DUAL PLANET AXLE
RIMPULL / BRYAN MODEL DA205

MAINTENANCE

1. CHECKING OIL LEVELS

1.1 Oil levels should be checked every 24 operating hours.

1.2 Oil checking levels are the six bolts of the center cover plate. The dual planet should be filled to the bolt at the **HIGHEST** point on the cover plate.

1.3 Checking of planet level is accomplished by removing the bolt at the lowest point on the cover. Oil should run from this hole if planet is properly filled. Reinstall bolt into cover and tighten.

1.4 Dual planet should be filled through one of two holes marked **FILL** when at the highest point on the cover.

2. OIL CHANGES

2.1 Start-up oil should be drained and refilled within the first 50 hours of operation.

2.2 Oil should be drained and refilled every 2,000 hours of normal operation. See Specifications, Page 8.

2.3 The center cover plate of the planet assembly should be removed and the magnet cleaned at each oil change.

CAUTION: Cleanliness is of extreme importance and an absolute must in the repair and overhaul of this unit. Before attempting any repairs, the exterior of the unit must be thoroughly cleaned to prevent the possibility of dirt and foreign matter entering the mechanism.

INSTALLATION / DISASSEMBLY / REASSEMBLY

1. WHEEL END INSTALLATION

1.1 Install lift chains into two 1"-8 UNC tapped pusher holes of axle casting. (Casting must be aligned with horizontal row of bolts located at the bottom and brake calipers on each side). Install the other end of lift chain on 3/4-10 rim clamp studs. (Assembly weight, approx. 10,000 lbs). Assembly must lift and be horizontal at assembly.

1.2 Clean mounting flange of drive axle end assembly, and file any burrs flat on the mounting face.

1.3 Lubricate and install O-ring into groove of pilot on flange end of casting.

1.4 Lift drive axle end assembly and align pilot of casting with frame pilot. (Installation of guide bolts into housing will assist in lining up bolt holes of mating parts). Engage pilot of drive axle end assembly and frame pilot.

1.5 Install 1"-8UNC bolts and hardened washers. Torque bolts to recommended torque. See Page 8.

2. AXLE SHAFT INSTALLATION

2.1 Remove small center cover from axle outer end.

2.2 Reach through opening in outer cover and unscrew four 1/2-13UNC bolts in retainer plate. Remove four 1/2" bolts, one 7/8-9UNC bolt, and one axle shaft spacer. Lay axle retainer plate down in sun gear cavity.

2.3 Clean axle shaft thoroughly. Install axle shaft spline into sun gear spline, and slide axle in through axle tube. (NOTE: Axle shaft end with 7/8-9UNC thread goes to the outboard end). Screw a lifting bar (at least 24" long) with a 7/8-9UNC thread on one end into the end of the axle shaft. Lifting the outer end of the axle shaft, rotate axle shaft, and push in at the same time to engage the spline in the differential side gear. (If the axle shaft will not engage the side gear, it may be necessary to go in beside the differential and lift

the axle shaft slightly while pushing in from the outer end of axle). After the spline has engaged the side gear, push shaft in until it trys to engage 1st stage sun gear. Using lift bar, lift axle shaft and align spline of sun gear and axle shaft. (If splines do not align, it may be necessary to rotate the wheel or the input shaft of the carrier assembly slightly until the splines are aligned). Push axle shaft into the sun gear until shaft is flush with outer face of sun gear.

2.4 Mount the axle shaft retainer plate to the 1st stage sun gear, using the four 1/2-13UNC bolts. Put the 7/8-9UNC bolt through the axle shaft spacer and screw into end of axle shaft.

2.5 Torque 1/2-13UNC and 7/8-9UNC bolts to torque specified on Page 8.

2.6 Lockwire 1/2-13UNC bolts in pairs, and then 7/8-9UNC bolt to 1/2-13UNC bolts in two directions.

2.7 Install center cover plate and gasket, leaving out one bolt (the one at lowest point on cover). Fill planet assembly with lubricant (see Lube Specs, Page 8), then install bolt into cover. Tighten all cover bolts to torque specified on Page 8.

3. TIRE AND RIM INSTALLATION

3.1 Install the first tire and rim assembly onto the wheel and up against the taper of wheel. Install spacer band up against rim face. Install second tire and rim assembly with rim taper facing to outer end of axle. Install rim clamps over studs and up against taper of outer rim. Install washers and rim clamp nuts on studs.

3.2 Tighten rim clamp nuts. Rotate wheel and visually check alignment of outer face of rim. Finish tightening the rim clamp nuts. (See bolt torque specifications Page 8). The first two rim clamps should be torqued 180^{0} across and then the next two 90^{0} from the first. Then continue around wheel at 180^{0} apart.

3.3 After a brief run in period, rim clamp torques and lube levels should be checked.

3.4 Check rim clamp lug nuts for proper torque for the first 80 hours. Thereafter, check them every 40 hours of operation. See Page 8 for torque specifications.

4. DUAL PLANET DISASSEMBLY PROCEDURE

4.1 Rotate wheel until drain plug in outer diameter of planet hub is in down position. Remove plug and drain oil from planet.

4.2 Remove large outside cover plate from planet outer end. (There will be some oil left in cover plate after draining planet. A catcher pan should be put under cover to catch oil).

4.3 Through 2nd stage sun gear, reach in and remove axle shaft retainer bolt (7/8-9UNC) and small spacer. Remove four 1/2-13UNC bolts and axle shaft retainer plate. Screw a lifting bar (at least 24" long) with a 7/8-9UNC thread on one end into the axle shaft and pull axle shaft out of splines in sun gear. Remove axle shaft completely from assembly.

4.4 Remove top three bolts from second stage housing. Attach lifting angle to planet housing with bolt into one of pusher bolt tapped holes. Attach lifting device to angle. Raise lifting device and apply slight lifting pressure. Remove balance of bolts holding planet in place. Install pusher bolts in pusher holes and push planet from wheel. Be careful not to damage pilot ring of 2nd stage planet assembly from internal gear completely.

4.5 Install clamp type lifting tool around 2nd stage sun gear, which is in 1st stage planet assembly. Slide out 1st stage planet assembly on teeth of internal gear. Remove planet from internal gear. CARE must be taken as 1st stage planet is removed, as the 1st stage sun gear will come out with the 1st stage planet. It will be loose and just sitting in the gear teeth and may slip out, falling and injuring someone, or damaging gear. Remove 1st stage sun gear from planet assembly by sliding gear out of teeth.

4.6 Internal gear removal.
If the internal gear is to be removed from axle assembly, the wheel assembly must be used to loosen the nut assembly. Remove bolt and lockbar from the stub end nut slot. Install wheel bearing adjusting tool into stub end nut slots and onto the planet mounting bolt circle with bolts. Rotate wheel counter-clockwise and loosen stub end nut. Now remove wheel bearing adjusting tool. The wheel assembly MUST BE SUPPORTED so it cannot drop down or slide out on stub end when internal gear is removed. Remove stud end nut completely from axle. Slife internal gear assembly out on stub end. The internal gear will need to be supported as it is removed to avoid internal gear dropping down and damaging stub end thread. Internal gear now can be slid out straight and removed.

5. WHEEL REMOVAL AND INSTALLATION

5.1 Wheel assembly can be removed only after brake calipers are removed. Remove nuts and washers from through bolts of caliper. Remove bolts and slip caliper off of disc. After calipers are removed, the wheel and disc assembly can now be removed from axle. Lift wheel assembly slightly to support weight of wheel. Now wheel assembly can be slid straight off the stub end.

5.2 Brake disc should be inspected and replaced if required. Torque mounting bolts per specification, Page 8.

5.3 Wheel bearing cups and seals can now be inspected and replaced if required.

5.4 Prelube wheel bearing cups, cones and metal lip of seal before installation of wheel.

5.5 Lift wheel assembly and align wheel hub center over the end of the stub end. Take wheel straight onto the stub end until bearing cup mates with inner wheel bearing cone on stub end. Wheel must now be supported and held in place until internal gear assembly is slid onto stub end and the outer cone on the internal gear hub mates with cup of wheel. (NOTE: The two 1 1/4" holes in internal gear hub should be at top and bottom of hub when installed).

5.6 Install stub end nut onto the thread of stub end. Run nut up by hand against end of internal gear hub.

5.7 Remove supports that are holding wheel. Install wheel bearing adjusting tool onto wheel with bolts and engage tool into slots on stub end nut.

5.8 Rotate wheel clockwise to tighten nut; continue to tighten nut until nut becomes very hard to turn. Remove wheel bearing adjusting tool so wheel can be rotated. Through 1 1/4" holes at top and bottom of internal gear hub, inspect that rollers are all rolling as wheel is rotated. If not, tighten nut. Take a small screw driver and reach through holes and try to move rollers side to side. If rollers move easily, wheel bearing is not tight. Tighten nut an additional notch or two until rollers do not move side to side. Then tighten one additional notch. Install lockbar, bolt, bolt lock, into slot in stub end nut. Torque bolt and lock bolt head.

6. DUAL PLANET REASSEMBLY AND ADJUSTMENT PROCEDURE

6.1 Install clamp type lifting tool around outside diameter of second stage sun. Lift planet and stand housing vertical. Install 1st stage sun gear into 1st stage planet idlers through large opening in the center of housing. Sun gear must be turned so that end with 1/2-13UNC tapped hole is put in first and stepped part of hub is up against brass thrust ring.

6.2 Lift planet assembly up and prelube planet idlers and bearings. With planet housing still vertical, be careful not to let 1st stage sun gear slide out. Align the three planet gears of 1st stage planet up with gear teeth of internal gear. Slide planet assembly into internal gear all the way back until 1st sun is against the brass piece in the stub end.

6.3 Install angle plate lift tool onto second stage planet using 3/4-10UNC tapped pusher hole. Hang planet housing vertical and clean mounting surface thoroughly. Take O-ring for planet to wheel pilot and coat with heavy grease. Install O-ring into groove of planet mounting pilot. Install long guide bolts into wheel to align planet to wheel. Align gear teeth of planet with internal gear teeth.

Slide planet over guide bolts and back into wheel pilot. Care must be taken not to damage planet pilot flange when installing. Install long bolts through planet and into wheel. Tighten bolts to the recommended torque (see Page 8).

6.4 Clean axle shaft thoroughly. Install axle shaft spline into sun gear spline and slide axle in through axle tube. (NOTE: Axle shaft end with 7/8-9UNC thread goes to the out board end). Screw a lifting bar (at least 24" long) with a 7/8-9UNC thread on one end into the end of the axle shaft. Lifting the outer end of the axle shaft, rotate axle shaft and push in at the same time to engage the spline in the differential side gear. (If the axle shaft will not engage the side gear, it may be necessary to go in beside the differential and lift the axle shaft slightly while pushing in from the outer end of the axle). After the spline has engaged the side gear, push shaft in until it trys to engage 1st stage sun gear. Using lift bar, lift axle shaft and align spline of sun gear and axle shaft. (If splines do not align, it may be necessary to rotate the wheel or the input shaft of the carrier assembly slightly until the splines are aligned). Push shaft into sun gear until shaft is flush with outer face of gear.

6.5 Mount the axle shaft retainer plate to the 1st stage sun gear, using the four 1/2-13UNC bolts. Put the 7/8-9UNC bolt through the axle shaft spacer and screw into the end of axle shaft.

6.6 Torque 1/2-13UNC and 7/8-9UNC bolts to torque specified on Page 8.

6.7 Lockwire 1/2-13UNC bolts in pairs and then 7/8-9UNC bolt to 1/2-13UNC bolts in two directions.

6.8 Install O-ring into large outer cover plate with heavy grease on the O-ring to hold it into the groove of cover plate. Install large cover plate onto 2nd stage planet housing. Torque bolts as specified on Page 8.

6.9 Install outer small cover plate and gasket onto large cover plate, leaving out the bolt at lowest point on cover. Fill planet assembly with oil, (see Page), then install bolt to cover. Torque all cover bolts to specified torque (see Page 8).

SPECIFICATIONS

1. LUBRICATION SPECIFICATION

SAE 80W-90 EP Gear Lube should be used in the planets and differential/carrier assembly.

2. LUBRICATION CAPACITY

Differential - - - - 50 US Gal. (approx)
Planetary, Each - - 12 US Gal. (approx)

3. BOLT TORQUE SPECIFICATIONS

DESCRIPTION	BOLT SIZE	TORQUE VALUE
Drive Axle End Adapter Mounting Bolts	1- 8 UNC	680 Ft/Lbs
Rim Clamp Lug Nuts	3/4-10 UNC	300 Ft/Lbs
Planet Housing 2nd Stage	3/4-10 UNC	280 Ft/Lbs
Axle Shaft to Sun Gear	7/8- 9 UNC	460 Ft/Lbs
Axle Shaft Retainer to Sun Gear	1/2-13 UNC	80 Ft/Lbs
Planet Pin Lock Bolts	1/2-13 UNC	80 Ft/Lbs
Internal Gear Ring Lock Bolts	1/2-13 UNC	80 Ft/Lbs
Cover Plate Mounting Bolts	3/8-16 UNC	35 Ft/Lbs
Brake Disc Mounting Bolts	3/4-10 UNC	280 Ft/Lbs

NOTE: All bolts are Grade 8.

All Bolt torques are based on threads lubricated with SAE 30 motor oil.

Dry thread installation IS NOT recommended.

SPECIAL TOOLS