



## Hale Products, Inc. Service Bulletins

Bulletin#: SB76

Revision#: 1

Date: 1/9/2004

Product Type Covered: Hale Pump

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Hurst Tool

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Lukas Tool

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Product Covered:

Midship Pump and Engine Recommendations

### Problem Statement:

Field reports of Caterpillar 3126E and C7 Series Engines inability to consistently meet the NFPA test points.

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### Body of the Bulletin

Recently reports have been received that Caterpillar 3126E and C7 series engines fail to consistently meet pump performance requirements on a variety of pump types. The engines appear to have reduced low speed torque. In some cases the NFPA rating point can only be achieved by bringing the engine up to speed with reduced flows then increasing the flow slowly. If the flow is increased at lower pressures, the engine speed can not be increased in some cases. The engine speed is limited to approximately 1300 rpm as if there is insufficient torque to increase the speed (and pump pressure) beyond this point. This may be a side effect of the latest emissions controls.

Caterpillar has updated the engine curves and the advertised operating range for these engines is now 1440 to 2500 RPM. To allow for this operating range a numerically lower gear ratio than that recommended in prior years should be selected. For example instead of selecting a 23 (2.28) ratio a 21 (2.05) ratio should be selected. Hale's updated pump recommendation list (Hale P/N 029-0020-52-0) dated September 9, 2003 was published to reflect this change. The current recommendation list is available on Hale's web site: [http://www.haleproducts.com/literature/list\\_literature.asp?lit\\_ctgy=articles](http://www.haleproducts.com/literature/list_literature.asp?lit_ctgy=articles).

A side effect of the lower gear ratios will be increased engine speed and possibly noise. The engines will be running closer to their full load speed at the NFPA 250 psi rating point. The maximum possible pressure produced from the pump will also be reduced although the minimum NFPA standards will be met.

If you have apparatus built with current model 3126E/C7 engines, in the process of being built or have pumps currently on order, we recommend that a review of the ratio selected compared to the current pump engine recommendation list and changes made accordingly.

It is also a good idea that testing be performed to make sure there are no low speed torque issues. To do this, simply open discharge valves for the approximate rated flow before throttling up to the required pressure. If the engine can not meet the required performance consistently, then contact your engine supplier for assistance. Obviously this is an important performance issue that needs to be addressed. If Caterpillar can not improve the situation, the gear ratio may have to be changed.

Hale Products, Inc will provide additional discounts on component kits to change gear ratios in response to this problem for a limited time. Contact Hale Customer Service for specific details. As always Hale will continue to assist our OEMs in any way possible.