Disassembly–Chassis

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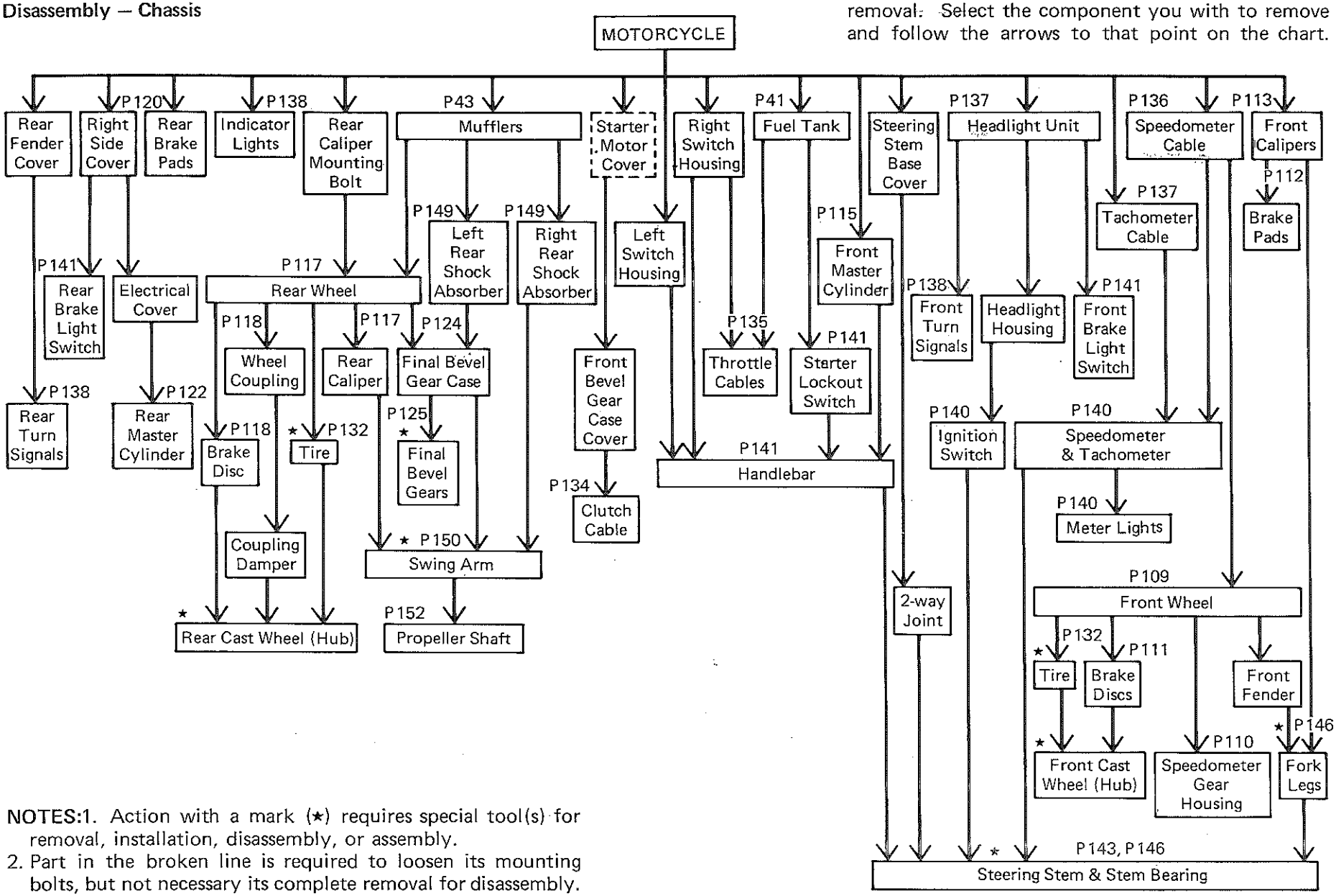
G

FLOW CHART
Disassembly – Chassis

The following chart is intended to be aids to proper removal. Select the component you with to remove and follow the arrows to that point on the chart.

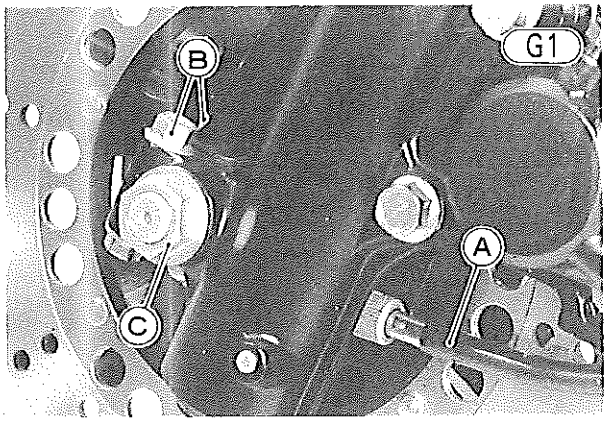


NOTES:1. Action with a mark (★) requires special tool(s) for removal, installation, disassembly, or assembly.
2. Part in the broken line is required to loosen its mounting bolts, but not necessary its complete removal for disassembly.

FRONT WHEEL

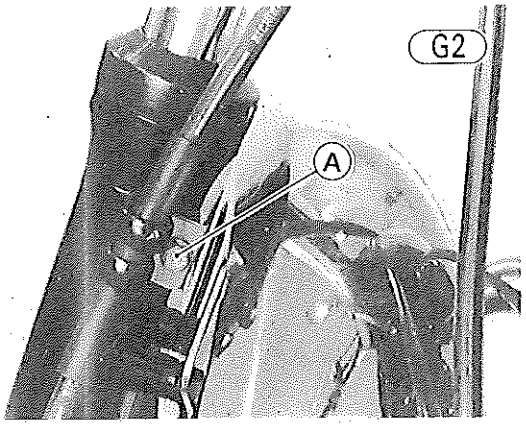
Removal:

- Disconnect the lower end of the speedometer cable with pliers.



A. Speedometer Cable C. Axle Nut
B. Axle Clamp Bolts

- Remove the brake hose clamp bolt.



A. Clamp Bolt

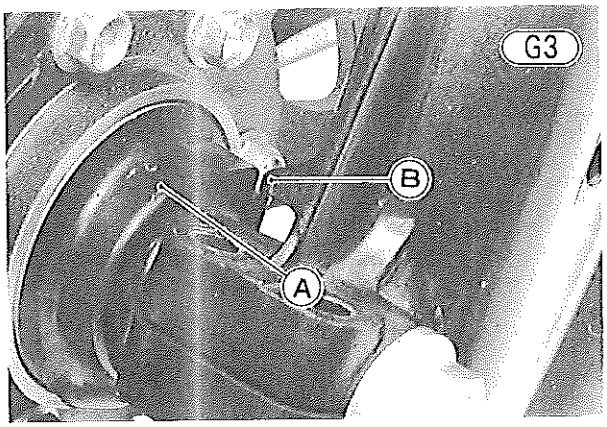
- Unbolt one of the brake calipers, and move it free of the fork leg. Avoid straining the brake lines and fittings.
- Remove the axle nut, and loosen the axle clamp bolt nuts (4).
- Use a jack under the engine or other suitable means to lift the front of the motorcycle.
- Holding the wheel to facilitate axle removal, pull out the axle, and then remove the wheel from the motorcycle.

CAUTION **Do not lay the wheel down on one of the discs. This can damage or warp the disc. Place the blocks under the wheel so that the discs do not touch the ground.**

- Insert a wood wedge (4~5 mm thick) between the disc brake pads. This prevents the pads from being moved out of their proper position, should the brake lever be squeezed accidentally.

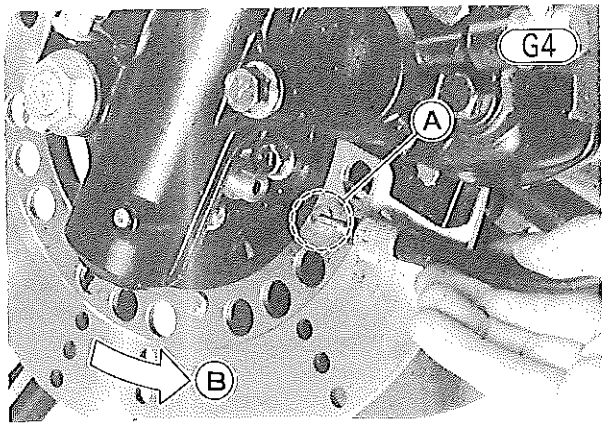
Installation:

- Remove the wedge from between the disc brake pads.
- Check that the speedometer gear housing is properly fitted on the front hub (See the speedometer gear housing assembly notes on Pg. 111), and check that the collar is on the right side of the hub.
- Hold the front wheel in its place between the front fork tubes, and insert the axle from the right.
- Install the front axle nut finger tight.
- Turn the speedometer gear housing so that it points to the three o'clock position, and fit the housing stop to the fork leg stop.



A. Speedometer Gear Housing B. Stop

- Holding the axle with a metal bar so that it does not turn, tighten the axle nut to 8.0 kg-m (58 ft-lbs) of torque.
- Tighten the axle clamp bolts to 2.0 kg-m (14.5 ft-lbs) of torque.
- Install the brake caliper, and tighten the caliper mounting bolts (2) to 3.0 kg-m (22 ft-lbs) of torque.
- Tighten the brake hose clamp bolt.
- Run the speedometer cable through the cable guide at the bottom of the left caliper.
- Insert the speedometer inner cable into the housing while turning the wheel so that the slot in the end of the cable will seat on the tongue of the speedometer pinion. Tighten the cable nut with pliers.



A. Slot B. Turn the wheel.

- Check the front brake.

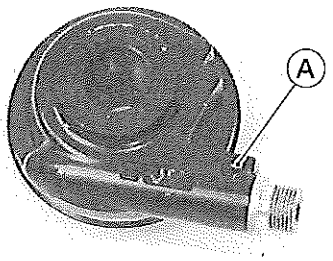
WARNING **Do not attempt to drive the motorcycle until a full brake lever is obtained by pumping the brake lever until the pads are against the disc. The brakes will not function on the first application of the lever if this is not done.**

Speedometer Gear Housing Disassembly:

- Pull the speedometer gear housing ② off the front wheel ⑮.
- Pull out the speedometer gear ③ and gear drive ⑥.
- Pull out the grease seal ④ using a hook.
- If the speedometer cable bushing ⑭ or speedometer pinion ⑫ needs to be removed, first drill the housing through the pin ⑩ using a 1 mm drill bit. Drill the housing from the gear side using a 2 mm drill bit. Using a suitable tool, tap out the pin, and then pull out the speedometer cable bushing, pinion, and washers ⑪.

NOTE: It is recommended that the assembly be replaced rather than attempting to repair the components.

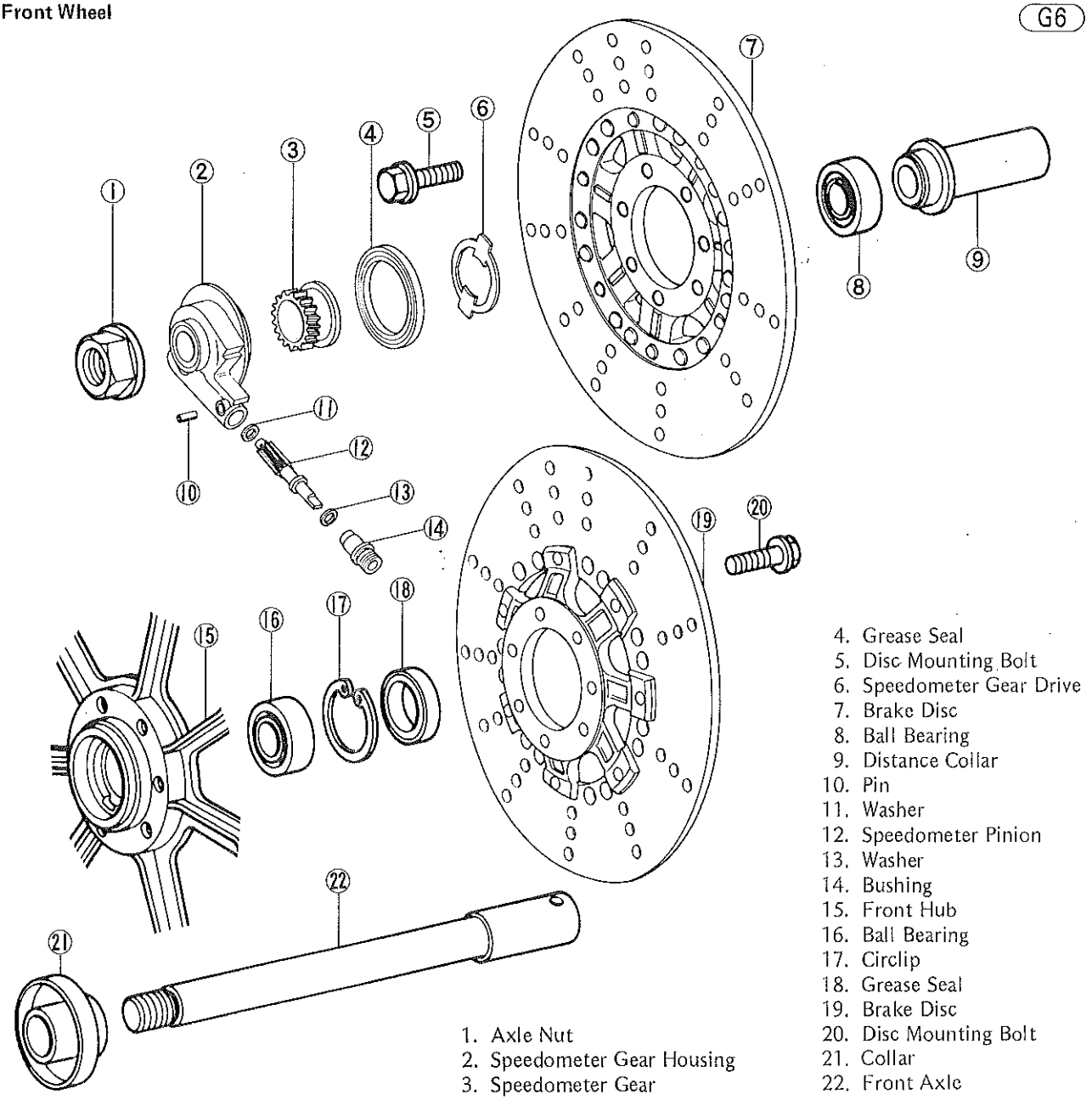
G5



A. Pin

Front Wheel

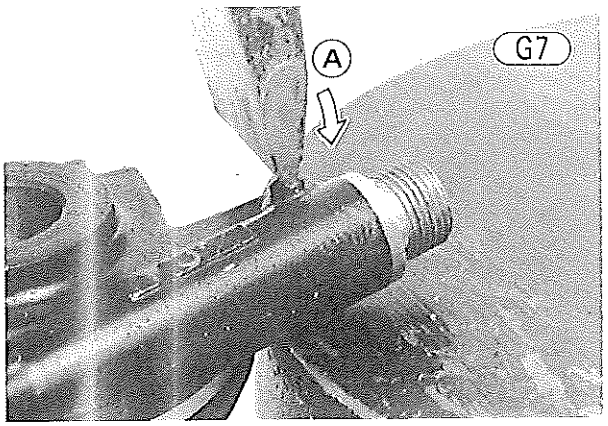
G6



1. Axle Nut
2. Speedometer Gear Housing
3. Speedometer Gear
4. Grease Seal
5. Disc Mounting Bolt
6. Speedometer Gear Drive
7. Brake Disc
8. Ball Bearing
9. Distance Collar
10. Pin
11. Washer
12. Speedometer Pinion
13. Washer
14. Bushing
15. Front Hub
16. Ball Bearing
17. Circlip
18. Grease Seal
19. Brake Disc
20. Disc Mounting Bolt
21. Collar
22. Front Axle

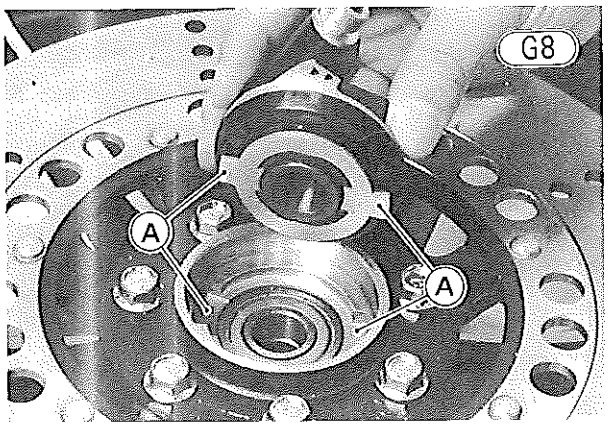
Speedometer Gear Housing Assembly Notes:

1. Replace the grease seal with a new one. Apply a little grease to the seal. Install it using a press or a suitable driver so that the face of the seal is level with the surface of the housing.
2. After inserting a new pin, stake the housing hole to secure the pin in place.



A. Stake.

3. Regrease the speedometer gear.
4. Install the speedometer gear housing so that it fits in the speedometer gear drive notches. When properly fitted, the outside of the housing is level with the end of the hub.

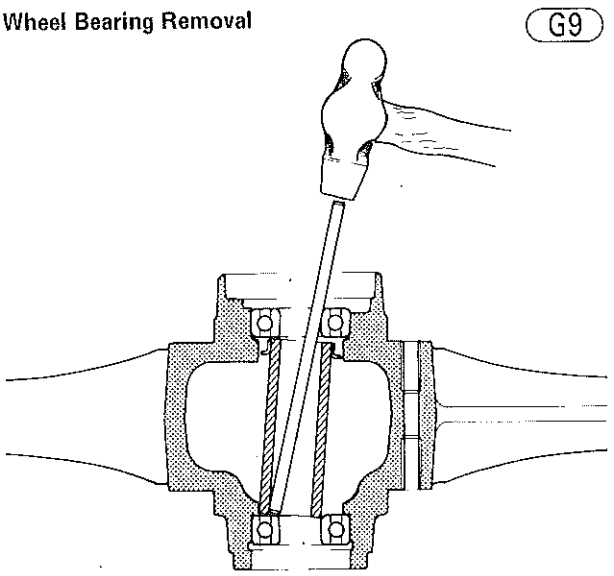


A. Notches

Front Hub Disassembly (including disc removal):

- Pull the speedometer gear housing ②and collar ㉑ off the wheel.
- Remove the disc bolts ⑤ (14), and take off the discs ⑦(2).
- Using a hook, pull out the grease seal ⑱, and remove the circlip ⑰.
- Insert a metal rod into the hub from the right side, and remove the bearing ⑯ on the left side by tapping evenly around the bearing inner race. The distance collar ⑨ will come out with the bearing.

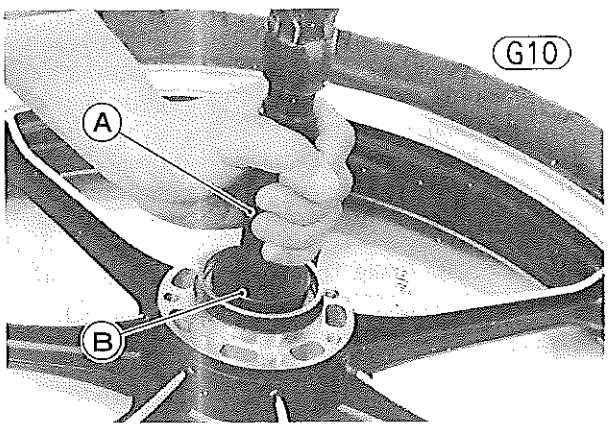
Wheel Bearing Removal



- Insert the metal rod into the hub from the left side, and remove the other bearing ⑧ by tapping evenly around the bearing inner race.

Front Hub Assembly:

- Inspect the bearings and replace if necessary.
- Before installing the wheel bearings, blow any dirt or foreign particles out of the hub with compressed air to prevent contamination of the bearings.
- Install the left side ball bearing using the bearing driver and the bearing driver holder (special tools). Press the bearing until it stops at the bottom of the hole.



A. Bearing Driver Holder (57001-139)
B. Bearing Driver (57001-140)

- Put the distance collar into the hub.
- Install the right side ball bearing using the same special tools, and install the circlip.
- Install a new grease seal using a bearing driver (special tool: PN 57001-296) and bearing driver holder. Press the seal so that the fece of the seal is level with the surface of the front hub.
- Mount the discs on the wheel, and tighten the disc bolts to 2.3 kg-m (16.5 ft-lbs) of torque.
- After installing the disc, check the disc runout (Pg. 210).

- Install the speedometer gear housing so that it fits in the speedometer gear drive notches (Fig. G8).
- Install the collar on the right side of the hub.
- Completely clean off any grease that has gotton on either side of the disc with a high flash-point solvent. Do not use one which will leave an oily residue.

FRONT DISC BRAKE

Removal, installation, disassembly, and assembly of the front disc brake is divided as follows:

Pad Removal
Pad Installation
Caliper Removal
Caliper Installation Notes
Caliper Disassembly
Caliper Assembly
Master Cylinder Removal
Master Cylinder Installation Notes
Master Cylinder Disassembly
Master Cylinder Assembly Notes
Brake Hose Replacement

NOTE: Disc removal and disc installation are covered in front hub disassembly and front hub assembly sections (Pgs. 111, 112).

Before working on the disc brake, please read the following:

CAUTION

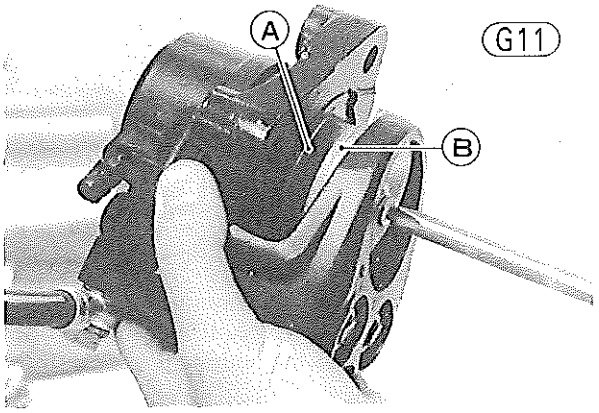
1. **Except for the disc pads and disc; use only disc brake fluid, isopropyl alcohol, or ethyl alcohol for cleaning brake parts. Do not use any other fluid for cleaning these parts. Gasoline, motor oil, or any other petroleum distillate will cause deterioration of the rubber parts. Oil spilled on any part will be difficult to wash off completely, and will eventually deteriorate the rubber used in the disc brake.**
2. **When handling the disc pads or disc, be careful that no disc brake fluid or any oil gets on them. Clean off any fluid or oil that inadvertently gets on the pads or disc with a high flash-point solvent. Replace the pads with new ones if they cannot be cleaned satisfactorily.**
3. **Brake fluid quickly ruins painted surfaces; any spilled fluid should be completely wiped up immediately.**
4. **If any of the brake line fittings or the bleed valve is opened at any time, AIR MUST BE BLED FROM THE BRAKE SYSTEM (Pg. 207).**
5. **When installing or assembling the disc brake, tighten the disc brake fittings to the values given in Table G1. Improper torque may cause the brake to malfunction.**

Table G1 Disc Brake Torque (for Front and Rear)

	kg-m	ft-lbs
Bleed valve	0.80	69 in-lbs
Brake lever pivot bolt	0.30	26 in-lbs
Brake lever pivot bolt locknut	0.60	52 in-lbs
Caliper holder shaft nuts	2.6	19.0
Caliper mounting bolts	3.0	22
Disc mounting bolts	2.3	16.5
Fitting (banjo) bolts	3.0	22
Master cylinder clamp bolts (front) mounting bolts (rear)	 0.90 1.8	 78 in-lbs 13.0
Rear caliper Allen bolts	3.0	22
Rear master cylinder plug	4.5	33
2-way joint mounting bolts	0.90	78 in-lbs

Pad Removal:

- To remove the left caliper, disconnect the lower end of the speedometer cable with pliers.
- Remove the caliper mounting bolts.
- Lift the caliper off the disc, take out the mounting screw for pad B, and remove the pad. A lockwasher and metal plate also come off.

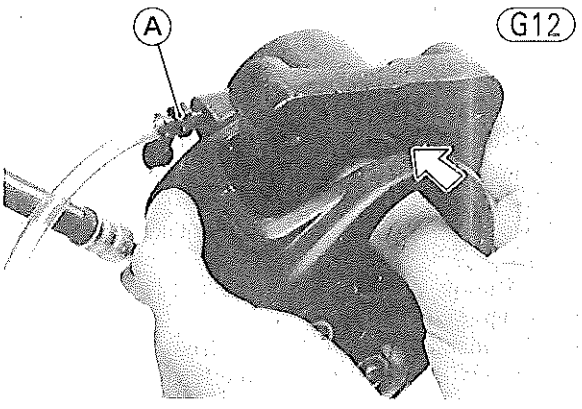


A. Pad A **B. Pad B**

- After pad B is removed, slide the caliper holder to the piston side, and remove pad A.

Pad Installation:

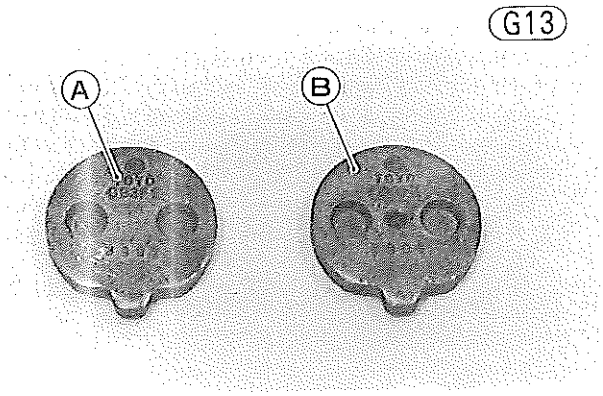
- Remove the bleed valve cap on the caliper, attach a clear plastic hose to the bleed valve, and run the other end of the hose into a container.
- Open (loosen) the valve slightly, push the piston in by hand as far as it will go, and then close (tighten) the valve. Wipe up any spilled fluid, and recap the bleed valve.



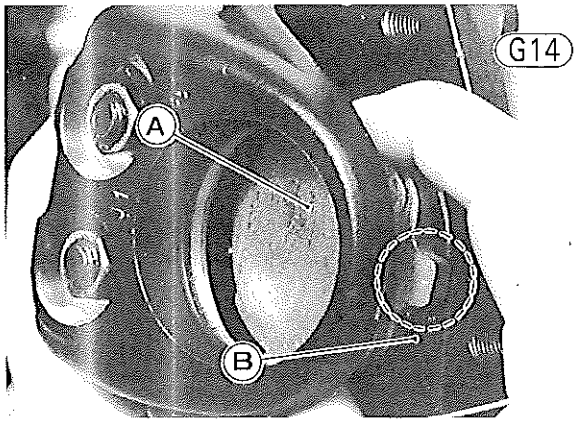
A. Bleed Valve

•Fit the pad A, aligning the tongue on the pad with the groove in the caliper holder.

NOTE: Pad B has the tapped hole behind it.

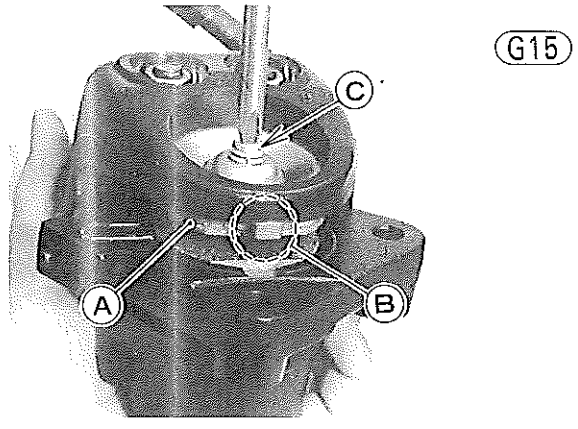


A. Pad A B. Pad B



A. Pad A B. Caliper Holder

•Fit pad B, aligning the tongue on the pad with the groove in the caliper. Install the metal plate, lockwasher and mounting screw; using a non-permanent locking agent on the screw.



A. Pad B C. Apply a non-permanent locking agent.
B. Tongue

•Install the caliper, tightening the caliper mounting bolts to 3.0 kg-m (22 ft-lbs) of torque.
•Install the lower end of the speedometer cable on the speedometer gear housing while turning the wheel.
•Since some brake fluid was lost when the bleed valve was opened, check the fluid level in the master cylinder and bleed the air from the brake system (Pg. 207).
•Push the bleed valve cap onto the valve.
•Check the front brake.

WARNING **Do not attempt to drive the motorcycle until a full brake lever is obtained by pumping the brake lever until the pads are against the disc. The brake will not function on the first application of the lever if this is not done.**

Caliper Removal (each caliper):

•To remove the left caliper, disconnect the lower end of the speedometer cable with pliers.
•If the caliper is to be disassembled, loosen the caliper holder shaft nuts (2).

NOTE: If the caliper is to be disassembled after caliper removal and compressed air is not available, remove the piston using the following two steps before disconnecting the brake hose fitting from the caliper.

- ○Remove the pad (Pg. 112).
- ○Pump the piston out with the brake lever.

•Remove the banjo bolt at the caliper, and temporarily secure the end of the brake hose to some high place to keep fluid loss to a minimum. There is a flat washer on each side of the hose fitting.
•Remove the mounting bolts (2), each with a flat washer and lockwasher, and take off the caliper.

Caliper Installation Notes:

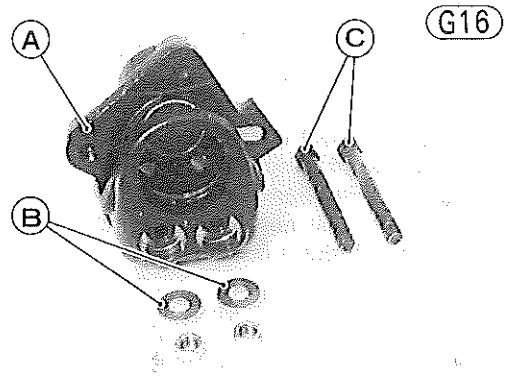
1. Tighten the mounting bolts to 3.0 kg-m (22 ft-lbs) of torque.
2. Tighten the caliper holder shaft nuts to 2.6 kg-m (19.0 ft-lbs) of torque.
3. Connect the brake hose to the caliper putting a new flat washer on each side of the brake hose fitting. Tighten the banjo bolt to 3.0 kg-m (22 ft-lbs) of torque.
4. Check the fluid level in the master cylinder, and bleed the brake line (Pg. 207).

WARNING **Do not attempt to drive the motorcycle until a full brake lever is obtained by pumping the brake lever until the pads are against the disc. The brake will not function on the first application of the lever if this is not done.**

Caliper Disassembly:

•Take out the mounting screw ⑬ for pad B ⑩, and remove the pad. A lockwasher ⑫ and metal plate ⑪ also come off.
•Remove the caliper holder shaft nuts ⑰ (2), and pull out the caliper holder shafts ③ (2) and the spacers ⑥ (2) taking care not to damage the dust covers ⑱ (4). Remove the pad A⑰.

CAUTION **To avoid damage to the dust covers and O rings, unscrew each shaft in turn a little at a time.**



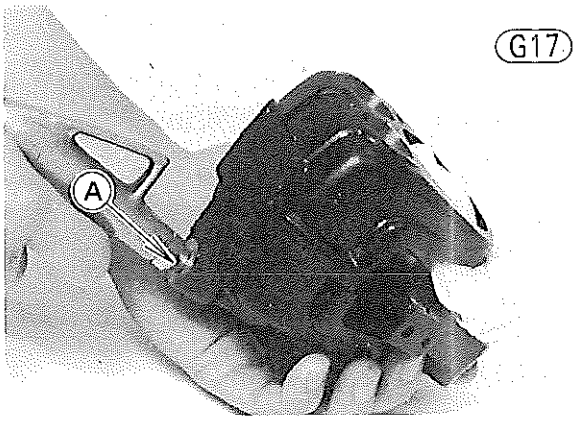
G16

A. Caliper Holder
B. Spacers
C. Holder Shafts

- Remove the dust seal ⑯ around the piston ⑮.
- Cover the caliper opening with a clean, heavy cloth, and remove the piston by lightly applying compressed air to where the brake line fits into the caliper.

WARNING **To avoid serious injury, never place your fingers or palm inside the caliper opening. If you apply compressed air into the caliper, the piston may cruch your hand or fingers.**

NOTE: If compressed air is not available, reconnect the brake line and pump the piston out with the brake lever.



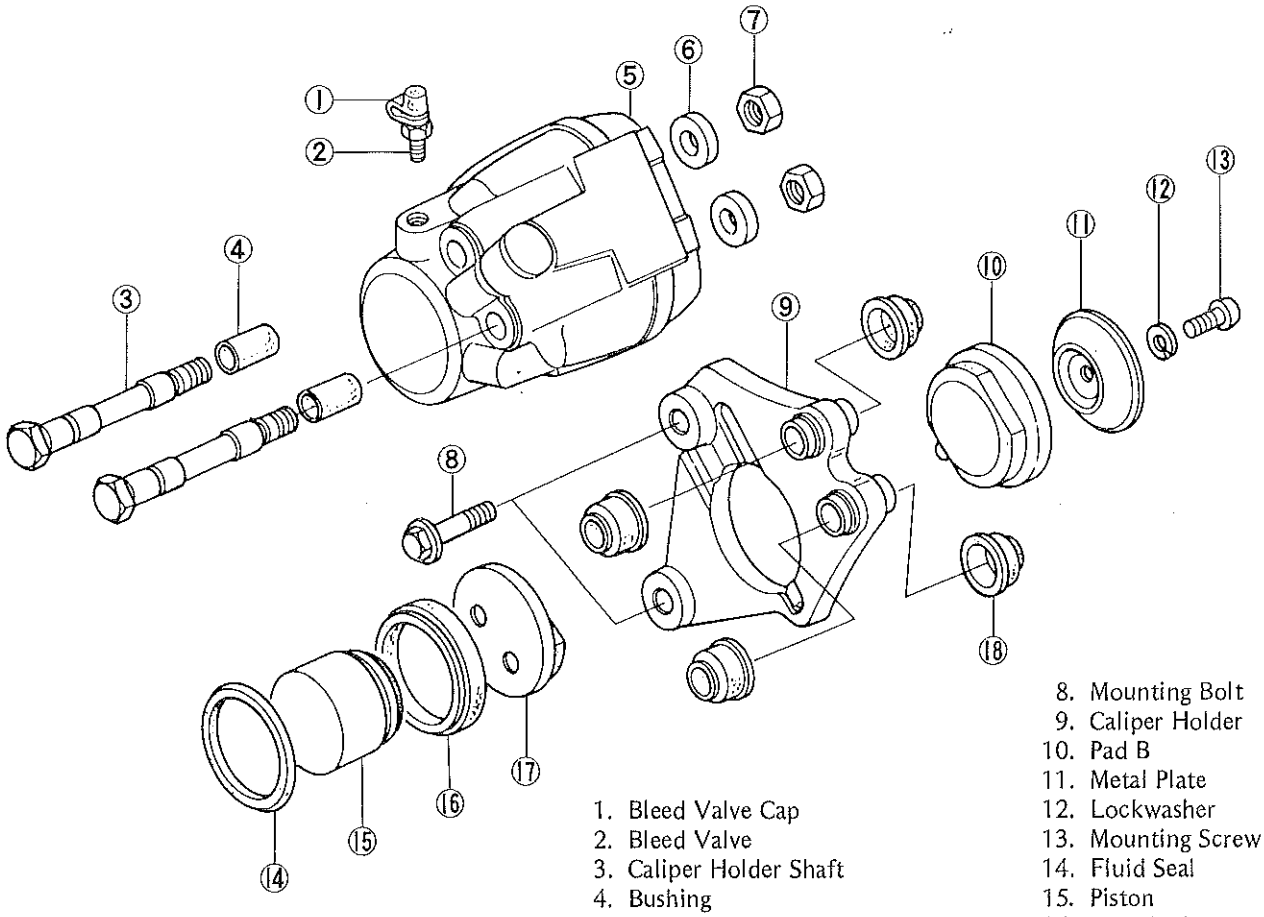
G17

A. Compressed Air

- Remove the caliper holder ⑨ and dust covers ⑱ (4).
- Taking care not to damage the cylinder surface, remove the fluid seal ⑭ with a hook.

Front Caliper

G18



1. Bleed Valve Cap
2. Bleed Valve
3. Caliper Holder Shaft
4. Bushing
5. Caliper
6. Spacer
7. Nut
8. Mounting Bolt
9. Caliper Holder
10. Pad B
11. Metal Plate
12. Lockwasher
13. Mounting Screw
14. Fluid Seal
15. Piston
16. Dust Seal
17. Pad A
18. Dust Cover

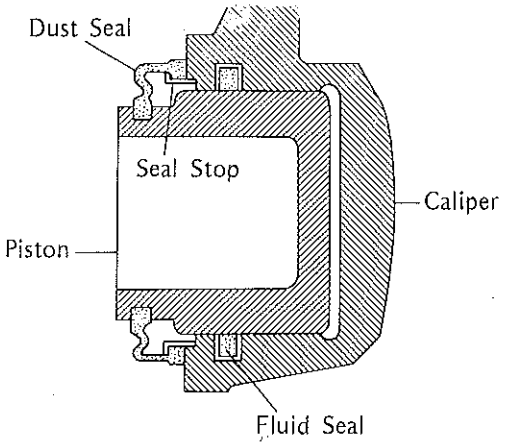
Caliper Assembly:

- Clean the caliper parts with brake fluid or alcohol (See CAUTION – Pg. 208).
- Fit a new fluid seal in place inside the cylinder.

NOTE: It is recommended that the fluid seal, which is removed, be replaced with a new one.

- Apply brake fluid to the outside of the piston and the fluid seal, and push the piston into the cylinder by hand. Take care that neither the cylinder nor the piston skirt get scratched.
- Install the dust seal around the dust seal stop. Check that the dust seal is properly fitted into the groove in the piston and on the dust seal stop.

Caliper Dust Seal (G19)



- Apply a thin coat of PBC (Poly Butyl Cuprysil) grease to the caliper holder shafts and holder holes. (PBC is a special high temperature, water-resistant grease).

NOTE: Replace the dust covers and O rings if they were damaged.

- With the caliper holder properly positioned, insert the caliper holder shafts while carefully turning the shafts to prevent damage to the dust covers.
- Install the spacers and nuts, and tighten the nuts loosely.

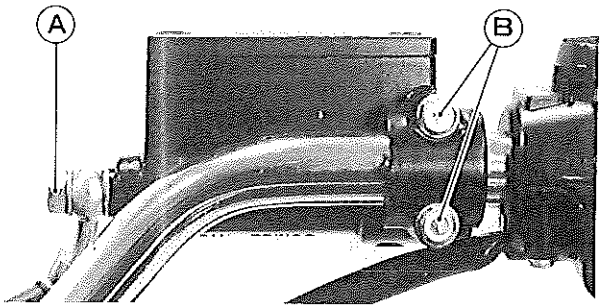
NOTE: Do not forget to tighten the nuts after installing the caliper on the motorcycle (Pg. 113).

- Install pad A in the caliper holder (Fig. G14).
- Fit pad B, aligning the tongue on the pad with the groove in the caliper. Install the metal plate, lockwasher, and mounting screw using a non-permanent locking agent on the screw (Fig. G15).

Master Cylinder Removal:

- Take off the right rear view mirror.
- Using a thin-bladed screwdriver or some other suitable tool, press in the front brake switch tab which catches in the hole in the underside of the master cylinder, and then remove the switch.
- Pull back the dust cover, and remove the banjo bolt to disconnect the upper brake hose from the master cylinder. There is a flat washer on each side of the hose fitting.

(G20)

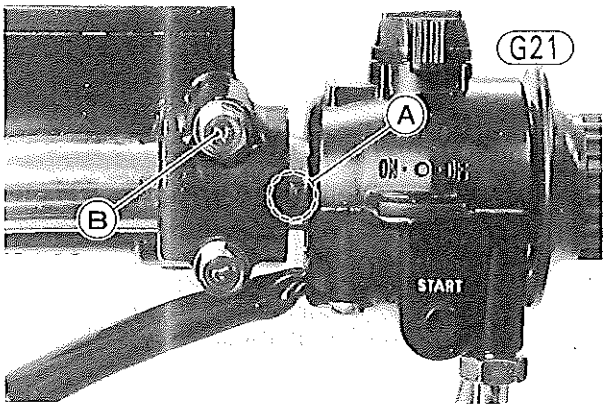


A. Banjo Bolt **B. Clamp Bolts**

- Remove the clamp bolts (2), and take off the master cylinder. There is a flat washer for each master cylinder clamp bolt. Immediately wipe up any brake fluid that spills.

Master Cylinder Installation Notes:

1. The master cylinder clamp is installed with the small projection towards the throttle grip. Tighten the upper clamp bolt first, and then the lower clamp bolt both to 0.90 kg-m (78 in-lbs) of torque.



A. Projection
B. Tighten the upper clamp bolt first.

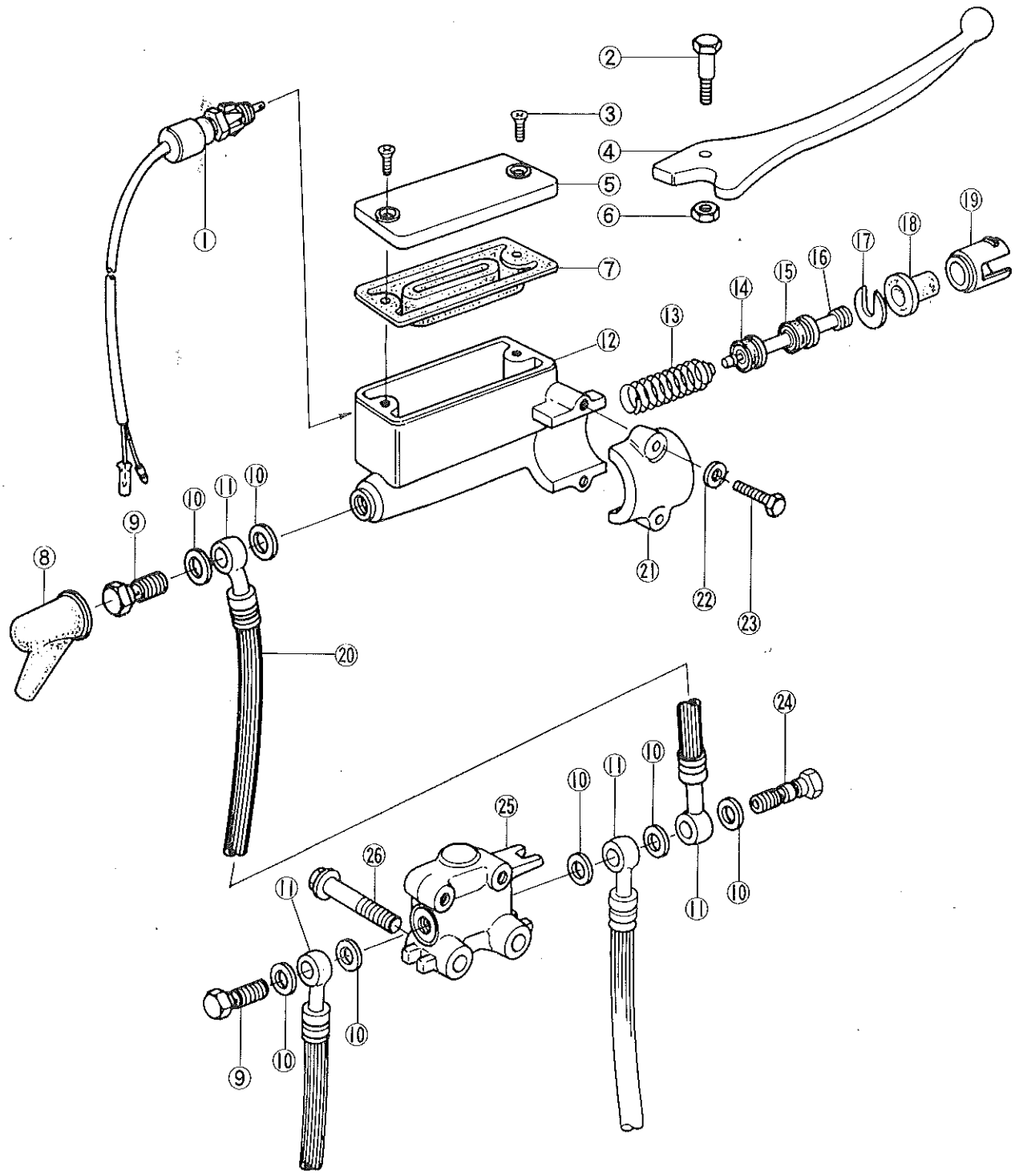
2. Use a new flat washer on each side of the brake hose fitting. Tighten the banjo bolt to 3.0 kg-m (22 ft-lbs) of torque.
3. Bleed the brake line after master cylinder installation (Pg.207).

Master Cylinder Disassembly:

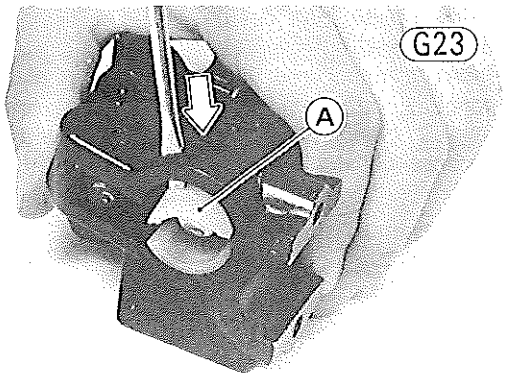
- Remove the screws (2), take off the master cylinder cap ⑤ and diaphragm ⑦, and empty out the brake fluid.
- Remove the locknut ⑥ and pivot bolt ②, and remove the brake lever ④.
- Using a thin-bladed screwdriver or some other suitable tool, press in the liner tabs which catch in the holes in the master cylinder, and then remove the liner ⑲.

Front Master Cylinder

G22



1. Front Brake Light Switch
2. Pivot Bolt
3. Screw
4. Front Brake Lever
5. Master Cylinder Cap
6. Locknut
7. Diaphragm
8. Dust Cover
9. Banjo (Fitting) Bolt
10. Flat Washer
11. Hose Fitting
12. Master Cylinder Body
13. Spring
14. Primary Cup
15. Secondary Cup
16. Piston
17. Piston Stop
18. Dust Seal
19. Liner
20. Brake Hose
21. Master Cylinder Clamp
22. Lockwasher
23. Clamp Bolt
24. Banjo (Fitting) Bolt
25. 2-way Joint
26. Mounting Bolt

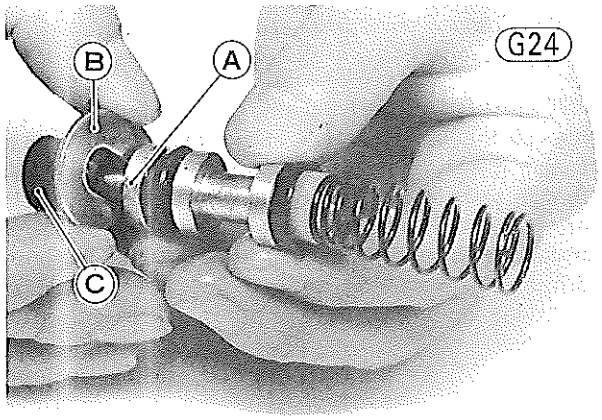


A. Liner

●Pull out the piston and spring unit ⑯.

Master Cylinder Assembly Notes:

1. Before assembly, clean all parts including the master cylinder with brake fluid or alcohol (See CAUTION –Pg. 208). Apply brake fluid to the parts removed and to the inner wall of the cylinder.
2. Be sure that the piston stop ⑰ is between the piston and dust seal ⑱.



A. Piston B. Piston Stop C. Dust Seal

3. Tighten the brake lever pivot bolt to 0.30 kg-m (26 in-lbs) of torque, and tighten the locknut to 0.60 kg-m (52 in-lbs) of torque.

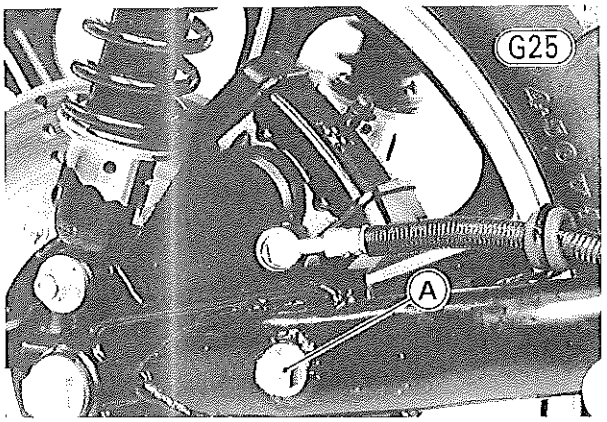
Brake Hose Replacement:

●Pump the brake fluid out of the line as explained in the Maintenance Section – Changing the brake fluid (Pg. 208).
●Remove the banjo bolts at the 2-way joint and at the caliper or master cylinder (depending on the hose), and remove the brake hose. There is a flat washer on each side of the hose fitting.
●Connect the new brake hose to the 2-way joint and the caliper or master cylinder, putting a new flat washer on each side of the brake hose fittings.
●Be sure that the metal pipe is properly fitted into the U-shaped notch in the 2-way joint and tighten the banjo bolts to the specified torque.
●Fill the reservoir with fresh brake fluid, and bleed the brake line (Pg. 208).

REAR WHEEL, REAR CALIPER

Removal:

●Set the motorcycle up on its center stand.
●Remove the mufflers (Pg. 43).
●Remove the rear brake caliper mounting bolt.

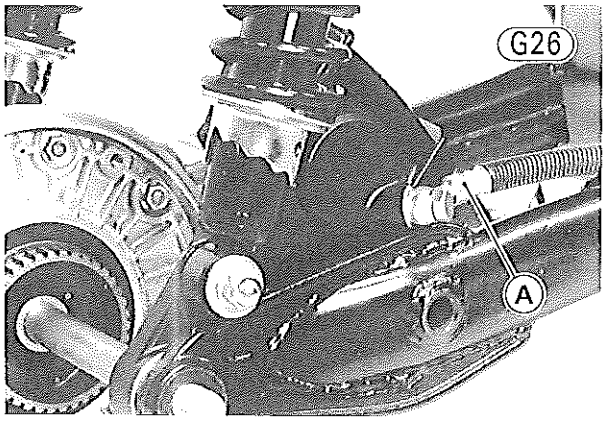


A. Caliper Mounting Bolt

●Remove the axle nut, and pull off the axle while holding up the caliper. The cap comes off with the axle.
●Free the caliper from the disc, and insert a wood wedge (7 ~ 8 mm thick) between the disc brake pads. This prevents them from being moved out of their proper position, should the brake pedal be pushed accidentally.
●Take out the rear wheel while holding up the caliper. The distance collar comes off with the wheel.

CAUTION **Do not lay the wheel on the ground with the disc facing down. This can damage or warp the disc. Place blocks under the wheel so the disc does not touch the ground.**

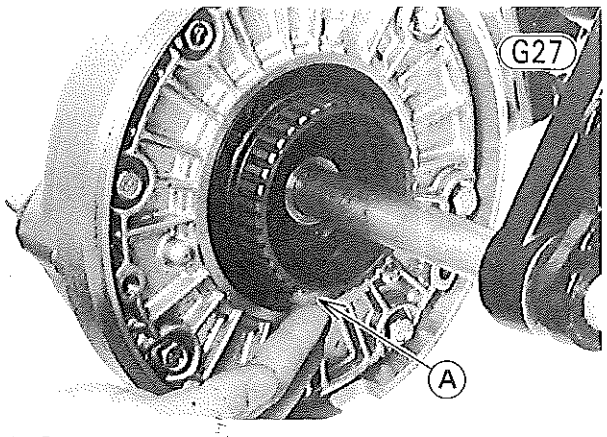
●Fit the caliper to the swing arm, and run the axle through the swing arm and the caliper holder to prevent the caliper from dangling.
●The rear caliper can be removed by disconnecting the rear end of the brake hose off the caliper.



A. Brake Hose

Installation:

- Apply grease to the rear wheel coupling splined portion.



A. Grease

- Remove the wedge from between the brake pads, and pull the rear axle out of the caliper holder and the swing arm. Fit the distance collar onto the final gear case.
- Slip the rear wheel in from the rear.
- Put the caliper on the disc so that the disc is between the pads.
- Run the axle through the cap, final gear case, rear hub, collar, rear caliper holder, and swing arm.
- Tighten the rear axle nut to 14.0 kg-m (101 ft-lbs) of torque.
- Tighten the rear caliper mounting bolt to 3.0 kg-m (22 ft-lbs) of torque.
- If the caliper was removed, connect the brake hose to the caliper putting a new flat washer on each side of the brake hose fitting. Tighten the banjo bolt to 3.0 kg-m (22 ft-lbs) of torque.
- Check the fluid level in the rear master cylinder, and bleed the brake line (Pg. 207).
- Install the mufflers (Pg. 43).

WARNING **Do not attempt to drive the motorcycle until a full brake pedal is obtained by pumping the brake pedal until the pads are against the disc. The brakes will not function on the first application of the pedal if this is not done.**

Rear Wheel Coupling and Rubber Damper Removal:

- Remove the retainer ④, and take off the wheel coupling ⑤ and rubber damper ⑥.

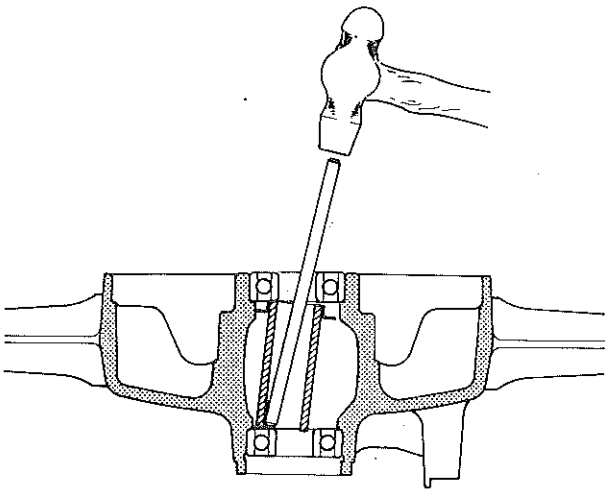
Rear Wheel Coupling and Rubber Damper Installation Notes:

1. Inspect the rubber damper and O ring, and replace them with new ones if they appear damaged or deteriorated.
2. Before installing the wheel coupling, apply a little grease to the O ring.

Rear Hub Disassembly (including disc removal):

- Remove the collar ⑯ from the wheel.
- Remove the disc bolts ⑫ (7), and take off the disc ⑪.
- Using a hook, pull out the grease seal ⑮ and remove the circlip ⑭.
- Insert a metal rod into the hub from the wheel coupling, and remove the right side bearing ⑬ by tapping evenly around the bearing inner race. The distance collar ⑨ will come out with the bearing.

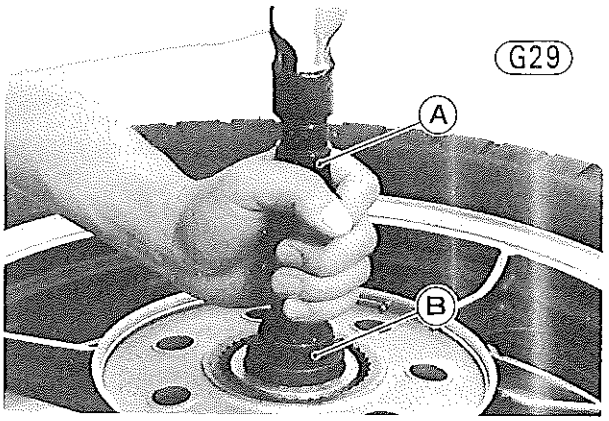
Wheel Bearing Removal G28



- Insert the metal rod into the hub from the other side, and tap out the remaining bearing ⑧.

Rear Hub Assembly:

- Inspect the bearings and replace them if necessary.
- Before installing the wheel bearings, blow any dirt or foreign particles out of the hub with compressed air to prevent contamination of the bearings.
- Install the coupling side ball bearing using a bearing driver and a bearing driver holder (special tools). Press the bearing in until it stops at the bottom of the hole.

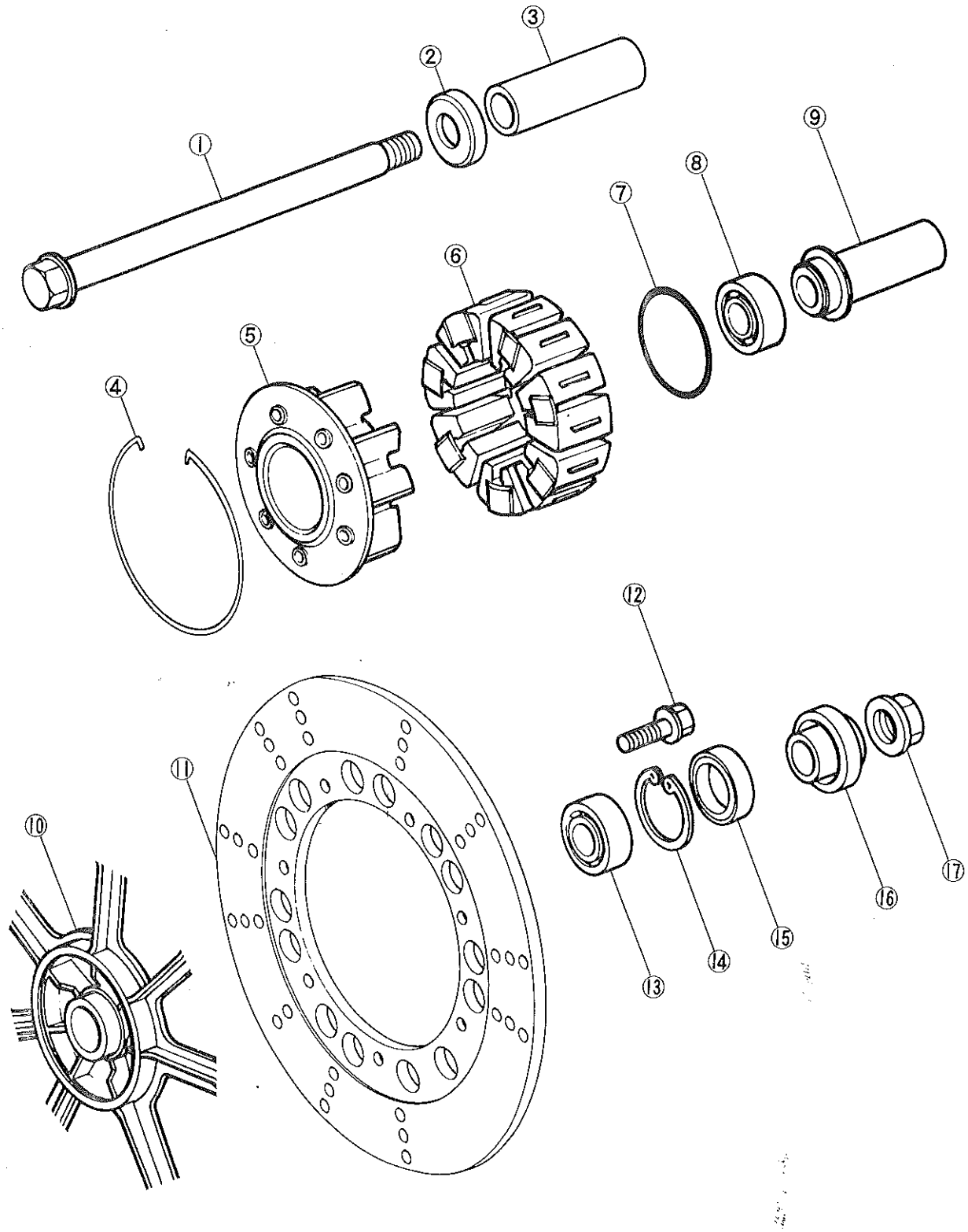


A. Bearing Driver Holder (57001-139)
B. Bearing Driver (57001-140)

- Put the distance collar into the hub.
- Press the remaining bearing in until it stops at the bottom of the hole using the same special tools used for the other bearing installation.
- Install the circlip.

Rear Wheel

G30



1. Rear Axle
2. Cap
3. Distance Collar
4. Retainer
5. Wheel Coupling
6. Rubber Damper
7. O Ring
8. Ball Bearing
9. Distance Collar
10. Rear Hub
11. Brake Disc
12. Disc Mounting Bolt
13. Ball Bearing
14. Circlip
15. Grease Seal
16. Collar
17. Axle Nut

- Replace the grease seal with a new one using a bearing driver (special tool: PN57001-296) and bearing driver holder. Drive in the seal until the face of the seal is level with the end of the grease seal hole.
- Put on the disc, and tighten the disc mounting bolts to 2.3 kg-m (16.5 ft-lbs) of torque.
- After installing the disc, check the disc runout (Pg. 210).
- Fit the collar.

REAR DISC BRAKE

Removal, installation, disassembly, and assembly of the rear disc brake is divided as follows:

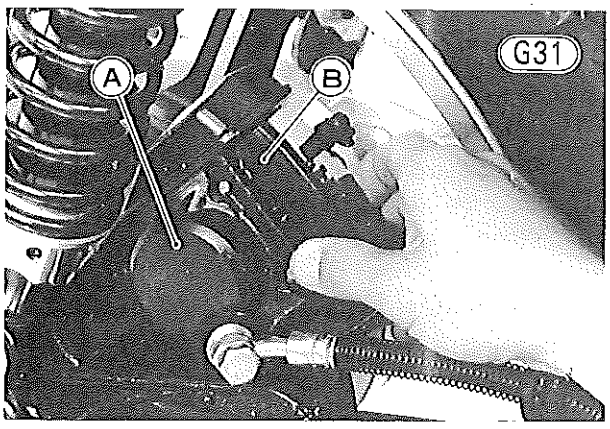
Pad Removal and Installation
Rear Caliper Disassembly and Assembly
Master Cylinder Removal
Master Cylinder Installation Notes
Master Cylinder Disassembly
Master Cylinder Assembly

NOTES:

1. Disc removal and disc installation are covered in the rear hub disassembly and assembly sections.
2. Caliper removal and caliper installation are covered in the rear wheel removal and installation sections (Pgs. 117, 118).
3. Refer to the CAUTION (Pg. 208) for general disc brake information.

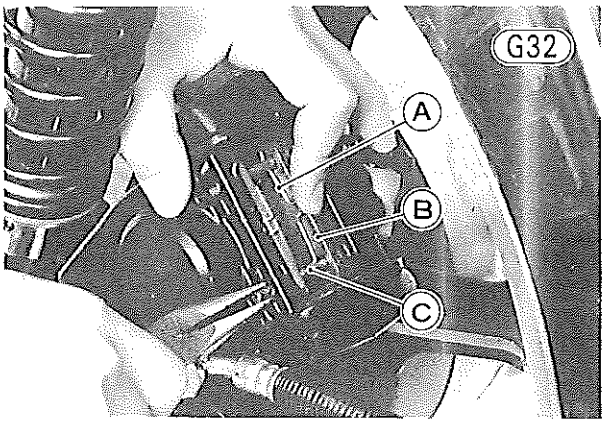
Pad Removal:

- Remove the pad cover on the caliper.



A. Caliper **B. Pad Cover**

- Remove the clips (2) from the pins (2).
- Holding a finger on the anti-rattle springs to keep them from flying off, pull the pins out of the caliper.



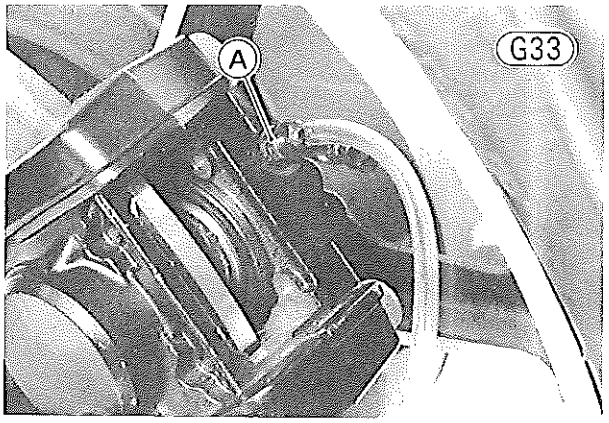
A. Anti-rattle Spring **C. Pin**
B. Pad

- Remove the pads (2) from the caliper.

Pad Installation:

- Remove the bleed valve cap, attach a clear plastic hose to the bleed valve, and run the other end of the hose into a container.
- Open (loosen) the valve slightly, push both pistons in by hand as far as they will go using a worn pad, and then close (tighten) the valve. Wipe up any spilled fluid, and recap the bleed valve.

CAUTION **Do not lever the pistons with a screwdriver against the disc. This can damage or warp the disc.**

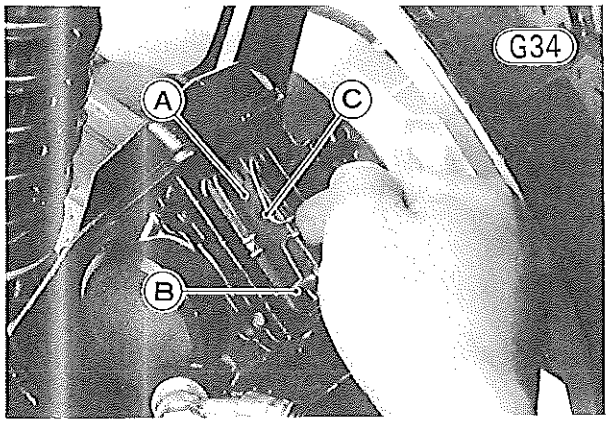


A. Bleed Valve

- Insert one of the pins through the outer wall of the caliper, pads, and into the inner wall of the caliper.

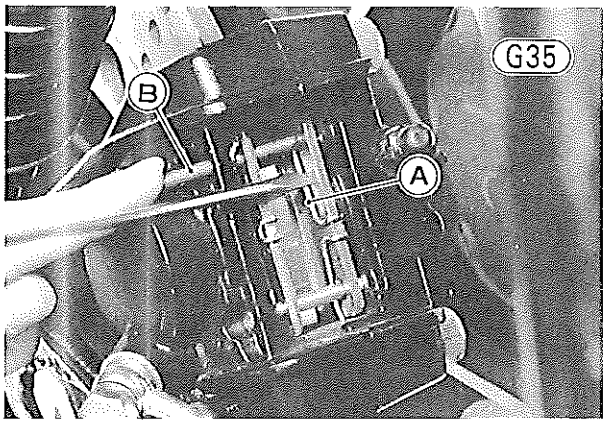
NOTES: 1. When inserting the pads into the caliper, be careful not to get the rubber dust seals out of place.
2. Hold the pin by the end with the hole to insert it.

- Install the anti-rattle springs. Be sure that the end of each spring goes under the installed pin, and that the top of each spring rides on the pad.



A. Pad
B. Pin
C. Anti-rattle Spring

- Insert the other pin through the caliper and pads pressing down the free end of each spring so that the pin can pass over it.



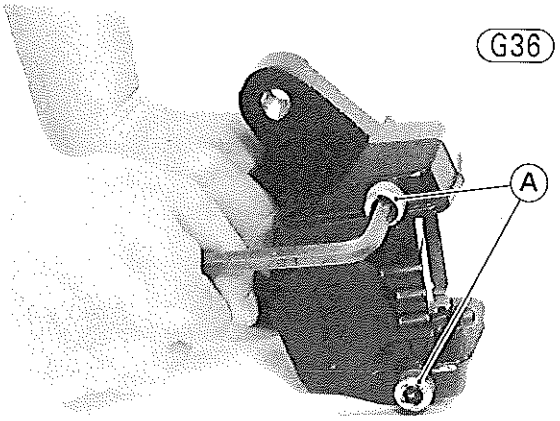
A. Anti-rattle Spring
B. Pin

- Insert the clips through the pins on the outside of the outside pad.
- Install the pad cover.
- Since some brake fluid was lost when the bleed valve was opened, check the fluid level in the master cylinder and bleed the air from the brake system (Pg. 207).
- Push the bleed valve cap onto the valve.

WARNING **Do not attempt to drive the motorcycle until a full brake pedal is obtained by pumping the brake pedal until the pads are against the disc. The brakes will not function on the first application of the pedal if this is not done.**

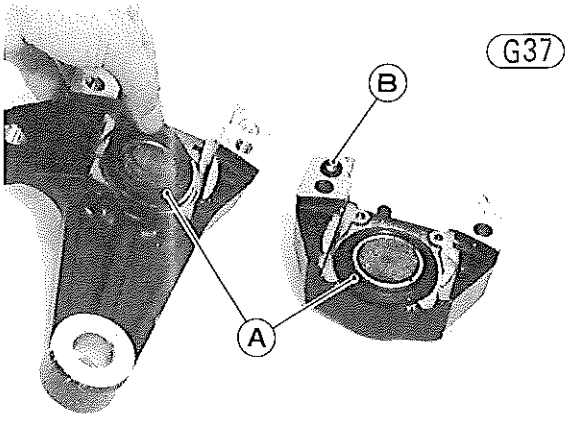
Rear Caliper Disassembly:

- Remove the rear caliper (see rear wheel removal, Pg. 117).
- Remove the pads as explained in the pad removal section (Pg. 120).
- Remove the Allen bolts ⑧ (2) to separate the caliper halves ③, ⑩.



A. Allen Bolts

- Remove the O ring ② and the dust seals ⑤ (2) around the pistons.



A. Dust Seals
B. O Ring

- Wrap each caliper half with a clean, heavy cloth, and remove each piston ⑥ by lightly applying compressed air to the brake fluid passage.

WARNING **To avoid serious injury, never place your fingers or palm on the piston. If you apply compressed air into the caliper, the piston may crush your hand or fingers.**

- Taking care not to damage the cylinder surfaces, remove the fluid seals ⑦ with a hook.

Rear Caliper Assembly:

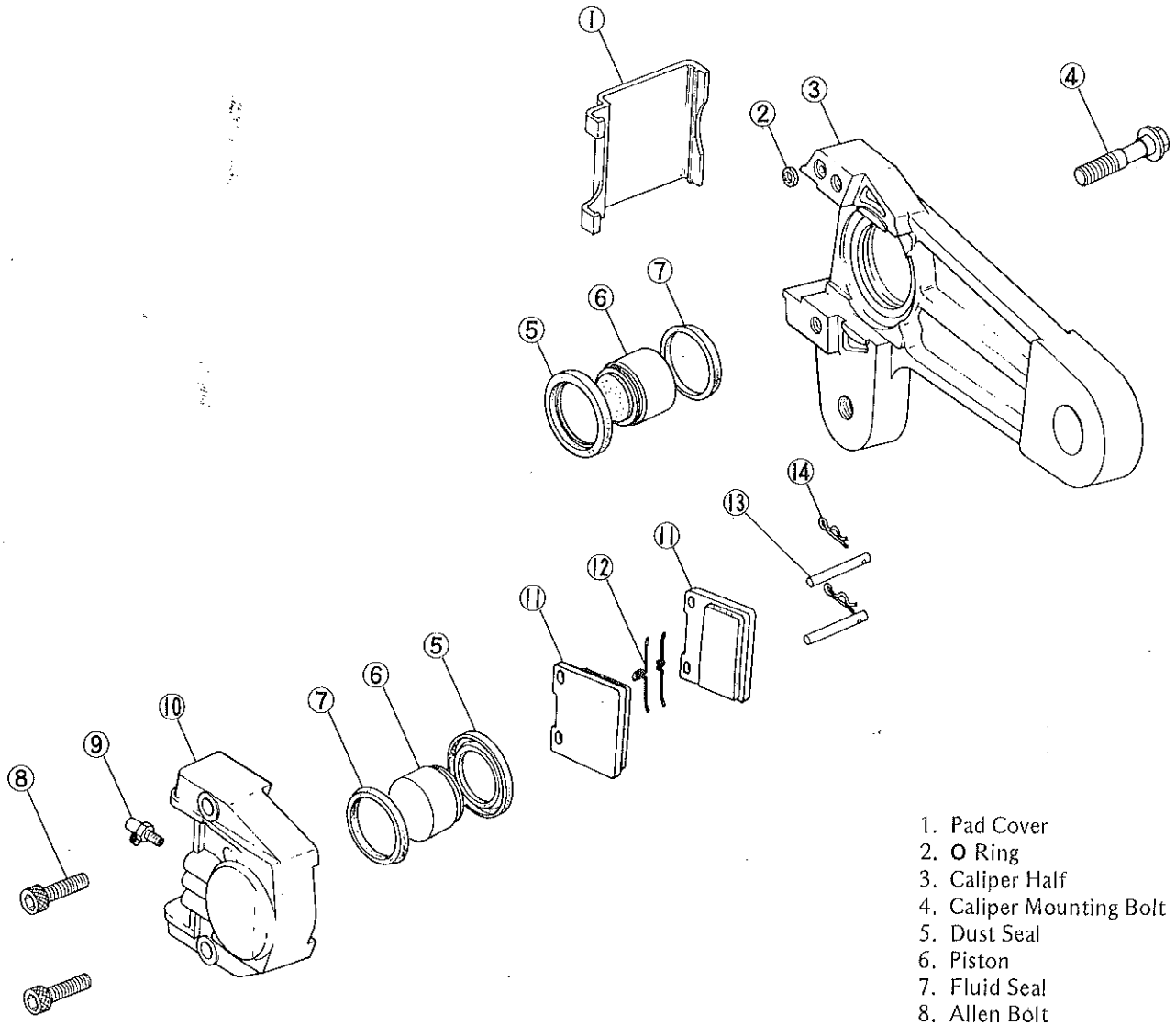
- Clean the caliper parts with brake fluid or alcohol (See CAUTION – Pg. 208).
- Fit a new fluid seal in place inside each cylinder.

NOTE: It is recommended that the rubber parts, which are removed, be replaced with new ones.

- Apply brake fluid to the outside of each piston and fluid seal, and then push the piston into the cylinder by hand. Take care that neither the cylinder nor the piston skirt get scratched.
- Install a new dust seal around each piston. Check that the dust seals are properly fitted into the grooves in the piston and the caliper halves.

Rear Caliper

G38

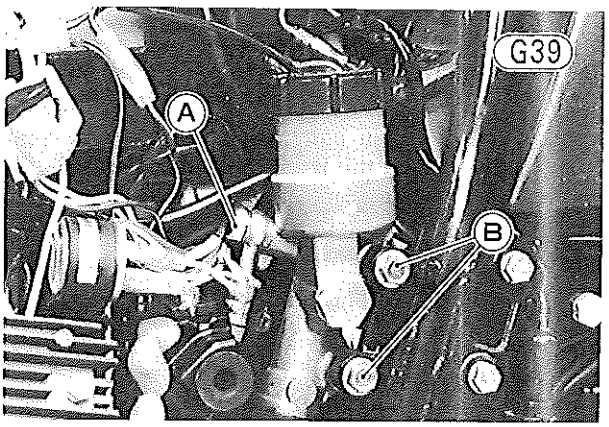


1. Pad Cover
2. O Ring
3. Caliper Half
4. Caliper Mounting Bolt
5. Dust Seal
6. Piston
7. Fluid Seal
8. Allen Bolt
9. Bleed Valve
10. Caliper Half
11. Pad
12. Anti-rattle Spring
13. Pin
14. Clip

- Fit a new O ring between the caliper halves.
- Tighten the Allen bolts to 3.0 kg-m (22 ft-lbs) of torque.
- Install the pads as explained in the pad installation section (Pg. 120).
- Install the rear wheel (Pg. 118).
- Check the fluid level in the master cylinder, and bleed the brake line (Pg. 207).

Rear Master Cylinder Removal:

- Pull off the right side cover.
- Remove the electrical panel.
- Remove the banjo bolt to disconnect the brake hose from the master cylinder. There is a flat washer on each side of the hose fitting. Immediately wipe up any brake fluid that spills.



A. Banjo Bolt **B. Mounting Bolts**

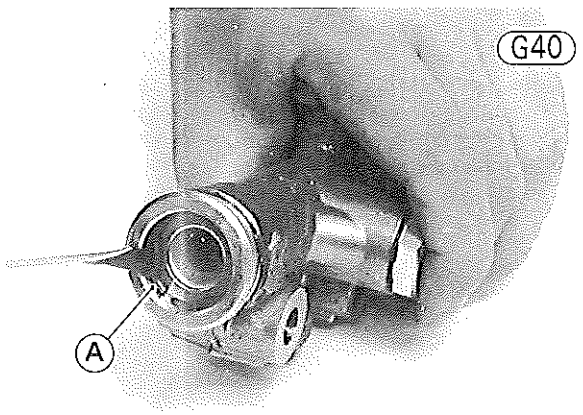
●Remove the master cylinder mounting bolts, and free the rear master cylinder from the motorcycle.

Rear Master Cylinder Installation Notes:

1. Apply grease to the stepped portions of the master cylinder mounting bolts, and apply a non-permanent locking agent to the threads of the bolts. Tighten the mounting bolts to 1.8 kg-m (13.0 ft-lbs) of torque.
2. The correctly installed master cylinder can move within the limit of clearance between the bracket holes and mounting bolts.
3. Replace the flat washer on each side of the brake hose fitting with new ones. Tighten the banjo bolt to 3.0 kg-m (22 ft-lbs) of torque.
4. Bleed the brake line after master cylinder installation (Pg. 207).
5. Adjust the rear brake (Pg. 24).

Rear Master Cylinder Disassembly:

●Remove the push rod dust cover ⑮.
●Take off the master cylinder cap ① and diaphragm ③, and empty the brake fluid into a suitable container.
●Remove the retainer ⑭ with a thin screwdriver, and pull out the piston stop ⑬ and piston ⑫. Do not remove the secondary cup ⑪ from the piston since removal will damage the cup.



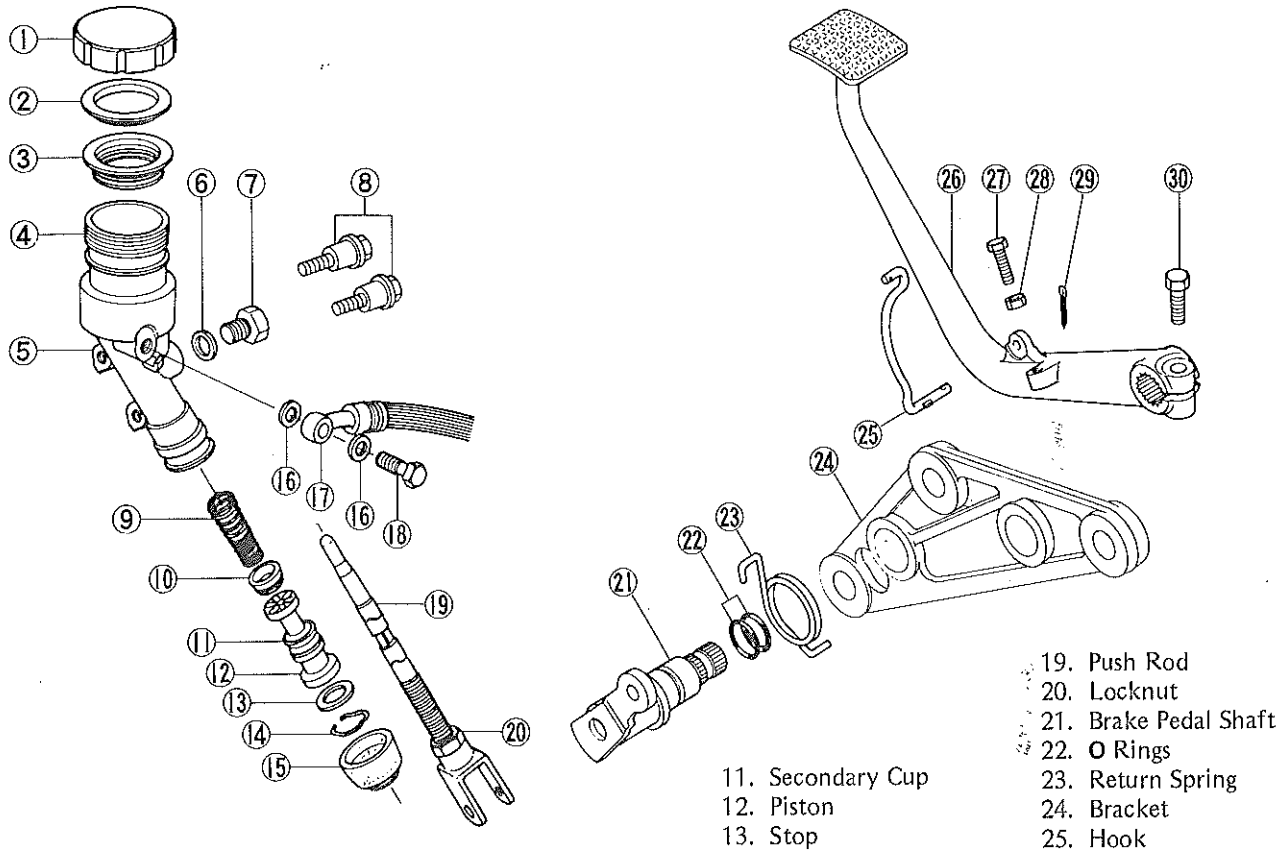
A. Retainer

●Remove the return spring ⑨ and primary cup ⑩ by lightly applying compressed air into the outlet hole.

Rear Master Cylinder Assembly:

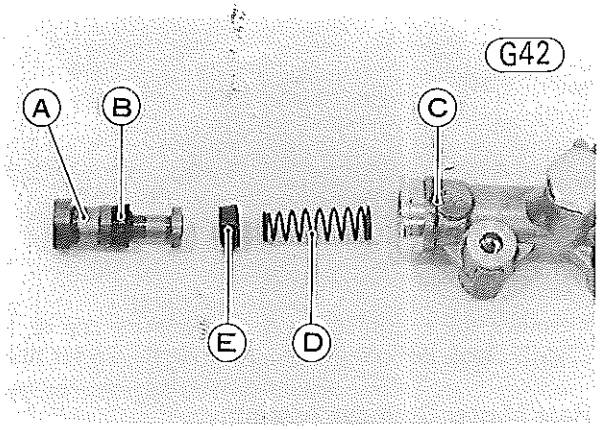
●Before assembly, clean all parts including the master cylinder with brake fluid or alcohol (See CAUTION – Pg. 208), and apply brake fluid to the removed parts and the inner wall of the cylinder. Take care not to scratch the piston or the inner wall of the cylinder.

Rear Master Cylinder



1. Cap
2. Ring Plate
3. Diaphragm
4. Reservoir
5. Master Cylinder Body
6. Gasket
7. Plug
8. Mounting Bolts
9. Return Spring
10. Primary Cup
11. Secondary Cup
12. Piston
13. Stop
14. Retainer
15. Dust Cover
16. Flat Washer
17. Brake Hose
18. Banjo Bolt
19. Push Rod
20. Locknut
21. Brake Pedal Shaft
22. O Rings
23. Return Spring
24. Bracket
25. Hook
26. Brake Pedal
27. Adjusting Bolt
28. Locknut
29. Cotter Pin
30. Brake Pedal Bolt

- Put the return spring into the cylinder. The spring seat side must face out.
- Install the primary cup. Be sure that the primary cup is not installed backward or turned sideways after insertion.



A. Piston
B. Secondary Cup
C. Master Cylinder
D. Spring
E. Primary Cup

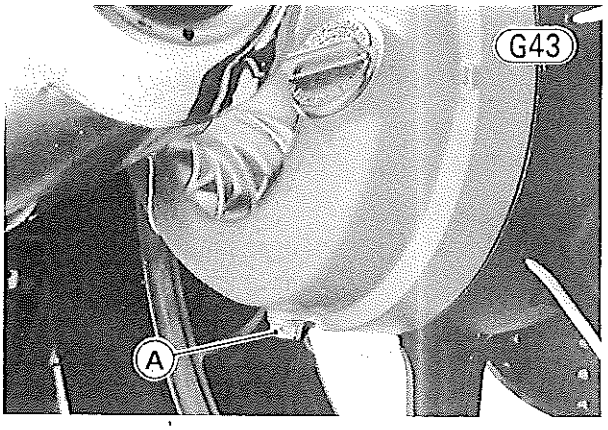
- Install the piston and stop, and with a suitable rod, install the retainer to hold the piston in as far as it will go.
- Fit the diaphragm and the master cylinder cap.
- Fit the push rod dust cover.

NOTE: If the plug ⑦ and gasket are removed, replace the damaged gasket with a new one and tighten the plug to 4.5 kg-m (33 ft-lbs) of torque.

FINAL BEVEL GEAR CASE

Removal:

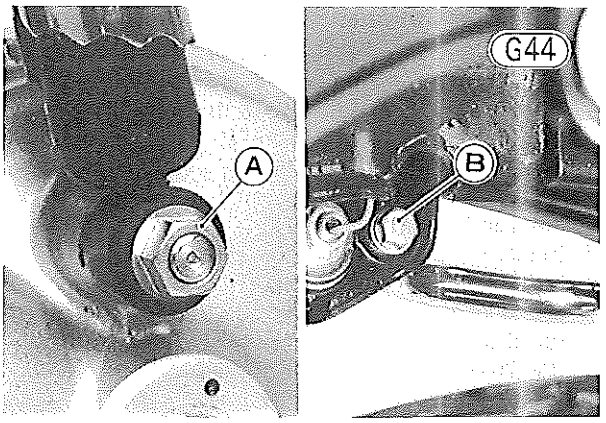
- If the final bevel gear case is to be disassembled after case removal, place an oil pan beneath the final gear case, and remove the final gear case oil drain plug to drain out the oil.



A. Drain Plug

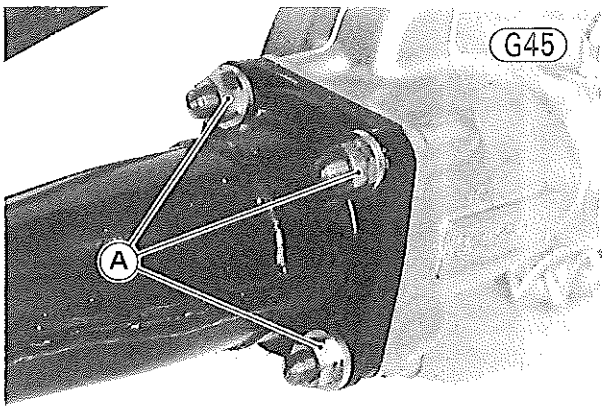
- After draining the oil, install the drain plug with its aluminum gasket, and tighten the plug to 2.0 kg-m (14.5 ft-lbs) of torque.

- Remove the rear wheel (Pg. 117).
- Remove the grab rail mounting bolt and lockwasher.



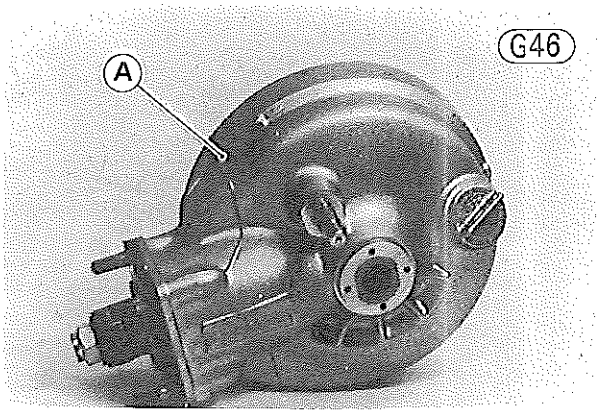
A. Mounting Nut **B. Mounting Bolt**

- Remove the cap nut, lockwasher, and flat washer at the top of the left rear shock absorber, and take off the grab rail.
- Remove the nut from the bottom of the shock absorber, and pull the shock absorber off its studs.
- Remove the final gear case mounting nuts (4), and pull the case off the swing arm. The spring comes off with the case.



A. Final Gear Case Mounting Nuts

NOTE: If the final gear case is full of oil, place the final gear case so that the right side of the case is up as shown. If the case is upside down or sideways, the final gear case oil will be drained through the breather hole of the case.

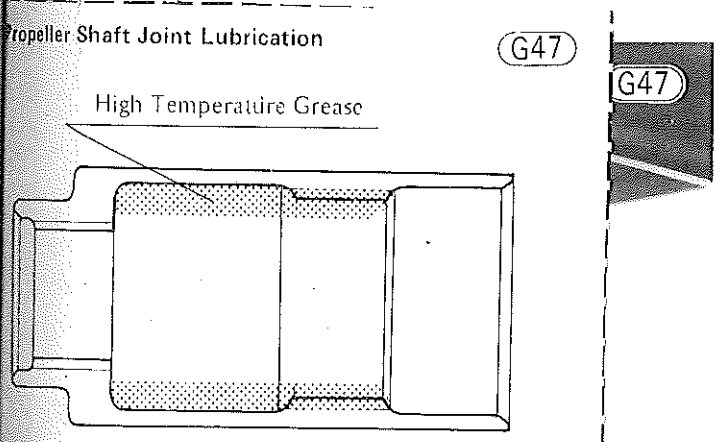


A. Final Gear Case

Installation Notes:

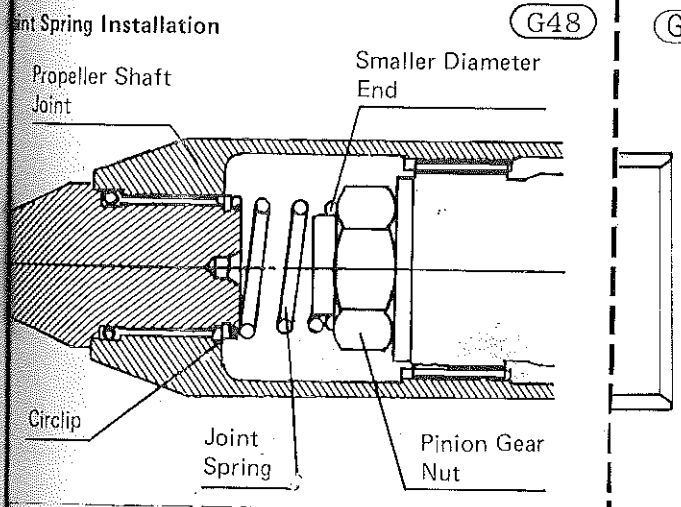
1. Wipe the old grease off the propeller shaft joint and pinion gear joint, and pack the propeller shaft joint with 25 cc (20 grams) of high temperature grease as shown.

Propeller Shaft Joint Lubrication



Install the joint spring so that the smaller diameter end fits into the pinion gear nut as shown.

Joint Spring Installation



3. Tighten the final gear case mounting nuts to 3.0 kg-m (22 ft-lbs) of torque.
4. Tighten the final gear case drain plug to 2.0 kg-m (14.5 ft-lbs) of torque.
5. Fill the case with hypoid gear oil, checking the oil level (Pg. 28).

Final Gear Case Disassembly:

The final gear case disassembly section is divided as follows:

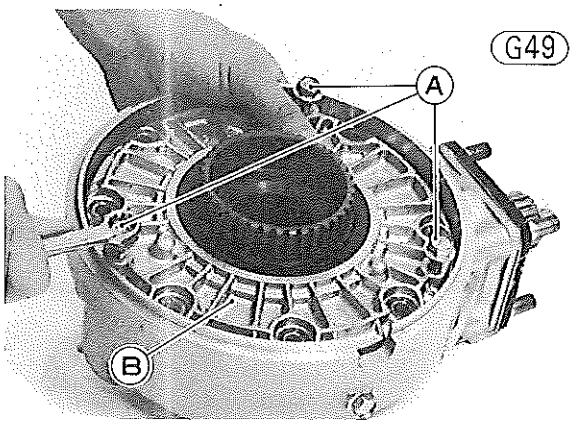
Ring Gear Removal
Ring Gear Installation Notes
Pinion Gear Disassembly
Pinion Gear Assembly
Final Gear Case Disassembly
Final Gear Case Assembly Notes
Backlash and Tooth Contact Adjustment

NOTES: 1. The ring gear and pinion gear are lapped together at the factory to get the best tooth contact. They must be replaced as a set.

2. Pinion Gear Assembly section covers the adjustment of the pinion preload. Improper preload can lead to bearing damage. Whenever the pinion gear nut is loosened, the preload must be adjusted.
3. Be sure to check and adjust the bevel gear backlash and tooth contact, when any of the parts which influence these items are replaced (Pg. 130).

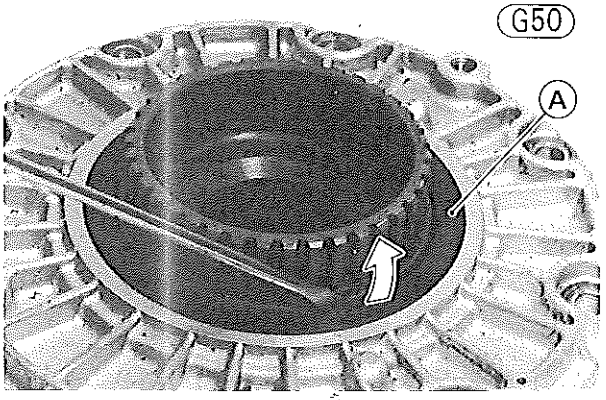
Ring Gear Removal:

- Remove the final gear case cover bolts (8) ⑦.
- Using the cover bolts (3), jack up the ring gear assembly ⑥ and O ring ⑲.



A. Jacking Bolts B. Case Cover

- Remove the shim(s) ⑰.
- To remove the ring gear oil seal ⑱, heat the ring gear assembly in an oil bath to 120~150°C (248~302°F). Pull out the oil seal with a hook.



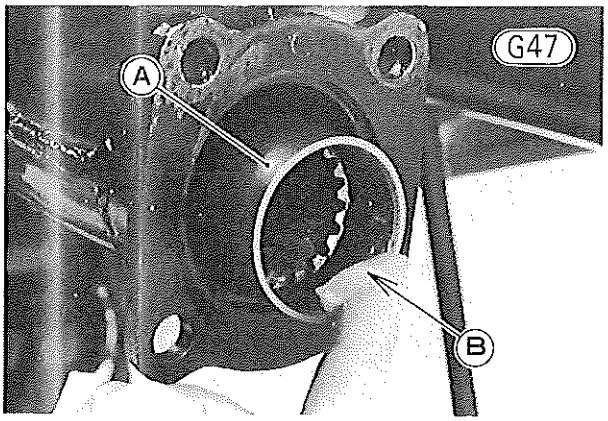
A. Ring Gear Oil Seal

Ring Gear Installation Notes:

1. Install the ring gear oil seal using the oil seal driver (special tool). Drive in the oil seal so that the face of the seal is level with the surface of the gear case cover.

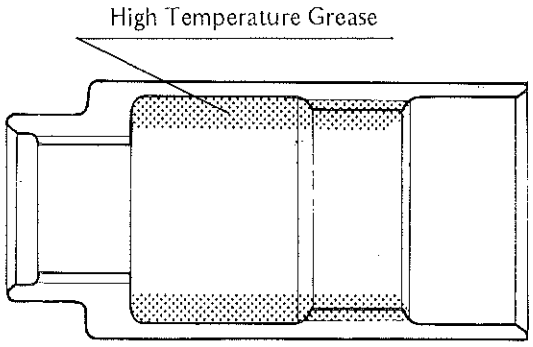
Installation Notes:

1. Wipe the old grease off the propeller shaft joint and pinion gear joint, and pack the propeller shaft joint with 25 cc (20 grams) of high temperature grease as shown.



A. Propeller Shaft Joint B. Greese

Propeller Shaft Joint Lubrication G48



3. Tighten the final gear case mounting nuts to 3.0 kg-m (22 ft-lbs) of torque.
4. Tighten the final gear case drain plug to 2.0 kg-m (14.5 ft-lbs) of torque.
5. Fill the case with hypoid gear oil, checking the oil level (Pg. 28).

Final Gear Case Disassembly:

The final gear case disassembly section is divided as follows:

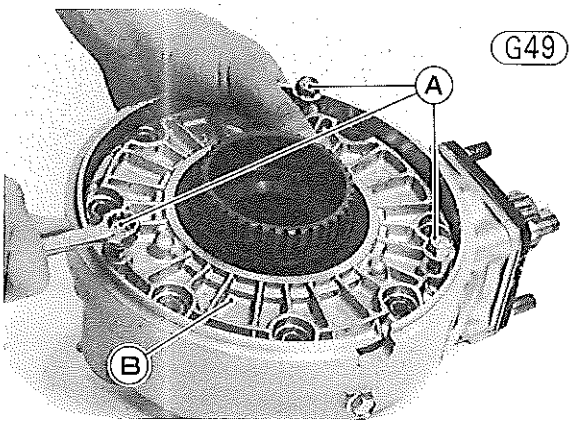
Ring Gear Removal
Ring Gear Installation Notes
Pinion Gear Disassembly
Pinion Gear Assembly
Final Gear Case Disassembly
Final Gear Case Assembly Notes
Backlash and Tooth Contact Adjustment

NOTES: 1. The ring gear and pinion gear are lapped together at the factory to get the best tooth contact. They must be replaced as a set.

2. Pinion Gear Assembly section covers the adjustment of the pinion preload. Improper preload can lead to bearing damage. Whenever the pinion gear nut is loosened, the preload must be adjusted.
3. Be sure to check and adjust the bevel gear backlash and tooth contact, when any of the parts which influence these items are replaced (Pg. 130).

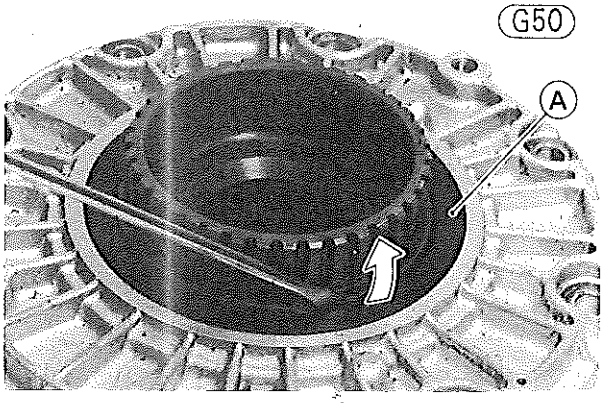
Ring Gear Removal:

- Remove the final gear case cover bolts (8) ⑦.
- Using the cover bolts (3), jack up the ring gear assembly ⑥ and O ring ⑲.



A. Jacking Bolts B. Case Cover

- Remove the shim(s) ⑰.
- To remove the ring gear oil seal ⑱, heat the ring gear assembly in an oil bath to 120~150°C (248~302°F). Pull out the oil seal with a hook.



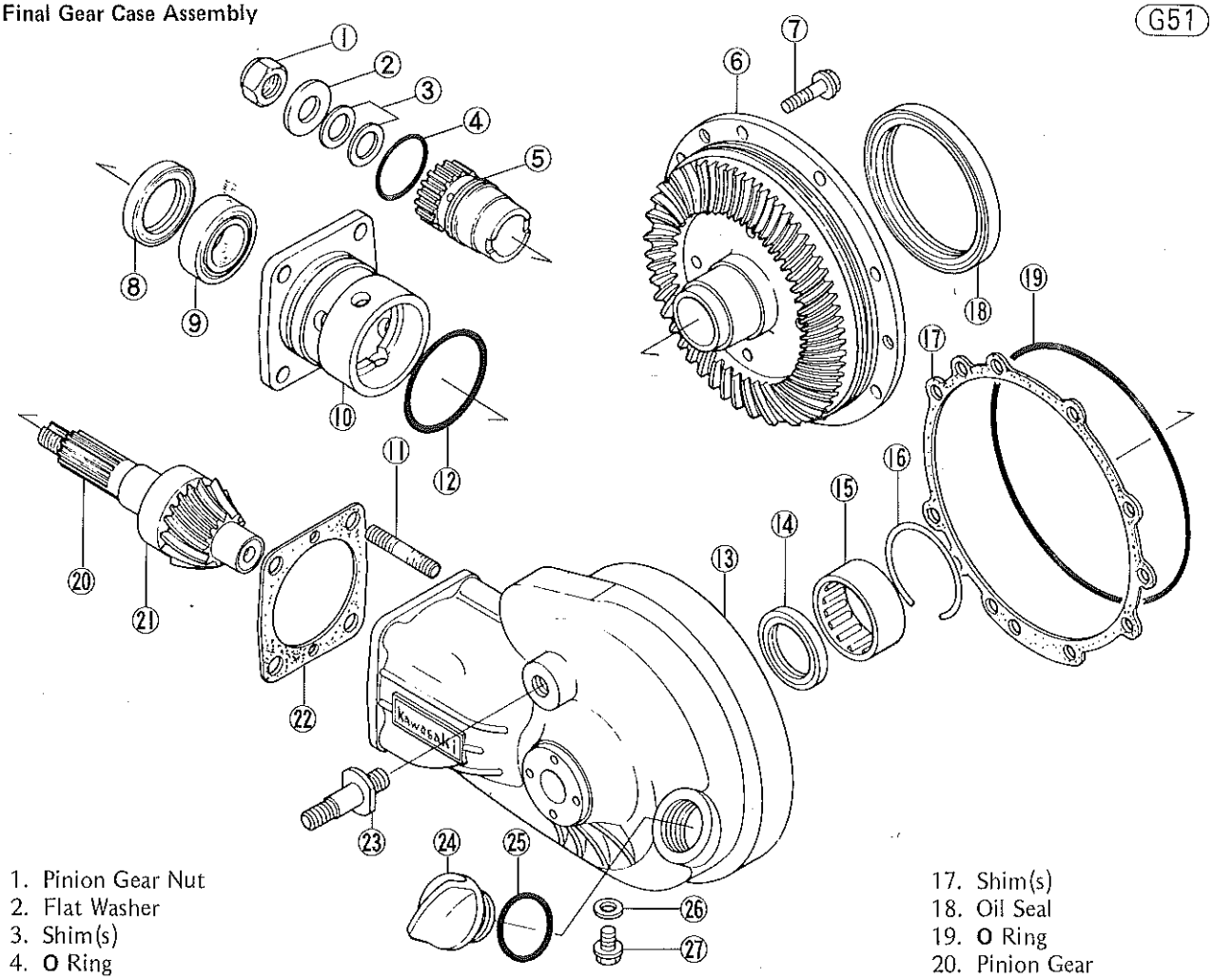
A. Ring Gear Oil Seal

Ring Gear Installation Notes:

1. Install the ring gear oil seal using the oil seal driver (special tool). Drive in the oil seal so that the face of the seal is level with the surface of the gear case cover.

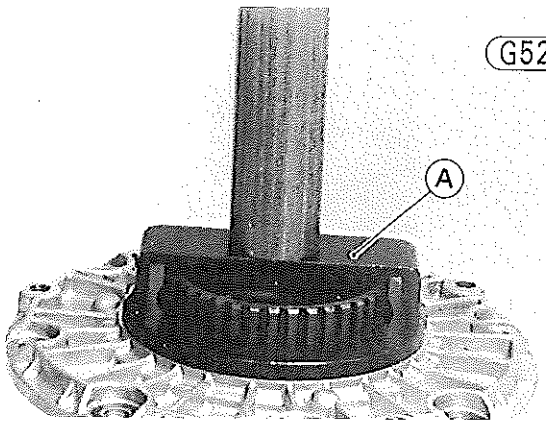
Final Gear Case Assembly

G51



1. Pinion Gear Nut
2. Flat Washer
3. Shim(s)
4. O Ring
5. Pinion Gear Joing
6. Ring Gear Assembly
7. Cover Bolt
8. Oil Seal
9. Tapered Roller Bearing
10. Bearing Housing
11. Stud Bolt
12. O Ring
13. Gear Case
14. Oil Seal
15. Needle Bearing
16. Snap Ring
17. Shim(s)
18. Oil Seal
19. O Ring
20. Pinion Gear
21. Tapered Roller Bearing
22. Shim(s)
23. Stud Bolt
24. Cap
25. O Ring
26. Gasket
27. Drain Plug

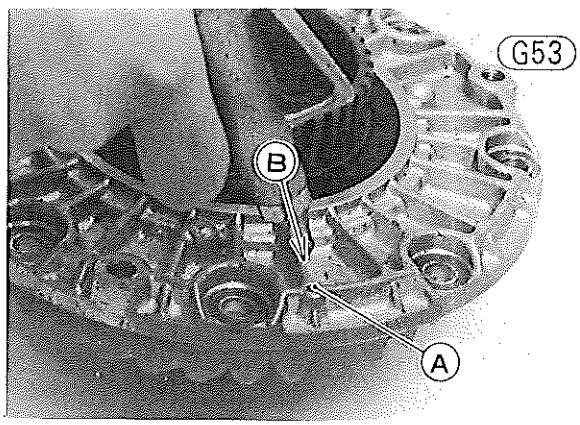
G52



A. Oil Seal Driver (57001-1029)

2. Remove any dirt or other particles from the hole in the cover and case with compressed air.

G53



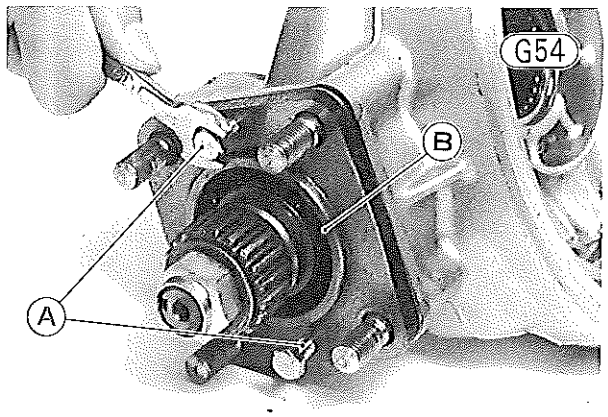
A. Hole **B. Compressed Air**

3. If the ring gear assembly was replaced, adjust the backlash and tooth contact of the bevel gears (Pg. 130).

4. After the backlash and tooth contact adjustment, tighten the final gear case cover bolts (8) to 2.5 kg-m (18.0 ft-lbs) of torque.

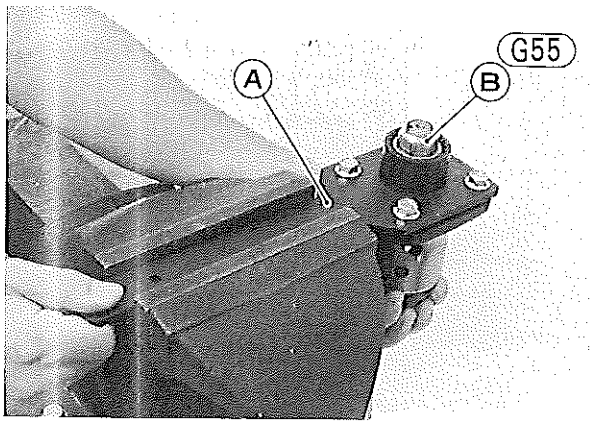
Pinion Gear Disassembly:

•Using any 6 mm diameter bolt with 1.0 mm pitch threads, jack up the pinion gear assembly.



A. Jacking Bolts **B. Pinion Gear Assembly**

•Remove the shim(s) ㉒.
•Pry up the staked portion of the pinion gear nut ①.
•Using the suitable bolts and nuts, attach the pinion gear holder (special tool) to the pinion gear bearing housing fitting the holder splines to the pinion gear joint splines.



A. Pinion Gear Holder (57001-1028)
B. Pinion Gear Nut

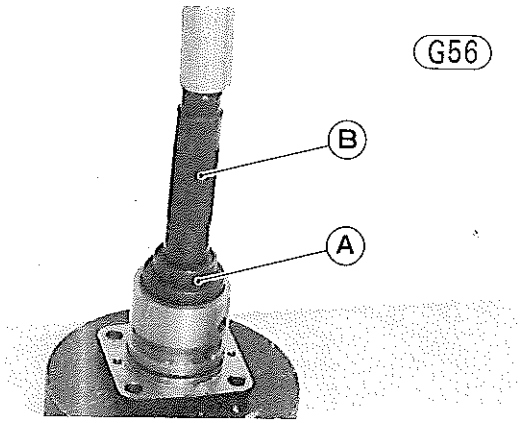
•Grip the holder with a vise, and remove the pinion gear nut and the pinion gear holder.
•Remove the flat washer ②, shim(s) ③, pinion gear joint ⑤ with the O ring ④.
•Remove the pinion gear ⑳ from the bearing housing ⑩.
•Pry the oil seal ⑧ off the bearing housing, and remove the tapered roller bearing inner race ⑨.
•Using a soft rod, tap the tapered roller bearing outer races (2) out of the housing.

Pinion Gear Assembly:

•Using the bearing drivers and bearing driver holder (special tools), drive in the tapered roller bearing outer races (2) until they stop at the bottom of the housing hole.

Table G2 Bearing Drivers and Holder

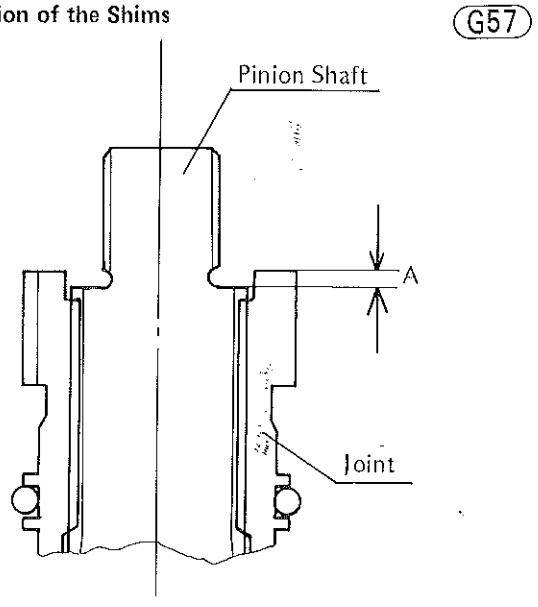
	P/No.
Small Outer Race	57001-290
Large Outer Race	57001-140
Oil Seal	57001-290
Using Driver Holder	57001-139



A. Bearing Driver (57001-140, -290)
B. Bearing Driver Holder (57001-139)

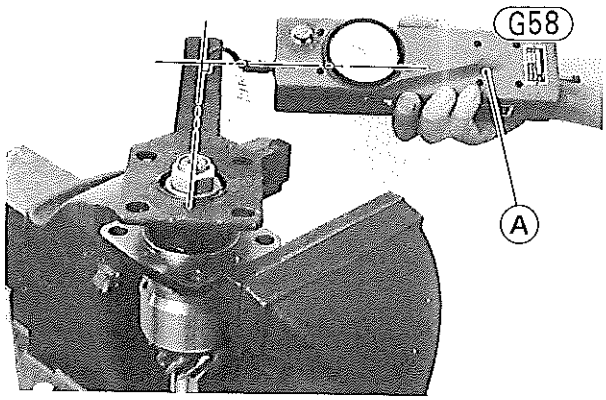
•Install the small tapered roller bearing inner race.
•Using the bearing driver (See Table G2.) and bearing driver holder (special tools), press the oil seal in until it stops at the stepped portion of the housing hole.
•Install the pinion gear, and install the pinion gear joint with its O ring.
•Adjust the pinion gear preload using the following 6 steps.
○Install the shim(s) so that the total thickness of the shim(s) used is 0.1 mm less than the dimension "A" as shown. Dimension "A" is the distance from the joint shoulder to pinion shaft shoulder.

Selection of the Shims



○Replace the pinion gear nut with a new one, if it has two staked portions.

○Install the flat washer, and tighten the pinion gear nut to 12.0 kg-m (87 ft-lbs) of torque, using the pinion gear holder (special tool).
○Attach the pinion gear holder with the protruding side of the holder facing down, and turn the pinion gear clockwise more than 20 times and then counterclockwise an other 20 times, so that the bearing preload becomes constant.
○Attach a spring scale to the hole in the holder. Pull on the scale keeping it at a right angle to the holder handle, and measure the force needed to start the pinion gear turning.



A. Spring Scale

Table G3 Pinion Gear Bearing Preload (with Oil Seal)

Spring Scale Reading
0.35~0.55 kg

CAUTION **Because the tapered roller bearings may be damaged, they must be replaced with new ones, if the bearing preload is more than 2.0 kg-m.**

○If the preload is not correct, change the shim(s) referring to the following notes, and recheck the pinion gear bearing preload.

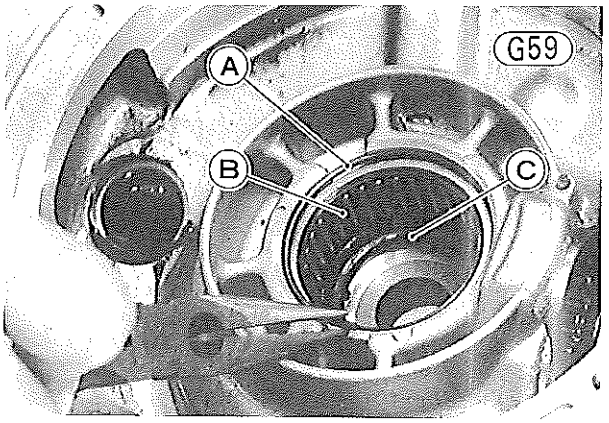
NOTES: 1. Shims are available in the sizes shown in the following table.
2. To decrease the preload by 0.10 kg-m (9 in-lbs), increase the total thickness of the shim pack by 0.07 mm, and vice versa.

●After the preload adjustment, stake the pinion gear nut to the notch in the end of the gear shaft.

●Adjust the backlash and tooth contact of the bevel gears (Pg. 130), if the pinion gear, bearing housing, or tapered roller bearing was replaced.

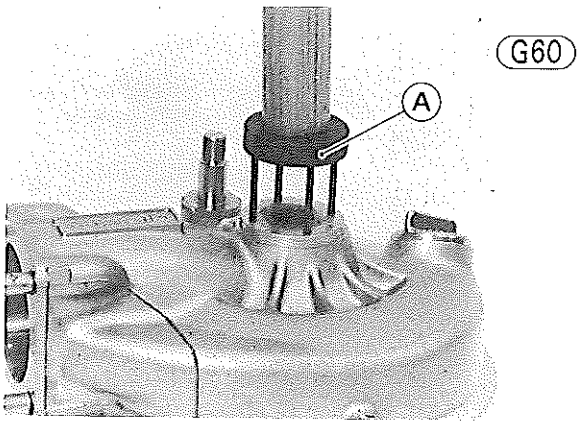
Final Bevel Gear Case Disassembly:

●Remove the ring gear assembly as explained in the ring gear removal section (Pg. 125).
●Remove the pinion gear assembly as explained in the pinion gear disassembly section (Pg. 127).
●Remove the snap ring ⑯ at the ring gear needle bearing ⑮.



A. Snap Ring B. Needle Bearing C. Oil Seal

●Heat the fianl gear case in an oil bath to approximately 100°C (212°F).
●Insert the remover (special tool) into the four holes on the outside of the final gear case, and force the needle bearing and oil seal ⑭ out of the case.



A. Oil Seal Remover (57001-1052)

Table G4 Shim Sizes

Thickness (mm)	P/No.	Thickness (mm)	P/No.
0.1	92025-1032	1.30	92025-1027
0.2	92025-1033	1.32	92025-1028
0.3	92025-1034	1.34	92025-1029
0.5	92025-1035	1.36	92025-1030
0.6	92025-1068	1.38	92025-1031
0.7	92025-1069		
0.8	92025-1070		
0.9	92025-1036		

Final Gear Case Assembly Notes:

1. Using the driver and driver holder (special tools), press the oil seal and needle bearing. The oil seal must be pressed in the case facing its marked side in.
2. If the final gear case was replaced, adjust the backlash and tooth contact of the bevel gears (Pg. 130).

Table G5 Driver and Holder

	P/No.
Oil Seal and Needle Bearing	57001-1053
Using Driver Holder	57001-139

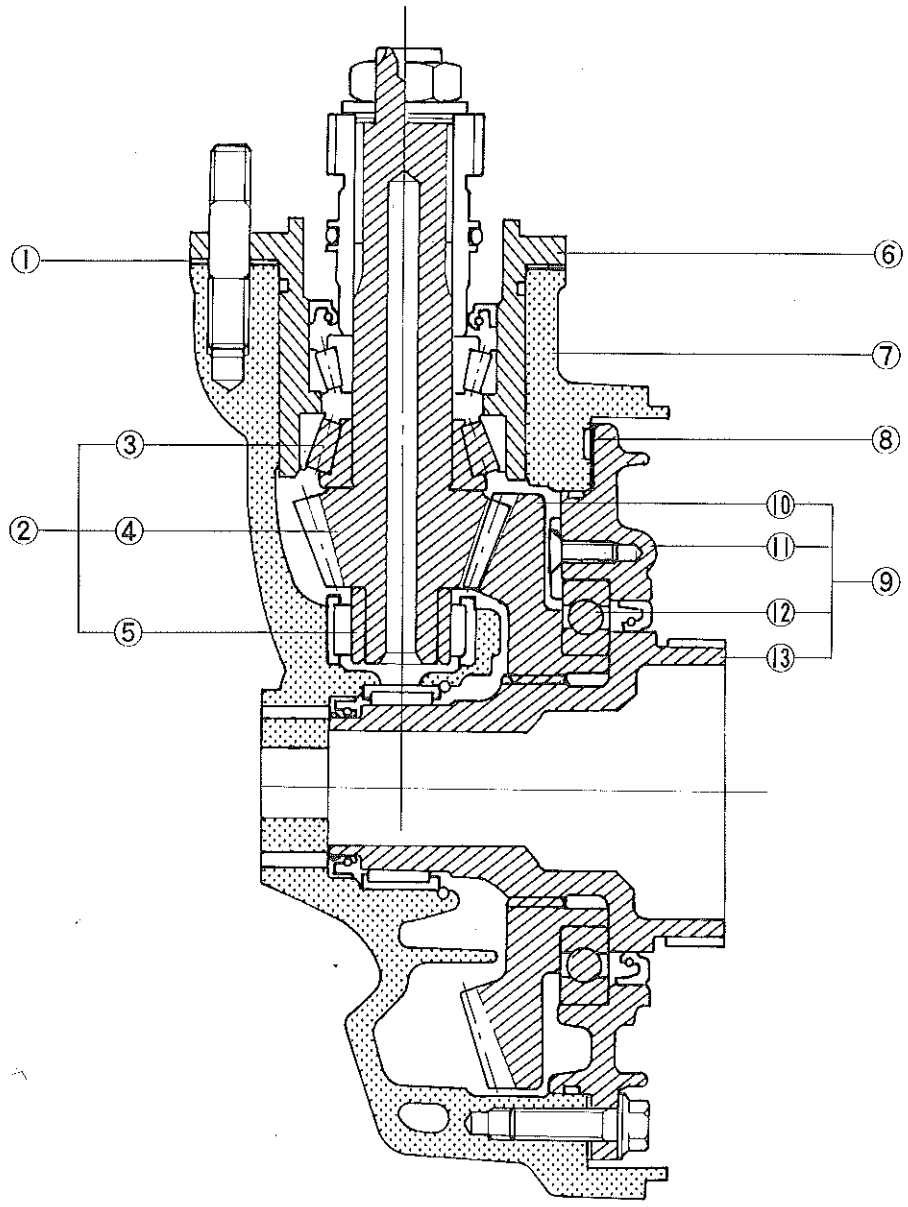
Backlash and Tooth Contact Adjustment:

Backlash and Tooth Contact of Bevel Gears

Improper backlash or tooth contact of the bevel gears may lead to noise and gear damage.

Be sure to check and adjust the bevel gear backlash and tooth contact, whenever one of the following items is replaced.

Final Bevel Gears G61



1. Shim(s) for Pinion Gear
2. Pinion Gear Assembly
3. Tapered Roller Bearing
4. Pinion Gear
5. Needle Bearing Inner Race
6. Pinion Gear Bearing Housing
7. Final Bevel Gear Case
8. Shim(s) for Ring Gear
9. Ring Gear Assembly
10. Ring Gear
11. Gear Case Cover
12. Ball Bearing
13. Ring Gear Shaft

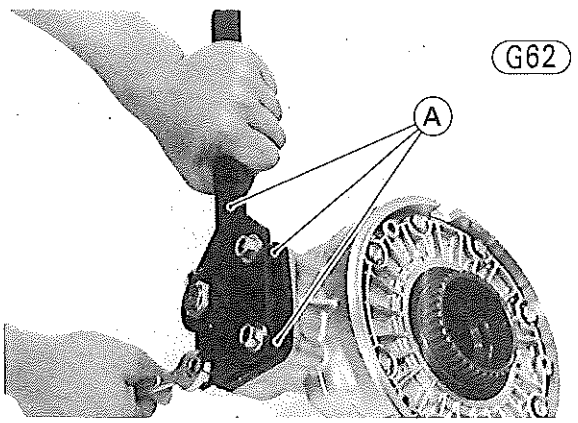
- ○Ring Gear Assembly
- ○Pinion Gear
- ○Tapered Roller Bearing
- ○Bearing Housing
- ○Final Gear Case

The amount of backlash is influenced more by changes in ring gear position than by changes in pinion gear position. Tooth contact is influenced more by changes in pinion gear position than by changes in ring gear position. For this reason, first adjust the backlash by changing the ring gear shim pack, and then adjust the tooth contact by changing the pinion gear shim pack.

CAUTION **The ring gear and the pinion gear are lapped together at the factory to get the best tooth contact. They must be replaced as a set.**

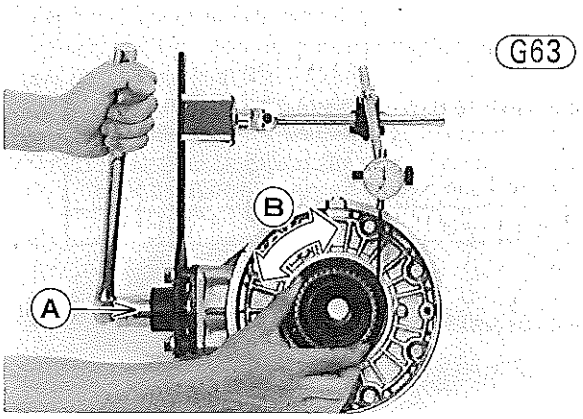
Backlash Adjustment

- Clean any dirt and oil off the teeth of the bevel gears.
- Install the final bevel gear assemblies (Pg. 125), and secure the pinion gear holder and spacers (special tool) on the final gear case with the final gear case mounting nuts (4).



A. Pinion Gear Holder and Spacers (57001-1028)

- To measure the backlash, mount a dial gauge on the pinion gear holder (special tool), so that the tip of the gauge is against the splined portion of the ring gear shaft. Move the ring gear back and forth while holding the pinion gear steady. The difference between the highest and the lowest gauge reading is the amount of backlash.



A. Locked **B. Backlash**

NOTE: Backlash, or gear lash is the amount of movement of one gear relative to the other, measured with one gear stationary.

- If the amount of backlash is out of the standard range, change the ring gear shim pack referring to the following notes, and then check the backlash again. Repeat if necessary.

Table G6 Backlash (at the ring gear shaft splines)

Standard
0.08~0.11 mm

NOTE: 1. Shims are available in the sizes shown in the following table.
2. To increase the amount of backlash by 0.1 mm, decrease the thickness of the ring gear shim pack by 0.18 mm, and vice versa. In the case of the pinion gear shim pack, by 0.62 mm.

Tooth Contact Adjustment

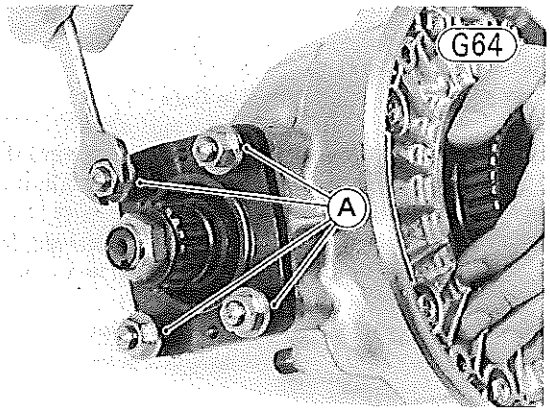
- To check the tooth contact, remove the pinion gear assembly, and apply checking compound to 4 or 5 teeth of the pinion gear.

Table G7 Shim Sizes

Ring Gear		Pinion Gear	
Thickness (mm)	P/No.	Thickness (mm)	P/No.
0.15	92025-1060	0.15	92025-1052
0.5	92025-1061	0.5	92025-1053
0.6	92025-1062	0.6	92025-1054
0.7	92025-1063	0.7	92025-1055
0.8	92025-1064	0.8	92025-1056
0.9	92025-1065	0.9	92025-1057
1.0	92025-1066	1.0	92025-1058
1.2	92025-1067	1.2	92025-1059

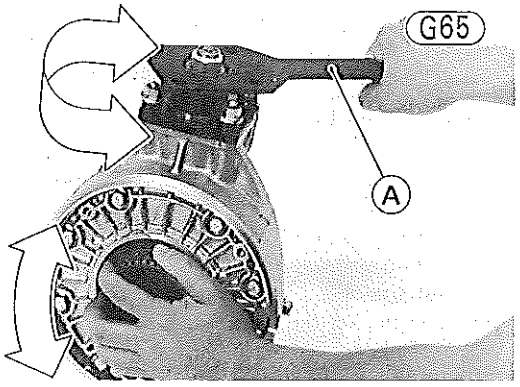
NOTES: 1. Check to see that there is no dirt and oil on the teeth.
2. Special compounds are available from automotive supply stores for the purpose of checking differential gear tooth patterns and contact. Use this for checking the bevel gears.
3. The checking compound must be smooth and firm, with the consistency of tooth paste.
4. Apply the checking compound to the teeth in a thin, even coat with a fairly stiff paint brush. If painted too thickly, the exact tooth pattern may not appear.

- Install the pinion gear assembly in the final gear case.
- Install the spacers (4) of the pinion gear holder (special tool) to the stud bolts (4), and tighten the case mounting nuts (9).



A. Spacers (57001-1028)

- Turn the ring gear shaft 3 or 4 revolutions in the drive and reverse (coast) directions by hand, while creating a drag on the pinion gear with the pinion gear holder (special tool) facing its protruding side in.



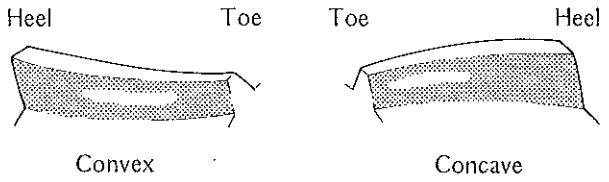
A. Pinion Gear Holder (57001-1028)

- Check the drive pattern and coast pattern of the bevel gear teeth.

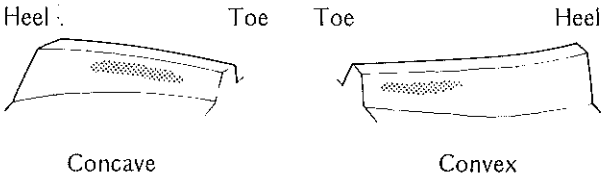
NOTE: The tooth contact patterns of both (drive and coast) sides should be centrally located between the top and bottom of the tooth. The drive pattern can be a little closer to the toe and the coast pattern can be somewhat longer and closer to the toe. The drive side of the ring gear tooth is the convex side, and the coast side is the concave side.

Correct Tooth Contact Pattern G66

Pinion Gear



Ring Gear



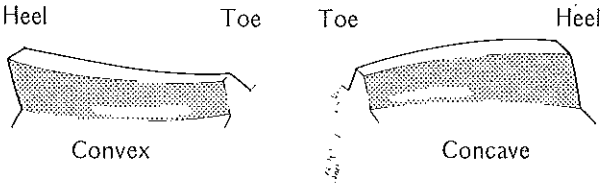
- If the tooth contact pattern is not correct, replace the shims following the examples below. The erase the original tooth contact pattern, and apply checking compound as described before.

NOTE: When the thickness of the pinion gear shim pack is increased by 0.1 mm, the backlash will be increased by about 0.02 mm, and vice versa. If the backlash cannot be gotten into the standard range by replacing the pinion gear shim(s), replace the shim(s) for the ring gear.

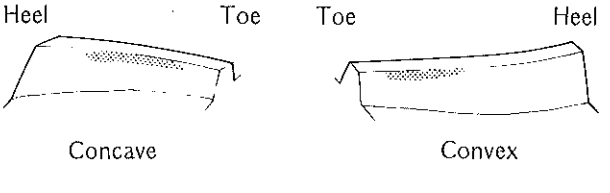
Ex. 1 Incorrect Tooth Contact Pattern 1
Decrease the thickness of the pinion gear shim pack by 0.05 mm to correct the pattern shown below. Repeat in 0.05 mm steps if necessary.

Incorrect Tooth Contact Pattern 1 G67

Pinion Gear

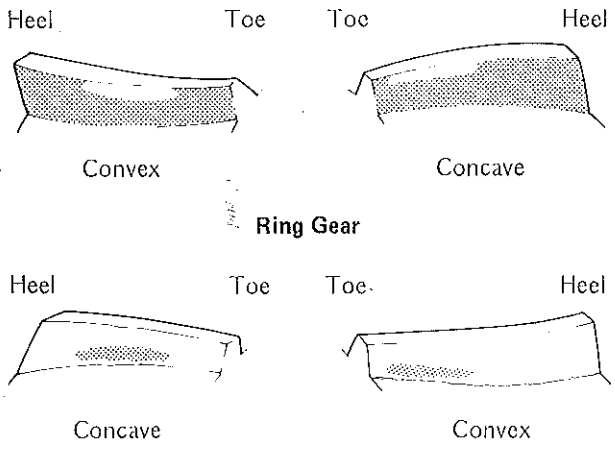


Ring Gear



Ex. 2 Incorrect Tooth Contact Pattern 2
Increase the thickness of the pinion gear shim pack by 0.05 mm to correct the pattern shown below. Repeat in 0.05 mm steps if necessary.

Incorrect Tooth Contact Pattern 2 (G68)



- When the correct pattern is obtained, clean the checking compound off the gear teeth.
- Install the pinion gear assembly with its O ring and shim(s), and install the ring gear assembly with its O ring and shim(s). Tighten the final gear case cover bolts (8) to 2.5 kg-m (18.0 ft-lbs) of torque.

TIRES

The following explanation covers tire removal and installation using bead breaker and tire irons, and rim protectors (special tools). If tires are to be removed and installed using a tire changer, operate it in the manner prescribed by the manufacturer.

NOTE: A tire changer suitable for tubeless and tube-type tires is available as a Kawasaki special tool.

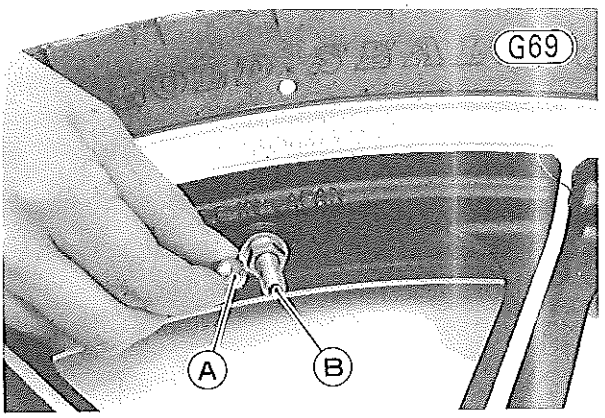
CAUTION **When removing and installing a tubeless tire, take care not to damage the tire and rim, especially the tire bead sealing area, rim sealing area where the beads fit, and inner surface of the tire. This may cause air leaks. See the Maintenance Section of the tires (Pg. 194).**

Removal:

- Remove the wheel from the motorcycle (Pg. 109 or 117), and remove the collar, speedometer gear housing, and/or disc(s) to avoid damaging them.

CAUTION **Do not lay the wheel on the ground with the disc facing down. This could damage or warp the disc.**

- Mark the valve stem position on the tire with chalk so that the tire may be reinstalled in the same position to maintain wheel balance.
- Remove the valve cap, and push the valve core to let out the air.

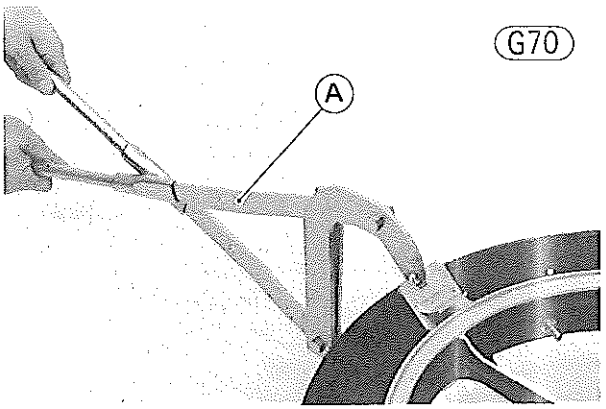


A. Valve Cap **B. Valve Core**

- To help the tire beads away from the rim flanges, lubricate the tire beads and rim flanges on both sides with a soap and water solution or liquid soap.

CAUTION **Never lubricate with mineral oil (engine oil) or gasoline because they will cause deterioration of the tire.**

- Break the tire beads away from both sides of the rim with the bead breaker (special tool).

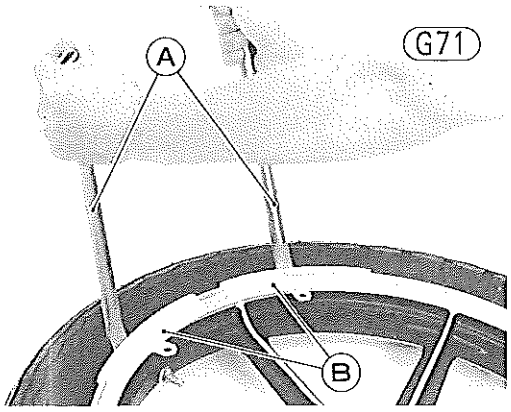


A. Bead Breaker (57001-1072)

- Install the rim protectors (special tool) on the rim flange near the valve stem, and lubricate the tire beads, rim flanges, rim protectors, and tire irons (special tool) with a soap and water solution or liquid soap.
- Step on the side of the tire opposite the valve stem, and start prying the tire off the rim near the valve stem with tire irons.

NOTE: For easier removal, always position the tire bead opposite the valve stem in the rim well, and pry the tire bead a little at a time.

CAUTION **During this operation, take care not to damage the tire bead sealing area and rim sealing area where the beads fit with tire irons, and take care not to insert the tire irons so deeply that the inner liner of the tubeless tire gets damaged (See Fig. J2).**



A. Tire Irons (57001-1073)
B. Rim Protectors (57001-1063)

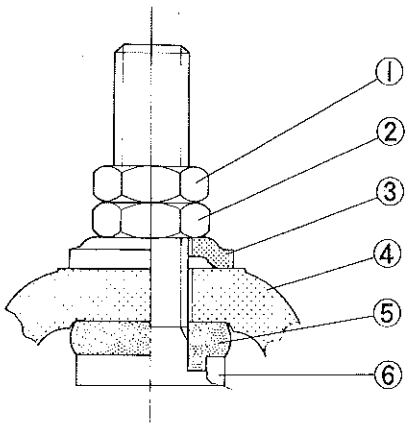
- Pry the other side of the tire off the rim, and free the tire from the rim.

Installation:

- Inspect the rim and tire, and replace them if necessary (Pgs. 194, 199).
- Clean the tire bead sealing area and rim sealing area where the tire beads fit. If necessary, smooth the rim sealing area with a fine emery cloth.
- Replace the valve. Install the valve stem, grommet, and washer as shown. Tighten the stem nut to 0.15 kg-m (13 in-lbs) of torque, and tighten the locknut keeping the stem nut from turning.

NOTE: The valve should be replaced with a new one when the tire is changed to prevent the air from leaking from the valve seat for its deterioration.

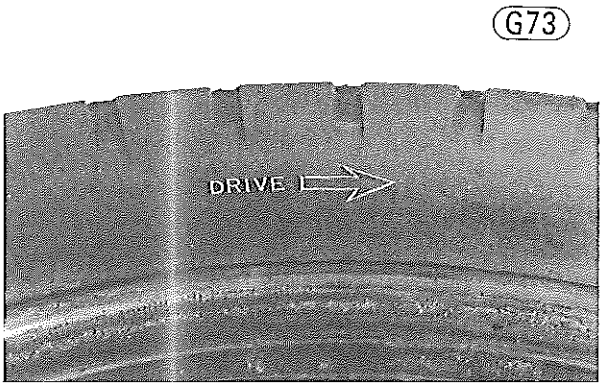
Valve Stem Installation

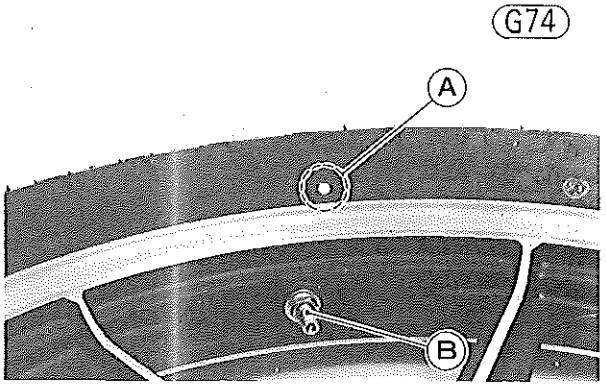


1. Locknut
2. Nut
3. Washer
4. Cast Wheel
5. Grommet
6. Valve Stem

- Lubricate the tire beads, rim flanges, rim protectors, and tire irons with a soap and water solution or liquid soap, and install the rim protectors near the valve stem.
- By hand, slide as much as possible of the lower side of the tire bead over the rim flange, starting at the side opposite the valve. Be sure that the tire does not go on backwards; the rear tire has an arrow molded into the sidewall to show the direction of tire rotation. Align the chalk mark on the tire with the valve stem.

NOTE: If a new tire is installed, the yellow paint mark on the tire should be aligned with the valve stem for best balancing results.





A. Yellow Paint Mark B. Valve Stem

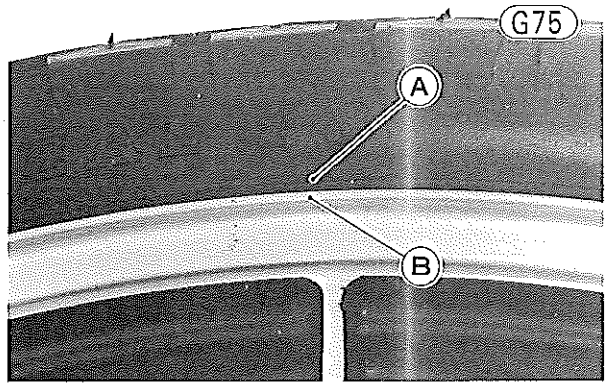
- Use tire irons to install the remaining part of the tire bead which cannot be installed by hand. For easy tire installation, position the part of the bead which is already over the rim flange in rim well.

NOTE: To prevent rim damage, be sure to place the rim protectors at any place the tire irons are applied.

- Install the other side of the tire bead onto the rim in the same manner.
- Center the rim in the tire beads, and inflate the tire with compressed air until the tire beads seat in the sealing surfaces.

WARNING **Be sure to install the valve core whenever inflating the tire, and do not inflate the tire to more than 4.0 kg/cm^2 (57 psi). Overinflation can explode the tire with possibility of injury and loss of life.**

- Check to see that the rim lines on both sides of the tire sides of the tire sidewalls are parallel with the rim flanges.



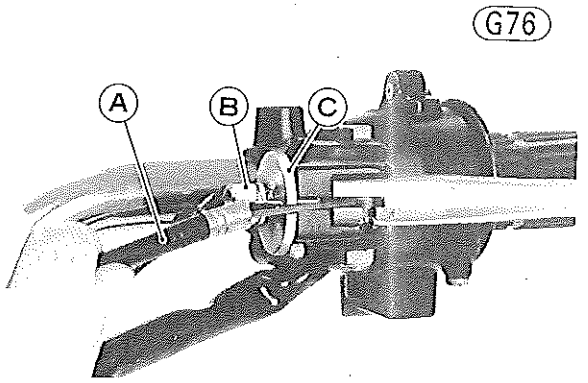
A. Rim Line B. Rim Flange

- If the rim lines and tire sidewall lines are not parallel, deflate the tire. Lubricate the rim flanges and tire beads, and inflate the tire again.
- After the tire beads seat in the rim flanges, check for air leaks. Inflate the tire slightly above standard inflation. Use soapy water or submerge it, and check for bubbles that would indicate leakage.
- Adjust the air pressure to the specified value (Pg. 197).
- Install the disc(s).
- Balance the wheel (Pg. 26).
- Mount the wheel on the motorcycle (Pg. 109 or 118).

CLUTCH CABLE

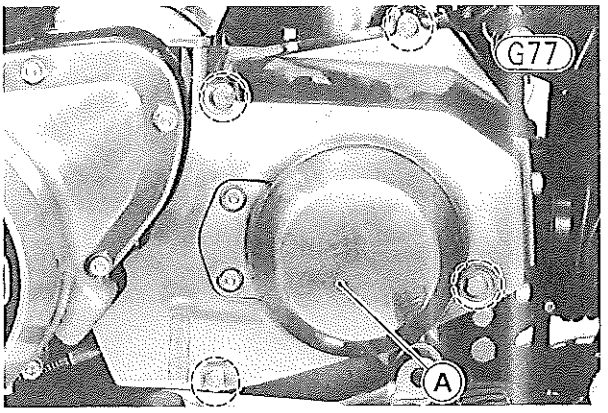
Removal:

- Loosen the locknut, and turn in fully the adjuster at the center of the clutch cable to give the cable plenty of play.
- Remove the clutch cable clamps that hold the clutch cable to the frame down tube.
- Loosen the knurled locknut on the clutch lever holder, and screw in the adjuster.
- Line up the slots in the clutch lever, locknut, and adjuster, and then free the cable from the lever.



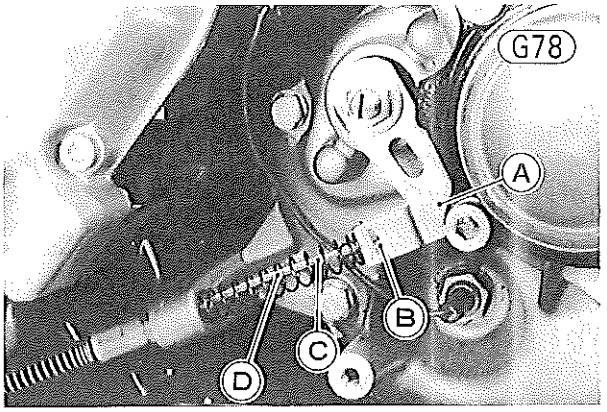
A. Outer Cable C. Knurled Locknut
B. Adjuster

- Loosen the starter motor cover bolts (2).
- Remove the front bevel gear case cover bolts and flat washers (4 ea), and take off the cover.



A. Front Bevel Gear Case Cover

- Remove the cotter pin from the clutch release lever, and free the clutch inner cable tip from the lever and front bevel gear case mount.

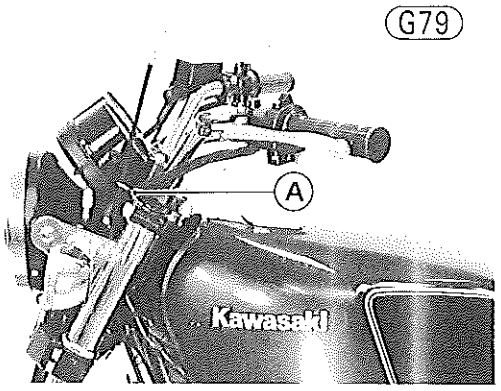


A. Release Lever C. Inner Cable
B. Cotter Pin D. Spring

- Pull the cable free of the motorcycle.

Installation:

- Before installing the clutch cable, lubricate it (Pg. 29).
- Run the upper end of the cable between the left fork leg and the head pipe, through the cable guide at the left side of the stem head, and to the clutch lever.



A. Cable Guide

- Fit the tip of the cable back into the clutch lever.
- Run the lower end of the clutch cable between the left down tube and the lower part of the engine.
- Fit the cable clamps (2) to the left down tube.

- Run the lower end of the cable into the front bevel gear case mount and spring, and fit the tip of the inner cable into the clutch release lever.
- Using a new cotter pin, secure the cable tip to the release lever.
- Adjust the clutch (Pg. 18).
- Install the front bevel gear case cover, and tighten the cover bolts (4). Be careful not to pinch the wiring (starter motor, alternator, etc.) between the crankcase and the cover.
- Tighten the starter motor cover bolts (2).

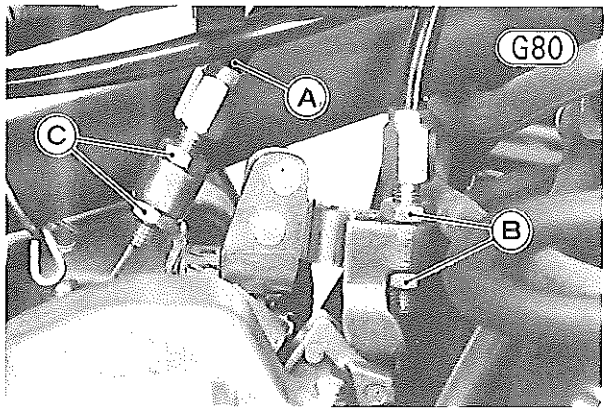
THROTTLE CABLES

Removal:

- Remove the fuel tank (Pg. 41).
- Screw in the locknuts and adjusting nuts at the upper end of the throttle cables all the way, to give the cables plenty of play.

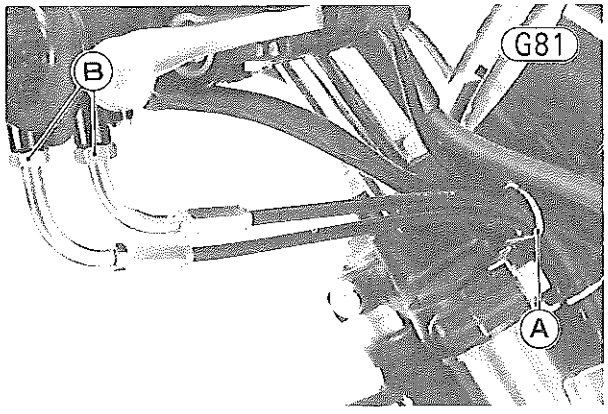
CAUTION **Attempting to remove the throttle cables from the carburetors without enough cable play, may cause throttle cable damage.**

- Loosen the throttle cable adjuster mounting nuts (2 ea) fully, remove the accelerator throttle cable adjuster from its bracket, and then slip the tip of its inner cable out of the pulley. Then do the same with the decelerator throttle cable.



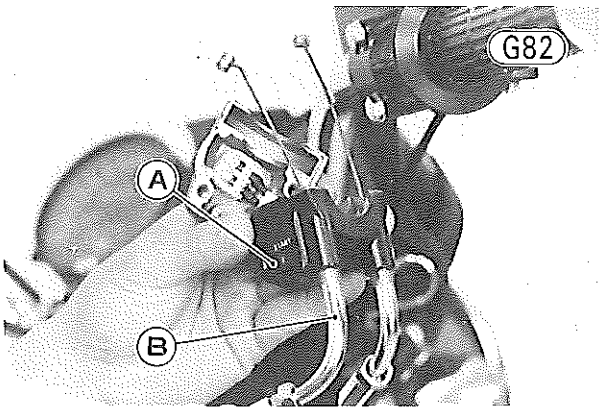
A. Accelerator Cable **B. Mounting Nuts**

- Loosen both cable elbow nuts, and pull the cables out through the cable guides on the stem head.



A. Cable Guide **B. Cable Elbow Nuts**

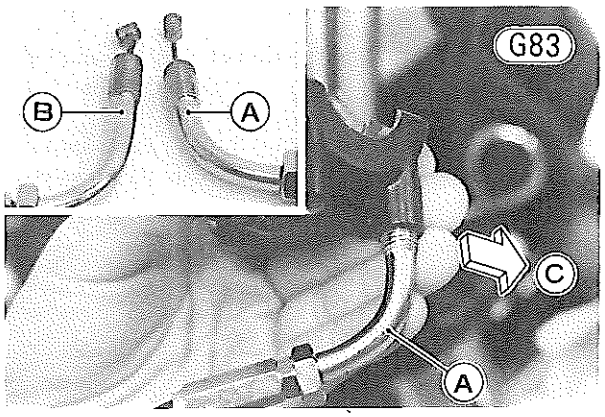
- Remove the right switch housing screws (2), and open the housing.
- Slip both throttle cable tips from their catches in the throttle grip.
- Unscrew the decelerator throttle cable elbow (the cable elbow next to the starter button), and pull the cable out of the right switch housing. Then do the same with the accelerator throttle cable elbow to free the throttle cables from the motorcycle.



A. Starter Button **B. Decelerator Cable Elbow**

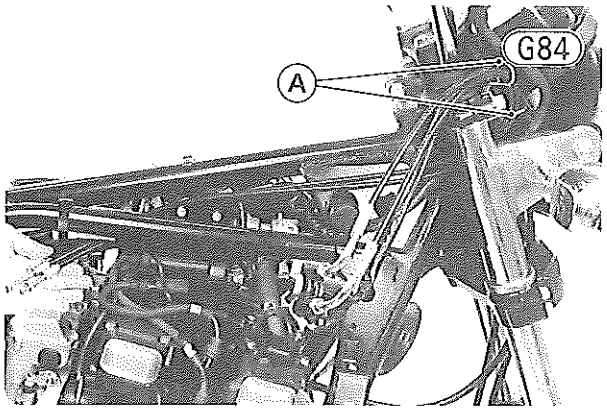
Installation:

- Before installing the throttle cables, lubricate them (Pg. 29).
- Screw the accelerator throttle cable elbow (shorter than the decelerator throttle cable elbow) into the front hole in the right switch housing. Screw it in almost all the way, and then lightly tighten the elbow nut.
- Screw in the decelerator cable elbow almost all the way, and then lightly tighten the elbow nut.



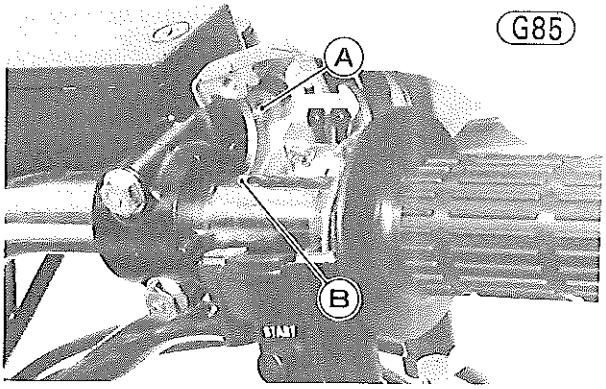
A. Accelerator Cable Elbow **C. Front**
B. Decelerator Cable Elbow

- Run both cables through the cable guides on the stem head, between the right front fork leg and the head pipe, and between the right top tube and the upper tube to the carburetors. The cables should be naturally routed, neither one twisted about the other.



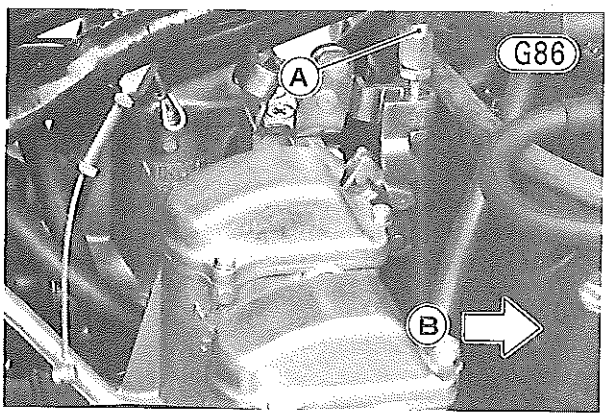
A. Cable Guides

- Turn the throttle grip so that the cable catches are facing up, fit the accelerator throttle cable tip into the front catch and the other cable tip into the rear catch.
- Put together the right switch housing, and tighten its screws. The upper half of the housing has a small projection which fits into a small hole in the handlebar. The front switch housing screw is longer than the rear screw.



A. Projection B. Hole

- Turn each elbow in the direction of its cable, and tighten its elbow nut to secure the elbow in the proper position.
- Fit the tip of the decelerator throttle cable into the front catch in the pulley, and install its adjuster in the bracket.



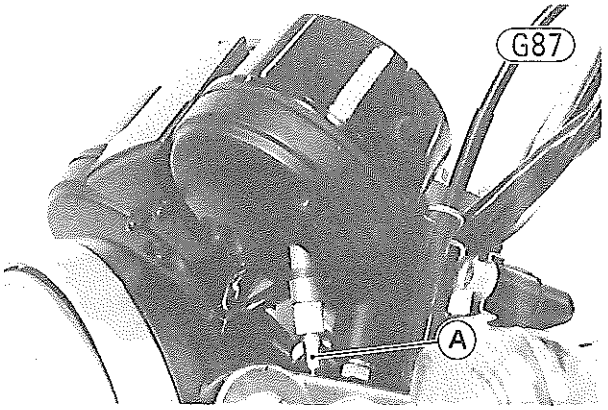
A. Decelerator Cable B. Front

- Fit the tip of the other cable into the other catch, and lift its adjuster onto the bracket while turning the throttle grip at the same time.
- Center each adjuster in its place in the bracket, and then tighten the mounting nuts.
- Install the fuel tank (Pg. 41).
- Adjust the throttle cables (Pg. 16).

SPEEDOMETER CABLE

Removal:

- Disconnect the upper and lower ends of the speedometer cable with pliers.

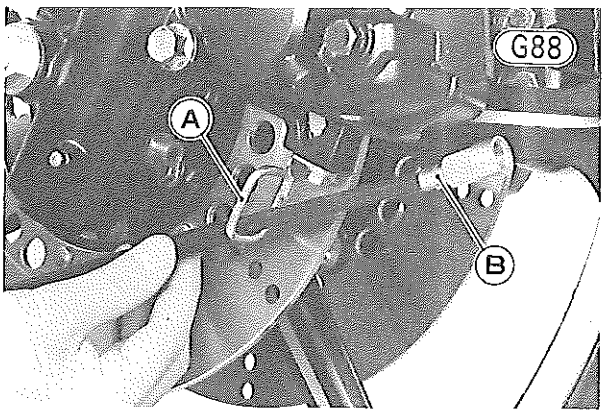


A. Speedometer Cable

- Free the cable from the motorcycle.

Installation:

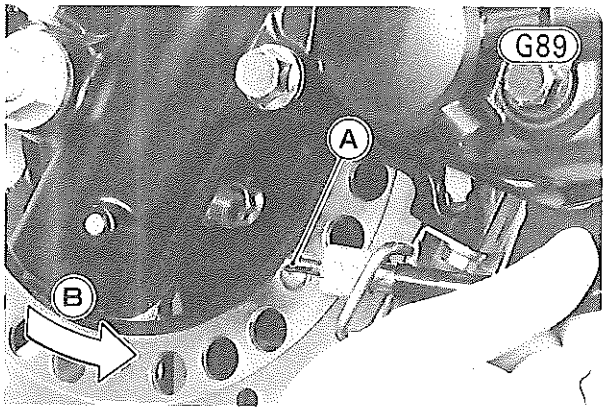
- Before installing the speedometer cable, lubricate it (Pg. 30).
- Run the speedometer cable through its guide at the bottom of the left caliper, between the stem base and the stem base cover, and secure the upper end of the cable to the speedometer with pliers.



A. Cable Guide B. Cable Upper End

- Insert the speedometer inner cable into the speedometer gear housing while turning the wheel so that the slot in the end of the cable will seat on the tongue

of the speedometer pinion. Tighten the cable nut with pliers.



A. Slot B. Turn the wheel.

TACHOMETER CABLE

Removal:

- Disconnect the upper and lower ends of the tachometer cable with pliers.
- Free the cable from the motorcycle.

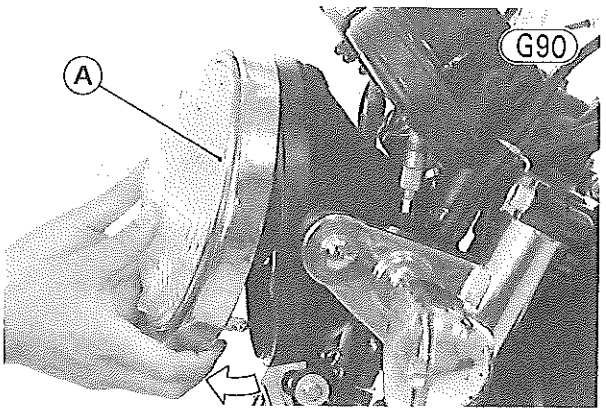
Installation:

- Before installing the tachometer cable, lubricate it (Pg. 30).
- Run the tachometer cable between the stem base and the stem base cover, fit the inner cable into the tachometer, and tighten the cable nut with pliers.
- Fit the bottom end of the cable into its place in the cylinder head. Turn it if necessary so that it fits all the way into place, and tighten its nut with pliers. There is a gasket between the outer cable and the tachometer pinion holder.

HEADLIGHT UNIT

Removal:

- Take out the retaining screws ⑪ (2).
- Swing the unit ④ out away from the housing ⑳, and disconnect the headlight socket ⑦ from the rear of the unit. For semi-sealed beam units, the bulb can now be removed.

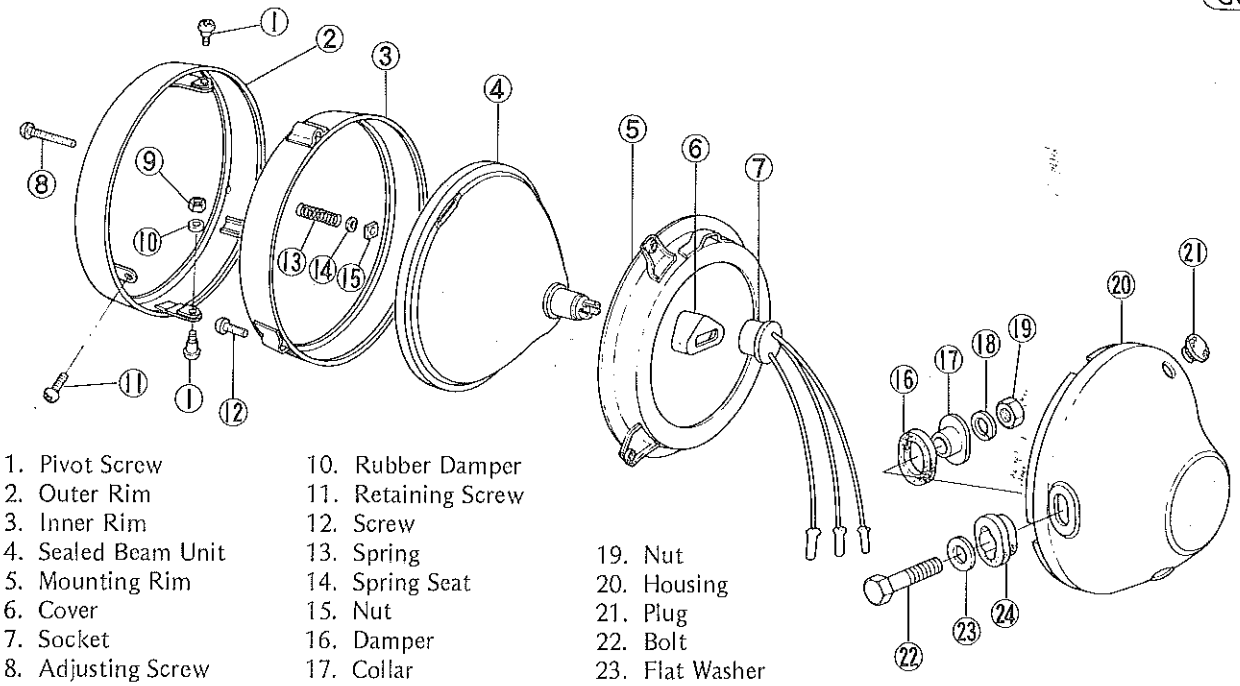


A. Headlight Unit

- Remove the pivot screws ① , nuts ⑨ with washers, rubber dampers ⑩ (2 ea), and the horizontal adjusting screw ⑧. A nut ⑮, spring seat ⑭, and spring ⑬ come off with the adjusting screw.
- Separate the outer rim ② from the inner rim ③.
- Remove the screws ⑫ (2), and separate the sealed beam unit from the inner rim and mounting rim ⑤.

Headlight Unit (sealed beam unit)

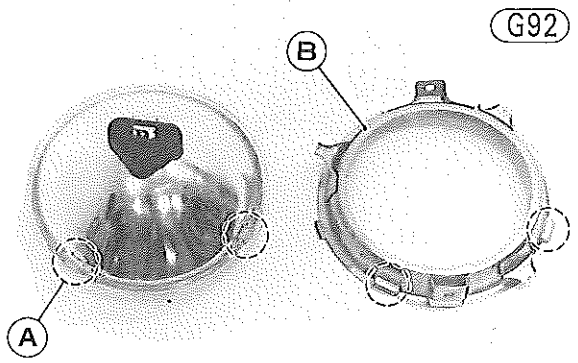
G91



1. Pivot Screw
2. Outer Rim
3. Inner Rim
4. Sealed Beam Unit
5. Mounting Rim
6. Cover
7. Socket
8. Adjusting Screw
9. Nut
10. Rubber Damper
11. Retaining Screw
12. Screw
13. Spring
14. Spring Seat
15. Nut
16. Damper
17. Collar
18. Lockwasher
19. Nut
20. Housing
21. Plug
22. Bolt
23. Flat Washer
24. Damper

Installation Notes:

1. Place the sealed beam unit in the mounting rim, fitting the 3 raised portions into the 3 notches on the mounting rim. This ensures that the part of the sealed beam unit marked "TOP" will be at the top after the headlight unit is mounted in the headlight housing.

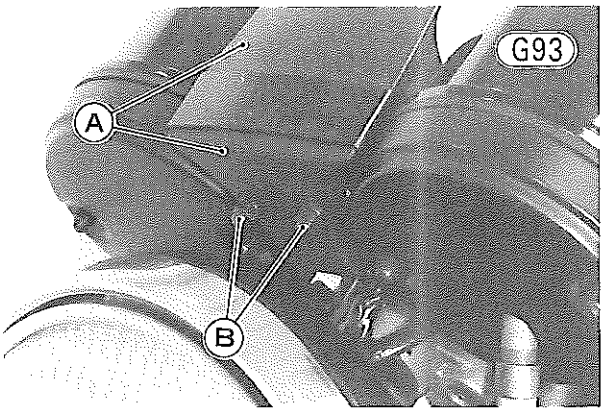


A. Raised Portion B. Mounting Rim

2. The spring seat on the adjusting screw goes between, the spring and the bracket.
3. Carry out the headlight adjustment after installation (Pg. 27).

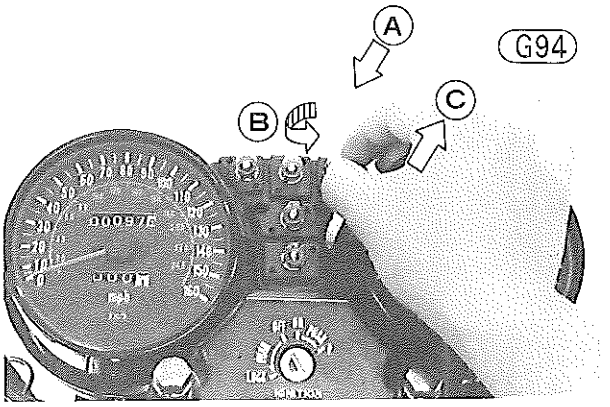
INDICATOR LIGHTS
(Left and Right Turn, Oil, High Beam, Neutral)
Removal:

- Remove the cap nuts, lockwashers, and flat washers (2 ea), and take off the upper and lower indicator light covers.



A. Indicator Light Covers B. Cap Nuts

- To remove the indicator light bulbs (5), first press the bulb inwards, then holding the bulb in this position, twist it to the left and pull it out.



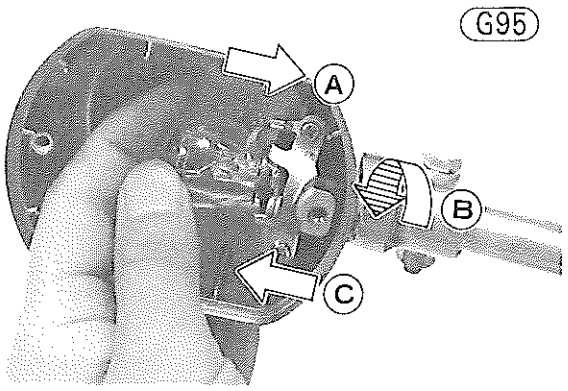
A. Press. B. Turn. C. Pull.

Installation Note:

- Use 12V 3.4W bulbs for indicator light replacement.

TURN SIGNAL LIGHT
Bulb Replacement:

- Remove the lens mounting screws and plastic washers (2 ea), and take off the lens and rubber gasket.
- Press the bulb inwards, and holding the bulb in this position, twist it to the left and pull it out.



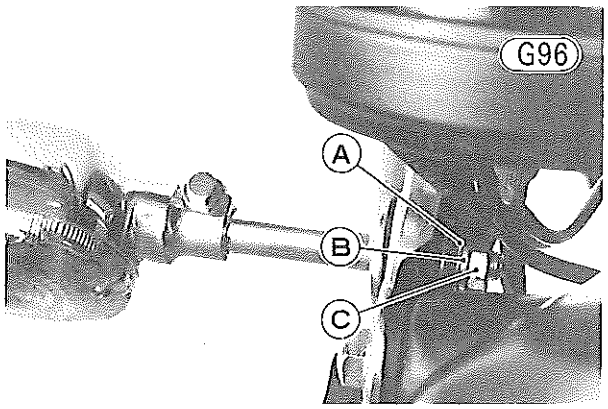
A. Press. B. Turn. C. Pull.

- Install a new 12 volt bulb of the correct wattage (see the wiring diagram).
- Fit the rubber gasket in place, and install the lens. Be careful not to overtighten the mounting screws.

TURN SIGNAL ASSEMBLY
Removal (front, either side):

- Open the headlight housing, and free the headlight unit from the motorcycle (Pg. 137).
- Disconnect the turn signal (US, Canadian model: turn signal/running position) light lead(s) (gray and blue leads) in the headlight housing.

●Remove the mounting nut, lockwasher, and black/yellow ground lead terminal, and pull the front turn signal from the front fork cover stay.



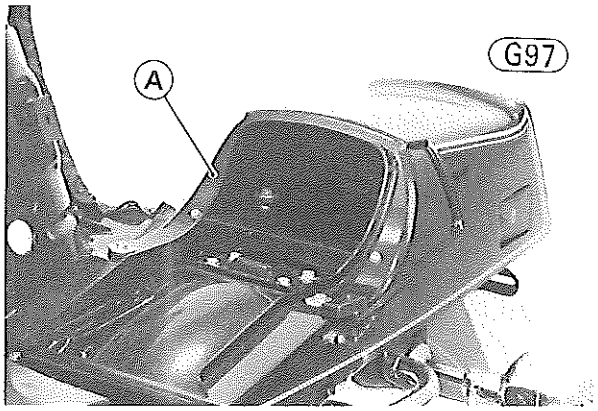
A. Ground Lead Terminal
B. Lockwasher
C. Nut

Installation Notes (front, either side):

1. If the turn signal dampers have been removed, install them as shown in Fig. G98.
2. Connect the turn signal (turn signal/running position) light leads according to the wiring diagram.

Removal (rear, either side):

●Unlock the seat, and swing it open.
●Remove the document cover.
●Remove the bolts and flat washers (4 ea), and take off the rear fender cover.



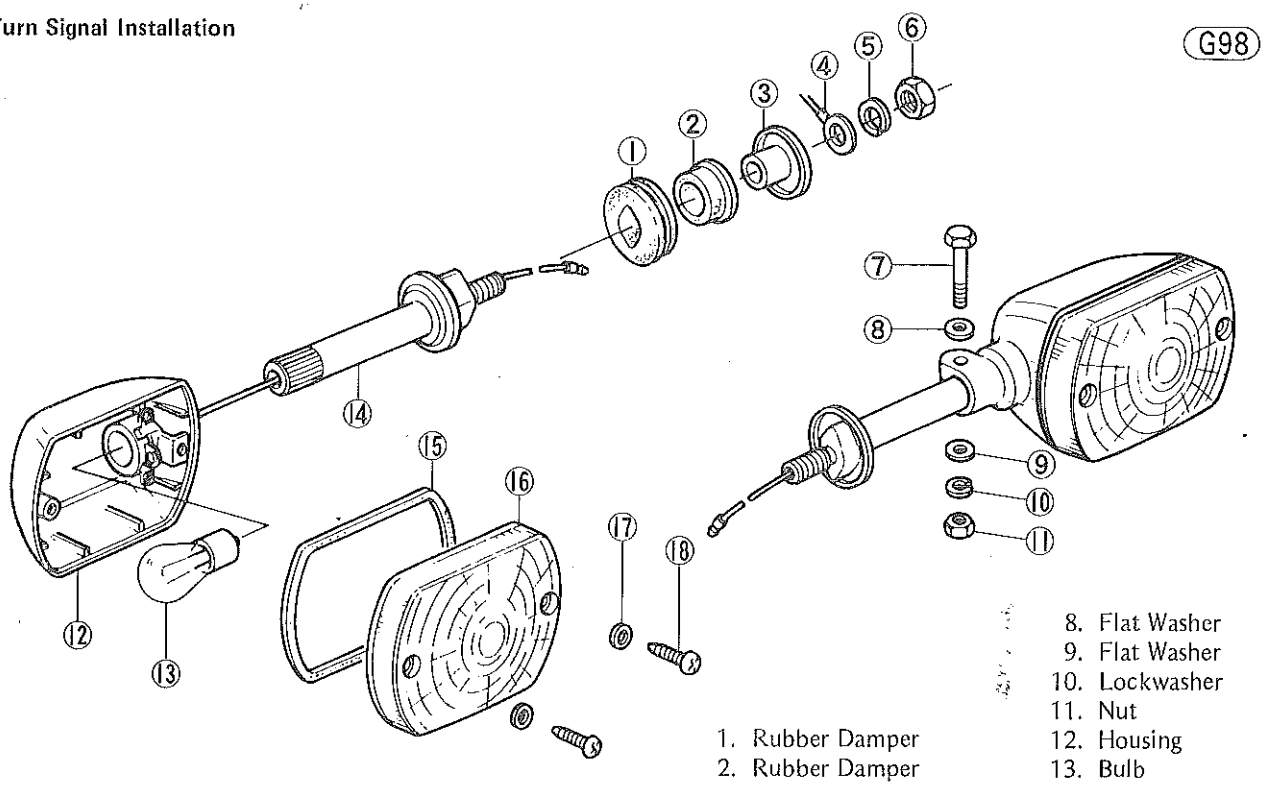
A. Rear Fender Cover

●Disconnect the gray turn signal lead.
●Remove the mounting bolt, nut, lockwasher, and black/yellow ground lead terminal, and pull the rear turn signal assembly off the stay.

Installation Notes (rear, either side):

1. If the rear turn signal dampers have been removed, install them as shown in Fig. G98.
2. Connect the turn signal leads according to the wiring diagram.

Turn Signal Installation

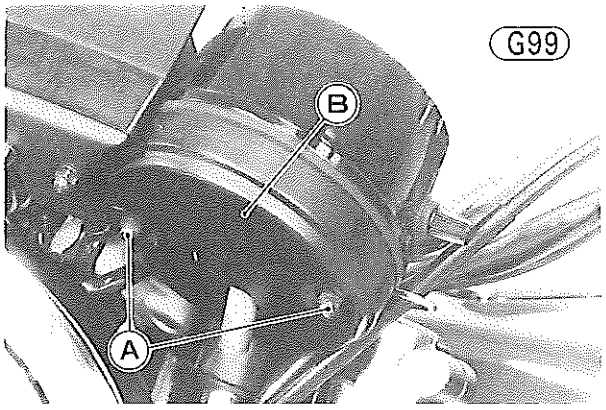


1. Rubber Damper
2. Rubber Damper
3. Collar
4. Ground Lead
5. Lockwasher
6. Nut
7. Bolt
8. Flat Washer
9. Flat Washer
10. Lockwasher
11. Nut
12. Housing
13. Bulb
14. Stay
15. Rubber Gasket
16. Lens
17. Gasket
18. Screw

SPEEDOMETER, TACHOMETER, METER LIGHTS

Removal:

- Disconnect the upper end of the speedometer cable or tachometer cable with pliers.
- Remove the cap nuts (2), and take off the meter lower cover.



A. Cap Nuts B. Lower Cover

- Pull up the meter, and pull the lights (2) out of their base. Each meter stud has a collar and rubber damper.
- To remove the meter light bulb, first press the bulb inward, then holding the bulb in this position, twist it to the left and pull it out.

CAUTION **Always hold and store the meters right side up. If a meter is left upside down or sideways for more than a very few minutes, it will malfunction.**

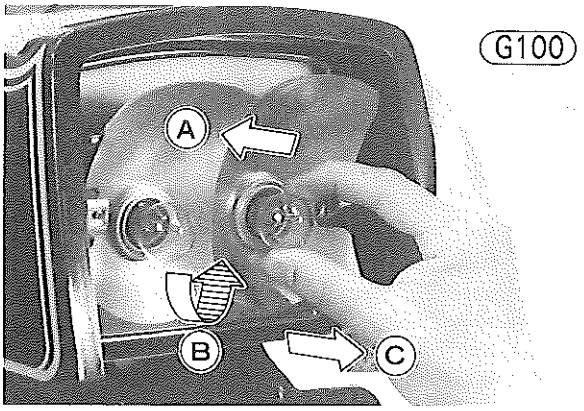
Installation Note:

- Use 12V 3.4W bulbs for meter light replacement.

TAIL/BRAKE LIGHTS

Bulb Replacement:

- Remove the lens mounting screws, and take off the lens.
- Press the bulb inwards, and holding the bulb in this position, twist it to the left and pull it out.



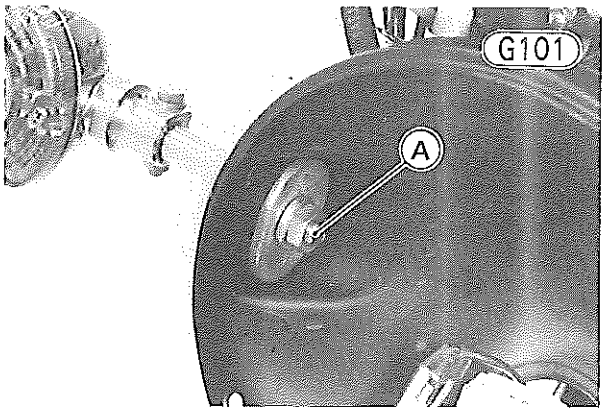
A. Press. B. Turn. C. Pull.

- Replace a burned-out bulb with a new 12 volt bulb of the correct wattage (see the wiring diagram).
- Fit the rubber gasket in place, if removed, and install the lens. Be careful not to overtighten the mounting screws.

IGNITION SWITCH

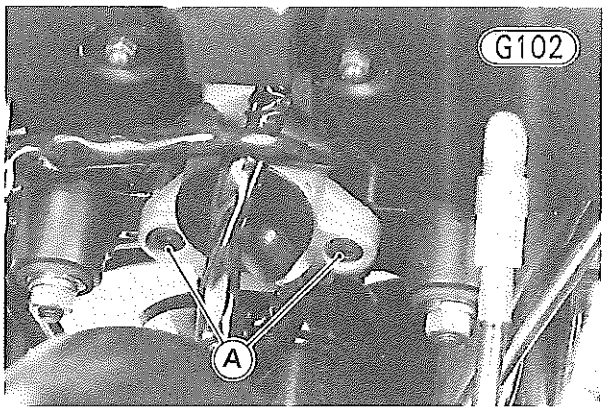
Removal:

- Open the headlight housing, and free the headlight unit from the motorcycle (Pg. 137).
- Disconnect the large 6-pin connector and brown lead from the ignition switch in the headlight housing, and push the connector out of the housing.
- Remove the headlight housing mounting bolts (2). Each bolt has a nut, collar, and washer.



A. Mounting Bolt

- Move the headlight housing down slightly.
- Remove the Allen bolts and lockwashers (2 ea) from the bottom of the steering lock assembly, and remove the steering lock assembly and ignition switch.



A. Allen Bolts

Installation:

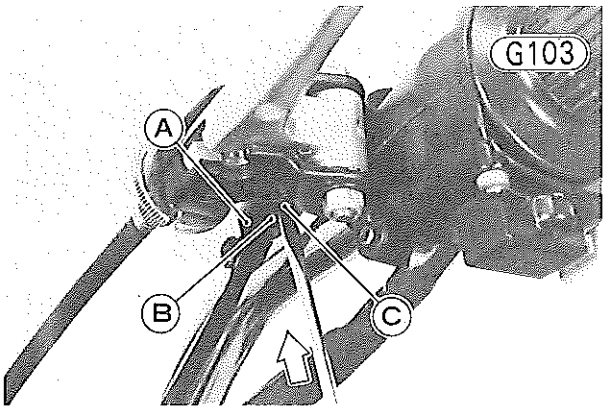
- Fit the ignition switch and steering lock assembly in place, and tighten the Allen bolts with the lockwashers.
- Connect the ignition switch wiring harness connector and brown lead in the headlight housing.
- Mount the headlight housing in place tightening its mounting bolts. The sequence is mounting bolt, flat washer, fork cover, rubber dampers (including the headlight housing), collar, lockwasher, and nut.

- Install the headlight unit (Pg. 138).
- Adjust the headlight (Pg. 27).

STARTER LOCKOUT SWITCH

Removal:

- Remove the fuel tank (Pg. 41).
- Disconnect the starter lockout switch leads.
- Using a thin-bladed screwdriver or some other suitable tool, press in the starter lockout switch tab which catches in the hole in the underside of the clutch lever holder, and then remove the switch.

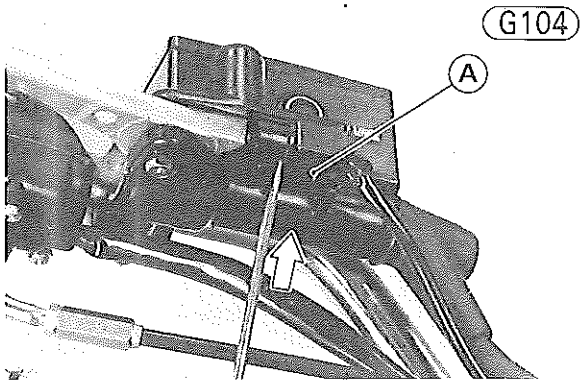


A. Starter Lockout Switch
B. Hole
C. Tab

FRONT BRAKE LIGHT SWITCH

Removal:

- Open the headlight housing, and free the headlight unit from the motorcycle (Pg. 137).
- Disconnect the brown and the blue front brake switch lead connections in the headlight housing, and pull these leads out of the housing.
- Remove the straps (2) on the right side of the handlebar, and free the front brake switch leads.
- Using a thin-bladed screwdriver or some other suitable tool, press in the front brake switch tab which catches in the hole in the underside of the front brake master cylinder, and then remove the switch.

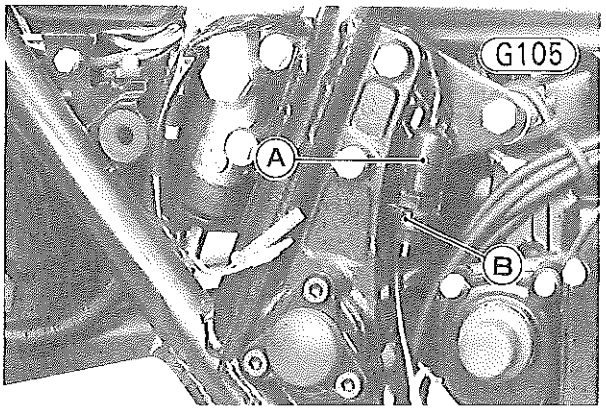


A. Brake Light Switch

REAR BRAKE LIGHT SWITCH

Removal:

- Remove the rear brake light switch spring.
- Remove the right side cover.
- Disconnect the rear brake light switch blue and brown leads.
- Press in the rear brake light switch tabs which catch in the bracket hole, and remove the rear brake light switch.



A. Rear Brake Light Switch
B. Tab

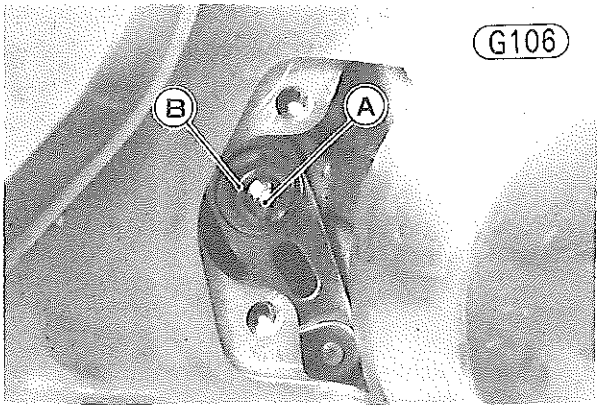
Installation Note:

- Adjust the switch after installation (Pg. 25).

HANDLEBAR

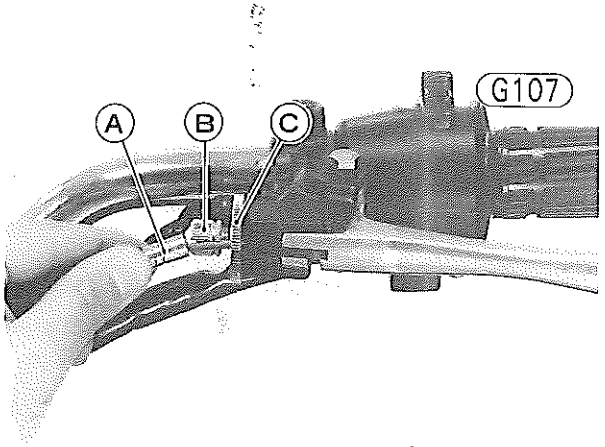
Removal:

- Take off the rear view mirrors.
- Remove the fuel tank (Pg. 41) or cover it with a thick cloth to avoid damaging the painted surface.
- Loosen the locknut, and turn in fully the adjuster at the center of the clutch cable to give the cable plenty of play.
- Remove the clutch adjusting cover.
- Loosen the locknut, and turn in the clutch adjusting screw a couple of turns to give the clutch cable plenty of play.



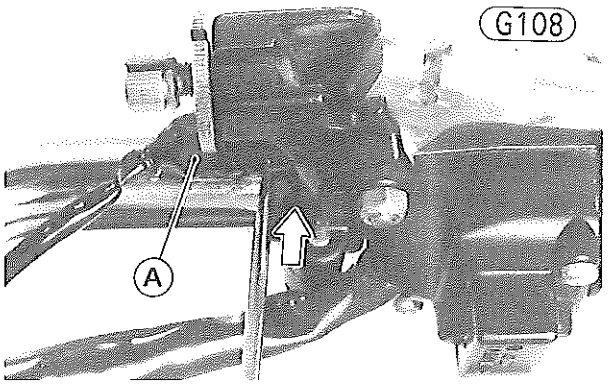
A. Adjusting Screw
B. Locknut

- Loosen the knurled locknut on the clutch lever, and turn in the adjuster and line up the slots in the clutch lever, locknut, and adjuster. Free the inner cable from the lever.



A. Clutch Cable **C. Knurled Locknut**
B. Adjuster

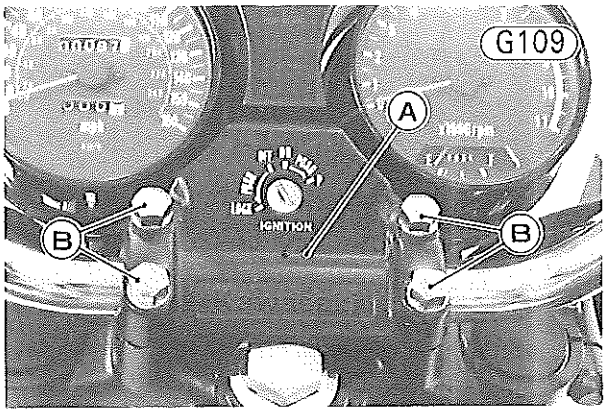
- Using a thin-bladed screwdriver or some other suitable tool, press in the starter lockout switch tab which catches in the hole in the underside of the clutch lever holder, and then remove the switch.



A. Starter Lockout Switch

- Remove the straps which hold the left and right switch wiring harnesses to the handlebar.
- Take out the left switch housing screws (2), and remove the housing from the handlebar. If necessary, loosen the clutch lever holder bolt, and slide the clutch lever to the right.
- Remove the right switch housing screws (2), and open up the housing.
- Loosen the master cylinder clamp bolts (2).

- Remove the handlebar clamp bolts and lockwashers (4 ea), remove the clamp, and slide the handlebar out of the throttle grip, right switch housing, and master cylinder.

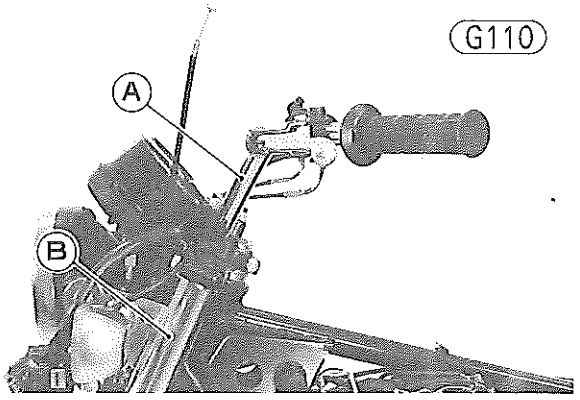


A. Clamp **B. Clamp Bolts**

- To remove the clutch lever, loosen the clutch lever holder bolt, cut off the left handlegrip, which is bonded to the handlebar, and slide off the clutch lever.

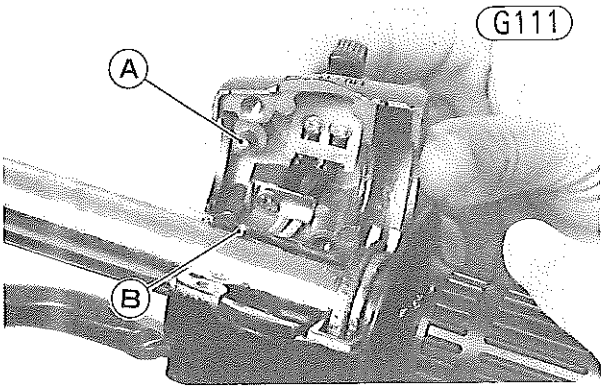
Installation:

- If the clutch lever and left handlegrip were removed; slide the clutch lever back on, and hand tighten its bolt. Bond a new left handlegtip to the handlebar.
- Slide the right side of the handlebar through the master cylinder and the right switch housing, and into the throttle grip assembly.
- Mount the handlebar, and install the handlebar clamp, lockwashers, and clamp bolts so that the angle of the handlebar matches the angle of the front fork as shown, and tighten the clamp bolts evenly to 2.0 kg-m (14.5 ft-lbs) of torque.



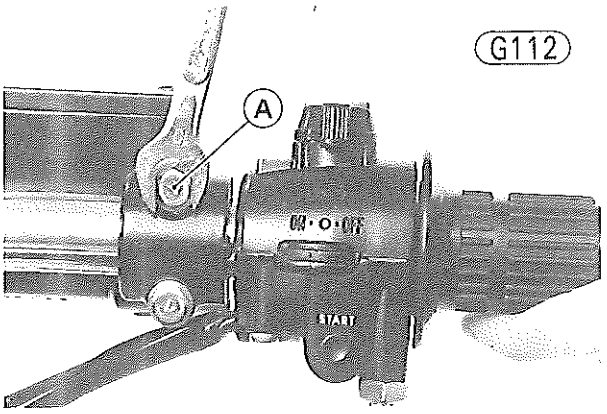
A. Handlebar **B. Front Fork**

- Install the left switch housing, and tighten its screws (2). The front switch housing screw is longer than the rear screw.
- Put together the right switch housing, and tighten its screws. The upper half of the housing has a small projection which fits into a small hole in the handlebar. The front switch housing screw is longer than the rear screw.



A. Projection **B. Hole**

- With the brake lever mounted at the proper angle, tighten first the upper and then the lower master cylinder clamp bolt to 0.90 kg-m (78 in-lbs) of torque.



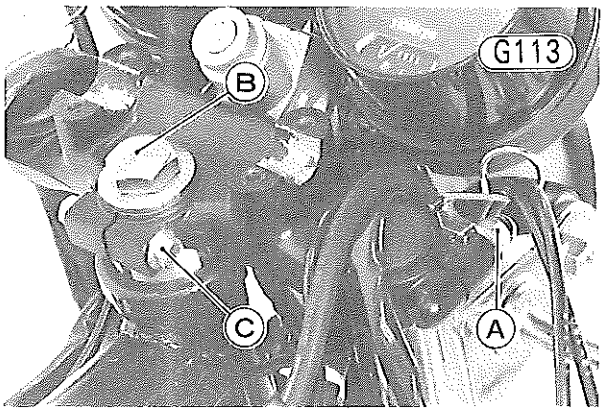
A. Tighten first this bolt.

- Install the starter lockout switch in the clutch lever holder.
- With the clutch lever mounted at a comfortable, tighten the clutch lever holder bolt.
- Strap the left and right switch housing wiring harnesses, the starter lockout switch leads, and the front brake light switch leads back onto the handlebar.
- Fit the tip of the clutch cable back into the clutch lever.
- Install the fuel tank (Pg. 41).
- Check the front brake (Pg. 24).
- Check the throttle cables (Pg. 15).
- Adjust the clutch (Pg. 18).
- Install the rear view mirrors.
- Adjust the rear view mirrors.

STEERING STEM

Removal:

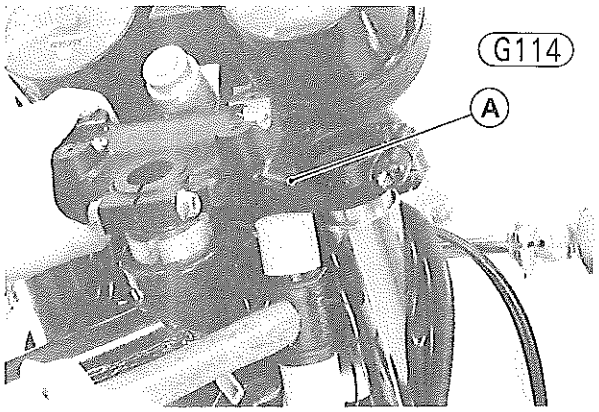
- Remove the fuel tank (Pg. 41).
- Remove the headlight unit (Pg. 137).
- Disconnect all the leads and plugs in the headlight housing, and push all the leads and plugs out of the housing.
- Remove the handlebar (Pg. 141).
- Remove the speedometer cable (Pg. 136).
- Disconnect the tachometer cable at the tachometer with pliers.
- Loosen the front fork upper clamp bolts (2), and remove the right front fork upper clamp bolt.



A. Fork Upper Clamp Bolt **C. Head Clamp Bolt**
B. Stem Head Bolt

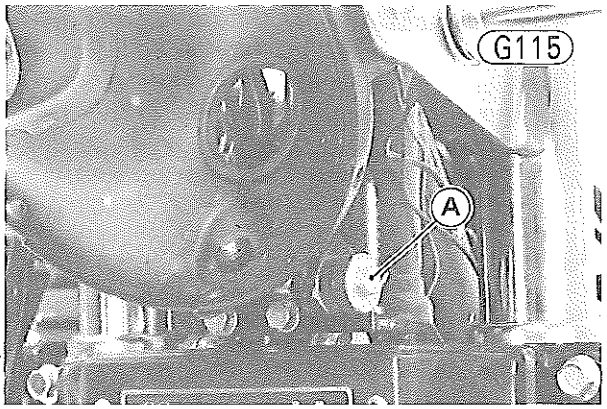
- Loosen the stem head clamp bolt, and then remove the stem head bolt, flat washer, and wave washer.
- Tap lightly on the bottom of the stem head with a mallet, and then remove the steering stem head together with the meters and ignition switch.

CAUTION **Place the stem head so that the meters are right side up. If a meter is left upside down or sideways for more than a very few minutes, it will malfunction.**



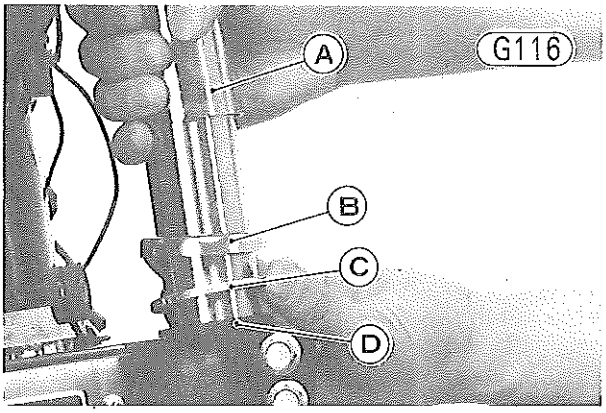
A. Stem Head

- Remove the headlight lower mounting bolt, large flat washers (2), small flat washer, lockwasher, and nut.



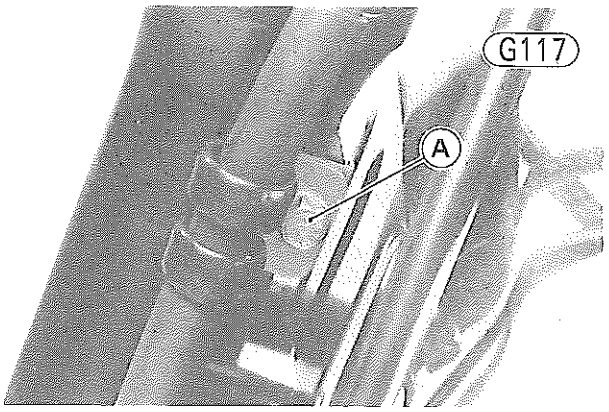
A. Mounting Bolt

- Remove the fork covers with the headlight housing and turn signals. Each fork cover has a fork cover base, damper ring, and rubber damper at the bottom, and the top ring at the upper.

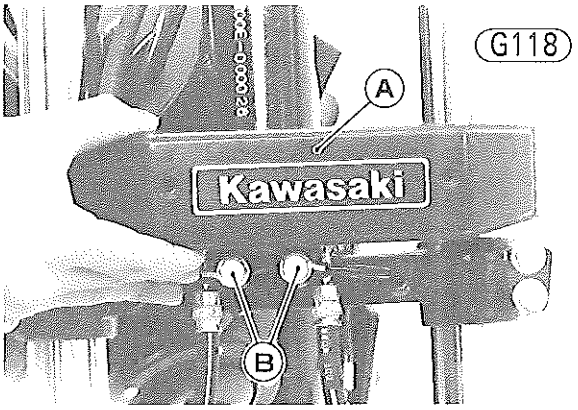


A. Fork Cover
B. Cover Base
C. Damper Ring
D. Rubber Damper

- Remove each caliper hose clamp bolt.

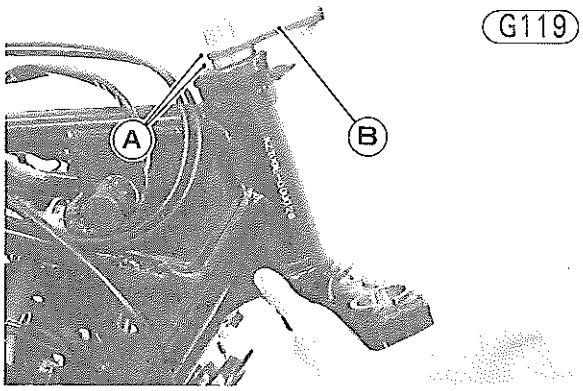


A. Hose Clamp Bolt



A. Stem Base Cover B. Mounting Bolts

- Remove the stem base cover screws (2), and take off the cover.
- Remove the 2-way joint mounting bolts (2).
- Remove each caliper mounting bolts, and remove the calipers together with the master cylinder, upper brake hose, 2-way joint, and lower brake hoses.
- Remove the front wheel (Pg. 109).
- Remove the fender bolts and lockwashers (4 ea), and take off the fender.
- Loosen the front fork lower clamp bolts, and pull out each fork leg with a twisting motion.
- Push up on the stem base, and remove the steering stem locknuts with a stem nut wrench (special tool); then remove the steering stem and stem base (single unit).

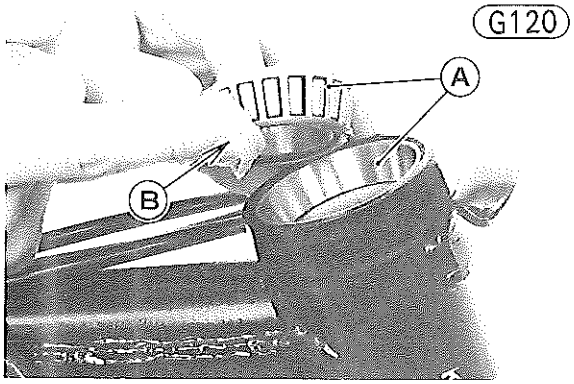


A. Stem Locknuts
B. Stem Nut Wrench (57001-134)

- Remove the steering stem cap and upper tapered roller bearing.

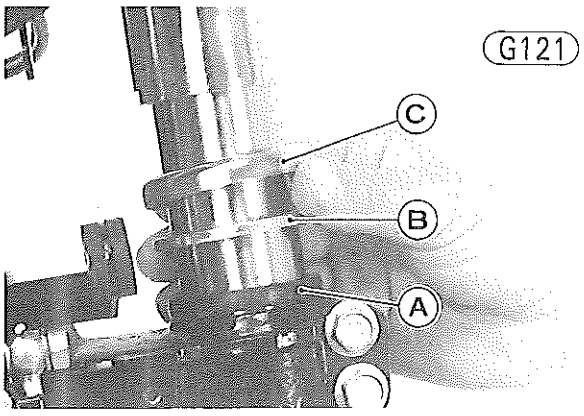
Installation.

- Apply grease to the upper and lower outer races in the head pipe, and to the upper and lower tapered roller bearings.



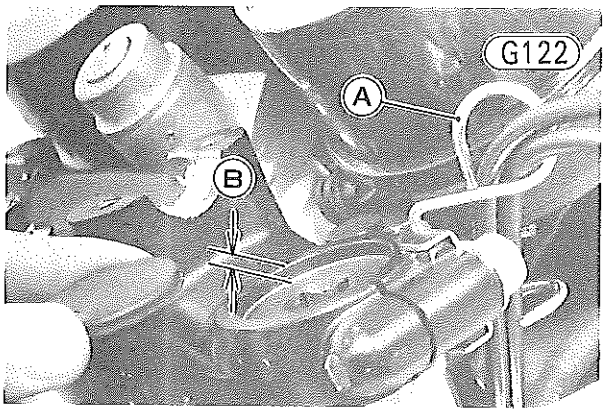
A. Tapered Roller Bearing **B. Grease.**

- Put on the upper inner race and steering stem cap. Insert the steering stem into the head pipe, and tighten the lower steering stem locknut to 4.0 kg-m (29 ft-lbs) of torque (flat side facing up).
- Check that there is no play and the steering stem turns smoothly without the rattle. If not, check the stem bearings (Pg. 210).
- Loosen the lower stem locknut, and clamp it again with finger tight pushing the stem base to the head pipe. Do not overtighten it, or the steering stem will be tight.
- Check that there is no play.
- Keeping the lower stem locknut at the position, clamp the upper stem locknut with finger tight.
- Run the inner tube of each front fork leg up through its clamp in the stem base. Temporarily tighten the lower clamp bolts on each side to hold each fork leg in place with its inner tube protruding about 200 mm above the steering stem base.
- Install the 2-way joint, and tighten its mounting bolts (2).
- Install the rubber damper, damper ring, and fork cover base, on each tube in this order.



A. Rubber Damper **C. Base**
B. Damper Ring

- Install the fork covers with the headlight housing and turn signals, and install the top ring on each fork cover.
- Install the stem head assembly, wave washer, and flat washer (flat side facing down). Screw in the stem head bolt loosely. Be sure the wiring harnesses and all cables go between the stem head and the front fork legs.
- For each fork leg, loosen the lower clamp; and slide the fork leg up until the upper end of the inner tube is 2 mm lower than the upper surface of the stem head. Tighten the upper clamp bolt to 2.8 kg-m (20 ft-lbs) of torque. The right front fork upper clamp bolt has a cable guides.



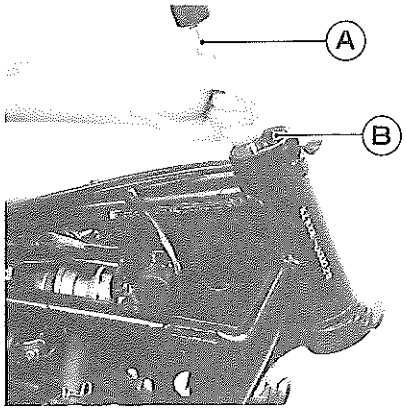
A. Cable Guides **B. 2 mm**

- Tighten the stem head bolt to 4.0 kg-m (29 ft-lbs) of torque and the stem head clamp bolt to 2.0 kg-m (14.5 ft-lbs) of torque.
- Tighten the front fork lower clamp bolts (4) to 2.0 kg-m (14.5 ft-lbs) of torque.
- Install the front fender, and tighten the fender bolts (4) with lockwashers (4).
- Install the front wheel (Pg. 109).
- Install the calipers on the front fork legs, and tighten the mounting bolts (4) to 3.0 kg-m (22 ft-lbs) of torque.
- Tighten each brake hose clamp bolt.
- Run the tachometer cable between the stem base and the stem base cover, fit the inner cable into the tachometer, and tighten the cable nut with pliers.
- Install the handlebar (Pg. 142).
- Run the plugs, sockets, and wiring into the headlight housing.
- Connect the plugs, sockets, and leads in the headlight housing. Connect the same color leads to the same color leads, except for the left turn signal gray lead which is plugged into the green lead.
- Install the headlight lower mounting bolt, and tighten the nut. The sequence is: mounting bolt, large flat washer, rubber damper (including the bracket at the 2-way joint), large flat washer, headlight housing bracket, small flat washer, lockwasher, and nut.
- Install the stem base cover, and tighten its screws.
- Install the headlight unit (Pg. 138).
- Install the speedometer cable (Pg. 136).
- Check the steering and adjust it, if necessary (Pg. 25).
- Install the fuel tank (Pg. 41).
- Check the front brake and bleed the system, if necessary (Pg. 207).
- Adjust the clutch (Pg. 18).
- Check the throttle cables and adjust, if necessary (Pg. 15).
- Install the rear view mirrors.
- Adjust the rear view mirrors.

STEERING STEM BEARING

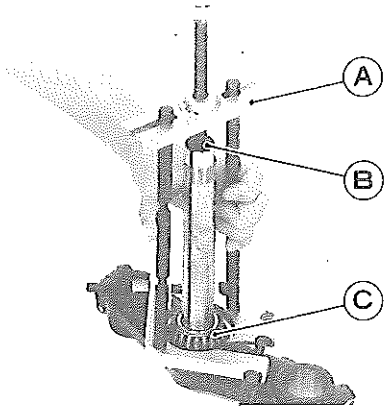
Removal:

- Remove the steering stem (Pg. 143).
- To remove the outer races pressed into the head pipe, insert a bar into the head pipe and hammer evenly around the circumference of the opposite race to drive it out.



A. Bar **B. Outer Race**

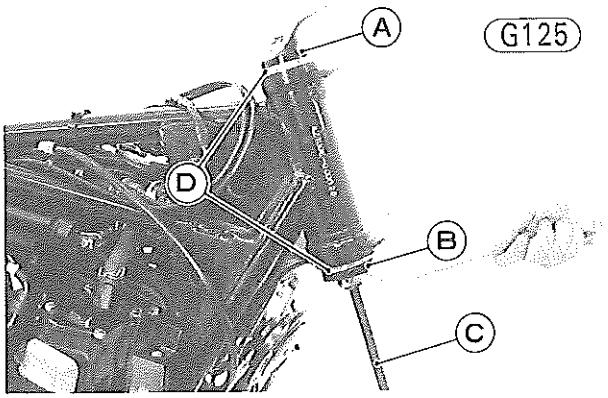
- Remove the lower tapered roller bearing inner race, which is pressed onto the steering stem, using a bearing puller and adapter (special tools). Be careful not to damage the grease seal under the bearing during bearing removal.



A. Bearing Puller (57001-158)
B. Bearing Puller Adapter (57001-317)
C. Tapered Roller Bearing Inner Race

Installation:

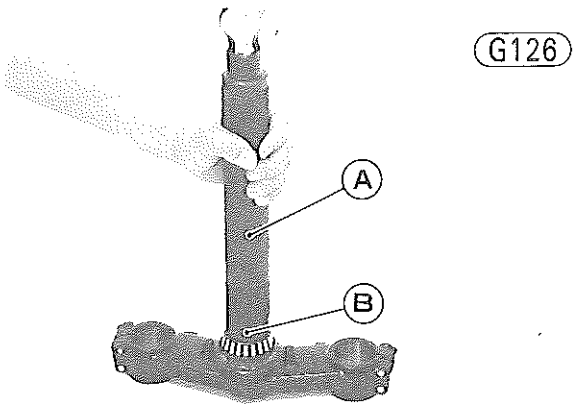
- Apply grease to the outer races, and press them into the head pipe using the drivers and driver press shaft (special tools). Be sure to press them in until they stop at the step in the head pipe.



A. Driver (57001-1076)
B. Driver (57001-1077)
C. Driver Press Shaft (57001-1075)
D. Outer Races

- Check the grease seal, apply grease to the lower tapered roller bearing inner race, and then drive it onto the steering stem using a stem bearing driver and adapter (special tools). Be sure to press it until it stops at the stem base.

NOTE: Replace the lower tapered roller bearing with a new one, if the grease seal is damaged.



A. Stem Bearing Driver (57001-137)
B. Stem Bearing Driver Adapter (57001-1074)

- Install the steering stem (Pg. 144).

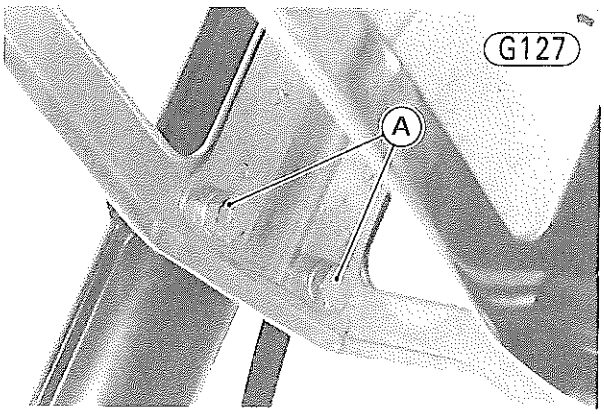
FRONT FORK

Removal (each fork leg):

- Remove the front wheel (Pg. 109).

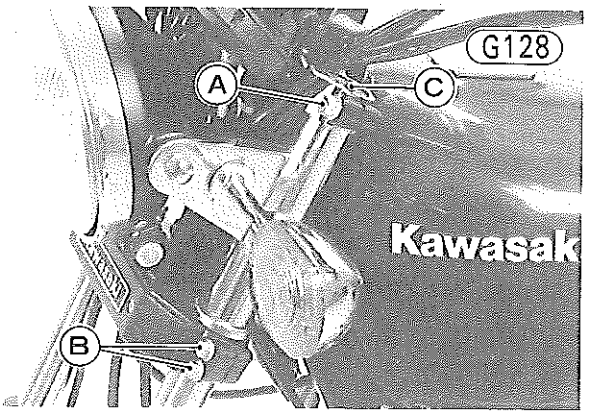
NOTE: During front wheel removal, take off only the caliper on the fork leg to be removed.

●Remove the front fender bolts and lockwashers (2 ea) to separate the left or right fork leg from the fender.



A. Fender Bolts

●Loosen the front fork upper clamp bolt.
●If the fork leg is to be disassembled after removal, loosen the top plug now. To loosen the top plug, remove the handlebar holder bolts (4), lockwashers (4), and holder, free the handlebar from the stem head, and then pull off the rubber cap.

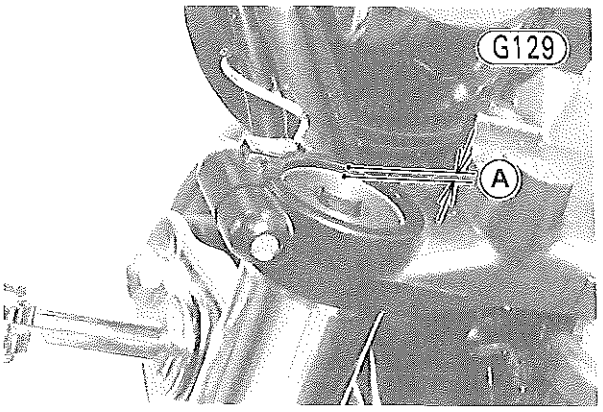


A. Upper Clamp Bolt
B. Lower Clamp Bolts
C. Top Plug

●Loosen the front fork lower clamp bolts (2).
●With a twisting motion, work the fork leg down and out.

Installation (each fork leg):

●Slide the fork leg up through the lower and upper clamps until the upper end of the inner tube is 2 mm lower than the upper surface of the stem head. Tighten the upper clamp bolt to 2.8 kg-m (20 ft-lbs) of torque and the lower clamp bolts (2) to 2.0 kg-m (14.5 ft-lbs) of torque.

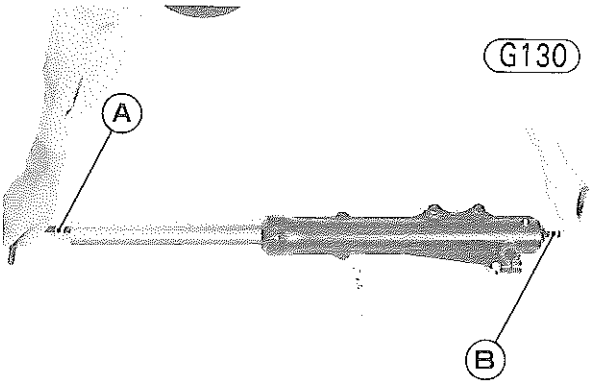


A. 2 mm

●If the fork top plug was loosened during removal, tighten it to 2.8 kg-m (20 ft-lbs) of torque.
●Fit the rubber cap onto the top plug.
●Tighten the front fender bolts (2) with the lockwashers (2).
●Install the front wheel (Pg. 109).

Disassembly:

●Remove the top plug ⑰ and O ring ⑱. For US model, pull out the short spring ㉘, spring seat ㉙, and long spring ㉚. For European model, pull out the spring.
●Pour the oil into a suitable container, pumping as necessary to empty out all the oil.
●Stop the cylinder ① from turning by using the front fork cylinder holder handle and holder adapter (special tools). Unscrew the Allen bolt ⑮ and gasket ⑭ from the bottom of the outer tube ⑨ or ㊱, and then separate the inner tube from the outer tube by pulling it out.

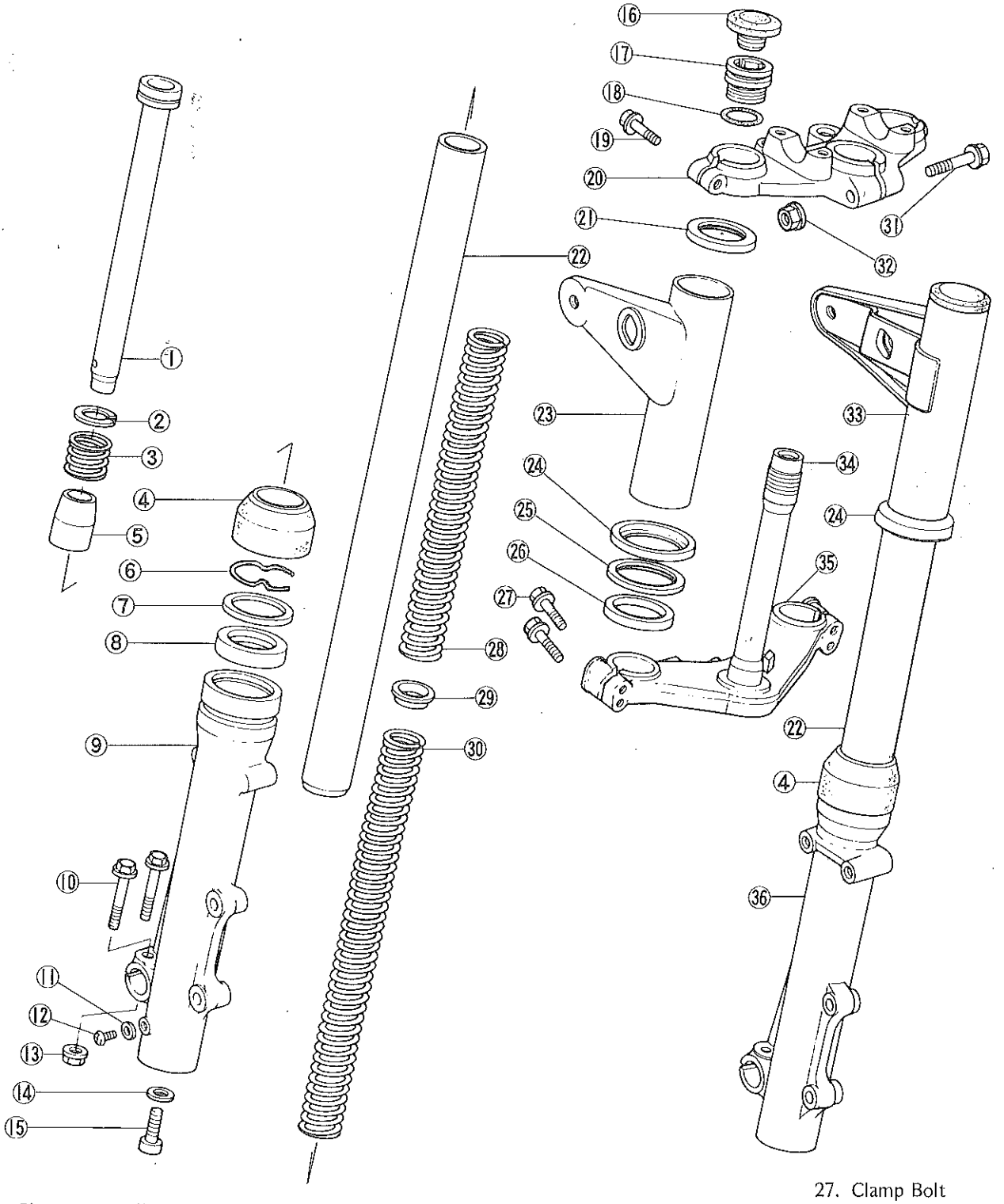


A. Front Fork Cylinder Holder Handle and Adapter (57001-183, 57001-1057)
B. Allen Wrench

●Remove the dust seal ④ from the outer tube.
●Slide or push the cylinder ①, and its spring ③ out the top of the inner tube.
●Remove the cylinder base ⑤ out the top of the outer tube.
●Remove the retainer ⑥ from the outer tube with a sharp hook, and pull out the oil seal ⑧. Be careful not to damage the outer tube. It may be necessary to heat the outer tube around the oil seal before pulling the seal out.

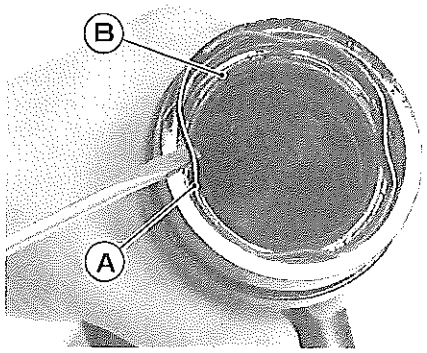
Front Fork (US model)

G131



1. Piston and Cylinder Unit
2. Piston Ring
3. Spring
4. Dust Seal
5. Cylinder Base
6. Retainer
7. Washer
8. Oil Seal
9. Left Outer Tube
10. Clamp Bolt
11. Gasket
12. Screw
13. Locknut
14. Gasket
15. Allen Bolt
16. Rubber Cap
17. Top Plug
18. O Ring
19. Clamp Bolt
20. Stem Head
21. Ring Cap
22. Inner Tube
23. Left Fork Cover
24. Base Cover
25. Damper Ring
26. Rubber Damper
27. Clamp Bolt
28. Spring
29. Spring Seat
30. Spring
31. Clamp Bolt
32. Locknut
33. Right Fork Cover
34. Steering Stem
35. Stem Base
36. Right Outer Tube

G132

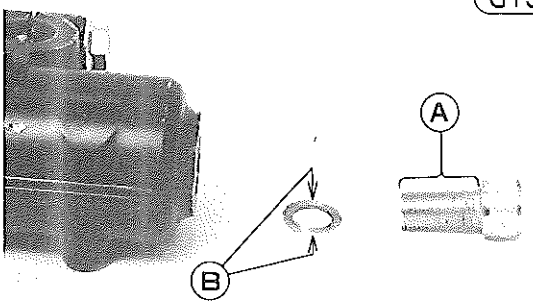


A. Retainer B. Oil Seal

Assembly Notes:

1. Apply a liquid gasket to both sides of the gasket ⑭, apply a non-permanent locking agent to the Allen bolt, and tighten it using a front fork cylinder holder handle and holder adapter (special tools) to stop the cylinder from turning. The torque for the Allen bolt is 4.0 kg-m (29 ft-lbs).

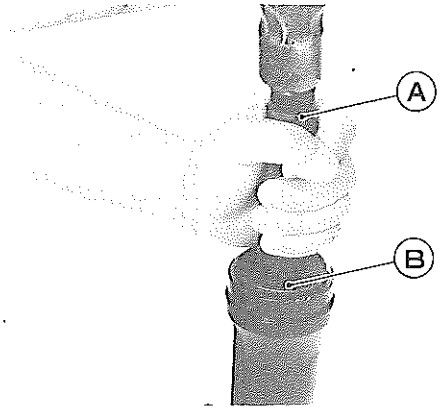
G133



A. Apply a non-permanent locking agent.
B. Apply a liquid gasket.

2. Replace the oil seal with a new one, apply oil to the outside, and install it with the bearing driver and driver holder (special tools).

G134



A. Bearing Driver Holder (57001-139)
B. Bering Driver (57001-140)

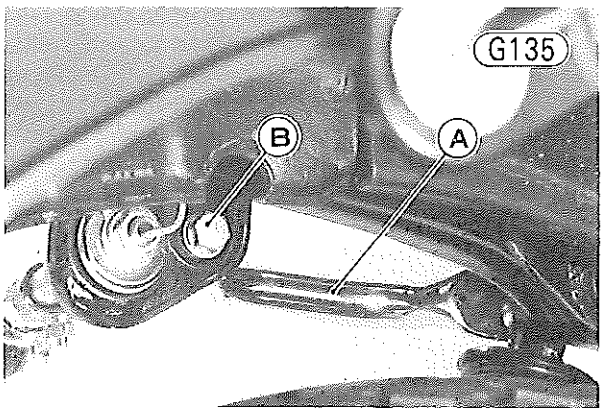
3. Refill the fork leg with 336 ~ 344 cc (European model: 346~354 cc) of fresh SAE 10W fork oil.
4. After installing the front fork leg, tighten the top plug to 2.8 kg-m (20 ft-lbs) of torque.

REAR SHOCK ABSORBERS

Removal (each side):

- Set the motorcycle up on its center stand.
- To remove the left shock absorber, remove the grab rail mounting bolt and lockwasher.

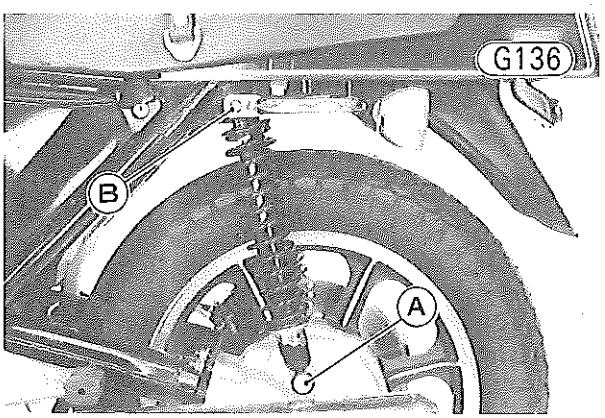
G135



A. Grab Rail B. Mounting Bolt

- Remove the cap nut, lockwasher, and flat washer. To remove the left shock absorber, also remove the grab rail, the right shock absorber, and the flat washer.
- Remove the nut at the bottom of the rear shock absorber.

G136



A. Nut B. Cap Nut

- Pull off the rear shock absorber.

Installation Notes:

1. Check that the rubber dampers (2) are fitted in the shock absorber upper and lower pivot holes, and that the coller is in the rubber damper at the lower pivot hole.

2. Tighten the shock absorber mounting nuts to 2.5 kg-m (18.0 ft-lbs) of torque.

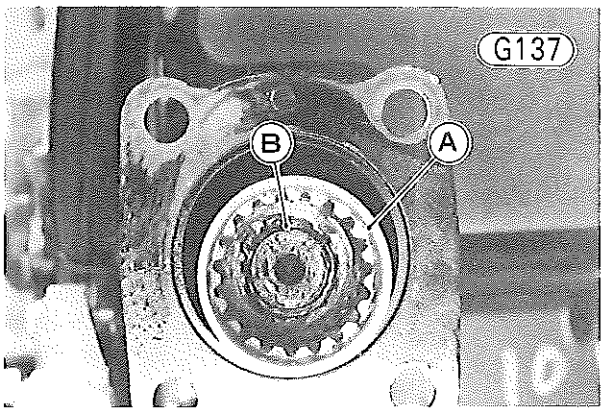
SWING ARM

Removal:

- Remove the mufflers (Pg. 43).
- Remove the rear wheel and rear brake caliper (Pg. 117).
- Pull the rear brake hose out of the guide on the swing arm, and secure the brake hose to some place higher than the rear brake reservoir to prevent fluid loss.
- Remove the final bevel gear case (Pg. 124).

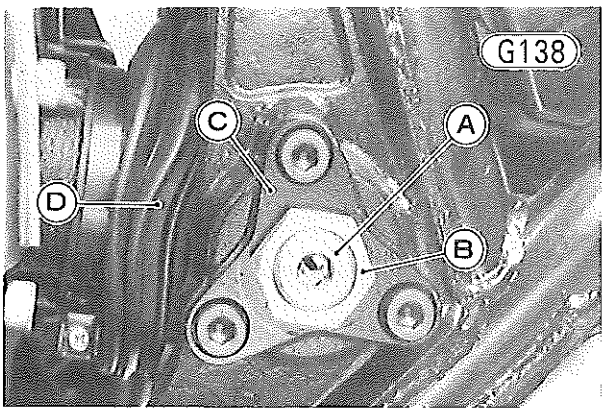
NOTE: Place the final gear case so that the right side of the case is up (Fig. G46). If the case is upside down or sideways, the final gear case oil will be drained through the breather hole of the case.

- Loosen the cap nut at the top of the right shock absorber, remove the nut from the bottom of it, and pull the bottom of the right shock absorber off its stud.
- Remove the circlip from the end of the propeller shaft, and pull off the propeller shaft joint.



A. Propeller Shaft Joint **B. Circlip**

- Slip the sliding joint dust cover out of place.
- Remove the rubber cap on the locknut of the pivot shaft.
- Loosen the pivot shaft locknut, and remove the Allen bolts (3) that secure the pivot shaft stop.



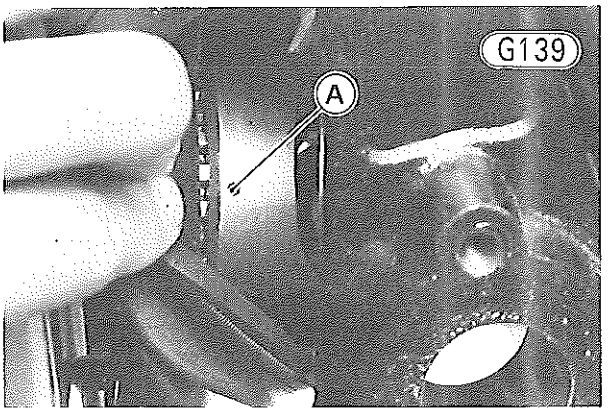
A. Pivot Shaft **C. Stop**
B. Locknut **D. Dust Cover**

- Pull off the pivot shaft with its stop.
- Remove the other pivot shaft in the same way, and propeller shaft, and then remove the swing arm.

Installation:

- Check that the sliding joint dust cover is in place.
- Check that the sliding joint connecting pin is in place.

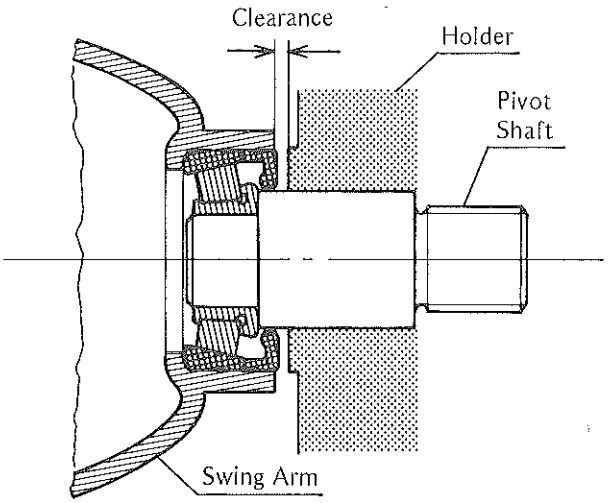
CAUTION **Do not push hard on the sliding joint connecting pin. Pushing hard on the pin may cause it to fall inside the front bevel driven gear joint.**



A. Pin

- Check that the swing arm bearings and grease seal caps are in place.
- Install the swing arm running the propeller shaft through the swing arm.
- Install the pivot shafts with their stops, fit them on each side, and tighten the Allen bolts (6).
- Insert a thickness gauge between the left end of the swing arm pivot and the pivot shaft holder on the frame; there should be about 1.5 mm clearance.

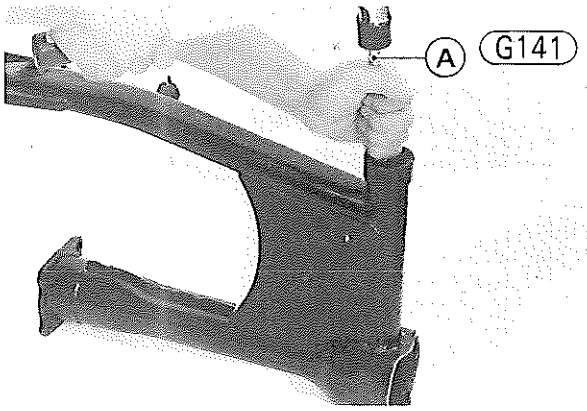
Swing Arm Installation G140



- Screw in the right pivot shaft until it becomes hard to turn, and tighten the locknut.
- Remove the thickness gauge, and tighten the left pivot shaft to 1.5 kg-m (11.0 ft-lbs) of torque.
- Check that there is no play and the swing arm swings smoothly without rattle.
- Fit the rubber cap on each side of the pivot shaft locknut.
- Slip the bottom end of the right rear shock absorber onto the stud on the swing arm, and tighten the nut to 2.5 kg-m (18.0 ft-lbs) of torque.
- Tighten the cap nut to 2.5 kg-m (18.0 ft-lbs) of torque.
- Slip the sliding joint dust cover into place on the swing arm.
- Wipe the old grease of the propeller shaft joint and pinion gear joint, and pack the propeller shaft joint with 25 cc (20 grams) of high temperature grease (Fig. G48).
- Install the propeller shaft joint and circlip.
- Install the final bevel gear case (Pg. 125).
- Install the rear wheel and rear caliper (Pg. 118).
- Install the mufflers (Pg. 43).

Disassembly:

- Using a hook, pull out the grease seal cap ⑥ and tapered roller bearing inner race ⑦.
- Insert a bar into one side, hammering on it lightly to knock out the tapered roller bearing outer race on the opposite side.



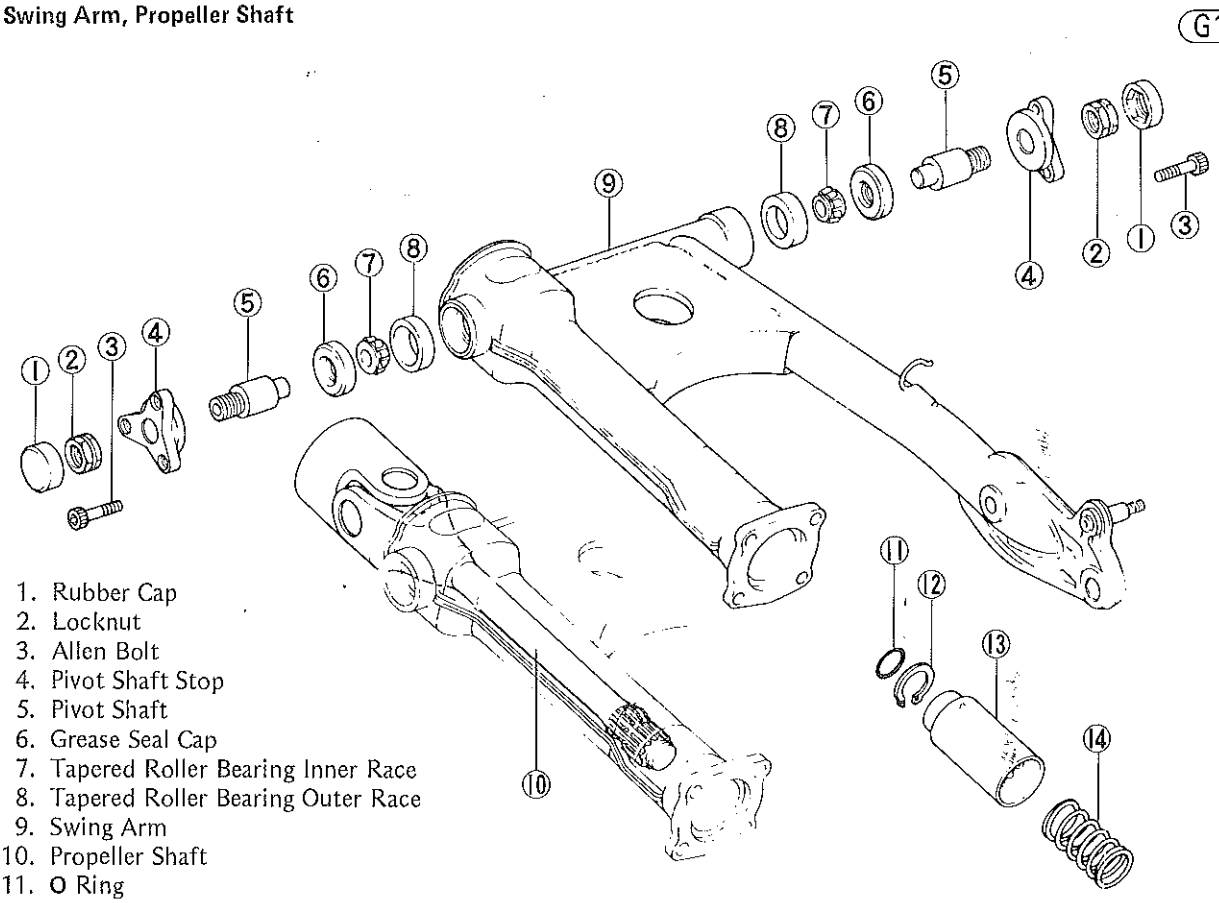
A. Bar

- Use the bar again to knock out the other outer race.

Assembly Notes:

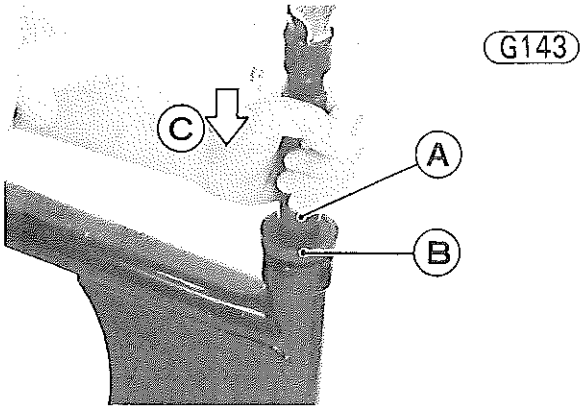
1. Replace the tapered roller bearings with new ones if either one has been damaged or removed. Apply grease to the outside surface of the baring rollers before installing them.

Swing Arm, Propeller Shaft

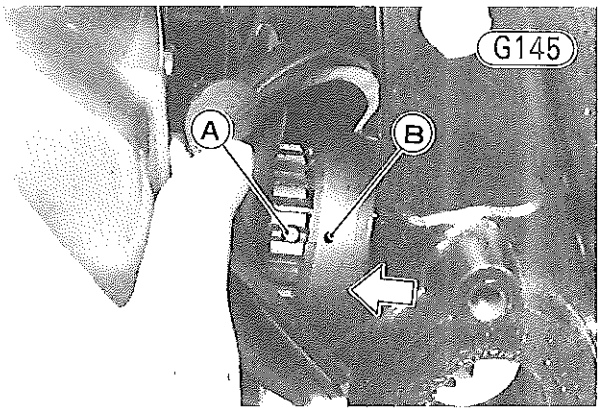


1. Rubber Cap
2. Locknut
3. Allen Bolt
4. Pivot Shaft Stop
5. Pivot Shaft
6. Grease Seal Cap
7. Tapered Roller Bearing Inner Race
8. Tapered Roller Bearing Outer Race
9. Swing Arm
10. Propeller Shaft
11. O Ring
12. Circlip
13. Propeller Shaft Joint
14. Spring

2. Apply oil to the outer races, and then drive them into the swing arm pivot using a bearing driver (special tool).



A. Bearing Driver Holder (57001-139)
B. Bearing Driver (57001-140)
C. Press



A. Pin **B. Hole**

- Install the swing arm (Pg. 150).
- Install the final gear case (Pg. 125).
- Install the rear wheel and rear caliper (Pg. 118).
- Install the mufflers (Pg. 43).

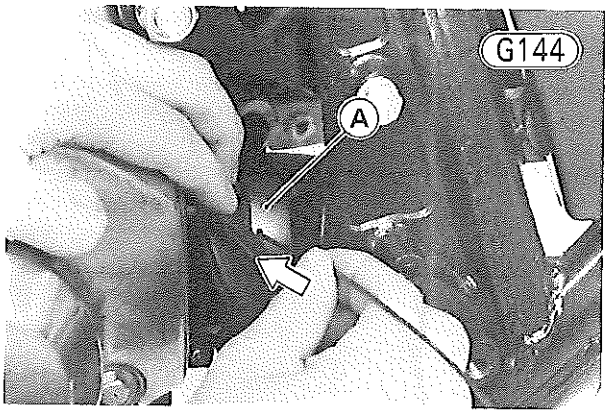
PROPELLER SHAFT

Removal:

- Remove the mufflers (Pg. 43).
- Remove the rear wheel and rear caliper (Pg. 117).
- Remove the final bevel gear case (Pg. 124).

NOTE: Place the final bevel gear case so that the right side of the case is up (Fig. G46). If the case is upside down or sideways, the final gear case oil will be drained through the breather hole of the case.

- Remove the swing arm (Pg. 150).
- Pushing lightly the sliding joint connecting pin with a wire or a suitable tool, remove the propeller shaft.



A. Propeller Shaft

Installation:

- Check that the sliding joint connecting pin and spring are in place.
- Apply a thin coat of a high temperature grease to the splines of the sliding joint.
- Pushing the sliding joint connecting pin lightly, install the propeller shaft. The pin must align with the hole in the propeller shaft.