DECOKING CONTROL VALVES

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ELWOOD® FLUID POWER

ISO 9001:2000 CERTIFIED COMPANY

Long Legacy of Service to the Refining Industry

In 1803, less than a decade after Joseph Bramah ushered in the era of modern hydraulics by patenting the first hydrostatic press, the R.D. Wood & Griffin Pipe Companies were established, manufacturing water valves and pipes. In 1851 the Charles Elmes Engineering Works was established and later became the Elmes Press & Valve Company to manufacture water valves, systems, and presses. These two companies existed independently until the early 1960's when they were purchased by the Nordberg Heavy Machinery Group of Milwaukee. In 1972 Rex Chainbelt bought the Nordberg Heavy Machinery Group changing the name of the company to Rexnord. In 1983 Elwood purchased the Hydraulic Products division of Rexnord and formed the Fluid Power Group of Elwood.

The R.D. Wood and Nordberg decoking product lines that came with this purchase from Rexnord has a long history of service to the Refining Industry that dates back to 1938 with the sale of the first decoking unit to Shell Petroleum Corporation in Wood River, Illinois. Since that time the list has grown to include a worldwide base of customers.

COMPANIES

Ameriven
Asiatic Petroleum
Atlantic Richfield
Bongaigaon
Canadian Natural Resources Ltd.
Chevron Oil
Chevron Texaco
Citgo
Cities Service
Clark Oil and Refining
Coastal States Petrochemical
Conoco Phillips
Continental Oil
Crown Central Petroleum
Exxon
Frontier Refining
Gelsenberg Benzin, AG
General Petroleum
Gulf Oil
Hyundai Oilbank
Imperial Oil
Koch Refining
Magnolia Petroleum
Marathon Oil
Mitsubishi Kasei
Mobil Oil
Motiva Enterprises
Numaligarh
Ohio Oil Company
Pasadena Refining
Pertamina
Petrobras
Pure Oil
Shell Compania
Shell Petroleum
Sinclair Refining
Skelly Oil
Socony Vacuum Oil
Standard Oil
Suncor
Union Oil
Union Pacific
Valero

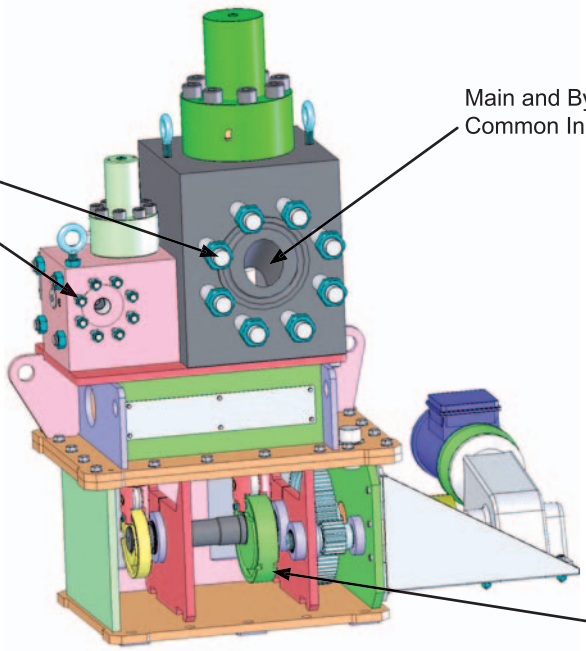
COUNTRIES

Argentina
Brazil
Canada
Chile
Germany
India
Indonesia
Japan
Russia
South Korea
Spain
United States
Venezuela

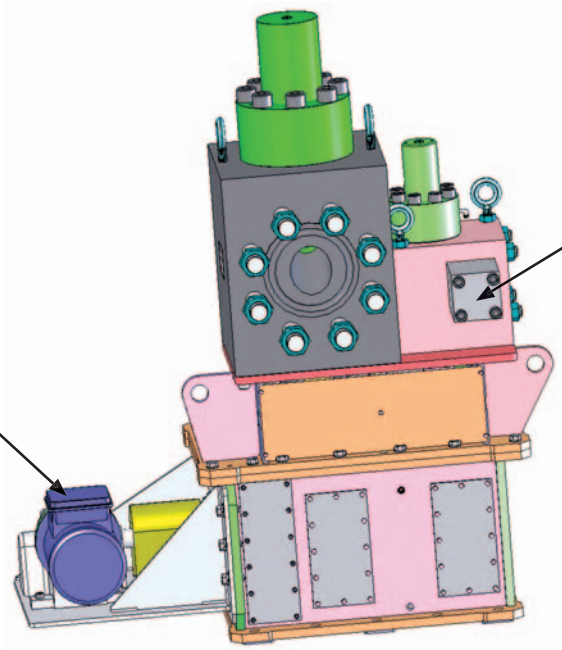
Innovative Product Enhancements

The original R.D. Wood and later Nordberg Decoking Valve was specifically designed and built to meet the demanding requirements of the refining industry. Although the product line has a long reliable history of service to this industry, enhancements have been made based on inputs received from our customers.

Front View



Rear View



Other Innovations:

- Safety Interlock
- Improved Spindle Design with Hard Seat

Spindle Design

At the heart of the decoking valve is the balanced spindle technology used to control the flow of fluid. This design has a proven track record with over 100 worldwide installations going back to the first decoking valve shipped in 1938. Although enhancements have been made in this design many of these products remain in service today.

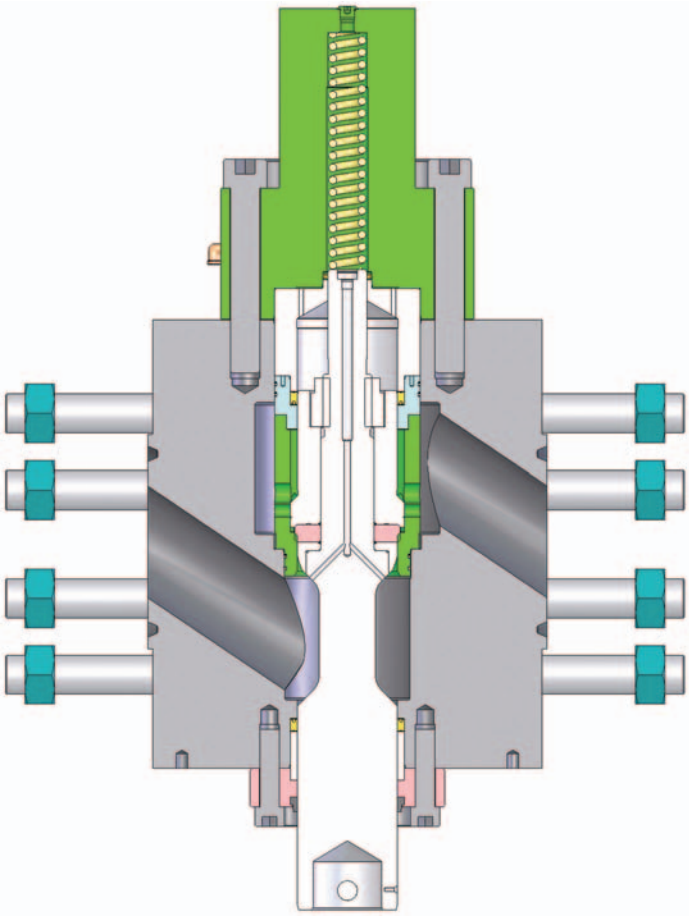
Over the years we have responded to the needs of our customers to increase the pressure and flow requirements of the decoking valve. These requirements have been the catalyst for several innovations and enhancements to the basic spindle design.

V-Notch Technology

Our V-Notch Technology allows precise control of fluid flow that eliminates harmful shock or water hammer to the system. This control is achieved by the use of specially designed orifices machined into the annulus area located above the seat and precise contours on the spindle. When the spindle is first opened, fluid flow passes through a series of small control orifices. As the spindle continues to open, the area of flow expands, providing precise metering of the fluid.

Shield Seat Design

The contour of the spindle above and below the composite disc is used to meter fluid flow controlling the effects of high fluid velocities. When the spindle is opening, the gap between the seat and the disc accelerates faster than the gap between the spindle and bores, minimizing the effects of high velocity fluids acting on the seat and disc. This innovation provides superior valve life.

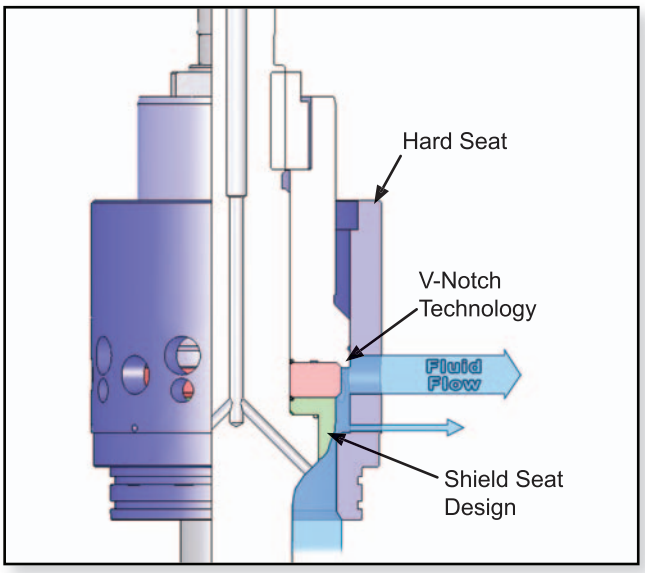


Hard Seating Material

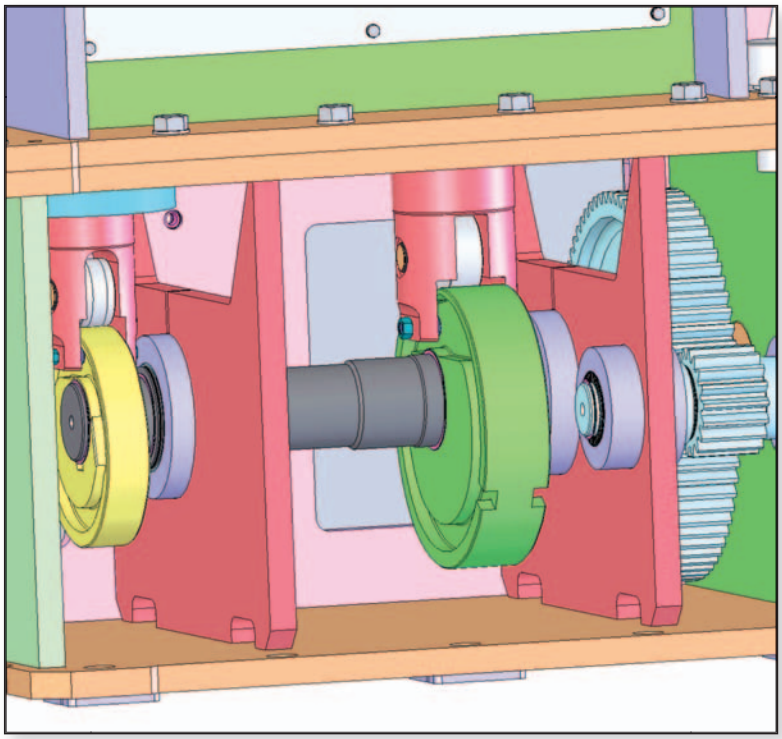
Higher pressure decoking units have hard seating materials to insure drop tight sealing with long life.

Maintenance

Spindle design consists of 5 components that can be easily serviced without moving valve unit or disconnecting piping.



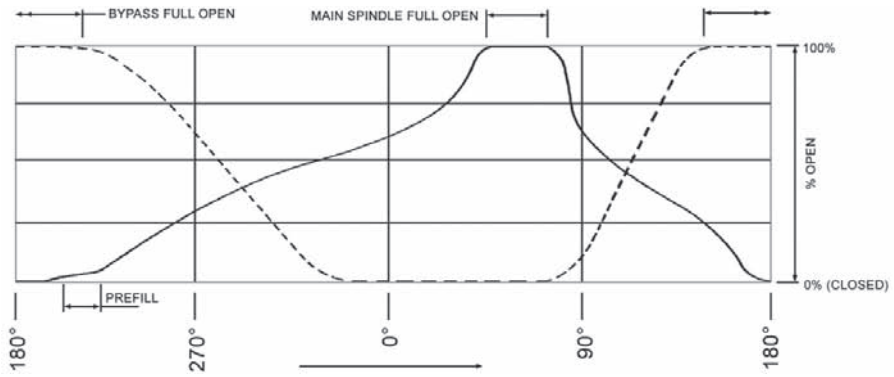
Precise Valve Control

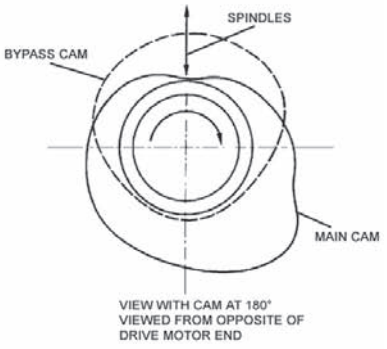


The valve spindles are mechanically linked to the CAMs providing precise, accurate position control of both the main and bypass valves in the forward and reverse directions. Other decoking valves only estimate the valve position. Other advantages of directly linking the CAM and spindle include:

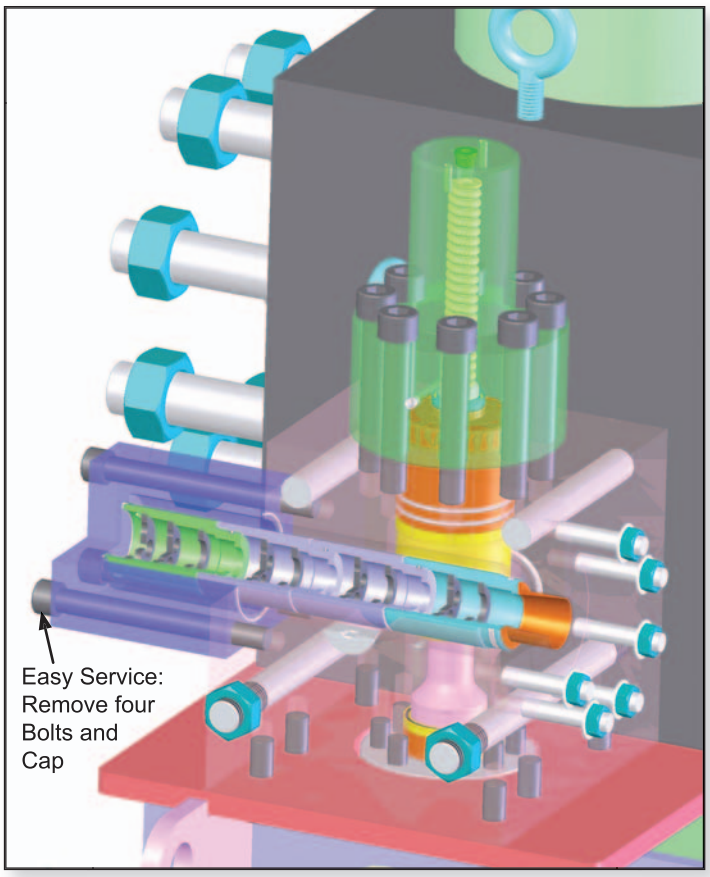
- Elimination of valve chatter during operation
- No external pilot valves required
- No external air supply required to operate air cylinders
- Positive pre-fill positioning
- Direct coupling to motor and gearbox provides capability to reverse valve direction from pre-fill back to bypass.

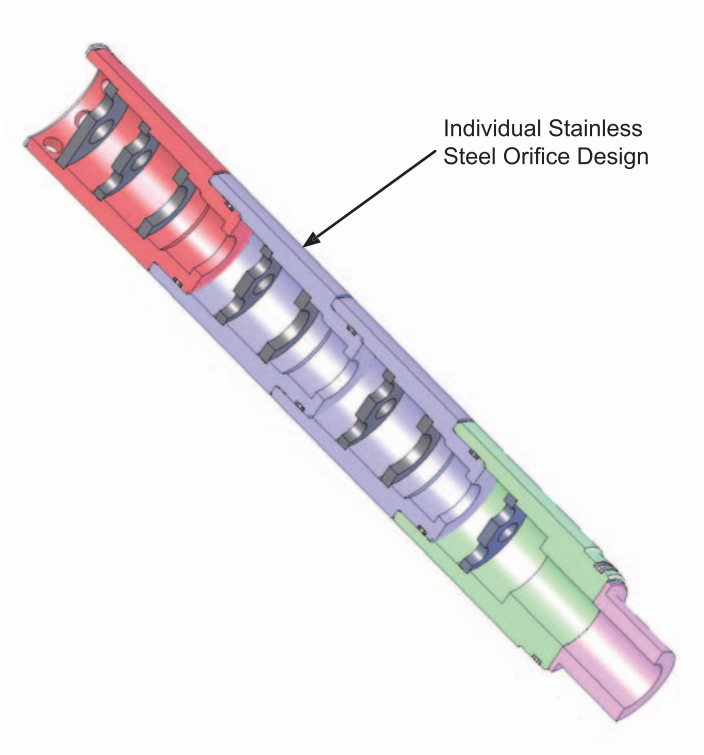
Typical Decoking Valve Cycle





Integrated Orifice Design





The integrated orifice design provides a compact and easy to maintain reliable pressure reducing element in the decoking valve product. The single sleeved design provides superior performance over the stacked plate designs by eliminating multiple sealing areas. Advantages of this orifice design include:

- Easily serviced by removing 4 bolts and cap located on the bypass valve
- Non-clogging design
- High reliability
- With optional differential pressure transducer wear on orifice pack can be monitored to allow servicing during a planned maintenance.

Technical Data

	HIGH PRESSURE VALVE	LOW PRESSURE VALVE
Maximum Operating Pressure	6000 PSI (414 bar)	3000 PSI (207 bar)
Maximum Water Temperature	75º C	55º C
Main Sealing Material	Stainless Steel	Soft
Bypass Sealing Material	Soft	Soft
Internal Material (High Pressure Area)	Stainless Steel	Stainless Steel
Body Material	Forged (Std)*	Forged (Std)*
Encoder	1024 with explosion proof enclosure	
Main Flange	2500 lb. Ring Type Joint	
Bypass Flange	300 lb. Raised Face	
Largest Diameter Size Particulate to Pass	5mm	
Max Flow Rate: 8" x 4" 6" x 3" 4" x 2"	3400 GPM (12,870 LPM) 2000 GPM (7571 LPM) 800 GPM (3028 LPM)	

*Consult Factory for other Material

Ordering Data - Decoking Control Valve

PRESSURE RATING	
3K	3000 PSI (207 Bar)
6K	6000 PSI (414 Bar)

VALVE SIZE		
	Main	Bypass
4M2B	4"	2"
6M3B	6"	3"
8M4B	8"	4"

Consult Factory for other Sizes

	BODY MATERIAL	
	LC	Low Carbon Steel
•	F	Forged
	SS	Stainless Steel

MOTOR SPECIFICATIONS			
	Voltage	Frequency	Certification
•	400	50Hz	ATEX
	575	60Hz	CSA
	480	60Hz	UL

Code No. Example: **DC 6K - 6M3B - F - 400 - 50 - ATEX**

• Denotes standard features.

Actual Installation

The installation shown is a 6" x 3" decoking valve at a refinery is South America.

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