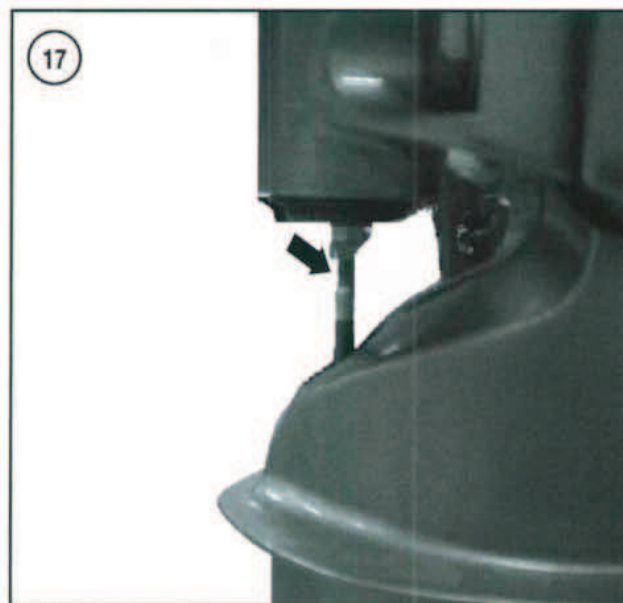


1. Disconnect both battery cables from the battery, if so equipped. Remove the spark plugs and connect the plug leads an engine ground. Shift the engine into neutral.
2. Locate the shift shaft linkage connector in the engine cover on the lower front portion. Remove the locking pin to disconnect the shift shaft from the shift linkage.
3. Count the turns as you remove the shift linkage connector from the upper end of the shift shaft (4, **Figure 16**).
4. Support the gearcase as you loosen the five bolts (1, **Figure 16**) from the gearcase. Remove the gearcase from the drive shaft housing. Pry at the points located near the front and rear of the gearcase. Install the water tube into position in the drive shaft housing if dislodged during removal of the gearcase.
5. Apply water-resistant grease to the splined area of the drive shaft and to the water tube grommet in the water pump housing. Make sure that the dowel pin (8, **Figure 16**) is properly positioned in the gearcase.
6. Place the shift selector into reverse. Make sure that the shift shaft enters the proper opening. Guide the water tube into the water pump grommet (3, **Figure 16**) and insert the drive shaft into the splined crankshaft. Lower the gearcase and slightly rotate the drive shaft clockwise if the gearcase and drive shaft housing do not mate. Repeat this step until the splined connections align and the housings mate. Ensure that the water tube enters the water pump grommet.
7. Secure the gearcase in position and install the fasteners. Tighten the fasteners to the specification provided in **Table 1**.
8. Align the upper and lower shift shafts. Thread the upper shift shaft linkage connector (4, **Figure 16**) onto the lower shift shaft with the number of turns recorded during removal. Make sure the nut makes several turns of engagement onto the lower shift shaft.
9. Refer to Chapter Five and adjust the shift linkage and or cables. Install the spark plugs and spark plug leads. Clean the battery terminals and connect the cables to the battery. Run the engine to check for proper shift and cooling system operation before putting the engine into service.

Removal/Installation (Models BF9.9A and BF15A)

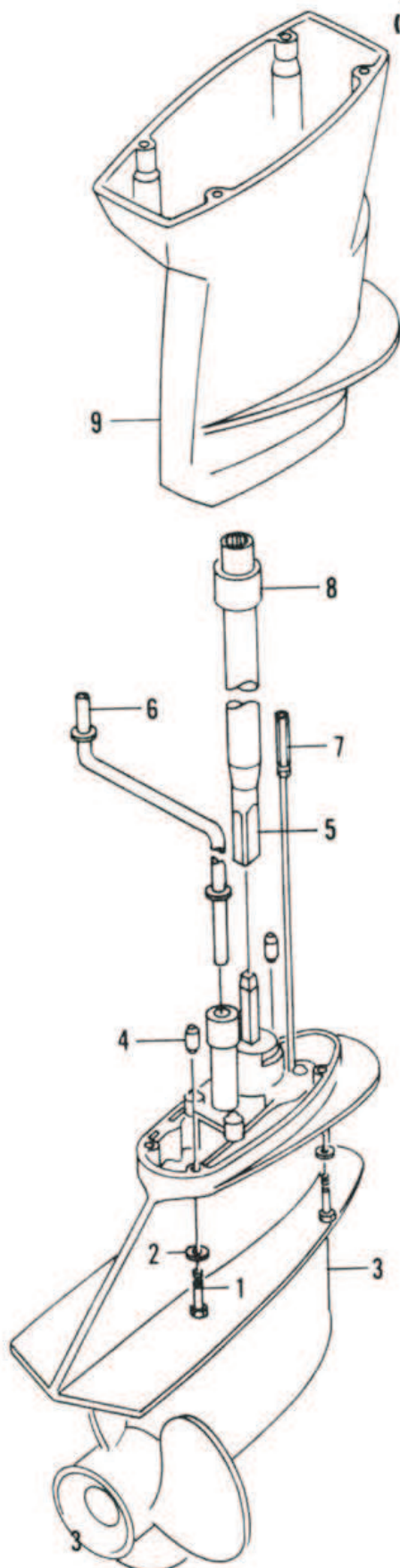
1. Disconnect both battery cables from the battery, if so equipped. Remove the spark plugs and connect the battery cables to an engine ground. Shift the engine into reverse.
2. Locate the shift shaft connector at the lower forward side of the drive shaft housing (**Figure 17**). Loosen the lower jam nut. Count the number of turns as you thread the upper connector from the lower shift shaft. Record the number of turns for reference during installation.



3. Support the gearcase and remove the bolts (1, **Figure 18**) and washers from the gearcase (3) and drive shaft housing (9).
4. Carefully remove the gearcase from the drive shaft housing. Pry at the points located near the front and rear of the gearcase. Carefully lower the gearcase from the drive shaft housing when it becomes free. Retain the aligning dowels (4, **Figure 18**) from the gearcase or drive shaft housing upon removal.
5. If it becomes dislodged during removal, install the water tube and sealing grommet (6, **Figure 18**) into position in the drive shaft housing. Remove the upper drive shaft (8, **Figure 18**) from the lower drive shaft or crankshaft.
6. Apply a light coat of water-resistant grease to the splined and square portion of the drive shaft, water tube grommet and alignment dowels. Position the shift selector into reverse gear.
7. Guide the water tube into the water pump discharge hole while inserting the drive shaft into the crankshaft. Lower the gearcase and slightly rotate the drive shaft clockwise if the drive shaft does not engage the crankshaft. Repeat this step until the shafts align and the gearcase and drive shaft housing mate. Never force the gearcase into position. Damage to the shift shafts and drive shaft seal could result.
8. Support the gearcase as you install the mounting bolts and washers. Tighten them to the specification listed in **Table 1**.
9. Thread the shift shaft upper nut or connector onto the lower shift shaft the same number of turns noted during removal. Refer to Chapter Five and adjust the shift linkage.

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GEARCASE MOUNTING (MODELS BF9.9A AND BF15A)



1. Bolt
2. Washer
3. Gearcase
4. Alignment pin/dowel
5. Square end of upper drive shaft
6. Water tube
7. Shift shaft
8. Coupling seal end of upper drive shaft *
9. Drive shaft housing

* later models use a male splined connection.

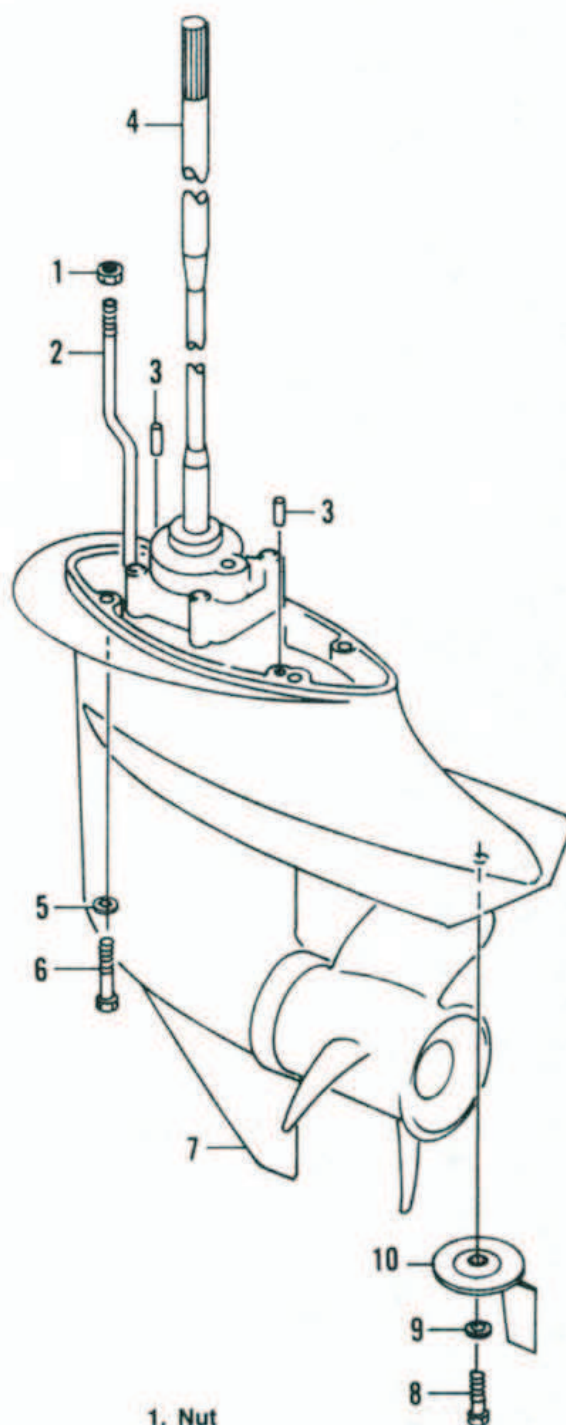
10. Install the spark plugs and spark plug leads. Clean the battery terminals and connect the cables to the battery.

Removal/Installation (Models BF20A, BF25A and BF30A)

1. Disconnect both battery cables from the battery, if so equipped. Remove the spark plugs and connect the plug leads to an engine ground. Shift the engine into reverse gear.
2. Locate the shift shaft connector at the lower forward side of the drive shaft housing (**Figure 17**). Loosen the lower jam nut. Count the number of turns as you remove the upper connector from the lower shift shaft. Record the number of turns for reference during installation.
3. Support the gearcase as you remove the bolts (6, **Figure 19**) and washers that retain the gearcase (7, **Figure 19**) to the drive shaft housing.
4. Remove the gearcase from the drive shaft housing. Pry at the points located near the front and rear of the gearcase. Carefully lower the gearcase from the drive shaft housing when it becomes free. Retain the aligning dowels (3, **Figure 19**) upon removal.
5. If it becomes dislodged during removal, install the water tube into the sealing grommet at the upper end of the drive shaft housing.
6. Apply a light coat of water-resistant grease to the splined portion of the drive shaft (4, **Figure 19**), water tube grommet and alignment dowels (3, **Figure 19**). Position the shift selector into reverse gear.
7. Guide the water tube into the water pump discharge hole while inserting the drive shaft into the crankshaft connection. Lower the gearcase and slightly rotate the drive shaft clockwise. Repeat this step until the shafts align and the gearcase and drive shaft housing mate. Never force the gearcase into position. Damage to the shift shafts and drive shaft seal may result.
8. Provide support for the gearcase as you install the mounting bolts and washers. Tighten them to the specification listed in **Table 1**.
9. Thread the shift shaft upper nut or connector onto the lower shift shaft the number of turns noted during removal. Refer to Chapter Five and adjust the shift linkage.
10. Install the spark plugs and spark plug leads. Clean the battery terminals and connect the cables to the battery.

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GEARCASE MOUNTING (MODELS BF20A, BF25A AND BF30A)

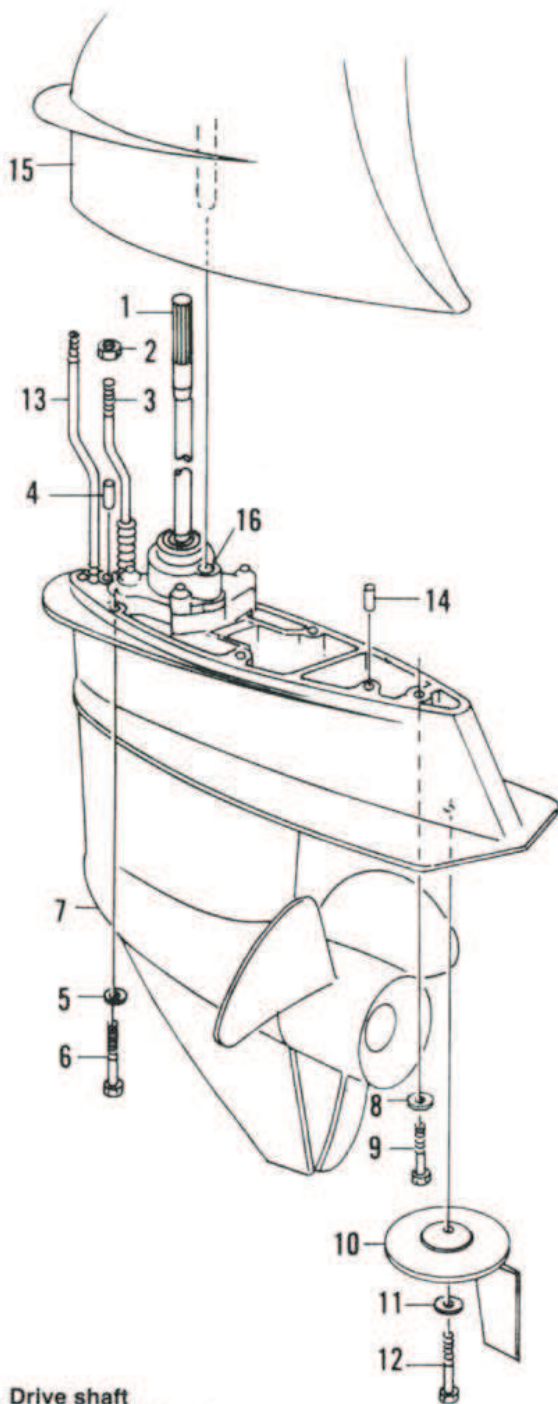


1. Nut
2. Washer
3. Alignment pin
4. Drive shaft
5. Washer
6. Bolt
7. Gearcase
8. Bolt
9. Washer
10. Trim tab

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GEARCASE MOUNTING

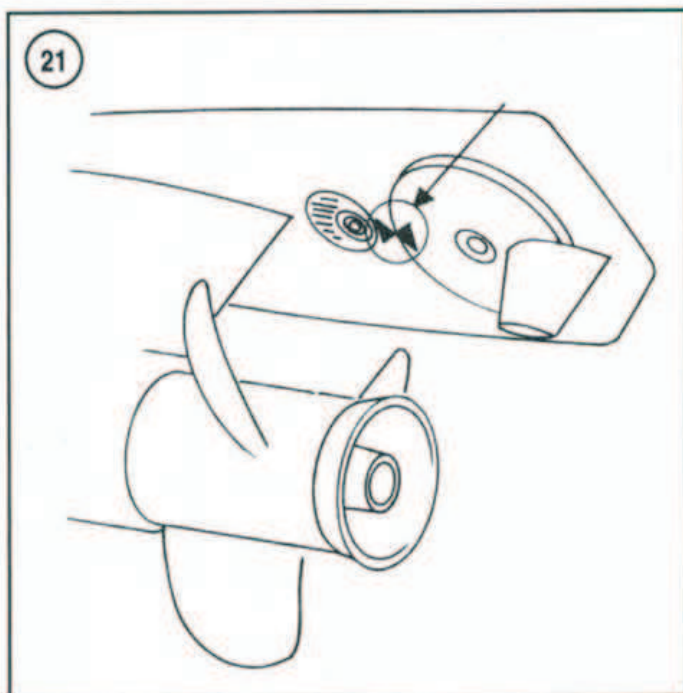
MODELS BF35A, BF40A, BF45A AND BF50A



- | | |
|--------------------------|---------------------------------------|
| 1. Drive shaft | 11. Washer |
| 2. Shift shaft locknut | 12. Bolt |
| 3. Shift shaft | 13. Speedometer hose coupling/fitting |
| 4. Locating pin or dowel | 14. Locating pin or dowel |
| 5. Washer | 15. Drive shaft housing |
| 6. Bolt | 16. Water tube grommet |
| 7. Gearcase | |
| 8. Washer | |
| 9. Long bolt | |
| 10. Trim tab | |

Removal/Installation (Models BF35A, BF40A, BF45A and BF50A)

1. Disconnect both battery cables from the battery. Remove the spark plugs and connect the plug leads to an engine ground. Shift the engine into reverse gear.
2. Locate the shift shaft connector at the lower forward side of the drive shaft housing (Figure 17). Loosen the lower jam nut. Count the number of turns as you remove the upper connector from the lower shift shaft. Record the number of turns for reference during installation.
3. Note the location and position of the mounting bolts (6, Figure 20) and washers (5).
4. Use a black marker to mark the trim tab position relative to the gearcase (Figure 21). Remove the bolt (12, Figure 20) and washer then lightly tap the trim tab (10, Figure 20) with a plastic mallet to remove it from the gearcase.
5. Cut the speedometer tube as close as possible to the fitting.
6. Remove the bolt (9, Figure 20) and washer (8) that are located above the trim tab. The trim tab must be removed to access the bolt.
7. Support the gearcase as you remove the bolts and washers from the gearcase and drive shaft housing.
8. Remove the gearcase from the drive shaft housing. Pry at the points located near the front and rear of the gearcase. Carefully lower the gearcase from the drive shaft housing when it becomes free.
9. Retain the aligning dowels (14, Figure 20) upon removal.
10. If it becomes dislodged during removal, install the water tube into position in the drive shaft housing (16, Figure 20).
11. Apply a light coat of water-resistant grease to the splined portion (1, Figure 20) of the drive shaft, the water tube grommet (16, Figure 20) and alignment dowels. Position the shift selector in reverse gear.
12. Guide the water tube into the water pump discharge hole while inserting the drive shaft into the crankshaft connection. Lower the gearcase and slightly rotate the drive shaft clockwise. Repeat this step until the shafts align and the gearcase and drive shaft housing mate. Never force the gearcase into position. Damage to the shift shafts and drive shaft seal could result.
13. Support the gearcase as you install the mounting bolts and washers. Tighten them to the specification listed in Table 1.
14. Thread the shift shaft upper nut or connector onto the lower shift shaft the number of turns noted during removal.



15. Slightly heat the cut end of the speedometer tube and carefully slide it into position onto the fitting (13, **Figure 20**). Allow the tube to cool before tugging on it.

16. Clean the surfaces then install the trim tab, bolt and washer. Align the marks made prior to removal and securely tighten the trim tab bolt.

17. Refer to Chapter Five and adjust the shift linkage.

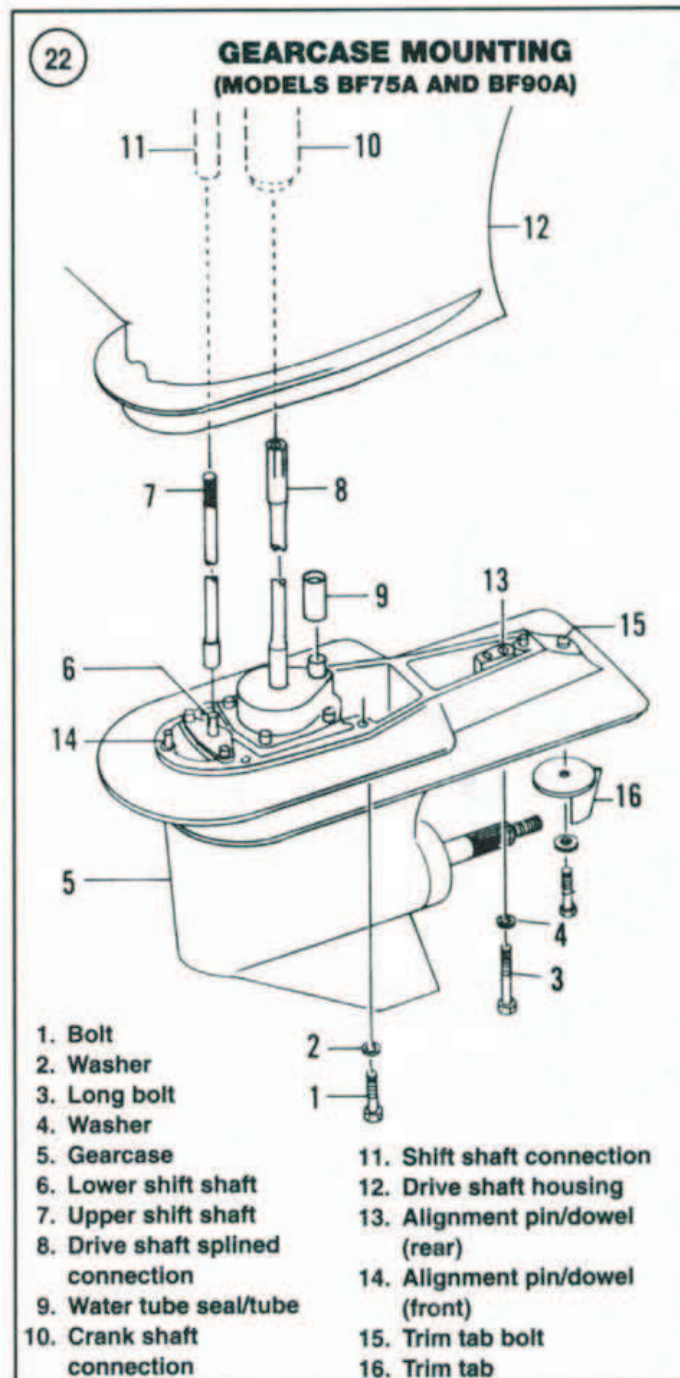
18. Install the spark plugs and spark plug leads. Clean the battery terminals and connect the battery cables to the battery.

Removal/Installation (Models BF75A and BF90)

NOTE

Some 1999 BF75A and BF90A models are equipped with the same gearcase as BF115A and BF130A models. Inspect the water pump to identify the gearcase design. Models prior to 1999 are equipped with a stainless steel water pump body. BF75A and BF90A models equipped with a plastic water pump body use the 1999 gearcase. On models so equipped, refer to the illustrations and procedures for BF115A and BF130A models.

Removal and installation procedures for both standard and left hand gearcases are virtually identical. On multiple engine applications, always mark the propeller and gearcase to ensure they are installed to the proper engine on assembly.



1. Disconnect both battery cables from the battery. Remove the spark plugs and connect the plug leads to an engine ground. Shift the engine into neutral gear.

2. Use a black marker to mark the trim tab position relative to the gearcase (**Figure 21**).

3. Note the location and position of the mounting bolts and washers (1-4, **Figure 22**).

4. Cut the speedometer tube as close as possible to the fitting.

5. Support the gearcase and remove the bolts and washers from the gearcase (5, **Figure 22**) and drive shaft housing (12).