

3. Operation

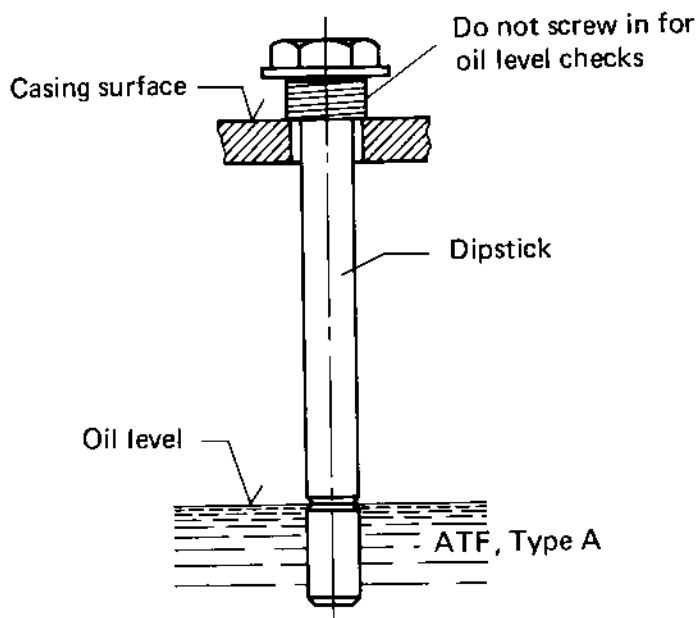
3.1 General information

All HBW boat reversing gearbox units are test-run on a test stand at the factory prior to delivery.

For safety reasons the oil is drained before shipment.

3.2 Initial operation

Fill the gearbox with oil (ATF) of the recommended grade. The oil level should be up to the index mark on the dipstick (see illustration).



Correct readings up to
 20° inclination in
direction of shafts
(15° for HBW150 V)

To check the oil level, just insert the dipstick, do not screw in. Retighten the hex screw with the dipstick after the oil level check. Do not forget sealing ring.

3.3 Operating temperature

The maximum permissible temperature of the transmission oil is 130 °C.

130 °C
= 254 °F

3.4 Operation of gearbox

The zero position of the operating lever on the control console must coincide with the zero position of the actuating lever on the transmission. Shifting is initiated by a cable or rod linkage via the actuating lever and an actuating cam. The completion of the gear changing operation is servo-automatically controlled.

Gear changing should be smooth, not too slow, and continuous (without interruption). Direct changes from forward to reverse are permissible, since the multiple-disc clutch permits gear changing at high rpm, including sudden reversing at top speeds in the event of danger.

3.5 Sailing and moving in tow

Rotation of the propeller without load while the boat is sailing, being towed, or anchored in a river, as well as operation of the engine with the propeller stopped (for charging the battery), will have no detrimental effects on the gearbox.

Important

When the boat is sailing (engine stopped), the gear lever must be in zero position. Never put the gear lever in the position corresponding to the direction of travel of the boat.

Locking of the propeller shaft by an additional brake is not required: use the gear lever position opposite your direction of travel for this purpose.

3.6 Lay-up periods

If the transmission is not used for periods of more than 1 year it should be completely filled with oil of the same grade to prevent corrosion. Protect the input shaft and the output flange by means of an anticorrosive coating if required.

3.7 Preparation for re-use

See item 2.3

4. Maintenance

4.1 Transmission oil

To ensure trouble-free operation of the clutch only use Automatic Transmission Fluid (ATF).

4.2 Oil quantity

| | |
|-----------|----------|
| HBW 50 | 0.3 ltr |
| HBW 100 | 0.35 ltr |
| HBW 150 | 0.55 ltr |
| HBW 150 V | 1.0 ltr |
| HBW 250 | 0.75 ltr |

Use the index mark on the dipstick as a reference (see item 3.2).

4.3 Oil level checks

Check the oil level in the gearbox about once a month. Correct oil level: index mark on dipstick (see item 3.2). Always use the same oil grade when topping up.

4.4 Oil change

Change the oil fore the first time after about 25 hours of operation, then at intervals of at least 1 year.

4.5 Checking the Bowden cable or rod linkage

The Bowden cable or rod linkage should be checked at shorter time intervals. Check the zero position of the operating lever (on the control console) and of the actuating lever (on the gearbox) on this occasion. The minimum lever travel from the neutral position to operating positions (0-A = 0-B) should be 35 mm for the outer and 30 mm for the inner pivot point. Make certain that these minimum values are safely reached. Check the cable or rod linkage for easy movability (see item 2.9).

4.6 Cooling

If the transmission is equipped with a cooling unit, drain the cooling water before long periods of non-use at temperatures around or below freezing point. For drain plug see drawing under item 2.10.