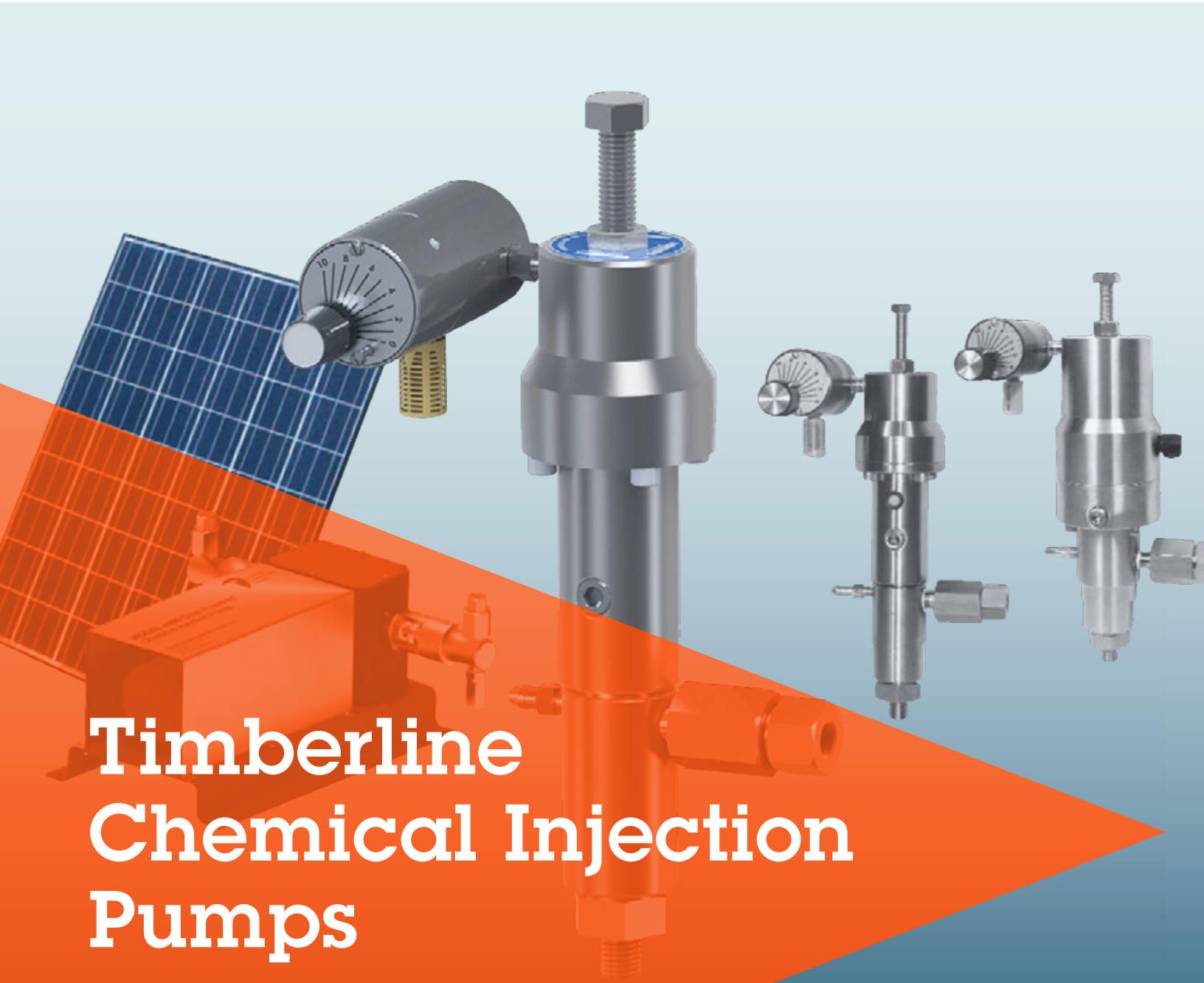
Apergy | Unlocking Energy

NORRISEAL WELLMARK



Timberline Chemical Injection Pumps

SERIES 4000 AC/DC CHEMICAL INJECTION PUMPS

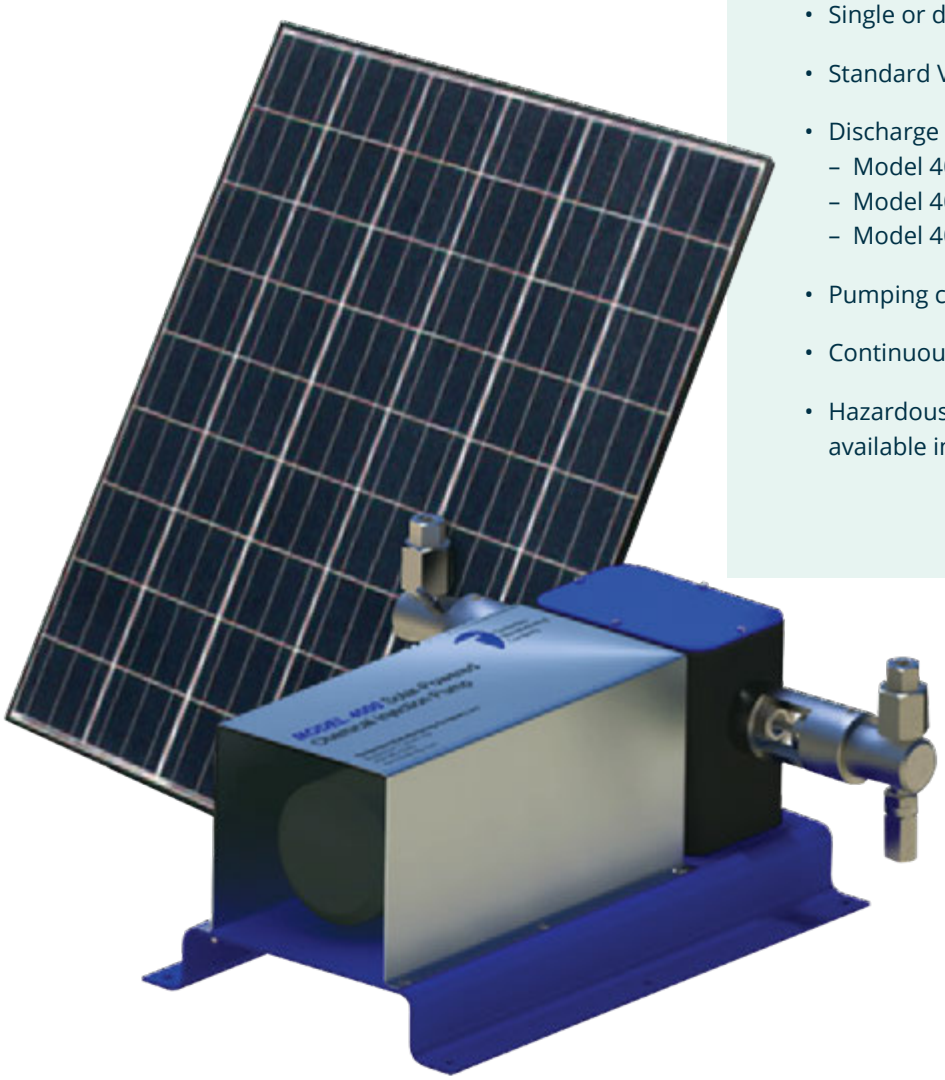
The series 4000 line of AC and DC powered chemical injection pumps provide years of reliable, low-maintenance and low-cost service with zero environmental emissions, zero noise pollution, and zero monthly power expenses when configured as a solar powered package.

Timberline is committed to delivering high-quality products that meet our customers' demanding requirements.

We are committed to maintaining an unbeatable service record where it counts – fast response, on-time delivery, and competent technical support.

FEATURES

- Variable-speed (continuous run) or constant-speed (on-off) operation
  - SCADA Ready options available
- All 316 SST wetted parts (except plunger)
- 3/16", 1/4", 3/8", and 1/2" plunger sizes
- Single or dual pump configuration options
- Standard V-ring packing
- Discharge pressures
  - Model 4000XP — Up to 6000 PSI
  - Model 4000 — Up to 5000 PSI
  - Model 4001 — Up to 3500 PSI
- Pumping capacity from 0.25 to 130 GPD
- Continuous duty, high efficiency motor
- Hazardous Location (C1D2) configurations available in both AC and DC



SPECIFICATIONS

Materials of Construction

Wetted Parts – 316 SST (excluding plunger)

Plunger – 17-4PH SST/H900, or
Ceramic-coated 17-4PH SST

Packing – PTFE / Aflas, or Viton

Check Seats – TFE

Check Balls – 316 SST

Pump Features

Discharge Pressure* – Up to 6000 PSI (Model 4000XP)
– Up to 5000 PSI (Model 4000)
– Up to 3500 PSI (Model 4001)

Plunger Sizes – 3/16", 1/4", 3/8", and 1/2"

Pumping Capacity – Up to 130 GPD

Motor and Power Options

Motor Speeds – 0-67 RPM

Motor Voltage – 12 VDC
– 24 VDC
– 120 VAC

Supply Voltage – 12 VDC (Solar)
– 24 VDC (Solar/TEG)
– 120 VAC (Electric Option)

Motor Power Rating – 1/5 HP (Model 4000XP)
– 1/10 HP (Model 4000)
– 1/21 HP (Model 4001)

Battery(ies) – Application dependent

Solar Panel – Application dependent

*Discharge Pressures are dependent on plunger size

SUPERIOR DESIGN

Materials of Construction

Drive shaft is rigidly supported by a stainless steel ball bearing and oil-impregnated bronze bushing. Compare to competitors' plastic bushings.

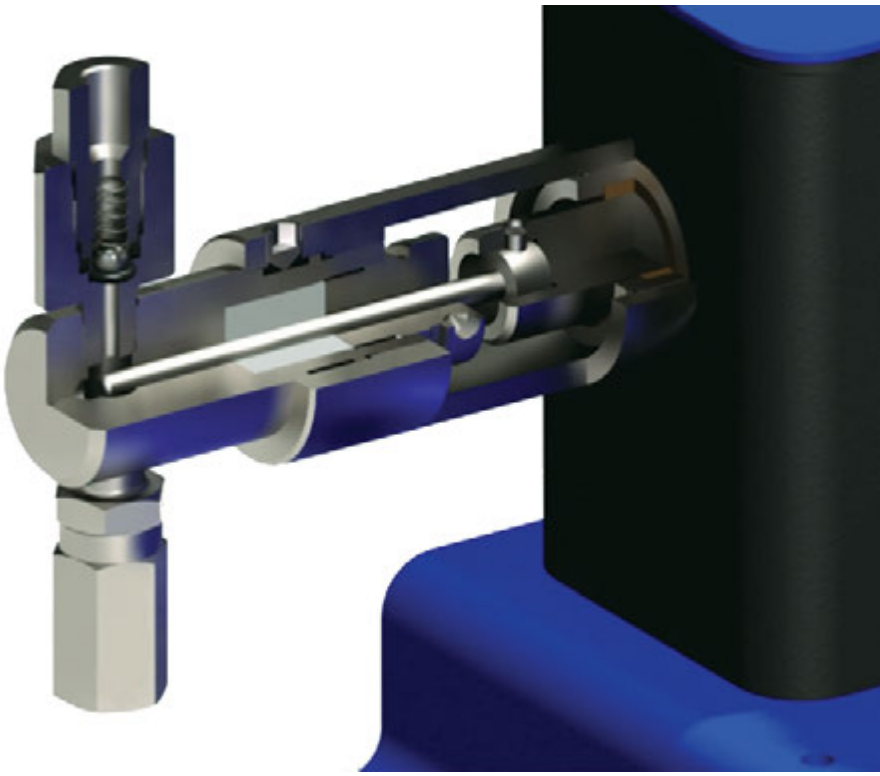
Ease of maintenance

Packing – Simply remove set screws to disengage pump body from yoke and remove the packing nut.

Plunger – After disengaging pump body, simply remove drive pin to release plunger.

Check valves – Large bodies make O-rings, ball, and spring easily accessible for simple, inexpensive replacement. Compare to competitors' tiny check valves, which are difficult to repair and expensive to replace.

Motors – Regular preventive maintenance (annual replacement of brushes) results in long life. Our American-made motors are easily removed from the pump assembly – simply remove four bolts and disengage the shaft coupling.



PRESSURE AND FLOW RATE

MODEL 4000

Intermittent

PLUNGER	Head Config.	MAOP (PSI)	Min Flow (QPD)	Max Flow (QPD)
3/16"	SINGLE	6,000	0.40	37
	DUAL		0.70	74
1/4"	SINGLE	5,000	0.68	66
	DUAL		1.24	131
3/8"	SINGLE	2,500	1.40	148
	DUAL		2.80	295
1/2"	SINGLE	1,250	2.49	262
	DUAL		4.97	525

Continuous Run

PLUNGER	Head Config.	MAOP (PSI)	Min Flow (QPD)	Max Flow (QPD)
3/16"	SINGLE	6,000	2.97	43
	DUAL		4.41	82
1/4"	SINGLE	5,000	4.41	73
	DUAL		8	146
3/8"	SINGLE	2,500	10	164
	DUAL		22	328
1/2"	SINGLE	1,250	16	291
	DUAL		45	583

MODEL 4000XP

Intermittent

PLUNGER	Head Config.	MAOP (PSI)	Min Flow (QPD)	Max Flow (QPD)
3/16"	SINGLE	6,000	0.40	44.2
	DUAL		0.80	70.2
1/4"	SINGLE	5,000	0.70	95.0
	DUAL		1.40	178.2
3/8"	SINGLE	2,500	1.50	187.3
	DUAL		3.10	368.6
1/2"	SINGLE	1,250	2.70	344.8
	DUAL		5.50	689.5

Continuous Run

PLUNGER	Head Config.	MAOP (PSI)	Min Flow (QPD)	Max Flow (QPD)
3/16"	SINGLE	6,000	4.40	49.2
	DUAL		6.40	78.0
1/4"	SINGLE	5,000	6.40	105.5
	DUAL		9.60	198.0
3/8"	SINGLE	2,500	14.40	208.2
	DUAL		17.60	409.6
1/2"	SINGLE	1,250	19.20	383.1
	DUAL		25.60	766.2

MODEL 4001

Intermittent

PLUNGER	Head Config.	MAOP (PSI)	Min Flow (QPD)	Max Flow (QPD)
3/16"	SINGLE	5,000	0.41	40
	DUAL		0.82	79
1/4"	SINGLE	2,500	0.72	70a
	DUAL		1.45	141
3/8"	SINGLE	1,500	1.63	158
	DUAL		3.26	317
1/2"	SINGLE	750	2.90	281
	DUAL		6	563

Continuous Run

PLUNGER	Head Config.	MAOP (PSI)	Min Flow (QPD)	Max Flow (QPD)
3/16"	SINGLE	4,500	2.96	44
	DUAL		8	88
1/4"	SINGLE	2,000	10	78
	DUAL		19	156
3/8"	SINGLE	750	35	176
	DUAL		60	352
1/2"	SINGLE	250	46	313
	DUAL		83	625

ANCILLARY PRODUCTS

Tanks & Containments

- Stand Mounted Tanks
- Stealth Series
- Tank Vault Series

Stainless Steel Pipe & Tube Fittings

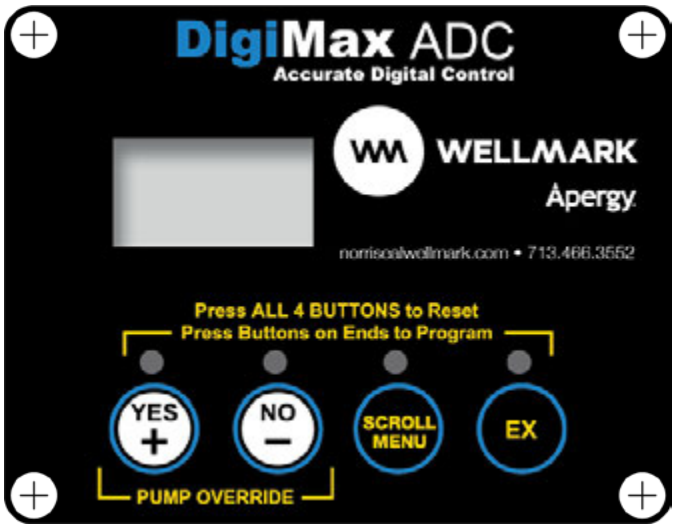
- SST Braided Hose
- 1/4 & 3/8 Seamless Tubing

Atomizers
Coupon Holders
Sand Probes

Tanks & Containments

- Inline Checks
- Gas Scrubbers
- Dividing Blocks
- Pulsation Dampeners
- Pre-Assembled Tank Manifolds
- Sight Glasses
- Strainers/Filters
- Regulators
- Gauges
- Injection Quills
- Valves

DIGIMAX ADC CONTROL/TIMER



TEMPERATURE SENSOR STANDARD

The Control Timer is equipped with a Temperature Sensor feature. When activated this feature turns the pump off until the temperature drops to a set temperature threshold or lower, regardless of program settings. This allows the user to minimize the waste of methanol by only pumping during conditions approaching freezing temperatures.

FEATURES

- Rate x Time calibration routine allowing the user to set a Calibration Factor based on actual pump flow rate characteristics
- Modbus RTU communication via RS485 allows for remote

Read/Write:

- Controller On/Off (disables pump output, but controller still able to communicate)
- Auto/Manual mode
  - Flowrate Setpoint (auto mode)
  - On/Off Timing (manual mode)
- Temperature Injection mode and temperature setpoint

Read Only

- Cycles Ran
- Current Temperature
- Plunger Size
- Motor RPM
- Current Voltage
- Calibration Factor

PROGRAM FUNCTIONS

AUTO MODE

After a one-time setup, this feature allows the operator to simply enter the number of quarts desired per day- No need to consult RUN TIME and OFF TIME charts. The DigiMax ADC is programmed to be hassle-free. Of course, Manual Mode is available allowing the user to manually set the control if desired.

In Auto Mode Digital Display continuously indicates settings:

- Plunger Size
- Battery Voltage
- Temp. Settings (ON/OFF, Temp. Threshold Setting and Current)
- Pump Rate (Quarts per Day)

In Manual Mode Digital Display continuously indicates settings:

- RUN Time
- OFF Time
- Cycle Count
- Battery Voltage
- Temp. Settings (ON/OFF, Temp. Threshold Setting and Current)

PRIMING OVERRIDE

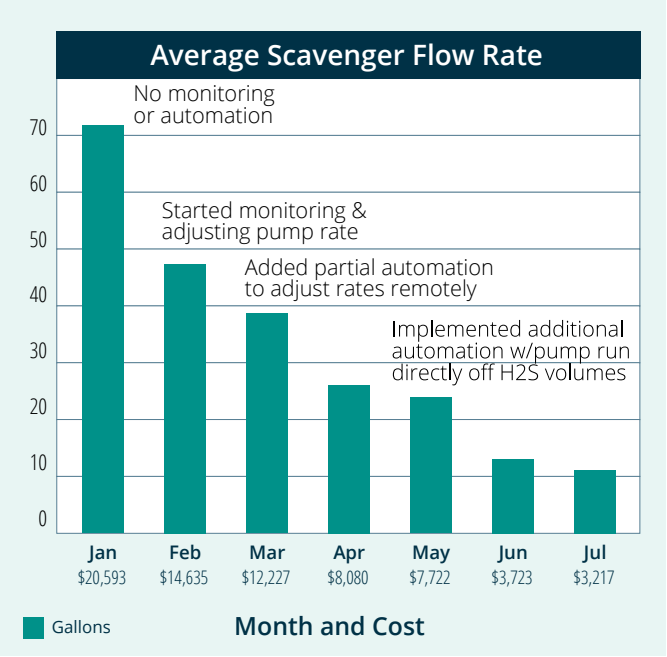
Runs pump continuously, overriding the program until the button is pressed again or until the pump runs for 5 minutes.

AUTOMATION RESULTS USING OUR CHEMICAL INJECTION PRODUCTS

SIGNIFICANTLY REDUCES SCAVENGER H2S COSTS

CHALLENGE

An operator used H2S Scavenger to reduce the toxic content level in the gas line to allow sale of gas, but found it difficult to pump the right amount of H2S in the well. He either pumped too much H2S, creating waste and raising costs exponentially, or he pumped too little H2S, causing the gas to be rejected in the sales line. In addition, the well operator wasted time and money continually monitoring H2S levels manually.



SOLUTION

Wellmark implemented a three-phase automation approach to solve the problems the well operator was facing.

Phase One

Wellmark monitored and adjusted the pumping rate at the well site.

Phase Two

After analyzing the chemical data from the well, Wellmark installed an automation solution that allowed the operator to adjust the pump rates remotely.

Phase Three

After the pump rates were adjusted, Wellmark implemented additional automation features to the unit that enabled pumps to run directly off of H2S volumes and fine-tune injection rates based on H2S levels.

DELIVERING RESULTS

Wellmark's chemical injection automation solution pays for itself four times over in the first year. Because of the implementation in the H2S well, **the customer saved an astonishing 81% in cost, bringing the total cost savings to $201,491!**

FIELD SERVICES | REPAIR | PARTS

Norriseal-WellMark is proud to offer a comprehensive spectrum of innovative service solutions dedicated to improving productivity and reducing costs for our customers. These services include on-site field services, in-house repair and in-house parts sales.

ON-SITE FIELD SERVICES

Expert technicians available for scheduled and un-scheduled field service work for chemical injection pumps. Whether it is for routine maintenance work on existing assets in the field, for scheduled on-site repair, or for installation and commissioning activities; Norriseal-WellMark has the services available to return your operations back to normal.

IN-HOUSE REPAIR

Norriseal-WellMark offers repair services for 2700A control valves, 7100 piston check valves & chemical injection pumps, including:

- **Disassembly**
- **Inspection**
- **Reassembly**
- **Testing**
- **Parts replacement**

We restore your equipment to like new condition, with factory warranties and installation support. We also provide the machining, welding, and other remanufacturing operations necessary to properly condition your equipment.

IN-HOUSE PARTS SALES

Purchase genuine Norriseal-WellMark replacement parts and accessory products directly from us. We carry an extensive component parts inventory to support a wide range of products.

Contact Norriseal-WellMark today for more information about products and services.

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