

PUMPS FOR THE NEXT GENERATION FOR LOW VISCOSITY FLUIDS

GLYCOL'S & AMINES

Energy Exchange, Electric Drive And *Hydra-Lectrik* Rotary Gear Pumps For Glycol Gas Processing Systems

GENERAL PRODUCT INFORMATION

1

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Catalog

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Rotor-Tech®, Inc. For The Next Generation



Energy Exchange Pump



Electric Drive Gear Pump



Hydra-Lectrik Pump

Company Statement

Founded in 1981, Rotor-Tech® specializes in the design and manufacturer of energy exchange and electric or pneumatic driven pumps to pump glycol in natural gas dehydrator systems.

Rotor-Tech[®] is a customeroriented company committed to assisting users in the proper selection and application of it's products. Their goal is to optimize product performance, extend in-service life, reduce operating costs and integrate the pumps into the overall dehydration system. This special focus makes Rotor-Tech's[®] customer response second to none.

Rotor-Tech's[®] policy is to deal ethically and fairly with each customer and place their satisfaction as the primary goal.

Products and Services

The patented energy exchange and *Hydra-Lectrik* units have separate gear pump and gear motor modules. All of the internal parts are specially designed and manufactured to withstand the severe conditions of continuous glycol pumping.

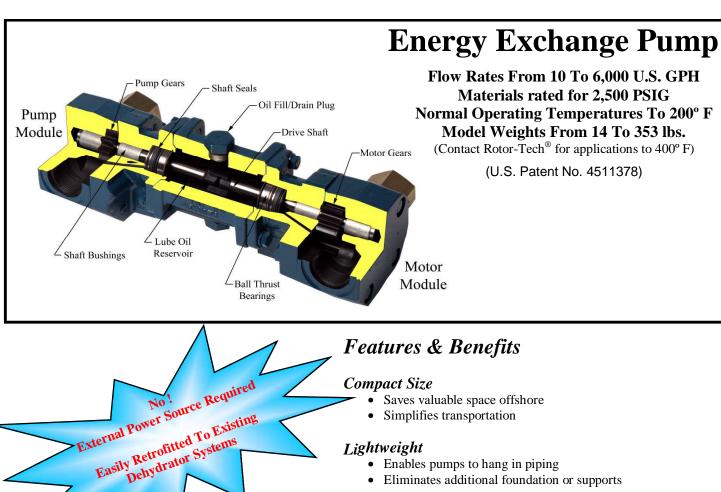
Rotor-Tech[®] has a Exchange/ Rebuilt Program for both the pump and motor modules. Rebuilt products are usually shipped the same day the order is received. Rotor-Tech[®] is also equipped to handle repair orders requested by our customers.

All Rotor-Tech[®] pump models new, exchange/rebuilt or repaired are run in on a test facility using glycol to simulate field conditions prior to shipment.

Rebuilt modules carry the same warranty as our new units and are priced competitively to the cost of routine maintenance of alternative equipment.



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Lightweight

- Enables pumps to hang in piping
- Eliminates additional foundation or supports

Constant Flow

- Eliminates pulsation and vibration
- Improves dehydration efficiency •
- Reduces required piping size

Rotary Gear Design

- Sustains high efficiency throughout pump life
- · Ensures long operational life with reduced maintenance cost
- Eliminates reciprocating parts and dependency on elastomeric parts which are subject to wear and deterioration
- No slides, pistons, check valves or O-rings to be replaced •

Modular Construction

- Prevents cross contamination of dry glycol by wet glycol
- Simplifies servicing
- Makes modifications for lower pressures or increased flow rates simple and economical

Optional Flo-Gage

- Accurately measures circulation rates
- Provides environmentally safe means to bleed-off air to prime the pump at start up



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Four Frame Sizes Available

ENERGY - EXCHANGE GLYCOL PUMPS FOR THE NEXT GENERATION

Energy Exchange Glycol Pumps

- 25 to 2500 PSI
- 10 to 6000 GPH
- No electrical power source needed
- Compact in size and weight (15-353 lbs.)
- Minimal maintenance
- High efficiency

GA/GC and GM Series								
Model No.	Recommended Operating Range-PSIG Min. Max.		Flow Min.	GPH Max.	Weight lbs.			
GA1-2	500	1000	10	50	15			
GA1-3	250	600	10	50	15			
GA1-4	100	350	10	50	16			
GA1-5	50	150	10	50	16			
GA2-3	700	1500	10	110	16			
GA2-4	350	850	10	110	17			
GA2-5	100	500	10	110	17			
GA4-6	700	1500	50	250	19			
GA4-8	350	850	50	250	19			
GA4-10	100	500	50	250	19			
GC4-6	700	1500	120	500	25			
GC4-8	350	850	120	500	25			
GM2-6	25	150	10	90	22			
GM3-6	35	175	10	150	22			
GM4-6	75	250	10	220	23			
GM2-8	20	125	10	90	22			
GM3-8	30	150	10	150	22			
GM4-8	50	200	10	200	23			



GS Series								
Model No. *	Recommended Operating Range-PSIG Min. Max.		Flow Min.	GPH Max.	Weight lbs.			
GS1108-1112	700	1500	200	600	68			
GS1108-1116	350	1000	200	600	68			
GS1108-3312	100	500	200	600	102			
GS2208-2212	700	1500	400	900	116			
GS2208-2216	350	1000	400	900	118			
GS2208-3316	100	500	400	900	126			
GS3308-3312	700	1500	600	1200	136			
GS3308-3316	350	1000	600	1200	138			
GS3308-3320	100	500	600	1200	140			
GS3312-3318	700	1500	800	2000	140			
GS3312-4418	350	1000	800	2000	156			
GS3312-4412/10	100	500	800	2000	206			
GS3318-4420	700	1500	1500	3000	164			
GS3318-4412/12	350	1000	1500	3000	206			
GS3318-4418/18	100	500	1500	3000	206			
GS4416-4412/12	700	1500	2000	4000	230			
GS4416-4416/16	350	1000	2000	4000	234			
GS4416-4420/20	100	500	2000	4000	238			

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* Many other models available.

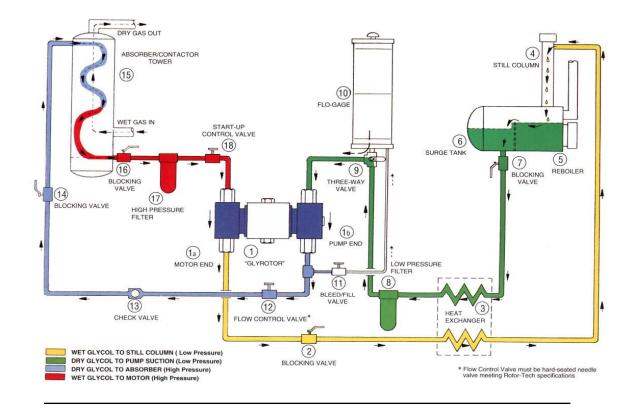
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(U.S. Patent No. 4511378)

Typical Glycol Dehydrator System Schematic For Energy Exchange



This information is provided to dehydrator manufactures so the Rotor-Tech[®] Energy Exchange Glycol Pump will operate correctly. Any other piping design will not do as well. If a different piping layout is wanted, please contact Rotor-Tech's[®] Engineering Department.

Description of components for the "Basic Dehydrator Piping" for systems with Rotor-Tech[®] Energy Exchange Pumps. Refer to the above diagram and the item numbers listed below.

The Rotor-Tech[®] Energy Exchange Glycol Pump is made up of two modules. The motor end (1a) receives highpressure wet (rich) glycol and gas from the contactor (15) as it goes to the still column (4). The pressure drop across the motor is usually about 100%; i.e., the pressure drops from contactor pressure to very near atmospheric pressure. If there is a 2 or 3 phase separator in the discharge line from the motor, the pressure drop will be from contactor pressure to the separator pressure. This pressure drop imparts rotational energy to the motor. The motor is connected to the rotary pump (1b) through a drive shaft in the central oil reservoir of the assembly.

The pump (1b) receives low-pressure, dry (lean) glycol from the reboiler. It is capable of pulling a high vacuum to suck the glycol through the connected components. However, when running properly there should be no vacuum in the suction line or at least a vacuum of not more than 5 inches HG. (approximately 2.5 PSIG). Excessive vacuum could cause the pump to cavitate and become damaged.

(2), (7), (16), and (14) are blocking valves and should be ball valves or plug valves. Rotor-Tech[®] does not recommend globe or gate valves here because stem leakage can cause air to enter the system or glycol to pollute the environment. Ball valves seldom leak.

(3) The heat exchanger can be of several types. This must be determined by the dehydrator manufacturer.

Cont. on next page



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Typical Glycol Dehydrator System Schematic For Energy Exchange Continued

(4) The still column is simply a part of the reboiler. (5) Refer to the manufacturer's instructions for a description of the operation of the reboiler.

(5), (6) The reboiler and surge tank can be in one vessel as shown or they may be separate vessels. Usually the surge tank is below the reboiler or it may be off to one side.

(8) The low-pressure filter is used to remove solids from the dry glycol. This is very important because it keeps the contactor from being fouled with these solids. The Rotor-Tech® pump can easily accommodate a reasonable amount of solids but these solids can cause erratic results in the flow control valve (12). This is especially true in low flow applications. Rotor-Tech® and its competitors recommend a filter at this location.

(9) The three-way diverter valve on the Rotor-Tech[®] Flo-Gage (10) is used to make the pump draw glycol out of the Flo-Gage during flow measurement rather than from the surge tank. As shown in the diagram, when the Flo-Gage is full of glycol the three-way valve handle is turned down to make the pump draw glycol from the Flo-Gage so that the flow rate may be determined.

(10) The Rotor-Tech[®] Flo-Gage is currently available in five sizes from one pint to five-gallon capacities. Any other size can be furnished on special order. Many other means of measuring flow are available but the Rotor-Tech[®] Flo-Gage is a very simple, direct, and accurate method that requires no calibration. Many use these flow gages to calibrate other types of flow measuring equipment.

(11) The bleed/fill valve is absolutely necessary. It is used to bleed air out of a dry pump. The pump cannot be expected to compress air at high pressure, so the air must be bled off to some low pressure point. Bleeding off the air allows the pump to withdraw glycol from the surge tank. The pump is thus primed and is now capable of producing the high pressure necessary to pump dry glycol into the contactor. When the Rotor-Tech® Flo-Gage is used, the bleed/fill valve is used to fill the Flo-Gage while the pump is running so that flow rate measurements can be made. If the Rotor-Tech® Flo-Gage is not used, the discharge side of the bleed/fill valve must be piped back to the surge tank (6) or to the atmosphere. Glycol that is expelled during priming should not be allowed to go onto the ground. Do not pipe it back into any part of the suction piping to the pump. If this is done the air will not escape and could cause cavitation and damage to the pump.

(12) The flow control valve is the most important valve necessary to operate Rotor-Tech[®] energy exchange pumps. It is used to throttle the flow from the pump (1a) to the contactor. This <u>one and only</u> valve is used to control the flow. It is necessary that a hard seat needle valve or hard seat globe valve be used for this purpose. Soft seated "needle" valves will cutout in a hot glycol system. Gate valves will not give stable conditions and ball valves are impossible to control properly. There is no compromise here. A hard seat all metal needle or globe valve must be used. For best control a needle valve having not more than 15 degree included angle and an orifice size suitable for the flow rate is recommended. If the flow rate is on the higher end of a particular pump's range, control is not so critical and a coarser style valve can be used. But, for very low flows it is extremely important to use a sharp pointed needle, fine threaded stem, metering needle valve. Rotor-Tech[®] stocks these in 1/4" NPT.

(13) The check valve is absolutely necessary. All well designed dehydrators will already have one whether using the Rotor-Tech[®] pump or not. Without a proper working check valve, high pressure from the contactor can come back through the pump causing it to run backwards. It is very difficult or almost impossible to start up a Rotor-Tech[®] energy exchange pump.

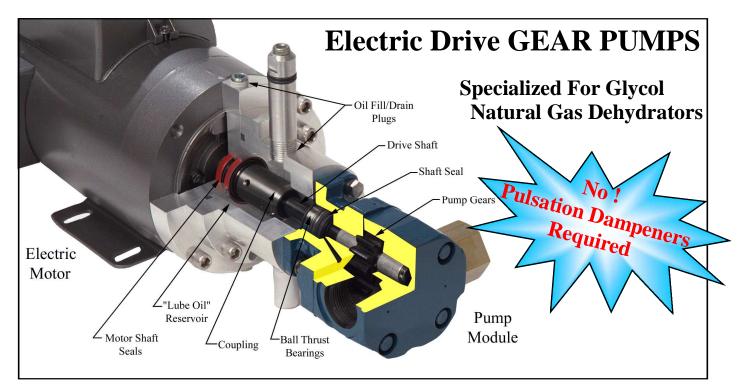
(15) The contactor is the high-pressure vessel where "wet" gas is bubbled through glycol to have its moisture removed to become "dry" gas.

(17) The high-pressure filter is used to keep solid contaminates out of the heat exchanger (3) and the still column (4). Here again Rotor-Tech[®] and its competitors recommend a filter at this point.

(18) The start up control valve is another important valve to facilitate proper starting of the Rotor-Tech[®] energy exchange pump. It can be a needle or globe valve with either a soft or hard seat. The soft seat straight through patterned taper seat valve is best. After start up this valve is left wide open, therefore the straight pattern gives the best flow characteristics. This valve is opened slowly during start up to help in getting the pump primed. By opening slowly the motor's speed and power are under complete control. After start up the motor/pump speed and flow rate are controlled <u>entirely</u> by the flow control valve (12).



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Features & Benefits

Full Range Of Applications

- Specialized electric-drive gear pumps for use with glycol natural gas dehydrators.
- Also available for transfer, metering and process application of other liquids.

Full Range Of Options

- AC or DC.
- Single or 3-phase, 60 Hz or 50 Hz.
- Explosion-proof (EXPR), totally enclosed fan cooled (TEFC), (TENV) or IEC specs.

Choice Of Speeds

• Variable or constant – with models available to pump up to 10,000 GPH (170 GPM)

Consistent Performance

- High efficiency throughout pump operating life.
- No reciprocating pump parts.
- No dependency on elastomeric parts subject to wear and deterioration.
- No slides, pistons, check valves or O-rings to be replaced.

Stable Flow

Durable

Positive Displacement Pressures to 3,500 PSI Minimal Vibration Compact and Lightweight Simple...Easily Serviced Efficient Economical Meets API Specifications



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ELECTRIC DRIVE GLYCOL PUMPS FOR THE NEXT GENERATION



Electric Drive Glycol Pumps

- 5 to 3,500 PSI
- 0.5 to 170 GPM
- Variable or Constant Speed
- Full Range of Motor Options
- Compact in Size and Weight
- Low Initial Cost
- Minimal Maintenance
- High Efficiency
- Long Operational Life

G	A and G	C Series	•		GS Series							
Model No.	GPM @ 1500 RPM	GPM @ 1800 RPM	Weight lbs.	Model No. *	GPM @ 1500 RPM	GPM @ 1800 RPM	Weight lbs.		Model No. *	GPM @ 1500 RPM	GPM @ 1800 RPM	Weight lbs.
GA-1	0.4	0.5	7	GS-1106	4.8	5.9	25		GS-1106/06	9.9	12.0	48
GA-2	0.8	1.0	7	GS-1108	6.4	7.8	26		GS-1108/08	13.3	16.1	48
GA-3	1.2	1.5	7	GS-1110	8.0	9.8	26		GS-1110/08	14.8	18.1	48
GA-4	1.7	2.0	8	GS-1112	9.7	11.8	26		GS-1110/10	16.5	20.0	50
GA-5	2.1	2.5	8	GS-1114	11.3	13.7	28		GS-1112/10	18.2	22.0	50
GA-6	2.5	3.0	8	GS-1116	12.9	15.7	28		GS-1112/12	19.8	24.0	50
GA-8	3.3	4.0	8	GS-2208	10.4	12.6	46		GS-2208/08	20.9	25.5	80
GA-10	4.2	5.0	8	GS-2210	13.0	15.5	46		GS-2210/08	23.9	29.0	82
GC-4	2.8	3.3	12	GS-2212	15.4	18.8	50		GS-2210/10	26.1	32.0	84
GC-6	4.2	5.0	12	GS-2214	18.0	22.0	50		GS-2212/10	28.8	35.3	84
GC-8	5.6	6.7	12	GS-2216	20.5	24.2	52		GS-2212/12	31.5	38.5	86
				GS-3308	15.2	18.5	58		GS-3308/08	27.5	33.5	92
For additional information : Web site : www.rotor-tech.com			GS-3310	18.0	23.1	58		GS-3310/08	30.9	37.5	95	
			GS-3312	22.8	27.6	58		GS-3310/10	34.3	41.9	95	
	info@roto		.1	GS-3314	26.5	30.3	60		GS-3312/10	37.7	46.0	98
	Fax : (713) 984-9425 Phone : (713) 984-8900		GS-3316	30.3	37.0	60		GS-3312/12	40.9	50.0	98	
Phone :	(713) 984-6	8900		GS-3318	34.0	41.3	60		GS-4410/08	42.5	52.1	124
World Headquarters :		GS-4408	18.0	22.0	74		GS-4410/10	47.9	58.0	126		
Rotor-Tech [®] , Inc. 10613 Stebbins Circle			GS-4410	22.9	28.4	74		GS-4412/10	52.1	64.0	128	
	, TX 77043			GS-4412	27.9	34.2	76		GS-4412/12	57.0	70.0	130
* Many otl	* Many other models available.		GS-4414	33.7	41.0	76		GS4414/14	66.5	75.0	134	
·, ou				GS-4416	37.8	46.8	76		GS4416/16	75.9	93.0	138
				GS-4418	44.1	53.1	78		GS4418/18	87	104	142

78

59.4

GS4420/20



GS-4420

49.5

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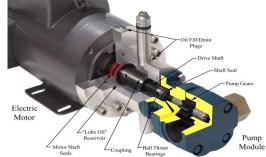
Electric Drive Gear Pumps Specialized For Glycol & Amine Applications

Positive Displacement

Pressures to 3.500 PSI

Minimal Vibration





Features & Benefits

Full Range Of Applications

- Specialized electric-drive gear pumps for use in glycol natural gas dehydrators & Amine sweetening applications.
- Also available for transfer, metering and process application ٠ of other liquids.

Full Range Of Options

- AC or DC.
- Single or 3-phase, 60 Hz or 50 Hz.
- Explosion-proof (EXPR), totally enclosed fan cooled (TEFC), (TENV) or IEC specs.

Choice Of Speeds

• Variable or constant – Flows from 0.5 gpm to 170 gpm. Higher flows available by custom design.

Consistent Performance

- High efficiency throughout pump operating life.
- No reciprocating pump parts.
- No dependency on elastomeric parts subject to wear and deterioration.
- No slides, pistons, check valves or O-rings to be replaced. **Materials**

Module Housing—ASTM 395.

- Thrust Ball Bearings -E-52100.
- Drive Shaft & Gears ASTM-8510 coated DLC.



Compact and Lightweight

Typical Motor Features

- TEFC (totally enclosed face cooled) Class 1, Div. II, Group C & D or
- EXPR (explosion proof) Class 1, Div. I, Group C & D
- IP55
- NEMA dimensions
- Class 'F' insulation for all frames, all insulation materials are Class 'H' (180°C) except motor leads (Class 'F')
- Temperature rise: Class 'B' (80°C)
- NEMA ratings design 'B'
- Service Factor: 1.25 up to 100HP
- Continuous duty (S1)
- 104°F (40°C) ambient temperature
- NPT threaded terminal box
- F1 mounted T-Box
- Automatic drain plugs-pressure compensated
- Continuous flow class 'H' resin insulation system
- MGI Part 31 rating for use with VFD-4:1 constant torque speed range Speed range can be extended with optional Blower Kit

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Hydra-Lectrik GLYCOL PUMPS FOR THE NEXT GENERATION

DOUBLE "C" FACE MOTOR 10 HP, THREE-PHASE, 480 VAC (REPLACES A 30 HP PUMP)



DOUBLE "C" FACE MOTOR 5 HP, THREE-PHASE, 1.25 S.F.

(U.S. Patent No. 4511378 & 5492556)

Hydra-Lectrik Design Concept

Most dehydrators using electric pumps expel high pressure, wet glycol from the contactor through a throttling valve. This valuable energy source is wasted and the expelled glycol can be environmentally unsound.

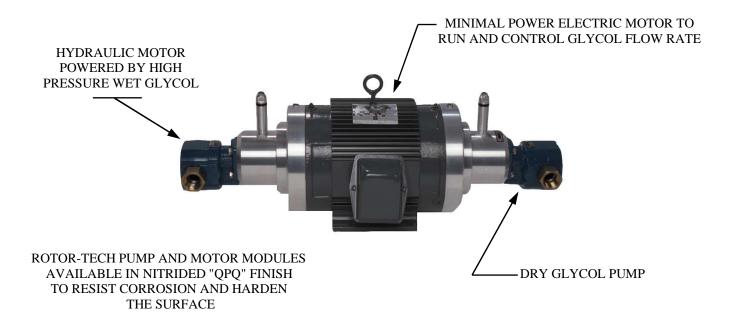
Rotor-Tech's[®] design concept harnesses this energy to power a hydraulic rotary gear motor that operates a specially designed gear pump approximately volumetrically equal to the motor. Then, by adding a small electric motor to overcome mechanical and hydraulic friction, the combined unit...the *Hydra-Lectrik*...can operate at a desired speed to attain a specified flow rate for the system. No contactor gas is used.

Because of the low electrical power requirement, the *Hydra-Lectrik* can operate in many locations where there is insufficient electrical service to run a pump solely dependent on electrical power. Alternative plunger pumps generally need more expensive 480 VAC, 3-phase power...not always available in remote locations. It is also desirable to control pump and motor speed with a variable frequency drive (inverter) which is much less expensive for the low power small electric motors used to drive the *Hydra-Lectrik*.



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Hydra-Lectrik **Pump** Designed for Today's Dehydration Systems



Features:

Double "C" Face Electric Drive Motor Improves balance, runs smoother and is easy to maintain.

Dual Powered

Hydraulically by return wet high pressure glycol. Electrically by a small electric motor.

Vibration-Free No pulsation dampeners required.

The Hydra-Lectrik pump uses no gas

Economical

Can pay for itself when replacing an energy exchange pump in 2 to 4 months.

Pays for itself when replacing a standard electric drive pump in 12 to 24 months.

Saves up to 83% of electrical power vs. conventional electric pumps.

Stable Flow...Positive Displacement

Flow Rates from 10 GPH to 10,000 GPH

Can be easily and economically controlled by a small variable frequency motor controller (Inverter).

Compact and Lightweight

80% smaller than alternative pump systems of comparable performance.

Rotary Gear Design

Sustains high efficiency throughout pump life. Consistent performance. No reciprocating pump parts. No dependency on elastomeric parts subject to wear and deterioration. No slides, piston, check valves, or O-rings to be replaced.

Simple and Easily Serviced With Easy Access Reduces routine maintenance time.

*Hydra-Lectrik Pump...*Your Best Alternative to Help Meet VOC and BETX Emission Standards.



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Hydra-Lectrik – Environmentally Friendly

The first step in meeting new EPA and state mandated VOC and BETX emission standards is to install speed controlled electric drive glycol pumps...like the Rotor-Tech[®] *Hydra-Lectrik*. This eliminates contactor gas consumption often wasted to the atmosphere and allows glycol circulation to be controlled to an optimum rate.

Like all Rotor-Tech[®] glycol pumps, the *Hydra-Lectrik* pump space-saving configuration is easy to install and maintain. It operates smoothly and is whisper quiet while providing flow rates from 10 to 10,000 GPH at pressures to 3,500 PSIG.

Hydra-Lectrik – Pays For Itself

Low initial cost and less installation, operating and maintenance costs, make Rotor-Tech[®] pumps your efficient alternative for today's dehydrator glycol pumping.

When replacing an energy exchange pump, the *Hydra*-*Lectrik* can pay for itself in 2 to 4 months! When replacing a standard electric drive pump, it pays for itself in 12 to 24 months. Nobody offers a glycol pump that can beat that...nobody!

The *Hydra-Lectrik* costs less to purchase, install, operate and maintain. It is smaller and 80% lighter than pumps of comparable performance. Rotor-Tech's® *Hydra-Lectrik* represents the state-of-the-art in glycol specialty pump engineering, energy conservation and environmental compliance.



Automatic Controller with VF Drive (Inverter)

Rotor-Tech[®] offers and recommends an Automatic Controller System. It operates all the pump start-up and shut-down circuits and incorporates a safety flow switch to automatically close the high pressure return valve in case of low-flow or no-flow in the dry glycol suction line. The speed controller (Inverter) is included in this enclosure if so ordered.

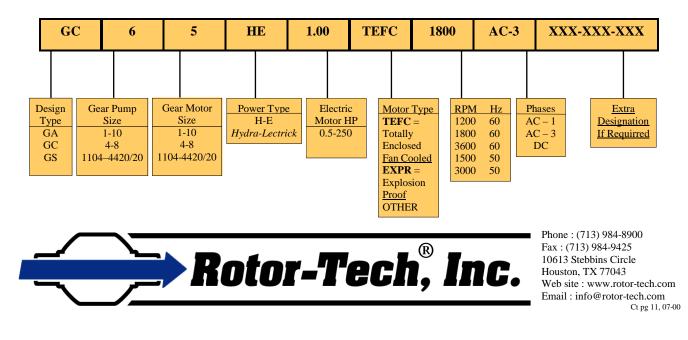


Double-ended "C" Face Mounting is Simple

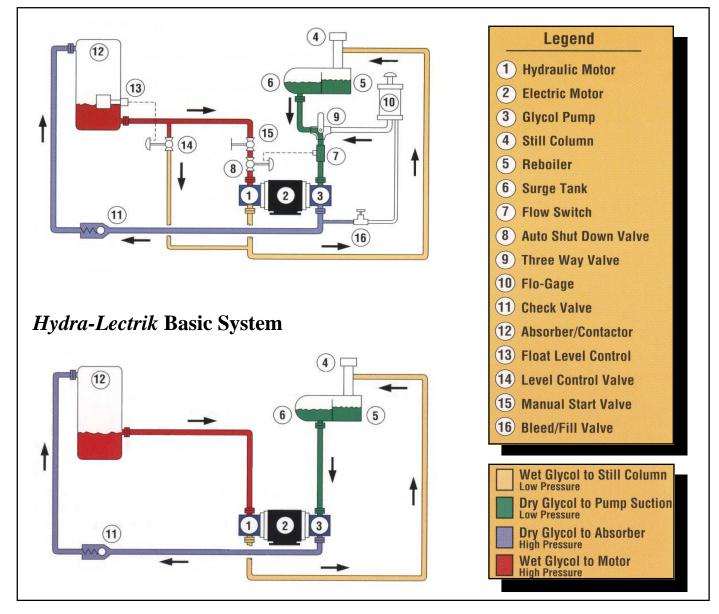
This 10 HP, three-phase, 480 VAC *Hydra-Lectrik* can replace a standard 30 HP pump. The *Hydra-Lectrik* pump space-saving configuration is easy to install and maintain. It operates whisper quiet and vibration-free with no pulsation dampeners.

DETERMINATION OF MODEL NUMBER

Rotor-Tech® *Hydra-Lectrik* Glycol Pumps use a simple system to determine the entire assembly model designation. The number is made up by categories as shown in example below.



Hydra-Lectrik System Schematic With Controls



Hydra-Lectrik Glycol Pump Benefits

Easily maintained Requires minimum electrical power Uses no gas U.S. patent number 4511378 & 5492556 Other patents pending Flow rates from 10 GPH to 10,000 GPH Helps meet new EPA and state mandated VOC and BETX emission standards Using speed controlled electric pumps can reduce emissions even more

No Pulsation Dampeners Required !



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Rotor-Tech® Flo-Gage

A very important and useful accessory with any pump.

Features & Benefits

It provides:

- Extremely accurate flow measurement.
- An excellent means to view the fluid condition.
- A safe method to introduce additives into the system.
- Reduced discharge pressure during start up.
- Environmentally safe means to bleed off air to prime the pump.

All models are:

- Precision made with heavy duty clear acrylic cylinders fitted to a heavy aluminum base and top.
- Furnished with a sturdy laminated easy-to-read chart to convert time for a pumped volume to GPH, GPM on any units specified.
- Furnished with a three-way diverter ball valve in bronze or 316 stainless steel.



Model Number *	Capacity	Usual Flow Rates	Valve Sizes	3-Way Valve
1200010	One Pint	5 to 90 GPH	1/2 in. NPT	Bronze
1200020	One Pint	5 to 90 GPH	1/2 in. NPT	316 S/S
1200040	One Quart	10 to 180 GPH (3GPM)	3/4 in. NPT	Bronze
1200050	One Quart	10 to 180 GPH (3GPM)	3/4 in. NPT	316 S/S
1200070	One Gallon	60 to 480 GPH (8GPM)	1.0 in. NPT	Bronze
1200080	One Gallon	60 to 480 GPH (8GPM)	1.0 in. NPT	316 S/S
1200090	Two Gallon	60 to 1020 GPH (17GPM)	1 1/2 in. NPT	Bronze
1200095	Two Gallon	60 to 1020 GPH (17GPM)	1 1/2 in. NPT	316 S/S
1200105	Five Gallon	150 to 2400 GPH (40 GPM)	1 1/2 in. NPT	Bronze
1200106	Five Gallon	150 to 2400 GPH (40 GPM)	1 1/2 in. NPT	316 S/S
1200107	Five Gallon	150 to 2400 GPH (40 GPM)	2 in. NPT	Bronze
1200108	Five Gallon	150 to 2400 GPH (40 GPM)	2 in. NPT	316 S/S

* Many other models are available.



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GLYCOL FILTERS FOR THE NEXT GENERATION

Filter Benefits

- 200 PSI @ 300° F
- Standard size cartridges
- Compact size
- Light weight
- Minimal maintenance
- High efficiency
- Protects glycol pump
- Reduces repair costs
- Keeps contactor clean
- Low elevation piping
- Ports in the base
- Port for removing sludge
- Top entry eliminates spillage

Sizes						
Model	Flow	GPH	Weight	Cartridge No.		
No.	Min.	Max.	Lbs.			
1240010	5	180	7.5	75975		
1240020	5	360	12.0	75195		
1240030	5	540	15.5	75292		

New From Rotor -Tech®, Inc.



Low pressure for dry (lean) glycol suction line.



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<u>Statement of NPSH Requirements for</u> <u>ROTOR-TECH Glycol Pumps</u>

This is to certify that Rotor-Tech Positive Displacement Rotary Gear pumps require "Flooded Suction" only when used as the primary circulation device in glycol based Natural Gas dehydration service.

Signed:

President, Rotor-Tech Inc.

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