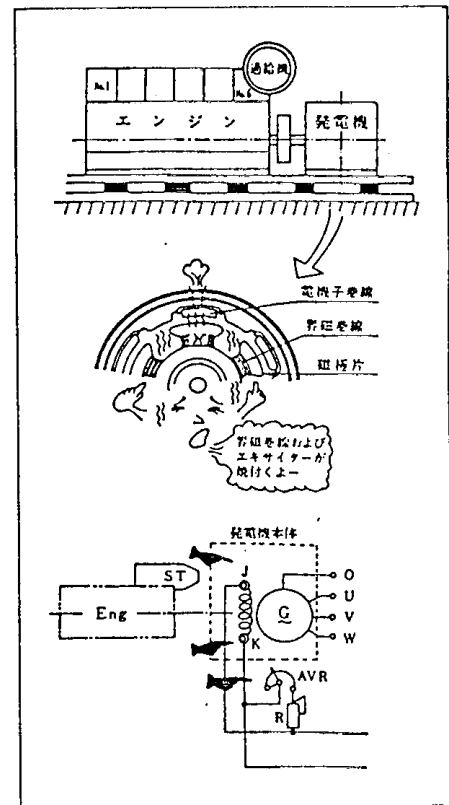


YANMAR DIESEL SERVICE NEWS

Title	Caution for Conducting Warming Up Operation		No. ;98-3-G-12-071-O Date; Oct.3.1998
Eng. Model	All Model	Application	Marine Auxiliary Engine
		Engine Nos.	_____

A marine generator diesel engine caused trouble, (after the use of 3 years and 6 months, or approx. 16,000 hours), when the engine speed was lowered to 400~450 rpm from the rated speed for conducting warming-up and after-cooling operations for about 10 minutes. In order to avoid the possible trouble above, we recommend that the marine auxiliary engine should be operated at rated engine speed for conducting the warming up operation. Please note that following trouble can be caused, should the engine be operated at a lower speed, (400~500rpm):

- Engine's Protective Functions will not be Established:**
 Engine's protective functions are established when the engine speed exceeded 85% of the rated speed. No protective functions are established in the lower speed range and no alarm will be activated in such lower speed range. (In the remote control start/stop specification engines, however, the protective circuit is established when the engine is operated for more than 30 seconds at the engine speed exceeding 300 rpm.)
- Generator may be Damaged:**
 When the generator has no circuit breaker in the field system circuit, if the generator is operated for a long time (10~15 mins.) at a low engine speed without removing the JK terminals, exciting current will increase in the generator, which will cause the exciter and field winding to be heated and a burn can result. It is also possible that the AVR's voltage will be raised, which can result in heating and a burn.
- Possible Operation in the Engine's Torsional Vibration Range:**
 This varies depending on the engine model, but it is possible that the engine can enter into the torsional vibration range at 6th skirt of node one. If the engine is operated under this condition, the crankshaft, gears, cooling water pump and lube oil pump gears, etc. can crack and break. So, be sure to conduct warming-up and after-cooling operations at the rated engine speed



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