Wagner Chip/Coal Dozer Brake System
First used on CHD100-282 and CD1000-129

Introduction

These service instructions were developed to help you with troubleshooting the brake system of the Wagner Chip and Coal Dozers. Knowing the routing of the system will help you to better understand how it works and allow for easier troubleshooting of the system.

The following pages contain valuable information which will guide you through the entire brake system functions and settings for individual components. Taking the time to read this information will make your job much easier and may very well save you time and money.

System Description

The complete brake system on a Wagner Chip or Coal Dozer actually consists of three systems; the Service Brakes, the Parking Brake, and the Brake Cooling System. The three work together to provide a reliable braking system.

The service brake system utilizes a conventionally modulated “wet disc” brake which is hydraulically applied. This provides a combination of durability (oil immersed enclosed brake) and positive stopping power (hydraulically applied force).

The parking brake is a reverse modulated dry disc brake system. It is spring applied and hydraulically released. This application provides an additional measure of safety, since in the event of the loss of hydraulic power, the parking brake will be automatically applied.

The use of a “forced cooling” system helps to maintain a safe operating temperature for the brakes. A pump is used to force transmission fluid from the transmission sump through the braking system and back to the sump.

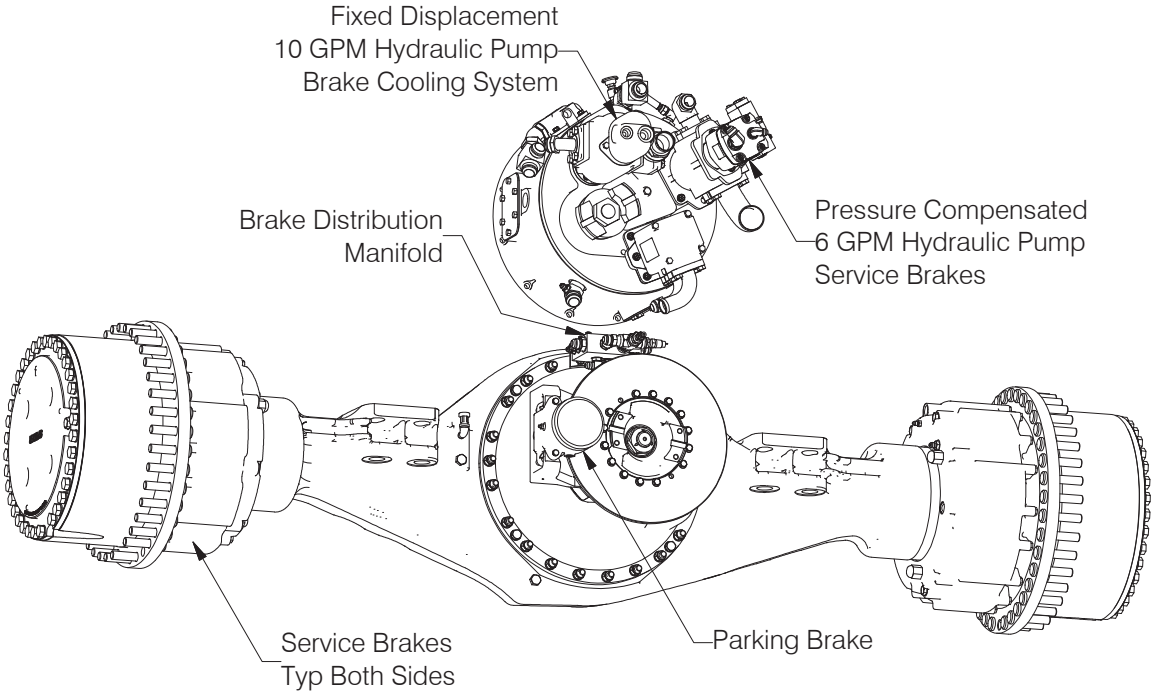

Figure 1 - Rear Axle Shown with Brake Locations, Converter Shown with Pump Locations

System Routing - Service Brakes

Hydraulic oil is supplied from the brake oil tank through a pressure compensated, 6 GPM variable displacement pump. Compensator pressure for the system is set at 2750 PSI. This pump is generally “piggybacked” with the system steering pump.

Fluid flows from the pump to the HP Filter Manifold (located on the LH side of the cab behind the hydraulic cooler). The HP filter manifold passes the fluid through a 10 micron filter element and out to the Brake Manifold Assembly (on valve plate on back of cab). A pressure relief set at 2900 PSI passes fluid, via a return hose, to a tee in the return line from the brake collection manifold (next to brake manifold assembly). The presence of a check valve in the HP manifold prevents fluid from flowing back through the pump.

A tee is inserted at the pressure port into the manifold, feeding flow to the manifold and to the first of two accumulators. A pressure test port has been installed on the accumulator side of the tee to simplify the checking of system pressure. These accumulators are installed to the system in order to insure the availability of brakes in case of hydraulic system failure. The fluid flowing into the manifold splits to allow supply flow to the pressure reduction valve for the parking brake. Main brake pressure flow continues through the manifold out to the second of the two accumulators. A drain line directs excess flow out through the tank port on the pressure manifold to the collection manifold.

An application pressure hose (A port) and a return hose (T port) run from the brake valve at the pedal to the collection valve. From the collection valve, the fluid is routed to the brake distribution / cooling manifold, out to brakes, and back to the tank. A pressure switch is installed at the RH end of the collection manifold to read application pressure out of the brake valve to activate the declutch switch. This switch will activate the declutch when application pressure reaches 250 PSI.

Located on the top of the brake manifold assembly is the pressure hose out to the pressure-in port on the brake valve. Also located on this connection is a pressure switch to read the system pressure and activate the low pressure warning system if the hydraulic pressure drops below 1200 PSI. The solenoid on top of the brake manifold assembly receives an electrical a signal to close the valve when the parking brakes is applied. Another solenoid, located on the RH side of the manifold, sends the same type of signal for the parking brake but it opens when parking brake is applied sending oil flow back to the tank.

Applied pressure (A port) to the brakes out of the brake valve ranges from 0 to 900 +/-50 PSI, depending on the force applied at the brake pedal. This pressure will not necessarily drop to 0 PSI when brake is released, but is expected to be no more than 2 PSI higher than residual in the hydraulic brake tank.

On the LH side of the brake manifold are three valves. A needle valve near the bottom of the manifold is used for relieving pressure from the accumulators.

NOTE: IT IS VERY IMPORTANT TO REMEMBER TO OPEN THIS VALVE BEFORE WORKING ON THE BRAKE SYSTEM IN ORDER TO RELIEVE THE PRESSURE FROM THE ACCUMULATORS AND AVOID INJURY.

A pressure reduction cartridge valve is present for reducing the flow pressure to the parking brake. Finally, a check valve isolates the downstream accumulator, to insure the availability of reserve pressure for the braking system.

System Routing - Parking Brake

The parking brake is a reverse modulated dry disc brake system, spring applied, and hydraulically released. This system is a great safety feature. If the hydraulic power is lost, the parking brake will be immediately applied.

The pressure reduction valve sends an adjusted pressure of 1350 PSI to the parking brake to keep it disengaged. When the pressure is released, the springs are allowed to apply the brake.

System Routing - Brake Cooling System

Wagner Dozers are designed to move material faster and further than other machines. For this reason, the brake system must be durable as well as dependable and must maintain these characteristics while generating less heat. The brake cooling system on the dozer helps to displace the heat generated by such use, which in turn lessens system failure, down time, and costly repairs.

Flow of the cooling oil for the brakes begins in the transmission sump. A suction hose runs from the sump to a 10 GPM fixed displacement pump which is generally “piggybacked” with the transmission charge pump.

The brake cooling pump sends the fluid to the brake distribution manifold, on to the brake housing, and back to the transmission sump via a 10 micron filter. Pressure of the cooling system is regulated in the manifold by a relief check valve and should not exceed 15 PSI. If back pressure does exceed 15 PSI, the relief will crack and allow fluid to flow directly back to the transmission sump.

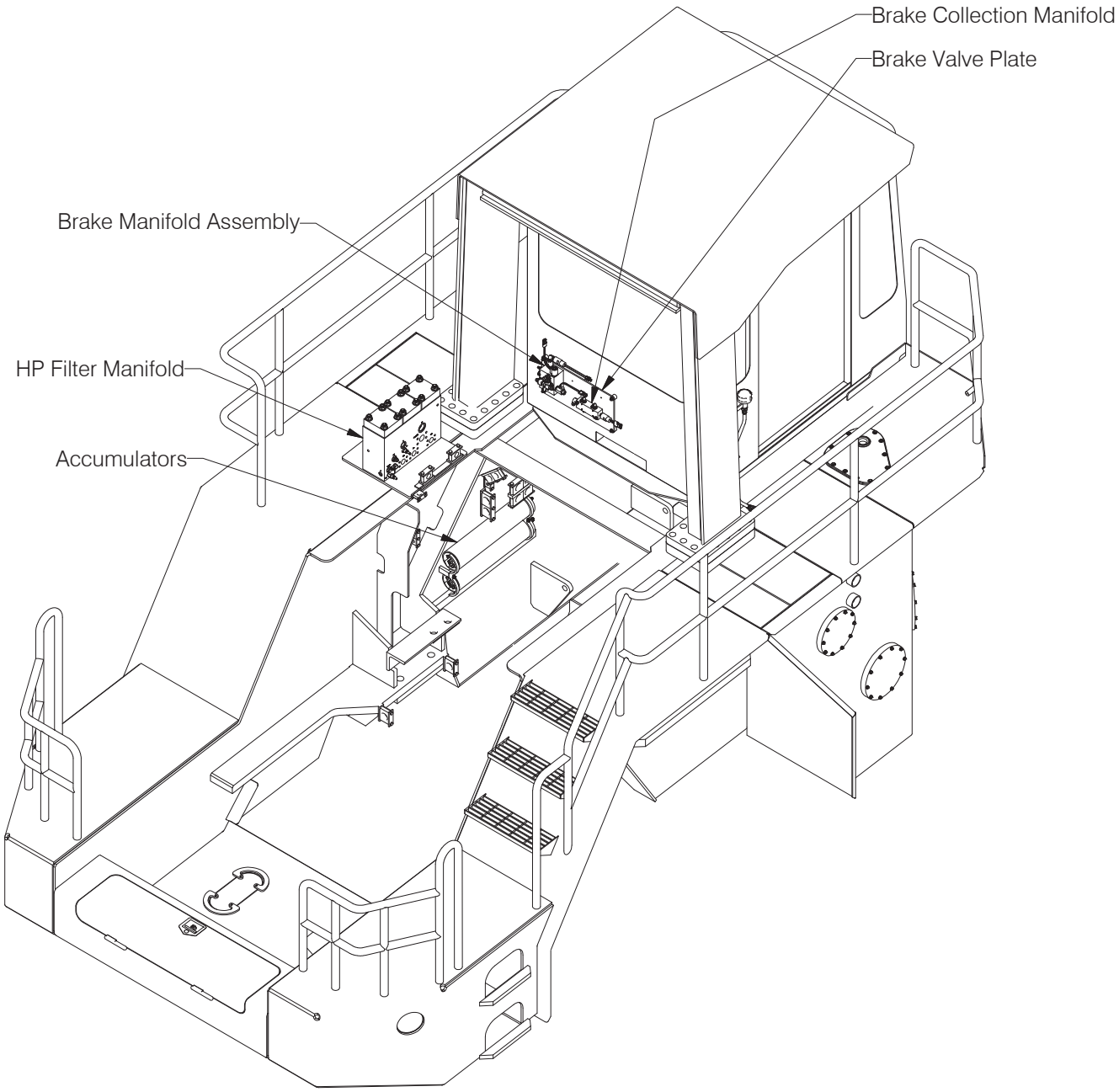

Figure 2 - Back of Cab and Inside of Chassis Shown

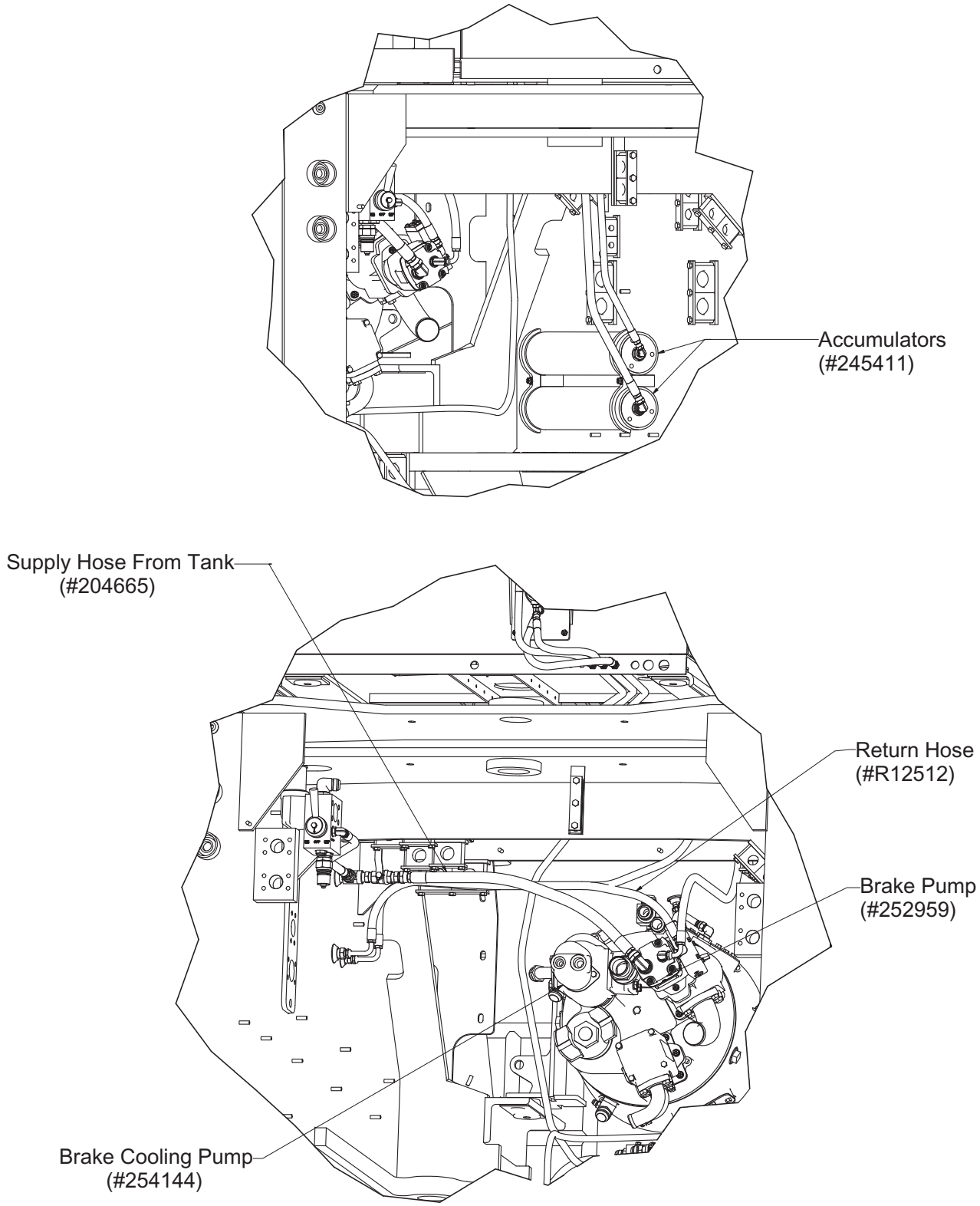

Figure 3 - System Hose Locations

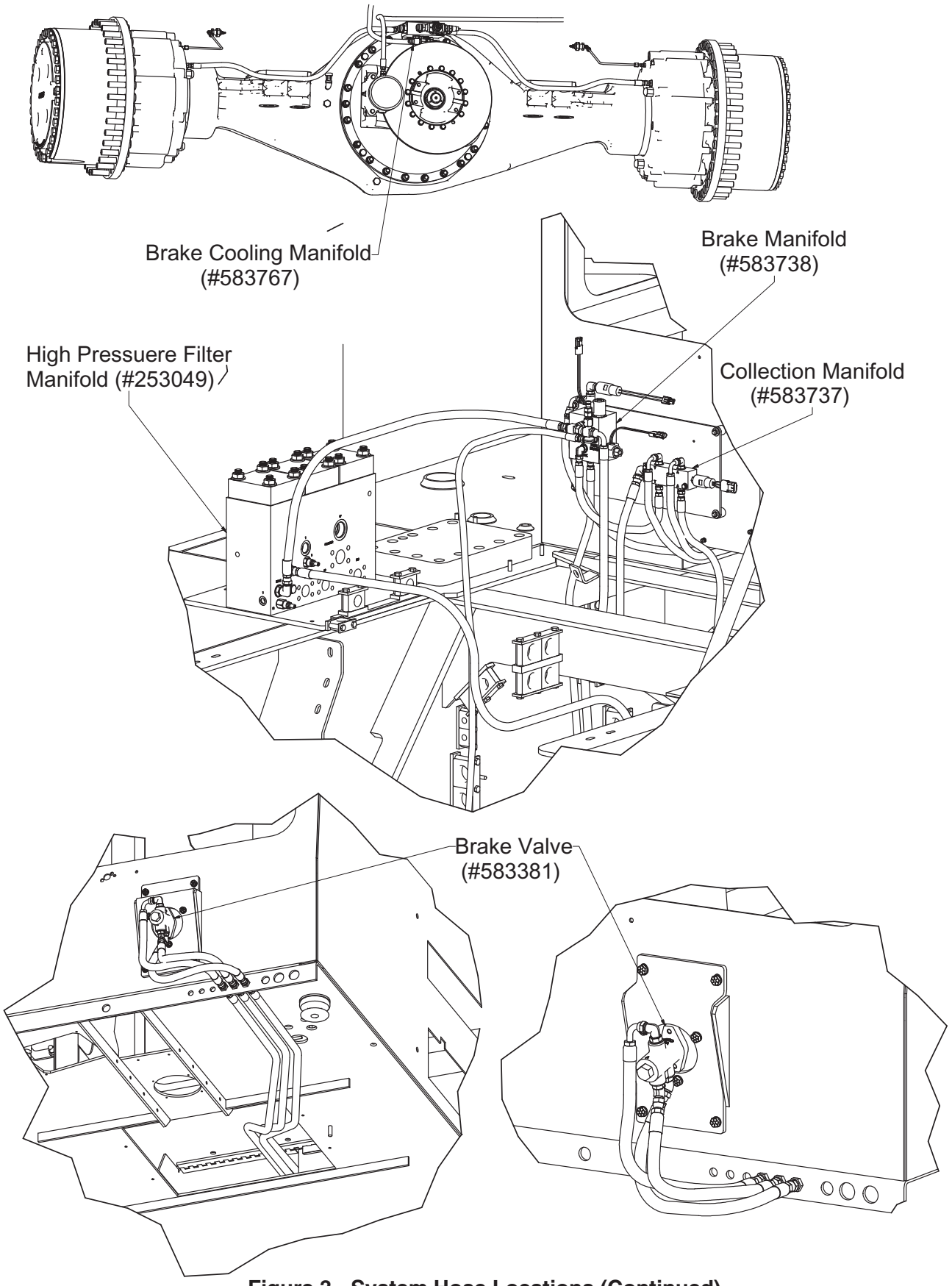

Figure 3 - System Hose Locations (Continued)