RED WINCHES
the ultimate high performance winch

Over Centre Valve for Hydraulic Winches
What it does and how it works:

USE AND OPERATION

These valves are used to control the motors movement and block / restrict in one direction in order to enable the following functions:

Under control descent of a vehicle down a hill: The vehicles weight doesn't carry it away as the valve prevents any cavitation's of the actuator. Limited maximum pressure in case of shocks created by loads, over loads or sudden manoeuvring (load control with open centre distributor)

In basic terms the over-centre valves job is to slow the oil down in the hydraulic hoses / line when winching out. If the situation develops it can block the line if the drum tries to go quicker than the motor.

Winching IN

When winching in the oil is free to flow through the over-centre block (see attached diagram) from V2 to C2 and onto the winch motor. The oil then returns back through the over-centre valve from C1 to V1.

Winching OUT

When winching out the opposite route is taken. Oil passes from V1 to C1 and through the motor. On its return from the motor is passes from C2 to V2. The big difference is on passing from C2 to V2 the route is now blocked by a no-return valve. This forces the oil through a flow regulating valve. This flow regulating valve is pressure activated. The more it senses pressure in the line the more it restricts or closes the line.

As an example if your vehicle is being lowered down the hill and the hydraulic motor is being operated to winch out the oil flows in the line and returns to tank. When you stop winching the motor also stops. This now creates pressure in the return line as the weight of the vehicle is trying to turn the drum which is trying to turn the motor. Effectively the motor turns into a pump in this situation.

Setting

The over-centre valves come with an adjustable screw. It is important that this screw is wound in or out to suit the weight of the vehicle. So when it is being lowered down the hill the weight of the vehicle is enough to produce enough pressure in the line to close the flow regulator and therefore stop the winch.

In technical terms if you can measure it the valve setting must be at least 1,3 times more than load pressure in order to enable the valve to close even when undergone to the maximum load pressure