DIRECTORATE GENERAL BORDER ROADS

GENERAL REPAIR INSTRUCTION NO. 144
ON
SERVICE INSTRUCTION PRONT AND REAR AXIES JONGA

GENERAL

Some cases of front/rear wheel bearing failure and wheels coming out in respect of Jonga vehicles have been reported by Project and workshops in BRO.

During liaison visits to various units in Eastern/Northern/western Sector, VFJ team has observed that while assembling front/rear axle shaft assemblies, procedure laid down in Jonga service manual are not being correctly followed. But it appears that the importance of following the correct assembly techniques has not been appreciated correctly. Therefore with a view to give further emphasis on use of proper assembley techniques, the assembly procedure for front/rear wheel bearing and axle shaft is reproduced below.

ASSEMBLING/DISMANTLING/PROCEDURE FOR
FRONT AXLE SHAFT JONGA

REMOVAL

Block rear wheels with chocks.

Jack up front of vehicle and support it with safety stands.

Remove wheel and tyre assembly.

Remove Brake drum .

Work off flange cap from drive flange using thin screw drivers.

Remove snap rings in axle shaft groove.

Bend up edge of locking plate and remove lock nut.

Remove locking plate, drive flange, 6-ring and shim.

Straighten lock washer and remove wheel bearing lock nut with wheel bearing lock nut wrench ST 35830000.

After removing lock nut, remove lock washer and then inner lock nut.

Remove wheel nub from spindle with bearing installed.

Remove snap ring from axle shaft.

Disconnect hydraulic brake hose.

Remove six nuts securing back plate to spindle housing.

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Remove back plate from spindle.

Slide spindle off axle shaft. Axle shaft (Birfield joint) can now be removed from housing.

Axle shaft (Birfield joing) cannot be disassembled.

Remove castle nut securing tie rod end to spindle arm and remove tie rod.

Remove eight bolts securing knuckle flange grease seal guard to knuckle flange. Remove guard and grease seal.

Remove four nuts securing knuckle flange upper cap to knukle flange and remove knuckle flange upper cap.

O-ring, shim and bearing.

Remove four nuts securing lower bearing cap to knuckle flange and remove lower cap. O-ring shim and bearing.

Remove knuckle flange from axle housing.

INSPECTION

Thoroughly clean all parts in cleaning solvent and dry with compressed air. Check parts for evidence of scratches, cracks, burns etc.

Front hub

Check hub for cracks by means of a magnetic exploration or dyeing lest and replace if necessary.

Grease seal

If grease leakage is detected during removal, replace seal. Replace grease seal every disassembly even if it appears to be serviceable.

Wheel bearing

Check wheel bearing to see that it rolls freely and is free from noise, cracks, pitting, or wear. Also check condition of outer race. Removal of outer race from hub is not necessary.

Birfield universal joints and shaft

Replace Birfield joint assembly if its outer or inner shaft is bent or has worn splines; if assembly is cracked or excessively worn; if joint is clattering or chattering or noisy. Small nicks or scratches can be removed with a fine stone.

Knuckle flange bearing cap

Replace knuckle flange bearing if it is worn, pitted or corroded.

Contd…P/03

Knuckle flange & spindle

Replace knuckle flange, if it is cracked. If studs on knuckles flange are bent, broken or damaged, replace them. Replace spindle if it has damaged threads or grooved bearing surfaces. Roller bearings those are pitted, corroded or dis-coloured must be replaced.

INSTALLATION

Install front axle in reverse order of removal, noting the following :
Install bearing race, place bearing race in position and tap race ……. Until it seats in axle housing.
Dip knuckle flange roller bearings in grease. Fit O-ring on each knuckle flange cap. Press in greased roller bearing to knuckle flange cap.
Place knuckle flange on axle housing with steering knuckle arm toward front of vehicle..
Install upper and lower bearing caps on knuckle flange with shims. Adjust upper and lower shims so that flange turning torque is 1:0 to 2.9 N.m (10 to 30 Kg-cm).

Note : Evenly distribute total number of shims to upper and lower bearing caps. Failure to
do so may cause misaligned centering of linner and outer shafts, resulting in undue strain on and wear of parts.

Available adjusting shim

Thickness (mm)
0.075
0.127
0.254
0.762

Equally tighten four nuts securing cap until bearing cone does not turn when knuckle flange is turned back and for the.

Tightening torque

Knuckle flange cap fixing nut :
19 to 21 N.m
(1.9 to 2.1 Kg-m)

Torque load for turning knuckle flange at edge of steering knuckle …… is 44 to 98 N (4.5 to 10 Kg). Add or remove shims to ……. Bearing cap until correct turning load is when it is nigh, add shim (s).

Contd…P/04

Tightening torque :

Grease seal guard fixing bolt :
10 to 11 N.m
(1.0 to 1.1 Kg-m)

Tighten stopper bolt together with lock nut until bolt head-to –guard face distance is approximately 18.5 mm. Then tighten lock nut securely.

Tighten torque :

Lock Nut :
10 to 11 N.m
(1.0 to 1.1 Kg-m)

Lubricate with grease all bearing surface of shafts and joints. Slide birfield joint assembly into axle housing. Turn axle shaft so as to line up splines of axle shaft with axle shaft gear in differential.

Pack roller bearing with specified bearing rease and place in spindle. Secure inplace with lock ring. Place spindle so spindle housing.

Place brake disc on spindle with oil drain hole towards to bottom. Place grease catcher on spindle, line up oil drain hole of grease catcher and brake disc. Install six lock washers and nuts.

Tightening torque :

Brake disc fixing nut :
34 to 37 N.m
(3.5 to 3.8 Kg-m)

Install spindle collar and coat surface where grease seal contacts with a very thin layer of grease pack wheel bearings with specified lubricant.

Install hub and brake drum on spindle with inner wheel bearing and grease seal in hub.
Install outer wheel bearing and thrust washer on spindle and install bearing adjusting nut. Tighten adjusting nut until brake drum binds then turned, then loosen adjusting nut one-eight turn. This will give correct wheel bearing adjustment.

Install lock washer and lock nut on spindle. Bend ears of lock washers over nut. Hub turning torque must be within 1.5 to 4.4 N.m (15 to 45 Kg-cm).

Place straight edge or steel rule on spindle and measure space between hub and straight edge with a feeler gauge or shims to determine thickness of shims to be installed.

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Available adjusting shim :

Thickness (mm)
0.120
0.251
0.762

Insert inner snap ring on axle shaft groove.
Place required thickness of shims on hub and tighten drive flange with six nuts and spring washers.

Tightening torque

Drive flange fixing nut :
34 to 37 N.m
(3.5 to 3.8 Kg-m)

Install outer snap ring on axle shaft groove. Install flange cap.

Insert ends of tie rods in knuckle flange arms. Be sure that dust seal and covers are on tie rods. Install the rod socket fixing nuts that secure tie rods to knuckle flange arms.

Tightening torque

Tie rod socket fixing nut :
46 to 51 N.m
(4.7 to 5.2 Kg-m)

IMPORTANT POINTS TO REMEMBER

Distribution of shims should be equal in both upper and lower bearings to avoid misalignment in centering of inner and outer shafts and under strain and wear & tear of parts.

Tightening torque for road wheel nut should be within 98 to 108 N.m (10.0 to 11.0 Kg.m).

Assy jprocedure of wheel bearing
And rear exle shift (JONGA)

The assembly procedure calls for introduction of shims to achieve and play of 0.30 to 0.75 mm and 0.05 to 0.15 mm on individual shaft and after assembly of both side shafts respectively. It was seen that this is not attended to and hence the rear axle shaft do not have any end play after assembly.

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The absence of end play results in the rear axle shaft pressing against each other and the tightening load of bearing cage develops an undesirable axle load on the bearing and rear axle shafts. This would result in premature failure of the bearing. This would also result in rotational tendency on lock washer and cause damage to its lug which would ultimately result in loosening of lock nut and wheel coming out.

However, the proper assembly procedure is re-produced below for information.

INSTALLATION

Install a new grease seal in bearing cage with rear axle bearing grease seal drift. Fit wheel bearing outer race by tapping in evenly with a brass drift and hammer. Lubricate cavity between seal lip and bearing with multipurpose grease.

Place bearing cage and broke disc on a suitable press. Press four bearing cage bolts in through brake disc and cage.

Before installing spacer, apply a coat of multipurpose grease on seal contact surface of axle shaft.

Place bearing cage with bearing spacer on axle shaft and fit it with bearing cone.

Drive bearing in using rear axle shaft bearing drifts. Place bearing lock washer on axle shaft, tighten lock nut, using rear axle bearing lock nut wrench and bend up lock washer.

Tightening torque :
284 to 325 N.m
(29.0 to 33.0 kg-m)

Notes: Be careful to place faced side of nut to washer side, so the washer is not damaged.

Line up washer lip and nut groove with tightening nut and bend washer carefully that lip will not be damaged.

Apply multipurpose grease to wheel bearing and races of axle case end.

Apply gear oil to spline at inner end of axle shaft.

Apply a coat of multipurpose grease to seal contact surface of shaft.

Install left or right shaft and adjust axial end play by applying shims.

Note : Carefully slide axle shaft in to axle case so that rough surface of axle shaft will not damage oil seal.

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Axial end play :

0.30 to 0.75 mm

Standard shim thickness :

1.350

Available shim thicknesses :
0.075 mm

0.125 mm

0.250 mm

0.500 mm

Tightening torque of bearing cage fixing nut :
36 to 41 N.m

(3.7 to 6.2 kg-m)

Install shift on opposite side and adjust axial end play by …… or removing shims.

Axial end play :

0.05 to 0.15 mm

Note : Always keep difference in shim thikness between left and right sides within 1.0 mm

IMPORTANT POINT TO REMEMBERS

(a) Use shims to achieve and play of 0.30 to 0.75 mm and 0.05 to 0.15 mm on individual shaft and after assembly of both side shafts respectively.

(b) Place face side of nut to washer side for correct fitment.

(c) Fitment of oil seal must be done with the help of proper tool to avoid damage of seal lip.

(d) Carefully slide axle shaft in to axle case so that rough surface of axle shaft will not damage oil seal.

During maintenance/assembly of front and rear axle assy, (JONGA) some worn out parts are considered to be replaced where-ever required. Some of such parts with surce of supply are mentioned below for user information. The units may procure these items from following genuine so sources to avoid spurious spares.

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S/ No	Part Number & Nomenclature		Address of OE Suppliers
1.	Bearing taper roller of front axle (40211-45460)	i)	The Anti Friction Bearing Corpn, Ltd. 402-B, Poonam Chamber, Dr Annai Basant Road, worli, Bombay – 400018
		ii)	National Engg. Industries Pvt, Ltd, Jaipur – 302006.
2.	Bearing taper roller of front axle (40215-45460)		M/s National Engg. Industries, Pvt Ltd. Jaipur – 302006
3.	Spindle front axle (40585-44000)		Vehicle Factory Jebalpur
4.	Front Half shaft lock washer (43232-454560)	i)	M/s Vivek Engg. Works, 18/46, Pantinaka Queens Rd Jabalpur Pin – 482001
		ii)	M/s MK Industries Miloniganj, Jabalpur – 482002
		iii)	M/s Saini Industries Corpns (Regd) Sewakpura, Kalsian Street, Gali No.4 Miller Ganj, Ludhiyana-141003
5.	Bearing Taper roller of rear axle (38440-25660)		The Anti Friction Brgs. Corpn Ltd. 402-B, Poonam Chamber, Dr Annie Basant Road Warli, B ombay – 400 018
6.	Assy Shaft rear axle RH		Vehicle Factory, Jabalpur
7.	Assy shaft rear axle LH		Vehicle Factory, Jabalpur
8.	Washer lock rear axle bearing (43069-44000)	i)	M/s MK Industries, Milongiganj, Jabalpur Pin – 482 002
		ii)	M/s Sood Eng. Works, 539/2, Kamala Nehru Marar, Jabalpur (MP)
9.	Nut lock rear axle bearing RH (43084-44000)	i)	M/s Vivek Engg. Corpn 18/46 Pantinaka queens Road Jabalpur, Pin – 482 001
10.	Nut lock rear axle bearing LH (43084-46500)	i)	M/s Reva Engg. Indus. Pvt Ltd. F-25/1 Okhla Industrial, Area, Phase-2, New Delhi-20
		ii)	M/s tork Fasteners (I) Pvt Ltd. W/B 33 MIDC Area, AMBAP, Nasik – 422 010.