t. Install the steering arm to the lower steering knuckle and secure with the four retaining bolts. Torque the retaining bolts to 350 Nm.

NOTE

No weight must bear on the axle or upper pivot pin when taking measurements to determine shim thickness for pre-load.

u. Support the steering knuckle assembly with a suitable bottle jack to ensure there is no clearance between the steering knuckle and the underside of the axle housing.

v. Tap down the upper pivot pin bearing to ensure it is seated.

w. Measure the depth between the installed spacer ring and the top surface of the steering knuckle (Fig 258).

x. Measure the depth of the recess in the bearing cap (Fig 259). The difference between the two measurements, plus the permissible pre-load factor (0.1 to 0.15 mm), determines the thickness of the shim(s) to be installed.

y. Install the pre-determined shims(s) into the steering knuckle. Install the bearing cap (Fig 260) with sealing ring and secure with the two retaining bolts.

z. Fit the centre bolt to the half-shaft gear and tighten slowly until backlash at the gear becomes noticeable (Fig 261).

aa. Tighten the centre bolt a further 2 to 2 1/2 turns so that the teeth of the half-shaft gear (Fig 262(2)) are fully engaged in the teeth of the half-shaft (Fig 262(1)).
1. Half-shaft
2. Half-shaft gear

**Figure 262 - Half-Shaft Gear Shaft - Alignment**

**ab.** Lock up the final drive by inserting a soft (copper) drift between the gear teeth of the half-shaft gear and the hub gear then torque the half-shaft gear centre bolt to 600 Nm (Fig 263).

**Figure 263 - Half-Shaft Gear Centre Bolt - Torquing**

**ac.** Coat the half-shaft gear shaft roller bearing with a lubricant (Molycte or equivalent) and install in the outer casing with the handle and replacer (Table 2, Items 6 and 32) (Fig 264).

**Figure 264 - Half-Shaft Gear Shaft Bearing - Installation**

**ad.** Install the hub gear outer bearing race in the outer casing with the handle and replacer (Table 2, Items 6 and 33) (Fig 265). Do not fit the rollers in the bearing race at this stage.

**Figure 265 - Large Roller Bearing Race - Installation**

**ae.** Insert the rollers in the bearing race and lubricate the rollers with a lubricant (Molycte or equivalent).

**af.** Install the retainer (Table 2, Item 23) in the bearing to retain the rollers in position.

**ag.** Screw the three guide pins (Table 2, Item 24) into the mounting holes (two upper and one lower).

**NOTE**

Maintain the position of the retainer (Table 2, Item 23) during the installation of the hub drive housing to prevent movement of the bearing rollers.

**ah.** Coat the contact surfaces of the hub drive housing with a sealing compound (Terostat 56, Part No. 001 989 58 20 or equivalent).

**ai.** Install the hub drive housing and progressively remove the retainer from the hub gear bearing as the housing is installed. Ensure that the bearing rollers remain in position (Fig 266).
aj. Progressively remove the guide pins and install the ten M14 (Grade 12.9) hub drive housing retaining bolts; torque the bolts to 200 Nm.

ak. Coat the shaft seal ring and seal spring with a lubricant (Molycote or equivalent) and install with the handle and replacer (Table 2, Items 6 and 33) (Fig 267).

Figure 267 - Sealing Ring - Installation

al. Inspect the seal and check that the seal spring has not been dislodged from its seat during installation.

am. Carefully install the wear ring (Fig 268(1)) with a soft hammer. When installed check that the wear ring contacts the wheel hub housing all the way around its circumference.

Figure 268 - Wear Ring - Installation

an. Screw the guide pins (Table 2, Item 34) into the output gear (Fig 269).

Figure 269 - Guide Pins - Installation

NOTE

There are two types of nuts in service that are used to fasten the tie rod to the steering arms, a castellated nut (with split pin) or a self locking nut. When fitting a self locking nut always use a new nut, coat the threads of the nut with a thread locking agent (Loctite 243) and torque the new self locking nut to 220 Nm.

ao. Connect the tie rod to the steering arm (refer to EMEI Veh D 393 Group 9 - Steering).

NOTE

There are two types of nuts in service that are used to fasten the drag link to the steering arm, a castellated nut (with split pin) or a self locking nut. When fitting a self locking nut always use a new nut, coat the threads of the nut with a thread locking agent (Loctite 243) and torque the new self locking nut to 220 Nm.

ap. Connect the drag link to the steering arm (if replacing the right hand front half-shaft) (refer to EMEI Veh D 393 Group 9 - Steering).

aq. Install the wheel hub with brake disc and CTIS sleeve (refer to EMEI Veh D 393 Group 8 - Brake System).

ar. Install the brake caliper (refer to EMEI Veh D 393 Group 8 - Brake System).

as. Connect the hub breather line (Fig 270(2)) to the wheel hub housing with the banjo bolt fitted with new sealing washers.
1. Central tyre control system (CTIS) supply line
2. Hub breather line

**Figure 270 - Wheel Hub Connections - Installation**

**at.** Connect the CTIS supply line (Fig 270(1)) to the wheel hub housing with the spacer (Fig 271(4)), banjo bolt (Fig 271(2)) and three new copper washers (Fig 271(3) and (5)).

**aw.** Install the road wheel (refer to EMEI Veh D 393 Group 7 - Axle Group).

**ax.** Connect the CTIS quick disconnect coupling on the opposing wheel on the front axle and install the wheel hub cover.

**ay.** Remove the axle stands supporting the vehicle.

**NOTE**

When checking the axle for serviceability check that air is not leaking from the venting block behind the cab. Air escaping from the venting block may indicate a CTIS inner hub seal on a road wheel is leaking.

**NOTE**

A leaking differential lock cylinder will over-pressurise the axle and blow oil seals. To test a differential lock cylinder suspected of being faulty, isolate the axle by disconnecting and plugging the vent line and connect a pressure gauge to the vent line connection at the axle. If pressure is evident in the axle when the differential lock is engaged, the differential lock cylinder is leaking.

**az.** Road test the vehicle and check the performance of the front axle including the CTIS. Inspect for leaks, recheck oil levels and top up if required.

**Front Axle Coil Spring**

**106. Removal**

**WARNING**

DO NOT WORK ON THE VEHICLE WITHOUT SAFETY STANDS BENEATH THE CHASSIS OR BENEATH THE AXLE. PLACE THE AXLE STAND AS CLOSE TO THE RAISED WHEEL AS POSSIBLE. FAILURE TO USE SAFETY STANDS MAY RESULT IN SEVERE INJURY OR DEATH IF THE JACK SLIPS OR COLLAPSES.

**a.** Chock the road wheels at the rear axles.

**b.** Turn the front wheel outwards on the side the coil spring is to be replaced.

**c.** Raise the cab (refer to EMEI Veh D 393 Group 01 - Access for Repair).

**d.** Remove the lower shock absorber mounting nut, serrated washer and bolt (Fig 272(1)) securing the shock absorber to the brackets on the axle housing. Detach the shock absorber from the axle housing.
1. Lower mounting bolt

**Figure 272 - Shock Absorbers - Disconnecting**

e. Remove the self locking nut from the centre bolt (Fig 273(1)) securing the tie down bracket, shims, coil spring and coil spring retaining plate to the upper spring bracket on the chassis. Do not remove the centre bolt.

1. Centre bolt

**Figure 273 - Front Coil Spring Centre Bolt - Removal**

f. If fitted, remove the self locking nut and centre bolt securing the coil spring and the lower locating plate to the lower coil spring retainer on the axle.

g. Lower the cab but do not secure the cab mounts (refer to EMEI Veh D 393 Group 01 - Access for Repair).

h. Attach a lifting sling to the lifting eyes on the front of the chassis, raise the vehicle with a suitable crane until the front coil spring is clear of the chassis and place chassis stands beneath the chassis rails.

107. **Cleaning and Inspection**

**WARNING**

ENSURE THE SAFETY REQUIREMENTS FOR USE OF COMPRESSED AIR ARE STRICTLY ADHERED TO. INADVERTANT USE OF COMPRESSED AIR EQUIPMENT MAY RESULT IN INJURY TO PERSONNEL.

a. Wash the parts in an appropriate cleaning agent and blow dry with compressed air. Inspect all parts and the coil spring brackets for wear or damage, replace as required.

108. **Installation**

a. If the coil spring is fitted with a lower locating plate proceed as follows:

1. Position the coil spring on the lower coil spring retainer so that there is a clearance of 15 mm to 35 mm between the end of the spring coil and the lip of the retainer (Fig 274).

**Figure 274 - Front Coil Spring Bottom Coil - Clearance**

(2) Install the lower locating plate and secure to the coil spring retainer on the axle with the centre bolt and self locking nut. Do not tighten at this stage.

(3) Fit the upper retaining plate and position the flat of the upper retaining plate flush with the end of the coil spring (Fig 275).
Figure 275 - Front Coil Spring Top Coil - Alignment

(4) Secure the coil spring to the chassis mounting bracket with the centre bolt and a new self locking nut.

(5) Take the weight of the vehicle and remove the chassis stands from beneath the vehicle. Slowly lower the vehicle until the coil springs are resting fully on the lower coil spring brackets.

(6) Raise the cab (refer to EMEI Veh D 393 Group 01 - Access for Repair).

(7) Torque the upper and lower coil spring retaining bolts to 160 Nm.

(8) Align front shock absorber lower eye and the mounting bracket on the axle housing and then install the centre bolt, serrated washer and self locking nut. Torque the bolt to 240 Nm.

(9) Lower and secure the cab (refer to EMEI Veh D 393 Group 01 - Access for Repair).

(10) Road test the vehicle and check the performance of the front coil springs under all operating conditions.

b. If the coil spring is not fitted with a lower locating plate proceed as follows:

(1) Mount the coil spring on the chassis mounting bracket and install the upper retaining plate. Align the retaining plate flat with the end of the coil spring (Fig 275).

(2) Secure the coil spring to the chassis mounting bracket with the bolt and new self locking nut. Do not tighten the bolt at this stage.

(3) Take the weight of the vehicle and remove the chassis stands from beneath the vehicle. Slowly lower the vehicle until the coil springs are resting fully on the lower coil spring mounting brackets.

Intermediate Axle Assembly

109. Removal

a. Apply the hand brake and chock the wheels at the front axles.

b. Manually release the intermediate axle park brake actuating cylinders (refer to EMEI Veh D 393 Group 8 - Brake System).

WARNING

DO NOT WORK ON THE VEHICLE WITHOUT SAFETY STANDS BENEATH THE CHASSIS OR BENEATH THE AXLE. PLACE THE AXLE STAND AS CLOSE TO THE RAISED WHEEL AS POSSIBLE. FAILURE TO USE SAFETY STANDS MAY RESULT IN SEVERE INJURY OR DEATH IF THE JACK SLIPS OR COLLAPSES.

c. Place the vehicle on chassis stands.

d. Disconnect the connections between the transmission and the intermediate axle and pull back the axle as follows:

(1) Remove the lower mounting bolts (Fig 276(1)), self locking nuts, serrated washers and angle brackets securing the left hand and right hand shock absorbers to the intermediate axle and swing clear of the axle.
1. Mounting bolt

**Figure 276 - Shock Absorber Connections**

(2) Remove the sway bar from the intermediate axle (refer to Group 19 - Frame/Chassis Group, para 343).

(3) Undo the self locking nut from the front right hand inner mounting bolt (Fig 277(2)) securing the right hand longitudinal link (Fig 277(1)) and slide the mounting bolt back so there is sufficient room to lower the panhard rod.

**Figure 277 - Panhard Rod Mount Connection**

(4) Remove the M16 bolt and conical spring washer securing the intermediate axle panhard rod to the right hand chassis rail mounting bracket and lower the rod.

(5) Remove the four M10 (Grade 10.9) bolts and self locking nuts securing the rear propeller shaft to the intermediate axle (power divider) output shaft flange. Tie the propeller shaft up clear of the intermediate axle.

**Figure 278 - ALB Linkage - Disconnecting**

(6) Remove the locking clip from the ball joint connecting the ALB linkage (Fig 278(1)) to the socket on the mounting bracket on the intermediate axle housing and disconnect the ball joint from the socket. Tie the ALB linkage up clear of the intermediate axle.

(7) Cut the cable ties securing the hoses, air lines and leads to the intermediate axle torque tube. Note the position of the insulator pieces (Fig 279(2)).

**Figure 279 - Intermediate Axle Torque Tube Connections**

(8) Remove the M6 bolt (Fig 279(1)) and self locking nut securing the CTIS hose with bracket and the park brake actuator air supply line to the mounting bracket at the front of the intermediate axle torque tube.

(9) Cut the cable tie securing the intermediate axle torque tube boot breather line to the torque tube boot connector and remove the line from the boot.
(10) Undo the union connecting the flexible brake hose (Fig 279(3)) to the steel brake pipe on top of the intermediate axle torque tube. Blank-off all openings.

(11) Remove the locking clip securing the flexible hose to the torque tube and tie up the hose.

(12) Remove the spring clamp (Fig 280(1)) securing the rubber boot around the intermediate axle torque ball housing and slide back the boot.

1. Spring clamp
2. M10 bolt

Figure 280 - Intermediate Axle Torque Ball Housing

(13) Support the intermediate axle torque tube with a trolley jack and a suitable extension piece (Fig 281).

Figure 281 - Intermediate Axle Torque Tube - Supporting

(14) Remove the M10 bolts (Fig 280(2)) securing the intermediate axle torque ball housing to the transfer case rear output housing.

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**CAUTION**

TO PREVENT DAMAGE TO THE INTERMEDIATE AXLE TORQUE BALL HOUSING, SUPPORT THE TORQUE TUBE WITH A TROLLEY JACK AND SUITABLE EXTENSION PIECE WHEN REMOVING THE PROPELLER SHAFT BOLTS.

**WARNING**

THE INTERMEDIATE AXLE TORQUE TUBE WILL ACT LIKE A GUILLOTINE IF IT INADVERTANTLY SLIDES TOWARDS THE TRANSFER CASE WHILST THE TRANSMISSION IS BEING REMOVED OR REPLACED AND LOSS OF FINGERS CAN OCCUR. ENSURE THE INTERMEDIATE AXLE TORQUE TUBE IS SECURED AT ALL TIMES DURING THE REMOVAL/INSTALLATION PROCEDURE OF THE TRANSMISSION AND BEFORE ATTEMPTING THE REMOVAL AND INSTALLATION OF THE INTERMEDIATE AXLE TORQUE TUBE.

(15) Attach a block and tackle between the intermediate axle torque tube strut brackets and a suitable anchor point on the rear of the vehicle (Fig 282).

**CAUTION**

AVOID DAMAGE TO SURROUNDING COMPONENTS AND ATTACHED FITTINGS WHEN PULLING BACK THE INTERMEDIATE AXLE TORQUE TUBE. CHECK THAT THE AXLE IS NOT FOULING AS IT IS MOVED REARWARD.

(16) Pull back the intermediate axle torque tube with the block and tackle until there is sufficient space to access the propeller shaft mounting bolts (Fig 283(7)).
**Figure 282 - Intermediate Axle Torque Tube - Separating**

(17) Remove the front torque ball shell halves (Fig 283(5)).

1. Spring clamp
2. Torque ball housing
3. Torque ball housing mounting bolts
4. Rear torque ball shell half
5. Front torque ball shell half
6. Shim
7. Propeller shaft mounting bolt

**Figure 283 - Torque Ball Assembly - Intermediate Axle**

THE INTERMEDIATE AXLE TORQUE TUBE WILL ACT LIKE A GUILLOTINE IF IT INADVERDANTLY SLIDES TOWARD THE TRANSFER CASE WHILST THE PROPELLER SHAFT BOLTS ARE BEING REMOVED AND LOSS OF FINGERS CAN OCCUR. ENSURE THE TORQUE TUBE IS CHAINED BACK AND SECURE BEFORE ATTEMPTING TO REMOVE THE PROPELLER SHAFT BOLTS.

**CAUTION**

TO PREVENT DAMAGE TO THE INTERMEDIATE AXLE TORQUE BALL HOUSING, SUPPORT THE TORQUE TUBE WITH A TROLLEY JACK AND A SUITABLE EXTENSION PIECE BEFORE UNBOLTING THE TORQUE BALL HOUSING BOLTS.

(18) Remove the intermediate axle propeller shaft mounting bolts (M12 x 30 (Grade 12.9) (Fig 284(1)) securing the intermediate axle propeller shaft to the transfer case intermediate axle output flange.

**Figure 284 - Intermediate Axle Propeller Shaft - Removal**

1. Intermediate axle propeller shaft bolt
(19) Slide the intermediate axle propeller shaft into the torque tube, support the torque tube with an adjustable safety stand and remove the trolley jack and extension piece.

**NOTE**

Note the position of wiring looms and air lines and note the number and position of the cable ties, clamps and insulators that secure them, before disconnecting electrical leads and air lines. As a rule of thumb cable ties must fasten wiring looms and air lines at intervals of 500 mm, but can also be fitted at shorter intervals as required.

e. Cut the cable ties securing the intermediate axle differential lock and power divider air lines and the brake wear indicator and power divider electrical leads to the intermediate axle torque tube.

f. Tag and disconnect the intermediate axle power divider shift cylinder electrical lead and air line from the shift cylinder. Discard the sealing washers from the banjo bolt securing the air line.

g. Tag and disconnect the intermediate axle breather line on the axle housing. Discard the sealing washers from the banjo bolt securing the breather line.

h. Tag and disconnect the CTIS air supply line at the connector at the front of the intermediate axle torque tube.

i. Tag and disconnect the left and right hand intermediate axle brake actuating cylinder air supply lines at each cylinder and the brake actuating cylinder breather lines at the connector at the front of the torque tube.

j. Tag and disconnect the left and right hand wheel hub breather lines at the hubs. Discard the banjo bolt sealing washers.

k. Tag and disconnect the differential lock shift cylinder air supply line from the intermediate axle housing.

l. Tag and disconnect the power divider breather line from the intermediate axle housing. Discard the banjo bolt sealing washers.

m. Tag and disconnect the electrical loom for the intermediate axle left hand brake wear indicator from the main loom connector on the left hand chassis rail. Cut the cable ties securing the brake wear indicator loom to the main wiring loom.

n. Note the position of the cable ties, lines and pipes and cut the cable ties securing the lines and pipes along the intermediate axle torque tube, the left and right hand side intermediate axle housing and the left hand chassis rail.

**WARNING**

DO NOT WORK ON THE VEHICLE WITHOUT SAFETY STANDS BENEATH THE CHASSIS OR BENEATH THE AXLE. PLACE THE AXLE STAND AS CLOSE TO THE RAISED WHEEL AS POSSIBLE. FAILURE TO USE SAFETY STANDS MAY RESULT IN SEVERE INJURY OR DEATH IF THE JACK SLIPS OR COLLAPSES.

o. Jack up the intermediate axle at the wheel hubs and support the axle on axle stands.

p. Remove the road wheels on the intermediate axle (refer to EMEI Veh D 393 Group 7 - Axle Group).

**CAUTION**

SUPPORT THE INTERMEDIATE AXLE AT THE HUB ENDS AND KEEP THE HUBS CLEAR OF THE GROUND TO PREVENT DAMAGE TO THE DIRT DEFLECTORS.

q. Jack up the intermediate axle at the differential and support the right hand wheel station with another floor jack.

r. Remove the axle stands.

**CAUTION**

TO PREVENT DAMAGE TO THE TORQUE BALL HOUSING, SUPPORT THE TORQUE TUBE WITH A MOBILE SUPPORT BEFORE REMOVING THE INTERMEDIATE AXLE.

s. Place a mobile support under the front of the intermediate axle torque tube.

t. Lower the intermediate axle and torque tube and at the same time release the block and tackle holding the axle rearwards. When the coil springs are completely relaxed, disconnect the block and tackle from the axle.

u. Carefully manoeuvre the intermediate axle from underneath the vehicle.
110. Cleaning and Inspection

**WARNING**

ENSURE THE SAFETY REQUIREMENTS FOR USE OF COMPRESSED AIR ARE STRICTLY ADHERED TO. INADVERTANT USE OF COMPRESSED AIR EQUIPMENT MAY RESULT IN INJURY TO PERSONNEL.

a. Seal all openings, wash all parts in an appropriate cleaning agent and blow dry with compressed air. Inspect all parts for wear or damage, replace as required. If fitting a new intermediate axle, transfer all pipes, lines, brackets and fittings from the old axle as required. Remove all temporary covers after cleaning.

b. Carefully deburr the intermediate axle torque ball housing and the shell halves of the intermediate axle torque ball (Fig 285).

c. Clean the tooth profile and slip joint spline cavity of the intermediate axle propeller shaft and pack the cavity behind each tooth profile with a molybdenum disulphide based grease (XG-276).

d. Lubricate the grease nipples on the intermediate propeller shaft with grease (XG-274).

111. Adjustment

**NOTE**

To maintain the torque setting on the torque ball, shims (Fig 283(6)) are fitted between the torque ball housing and the transfer case. Shims are supplied in 0.2 mm, 0.5 mm and 1.0 mm sizes (Fig 286). A retaining plate (Table 2, Item 21), a spring balance, and an extension bar (Table 2, Item 22) are used to measure the torque setting.

**NOTE**

The torque ball adjustment must be carried out prior to attaching the torque tube to the transmission. The dimension difference between the transfer case flange and the torque ball flange must be determined.

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**Figure 285 - Intermediate Axle Torque Ball Housing and Halves**

c. Clean the tooth profile and slip joint spline cavity of the intermediate axle propeller shaft and pack the cavity behind each tooth profile with a molybdenum disulphide based grease (XG-276).

d. Lubricate the grease nipples on the intermediate propeller shaft with grease (XG-274).

**Figure 286 - Intermediate Axle Torque Ball Adjusting Shims**

a. 0.2 mm, 0.5 mm, 1.0 mm b. ∅ 148 mm c. ∅ 194 mm

**Figure 286 - Intermediate Axle Torque Ball Adjusting Shims**

a. Coat the rear and front torque ball shell halves (Fig 283(4) and (5)) with a molybdenum disulphide based grease (XG-276) and fit them into the intermediate axle torque ball housing (Fig 283(2)).

b. Press the torque ball shell halves against the intermediate axle torque ball and measure projection “X” (Fig 287).

**Figure 287 - Projection “X” - Measurement**

c. The following parameters must be considered when determining the thickness of the shim stack:

1. Recess in retaining plate = 11.0 mm (constant) (Fig 288).
(2) Recess in the intermediate axle torque ball housing flange = 5.0 mm (constant) (Fig 287).

(3) Dimension difference = 11.0 mm - 5.0 mm - “X” mm (Fig 287).

(4) Permissible preload 0.1 mm to 0.2 mm.

Figure 288 - Retaining Plate - Constant Distance

d. The dimension difference plus preload gives the thickness of shims which are to be placed between the intermediate axle torque ball shell halves and the transfer case output flange as the following example demonstrates:

(1) Projection “X” measurement = 4 mm.

(2) Dimension difference calculation - 11.0 mm (constant) minus(-) 5.0 mm (constant) minus(-) 4.0 mm (“X” measurement) equals(=) 2mm.

(3) Dimension difference = 2 mm.

(4) Determine shim stack thickness (permissible preload - 0.1 to 0.2mm). Insert shims of 2.10 mm thickness (Preload 0.10 mm).

e. Check the torque ball adjustment as follows:

(1) Install the shim stack, as determined using the example in sub para d., on the intermediate axle torque ball housing (Fig 289).

(2) Fit the retaining plate (Table 2, Item 21) (Fig 288) to the intermediate axle torque ball housing and tighten the securing bolts uniformly to 60 Nm.

Figure 289 - Position of Shims

(2) Fit the retaining plate (Table 2, Item 21) (Fig 288) to the intermediate axle torque ball housing and tighten the securing bolts uniformly to 60 Nm.

Figure 290 - Intermediate Axle Torque Ball - Adjustment Check

NOTE

With an extension bar measuring 750 mm, a manual force of 200 - 300 N should be attained.

(3) Insert the 750 mm extension bar (Table 2, Item 22) into the retaining plate and measure the force on the extension bar with a spring balance (Fig 290).
(4) If the force on the extension bar is below 200 N, insert shims; if the force is above 300 N, remove shims. Repeat the procedure until the force on the extension bar is between 200 N and 300 N.

f. Remove the extension bar and the retaining plate (Table 2, Items 22 and 21).

112. Installation

**WARNING**

DO NOT WORK ON THE VEHICLE WITHOUT SAFETY STANDS BENEATH THE CHASSIS OR BENEATH THE AXLE. PLACE THE AXLE STAND AS CLOSE TO THE RAISED WHEEL AS POSSIBLE. FAILURE TO USE SAFETY STANDS MAY RESULT IN SEVERE INJURY OR DEATH IF THE JACK SLIPS OR COLLAPSES.

**CAUTION**

SUPPORT THE INTERMEDIATE AXLE AT THE HUB ENDS AND KEEP THE HUBS CLEAR OF THE GROUND TO PREVENT DAMAGE TO THE DIRT DEFLECTORS.

**CAUTION**

TO PREVENT DAMAGE TO THE TORQUE BALL HOUSING, SUPPORT THE TORQUE TUBE WITH A MOBILE SUPPORT BEFORE INSTALLING THE INTERMEDIATE AXLE.

a. Carefully manoeuvre the intermediate axle into position under the vehicle. Ensure the torque tube and right hand wheel hub are supported with mobile stands.

b. Raise the intermediate axle so that the coil springs are firmly seated on the retaining plates on the axle.

**WARNING**

THE INTERMEDIATE AXLE TORQUE TUBE WILL ACT LIKE A GUILLOTINE IF IT INADVERTANTLY SLIDES TOWARDS THE TRANSFER CASE WHilst THE INTERMEDIATE AXLE IS BEING REMOVED OR REPLACED AND LOSS OF FINGERS CAN OCCUR. ENSURE THE INTERMEDIATE AXLE TORQUE TUBE IS SECURED AT ALL TIMES DURING REMOVAL AND INSTALLATION OF THE INTERMEDIATE AXLE.

c. Attach the block and tackle, pull back the intermediate axle and secure.

d. Support the intermediate axle on axle stands.

e. Install the road wheels on the intermediate axle (refer to EMEI Veh D 393 Group 7 - Axle Group).

f. Maintain the support under the intermediate axle torque tube with a jack and a suitable extension piece, remove the axle stands and lower the intermediate axle.

g. With a trolley jack and a suitable extension piece raise the intermediate axle torque tube until the intermediate axle propeller shaft flange is aligned with the transfer case intermediate axle output flange.

**WARNING**

THE INTERMEDIATE AXLE TORQUE BALL HOUSING WILL ACT LIKE A GUILLOTINE IF IT INADVERTANTLY SLIDES TOWARD THE TRANSFER CASE WHilst THE PROPELLER SHAFT BOLTS ARE BEING INSTALLED AND LOSS OF FINGERS CAN OCCUR. CHAIN BACK THE TORQUE BALL HOUSING SO THAT IT WILL NOT MOVE BEFORE ATTEMPTING TO INSTALL THE PROPELLER SHAFT BOLTS (FIG 291).
Figure 291 - Intermediate Axle - Securing

h. Connect the intermediate axle propeller shaft and torque tube to the transfer case as follows:

1. Install the torque ball shim pack (previously calculated, see para 111) to the transfer case intermediate axle output housing. Temporarily secure the shims with grease.

2. Connect the intermediate axle propeller shaft to the transfer case intermediate axle output flange with the four M12 (Grade 10.9) bolts. Coat the threads of the bolts with a thread locking agent (Loctite 243) prior to assembly and torque the bolts to 100 Nm.

3. Install the outer torque ball halves in the intermediate axle torque ball housing. Lubricate the torque ball halves with a molybdenum disulphide based grease (XG-276).

4. Slowly release the intermediate axle with the block and tackle ensuring the torque ball housing flange is aligned with the transfer case housing flange.

TO PREVENT DAMAGE TO THE INTERMEDIATE AXLE TORQUE BALL HOUSING, SUPPORT THE TORQUE TUBE WITH A TROLLEY JACK AND A SUITABLE EXTENSION PIECE WHILE INSTALLING THE TORQUE BALL HOUSING BOLTS.

(5) Coat the mating surface of the intermediate axle torque ball housing with a sealant (Omnifit FD 10, Part No. 002 989 00 20 10, or equivalent) and connect the torque ball housing to the transfer case housing with the M10 x 150 (Grade 12.9) bolts (Fig 292). Torque the bolts to 65 Nm.

Figure 292 - Intermediate Axle Drive Torque Ball Housing - Installation

i. Slide the rubber boot over the intermediate axle torque ball housing and secure with the spring clamp (Fig 293(1)).

j. Connect the torque tube breather line to the torque tube boot connector on the intermediate axle and secure with the cable tie.

k. Remove the block and tackle from the intermediate axle and the jack and extension piece supporting the intermediate axle torque tube.