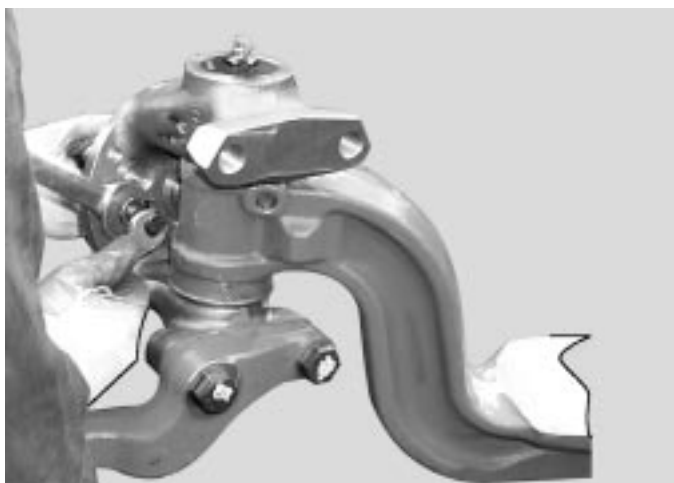
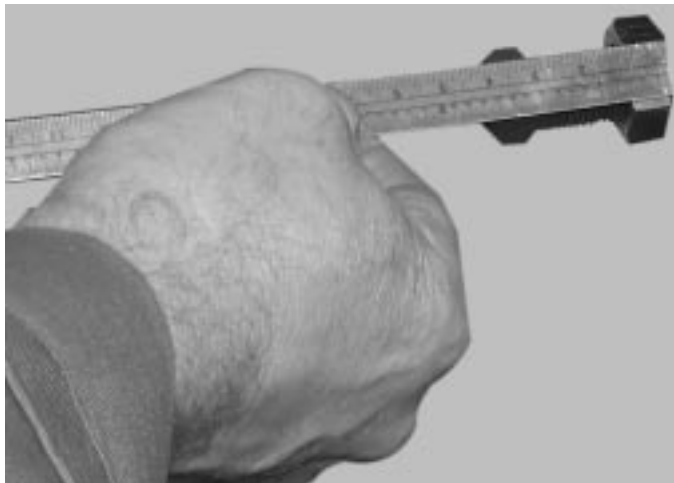


SECTION 4

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 5
OVERHAUL PROCEDURES
**REMOVAL AND REFITTING OF STEERING LEVERS
(THIS PROCEDURE CAN BE PERFORMED WITH
VEHICLE EITHER ON OR OFF AXLE)**

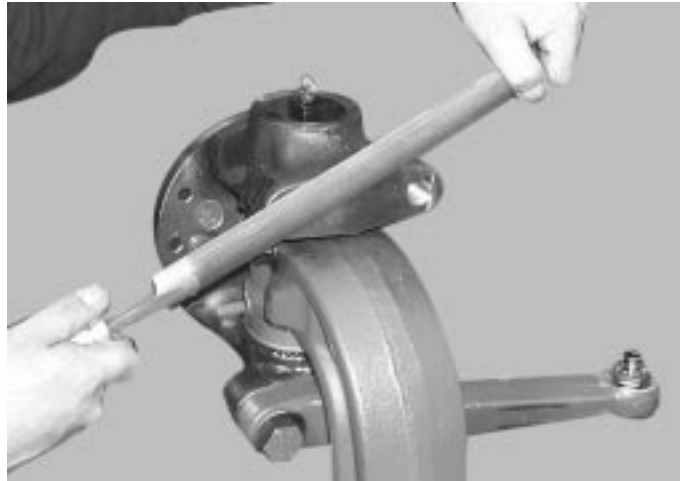

**NOTE:-
THE FOLLOWING INSTRUCTIONS
SHOULD BE STRICTLY ADHERED TO.
FITMENT OF STEERING LEVERS IS ONE
OF THE MOST SAFETY CRITICAL
FACTORS ON THE VEHICLE**

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 from the 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 undamaged
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 6

SWIVEL REASSEMBLY

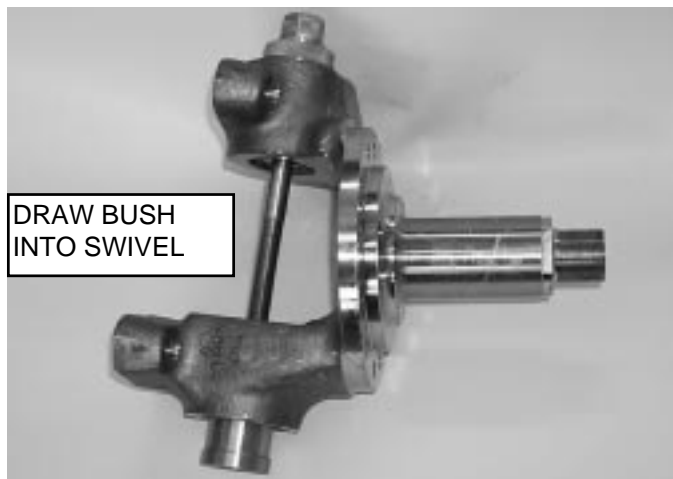
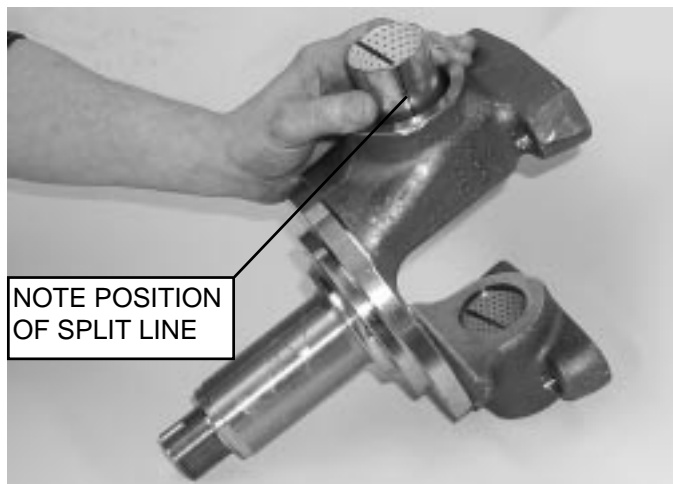
1. Lightly lubricate outside of replacement bushes with clean grease.



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 6 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 first [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.

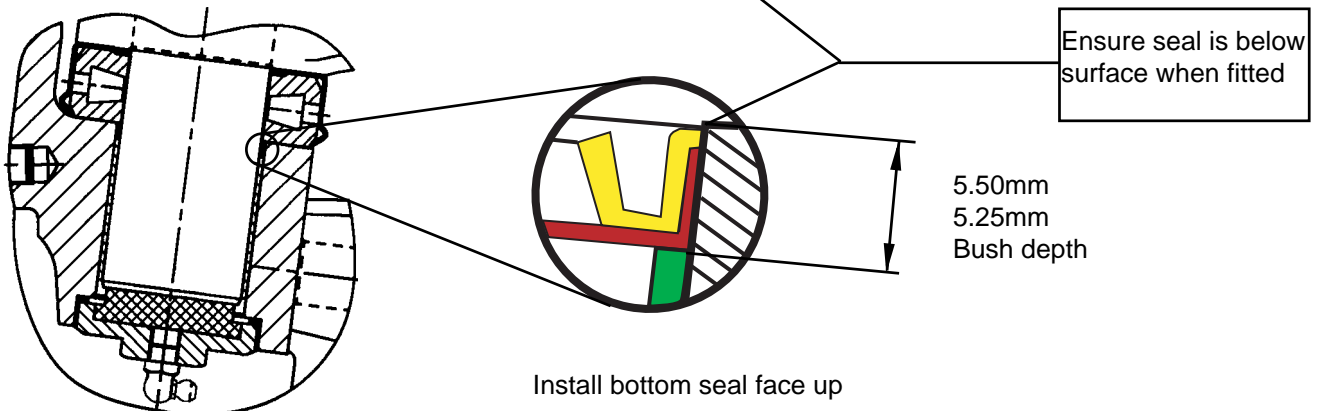
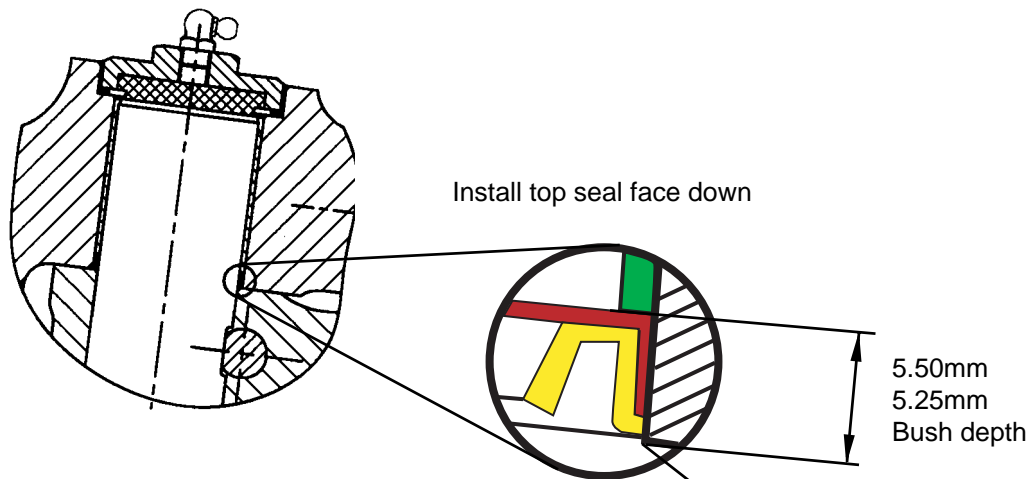
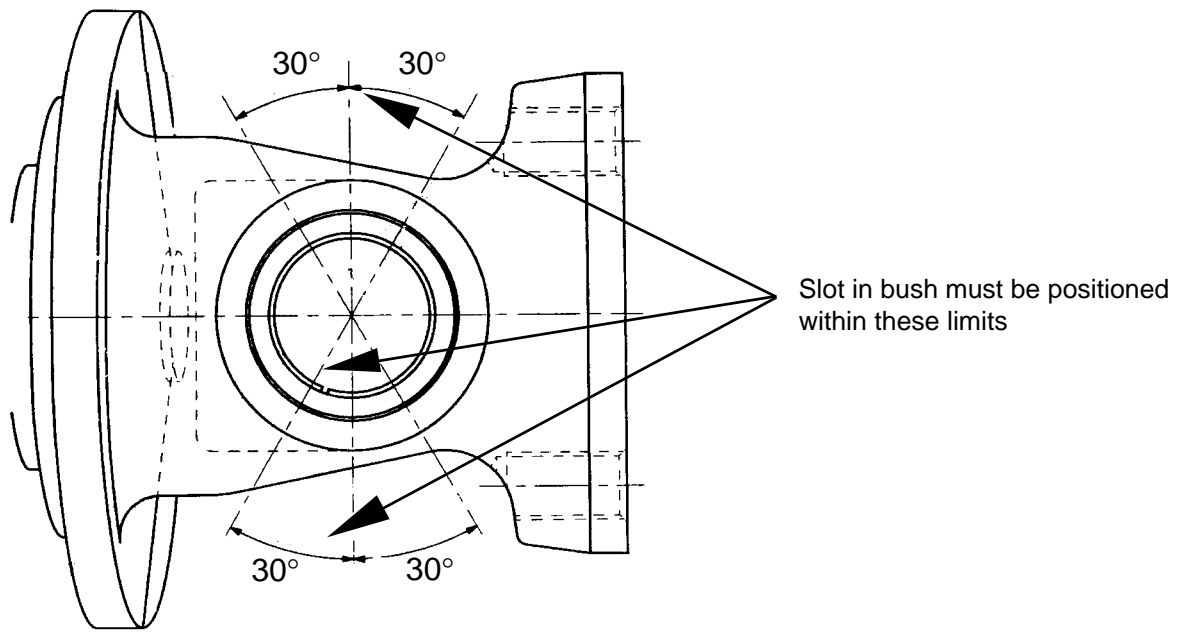


**NOTE:-
ENSURE LIP OF SEAL IS POSITIONED AS SHOWN IN [DIAGRAM ON PAGE 11](#)**

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 7
OVERHAUL PROCEDURES
SWIVEL / SUSPENSION UPRIGHT 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, through bush, shims and thrust bearing. (this serves to assist in placing swivel onto axle bed).


NOTE:-

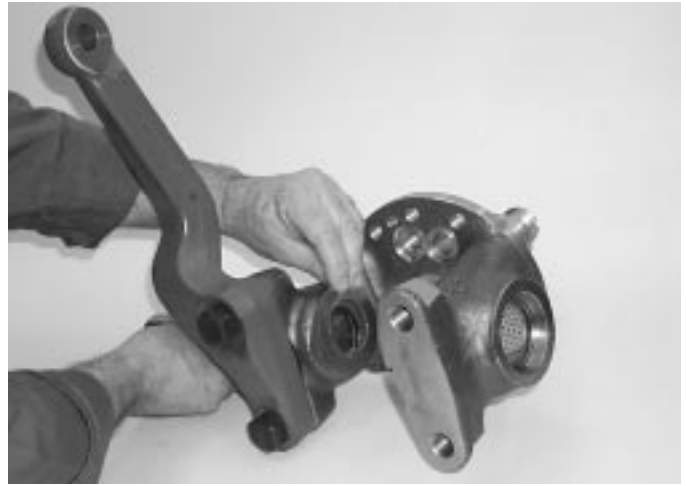
USE SETTING TOOL [\(SEE CHART AT FRONT OF THIS SECTION\)](#).

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.

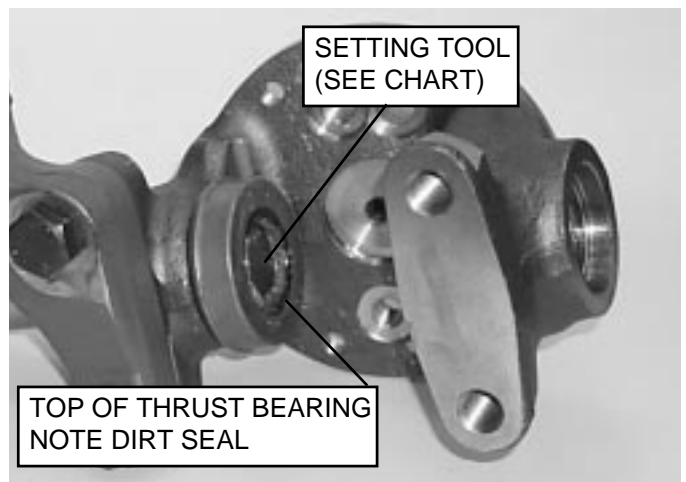
7. Offer swivel, shims, thrust bearing and setting tool, up to axle beam.


WARNING:-

COMPONENT IS HEAVY. CARE SHOULD BE TAKEN WHEN LIFTING.



TOP OF THRUST BEARING
NOTE DIRT SEAL



SETTING TOOL
(SEE CHART)

TOP OF THRUST BEARING
NOTE DIRT SEAL



SECTION 7 CONT'D

OVERHAUL PROCEDURES

SWIVEL / SUSPENSION UPRIGHT 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.
[\(see diagram on page 11.\)](#)

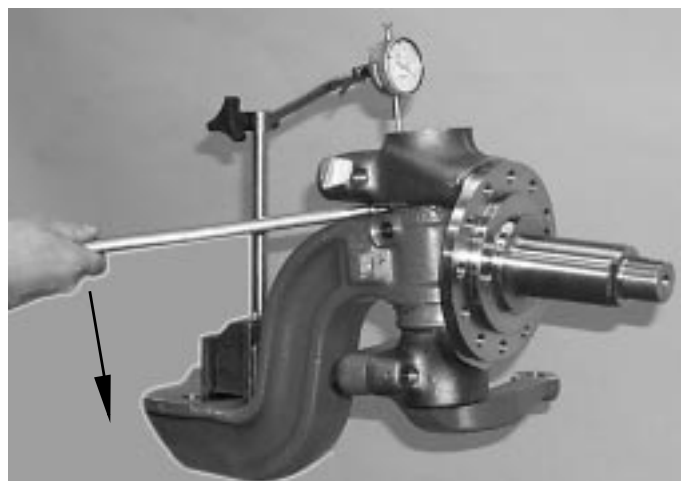
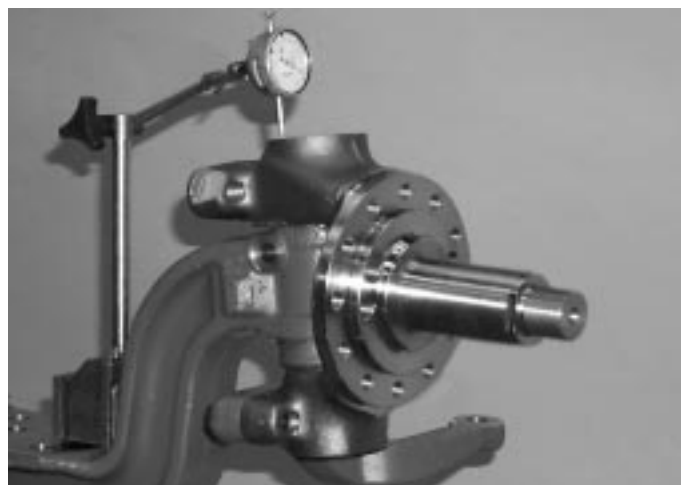
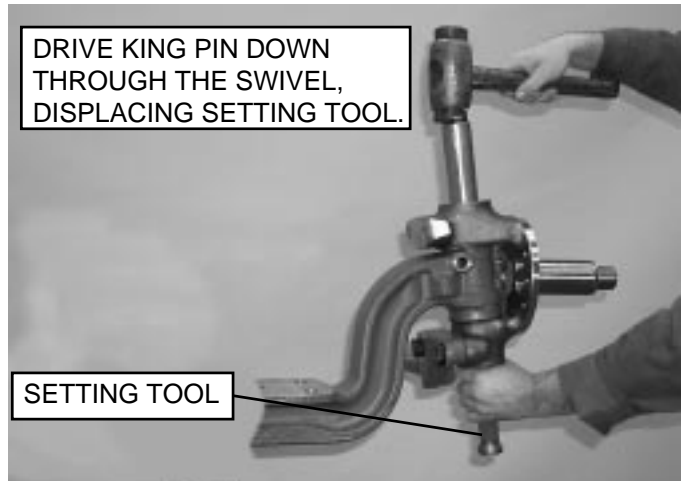
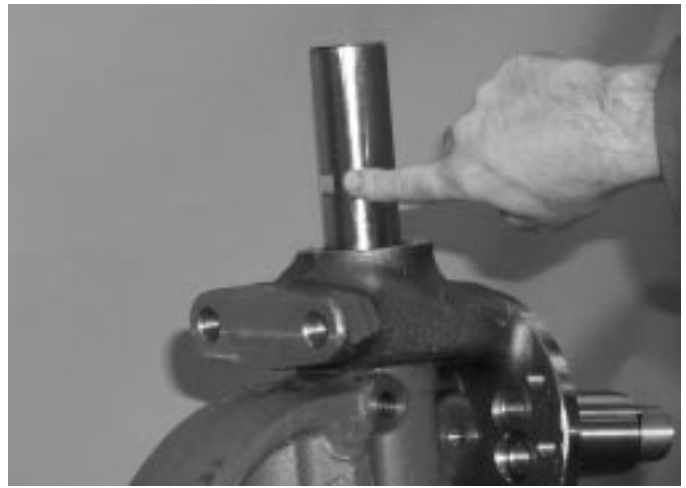
NOTE:-

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.

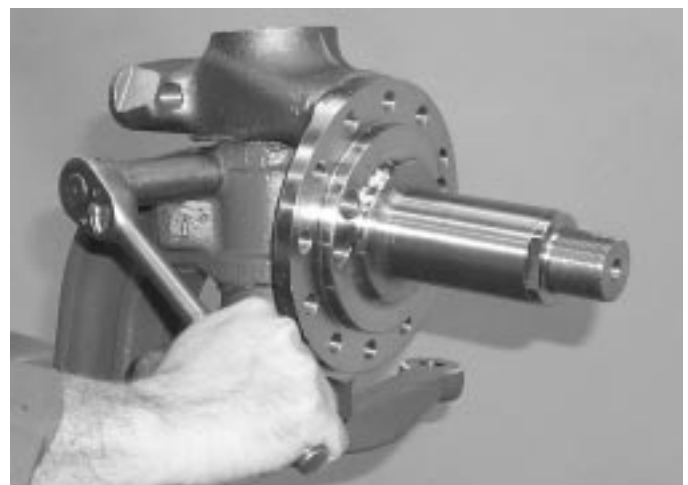
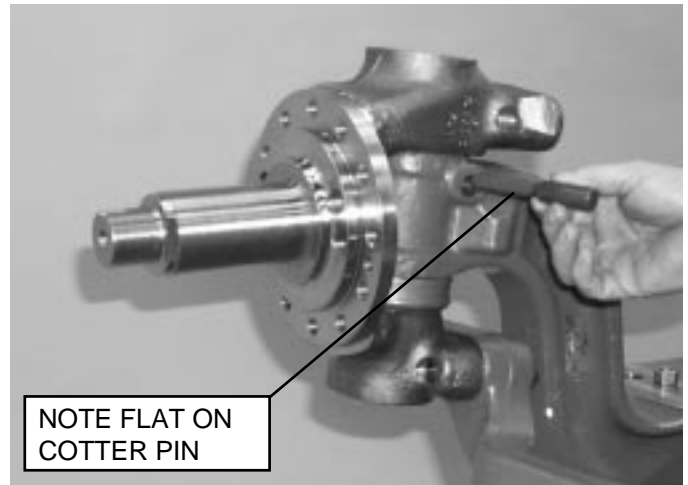


SECTION 7 CONT'D
OVERHAUL PROCEDURES
SWIVEL / SUSPENSION UPRIGHT REASSEMBLY CONTINUED.

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 7 CONT'D
OVERHAUL PROCEDURES
SWIVEL / SUSPENSION UPRIGHT 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 'O' RING SEAL HAS BECOME DAMAGED AND MUST BE REPLACED.**



SECTION 7 CONT'D

OVERHAUL PROCEDURES

SWIVEL / SUSPENSION UPRIGHT REASSEMBLY CONTINUED.

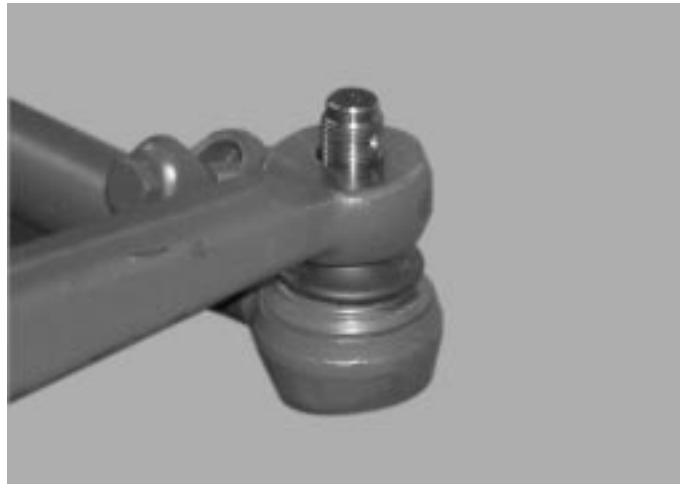
- 22. If Top and bottom steering levers have been removed for replacement / Checking, Refit to swivel using bolts and tighten to specified torque.
- 23. Offer tie rod assembly up to bottom steering lever.



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 7 CONT'D
OVERHAUL PROCEDURES
SWIVEL / SUSPENSION UPRIGHT 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 8 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.

- 8.1 Assemble brake disc (57) and hub (7) together then secure with setscrews (58) tightening to 222 / 246 lbs.ft. (301 / 334Nm).
- 8.2 Fit inner and outer hub bearing cups (9 & 6) into their bores in hub (7).
- 8.3 With hub (7), outer end face down on bench, place inner hub bearing cone(9A) in hub.
- 8.4 Using a suitable fitting tool, knock hub oil seal(10), spring large o/dia. first into position in hub bore.
- 8.5 Carefully heat up pole wheel (12) to hand hot (120°c max.) then push into position on hub (8).
- 8.6 Carefully offer hub assy. to axle stub (16) then, with hub unit supported by a sling or an assistant, fit outer hub bearing cone (6A) into it's cup (6)
- 8.7 Fit hubbearing washer (4) followed by nut (2). Tighten nut until it won't go anymore.
- 8.8 Fit hub bearing nut pinch bolt (3) and pinch bolt nut (1) and tighten to 26 / 32lbs.ft. (34 /43)Nm)
- 8.9 Fit hub cap (59) ensuring that oil filler / drain hole is positioned between hub lugs and secure with setscrews to 12 / 16lbs.ft (16 / 22 Nm)
- 8.10 Fit hub cap drain plug into position in hub cap (59).



SECTION 9 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.)
P		
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.)

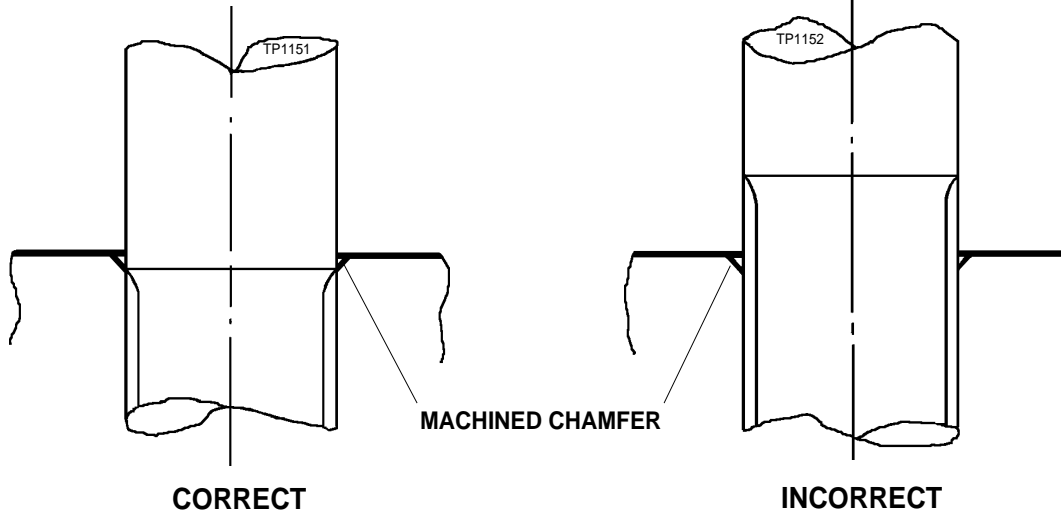
Note :- for stud fitting / setting procedures see page B12.



KIRKSTALL SPECIALITY AXLE DIVISION

STANDARD STUDS - FITTED INTO MACHINED CHAMFERED HOLES

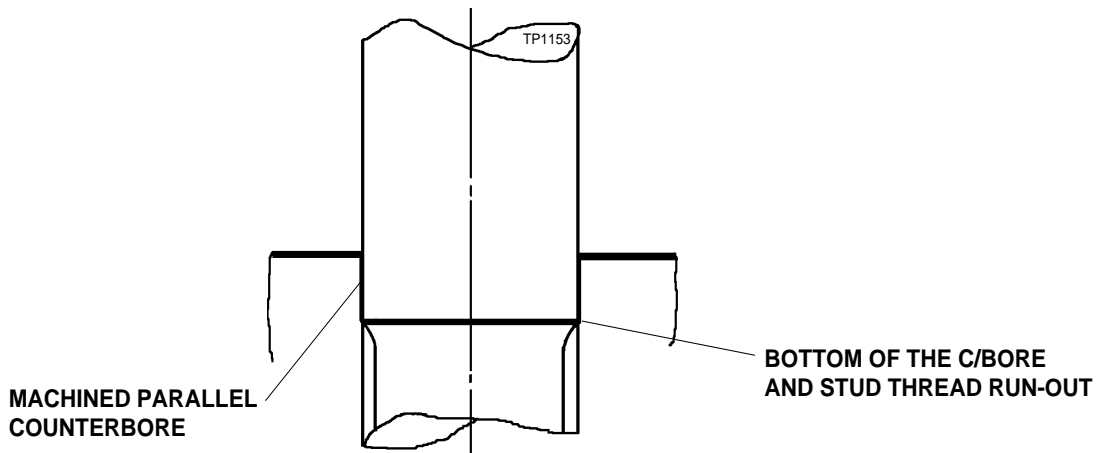
STUDS TO BE INSERTED UNTIL THREAD RUN-OUT LOCKS INTO PARENT METAL



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



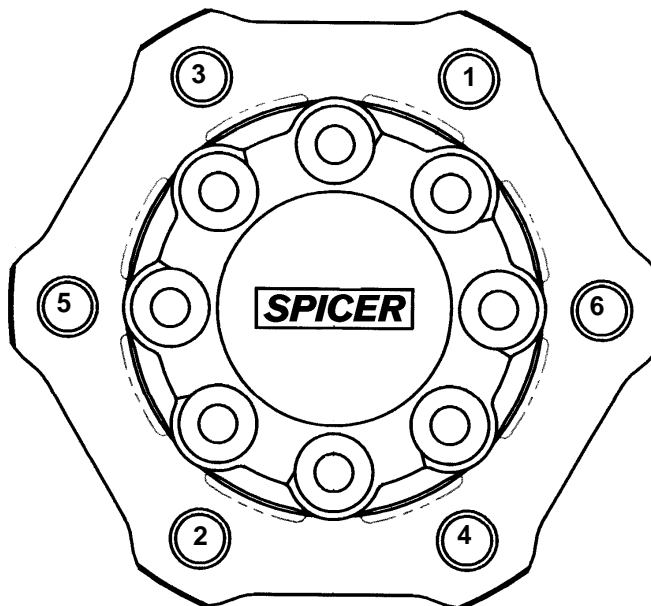
**THIS SPECIFICATION IS FOR STUD FITTING ONLY ;
NUTS & SETSCREWS MUST BE TORQUED TO VALUE SPECIFIED**

Alteration Numbers

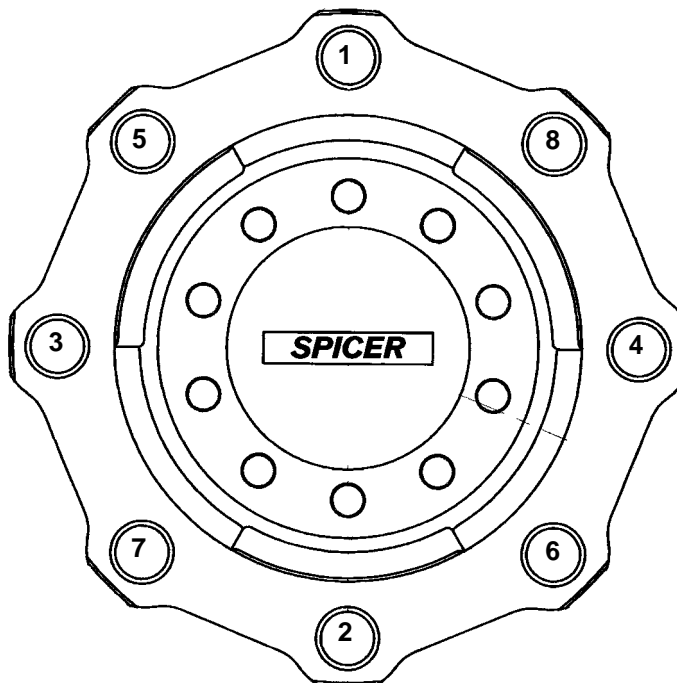
ISSUE A									

<p>DISTRIBUTION</p> <p>Front Axle B.U. Drive Axle B. U. Production</p>	<p>STUD FITTING PROCEDURES</p>	<p>TD183/1</p> <p>SHT 1 OF 1</p>
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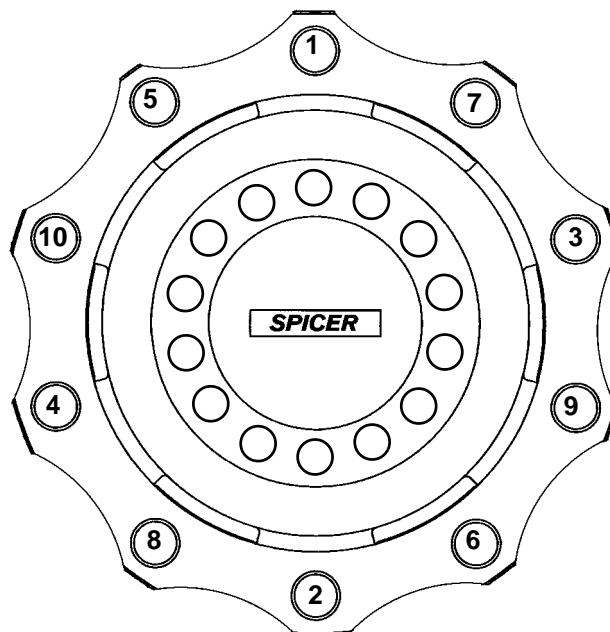
**WHEELNUT TIGHTENING
TORQUE SEQUENCE
FOR 6 STUD FIXING**

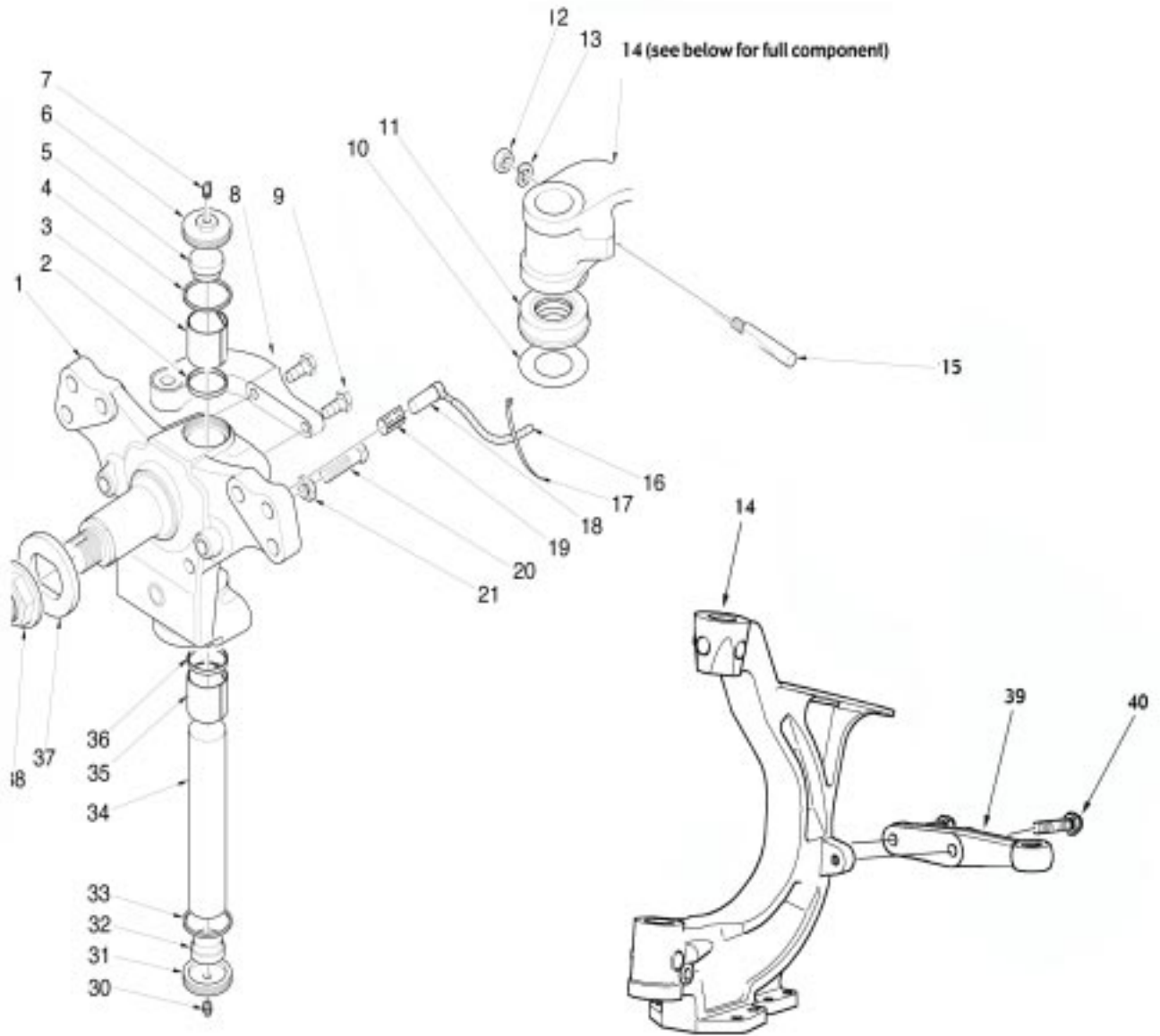


**WHEELNUT TIGHTENING
TORQUE SEQUENCE FOR TYPE
FOR 8 STUD FIXING**



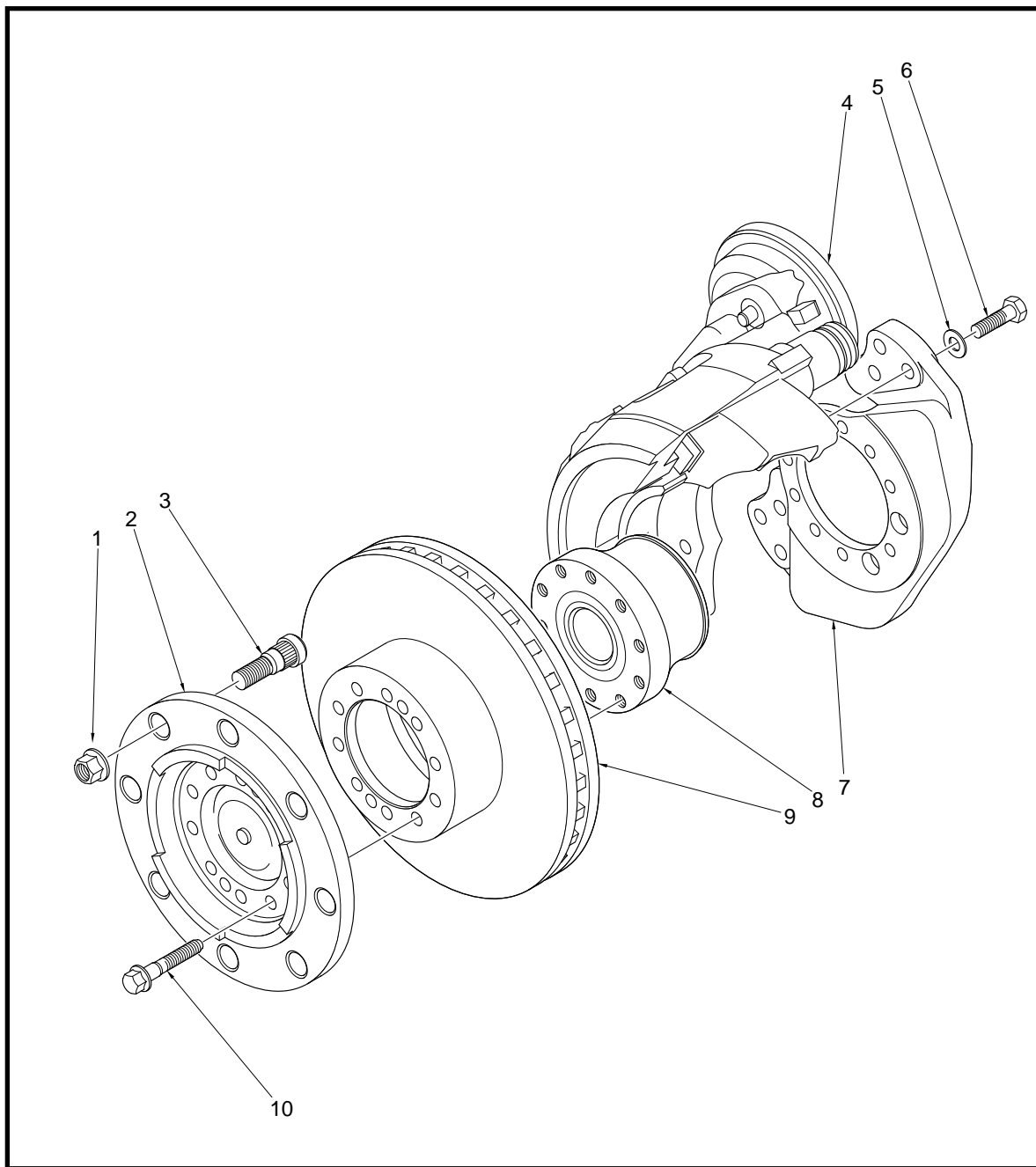
**WHEELNUT TIGHTENING
TORQUE SEQUENCE
FOR 10 STUD FIXING**





ITEM No	DESCRIPTION	ITEM No	DESCRIPTION
1	Swivel assembly	21	Lockstop nut
2	King pin oil seal (top)	22	Not required
3	King pin bush (top)	23	Not required
4	Top cap 'O' ring	24	Not required
5	Top cap foam insert	25	Not required
6	Top cap	26	Not required
7	Top cap lubricator	27	Not required
8	Top steering lever L/H	28	Not required
9	Top lever bolts	29	Not required
10	Setting shims	30	Bottom cap lubricator
11	King pin thrust bearing	31	Bottom cap
12	Cotter pin nut 1/2" UNF	32	Bottom cap foam insert
13	Cotter pin washer	33	Bottom cap 'O' ring
14	Suspension upright	34	King pin
15	Cotter pin	35	King pin bush (bottom)
16	Cable protector A.B.S sensor	36	King pin oil seal (bottom)
17	Tie wrap	37	Thrust washer (hub bearing)
18	A.B.S sensor	38	Hub nut
19	A.B.S sensor brush	39	5 th link lever
20	Lockstop screw	40	5 th link lever bolts

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

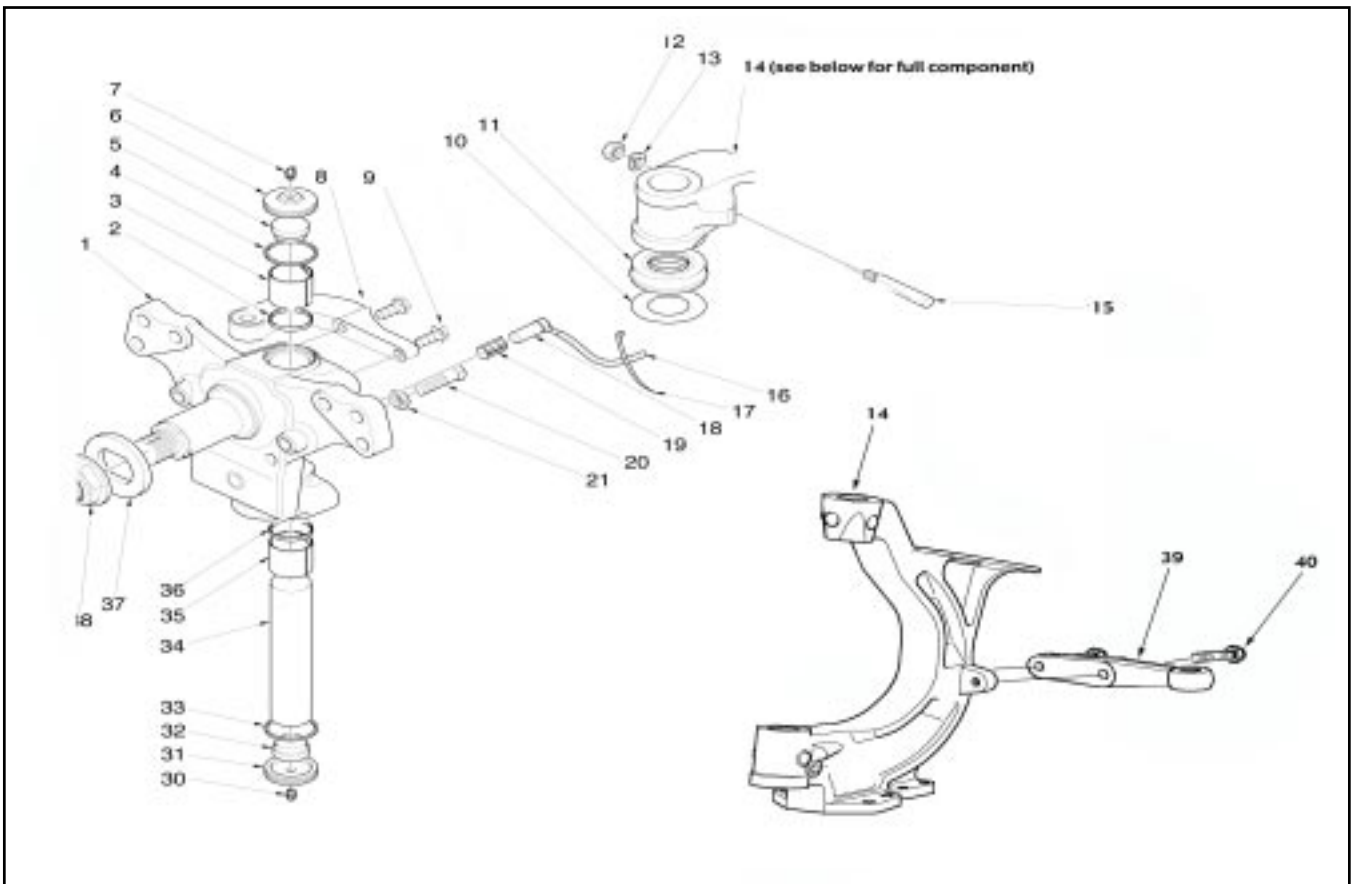


PARTS LIST FOR TYPE NDIFS 80P SWIVEL ASSEMBLY

CUSTOMER: PREVOST

ASSEMBLY NUMBER 26630

Item No	Description	Qty	Per Axle	Part number	Recommended Spares holding per		
					25 axles	50 axles	100 axles
1	Swivel		2	F4974/2	1	2	3
2	King pin oil seal (top)		2	F4866/32	2	4	6
3	King pin bush (top)		2	F4922/20	2	4	6
4	Not required on this application						
5	Top cap foam insert		2	F4858/46	6	12	24
6	Top cap		2	F4897/34	2	4	6
7	Top cap lubricator		2	SL1000/55	2	2	4
8	Bottom steering lever LH		1	F4974/8	1	2	3
	Bottom steering lever RH		1	F4978/7	1	2	3
9	Bottom steering lever bolt Long		2	ML6020/100X	2	4	6
	Bottom steering lever bolt Short		2	ML6020/65X	2	4	6
10	Swivel brg setting shims		as reqd	F4866/119B	3	6	12
				F4866/119C	3	6	12
				F4866/119D	3	6	12
				F4866/119E	3	6	12
11	King pin thrust bearing		2	F4872/220	4	8	16
12	Cotter pin nut 1/2" UNF		2	SL221/6	2	4	6
13	Cotter pin washer		2	SL241/6	2	4	6
14	Pivot arm		1	F4974/1	1	2	3
15	Cotter pin		2	F4858/57	2	4	6
16	Available on request						
17	Available on request						
18+19	Available on request						
	Also required but not illustrated						
	Plastic plug (ABS)		2	SL209/16	2	4	8





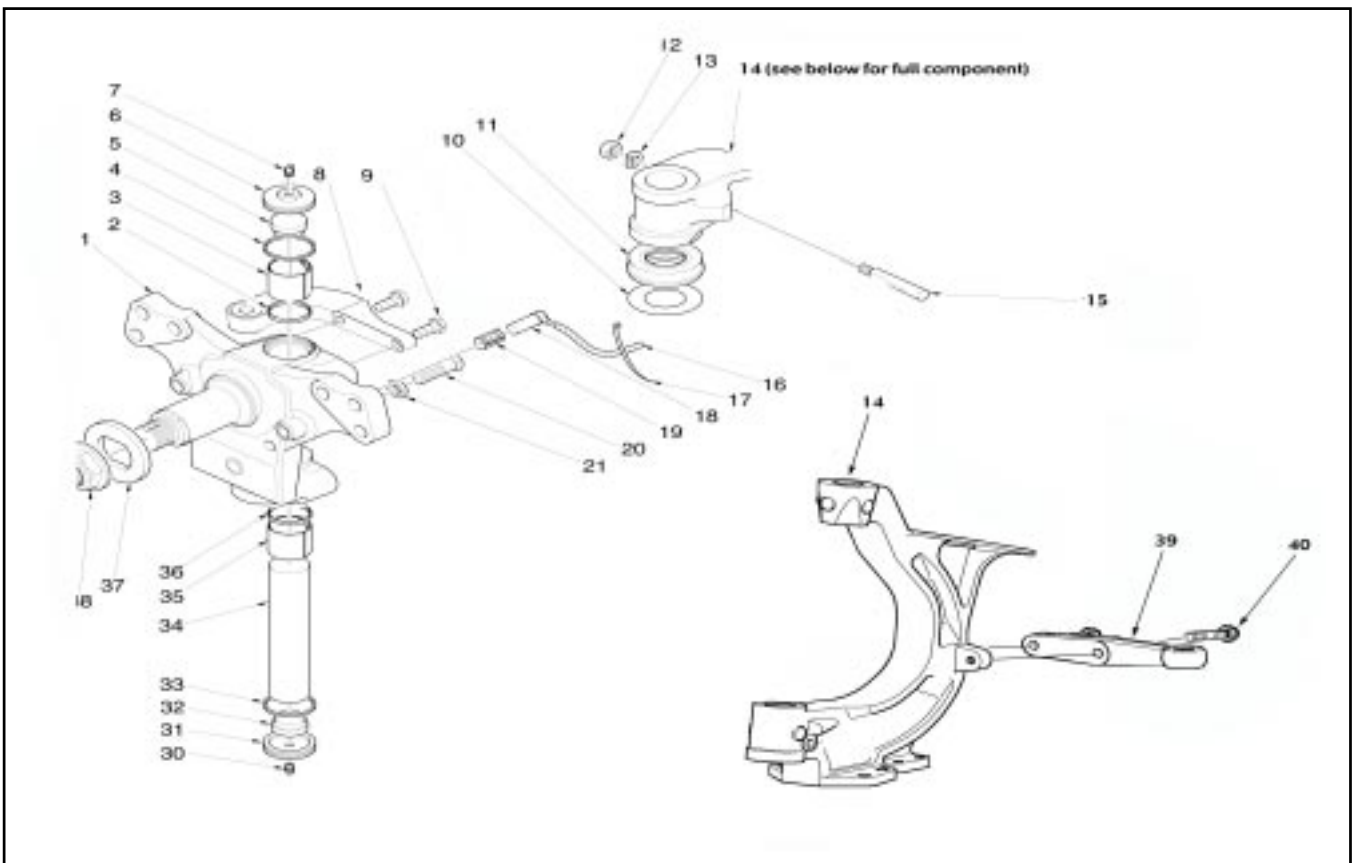
PARTS LIST FOR TYPE NDIFS 80P SWIVEL ASSEMBLY continued...

CUSTOMER: PREVOST

ASSEMBLY NUMBER 26630

Item No	Description	Qty Per Axle	Part number	Recommended Spares holding per		
				25 axles	50 axles	100 axles
20	Lockstop screw L/H & R/H	2	F4858/44F	2	4	6
	Lockstop screw L/H	1	F4858/44H	1	2	3
21	Lockstop nut	3	SL224/8	3	6	9
22	Not required on this application					
23	Not required on this application					
24	Not required on this application					
25	Not required on this application					
26	Not required on this application					
27	Not required on this application					
28	Not required on this application					
29	Not required on this application					
	Not required on this application					
30	Bottom cap lubricator	2	SL1000/55	2	2	4
31	Bottom cap	2	F4897/34	2	4	6
32	Bottom cap foam insert	2	F4858/46	6	12	24
33	Not required on this application					
34	King pin	2	F4866/14	2	4	6
35	King pin bush (bottom)	2	F4922/20	2	4	6
36	King pin oil seal (bottom)	2	F4866/32	2	4	6
37	Thrust washer (hub bearing)	2	F4567/30	2	4	6
38	Hub nut	2	F4567/77	2	4	6
39	5 th link lever LH	2	F4914/208	2	4	6
	5 th link lever RH	2	F4914/207	2	4	6
40	5 th link lever bolt Long	2	ML6020/80X	2	4	6
	5 th link lever bolt Short	2	ML6020/60X	2	4	6

NOT ILLUSTRATED ON DRAWING



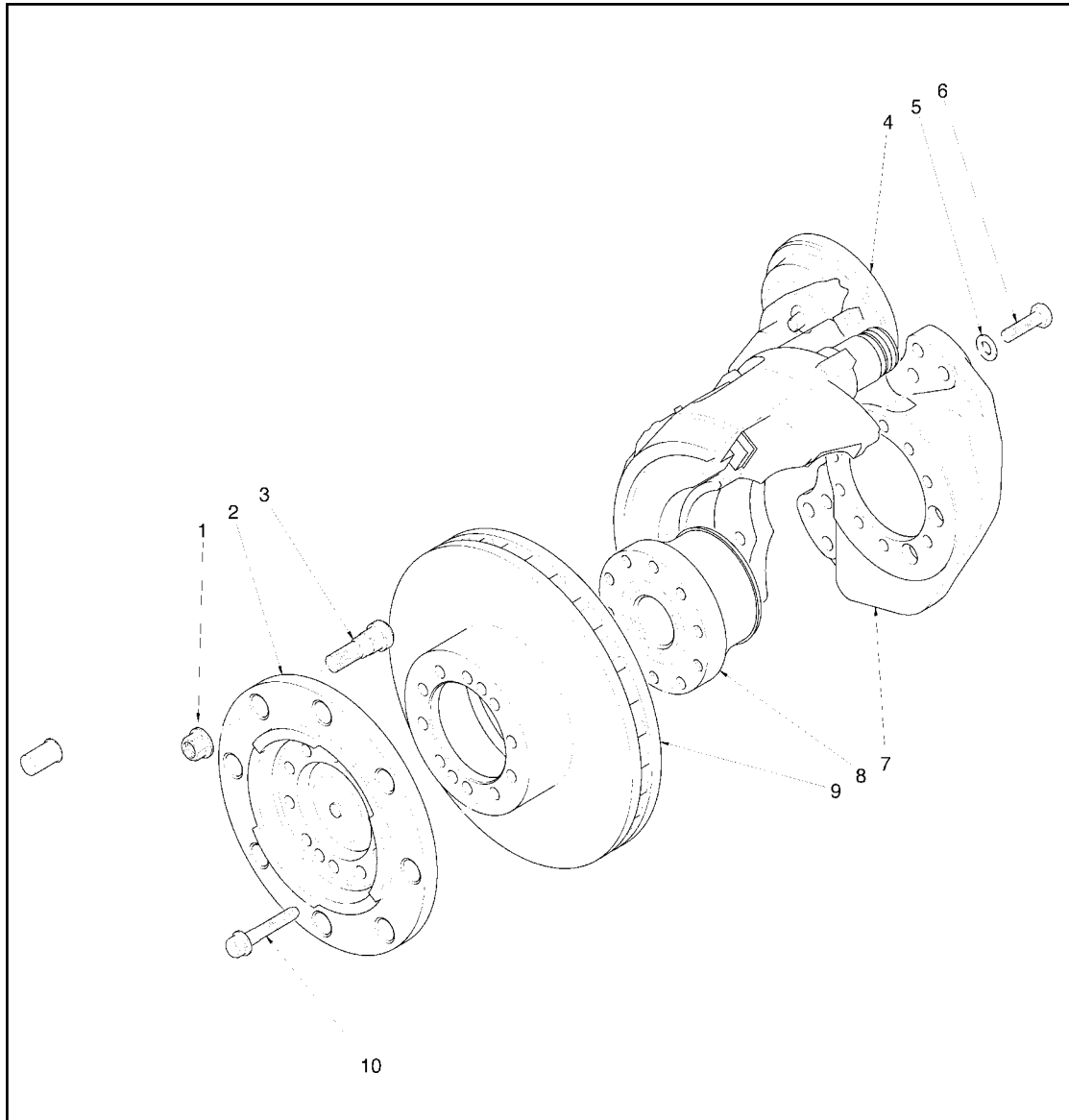


PARTS LIST FOR TYPE NDIFS 80P HUB AND BRAKE ASSEMBLY

CUSTOMER: PREVOST

ASSEMBLY NUMBER 26630

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

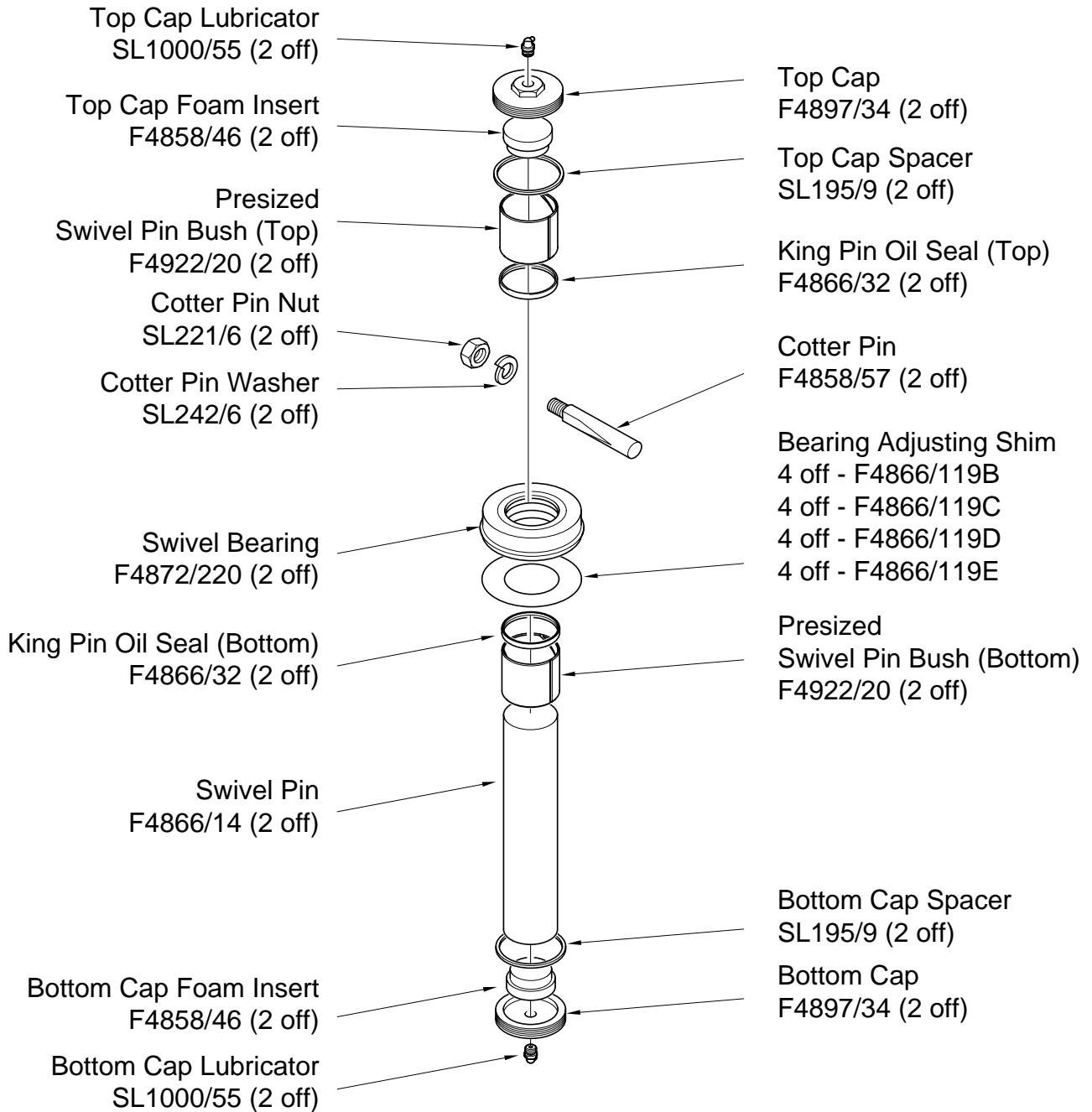




SPICER SPECIALITY AXLE DIVISION

KIT FOR AXLE SET

TP1803



NOTE:- THE FOLLOWING SERVICE TOOLING IS REQUIRED FOR INSTALLATION OF THIS KIT.

- E659 PULLER FOR TOP AND BOTTOM BUSHES**
- E661 KING PIN OIL SEAL / BUSH BUMPER**
- E657 ALIGNMENT TOOL FOR FITTING SWIVEL TO AXLE BED**

REFER TO RELEVANT SERVICE MANUAL FOR FITTING INSTRUCTIONS,

Alteration Numbers

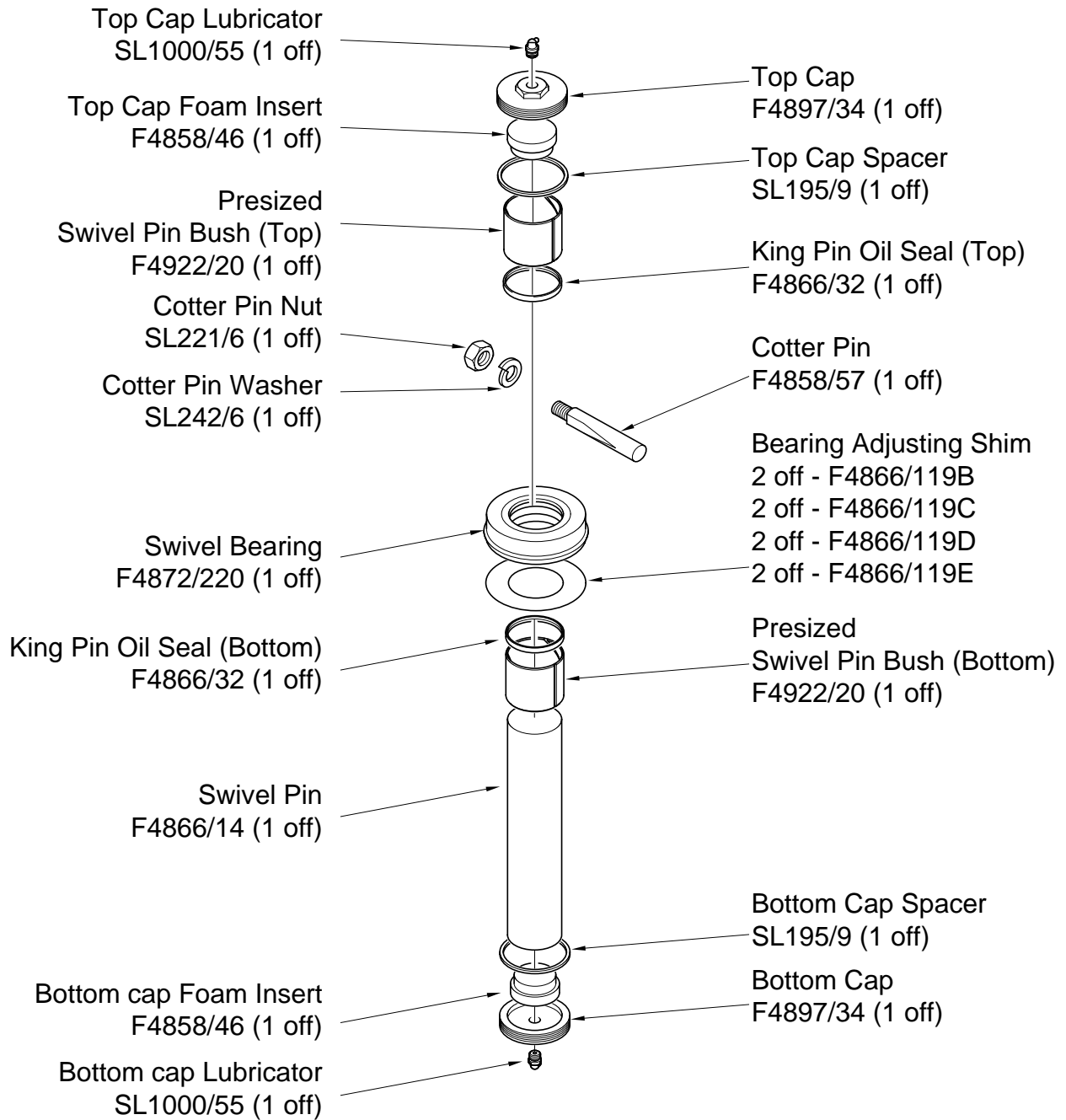
Issue A	002						
Distribution :- Spares dept. Service		Swivel Pin Kit List No. 12280/27		Axle Type NDS 80		Kit Arrgt. No.12280/27A	



SPICER SPECIALITY AXLE DIVISION

KIT FOR 1 HUB END

TP1803



NOTE:- THE FOLLOWING SERVICE TOOLING IS REQUIRED FOR INSTALLATION OF THIS KIT.

- E659 PULLER FOR TOP AND BOTTOM BUSHES**
- E661 KING PIN OIL SEAL / BUSH BUMPER**
- E657 ALIGNMENT TOOL FOR FITTING SWIVEL TO AXLE BED**

REFER TO RELEVANT SERVICE MANUAL FOR FITTING INSTRUCTIONS,

Alteration Numbers

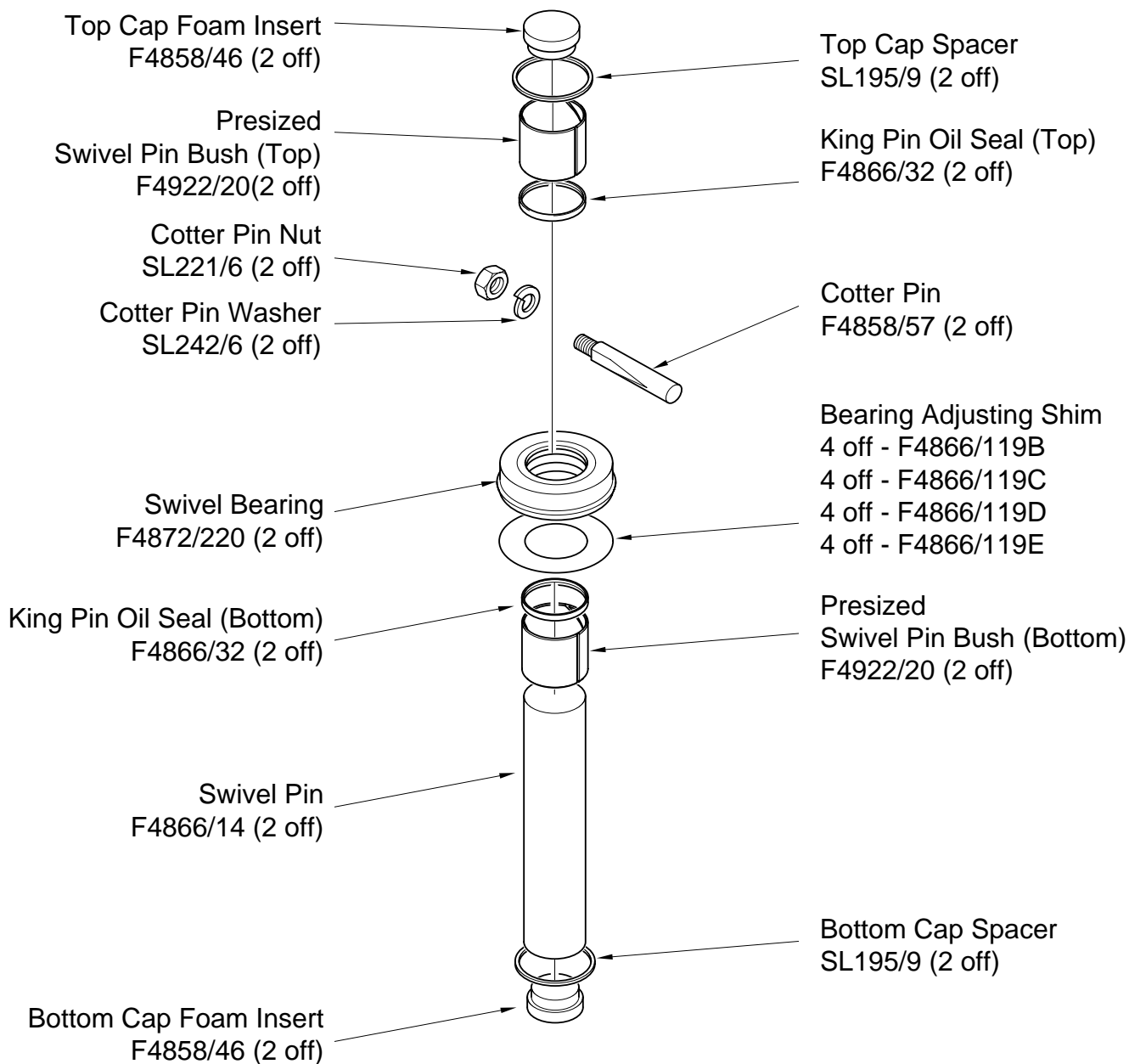
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Distribution :-002 Spares dept. Service		Swivel Pin Kit List No. 12280/28	Axle Type NDS 80	Kit Arrgt. No.12280/28A			



SPICER SPECIALITY AXLE DIVISION

KIT FOR AXLE SET

TP1804



NOTE:- THE FOLLOWING SERVICE TOOLING IS REQUIRED FOR INSTALLATION OF THIS KIT.

- E659 PULLER FOR TOP AND BOTTOM BUSHES**
- E661 KING PIN OIL SEAL / BUSH BUMPER**
- E657 ALIGNMENT TOOL FOR FITTING SWIVEL TO AXLE BED**

REFER TO RELEVANT SERVICE MANUAL FOR FITTING INSTRUCTIONS,

Alteration Numbers

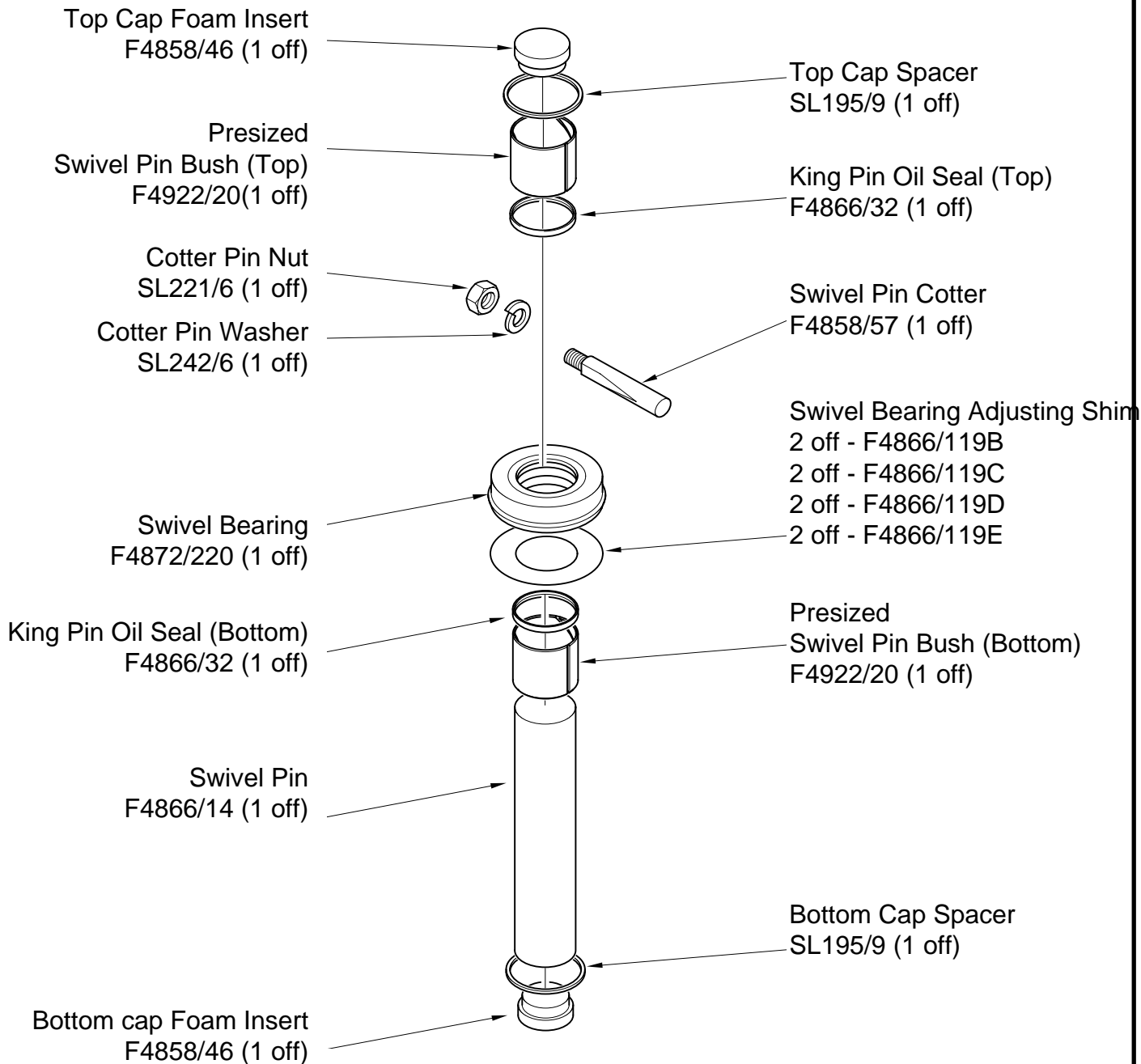
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Distribution :- 002 Spares dept. Service		Swivel Pin Kit List No. 12280/29		Axle Type NDS 80		Kit Arrgt. No.12280/29A	



SPICER SPECIALITY AXLE DIVISION

KIT FOR 1 HUB END

TP1804



NOTE:- THE FOLLOWING SERVICE TOOLING IS REQUIRED FOR INSTALLATION OF THIS KIT.

- E659 PULLER FOR TOP AND BOTTOM BUSHES**
- E661 KING PIN OIL SEAL / BUSH BUMPER**
- E657 ALIGNMENT TOOL FOR FITTING SWIVEL TO AXLE BED**

REFER TO RELEVANT SERVICE MANUAL FOR FITTING INSTRUCTIONS,

Alteration Numbers

Issue A	002						
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Distribution :- Spares dept. Service	Swivel Pin Kit List No. 12280/30	Axle Type NDS 80	Kit Arrgt. No.12280/30A
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NOTES



**SERVICE AND REPAIR INSTRUCTIONS FOR
KNORR-BREMSE PNEUMATIC DISK BRAKE
SB6000 / SB7000**

MANUAL SECTION C

Service and Repair

WI-SB0001 EN

Pneumatic Disk Brake **SB6000/SB7000**



KNORR-BREMSE
Systems for Commercial Vehicles

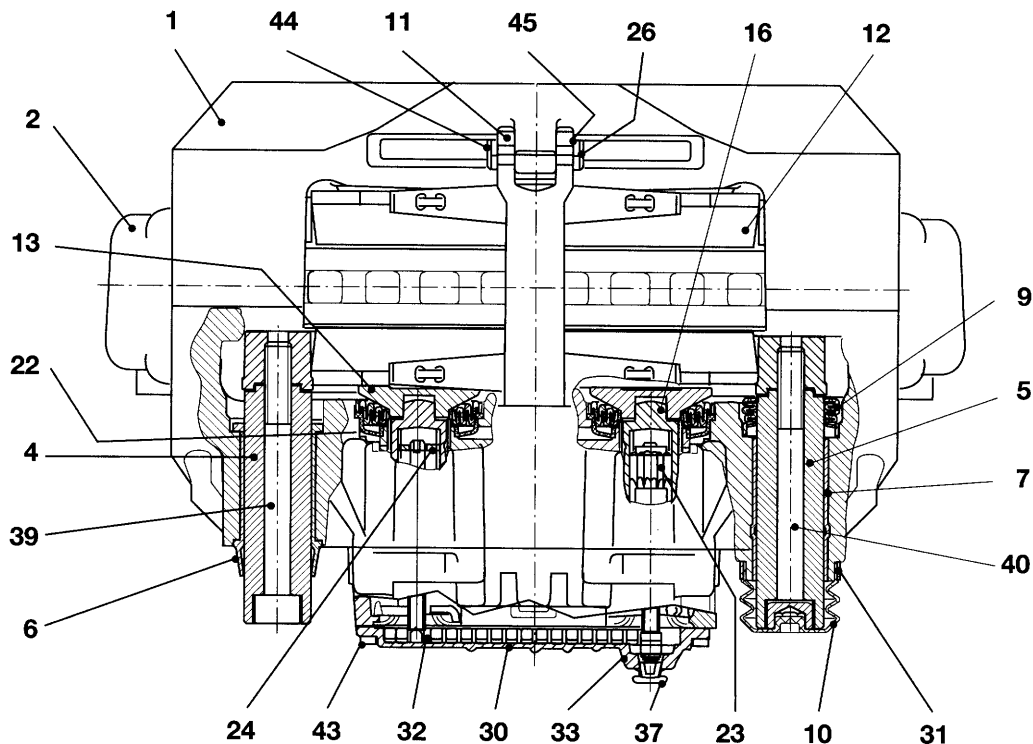


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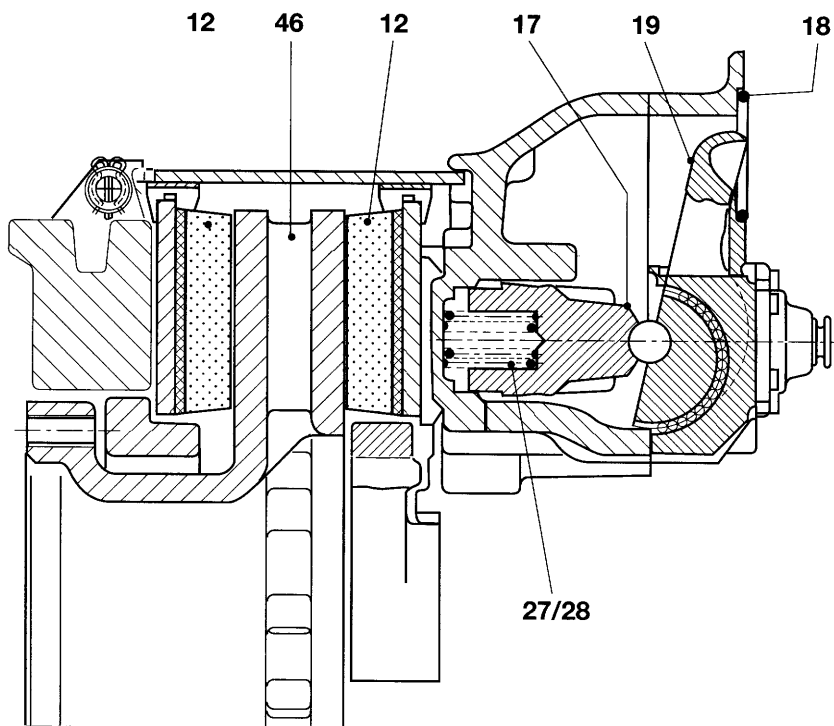
1. Construction and Function

1.1.1 Sectional Drawing



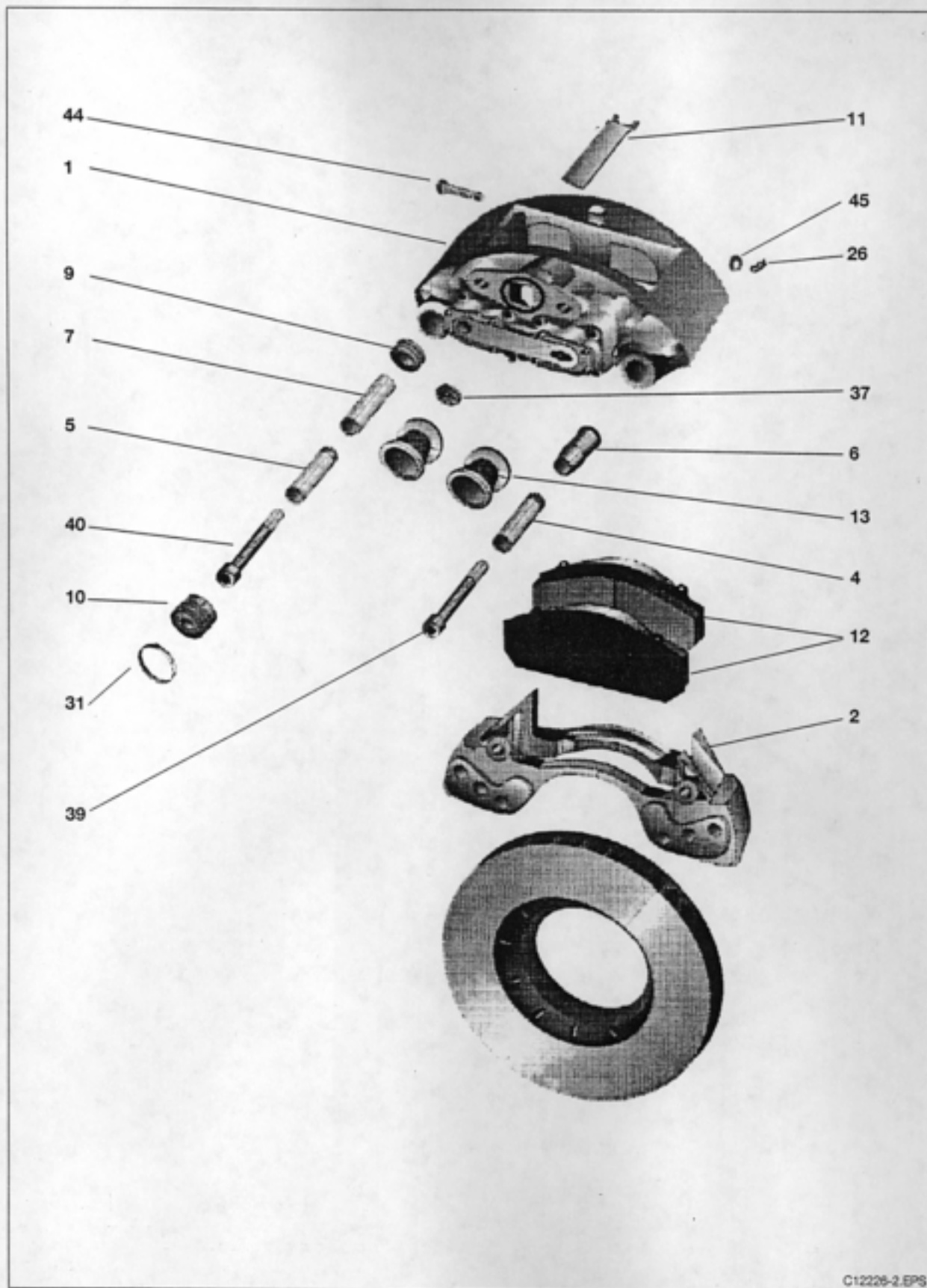
Key: (see Page 5)

- 1 Brake Caliper
- 2 Brake Carrier
- 4 Guide Bush
- 5 Guide Bush
- 6 Guide Sleeve
- 7 Bushing
- 9 Bellow for Guide Bush
- 10 Bellow Cap
- 11 Brake Pad Bracket
- 13 Thrust Member with Bellow
- 16 Threaded Tube
- 17 Beam
- 18 O-Ring
- 19 Lever
- 22 Cap
- 23 Clearance Adjuster
- 24 Driver
- 26 Spring Splint Pin
- 27 Compression Spring
- 28 Compression Spring
- 30 Roller Chain
- 31 Perforated Clip
- 32 Chain Drive Wheel
- 33 Shaft Sealing Ring
- 37 Cap
- 39 Cheese-Head Screw
- 40 Cheese-Head Screw
- 43 Cheese-Head Screw
- 44 Pin
- 45 Washer
- 46 Rotor Disc



27/28

1.1.2 Exploded View of SB6000/SB7000



C12226-2.EPS

1.2 Function

Principal: Floating Brake Caliper

1.2.1 Operation of the Brake

The piston rod of the brake chamber pushes the lever (19) during a brake application.

The force is transmitted via the excentric roller bearing mounted in the lever towards the beam (17). The clamping force acts via the threaded tubes (16) and the thrust members (13) onto the inner brake pad (12).

After compensating for the clearance between brake pad and rotor disc (46) the reaction force is transmitted via the brake caliper onto the outer brake pad (12).

1.2.2 Release of the Brake

When the brake pressure is reduced, the two springs (27,28) push the beam with the threaded tubes and the lever (19) back into the original position.

1.2.3 Adjustment of the Brake

The brake is equipped with an automatic, wear free clearance adjuster, which keeps a constant clearance between brake pad and rotor disc.

With every brake application a simultaneous application is made by the clearance adjuster (23), which is connected to the lever (19).

The threaded tubes (16) are turned due to wear via the clearance adjuster (23) and driver (24), when the clearance due to brake pad and rotor disc wear is exceeded .

2. Maintenance Information

2.1 Brake Pads

The thickness of the brake pads have to be checked on a regular basis depending on the vehicle operation, according to the vehicle manufacturer's specification and to the legislation.

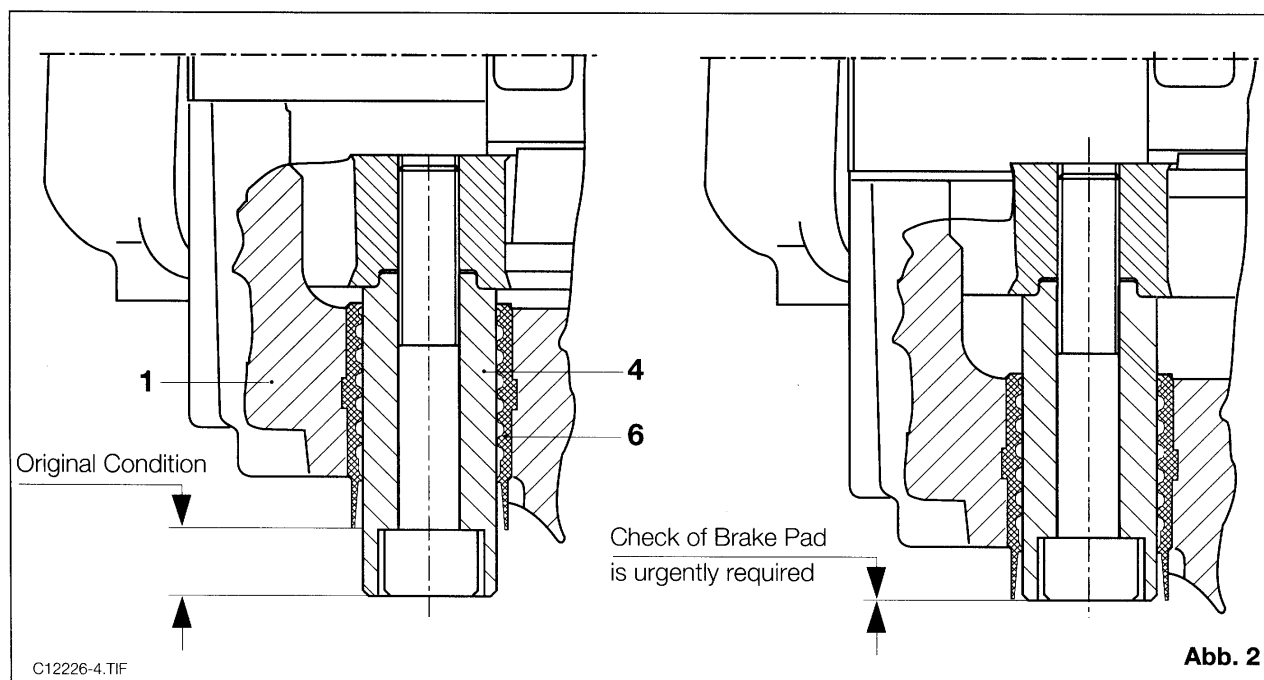
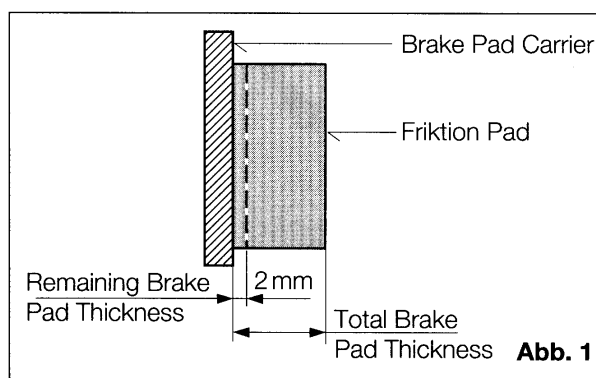
See also chapter **2.4.**

The remaining thickness of the brake pads should not be less than 2 mm. See **fig. 1.**

Due to the position of the brake caliper (1), in relation to the fixed guide bush (4), the brake pad condition can be checked visually, without dismantling the wheels. See **fig.2.**

In case the end of the guide sleeve (6) is in alignment with the fixed guide bush (4) the remaining brake pad thickness has to be checked exactly with dismantled wheels .

The replacement of the brake pads is described in chapter **3.**



2.2 Bellows on the Thrust Members

The bellows on the thrust members (13) and the caps (22) should not show any cracks or other damage. The penetration of dirt and humidity leads to corrosion and influences the function of the clamping mechanism and the clearance adjustment.

The replacement of bellows is described in chapter 3.

2.3 Brake Caliper

The brake caliper (1) should move easily on the guiding parts (5) and (7), respectively (4) and (6).

The guide bush (5) is sealed with the bellow (9) and bellow cap (10).

The parts (9) and (10) should not show any cracks or damage.

The replacement of the parts (9) and (10) (sealing) and the guiding parts are described in chapter 3.

2.4 Rotor Disc

Checking the Rotor Disc (46) Condition:

The sections A-D (fig.3) show possible rotor disc surface conditions:

- A ➔ network cracks = permissible
- B ➔ cracks from the outside towards the hub centre cracks max. 1.5mm (width and depth) = permissible
- C ➔ uneven rotor disc surface below 1.5 mm = permissible
- D ➔ cracks crossing the rotor disc = **not permissible**

Technical Specification:

- Rotor Disc Width, new = 45 mm
- Permissible Wear = 7 mm
- Absolute Wear Dimension = 38 mm

With rotor disc surface conditions **A to C** the rotor disc can be used until the absolute wear dimension is reached.

Turning off dimensions and exchange of rotor disc see **table 2** (next page).

The exchange of the rotor disc depends on its condition and wear dimension.

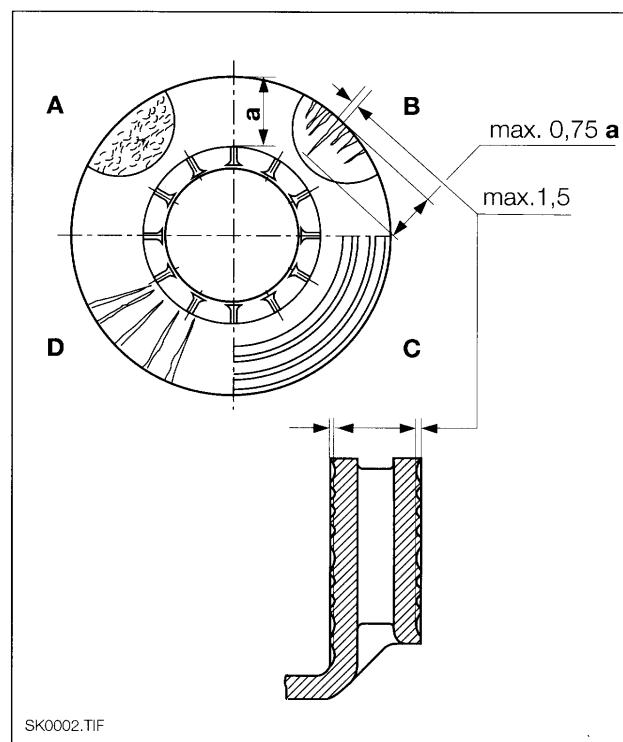
The new rotor disc has a width of 45 mm.

The minimum permissible width of the rotor disc is 38 mm and should not be exceeded.

The wear dimension is 7mm (3.5 mm per rotor disc side), it can only be exceeded when an oversize brake pad is fitted.

When the width of the rotor disc reaches 41 mm an oversized brake pad should be used.

The dimensions of the individual brake pads are shown in **table 1** (see page 8).



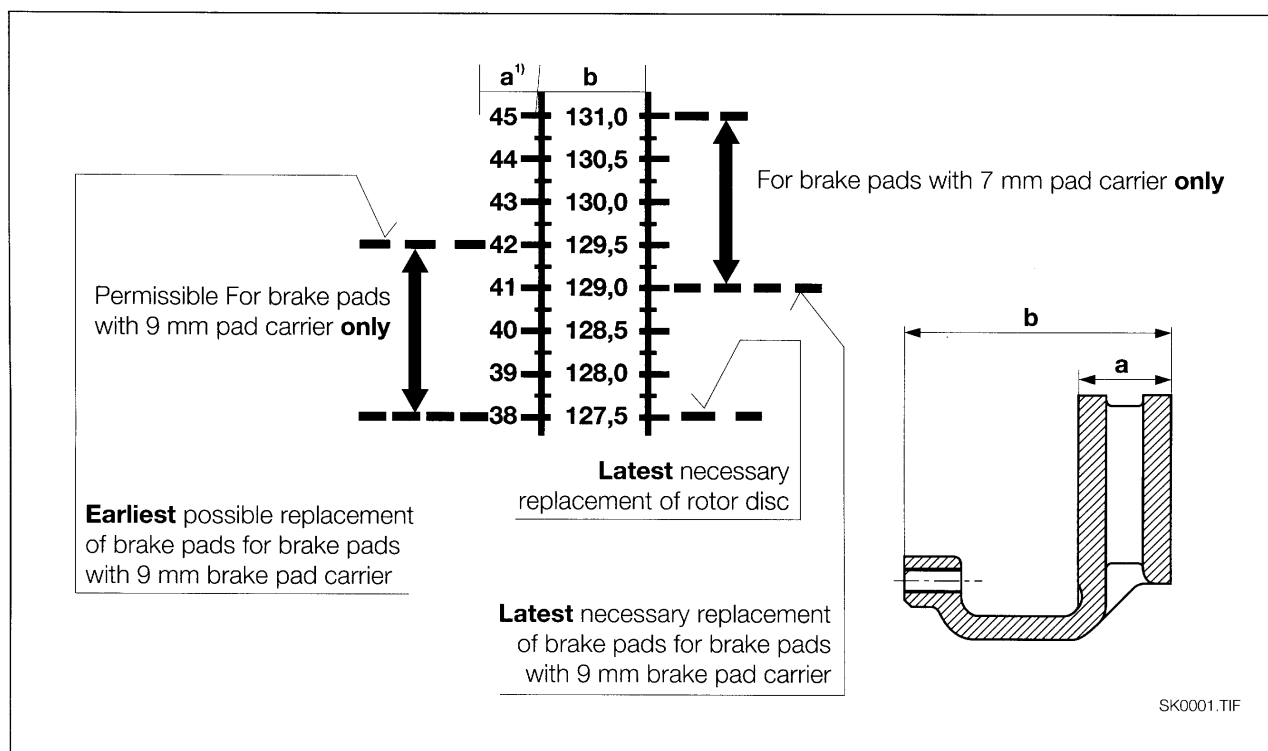
Attention !

To prevent damage of the rotor disc, the brake pads should be replaced when the brake pad shows a minimum dimension of 2 mm on the thinnest position above the brake pad carrier.

Table 1:
Brake Pad Dimensions

	Dimension	Standard Brake Pad	Oversized Brake Pad	
		[mm]	[mm]	
Brake Pad Carrier Thickness	T	7	9	
Brake Pad Thickness	S	23	23	
Total Thickness	h	30	32	

Table 2:
Adjustment of the rotor disc dimensions for the individual wear conditions and the timing of the brake pad replacement.



Attention !
If these instructions are not followed, there is a danger, that with worn out brake pads the rotor disc will be damaged and therefore the braking efficiency will be reduced or will be even lost.

2.5 Brake Chamber

The brakes are only to be allowed to be configured with brake chambers, which must have an inner

This means, that the pressure rod, which acts towards the lever (19) must be sealed to the secondary area of the brake chamber, otherwise the clamping mechanism would be completely open to atmosphere.

1) Attention: Please note the vehicle manufacturer's specification!

3. Reference for Repair

- Note, that the vehicle must be lifted and secured!
- Dismantle wheels!
- Make sure, that the brake can not be operated during repair

Attention ! Brake pads to be replaced for the whole axle!

- During installation of wheels, check if the tyre valve has enough space to the brake caliper.
- With the wheel mounted, there has to be enough space, otherwise the tyre valve can be damaged as well as the tyre.

3.1 Replacement of Brake Pads

Take away the spring splint pin (26) and washer (45) (fig.4).

Pre-load brake pad bracket (11) with a driver and push the pin (44) out of the bore hole (fig.5).

To remove the brake pads (12) easily out of the brake pad shaft, the threaded tubes (16) must be screwed out.

Therefore remove cap (37) with a screw driver (**fig.6**).

3.1.1 Reversal of the Threaded Tubes

Turn with the hexagonal part (SW=8mm) of the clearance adjuster (23) the threaded tube anti-clockwise until stop (**fig.7**).

During reverse (anti-clockwise) the overload clutch inside the clearance adjuster generates a "click"-noise caused by the torque.

Remove brake pads (12) from the brake pad shaft. After the brake pads are removed check the brake condition.

Consider chapter **2.2** to **2.5** for the inspection.

If no malfunctions are discovered, new brake pads can be installed.

Attention !

Use only original brake pads, which are released by the vehicle manufacturer and/or Knorr Bremse granted replacement parts.

Failure to follow these instructions will invalidate any guarantees or warranty !

Attention !

With used rotor disc (46) the new brake pads need to be chamfered on the inside and outside radius (4x45 degree).

The brake pad carrier must have a thin covering of copper paste in the area of the contact to the brake caliper (1) and brake carrier (2).

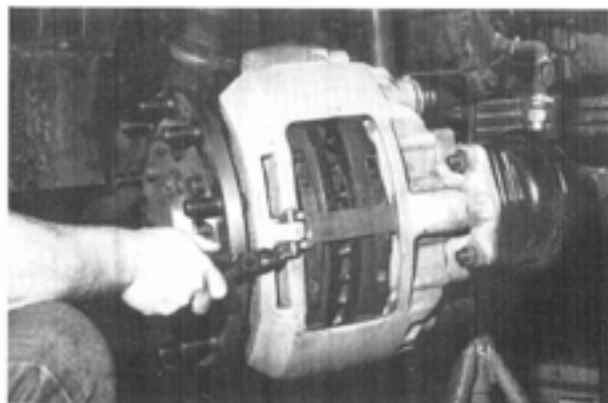


Fig. 4



Fig. 5

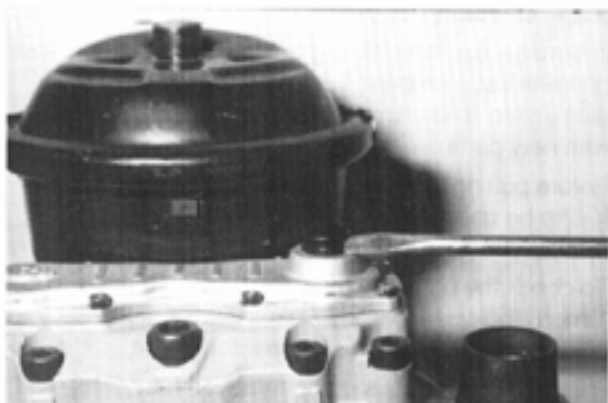


Fig. 6



Fig. 7

The assembly of the brake pads (12) has to be done in the reverse way to dismantling.

Push brake caliper (1) to the vehicle outside direction and put in the outer brake pad (12).

Push the brake caliper in the direction to the vehicle inside and put in the inner brake pad (12) **(fig.8)**.

3.1.2 Clearance Adjustment

Slide a feelergauge in between the thrust member (13) and brake pad carrier and adjust the clearance to 0.7 mm by turning the hexagonal (SW=8) of the clearance adjuster (23) clockwise **(fig.9)**.

Put on cap (37).

After brake operation the wheel and/or the hub should turn easily, when the brake is released.

Put in the brake pad bracket (11) into the brake caliper and pre-load it with a screw driver, so that the pin can be easily mounted into the bore hole **(fig.10)**.

Put in pin (44) and washer (45) and secure with a spring splint pin (26).

Attention !

Run in the brake pads, avoid long brake applications as well as harsh braking.

3.2 Replacement of the Thrust Members with Bellows and Checking of Clamping Unit

3.2.1 Checking of the Clamping Unit

If damage is noticed during the checking of the bellows of the thrust members (13), both bellows have to be dismantled. The dismantled parts must be replaced with new parts.

Before putting in the new parts the clearance adjuster has to be checked for corrosion and for easy operation.

To check the parts the threaded tubes (16) have to be turned clockwise with the clearance adjuster (23) hexagonal (SW=8) towards the rotor disc.

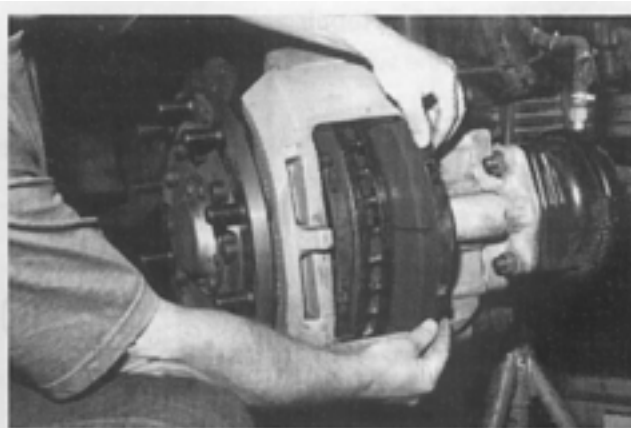
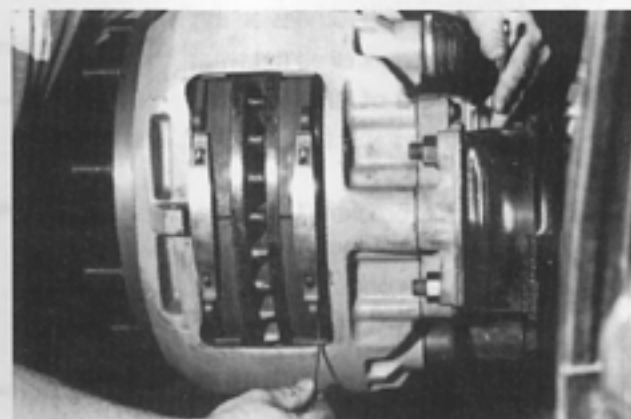
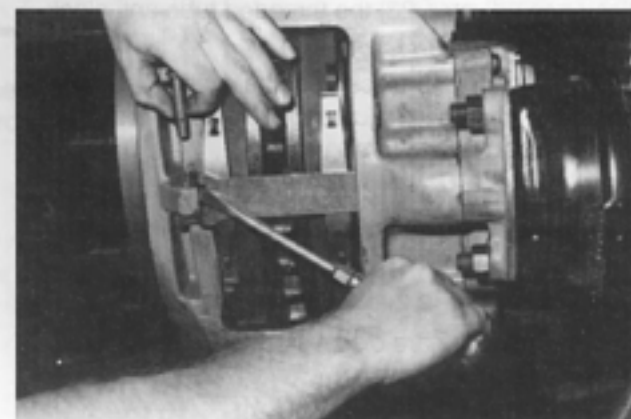
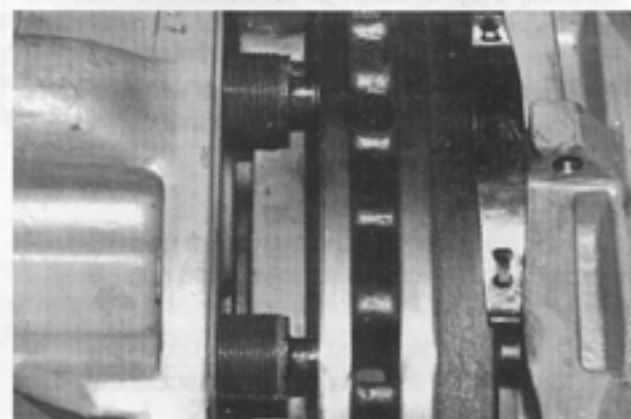
By turning the threads of the threaded tubes (16), check for corrosion.

Rust on the threads of the threaded tubes indicate the need for an overhaul of the brake by a Knorr service specialist **(fig.11)**.

Attention:

To prevent the threaded tubes (16) not being completely turned out of the beam (171), make sure that there is a new brake pad in the outer brake pad shaft.

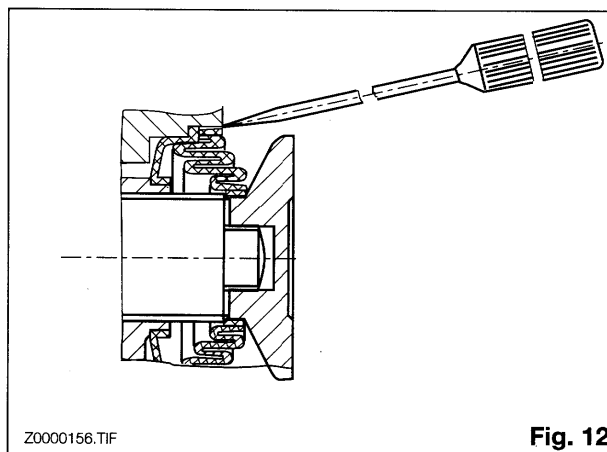
If the threaded tubes are withdrawn from the beam, the reassembly and adjustment must be carried out by a Knorr Service Specialist.


Fig.8

Fig. 9

Fig. 10

Fig. 11

3.2.2 Removal of defective Bellows

It is possible to remove defective bellows with the brake installed on the vehicle.

Push a screw driver in between the outer diameter and brake caliper bore and remove bellow (fig.12).



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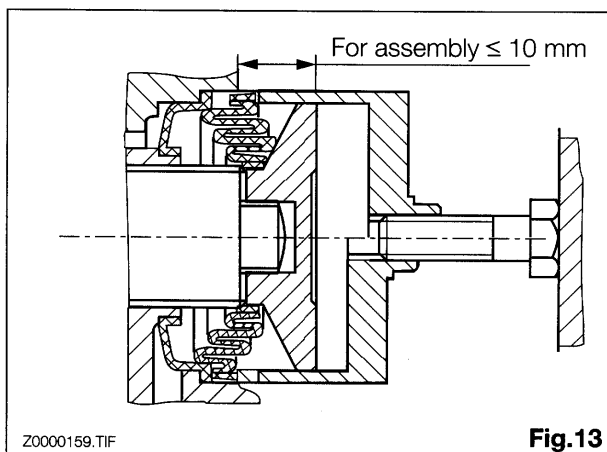
Fig. 12

3.2.3 Installation of the Thrust Members with Bellow

Place the thrust member with bellow (13) onto the exposed mating part of the threaded tube (16).

Ensure that the press tool is centered on thrust member (13) and press it in with the assembly tool (SW= 13) (fig. 13).

Assembly tool order-no.: II 19252



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Fig.13

3.3 Repair of Brake Caliper Bearing

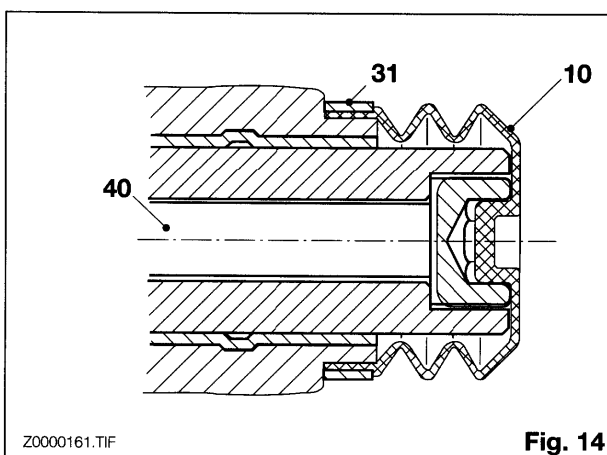
3.3.1 Removal of the Brake Caliper from the Brake Carrier

Take out brake pads as described in chapter 3.1.

Release perforated clip (31) and remove it.

Remove bellow cap (10).

Release screws (39) and (40) with hexagonal wrench (SW=14) and remove them (fig.14).



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Fig. 14

3.3.2 Replacement of the Inner Bellows

3.3.2.1

Pull out bellow (9) with screwdriver (fig.15).



Fig. 15

3.3.2.2

Insert bellow (9) into assembly tool.

Order-no.: II 19253 (**fig.16**).

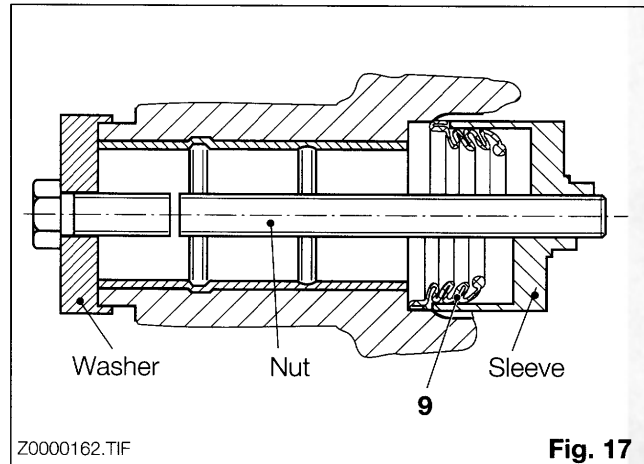


Fig. 16

3.3.2.3

Press in new bellow (9~ with assembly tool.

Order-no.: II 19253 (**fig.17**).



3.3.3 Replacement of Guide Sleeve (Elastic Guiding)

3.3.3.1

Press out defect guide sleeve (6) from the brake caliper bore.

Squeeze the new guide sleeve at the collar and insert it from the inside of the brake caliper into the bore (**fig.18**).



Fig. 18

3.3.3.2

Push guide sleeve through until it can be touched on the other end.

Note that the collar of the guide sleeve fits tightly against the bore shoulder, so that there is no movement (**fig.19**).

Grease guide sleeve inside with 3 to 5 grams grease „Syntheso GI EP1“ (branch Klüber).

Order-no.: 503880

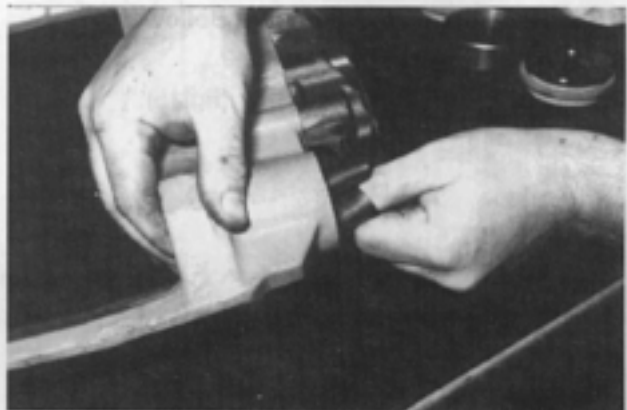
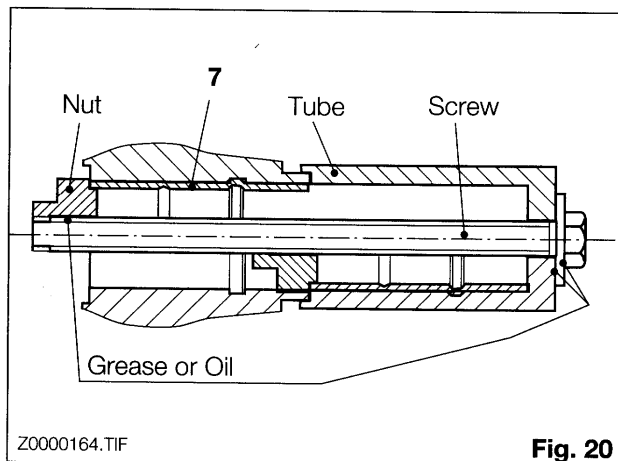


Fig. 19

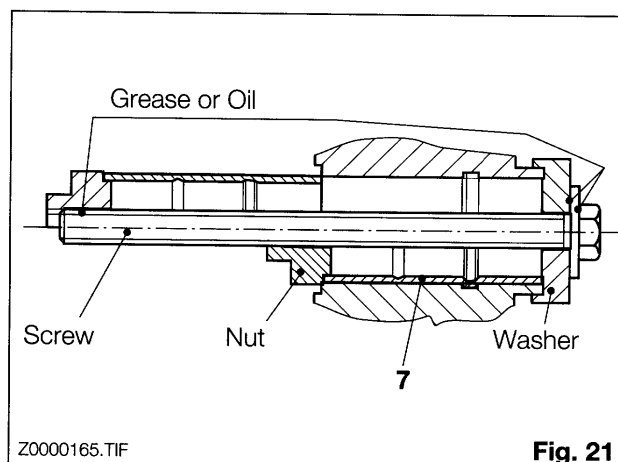
TP1430

3.3.4 Replacement of the Bushing (Fixed Guiding)
3.3.4.1

Pull out bushing (7) with assembly tool.
Order-no.: II 19254 (**fig.20**).

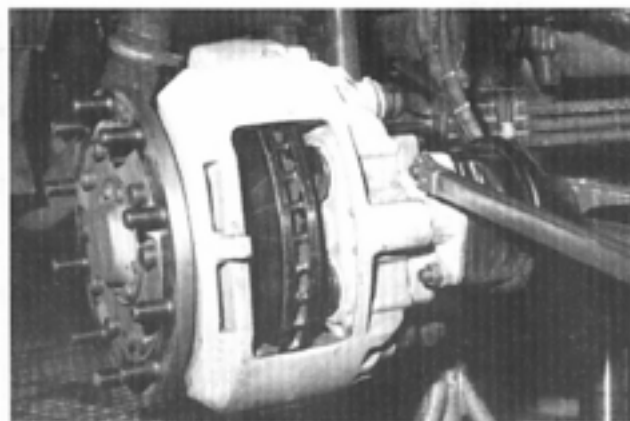

Fig. 20
3.3.4.2

Draw in new bushing (7) with assembly tool until stop (**fig.21**)
Order-no.: II 19254


Fig. 21
3.4 Replacement of the Brake Chamber
3.4.1

Unscrew Air Connector from the Brake Chamber.
Release the two fixing nuts (M16x1.5-SW24) on the brake housing.

Take away brake chamber (**fig.22**).


Fig. 22
3.4.2

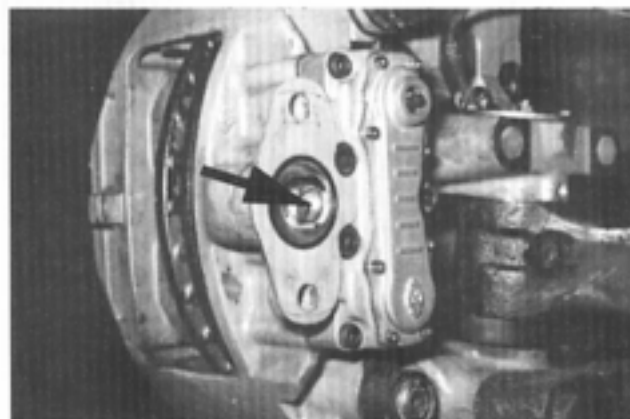
Before installing the new brake chamber, the cup in the lever (19) has to be greased with multipurpose grease, e.g. "RENOLIT HLT 2", (**fig.23**).

Attention!

Do not use a molybdenumsulphite combined grease!

Use brake chambers with „inner sealing“ see chapter 2.5!

Ensure that the o-ring is in the correct position between the brake caliper and brake chamber!


Fig. 23

4. Screw tightening torques of pneumatic disc brake SB6000 SB7000

Position no. (s. p. 4 a. 5)		Tightening Torque [Nm]	ScrewWidth (SW)	Hexagonal	
				Outer-	Inner-
39 + 40	Guide Bushing on Brake Caliper 2 Screws M 16x1.5-10.9	279 ⁺³¹	14		X
—	Brake Chamber 2 Nuts M16x1.5	180 ^{±20}	24	X	

Assembly Tools

Order- No.	Contents
II 19252	Installation Thrust Member with Bellow
II 19253	Inner Bellow for Brake Caliper Guiding
II 19254	Bushing for Caliper Guiding

6 Wearing Parts

Attention!
Use only original Knorr parts!

Please contact your Knorr Bremse authorized distributor, because the brake discs have different parts depending on the individual vehicle manufacturer's requirements.