

MOOG

Moog Solutions for the Wood Products Industry



CHALLENGES

for wood processing

Manufacturers and processors face greater challenges than ever in managing saw and veneer mill operations, with constant pressures for better, faster, and higher performance output. Customers for finished products are demanding ever higher quality and timely delivery at an affordable price.

- Increased Production: How to obtain faster and more accurate positioning systems to maximize yield of high-grade lumber, while pushing production rates to new levels?
- Increase Log Yield: How to increase the productivity of machinery and improve profitability?
- Reduce Downtime: How to keep running even in rigorous environmental conditions?
- Quality: How to achieve accurate positioning throughout the sawmill to provide high quality finished products for customers?



MOOG SOLUTIONS

Moog is ready to help manufacturers and processors overcome problems and increase performance. As a leader in designing, manufacturing, and servicing industrial hydraulic valves, Moog has been an important presence in the wood industry for over 40 years. We have taken the time to understand your specific needs and to offer you the right products to meet those needs.

Moog's products make sure that the log is in the right place at the right time, enabling customers to make the cuts that count. Our Servovalves and Servo-Proportional Valves help increase machine speed and accuracy, while keeping machines running even in the most difficult conditions. We can help maximize positioning velocities, minimize set times, and eliminate overshoot, while offering superior positioning control. Known for legendary quality and reliability, Moog valve products are backed by an experienced team of applications engineers ready to help our customers select the right product for their equipment.

We have developed products that take into consideration the rigorous needs of the wood products industry. Our newest product, the High Flow Direct Drive Servo-Proportional Valve, can provide 40 gpm flow rates for wood processing applications where greater speed is required. This valve, called the D634-P, offers an important performance advantage, while providing the benefits of safety, energy savings, and responsiveness that characterize the Moog Direct Drive Valve product line.

Other products offered by Moog to the wood products industry include servomotors and drives, radial piston pumps (RKP), hydraulic and electromechanical actuation, and integrated hydraulic manifold systems.

Moog has the range of products and depth of experience in closed loop systems to deliver proven solutions to wood processing applications. Moog is known for its ability to provide electrohydraulic and electromechanical products and systems that offer real advantages to our wood processing customers.



APPLICATIONS

for the wood processing industry



- Carriages
- Optimizers
- Band Saws
- Veneer Lathes
- Veneer Lathe Chargers
- Saw Sets
- Curve Saws
- Chippers
- Chipping Heads
- Steppers
- Canters
- Edgers
- Slashers
- Planers

MOOG

GET CONTROL

with our hydraulic valve product line

Moog offers an extensive range of servo-grade proportional control products designed to meet the industry's positioning needs, with both direct drive and two-stage valves. Moog's D680 series Servo-Proportional Valves are known for high flow characteristics and advanced safety characteristics. The faster step and frequency response of the D681 and D682 valves, combined with a dynamic performance nearly independent of system pressure, make these a proven choice for wood product applications. Products such as ServoJet® and Direct Drive Servo-Proportional Valves (DDV) are designed with higher flow capabilities, larger internal clearances, higher frequency responses, and higher spool driving forces. Our Direct Drive Valve products come in two sizes—D03 and D05. Our two-stage valve products are available in five different sizes and two pilot-stage options—mini DDV and ServoJet®. The Moog range of products has proven experience in the wood products industry.



D633 DDV



D634 DDV



D661 ServoJet®



D662 ServoJet®



D681 Series



D682 Series

Our new High Flow Direct Drive Valve (D634-P) provides up to 40 gpm and is ideal for wood processing applications where higher speeds are needed. Available in 6, 10, and 15 gpm flow versions at $\Delta p = 5$ bar [75 psi] per land, this product offers high flow with superior control at higher pressure drops, low hysteresis, high response sensitivity, and dynamic performance nearly independent of system pressure. At high pressure drops, this valve holds its maximum flow area nearly constant due to the high spool driving forces, optimized flow force compensated spool design, and the bi-directional working principle of the linear force motor. This results in a higher operational limit and better hydraulic performance, compared to conventional valves with proportional solenoids.

Valve Series	Description	Flow gpm*	Frequency Response**
D633	3, 4, 2x2 way Direct Drive Valve (size 03)	1 to 10	70 Hz
D634	3, 4, 2x2 way Direct Drive Valve (size 05)	10 to 26	60 Hz
D634-P	3, 4, 2x2 way Direct Drive Valve (size 05)	16 to 40	60 Hz
D661/D681	3, 4, 2x2 way ServoJet® or Mini-DDV pilot (size 05)	26 to 56	60/80 Hz
D662/D682	3, 4, 2x2 way ServoJet® or Mini-DDV pilot (size 07)	57 to 170	40/75 Hz
D663/D683/ D664/D684	3, 4, 2x2 way ServoJet® or Mini-DDV pilot (size 08)	171 to 240	45/75/ 38/75 Hz
D665/D685	3, 4, 2x2 way two stage valve with DDV pilot	250 to 390	60/25 Hz

* @ 1,000 psi

** small signal 90° phase lag @ 3,000 psi

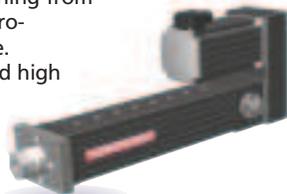
Moog offers a range of hydraulic and electric products to meet the needs of the wood processing industry. From the Moog RKP Pump to our Electro-Mechanical Actuators to servomotors and drives, we have products that are high performance but rugged for the challenging environment of wood processing.



PRODUCTS

robust hydraulic and electric products

As many wood products applications are transitioning from hydraulic to electric, Moog offers a range of Electro-Mechanical Actuator products for this marketplace. The high power, heavy duty version can with-stand high impact loads and provide 80,000 lbs. thrust capability. The medium horsepower, integrated actuator provides market leading performance and one of the smallest package sizes in the industry. These total axis control solutions are effective in wood products applications that need high performance and the benefits of energy efficiency and modular flexibility. The low maintenance costs and ease of installation of Moog's Electro-Mechanical Actuators save on the customer's total operation costs over the life of the machine.



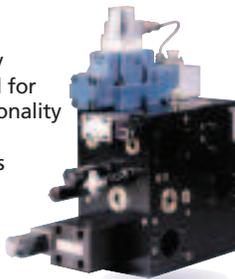
Electro-Mechanical Actuators

Moog's electric products, Electro-Mechanical Actuators, and servomotors and drives, are hard at work in many wood products applications that are transitioning from hydraulic to electric. Our large frame motors and variable programmable servodrives offer high performance and reliability for positioning systems in many mill applications, and are often used for multiple axes in chippers and planers.

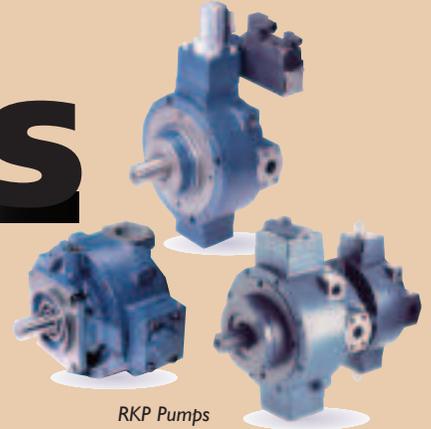


Servomotors and Drives

Moog's integrated hydraulic manifold systems are fully integrated, self-contained systems, which are designed for each customer application. The circuit logic and functionality can be engineered to meet your exact performance, safety and mounting requirements. Integrated Systems offer many advantages including reduced size, weight and cost and are a clean, tested, and reliable turnkey solution for wood processing applications.



Integrated Hydraulic Manifold System



RKP Pumps

Pump Size (cc)	Rated Flow		Continuous Pressure	
	1200 rpm (gpm)	1800 rpm (gpm)	Standard (psi)	High Pres. (psi)
19	6.0	9.0	4,000	5,000
32	10.1	15.2	4,000	5,000
45	14.3	21.4	4,000	-
63	20.0	30.0	4,000	5,000
80	25.4	38.0	4,000	5,000
100	31.7	47.6	4,000	-
140	44.4	66.6	4,000	-

With a unique and robust design, the RKP pump is a proven product, which has been serving a wide range of industrial applications for nearly three decades. Long service life and reliability make the RKP pump ideal for the special requirements of modern saw and veneer mill equipment. Resistance to contamination, compatibility with special fluids,* low leakage, and compact design ensure that it will keep running where and when you need it.

**bio degradable, HFC etc. after consultation with our RKP specialists*

MOOG

SOLUTIONS

products and systems

How do you reduce set times by increasing positioning velocity?

Flow availability is the key. Our industry leading two-stage valves offer you improved flow characteristics. Our D07 and D08 products give you greater flow availability than anything the competition can offer so your logs are in the right place, exactly when they are supposed to be.

How do you achieve more accurate positioning and consistency?

Valve dynamics, or frequency response, impacts your ability to create maximum rates of deceleration with limited overshoot and no oscillations. Moog has the unique ability to provide you with a solution that ensures positional accuracy. Our ServoJet® and Direct Drive Valve models have frequency response rates that are almost 30% higher than our closest competitor. Our Direct Drive Valve's actuation device is very similar to the solenoids used in servo-solenoid valves, but with inherently higher performance. Plus, the ServoJet® pilots in our D661, D662 and D663 series have natural frequencies of 500 Hz—considerably higher than typical servo-solenoid pilots.

How can you minimize downtime for your operations?

When a valve becomes contaminated, one of two things happens and neither one is good for business. Either the spool begins to stick or a pilot stage filter becomes plugged. Whichever it is your valve becomes sluggish or fails altogether. From there, things only get worse. At Moog, we created our Direct Drive Valve and ServoJet® products to be tough enough to resist contamination. We found that in single-stage applications, modern servo-solenoid valves have one serious drawback—low spool driving forces. Without sufficient spool driving force, you simply can not cut through the dirt. So we devised our Direct Drive Valve line with a high-force actuation device. Our Direct Drive Valve offers twice the spool driving force of a servo-solenoid valve. For two-stage, or high-flow applications, we created a ServoJet® pilot stage for our D660 series. The ServoJet's smallest clearance is 300 to 400 μm . That is nearly 50 times greater than the pilot stage spool and bushing fit in two-stage servo-solenoid valves.



Another way Moog helps those customers with a large number of valves on premises to prevent downtime and reduce maintenance costs, is through valve monitoring. Moog's portable valve testers provide a cost-effective, quick, and easy means of evaluating valves in the field and differentiating between hydraulic and electronic problems. There are five models to choose from, each with different levels of capability and flexibility to meet your specific requirements.

We know that our valves are not just a part, but the heart of your system. Moog takes the same care providing its technical support and repair services that it uses when manufacturing valves for the most precise applications. Application and design engineers provide technical support to ensure that you have selected the right valve to meet your needs, and that installation, operation, and maintenance of products is trouble-free for users. Field service from experienced technicians is also available for customers that need convenient on-site assistance. Our distribution network acts as your local resource for technical assistance, training, and order processing.



TECHNICAL

support



Moog's valves are known for exceptionally long service life and when you need a repair, you can trust us to renew your performance, while minimizing downtime. Our repair seal is your guarantee of a Moog Authentic Repair and renewal of your 24-month manufacturers warranty protection. Unreliable repairs and reinstallation can mean more downtime and costs that you can not afford on your critical operations.



CONTACT

information

For more information on Moog's products and capabilities, contact your local distributor or our staff of service professionals at either of our technical hotlines: (716) 687-4950, or (716) 655-3000.

Please visit our website at www.moog.com/industrial.

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