D633/D634 DIRECT DRIVE SERVOVALVES

The D633 and D634 Series are Direct Drive Valves (DDV) with electric closed loop spool position control. These valves are throttle valves for 3-, 4-, and 2x2 way applications. They are suitable for electrohydraulic position, velocity, pressure and force control systems, including those with high dynamic response requirements.

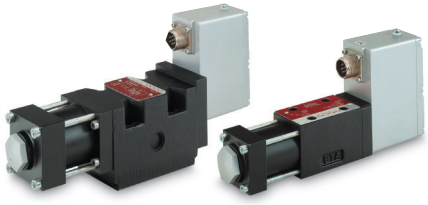
The valve model numbers listed in the chart on the back were specifically designed to withstand the harsh environment, vibration, and shock loads found in wood/lumber processing plants.

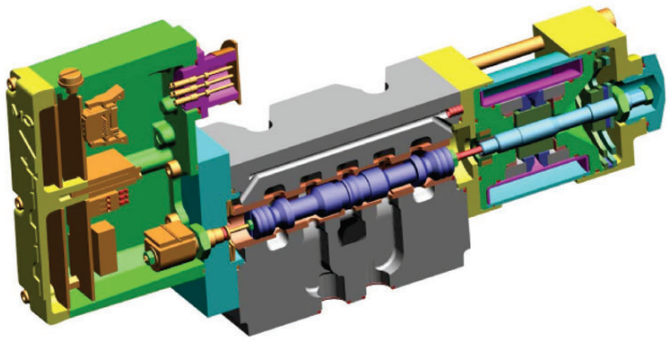
The spool drive device is a permanent magnet linear force motor that can actively stroke the spool from its spring centered position in both directions. This is an advantage when compared to proportional solenoids with one force direction only. The closed loop spool position electronics and pulse width modulated (PWM) drive electronics are integrated into the valve and require a 24VDC power supply.

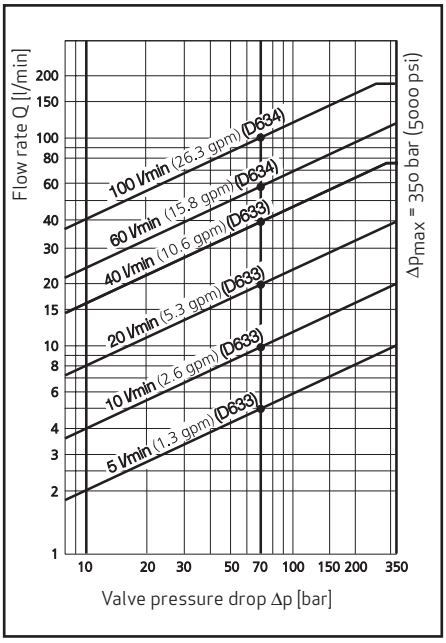
Benefits for the Wood Processing Industry

- Moog's Direct Drive Valves (DDV) have spool driving forces that are twice those of a servo solenoid valve
- Increased operation at limits (at high pressure drops)
- Directly driven by a permanent magnet linear force motor with high force level
- No pilot oil flow required
- Pressure independent dynamic performance
- Low hysteresis and low threshold
- Low current consumption at and near hydraulic null
- Standardized spool position monitoring signal with low residual ripple
- Electric null adjust
- Can be configured with an offset fail-safe mode; with loss of supply voltage, broken cable or emergency stop, the spool shifts to a predetermined offset flow condition

Proportional solenoid systems require two solenoids with more cabling for the same function. Another solution uses a single solenoid, working against a spring. In case of current loss in the solenoid, the spring drives the spool to the end position by passing through a fully open position. This can lead to uncontrolled load movements.





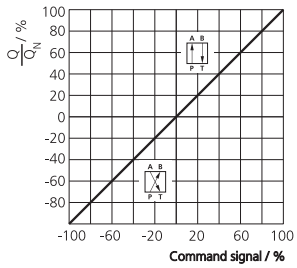


Operation of the Direct Drive Valves

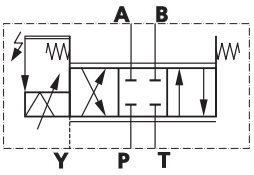
The position control loop for the spool with position transducer and linear force motor is closed by the integrated electronics. An electric signal corresponding to the desired spool position is applied to the integrated electronics and produces a pulse width modulated (PWM) current to drive the linear force motor. An oscillator excites the spool position transducer (LVDT) producing an electric signal proportional to spool position.

The demodulated spool position signal is compared with the command signal and the resulting spool position error causes current in the force motor coil until the spool has moved to its commanded position, and the spool position error is reduced to zero. The resulting spool position is thus proportional to the command signal.

Flow Signal Characteristic Curve



Direct Drive Valve Hydraulic Symbol



Technical Data Direct Drive Valves

Model Number	D633-303B	D633-317B	D633-308B	D633Z570B	D634Z395C	D634Z549A	D634-1019	D634-1003	D634Z1044
Type Code	R02KO1M0NSM2	R04KO1M0NSM2	R08KO1M0NSM2	R16KO1M0NSM2	R24KO2M0NSM2	R40KO2M0NSM2	P24KA6M0VSM2	P40KA6M0VSM2	P60KA6M0VSM2
Notes				Vibration resistant internal connector	Vibration resistant internal connector	Vibration resistant internal connector			Vibration resistant internal connector
Flow (gpm @1000 psi total drop)	1	2	5	10	16	26	16	26	42
Flow (gpm @ 150 psi total drop)	0.5	1	2	4	6	10	6	10	16
Max Supply Pressure (on main stage)	5000	5000	5000	5000	5000	5000	5000	5000	5000
Null Cut	Servo 0 to 1.5% overlap	Servo 0 to 1.5% overlap	Servo 0 to 1.5% overlap	Servo 0 to 1.5% overlap	Servo 0 to 1.5% overlap	Servo 0 to 1.5% overlap	Proportional 0 to 3% overlap	Proportional 0 to 3% overlap	Proportional 0 to 3% overlap
Fail-Safe	Spool in Mid-Position	Spool in Mid-Position	Spool in Mid-Position	Spool in Mid-Position	Spool in Mid-Position	Spool in Mid-Position	Spool in Mid-Position	Spool in Mid-Position	Spool in Mid-Position
Seal Type	Buna	Buna	Buna	Buna	Buna	Buna	Fluorocarbon	Fluorocarbon	Fluorocarbon
Elec Conn	7-Pin	7-Pin	7-Pin	7-Pin	7-Pin	7-Pin	7-Pin	7-Pin	7-Pin
Input Command	+/-10VDC	+/-10VDC	+/-10VDC	+/-10VDC	+/-10VDC	+/-10VDC	+/-10VDC	+/-10VDC	+/-10VDC
Power Supply	+24VDC	+24VDC	+24VDC	+24VDC	+24VDC	+24VDC	+24VDC	+24VDC	+24VDC

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