

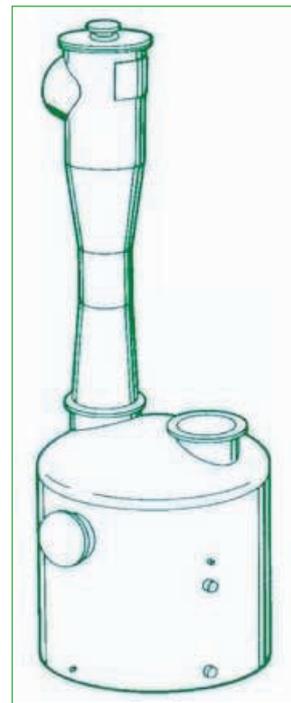
## Series 770 Water Jet Scrubbers

### Series 770 Water Jet Educator Scrubbers

The Maskell Series 770 Water Jet Scrubbers are designed for the removal of soluble gases and particulate matter, and direct-contact condensation. The open design combined with a high liquid flow-rate permits collection of sticky and/or gummy particulate, as well as gas which decomposes upon contact with water, e.g.  $\text{SiCl}_4$ ,  $\text{H}_2\text{SiF}_6$ .

A high liquid flow at pressures up to 100 psig directed into the throat of the venturi induces a gas flow into the venturi. Gas/liquid contact occurs in the throat of the venturi where the contaminant gas or particulate matter is scrubbed. Leaving the throat, the gas is allowed to expand in the venturi's diverging section prior to entering the separator tank. Once in the separator tank, the gas stream makes several sharp changes in direction, causing entrained water droplets to impinge on the tank wall or the liquid surface. The scrubbed gas then exits the separator and is exhausted to atmosphere. Where extremely high efficiencies are required, water jet scrubbers can be arranged in series.

The standard Series 770 Water Jet Scrubbers are custom designed to meet the specific requirements of each application.



### Series 770 Applications

Heil Series 770 Water Jet Scrubbers have been used successfully for control corrosive and/or noxious gases and particulate matter in fertiliser, pulp and paper, pharmaceuticals, and chemical plants. The design of the Series 770 Water Jet Scrubber makes it the ideal choice for control of exhausts from epitaxial reactors. The scrubber is selected to provide adequate dilution (up to 100:1) of the incoming gas, trapping most of the silicon dioxide (a decomposition product of  $\text{SiCl}_4$ ) while also absorbing the HCl gas. Two Series 770 Water Jets in series have been tested in excess of 98% efficiency.



### Series 770 Features

Principal features of the Series 770 Water Jet Scrubber are:

**Low initial cost** - The Series 770 Water Jet is capable of inducing gas flows up to 160,000  $\text{m}^3/\text{hr}$  against static resistances up to 200mm W.G. without using a fan. Pre-engineered standard designs are available over the range of capabilities.

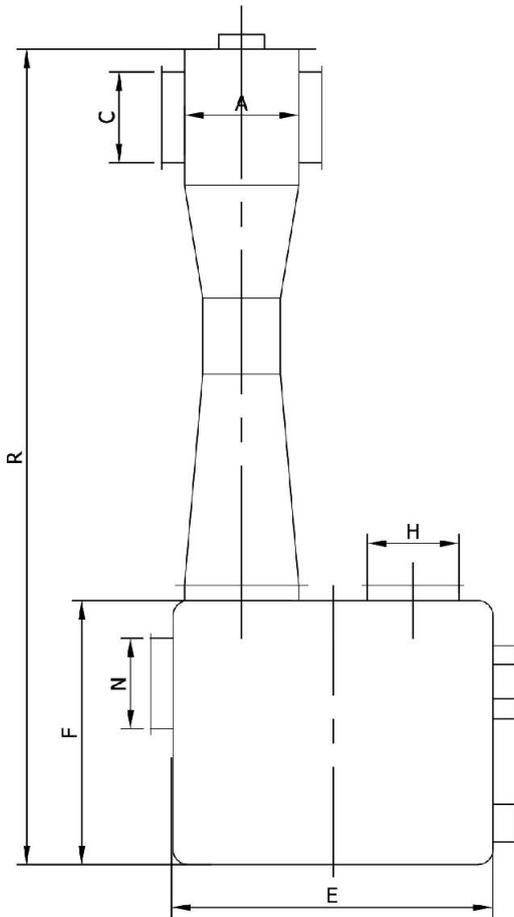
**Low maintenance cost** - No moving internal parts to wear. The spray nozzles used to direct the spray to the throat have large orifices to eliminate the potential for plugging. The open design enables the Series 770 Water Jet Scrubber to be highly effective controlling heavy solids loadings, as well as sticky or tacky materials which could clog other scrubbers.

**Versatile** - The Series 770 Water Jet Scrubber can be specified for a wide variety of gas scrubbing applications. In addition they can be operated in series with another Series 770 Water Jet or other type scrubbers, e.g. Series 730 Countercurrent Scrubber, etc., to achieve maximum efficiencies even for the most difficult of applications.

**High efficiency** - Proper sizing of the unit and selection of irrigation rate, pressure, and chemical addition will result in efficiencies up to 90% for soluble gases for a single Series 770 Water Jet. Particulate collection efficiency can exceed 99%.

**Extended service life** - Individual units are designed with maximum corrosion resistance as a primary consideration. The wide selection of corrosion resistant materials feature FRP (fiberglass reinforced plastic) as a standard material with stainless steel and other alloy construction available.

## Series 770 Water Jet Scrubbers



### Series 770 Equipment Selection

The air or gas volume required to ventilate the process is the principal guide in selecting the proper sized scrubber. Where the specific volume of air required is not already known, references such as the Industrial Ventilation Handbook should be consulted.

After determining the total air volume to be scrubbed, the efficiency of the unit must then be selected. The required efficiency will depend upon several factors including type of particulate, size distribution, quantity, concentration, plant environment, local and national codes.

Maskell's engineers will then assist in determination of pressure drop, recirculation rate, specific material selection, as well as sizing and specification of accessory items (pumps, recirculation tanks, fans, etc.) to make the system complete. Maskell's engineers will then provide a specific quotation on the appropriate scrubber and/or system.

**NOTE:**

1. All dimensions re approximate.
2. Rectangular access doors are flush type.
3. Fittings 150mm and smaller - Sch. 80 PVC, 200mm and larger FRP flanged.
4. Separator tank sizes 30 and larger have dished heads.

Size	A	C	E	F	H	N	R	Operating Range	
								CFM	m <sup>3</sup> / hour
770-3	75	75	600	690	75	-	1400	20-120	34-204
770-6	150	150	900	900	150	-	2100	80-480	136816
770-10	250	200	1100	1100	200	-	2500	200-1400	340-2380
770-12	300	250	1200	1200	250	600	2900	250-2000	425-3400
770-18	450	400	1500	1350	400	600	4000	500-4500	850-7650
770-24	600	500	1800	1700	500	600	4800	1000-8000	1700-13600
770-30	750	600	2100	1750	600	600	5400	2000-12000	3400-20400
770-36	900	750	2400	2300	750	600	6800	2500-17500	4250-29750
770-48	1200	1050	2700	3000	1050	600	9600	5000-35000	8500-59500
770-60	1500	1350	3400	3700	1350	600	11600	7500-45000	12750-76500
770-72	1800	1500	3700	4100	1500	600	12600	10000-70000	17000-119000
770-84	2100	1800	4300	4100	1800	600	14400	13000-95000	22100-161500

**Important** - The data and information represented herein refers to typical values by the methods or apparatus indicated and should be so considered. Since processing variables are a major factor in product performance, this information should serve only as a guide. Any information presented herein should not be assumed to be free of patent coverage nor taken as an inducement or encouragement to infringe if patents exist claiming the methods, apparatus or products herein described. No warranty, therefore, is thereby given concerning the existence or non-existence of any patents claiming any pertinent subject matter presented herein. The company assumes no obligation, express or implied, or liability for use of the information and data presented.



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