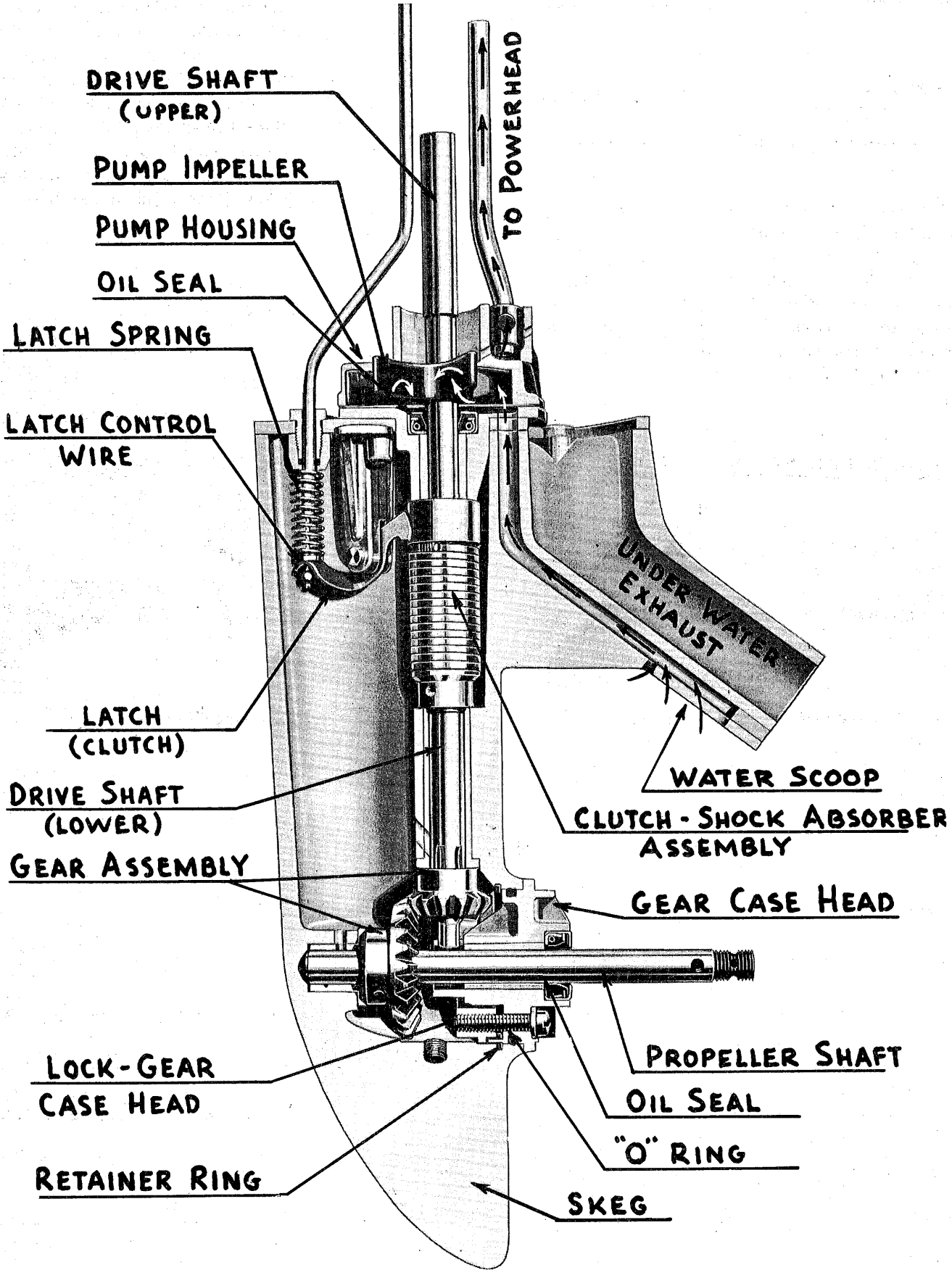


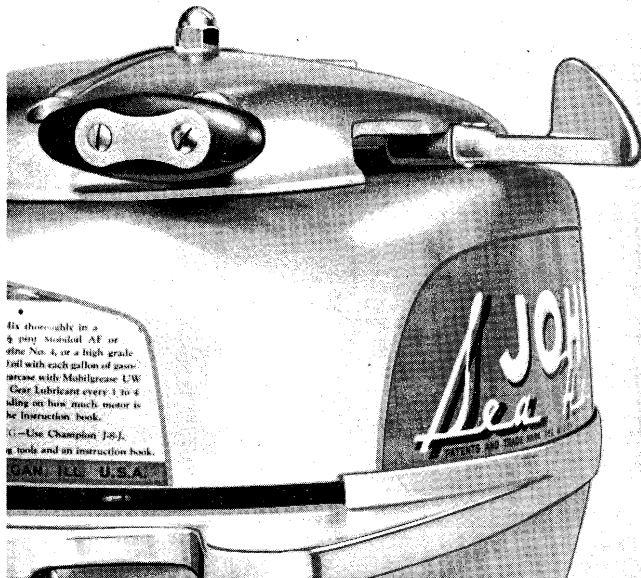


LOWER UNIT ASSEMBLY — MODEL TN



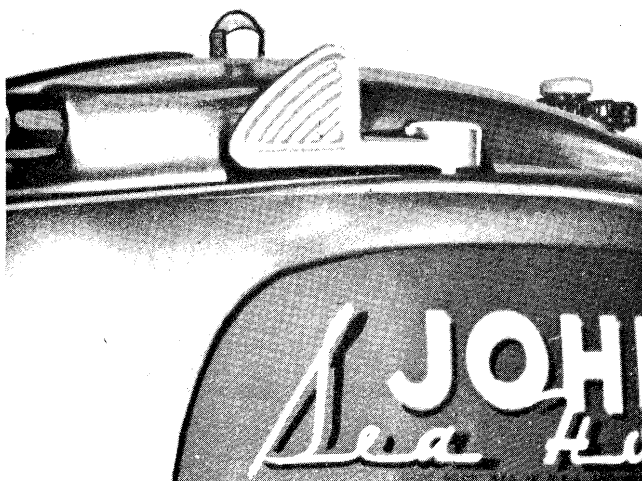


Design and construction of the Model TN lower unit, while it includes a neutral clutch and shock absorber, are such that disassembly and repair are not too difficult to accomplish with a bit of care and on careful observation during the procedure. All service operations, nevertheless, must be performed with care and in reasonably clean surroundings—clean bench, tools, etc. Cleanliness plays a most important part in repairs of all sorts—the gearcase of an outboard motor being no exception.



Showing Control Lever Set to "Neutral" Position

A "Neutral" arrangement is provided to permit starting the motor "out of gear"—the motor may be started at the dock and operated at idle speed until warmed up or until ready for power application. A clutch mechanism controlled manually, is built into the gearcase for this purpose. Control is accomplished by movement of the small lever in-

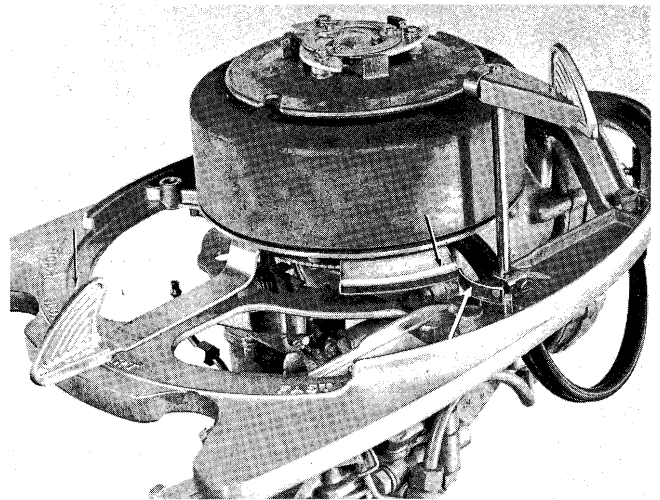


Showing Control Lever in "Run" Position

stalled adjacent to the Ready Pull starter—"in gear" when lever is set flush with contour of the fuel tank—"in neutral" when lever is extended.

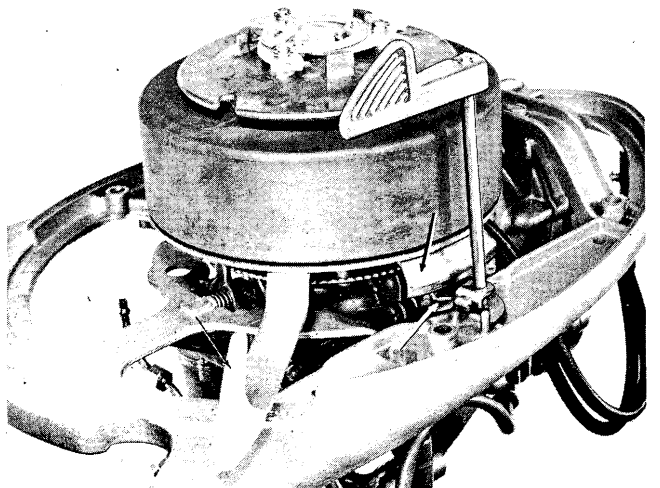
Note—The neutral control lever cannot be shifted with speed control (magneto) lever advanced beyond "start" position—required to prevent "racing" of the motor when in neutral. To accomplish shifting, the speed control lever must be retarded to "start" position or within the slow speed operating range. No attempt should otherwise be made to shift the neutral control lever.

Speed limitation control for "shifting" is obtained by installing a cam on the armature plate and a quadrant on the neutral control shift rod as illustrated here.



Arrows Indicate Position of Speed Limitation Control Mechanism when Control Lever is Set to "Neutral" Position—Speed Control Lever Set at "Start" Position

In operation, the quadrant attached to the control rod, engages the cam on the armature plate to prevent advancing the speed control lever beyond the "start" position, when set in "neutral." When



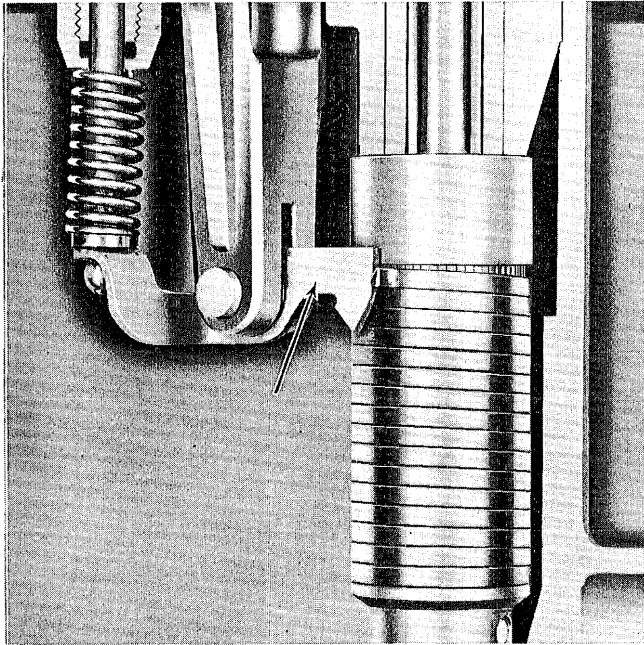
Arrows Indicate Position of Speed Control Mechanism when Control Lever is Set to "Run" Position—Speed Control Lever Advanced for High Speed Performance



set for "running," the quadrant clears the cam to permit free movement of the speed control lever—the motor in this case, may be operated throughout its entire speed range.

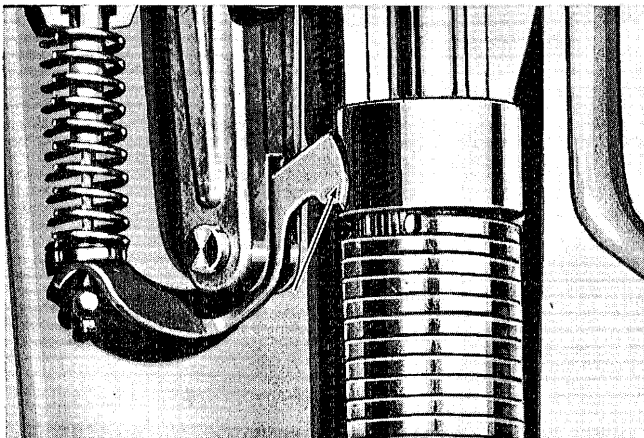
The neutral clutch consists of steel bushing keyed to the lower driveshaft, an accurately ground steel sleeve driven by the upper driveshaft and a spring which is coiled around both the steel sleeve and the bushing.

Propeller drive is thus accomplished by gripping effect of the clutch spring on the sleeve and bushing created during operation of the motor.



View of Clutch Assembly—Latch Down—"Neutral"

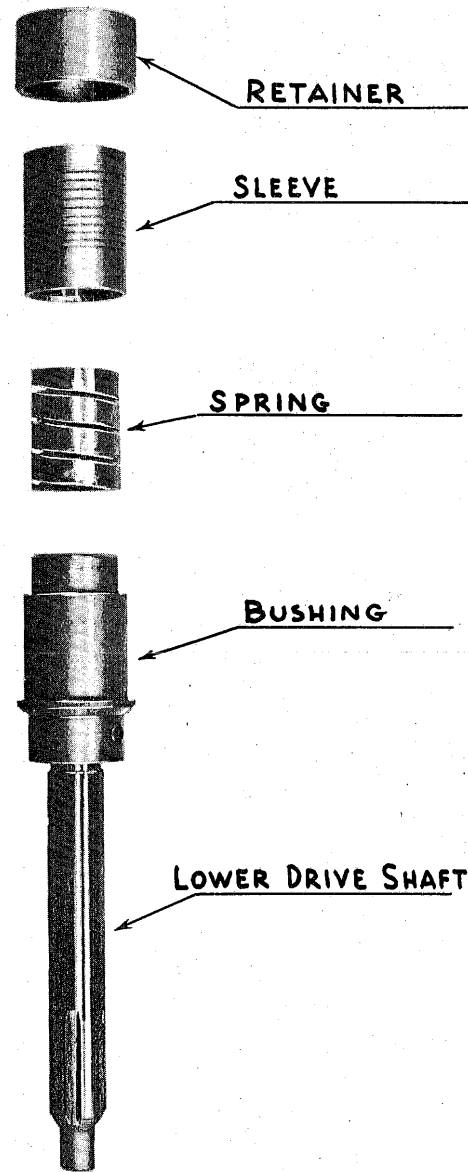
When set for neutral operation, the latch is lowered by movement of the neutral control lever to obstruct rotation of the clutch spring. This action causes the spring to unwind and to subsequently release its grip on the steel sleeve and bushing to permit "slippage" between the upper and lower driveshafts—neutral. When operating "in gear,"



View of Clutch Assembly Showing Latch Up—Running

the latch is lifted by moving the neutral control lever to running position to resume rotation of the clutch spring and its grip on both the steel sleeve and bushing. Rotation causes the spring to "wind up" to increase its grip as motor speeds up.

The propeller shock absorber consists of a comparatively strong spring keyed to the upper driveshaft and inserted tightly into the steel sleeve mentioned above which is actually part of the clutch. Action of the shock absorber is such that in event the propeller strikes an underwater obstruction, the shock absorber spring is caused to "coil" slightly in the steel sleeve to release its grip thereby absorbing shock of sudden impact.

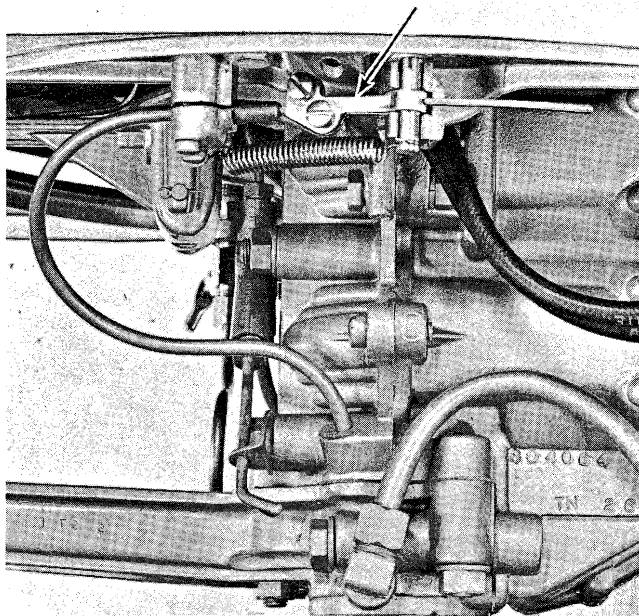


Showing Details of the Shock Absorber Assembly

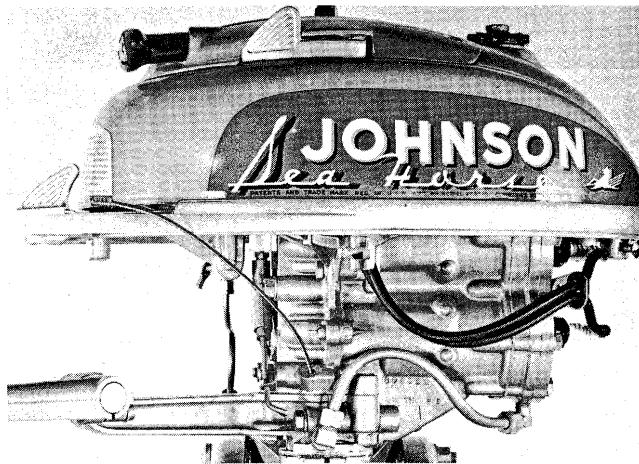
In event it becomes necessary to detach the lower unit from the power head, the neutral clutch cable must be made free of its anchor. Simply loos-



en the two screws holding the anchor fast to the cable. Remove the cable guide tube, then the nuts and screws securing the power head and lower unit.

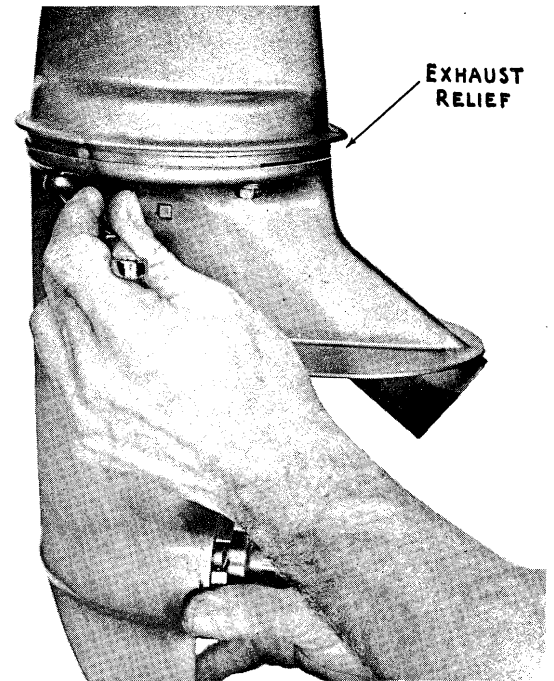


Showing Method of Anchoring the Clutch Control Cable

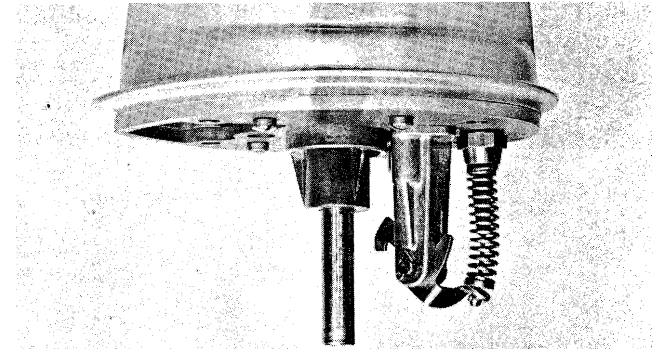


Showing Clutch Cable Detached from Anchor and Guide Tube Removed, Prior to Detaching Power Head from the Lower Unit

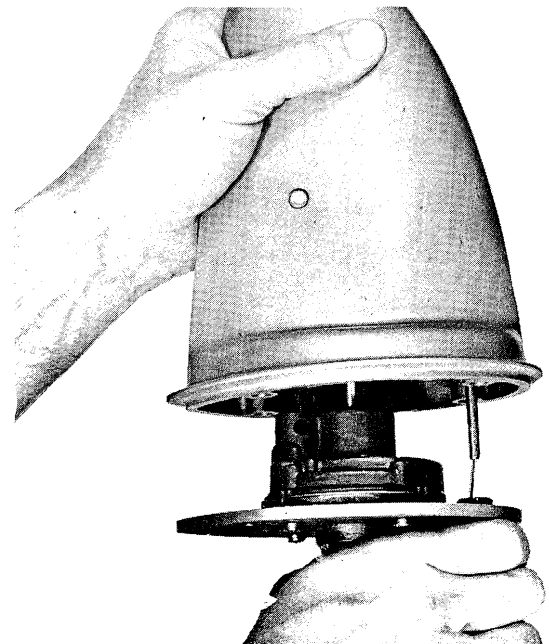
To remove the gearcase proper from the upper gearcase housing, it is necessary merely to remove the screws holding the assembly fast. The gearcase and upper section are easily separated. Note narrow "open slot" between the two sections above the exhaust outlet. Purpose—to provide exhaust relief for starting and slow speed operation.



Removing Gearcase from Lower Unit Assembly



Gearcase Removed, Exposing the Upper Driveshaft and Clutch Control Mechanism



Removing Pump Assembly, Clutch Control Mechanism and Bearing Support from the Lower Unit Assembly