SHAFER™

Nitrogen Power Banks

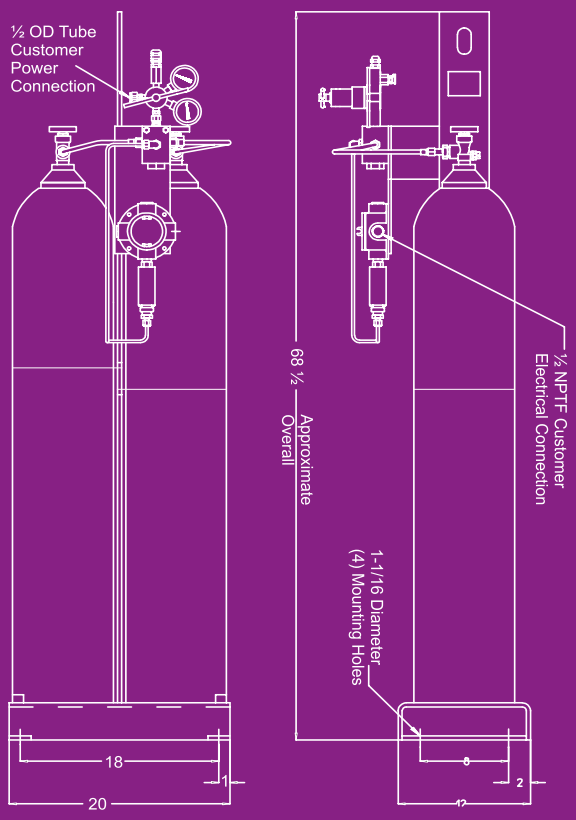
For use where a suitable natural gas or other power source is unavailable, these compact, rechargeable nitrogen storage banks provide high pressure power supply to Emerson valve actuators.

Shafer uses seamless steel cylinders manufactured to DOT spec 3AA. The cylinders are 9" O.D. x 51" long with a nominal volume of 2675 cubic inches. The maximum working pressure is 2265 psi with a test pressure of 3775 psi.

Nitrogen power banks are available from 1 to 10 bottle modules with or without optional sun shade housings as shown on the next page.

Actuators to be powered by nitrogen should be ordered with the Emerson soft-seated bubble-tight pilot operated check valve to prevent leakage of the nitrogen supply.

Pressure regulators with relief valve and gauges are included so that the power pressure fed to the operator can be reduced to the pressure required of the specific operator to turn the valve at the specified differential pressure and torque requirement.



EMERSON™
Process Management

NITROGEN POWER BANKS

To calculate the number of cylinders required to stroke an actuator N times the following formula applies:

$$\frac{{}^{V}N2 = VO \times A \times PR \times N}{{}^{P}N2 - PR}$$

Where ${}^{V}N2$ = Actual volume in cubic inches of nitrogen cylinders required.

VO = Actual stroking volume in cubic inches of the operator.

A = 1.25 for gate valve operators.

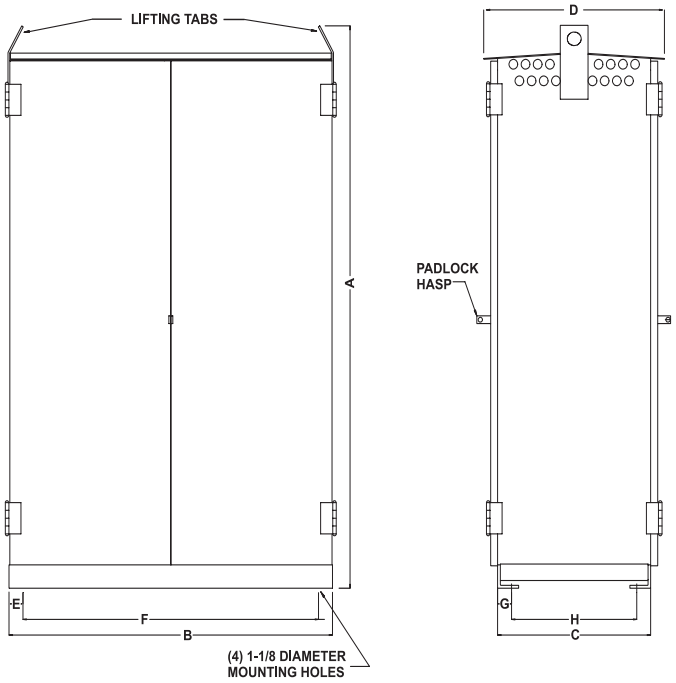
A = 2.5 for rotary vane operators.

PR = Regulator set point in PIA.

${}^{P}N2$ = Starting pressure of nitrogen cylinders in PIA. (2250 psi)

When ${}^{V}N2$ is determined, divide the result by 2675 cubic inches to determine number of cylinders required.

Optional pressure switches may be added to signal an alarm if a low nitrogen pressure condition develops.



These tamper proof, lockable housings constructed of 12 gauge (.104") steel and rigid angle provide relief from direct sun rays as well as preventing unauthorized tampering. The units have swing out doors with stainless steel hinges for easy access and cylinder change out.

Overall Dimensions of Nitrogen Power Supply Sun Shade Housings									
Number of Bottles	**Weight ***	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**
1 or 2	315#	73	25 5/8	10 3/4	11 7/8	2	21 5/8	2	6 3/4
3 or 4	435#	73	25 5/8	22	24	2	21 5/8	2	18
5 or 6	550#	73	36 5/8	22	26	2	32 5/8	2	18
7 or 8	630#	73	46 1/2	22	26	2	42 1/2	2	18
9 or 10	715#	73	56 3/4	22	26	2	52 3/4	2	18
* Weights are less cylinders. Cylinders = 120 pounds each (approximately)									

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SHAFER™

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