Operator's Manual

Rasmussen Diesel Hydraulic Winch Drive System

Introduction

Read this manual before operating equipment. Understanding the system components and operating procedures will prepare you to operate the equipment safely and prevent damage to system components.

System Overview

The diesel hydraulic winch drive system is designed to operate one or more hydraulic winches. The system consists of the following primary components:

- Diesel engine
- Two large fixed-displacement pumps
- One pressure relief valve to protect system components from excessive pressure
- Control value with multiple spool valves
- One pressure-regulated pilot pump
- One two-function remote control station
- One small fixed-displacement pump for circulating oil through the heat exchanger

When the diesel engine is running, oil flows from the two large fixed-displacement pumps through the spool directional valve, then through the return filter and back to tank. There is no clutch between the engine and the hydraulic pumps. If the engine is running then the pumps are circulating oil through the system.

When any of the joysticks is operated, flow supplied by the pilot pump is directed to the associated spool in the multi spool directional valve, which causes the spool to shift. Flow from the two fixed-displacement pumps is then directed to the hydraulic winch controlled by that particular spool. If a winch stalls at any time during operation due to excessive load, hydraulic pressure will immediately climb to the relief valve setting and flow will be allowed to return to the reservoir to protect the system.

The volume of oil delivered to a winch is directly proportional to how far the operator moves the joystick. For example, if the operator moves the joystick halfway, the directional valve spool will shift halfway and 50% of pump output will be delivered to the winch.

When multiple joysticks are operated simultaneously, the directional valve spool nearest to valve inlet has the highest priority, followed by the following spool(s). If the joystick that controls the first spool is fully shifted, 100% of pump output will be delivered to the winch supplied by spool #1. No other winch will be operable until the operator partially or fully releases the joystick. In order to operate winches simultaneously, the operator must modulate the joysticks so that pump output is distributed between the winches appropriately.

Operating Procedure

Complete the following items DAILY:

1. Check engine oil and coolant levels.
2. Check hydraulic oil level.
3. Verify that pump inlet valves at hydraulic reservoir are open.
4. Verify that three hoses are connected to each winch: two winch drive hoses and one case drain hose.
5. Verify that the quick disconnects for each hose are securely snapped together. **IMPORTANT: A case drain hose that is not properly connected can cause permanent winch failure.**
6. Without engine running, verify that joystick handles move freely and return to the center position upon being released. **Be certain that the joysticks are in the center position prior to starting engine. Failure to do so could result in injury or damage to equipment.**
7. Verify that all personnel are a safe distance from moving components.
8. Start engine and allow it to adequately warm up.
9. Briefly operate joysticks to verify that each joystick runs only one winch and that each winch rotates in the desired direction.

IMPORTANT: The direction of winch rotation is dependent on how the hoses are installed. If you must change the direction of rotation, switch the hoses ONLY AT THE WINCH. Do not remove or alter the hoses at the directional valve or at the remote control station.