



DYNEX
High Pressure Hydraulics

Producing hydraulic products for worldwide use

Who is Dynex/Rivett?



Raymond A. Warell (left) and Raymond M. Warell (right)

Dynex/Rivett is a medium size manufacturing company producing an extensive range of hydraulic components and systems. These products have been sold worldwide for over 40 years.

Products include pumps, hydraulic motors, valves, electro-hydraulic controls, and special components and systems designed for specific customer requirements. *Dynex* engineering and manufacturing strengths are of high importance in the development and production of these products.

Dynex is best known for quality, reliability and durability on difficult applications.

The rapid changes in our world market place demand a constant improvement in products and services. *Dynex* is dedicated to a sustained high investment in people, research and development, manufacturing technology, quality improvement and cost reduction to meet this competitive challenge.



The success of Rivett Lathe and Grinder resulted from the company's philosophy of producing only top-of-the-line products.

Dynex high pressure pumps have been used successfully since the 1940's. Early applications included excavators which operated at 6000 psi (420 bar), a relatively high pressure at the time.

Today's advanced CNC machining centers provide increased flexibility and manufacturing capacity, with computer controls, fast set-ups and quick changeovers.

Ray Warell
Raymond A. Warell
Vice President Sales and Marketing

RM Warell
Raymond M. Warell
President

Company History

Rivett Lathe and Grinder Mfg. Co. was founded in 1884 in Boston, Massachusetts. The company was

a manufacturer of precision machine tools. Later, *Rivett* developed hydraulic valves for use on its own machines and for sale through industrial fluid power distributors.

The *Dynex Company* was founded in 1957 in Milwaukee, Wisconsin, as a division of *Applied Power Inc.* The company developed a line of high pressure pumps, motors and valves primarily for mobile equipment.

In 1966 *Rivett* was acquired by *Applied Power* to offer industry a complete line of hydraulic products for both industrial and mobile applications.

Raymond M. Warell, with 17 years experience with *Vickers*, became Vice President and General Manager of both the *Dynex* and *Rivett* divisions in 1974. Using his knowledge of hydraulics, Mr. Warell reorganized these divisions to position them for profitable growth.

In 1977 *Applied Power* began a restructuring process to focus on their non-hydraulic business. Both *Dynex* and *Rivett* were offered for sale. In response, Mr. Warell proposed purchasing the divisions. His move was successful and the new company was incorporated as *Dynex/Rivett Inc.*

- 1884** - *Rivett Lathe & Grinder Mfg. Co.* is founded in Boston, Massachusetts to manufacture precision tools.
- 1948** - *Rivett* expands by adding industrial hydraulic valves and cylinders to its products.
- 1957** - The *Dynex Company* is founded in Milwaukee, Wisconsin, by *Applied Power Inc.* to develop hydraulic components for mobile applications.
- 1960** - The first high pressure checkball pumps rated for 15 000 psi (1040 bar) are developed for hydraulic presses.
- 1963** - A European sales office and warehouse facility is established in England.
- 1966** - *Rivett* is acquired by *Applied Power Inc.*
- 1973** - The hydraulic industry's first wet-solenoid design directional valves are developed and sold.
- 1974** - Raymond M. Warell becomes Vice President and General Manager.
- 1977** - Mr. Warell purchases the two companies and *Dynex/Rivett Inc.* is incorporated.
- 1980** - The *Wisconsin Governor's New Product Award* is presented to *Dynex/Rivett* for its mobile servovalve steering system.
- 1981** - Growth results in the expansion of the facilities in Pewaukee, Wisconsin, and Ashland, Massachusetts.
- 1985** - President Raymond M. Warell serves as Chairman of the *National Fluid Power Association*.
- 1986** - Pressure compensated checkball pumps are introduced rated for pressures to 8500 psi (590 bar).
- 1991** - *Dynex/Rivett* exhibits at *Hannover Fair* in Germany to support a worldwide distributor network.
- 1995** - 10 000 psi (700 bar) spool valves are introduced to meet increasing requirements for high pressures.
- 1997** - New seated control valves, rated for 10 000 psi (700 bar) are introduced.

Facilities / Products



Dynex headquarters and manufacturing facility is in Pewaukee, Wisconsin, located 20 miles (32 km) west of Milwaukee. Two main highways border the 31 acre (13 hectare) property providing access to the Interstate highway system.



Standard and custom power units are assembled in Ashland, Massachusetts. This facility, 25 miles (40 km) west of Boston, also is a warehouse serving North American distributors.



A sales engineering office and warehouse in Eaton Socon, England, serves Dynex international distributors. The facility is located 50 miles (80 km) north of London, next to the A1 motorway.

Company Organization

Dynex has facilities in Pewaukee, Wisconsin, and Ashland, Massachusetts, and Eaton Socon in the United Kingdom.

The upper management team consists of six individuals. Four are in Pewaukee, and one each in Ashland and Eaton Socon. These people report to the president.

In North America, products are sold through 70 distributor locations.

The facility in England was first established in 1963 to distribute *Dynex* products throughout the world — notably the U.K., the Netherlands, Australia and Japan. Today, distributors represent *Dynex* in more than 15 international locations. The U.K. facility provides prompt product delivery and technical support to Europe, Africa and the Middle East. The U.S.A. facility supports distributors in Asia.

Pewaukee, Wisconsin, U.S.A.
World Headquarters

| Corporate Finance | Sales and Marketing | Design Engineering | Manufacturing |
|--------------------------------|---|------------------------|----------------------------------|
| Accounting and Data Processing | North American Sales and Service | Research & Development | Production and Inventory Control |
| | International Sales & Service (Except Europe) | Product Design | Manufacturing Engineering |
| | Worldwide Marketing & Advertising | | Machining & Assembly |

Ashland, Massachusetts, U.S.A.
Power Units and Systems

| | |
|-------------------------|---------------------------|
| Systems Sales & Service | Warehouse (North America) |
|-------------------------|---------------------------|

Eaton Socon, Cambridgeshire, U.K.
European Headquarters

| | |
|---------------------------|--------------------|
| Sales & Technical Support | Warehouse (Europe) |
|---------------------------|--------------------|

Products sold to many different markets

A wide range of products sold in many different markets provides a

strong foundation for consistent growth. *Dynex's* consistent profitability has allowed continuing reinvestment in new product development and advanced equipment.

Products range from 15 000 psi (1040 bar) pumps and valves, to electro-hydraulic pumps and proportional actuators, to high-torque vane and piston motors. These products operate under difficult operating conditions including high pressures, elevated temperatures, fluids with low lubricity, long duty cycles and contamination from dirty environments.

Dynex products are used on a wide variety of mobile and industrial machinery. Specialty markets include tunneling, petroleum, heavy lifting, bearing lubrication, test-stands, steel mills and presses. *Dynex* products make machines stronger, faster and more efficient.

R&D / Manufacturing

Research and Development

Design engineers focus on the product strengths of *Dynex*: piston pumps and other high pressure products.

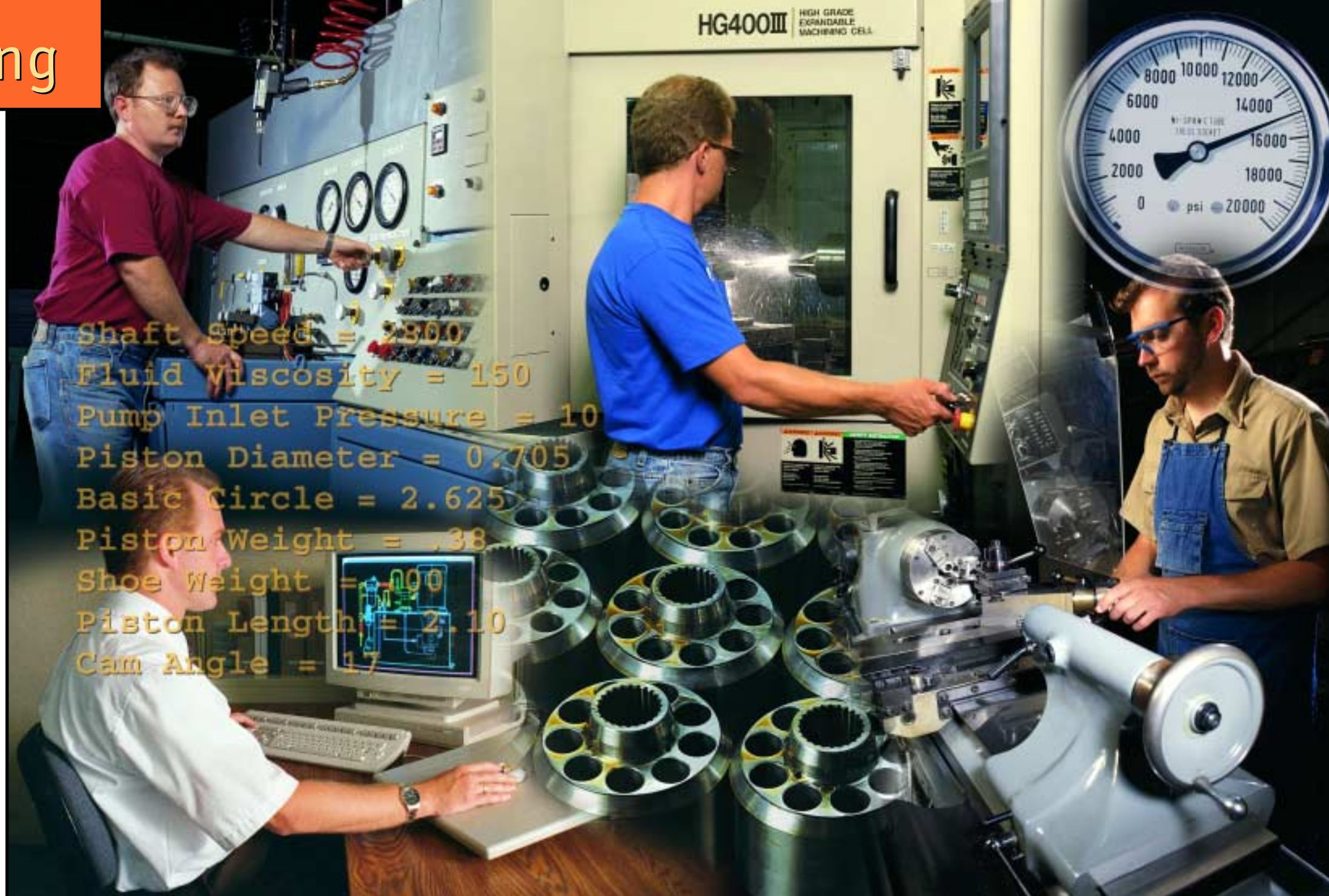
Checkball piston pumps utilize two seated valves in each piston pumping chamber to direct fluid from the inlet side of the pistons to the pump outlet. This positive sealing design makes these pumps ideal for high pressure applications. They have proven to be one of the company's most dependable products, providing customers reliable operation for many years.

This design also allows the outputs from individual pistons to be isolated. One *Split-Flow*® pump can provide independent flows to multiple functions in a circuit simultaneously with separate loads.

New checkball pumps deliver higher flows in a smaller size with increased speed capability. These designs improve the input-power-to-weight ratio of *Dynex* products.

Seated control valves for pressures to 10 000 psi (700 bar) use a ball-on-seat design providing non-silting operation and positive sealing for circuits requiring load holding functions.

Pressure controls use manual and electro-hydraulic controls for high pressure circuit protection to 15 000 psi (1040 bar).



Laboratory technicians use microscopic observation to evaluate parts for research and development and final product design. Stereoscopic zoom microscopes, equipped with video cameras and printers, provide detailed records of part inspections.

Accurate inspection of machined parts is accomplished quickly using three-dimensional Coordinate Measuring Machines (CMM). These precise inspection instruments are located in a temperature and humidity controlled room. Data stored in computers assures consistency in inspector measuring procedures.



Computer Aided Design (CAD), with solid modeling, and Finite Element Analysis (FEA) provide faster product design.

Manufacturing engineers use Computer Aided Manufacturing (CAM) to transfer product designs from computers to CNC machines. Design engineers, manufacturing engineers and machine operators work together to improve machining processes.

Machines in the model shop hold tight tolerances and surface finishes required for high pressure components. Precision lathes can turn parts within .000025 inch (.00064 mm).

Quality Control

Inspection procedures comply with U.S. government standard MIL-I-45208A.

Audits and approval by government inspectors qualify *Dynex* to supply components to the government and its contractors.

All products are tested and checked for compliance with engineering specifications. Dedicated test-stands with programmable controlled cycle-testing reduce testing time and assure a repeatable testing process. These stands use *Dynex* high pressure pumps and valves controlled with electro-hydraulic valves and actuators.



Dynex Product Line

Hydraulic Pumps

Fixed Displacement
Checkball Pumps

Variable Delivery
Checkball Pumps

Pressure Compensated
Checkball Pumps

Split-Flow®
Checkball Pumps

Pressure Compensated
Valveplate Pumps

Load Sensing
Valveplate Pumps

Electro-hydraulic
Valveplate Pumps

On/Off
Valveplate Pumps

Hydraulic Motors

Fixed Displacement
Piston Motors

Dual Displacement
Piston Motors

Low-Speed, High-Torque
Vane Motors

Hydraulic Valves

Balanced Spool
Directional Controls

High Pressure
Spool Valves

High Pressure
Seated Valves

Poppet Style
Check Valves

Balanced Spool
Pressure Controls

Poppet Style
Pressure Controls

High Pressure
Manual Relief Valves

High Pressure Electro-
Hydraulic Relief Valves

Low and High Pressure
Sandwich Valves

Electro-Hydraulic Products

Remote Proportional
Actuators

Proportional
Stack Valves

Hydraulic Systems

Standard
Power Units

Custom Design
Systems

**For more information
visit our web site:
www.dynexhydraulics.com**

USA Headquarters

Dynex/Rivett Inc.
770 Capitol Drive
Pewaukee, WI 53072 U.S.A.
Tel: 262-691-2222
FAX: 262-691-0312
E-mail:
sales@dynexhydraulics.com

Power Units & Systems

Dynex/Rivett Inc.
54 Nickerson Road
Ashland, MA 01721 U.S.A.
Tel: 508-881-5110
FAX: 508-881-6849
E-mail:
ashland@dynexhydraulics.com

European Sales

Dynex/Rivett Inc.
Unit C5 Steel Close, Little End Road,
Eaton Socon, Huntingdon,
Cambs. PE19 8TT United Kingdom
Tel: +44 (0) 1480 213980
FAX: +44 (0) 1480 405662
E-mail: sales@dynexhydraulics.co.uk