

Brake Valve Experience

Brake Valves are recognized by most valve manufacturers and users as being inherently unstable, often requiring field “tuning” and even system modifications in order to provide suitable operating characteristics. This “trial and error” approach is extremely undesirable and can be costly. **Our customer should put a very high emphasis on working with a Brake Valve manufacturer that can demonstrate considerable experience and success in the application of Brake Valves to Hoists.**

Load Conditions

This hoist application requires that a load be lowered smoothly through a full spectrum of speeds and loads. The winch must operate smoothly from very slow “creep” speed to full speed and with “no load” to “full load”. Therefore, the Brake Valve must be stable from very low to full system flow, and with low to full pressure.

Mounting

Direct mounting to the hoisting (raising) pressure port of the hydraulic motor is important to eliminate the risk of a line failure.

Pressure Rating

The selected Brake Valve must have a pressure rating suitable for the system pressures expected.

Flow Rate

The selected Brake Valve must have a flow rating suitable for the system maximum flow.

Customer systems will vary considerably depending on the hoist performance required for a given application.

Check Valve Bypass

The selected Brake Valve must have a full flow check valve bypass so that during hoisting (raising the load) operations the oil passes freely through the check valve to the hoisting pressure port of the motor. Low pressure drop through the check valve section is important to reduce overall pressure drop in the system.

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LANTEC	<i>Technical Bulletin</i>	30050
Selecting a Brake Valve		Page 3 of 3

Brake Valve Opening Pressure

The Brake Valve works in conjunction with the Hoist Friction Brake. The Friction Brake is released by hydraulic pressure. The hydraulic pressure is developed when the pump supplies oil to the reversing pressure port of the motor. Since the Friction Brake is applied, the motor will not rotate. The pressure increases until the Friction Brake is fully released, at which time the Brake Valve will hold the load. The pressure will continue to increase until the Brake Valve opens and smoothly lowers the load at a speed proportional to the supply of oil.

When the operator wants to stop the load he moves the main control valve to neutral, reducing and stopping the supply of oil to the motor. The pressure thus decreases, causing the Brake Valve to close. The Friction Brake then sets by spring force.

The pressure required to fully release the Friction Brake is 700 psi. Therefore, the Brake Valve must open at a 150-200 psi higher pressure (850-900 psi).

Related Documents

LANTEC recommends understanding the contents of these related documents, available from LANTEC upon request:

Technical Bulletin	30040	Customer Supply of Hydraulic Motor and Brake Valve
Sales Bulletin	50010	Personnel Handling Statement