



# JRG/JT EDUCTORS

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## Superior By Every Measure

The Clark-Reliance Corporation, with its Jerguson/Jacoby-Tarbox Eductors (JRG/JT), delivers greater value for your investment on every count.

Their advanced design provides superior flow paths for optimum performance, while the rugged construction is your assurance of reliability on demanding applications.

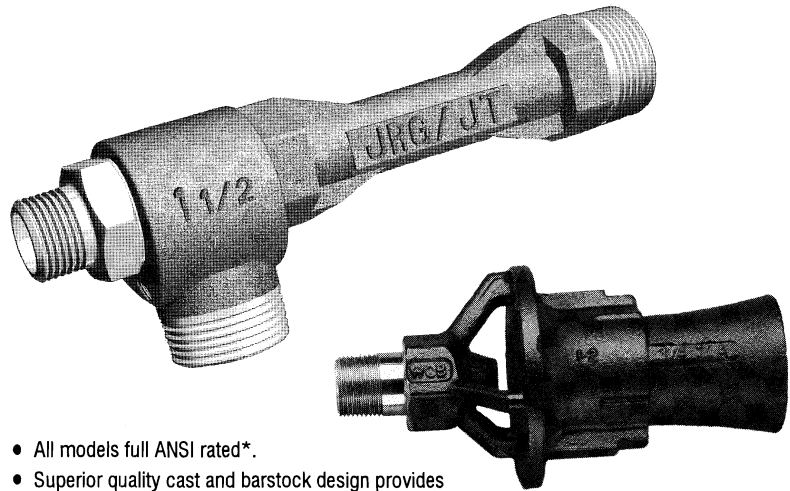
They are backed by superior application engineering services, and can be supplied to meet tight delivery schedules.

In addition, they are offered at prices equal to or lower than other makers of eductors, or conventional electric pumps.

### Advanced Design... Full ANSI Ratings

JRG/JT Eductors feature an advanced design to assure flows better than those of other eductors. Unlike typical cast units, which meet only a nominal pressure rating, JRG/JT Eductors meet rigorous ANSI specifications.

All of our eductors have a smooth specified finish for critical flow paths. In comparison, sections of the flow paths in competitive cast units may be left rough to keep production costs down. Also, the mixing tube section of JRG/JT Eductors has been designed to withstand the stress to which it will be subjected. This is the point at which many other makes are weak and subject to breakage during installation. All units have wrench flats to prevent damage during installation.



- All models full ANSI rated\*.
- Superior quality cast and barstock design provides superior performance.
- Wrench flats at pipe connections prevent damage to unit on installation and removal.
- World Class Manufacturing - per your requirements, at prices equal to or lower than those of competitive eductors - by an ISO 9001 certified manufacturer.
- Computer designed flow path with finishes specified to meet maximum operating efficiency.

\*non-metal parts are not specified by ANSI.

Providing a smooth flow path is critical to optimum eductor performance. As a result of this feature, the motive fluid achieves more velocity through the eductor body, and this means more energy is used for pick-up of the suction fluid. Also, better flow paths in the diverging section of the eductor allow it to achieve better discharge pressures.

### More Productive Than Electric Pumps- With Lower Initial & Upkeep Costs

JRG/JT Eductors offer many advantages over electric pumps. They feature design simplicity, without rapidly rotating parts that are subject to leakage, wear and breakage. Eductors are generally small in relation to the work they do, and they are low in cost. They are easy to install and require few adjustments. They are easy to inspect and clean, and never require lubrication. In addition, they

are ideally suited for use in hazardous locations, without the need for explosion proofing as may be required with electrical equipment.

### Better Technical Capabilities

The Clark-Reliance Corporation staff has extensive experience in eductor technology. Our engineers have the ability to computer-calculate the fluid and friction factors that can affect eductor operation. And they are experts at computer-modeling the performance of the eductor.

Customer service is at the base of all technical activities. Application engineering assistance takes the form of factory and field personnel on call for joint consultation with customers.

In short, the JRG/JT Eductor is the best choice for many applications. Whether it is educting liquid, gas, steam, or solids, we have the right eductor for you.

# Efficient, Trouble-Free Design

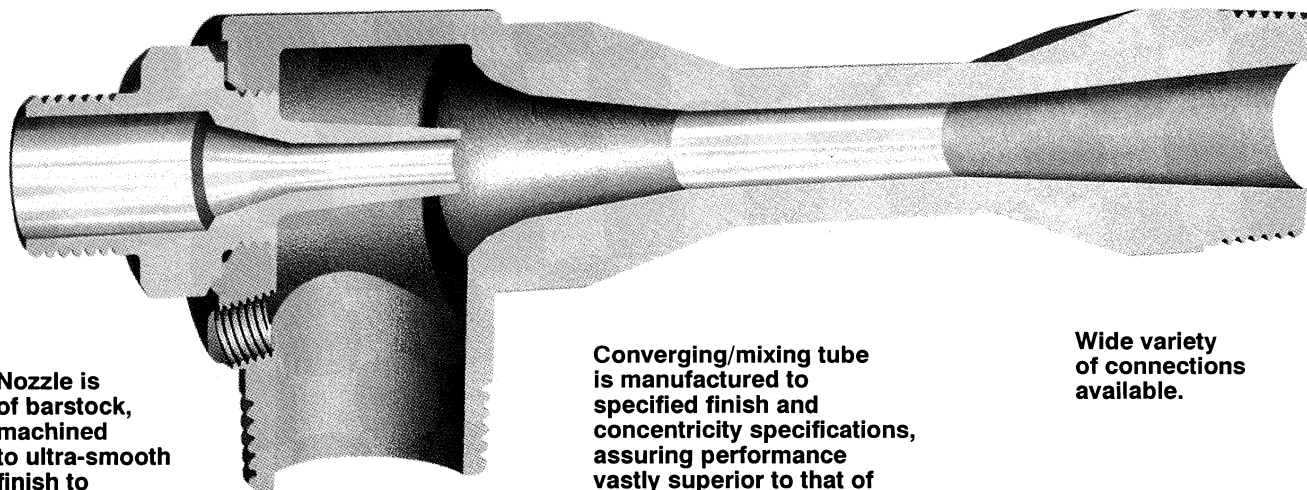


**Only two major components: Nozzle and Body.**

**O-Ring seal design for low leakage levels.**

**Entire unit meets ANSI specifications.**

**Diffuser nozzle acts efficiently in converting high velocity stream back into a pressure stream.**



**Nozzle is of barstock, machined to ultra-smooth finish to maximize flow.**

**Converging/mixing tube is manufactured to specified finish and concentricity specifications, assuring performance vastly superior to that of competitive cast units.**

**Wide variety of connections available.**

**Optional gauge ports to evaluate the performance of the eductor.**

## How Eductors Work

An eductor is a pump that uses a fluid to perform the work of pumping another fluid (or solid). The fluid doing the work is termed the motive fluid, and the fluid being pumped is the suction fluid. The motive fluid employed can be liquid, gas or steam. The suction fluid can be liquid, gas or steam.

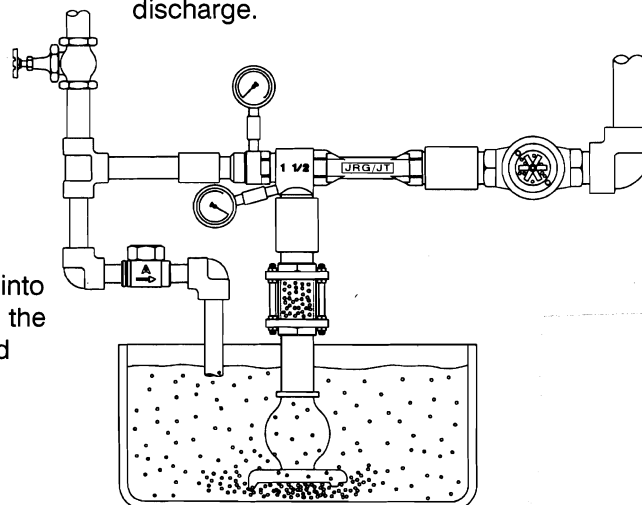
Other names for eductors include jet pumps, ejectors, venturi pumps, siphon pumps, steam siphons, and injector pumps.

Eductors operate on basic principles of flow dynamics that have been known since the times of the ancient Greeks. What makes the JRG/JT Eductors superior is the way advanced computer modeling has been used to maximize efficiency. This same computer modeling allows Clark-Reliance to simulate your process needs and recommend the correct product every time.

## Operation Is As Follows:

1. The pressurized motive fluid enters the eductor through the motive inlet and enters the nozzle. The nozzle causes the motive entering to accelerate as it passes through the converging portion of the nozzle. The nozzle is of the converging type if the motive is a liquid, or of the expanding type if the motive is gas or steam.
2. The suction chamber is where the pumping takes place. As the accelerated motive leaves the nozzle, the friction between it and the material in the suction chamber forces the mixture into the diffuser section lowering the pressure in the chamber and pulling additional material in from the suction inlet.

3. The motive fluid entrains the suction media to produce a uniformly mixed stream traveling at a lower velocity. The mixing tube in JRG/JT Eductors is amply sized to allow sufficient time for the two streams to mix completely.
4. The diffuser is specially shaped to reduce the velocity of the mixture still further, converting the kinetic energy to pressure at discharge.



# The Best Choice For Many Applications



JRG/JT Educators are the most efficient way to pump many kinds of liquids and gases, and even solids. Applications are generally categorized as follows: Liquid motive pumping a liquid. Steam motive pumping a liquid. Liquid motive pumping a gas. Other application areas are in water treatment processes and in those for gases.

## Liquid Motive Pumping Liquid

*Typical applications include:*

- Draining sumps.
- Pumping in areas where an electric pump would present an explosion hazard.
- Boosting the NPSH (Net Positive Suction Head) of a pump.
- Pulling an acid or base into a water stream for dilution purposes.

## Steam Motive Pumping Liquid

- For draining sumps, where electrical lines are not available.
- For drawing water from ponds and warming it as it is being supplied to processes.
- For heating process fluids in-line.
- For cooking slurries in-line.
- For heating reactor jackets.

## Liquid Motive Pumping Gases

- To aerate a liquid to reduce the BOD (Basic Oxygen Demand) of the fluid.
- To exhaust vapors or gas from a room.
- To evacuate a vessel.
- To scrub fumes from a gas.
- To inject air, ozone, chlorine or other gas into a process liquid.
- To create vacuums.

OPERATING SPECIFICATIONS							
<b>Pumping Liquids</b> For complete information, turn to Section E200 Bulletin E200.1	MODEL	SL	ML	HL	SG	HG	
	Operating Media	Liquid	Liquid	Liquid	Steam	Steam	
	Operating Pressure (psig)	15-200	15-200	15-200	30-150	20-150	
	Pressure Recovery %	10-15	30-35	40-50	15-20	30-35	
	Maximum Suction Lift	27 ft	27 ft	27 ft	20 ft	20 ft	
	Maximum NPSH Required	3 ft	3 ft	3 ft	13 ft	13 ft	
<b>Pumping Gases</b> For complete information, turn to Section E200 Bulletin E200.3	MODEL	ML	MLE	SG	HG		
	Operating Media	Liquid	Liquid	Steam, Air	Steam, Air		
	Operating Pressure (psig)	20-200	20-200	20-150	10-100		
	Maximum Vacuum	29 In Hg	29 In Hg	24 In Hg	23 In Hg		
	Discharge Pressure	15	15	12	35		
	Applications	Evacuate, Exhaust, Prime →					
<b>Heating Liquids</b> For complete information, turn to Section E200 Bulletin E200.5	MODEL	MLE	ML	MLH	ULJ	ULH	TLA
	Heating Process	In-line	In-line	In-line	In-line	In-line	In-tank
	Max Temp Rise	180	200	215	200	200	125
	Maximum GPM Heated	5000	5000	5000	700	700	2000
	Steam Press Range	Vac-45	Vac-100	Vac-120	0-150	0-150	10-140
<b>Solids Transport</b> Consult the factory for specific application information	MODEL	SL	ML	HL	ULJ	SG	
	Operating Media	Liquid, Air	Liquid, Air	Liquid, Air	Air	Air	
	Operating Pressure (psig)	5-100	5-100	3-100	15-50	20-100	
	<i>For details on these units provide complete piping information.</i>						
<b>Tank Agitation</b> For complete information, turn to Section E100 Bulletin E100.3	MODEL	TLA					
	Operating Pressure (psig)	10-150					
	Suction Pick-up Ratio	4:1					
	Plume Length	1 ft per psi					
	Maximum GPM Motive	3200					
	Viscosity Range	1-2000 cP					

## Steam Or Gas Motive Pumping Gases

- To lower the boiling point of a vessel, saving heating costs.
- To produce a vacuum for filtration processes.
- To prime pumps and vessels.
- To prime siphon lines.

## Mixing

- To provide agitation of a vessel.
- To control shear during agitation.

# JRG/JT Educator Selector Guide

SUCTION	MOTIVE		
	LIQUID	STEAM	GAS
LIQUID	Pump from Tank Pump from Sump Dilute in Line Transport Liquid	Pump from Tank Pump from Sump Heat Liquid Prime Pumps Evacuate Liquid Lines	Apply Spray Humidify
	SL, ML, HL	SG, HG, TLA	Custom Units
STEAM	Heating in Line Condensing Steam Sterilize Degrease	Thermocompressor	Humidify Exhaust Vessels
	ML, HL, MLH, MLE, ULJ, ULH	Not Available	SG, HG, ML
GAS	Vacuum Filtration Exhaust Vessels Evacuate Vessels Aerate Liquids Distillation Prime Pumps	Vacuum Filtration Exhaust Vessels Evacuate Vessels Distillation Prime Pumps	Vacuum Filtration Exhaust Vessels Evacuate Vessels Distillation Prime Pumps
	ML, MLE	SG, HG	SG, HG, ML
SOLIDS	Forming Slurries Wet Polymers Dilute Mix	Transport Humidify Solids	Pneumatic Transport
	ML, ULJ	SG, HG	ULJ, SL, ML, SG



**NOTE:** Clark-Reliance shall not be liable for damages of any kind resulting in part from failure to install its products in accordance with all applicable codes and/or state and local regulations, improper application and/or maintenance.