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**SECTION CHANGE LOG**

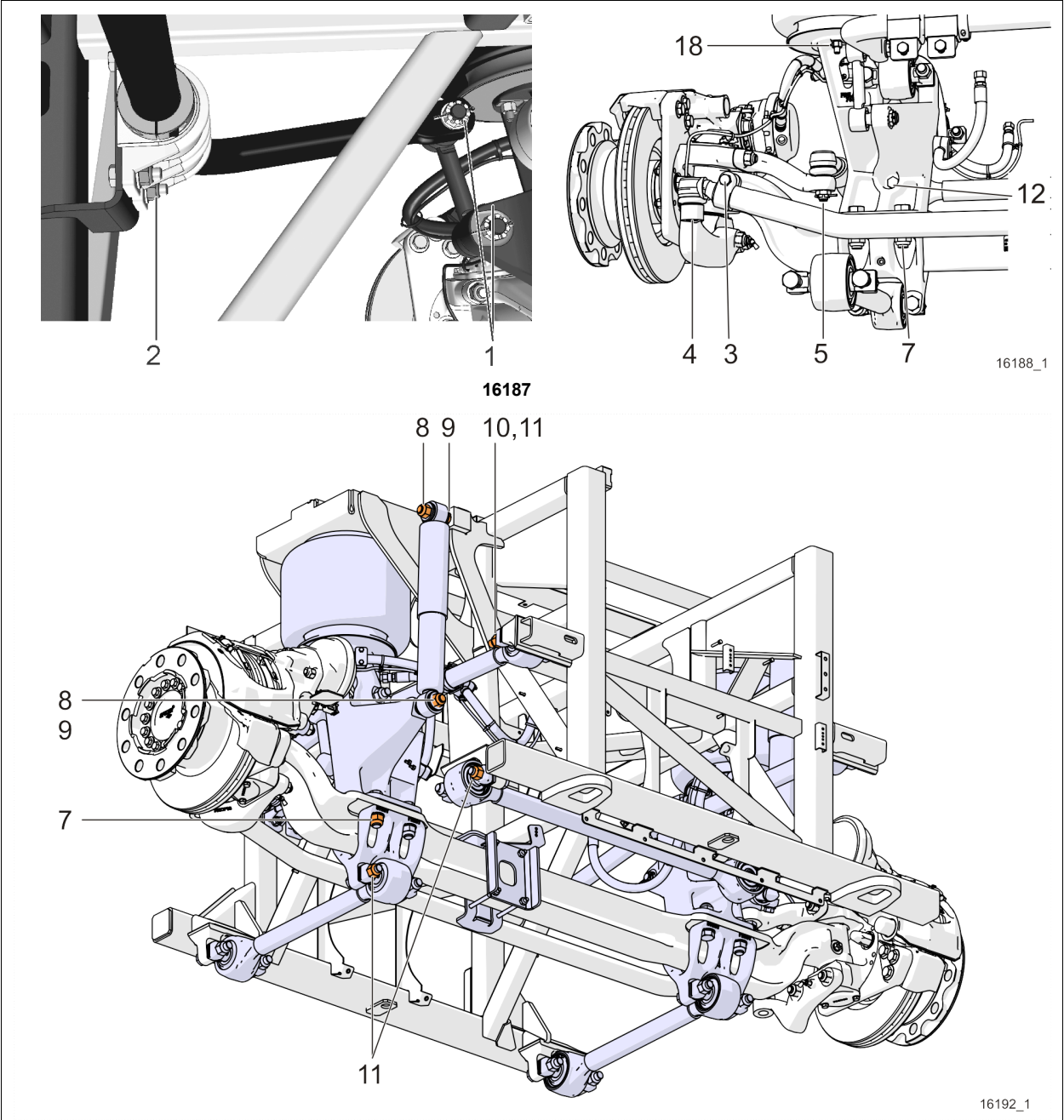
DESCRIPTION		DATE
1	Front I-beam axle, new tie-rod	2018-10-16
2		
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1. TORQUE TABLES

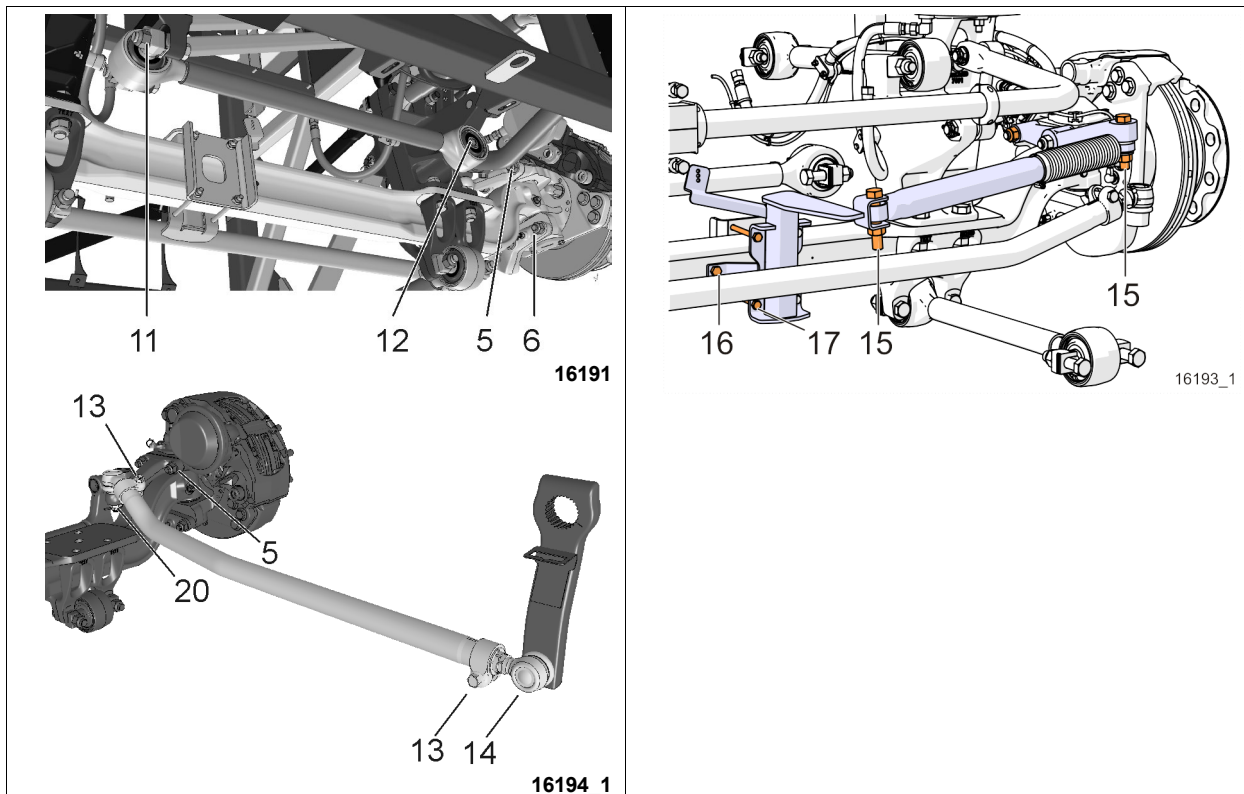
The following tables list the tightening torques requiring a specific torque value. When no torque specifications are indicated, use the Standard Torque Specifications table found in Section 00: General Information of the Maintenance Manual.

For other torque specifications, refer to Dana manuals listed in paragraph 2.1 reference manuals in this section.

1.1 FRONT I-BEAM AXLE AND RELATED COMPONENTS



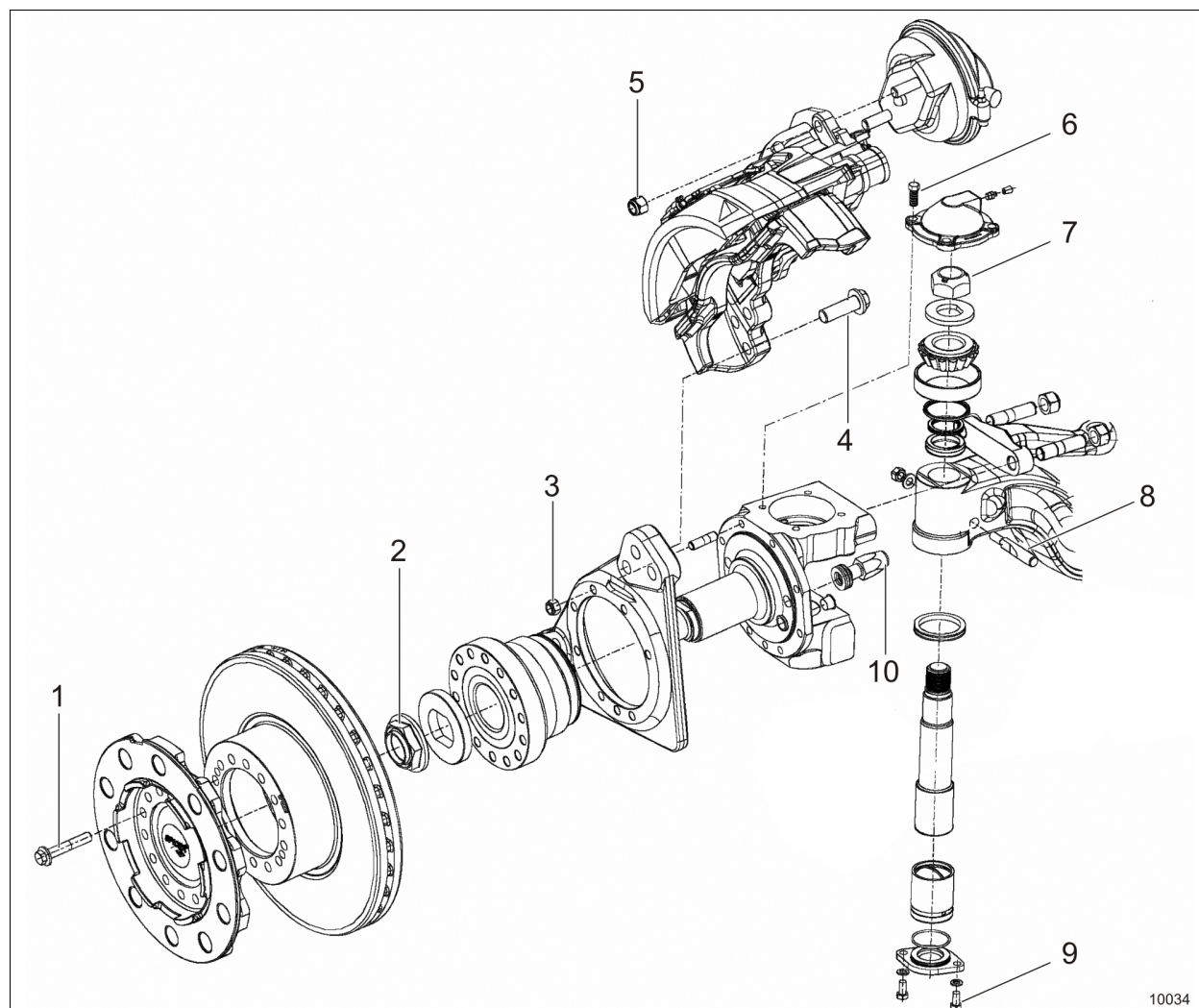
## SECTION 10: FRONT I-BEAM AXLE



### FRONT I-BEAM AXLE

No	DESCRIPTION	QTY	TORQUE (dry)
1	Sway bar link, upper and lower nuts	4	165-200 lb-ft (224-271 Nm)
2	Sway bar bushing collars (front suspension)	8	80-100 lb-ft (108-136 Nm)
3	Tie rod end clamp bolts	2	118-133 lb-ft (160-180 Nm)
4	Tie rod end ball pin nuts	2	155-170 lb-ft (210-230 Nm)
5	Steering arm stud nuts	2	285-315 lb-ft (386-427 Nm)
6	Tie rod arm stud nuts	4	285-315 lb-ft (386-427 Nm)
7	I-beam axle mount nuts	8	230-280 lb-ft (312-380 Nm)
8	Shock absorber upper & lower mounting nuts	2	99-121 lb-ft (134-164 Nm)
9	Shock absorber pins, upper & lower	2	350-400 lb-ft (475-542 Nm)
10	Radius rod retaining studs	4	90-110 lb-ft (122-149 Nm)
11	Radius rod retaining nuts	18	225-255 lb-ft (305-346 Nm)
12	Transverse radius rod taper pin screw	1	206 lb-ft (279 Nm)
13	Drag link clamp bolts	2	118-133 lb-ft (160-180 Nm)
14	Drag link ball joint stud nut, fore	1	165-236 lb-ft (224-320 Nm)
15	Steering damper nuts	2	100-120 lb-ft (136-163 Nm)
16	Steering damper bracket bolt	1	39-45 lb-ft (53-61 Nm)
17	Steering damper bracket nuts	4	30-36 lb-ft (41-49 Nm)
18	Air spring nut	4	25 lb-ft (34 Nm)
19	Steering damper arm nuts	2	285-315 lb-ft (386-427 Nm)
20	Drag link ball joint stud nut, aft	1	140-200 lb-ft (190-271 Nm)

## 1.2 FRONT I-BEAM AXLE HUB, ROTOR AND BRAKES

**HUB, ROTOR AND BRAKE**

No	DESCRIPTION	QTY	TORQUE (dry)
1	Hub Flanged Bolt	28	174-192 lb-ft (236-260 Nm)
2	Stake Hub Nut	2	575-626 lb-ft (780-849 Nm)
3	Caliper Bracket Nut – Self Lock	16	85-103 lb-ft (115-140 Nm)
4	Brake Caliper Mounting – Bolt	12	433-479 lb-ft (587-649 Nm)
5	Brake Chamber Nut – Self Lock	4	133-155 lb-ft (180-210 Nm)
6	Kingpin cover Screw	8	51-62 lb-ft (69-84 Nm)
7	Kingpin Nut – Self Lock	2	500-700 lb-ft (678-949 Nm)
8	Draw key, Nut	2	51-62 lb-ft (69-84 Nm)
9	Kingpin lower cover Screw	4	26-32 lb-ft (35-43 Nm)
10	Back & Front Lock - Stop Bolt	3	85-103 lb-ft (115-140 Nm)a

## 2. DESCRIPTION

The Dana Spicer S84U front axle is of the "Reverse Elliot" type. The front axle consists of a girder section beam with knuckles. Each knuckle is carried on a parallel king pin, with a steep angle taper roller bearing at its top and a plain phosphor bronze bush at bottom.

The unitized hub bearings used on the NDS range of axles, are non-serviceable 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.

Brakes are manufactured by KNORR-BREMSE.

Steering ball joints with hardened balls and rubbing pads incorporate compression springs which automatically take up any wear.

The tie rod simplifies toe-in adjustment. The maximum turning angle is set through stop screws installed on the inner side of the knuckle.

Steering stabilizer (damper) and steering drag link which are mounted on the front axle are described further in Section 14: STEERING of this manual.

### 2.1 REFERENCE MANUALS

Additional information is found in the following manuals included on your vehicle Technical Publications USB flash drive:

For kingpin rework:

**Dana Parts & Service Instructions S84U Steer Axle KING PIN REWORK\_ Manual NO 1985 B iss A**

For hub bearing rework:

**Dana Parts & Service Instructions S84U Steer Axle HUB BEARING REWORK\_ Manual NO 1963 B iss A**

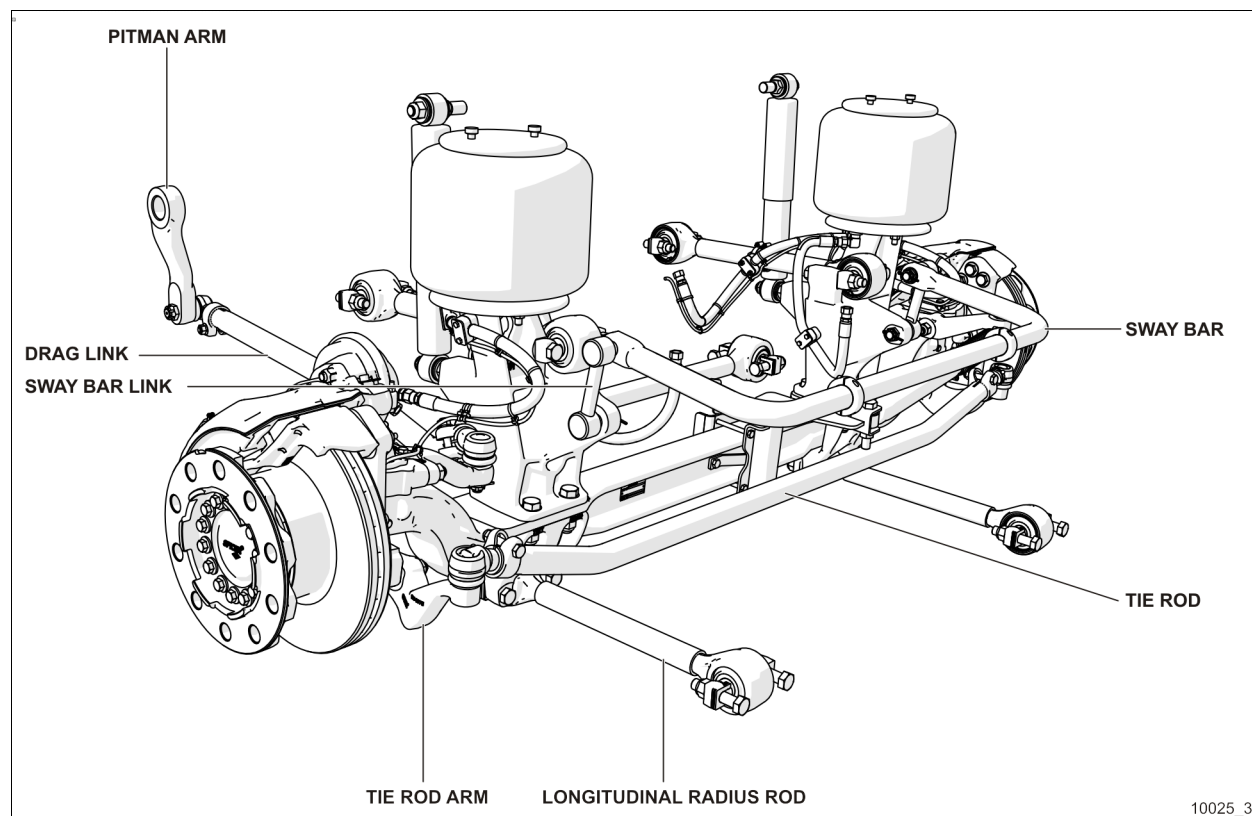
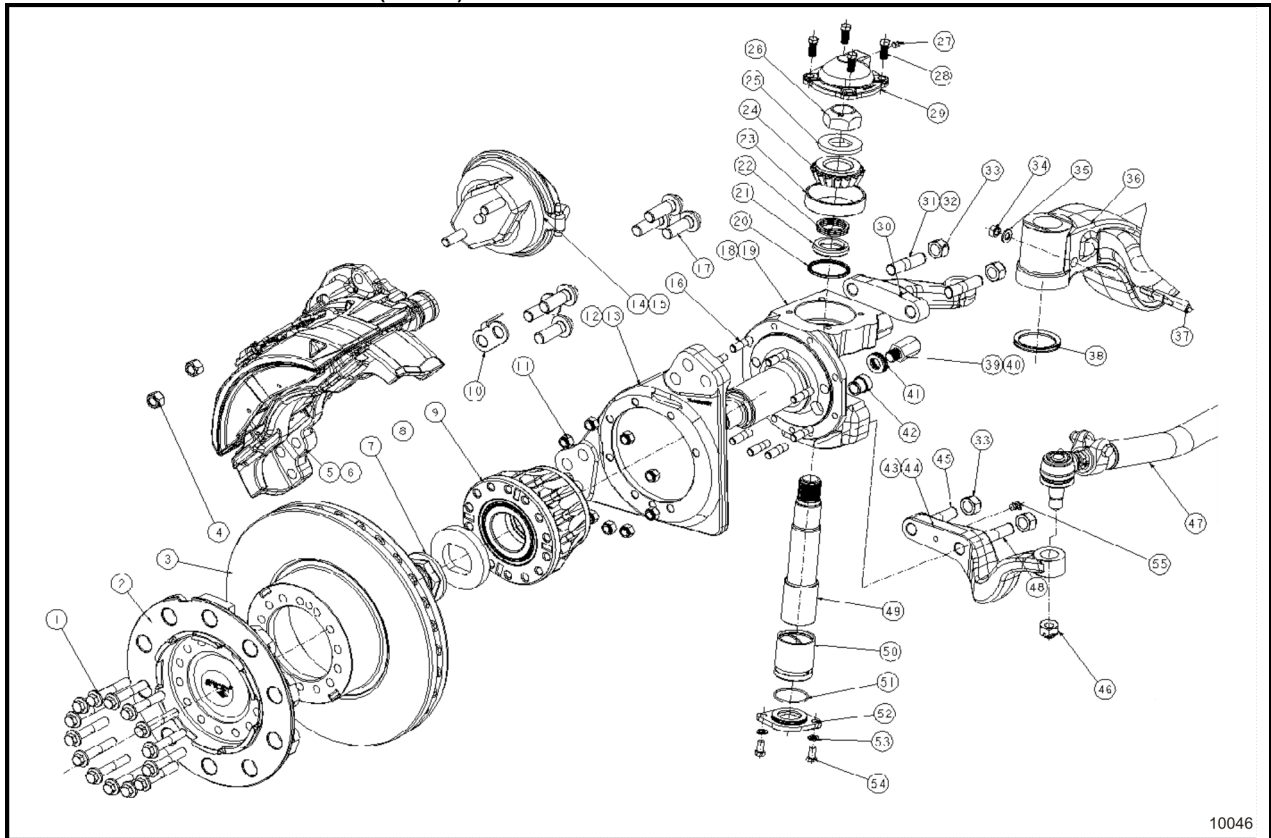


FIGURE 1: FRONT AXLE ASSEMBLY (I-BEAM)




10046

TYPICAL S84U AXLE

ITEM	DESCRIPTION	QTY	ITEM	DESCRIPTION	QTY
1	Flanged Bolt	28	29	Cap - Knuckle Top	2
2	Hub	2	30	Top Steering Lever	1
3	Brake Disc	2	31	Top Steering Lever - Stud L.H.	2
4	Nut - Self Lock	4	32	Top Steering Lever - Stud R.H.	2
5	Brake L.H.	1	33	Nut - Self Lock	8
6	Brake R.H.	1	34	Drawkey - Nut	2
7	Stake Nut	2	35	Drawkey - Washer	2
8	Collet Washer	2	36	Beam - Axle	1
9	Hub Bearing	2	37	Drawkey	2
10	Wear Sensor Clip	2	38	V Ring Seal	2
11	Nut - Self Lock	16	39	Back Lock - Stop Bolt	2
12	Brake Mounting Bracket L.H.	1	40	Front Lock - Stop Bolt	1
13	Brake Mounting Bracket R.H.	1	41	Stop bolt - washer	4
14	Actuator L.H.	1	42	ABS Sensor - Bush	2
15	Actuator R.H.	1	43	Bottom Steering Lever L.H.	1
16	Stud	16	44	Bottom Steering Lever R.H.	1
17	Brake fixing - Bolt	12	45	Bottom Steering Lever - Stud	2
18	Knuckle L.H.	1	46	Nut - Self Lock (Tie Rod)	2
19	Knuckle R.H.	1	47	Socket & Tie Rod Assy	1
20	Oil Seal	2	48	Socket Assy R.H.	2
21	Sleeve - Knuckle Bearing	2	49	Socket Assy L.H.	2
22	Shim	A/R	50	Kingpin - Bushing	2
23	Bearing Cup	2	51	O Ring Seal	2
24	Bearing Cone	4	52	Kingpin	2
25	Washer (Collet)	1	53	Washer	2
26	Nut - Self Lock	2	54	Cap - Knuckle Bottom	2
27	Lub Nipple (Straight)	2			
28	Screw	2			

### 3. LUBRICATION



## MAINTENANCE

Knuckle pins are provided with grease fittings for pressure lubrication. These grease fittings should be serviced at the intervals specified by the Lubrication And Servicing Schedule in Section 24: LUBRICATION & SERVICING.

Good quality lithium-base roller bearing mineral grease NLGI No.1 and 2 like Shell Retinax LX are recommended.

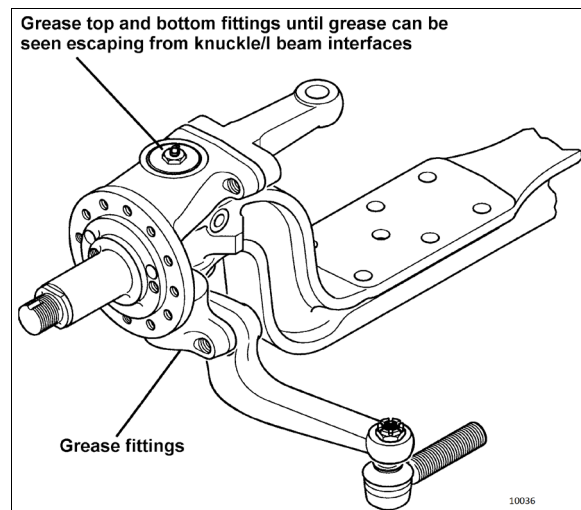


FIGURE 2: FRONT AXLE GREASING POINTS

### 4. MAINTENANCE

A periodic inspection of the front axle assembly should be made to check that no damage and distortion have taken place. All the bolts and and stop screws should be checked and tightened, as required, to the torque specifications given at the beginning of this section. Also check the condition of the steering knuckle kingpins and bushings. In case of excessive looseness, the bushings and kingpins should be replaced.

Any looseness in the steering linkage, under normal steering loads, is sufficient cause to immediately check all pivot points for wear, regardless of accumulated mileage. Steering linkage pivot points should be checked each time the front axle assembly is lubricated. Any

looseness can be visually detected while rotating the steering wheel in both directions.

Steering knuckles, knuckle pins and bushings can be overhauled or replaced without removing the axle from the vehicle. However, if extensive overhaul work is necessary, the axle assembly should be removed.



## CAUTION

Should removal of a locking device be required when undergoing repairs, disassembly or adjustments, always replace with a new one.

### 5. REMOVAL AND REPLACEMENT

The following procedure deals with the removal of the front axle assembly. The method used to support the axle assembly and suspension components during removal and disassembly depends upon local conditions and available equipment.

#### 5.1 REMOVAL

1. Raise the vehicle by its jacking points on the body (see Section 18, "Body" under paragraph "Vehicle Jacking Points") until vehicle body is approximately 20 inches (508 mm) from the floor. Place jack stands under frame. Remove the wheels (if required, refer to Section 13, "Wheels, Hubs and Tires").



## CAUTION

Use only the recommended jacking points as outlined in section 18 "Body".

2. Exhaust compressed air from the air supply system by opening the drain valve of each reservoir.
3. Install jacks under axle jacking points to support the axle weight.
4. Disconnect the steering drag link from the steering arm.
5. Remove the ABS sensors from their location in hubs (if applicable).
6. Disconnect the height control valve link from its support on the axle.



7. Disconnect air lines from front brake chambers, and cover line ends and fittings to prevent the entry of foreign matter.



### CAUTION

Position the air lines and electric wires so they will not be damaged while removing the front axle assembly.

8. Proceed with steps a, b and c, while referring to Section 16: "*SUSPENSION*".
  - a) Disconnect sway bar links from axle brackets.
  - b) Remove shock absorbers.
  - c) Disconnect five radius rods: one transversal and two longitudinal from subframe, and two upper rods from axle.
9. Remove the bolts and nuts fixing the axle to the left-hand and right-hand side air springs mounting supports.
10. Using the jacks, slowly lower the axle assembly, and carefully pull away from underneath vehicle.

## 5.2 REPLACEMENT

Reverse front axle "*Removal*" procedure. Ensure cleanliness of air bellows support mounting plates.

### *NOTE*

*Refer to Section 16, "Suspension", Section 14, "Steering" and to paragraph 8 "Specifications" at the end of this section for applicable checks.*

*Refer to torque tables at the beginning of this section for tightening.*

## 6. SERVICE INSTRUCTIONS FOR STEER AXLE



### MAINTENANCE

An inspection should be made at the intervals specified by the Lubrication And Servicing Schedule in Section 24: LUBRICATION & SERVICING.

#### 6.1 STEERING KNUCKLE KINGPIN INSPECTION

Check permissible slackness in the kingpins as follows:

Aspects to be considered are:

- **Lateral slackness**
- **Vertical slackness**

#### NOTE

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

##### 6.1.1 Checking Lateral Slackness

Following regular and thorough greasing practices will maximise bushing life. This procedure measures the upper bearing & lower bushing wear due to side and vertical loading. While this is being carried out, the brake must be applied.

1. Place a set-square with its stock on ground and its blade against tire wall.
2. Place a mark on the ground to indicate position of stock end.
3. Insert a lever through bottom cut-out of wheel and lever it upwards thus moving set-square outboard.
4. Mark the changed position of the stock end.
5. Maximum allowable stock displacement (for 22.5" wheels) is **0.315 in (8mm)**.
6. If displacement exceeds stated allowance then need for bushing / bearing attention and possible renewal, is in evidence.

#### NOTE

*To avoid inaccurate measurements, be careful not to let the knuckle turn while moving assembly in and out. Applying brakes will help lock wheel assembly.*

##### 6.1.2 Checking Vertical Slackness

1. This is measured by a dial indicator anchored to axle beam and having its pointer placed vertical against knuckle top.
2. Place a jack against underside of knuckle and, while applying a lifting force, observe any movement on indicator dial.
3. **If vertical movement is evident and it exceeds 0.030" (0.76mm)** then readjustment of knuckle is required by adjusting thickness of bearing adjusting shims. In this case, refer to:

**Dana Parts & Service Instructions S84U Steer Axle KING PIN REWORK\_ Manual NO 1985 B iss A.**

#### 6.2 STEERING TIE ROD INSPECTION

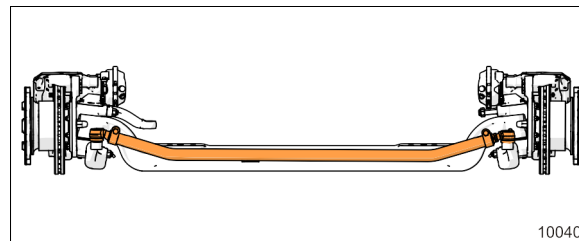


FIGURE 3

The steering tie rod on the axle requires several visual and functional inspections. Refer to Section 14– STEERING under heading FRONT I-BEAM AXLE TIE ROD.

Detailed information can also be found in the following supplier publication:  
**TRW\_Front\_Axle\_Steering\_Bar\_Service\_Information\_XSZ143**

## 7. FRONT WHEEL ALIGNMENT

Refer to Section 14: STEERING.

**8. SPECIFICATIONS**

**Front Axle**

Make ..... DANA SPICER EUROPE  
Model ..... S84U  
Front Track ..... 84.4 inches (2 145 mm)  
Rated load capacity ..... 16,500 lbs (7 500 kg)

