Introduction
Contamination of Mobil SHC Aware™ H Series Hydraulic Oils can have an adverse effect on their performance and can, if present at great enough quantity (typically >5%), affect the fluids’ biodegradability and toxicity. ExxonMobil recommends a flushing procedure for systems being converted to Mobil SHC Aware H Series Hydraulic Oils to prevent problems caused by mixtures of other fluids and contaminants. The degree of flushing depends on the type and condition of the system and the fluid previously used.

This document covers procedures for three kinds of flushing systems:

- **New systems**
- **Systems previously using automotive oils or polyalkylene glycol (PAG)-based products**
- **Systems previously using mineral oil-based industrial hydraulic and circulating fluids**

New systems
Many new systems may have an internal coating of rust preventives or may have been run on preservative fluids before shipping. Protective coatings on individual components, such as pumps and valves, should be removed and the components cleaned.

ExxonMobil recommends the following guidelines as operators prepare new systems for Mobil SHC Aware H Series Hydraulic Oils.

**Step 1:** If the system contains oil, drain as much as possible from cylinders, filters, pumps, valves, etc. Wipe the reservoir and other accessible interior spaces with clean rags. Look carefully for pipe scale, weld spatter, threading compound, gasket cement, shavings, and other debris left behind after installation. Remove any solid contaminants from the system.

**Step 2:** Replace filters, if necessary.

**Step 3:** Charge the system with sufficient Mobil SHC Aware H Series Hydraulic Oils or the appropriate grade of mineral hydraulic fluid to assure full circulation to all components.

**Step 4:** Operate the system at normal temperatures and loads for a minimum of at least one hour after these temperatures and loads have been reached. Monitor the differential pressure drop across the filter. A filter change may be necessary during this flush because contaminants in the system are incompatible with the Mobil SHC Aware H Series Hydraulic Oils. If this is the case, change the filters and continue to operate the system at normal temperatures, but at reduced loads, until the hour of flushing is completed and/or the filters are clean.

**Step 5:** Drain the system while warm and repeat step 1.

**Step 6:** Add the final charge of Mobil SHC Aware H Series Hydraulic Oils and begin normal operation.
Systems previously using automotive oils or polyalkylene glycol (PAG)-based products
Automotive engine oils and polyalkylene glycol (PAG)* fluids can demonstrate the highest degree of incompatibility with Mobil SHC Aware™ H Series Hydraulic Oils, particularly if the systems contain moisture. For this reason, special precautions are necessary to ensure an adequate flush. Small amounts of water (<1000 ppm) will not change the performance characteristics. Care must be taken to ensure that moisture does not enter into the product, which may be the case with a previous fluid in the system, or in a high humidity environment.

**Step 1:** Drain the system, including all cylinders, accumulators, and lines, while warm.

**Step 2:** Install new filters and clean the filter housings.

**Step 3:** Fill the system with sufficient Mobil SHC Aware H Series Hydraulic Oils to assure full circulation to all components.

**Step 4:** Operate the system for at least two hours under normal operating conditions. If the flushing fluid shows any sign of contamination, repeat steps 1, 2, 3, and 4.

**Step 5:** Repeat steps 1 and 2, then fill the system with the final charge of Mobil SHC Aware H Series Hydraulic Oils. Resume normal operation and monitor filters daily.

**Health and safety**
Consult the Material Safety Data Sheets (MSDS) for Mobil SHC Aware H Series Hydraulic Oils. Please follow all health and safety warnings and precautionary statements on the product MSDSs. Please also consult the equipment manufacturer and your company for safety and health instructions. Please follow all instructions and all local, state, and federal regulations when flushing equipment.

For more information about Mobil SHC Aware™ H Series Hydraulic Oils, please contact your ExxonMobil marine fuels & lubricants representative or visit www.exxonmobil.com/marine.

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* PAG fluids are incompatible with most mineral and synthetic ester lubricants. A thorough flush and refill is required to ensure the integrity of the hydraulic fluid in service.

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Systems previously using mineral oil-based industrial hydraulic and circulating fluids
Most dry industrial hydraulic and circulating fluids are more compatible with Mobil SHC Aware H Series Hydraulic Oils than automotive oils. However, the moisture level in systems previously charged with industrial hydraulic and circulating fluids must be reduced to as low a level as possible (see discussion under “Systems previously using automotive oils or polyalkylene glycol (PAG)-based products,” at left).

**Step 1:** Operate the system under normal conditions until normal operating temperature is reached, then drain the oil.

Ensure that no more than 5 percent of the previous oil remains in the system.

**Step 2:** Install new filters and clean the filter housings.

**Step 3:** Fill the system with Mobil SHC Aware H Series Hydraulic Oils.

**Step 4:** Operate the system for at least 2 hours under normal operating conditions. Monitor the differential pressure drop across the filter.