Vernay®
Precision Molded Inserted Products

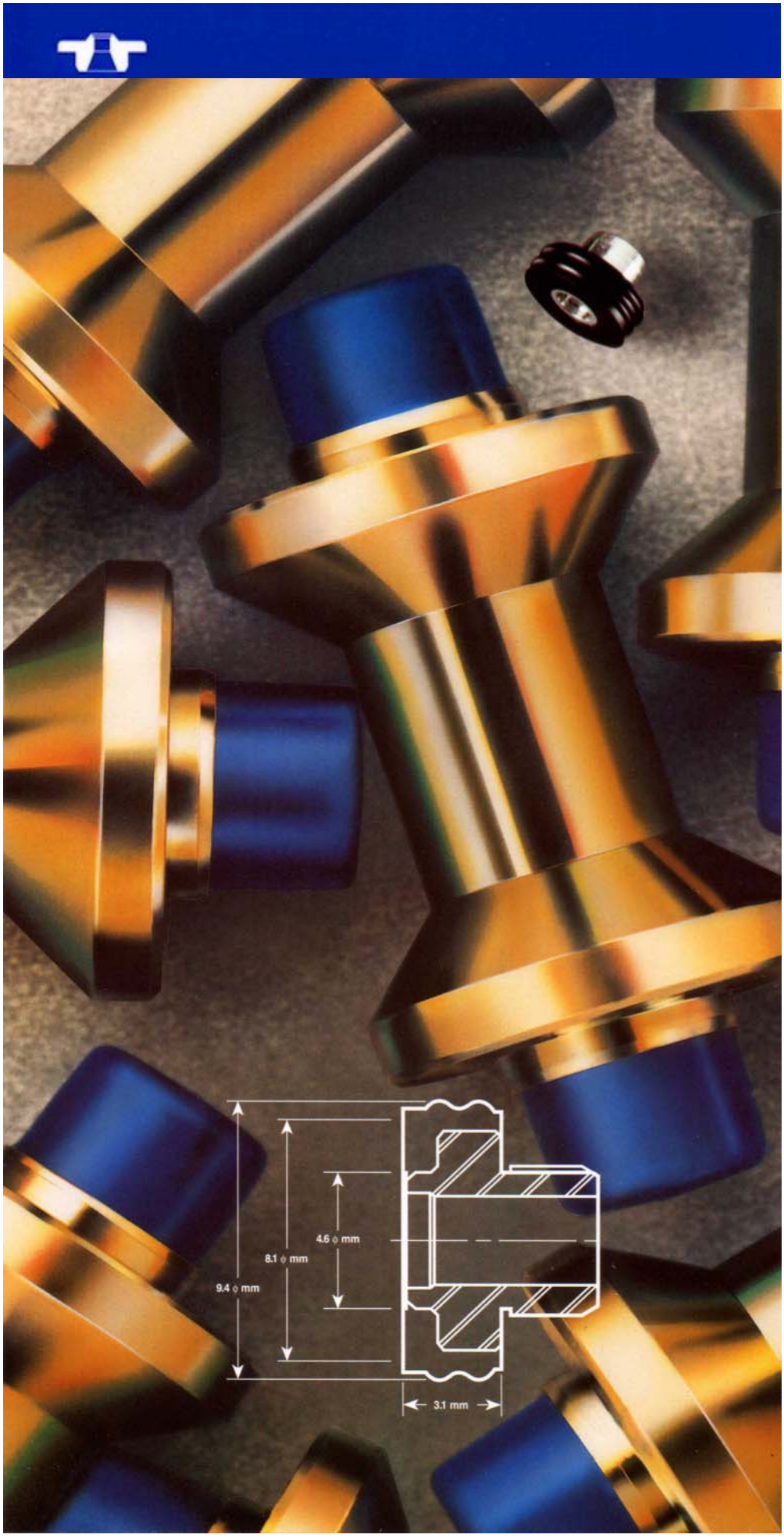
Custom-engineered for superior performance

Vernay specializes in the innovative design and high-volume manufacture of precision elastomeric products. Vernay precision molded inserted products are specifically designed for applications that control fluid flow. They are in use all over the world, delivering superior, uncompromising performance to customers within many industries. Precision molded inserted products include our V-Tip® needle valves, armatures and V-Seats®, as well as Vernay poppets/sleeves, insert-reinforced products, seals and assemblies.

From initial design to finished product, we work closely with you to meet your application's requirements.

VERNAY®

Elastomeric Fluid Controls



your applications + (our designs + materials) = new opportunities

Vernay elastomer-to-insert bonding

Vernay precision molded elastomer-to-insert bonding enhances the functional integrity of your application. Insert bonding ensures cohesive surface-to-surface bonding (chemically and/or mechanically), rigid reinforcement to the molded elastomer and consistent operation. Our resilient elastomer tips reduce noise, resist impact, provide tighter tolerances and facilitate positive sealing even when foreign particles are present. They also prevent abrasion and eliminate the leakage and wear of mating components. Vernay elastomer tips are compatible with fuels.

Elastomer-to-insert bonded products include Vernay V-Tip® needle valves and armatures, V-Seats®, stator seals, plungers, momentum, absorbers, laminated discs, poppets/sleeves, seal plates, filter screens, specialty shapes and bearings.

Similar to our elastomer-to-insert bonded products, Vernay insert-reinforced products provide cohesive surface-to-surface bonding and rigid reinforcement to the molded elastomer. They maintain the shape and alignment of the elastomer while providing a tight seal and are wear resistant.

There are two types of insert-reinforced products:

- Insert encapsulated (the insert is surrounded with an elastomer). Partial insert encapsulation is used for products such as roller rings, poppets and reciprocating seals. Complete insert encapsulation is used for products such as insert diaphragms.
- Elastomer encapsulated (the elastomer is surrounded with an insert). Partial elastomer encapsulation is used for products such as our V-Seat® fuel injector seals.

Vernay inserted assemblies

We work with your engineers to provide the assembly or sub-assembly that best meets your application's requirements. By combining multiple components into one unit, we offer convenient ready-to-use inserted assemblies that are in many cases an economical advantage.

Manufacturing variability is minimized because all components in each sub-assembly are toleranced together.

We can design and assemble retainers to orient the inserted component to function in a variety of applications.

Products include our assembled V-Ball® captured ball armatures, fuel pump check valves and poppet assemblies.

Insert materials

Inserts can be formed through cutting, stamping or molding, with or without a post-surface treatment. Designs and tolerances are logically drawn from the requirements of your application and the manufacturing method to be used.

Inserts for bonded components can be made out of various base materials including brass, low carbon steel, aluminum, stainless steel and Vernalite® engineered plastic. Special materials, platings and coatings that decrease corrosion and/or improve wear resistance are available.

We have extensive experience with non-standard materials used in aggressive media, such as automotive fuel mixtures at temperatures ranging from -20° to 150° C (-4° to 302° F).

For more technical details, please refer to Vernay Technical Information Sheets.

Applications

Automotive: Fuel systems, vapor recovery, comfort control systems, ABS, ATC, suspension systems, pressure regulators, cruise controls, automatic transmissions, emission control systems.

Appliance: Automatic ice makers, automatic washing machines, water softeners, vending machines.

Specialty: Irrigation, metering valves, refrigeration couplings, impact printers, severe environment instruments.

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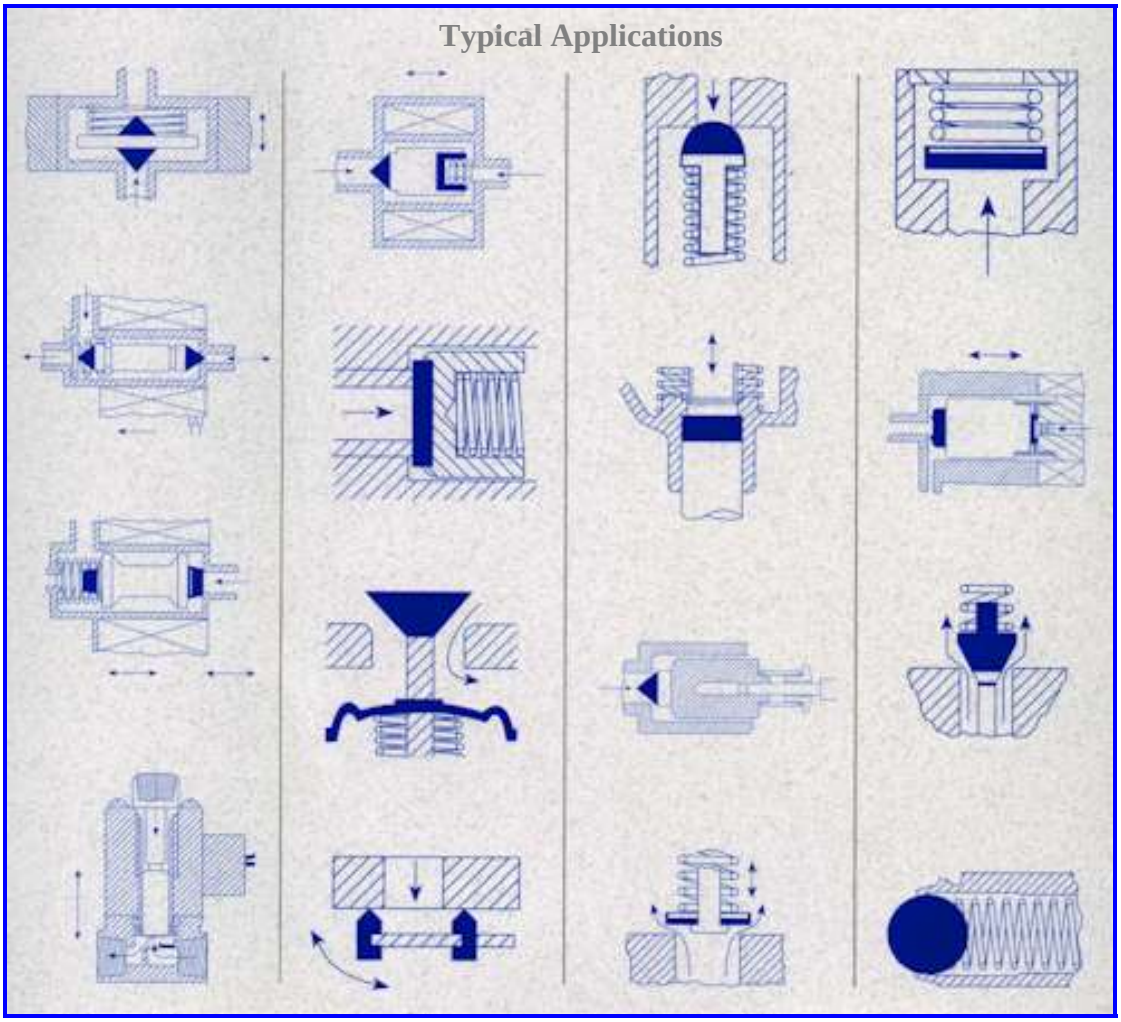
Optimal solutions are most often achieved through successful co-development. Vernay specialists are ready to work with you to provide innovative answers to your most demanding design challenges. Working with Vernay as your design partner can result in lower total cost and higher value.



Compounding capabilities

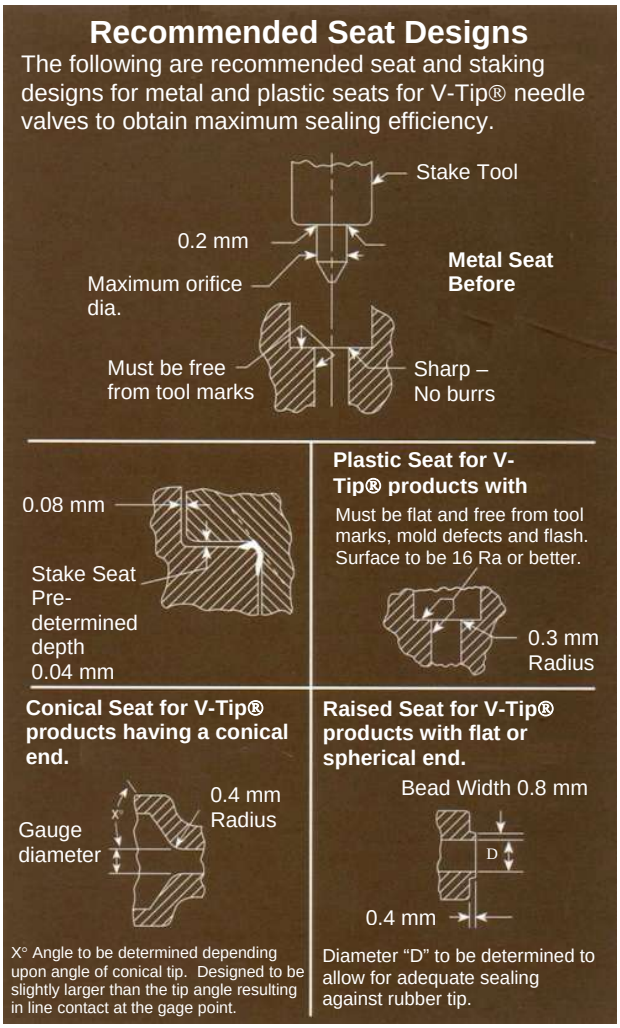
(Not limited to the following polymeric families.)

- Nitrile, NBR
- Fluorosilicone, FVMQ
- Ethylene Propylene, EPDM
- Silicone, VMQ, MQ, PVMQ
- Hydrogenated Nitrile, HNBR
- Butyl, IIR
- Fluorocarbon, FKM
- Polyisoprene, IR, NR
- Epichlorohydrin, CO/ECO
- Chloroprene, CR
- Polyurethane, AU/EU
- Styrene-butadiene, SBR
- Polyacrylate Acrylic, ACM/AEM/ANM

With access to over 23,000 proprietary elastomeric formulations stored in our database for quick retrieval, our engineers and chemists select custom-compound materials suited to your demanding product applications.

Recommended Seat Designs

The following are recommended seat and staking designs for metal and plastic seats for V-Tip® needle valves to obtain maximum sealing efficiency.



Quality commitment

Vernay is committed to the philosophy of continuous improvement in everything we do. Product quality is achieved through the stabilization and continuous improvement of all processes and activities that impact quality.

The Vernay Quality System has been established to enforce the vital component of the customer-supplier relationship.

The Vernay Quality System is based on the ISO-9001 Quality System Standards, the Automotive QS-9000 and TS-16949 System Requirements, the FDA Quality System Regulations, and the ISO-14001 Environmental Quality Standard.

Actual quality certifications, for each of our global locations can be downloaded in PDF format on our website www.vernay.com!.

VERNAY®
Elastomeric Fluid Controls

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