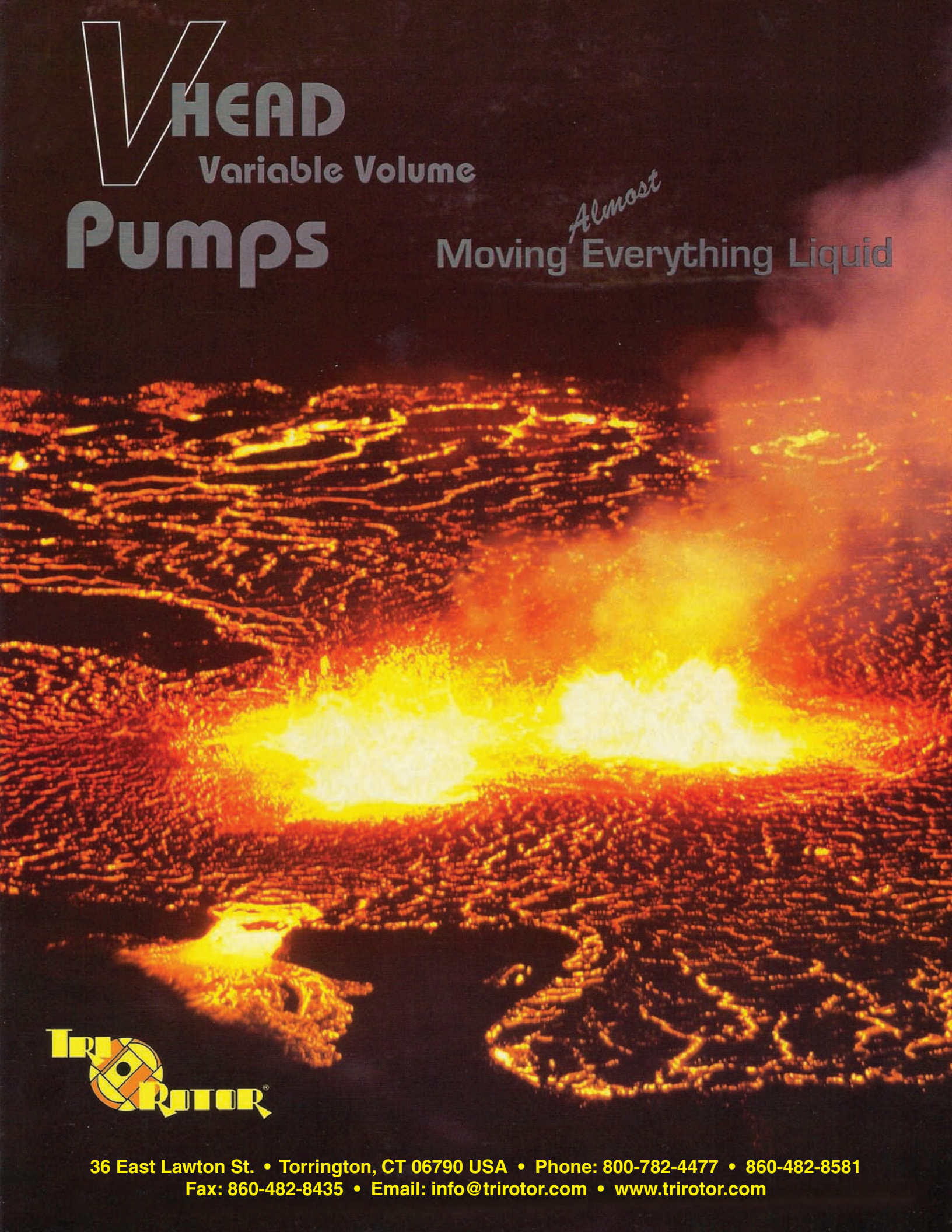


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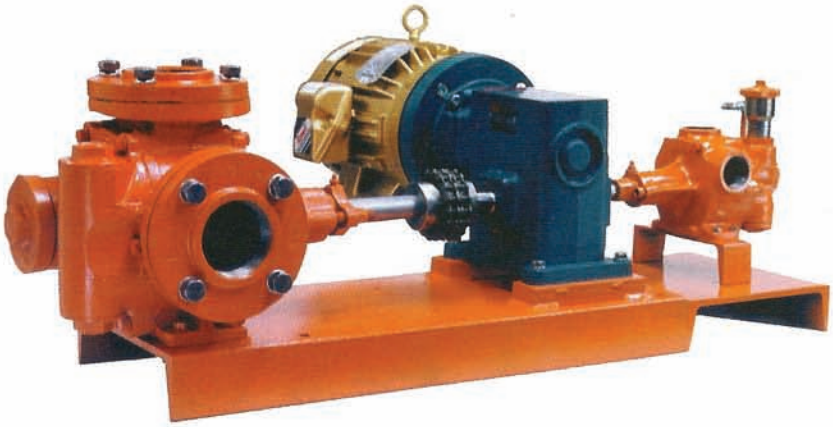
# High Dependability

***For nearly three-quarters of a century, Tri-Rotor V-Head pumps have been moving liquids throughout the world that others only think about. The unique design allows a smooth flow because of the four overlapping strokes of the piston and shuttle with every revolution of the pump shaft while simultaneously and automatically adjusting to suction line demands.***



## THE PERFECT BLEND

A tank car of high concentration caustic soda is being unloaded direct to process, all the while being simultaneously diluted to required strength. A pair of Tri-Rotor Control Head pumps are nonchalantly performing this trick.

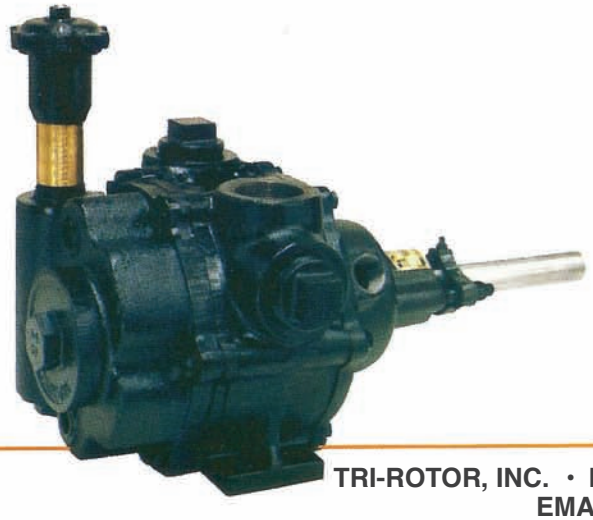
Driven from a single motor, locked into constant speed relationship, one pump handles the caustic, the other water, the manual flow control on each pump set to give the desired caustic-water ratio. The pumps discharge into a mixing tee, whence comes the concentration specified for process.

## THE PERFECT FILL

Heavy gear oil at full line pressure spurts from the opened nozzle, smoothly, foamlessly, fills the drum in seconds, then shuts off.

Back at the oil storage tank, a Tri-Rotor Control Pump, running at constant speed, is performing a host of changing duties in an almost human manner. When the filling nozzle is opened, the pump automatically adjusts its delivery to the demand, forcing a smooth flow in the highly efficient manner of a multi-piston mechanism, which it is.

When the nozzle closes, the pump senses the rising pressure, accordingly reduces its stroke to near zero, so that in "free wheeling" it holds the oil at pressure in the line, cuts the power consumption, and avoids heat build-up.



## ON THE ROAD A PERFECT MIX

Precise amounts of asphalt into the road mix is critical. A steam jacketed Tri-Rotor, with vernier flow control, enables the operator to meter the asphalt into the mix within the prescribed limits of accuracy.



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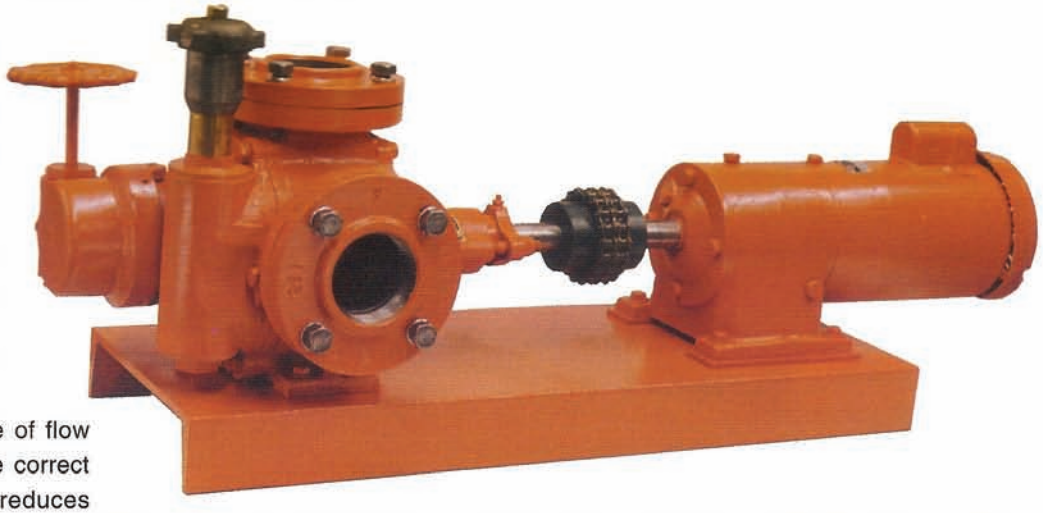
# Extremely Durable

## ONE PUMP DOES THE WORK OF TWO

Syrup is pumped from storage into process, at modest flow rate. A tank car arrives with a new load of syrup, and is rapidly unloaded into the storage tank at a high flow rate.

Two pumping installations? No, the pump takes care of that automatically. This Tri-Rotor pump is selected according to size and speed required for rapid unloading of tank trucks.



After pumping the new syrup into storage, the operator valves the pump back into process, then turns down the vernier flow control on the pump (decreasing the stroke of the pumping members, not the pump speed), which is direct reading in percentage of flow rate, until its output is reduced to the correct process rate (and which incidently, reduces power consumption). The pressure regulating control is turned toward increase, while the pump is running, allowing the pump to operate at a higher processing pressure. Should the discharge line become clogged or a valve be pinched down or closed, the pump automatically assumes its near zero stroke, the best kind of relief arrangement invented because it does not work the pumpage, build up heat, nor waste power.

## EFFICIENT TRIAL RUNS

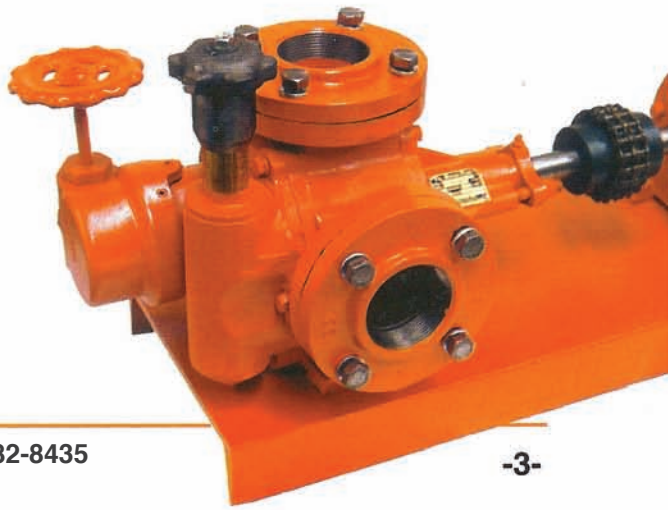
Every now and then, the plant chemists, working on a new product process, make trial runs varying the constituent pressures until they find the right values. All done with pressure regulators, throttling devices, etc.? Not at all.

Just another run-of-the-mill, ho-hum job for a Tri-Rotor Control pump with its own pressure regulating control. A chemical engineer's dream, this pump.

You can vary the discharge pressure from it, without changing speed or stopping it, from zero to its full rated pressure merely by turning the pressure regulating control handwheel on the pump.

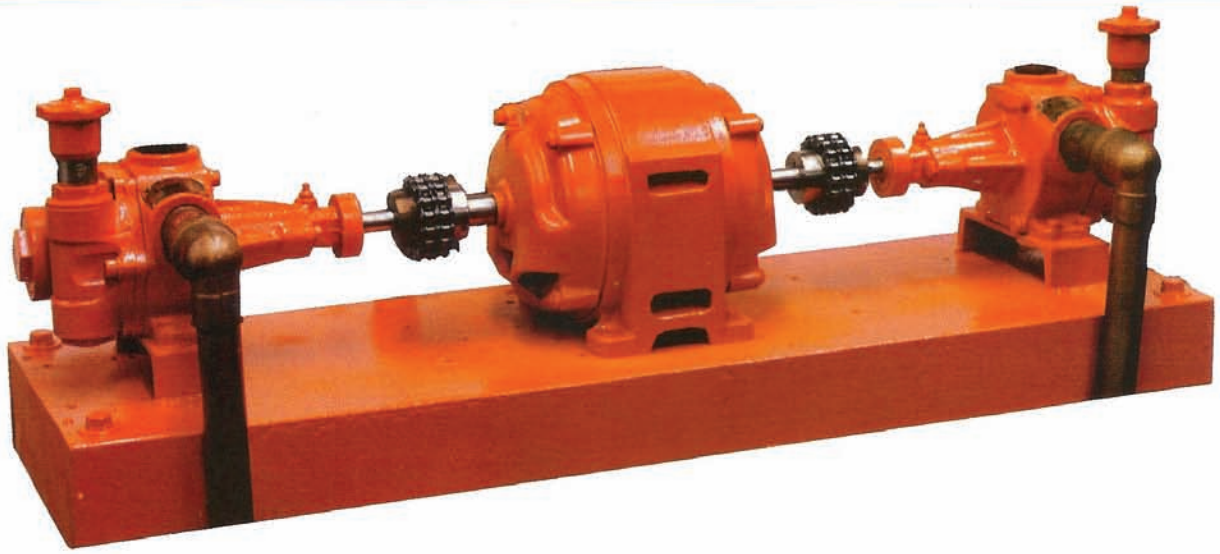
## PROPORTIONAL BLENDING

The automatic proportioner blends seven streams of oils and additives with accuracies up to .005 of 1 percent. Within the consoles of this machine beat 14 "hearts," all Tri-Rotor Control Head pumps, some with pressure regulating controls and others with special vernier flow controls. A large number of different finished products are made in this unit, by adjusting the pump controls to predetermined settings for each one.



# *Highly* ***Versatile***

**Dependable and Guaranteed to Perform**



## THE PERFECT MIX

On this particular morning, the bakers want to change one of their standard corn syrup-liquid sugar blends. Thanks to their Tri-Rotor dual pumping installation this is easy. Both Tri-Rotors, driven from the same motor, are equipped with vernier flow controls. The operator merely resets the verniers to previously established values, starts the pumps, one delivering corn syrup and the other liquid sugar in proportion into the mixer.

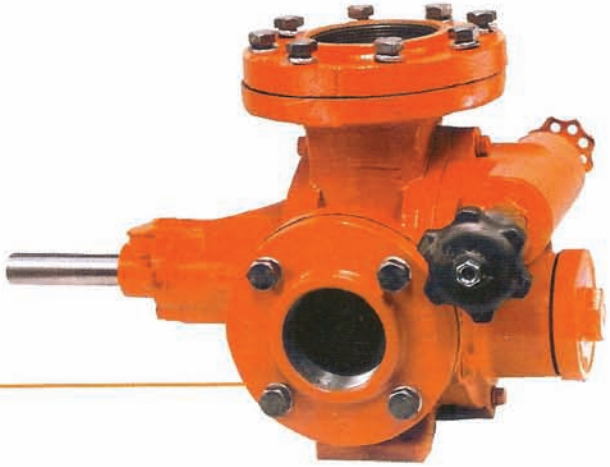
## OPERATES IN ANY KIND OF WEATHER

One tank with light fuel oil, another with heavy, a third with lube oil, each handled by the same Tri-Rotor control head unit, direct-connected to a gearhead motor. For the more viscous pumpages, the operator adjusts the manual flow control on the pump, thus compensating for each viscosity and avoiding cavitation.

When things are really tough, say some bitter cold morning, the man starts the pump up after first turning down the flow control to zero setting, then opens it gradually to get the molasses-like stuff moving without cavitation, starvation, overloading the motor, etc.

## FROM A HOMOGENIZING CHAMBER

In a grease plant, drawing semi-solid grease from a homogenizing chamber under vacuum, and discharging it at 400 pounds per minute, that's our Tri-Rotor - the one with a 4-inch top suction and a 3-inch side discharge port.



## IMAGINE

- *Infinitely variable volume & pressure control*
- *Automatic or manual operation*
- *Constant speed*
- *Multipurpose*
- *Ultra accuracy*
- *Valveless, yet its own relief valve*
- *Rotary positive displacement*
- *Unsurpassed efficiency*
- *Easy operation*
- *Long lasting*



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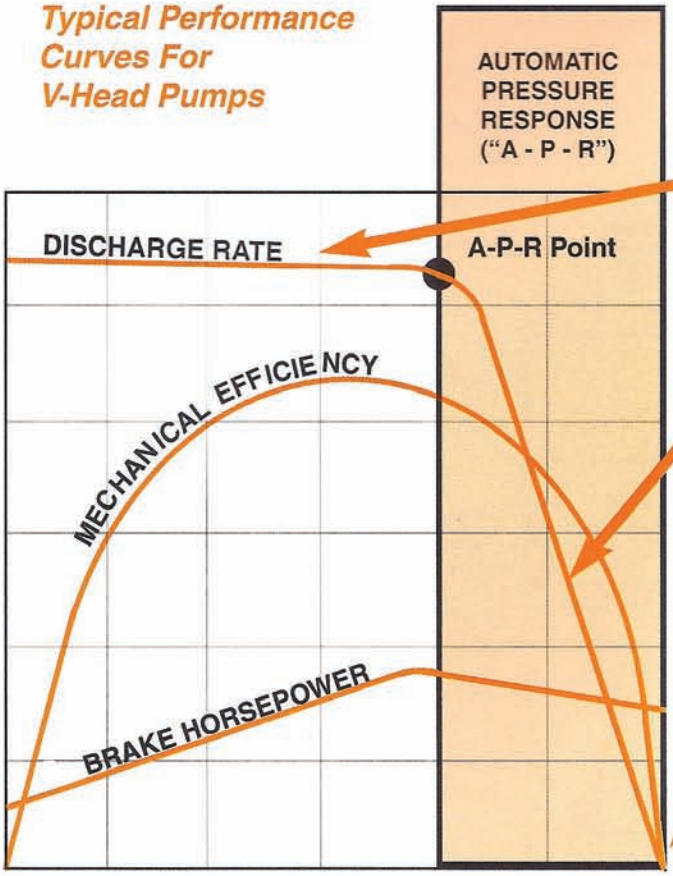
# *Fully* **Automatic**

## You Are In Total Control Of Volume And Pressure

***Typical Performance Curves For V-Head Pumps***




**TOTAL PUMPING PRESSURE**
Typical performance curves for V-head Pumps

### THE AUTOMATIC VARIABLE VOLUME CONTROL

The pump, driven at a constant speed, establishes the discharge rate. The operator presets total pumping pressure by means of the control spring. The pump then delivers at a constant value as long as the operating pressure remains below the A-P-R point.

If pressure exceeds that point, a sensing mechanism inside the pump automatically responds by shortening the stroke of the pumping members, thereby reducing the discharge rate until an equilibrium point (volume vs. pressure) is reached.

The pump stroke will continue to adjust proportionately in order to maintain maximum pressure in the discharge line. In effect the pump is "free wheeling", greatly reducing horsepower consumption and with little heat buildup.

The pump stroke will lengthen to resume a full discharge rate by simply reducing the pressure.

The sensing mechanism automatically responds to total pumping pressure in both suction and discharge lines.

## IDEAL

*for automation applications because the Tri-Rotor V-Head Pump is itself fully automated.*

It's a pumping station with its own built-in "remote control."

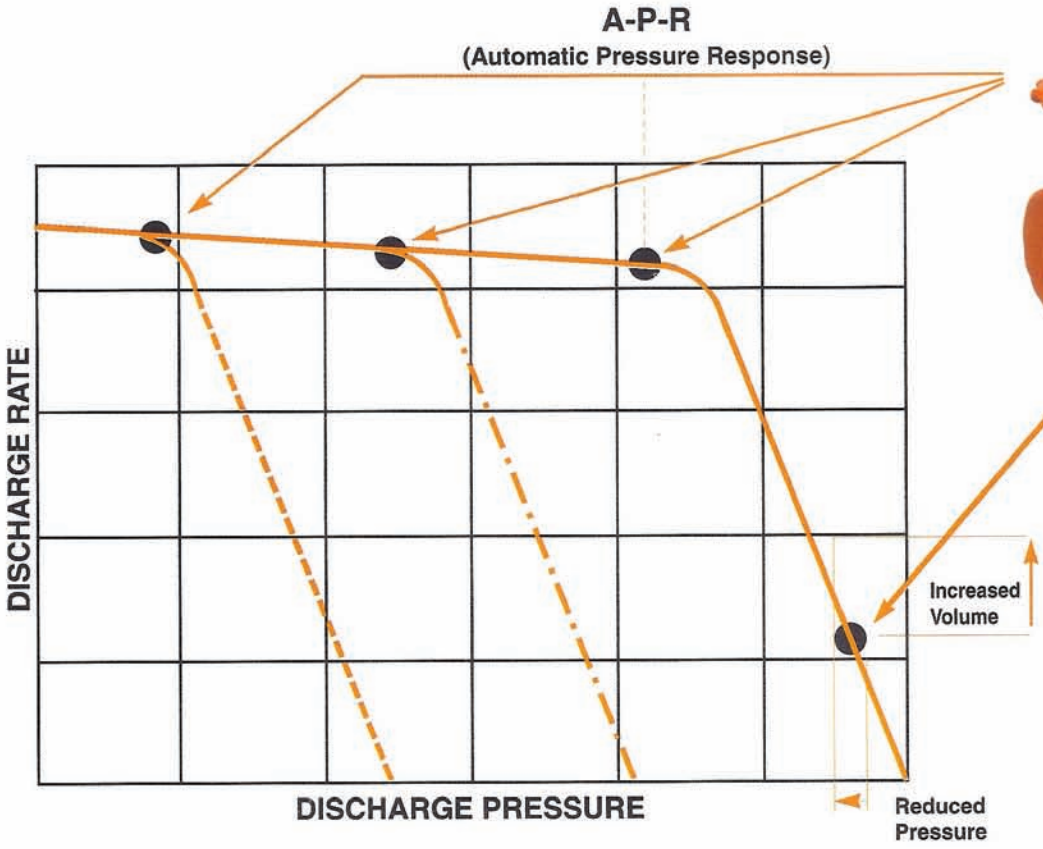
# Infinitely Variable Automatic

***The Pressure Regulating Control (PRC) allows easy adjustment of the discharge pressure from minimum to maximum without stopping or changing the pump shaft speed.***

Up to the A-P-R point, the stroke length of pumping members remains constant to maintain a constant delivery volume.

Above the A-P-R point, the stroke length automatically decreases so the discharge rate drops in direct proportion to the rise in pressure.

*The Automatic Volume Control can be adjusted at a pre-selected pressure point. Turning the regulator increases or decreases spring tension of the control mechanism, thereby affording an infinite range of pressure settings.*




The discharge rate and pressure levels are automatically maintained at any point along this slope. Should **discharge pressure fluctuate**, for example downward, the automatic volume control mechanism responds by lengthening the pump stroke, increasing the discharge rate. The subsequent increased volume builds the line pressure back to its former level. Sensing this rising pressure, the control mechanism will reverse its action, reducing the flow until the original volume-pressure relationship is restored.

Should the **delivery rate fluctuate**, the control mechanism automatically preserves the volume-pressure relationship in the same manner.

## TRI-ROTOR V-HEAD PUMP SELECTION TABLE AND RECOMMENDED SPEEDS

| MODEL NUMBER | PORT SIZE (IN) | 40 - 600 SSU (4 - 125 CpS) | | 5,000 SSU (1,060 CpS) | | 10,000 SSU (2,150 CpS) | | 50,000 SSU (10,800 CpS) | | 100,000 SSU (21,625 CpS) | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GPM | RPM | GPM | RPM | GPM | RPM | GPM | RPM | GPM | RPM |
| **20DV** | $1^1/_2$X$1^1/_2$ | 20 | 1140 | 14 | 875 | 12 | 750 | 8 | 450 | 4 | 230 |
| **80BV** | 2x2 | 80 | 540 | 53 | 360 | 45 | 300 | 27 | 190 | 18 | 125 |
| **100CV** | 3x3 | 100 | 690 | 70 | 480 | 52 | 360 | 38 | 260 | 20 | 135 |
| **120AV** | 3x4 | | | 80 | 540 | 65 | 450 | 45 | 300 | 25 | 170 |
| **200AV** | 4x4 | 200 | 430 | 140 | 300 | 116 | 250 | 80 | 170 | 56 | 120 |
| **220TV** | 4x4 | 200 | 430 | 140 | 300 | 116 | 250 | 80 | 170 | 56 | 120 |



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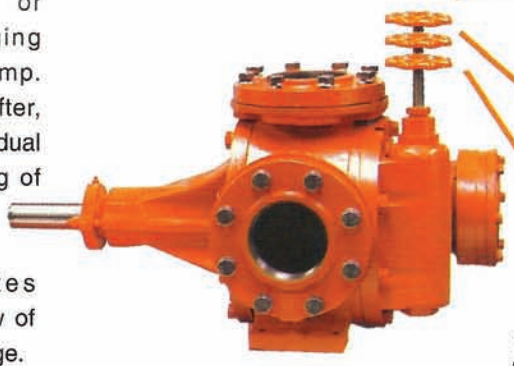
# Infinitely Manually Adjustable

***A simple turn of the Manual Flow Control (MFC), while the pump is running at a constant speed, allows the operator to vary from maximum volume down to zero, for an infinite selection of discharge volume settings.***

## A Unique Design For All Kinds Of Weather And Pumpages

The stroke length of the pumping members is governed by the position of the handwheel stem, independent of pump shaft speed, allowing the V-Head Pump to perform over a wide range of conditions.

• **Cold Starting and Heavy Pumpages:** With the Manual Flow Control (MFC) fully closed (zero stroke), the pump is easily started without overloading the motor or damaging the pump. Thereafter, the gradual opening of the control initiates the flow of pumpage.

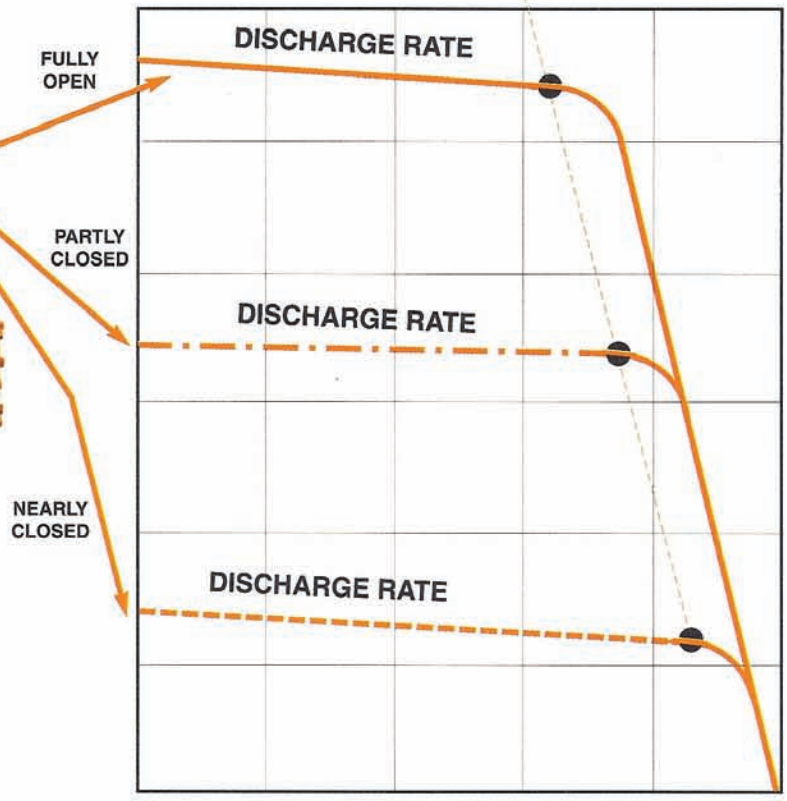


• **Multi-Purpose Utilization:** A Tri-Rotor Pump not only replaces several pumps of differing flow rates by simply adjusting its flow control, but, and without changing speed, the same V-Head Pump can handle various viscosity pumpages by reducing stroke lengths to accommodate more viscous liquids without cavitation.

Up to the A-P-R point, delivery rate is constant.

Above the A-P-R point, automatic control is activated.

**A-P-R**
**(Automatic Pressure Response)**



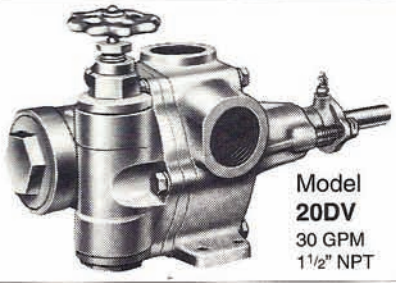

## Metering Vernier Flow Control

**For accurate automatic metering of pumpage**

*The Vernier Flow Control's (VFC) micrometer assembly, most in direct reading percentage, offers precise settings of discharge rates. By replacing the MFC (handwheel) with the VFC, a high degree of accuracy is possible. If metering characteristics are necessary for the entire pressure range of the pump, thereby eliminating the need for the* ***automatic*** *variable volume control, the V-Head can be furnished with a "positive" control (PVFC).*

# TRI-ROTOR® has the Variable "V" Head Pump for you

**• Manual or Automatic • Capacities from 2 to 250 GPM • Pressures to 150 PSI • Viscosities to 3,000,000 SSU (650,000 CpS)**



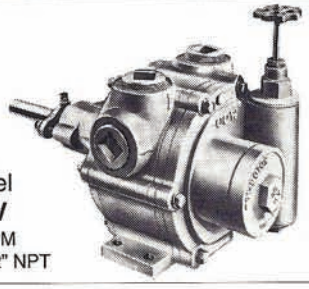
Model **20DV**
30 GPM
1½" NPT

## SERIES 20

*30 GPM @ 1800 RPM*
*1½" NPT ports*
CW or CCW rotation - not reversible in field
1¼" NPT ports optional

**MODEL 20DV**
**30 GPM • 1½" NPT ports**

- Hot vegetable oil
- Honey
- Solvent
- Aliphatic polyamine
- 50% sodium hydroxide
- Synthetic rubber
- Carboxyl methy cellulose
- PEPJ compound
- Water base foil coating
- Liquid lignosulfonate



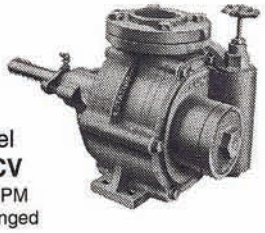
Model **80BV**
88 GPM
Four 2" NPT

## SERIES 80

*80 GPM @ 540 RPM*
*Four 2" NPT ports*
CW or CCW rotation reversible in field with no additional parts except replacement head for **80BV**.

**MODEL 80BV**
**88 GPM • four 2" NPT ports**

- Heat transfer oil
- Machine coolant
- Bitumen
- Lacquer
- Polyvinyl alcohol
- Vacuum pump oil
- Special compound
- Sodium silicate
- AMYL acetate
- Propylene glycol



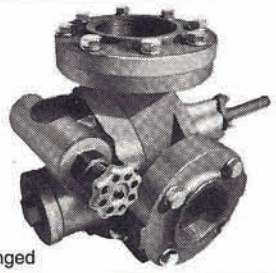
Model **100CV**
100 GPM
3" Flanged

## SERIES 100

*100 GPM @ 675 RPM*
*3" flanged ports*
CW or CCW rotation reversible in field with no additional parts except replacement head for **100CV**.

**MODEL 100CV**
**100 GPM • 3" flanged ports**

- Magnesium chloride
- Ethylene glycol
- Jet fuel
- Calcium sulfate brine sludge
- Asphalt emulsion
- Hydraulic fluid
- Soap solution
- Metal cutting oil
- Phosphate ester



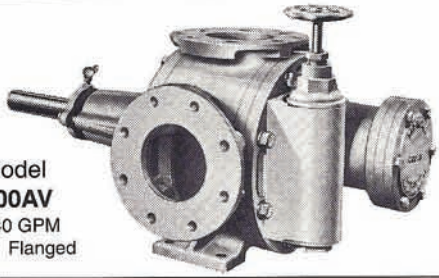
Model **120AV**
90 GPM
4" x 3" Flanged

## SERIES 120

*90 GPM @ 600 RPM*
*4" flanged top suction port*
*3" flanged side discharge port*
CW or CCW rotation reversible in field with no additional parts except replacement head for **120AV**.

**MODEL 120AV**
**90 GPM • 4" x 3" flanged ports**

- Silicone sealant
- Dialyphthalate
- NLGI No. 2 grease
- Napalm
- Ink paste
- Plastic



Model **200AV**
240 GPM
4" Flanged

## SERIES 200

*200 GPM @ 490 RPM*
*4" flanged ports*
CW or CCW rotation reversible in field with no additional parts except replacement head for **200AV**.
Also available in top suction Series **220TV**.

**MODEL 200AV**
**240 GPM • 4" flanged ports**

- Plasticizer
- SAE motor oil
- Glucose
- Semi-solids
- Gasoline
- Diesel fuel
- Polyurethane
- Foam
- Sucrose
- Polyetherpolyol

*Designed to Move Liquids Others Can't*

- Adhesives
- Alcohol
- Asphalt
- Beer
- Bitumen
- Caustic Soda
- Chocolate
- Coolants
- Corn Syrup
- Creosote
- Dyes
- Fat
- Fuels
- Glue
- Grease
- Ink
- Jam
- Molasses
- Oil
- Paint
- Plastic
- Resins
- Shortening
- Soap
- Tallow
- Tar
- Varnish
- Wax

and Much, Much more

20CPVCFM

200AVRAGR

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