

Durability measured
in **decades**

Liquid Ring Camel Vacuum





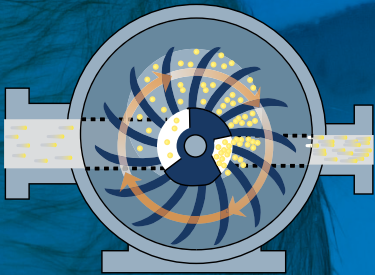
Durability measured in decades

Most alternative vacuum technologies measure life in terms of “hours”. The liquid ring LifeLine® Camel systems, utilizing Nash Engineering™ liquid ring pumps, re-define durability in terms of “decades” of service. It is not uncommon for Nash pumps to have been in service for thirty years or more. What is more incredible is that these pumps only need minimal maintenance over their lifetime.



Liquid ring operating principle

Liquid ring is a simple technology. A rotor spins a sealing fluid (usually water) inside of a cylindrical housing. Since the rotor is offset to the housing, the fluid moves in and out of “buckets” as the rotor turns. The fluid acts like an ideal piston, pumping the air virtually without friction. The rotor never touches the housing, so the pump suffers no internal wear.



Ability to handle carryover

Unlike other technology options, liquid ring systems have the unique capability to ingest volumes of liquid contaminants without a noticeable effect on the pump operation.



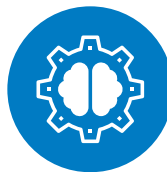
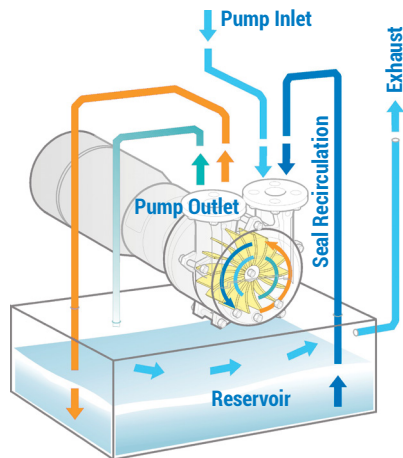
Tolerates high ambient temperatures

Creating vacuum creates heat. Retained heat means shortened life and increased maintenance. Because liquid ring pumps have no internal friction and are sealed with a liquid, heat is transferred to the seal fluid and is removed from the pump. Benefiting from the cool operation, liquid ring pumps can operate where ambient temperatures prohibit air cooled technologies.



Secure water supply

Water usage and loss of supply are often cited as reasons to forgo the advantages of liquid rings. The Camel provides the answer to both issues. The design of the Camel uses significantly less water per minute than normal liquid ring operations. Through an on-board water reservoir, there is enough seal water for up to 48 hours of operation.



Intelligent controls

A programmable logic controller (PLC) controls the automatic alternation of both vacuum pumps with provisions for simultaneous operation if required and automatic activation of the reserve unit if required. The control system also includes an automatic minimum run time adjustment to control run time based on demand.



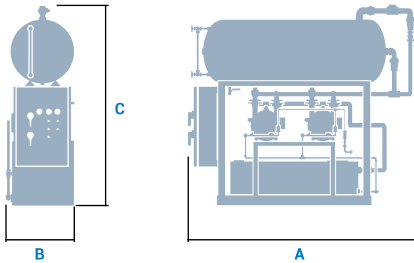
Type 1 Configuration



Type 2 Configuration

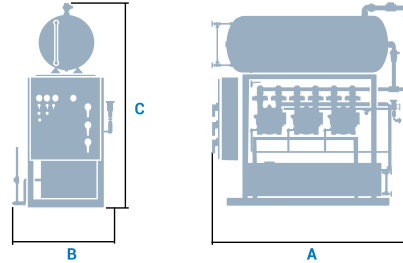
Key benefits

- Durable
- Not affected by liquid contaminants
- Secure water supply
- Cool operating in high ambient



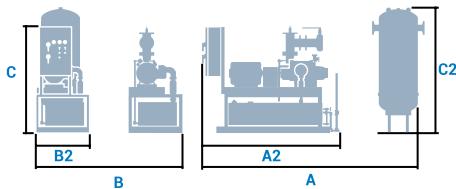
Duplex Type 1

HP	A	B	C
3	90"	35"	77"
5	90"	35"	77"
7.5	92"	35"	79"
10	92"	42"	90"



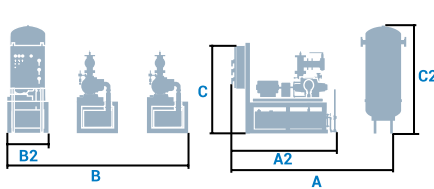
Triplex Type 1

HP	A	B	C
5	90"	35"	77"
7.5	92"	35"	79"
10	92"	42"	90"



Duplex Type 2 Modular

HP	A	A2	B	B2	C	C2
10	134"	86"	93"	35"	69"	76"
15	134"	86"	93"	35"	69"	76"
20	136"	88"	110"	43"	75"	76"
30	136"	88"	110"	43"	75"	76"



Triplex Type 2 Modular

HP	A	A2	B	B2	C	C2
10	142"	88"	152"	35"	75"	90"
15	142"	88"	152"	35"	75"	90"
20	142"	88"	177"	43"	75"	90"
30	142"	88"	177"	43"	75"	90"

Liquid Ring Camel Vacuum System			
Power ¹		System capacity ²	
Hp	kW	SCFM @19" Hg	lpm @450 mmHg

DUPLEX

3.0	2.2	18	510
5.0	3.7	30	850
7.5	5.6	41	1,161
10.0	7.5	49	1,387
10.0*	7.5	55	1,557
15.0*	11.0	91	2,576
20.0*	14.9	123	3,483
30.0*	22.0	175	4,955

TRIPLEX

5.0	3.7	60	1,700
7.5	5.6	82	2,322
10.0	7.5	98	2,774
10.0*	7.5	110	3,114
15.0*	11.0	182	5,154
20.0*	14.9	246	6,966
30.0*	22.0	350	9,911

1) Power is nameplate motor HP and not necessarily the exact draw of the vacuum pump.
kW is a conversion from horsepower.

2) All capacities are calculated using NFPA 99 (reserve vacuum pump on standby)

* Units are modular systems



Life is in the details.®