

# AIR BOSS® ATS



## *Air Purification System*



Qualified to UL Specification  
YYXS-YYXS7

Hood and Duct Accessories

UL File #MH27669

New York City, Department of Buildings  
MEA 288-01-E and 88-99-E

**TRION**®  
air purification systems

# ENGINEERED SOLUTIONS FOR CLEAN AIR



## THERE ARE CERTAIN THINGS YOU EXPECT FROM AN AIR PURIFICATION SYSTEM.

A perfect fit for your specific application...effectiveness...availability. For even more value, add a variety of applications and simplicity of operation. Back all these features up with substantial product and application expertise, superb technical services and unconditional support anywhere, anytime, and you've got the first name in air purification systems: Trion.

Since 1947, Trion has combined the leading-edge technology you expect with the value-added services you want to provide unique, effective air purification solutions for numerous applications in industrial and commercial markets.

## NUMEROUS APPLICATIONS. ONE SOLUTION.

When you need one system for cleaning numerous applications, such as kitchen grease and smoke, oil mist, and contaminants from other industrial processes, Trion has the kitchen exhaust, commercial and large industrial solutions just for you.

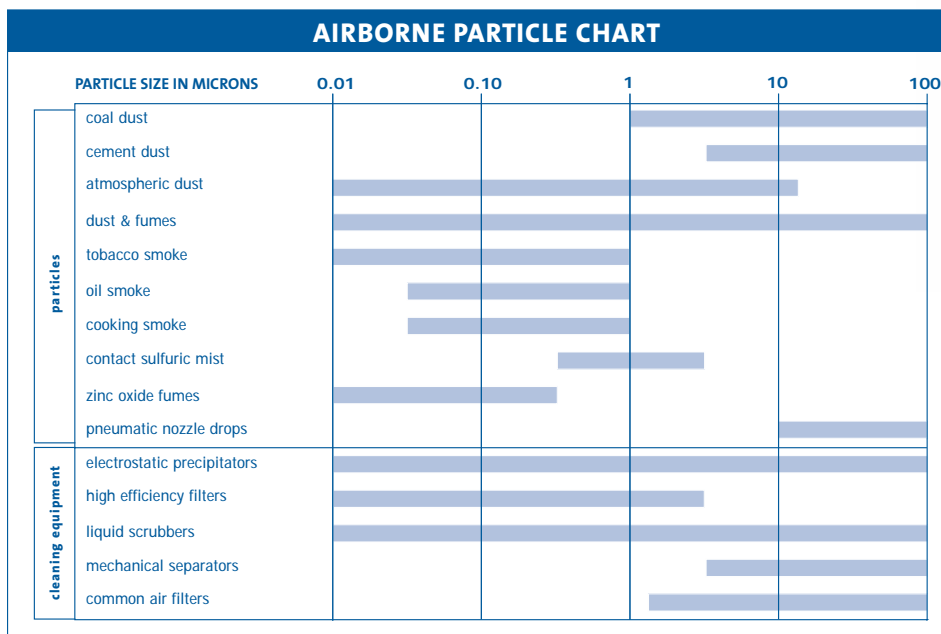
Atmospheric contaminants may be either liquids or solids, in the form of oil, water, grease, smoke, fumes, dusts or similar particulate including gaseous and vaporous odors. The ATS units

readily adapt to the various air collection methods utilized to recover contaminant for collection. Air inlet and outlet flanges on the modules include predrilled holes to connect adjoining duct work. Module support rails are included for multiple mounting methods.

With your unique needs in mind, the Trion ATS design utilizes five individual sections, each with specific air treatment tasks that are preselected, then factory assembled to form a compact, inline, drop-in unit. The modules and their basic functions include:

MODULE NAME	NORMAL FUNCTION
Prefilter/Impinger	Mist Eliminator/Grease Extraction
ESP-Electrostatic Precipitator	High-efficiency Primary Filtering Device
Media	Secondary or Backup Filter
Adsorber	Odor Control and Removal of Gases
Blower	System Air Mover

## CHARACTERISTICS OF PARTICLES AND PARTICLE DISPERSOIDS



*Air Boss® ATS features factory assembled, inline, compact construction.*

# Design Efficiencies & Operational Reliability

## FEATURE/BENEFITS

- Customized for specific applications
- Effective on airborne solids, liquids and odors
- Available in various capacity ranges
- Factory assembled, built-up construction
- Integral automatic cleaning system
- Optional fire suppression system
- ETL listed
- Designed for: simplified installation, ease in service, NFPA 96 standards

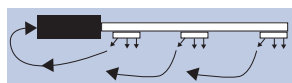
## ATS APPLICATIONS

Oil Mist:	Smoke:	Kitchen Exhaust:	HVAC:
<b>Machine Shops</b>	<b>Welding</b>	<b>Grease</b>	<b>Clean Rooms</b>
<b>Cold Heading</b>	<b>Presses/Forging</b>	<b>Smoke</b>	<b>Return Air</b>
<b>Screw Machines</b>	<b>Curing</b>	<b>Odors</b>	<b>Outside/Makeup Air</b>
<b>Foundry</b>	<b>Rubber Manufacturing</b>	<b>Wood-fired Cookers</b>	<b>Lounges</b>
<b>Presses</b>	<b>Plasticisers</b>		<b>Bars</b>
<b>Machining Centers</b>	<b>Heat Treating</b>		<b>Smoking Rooms</b>
<b>Heat Treating</b>			<b>Casinos</b>
<b>Tenter Frames</b>			<b>Indoor Gun Ranges</b>

- **Trion Quality** The same high quality that Trion provides on ALL of the US Navy submarine fleet since 1947 as a sole supplier of air cleaning equipment to the world's navies.
- **NFPA Qualified** Designed to NFPA 96 standards for kitchen exhaust.
- **ETL Listed** ETL approved to UL standard 867.
- **Sectional Design** Built-up design allows units to be tailored to your exact requirements.
- **Smoke and Odor Control** Components effectively remove both liquid and solid particulate, as well as gas and odor.
- **Complete System Design** One central system to effectively treat virtually any application for kitchen or industrial exhaust air.
- **High Efficiency Cleaning** Up to 99% efficient, per DOP or ASHRAE test methods.
- **Spiked Ionizer Design** Eliminates common wire breakage and replacement, as seen in wire and other ionizer cell designs.
- **Heavy Duty Cell Design** The most durable and efficient cell design on the market insures long term performance and reliability.
- **Automatic Cleaning** Programmable Logic Controller (PLC) automates the cleaning process, which reduces maintenance costs and insures efficient air cleaning at all times.
- **Simple to Service** Designed for easy serviceability from either side of cabinet, as specified.
- **Optional Fire Suppression** Available on all systems to meet your specific requirements.
- **Ease of Installation** System design makes installation simple and requires no field assembly. Just attach your ductwork, electrical connection and plumbing, and it's done.

## TYPICAL SYSTEM ARRANGEMENTS

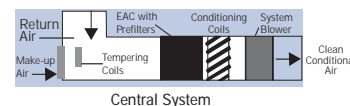
The ATS units readily adapt to the various air collection methods.



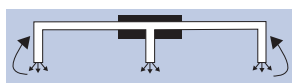
Fugitive Contaminant - Multiple Overhead Discharge through Central Trunk Line



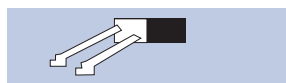
Multiple Source Captured Contaminant Hooded to Main Trunk Line



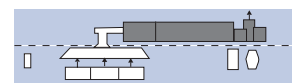
Central System



Fugitive Contaminant - Low Column Ducted Discharge



Multiple Source Captured Contaminant Hooded to Common Mixing Plenum



Kitchen Exhaust (Weatherproof)

# PARTICLE CHARACTERISTICS



## REVOLUTIONARY TECHNOLOGY FOR THE NEW MILLENNIUM

During operation, the contaminated air to be cleaned passes across Trion's unique spiked ionizer blades which are supported between flat grounded electrodes. Revolutionary to the industry, the blades are made of stainless steel that will not rust or break, thus eliminating costly maintenance time and replacement costs.

The DC voltage supplied to the blades creates a high intensity field where the particulate matter in the air becomes electrically charged. The charged particles then pass into a collector plate section made up of a series of equally spaced parallel plates. Each alternate plate is charged with the same polarity as the particles, which repel, while the interleaving plates are grounded, which attract and collect.

Periodically, depending on the type and amount, the contaminant is washed into the cabinet drain basin by an automatic activated integral washing system that is located on both the upstream and downstream sides of the ionizing-collecting cell(s). "U" shaped slide rails are positioned on the air entrance and exit sides of the module housing. These rails will hold two-inch metal mesh filter panels or a 40% open perforated plate. The selection depends on the nature of the contaminant and the other modules used in the air treatment system.

A programmable logic controller (PLC) and dual voltage solid-state Pulse Width Modulated (PWM) high voltage DC power supply are housed in a remote-mounted NEMA 12 enclosure. The PLC controls the system functions of wash, fire suppression, and fan on/off. A 7-day clock is standard. The PWM power supply, which energizes the ionizing-collecting cells, comes standard with LED indicator lights. Optional door-mounted meters, which aid in determining cell operating status, are also available.

In applications requiring extremely high collection efficiency and low resistance to air flow, two or three electrostatic sections may be placed inline to create a double or triple pass unit.

## DURABLE, COMPACT CABINETRY

When you invest in a Trion ATS, you want it not only to fit your unique needs, but your individual space as well. And you want it to last. Trion ATS housings are constructed using 16-gauge zinc-coated steel. Then all welds and the finished area of welds are treated with a corrosion- and rust-inhibiting coating to assure long life. Cabinet finish is completed with a durable industrial-grade semi-gloss baked-on enamel no less than 3 mil thick. All doors are gasketed to prevent air and water leakage. Finally, the housing is furnished completely assembled for easy shipment and installation.

## THE IMPINGER MODULE

The impinger module is an optional part of the ATS system design. A 2" rail is positioned upstream of the impinger panel to accommodate a standard 40% free area perforated panel for heavy, fluid or semi-fluid particulate matter or a metal mesh prefilter for light oil mist. It also allows for even, dry air distribution through the filtering sections. The particulate matter may range in viscosity from that of water to relatively heavy greases. In heavy loading applications, the liquid particles strike the impinger, coalesce into droplets and then flow to the drain pan below, thus eliminating problems with evaporation. If the particles are of a high viscosity nature that do not readily flow into the drain pan, they are periodically flushed down the drain with the integral wash system nozzles located upstream and downstream of the impinger panel.

## THE ELECTROSTATIC AIR CLEANER MODULE

Electrostatic Air Cleaner Section enables extremely small particulate matter, "The Fines," to be removed from an air stream with relatively no resistance to air flow. This is due to the open area of the collecting elements. The low resistance is maintained from the start to the completion of the collection cycle. The unit operates in the higher efficiency collection range, upward of 95% DOP Method, on particles ranging in size from 10 Microns down to 0.01 Microns in size.

# Energy Savings & Efficiency

## MEDIA MODULE (OPTIONAL)

The flexibility of the media module provides an efficient means for high efficiency filtration, as a prefilter or afterfilter, depending on your requirement. This section is designed to house a variety of mechanical filters that may be required in your application. The housing allows for various filter combinations that are tailored to your specific needs, such as HEPA's, 95% bags, mini-pleated cartridges or other media. The heavy-gauge access housings are supplied with industrial-grade hardware.

## ADSORBER MODULE (OPTIONAL)

Unlike particulate filters, odors in the form of undesirable gases and vapors are most commonly removed from the air stream by the process of adsorption that is enhanced by multi-faceted porous surfaces of certain materials. Filter trays of activated carbon or optional potassium permanganate pellets effectively facilitate the adsorption of these odors and gaseous contaminants.

## STANDARD BLOWER MODULE PACKAGE

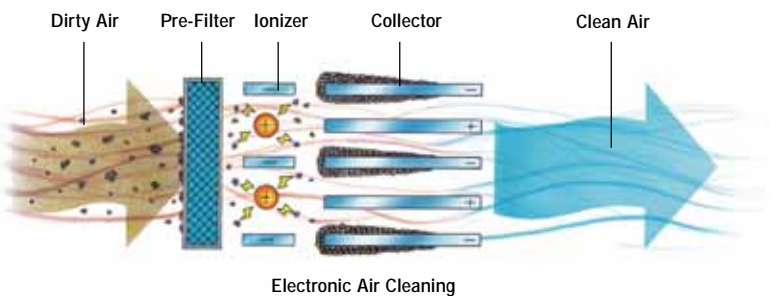
The energy-efficient, backward-inclined blower, powered by a TEFC motor, is designed for horizontal air flow and mates with the air purification system to provide a uniform distribution of air. The bolted rear panel provides service access. Air discharge

screen and rain guard are available as options. The blower wheel is steel, backward-inclined, all-welded construction.

## OPTIONAL UPBLAST BLOWER

The NFPA 96 UpBlast fan is designed to mate with the air purification system and provide uniform air distribution. It is a centrifugal upblast exhaust fan, with drain, in compliance with UL 762 for kitchen exhaust applications containing grease-laden air. The blower wheel is steel, backward inclined, all welded construction.

## PRINCIPLE OF OPERATION



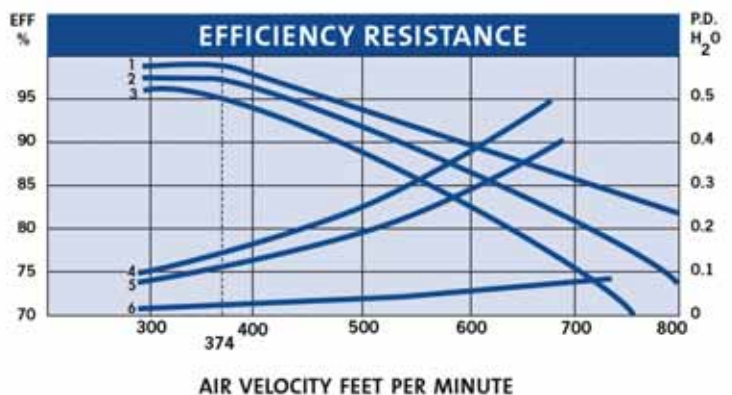
### AIR VELOCITY FEET PER MINUTE

#### Efficiency-Curves 1, 2 and 3

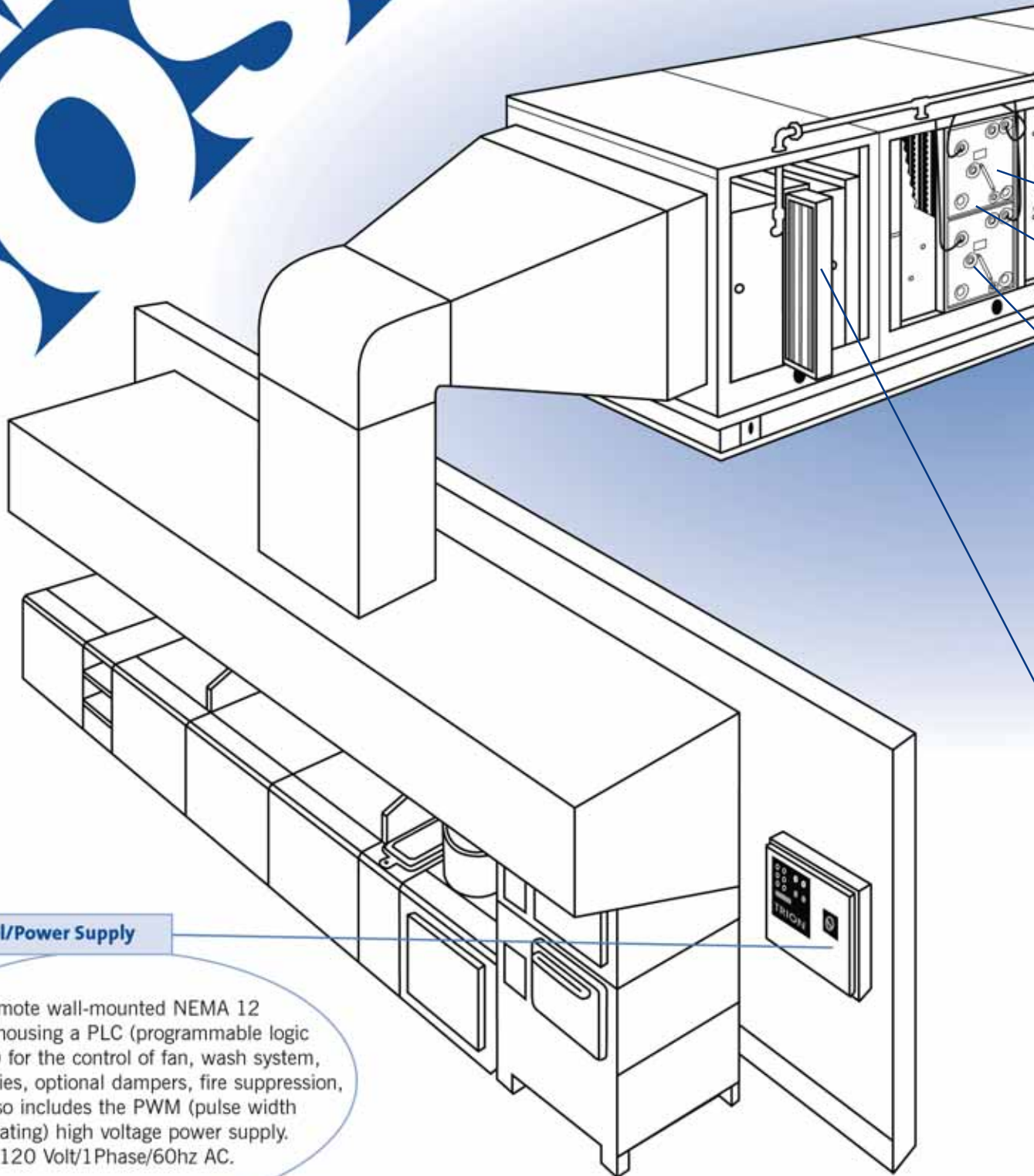
1. Overall DOP (Diocetylphthalate) efficiency using 10 Stage Cascade Impactor
2. ASHRAE Standard 52 Dust Spot Test Method Atmospheric Air
3. 0.3 Micron DOP efficiency using 10 Stage Cascade Impactor

#### Pressure Drop Across Unit-Curves 4, 5 and 6

4. Cell with 40% open perforated plate, front and rear
5. Cell with 1" metal mesh filter, front and rear
6. Cell only



# AIRBOSS®



## Control/Power Supply

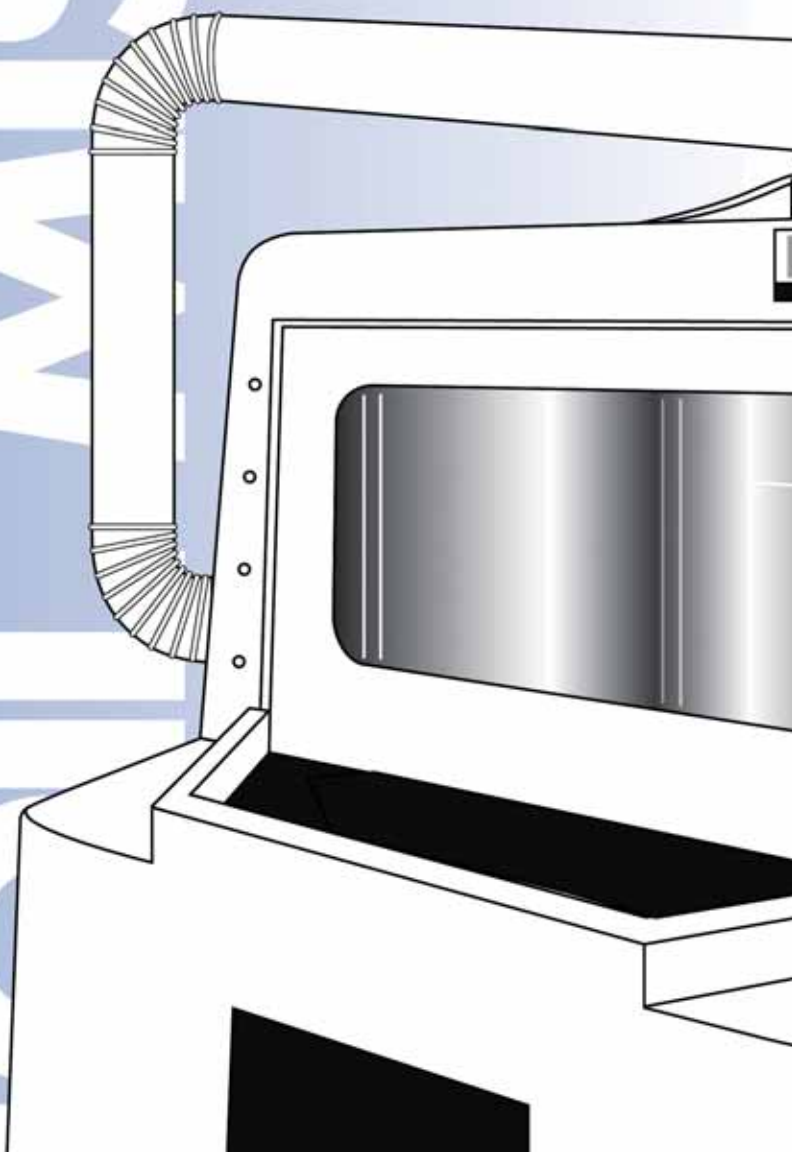
Remote wall-mounted NEMA 12 cabinet housing a PLC (programmable logic controller) for the control of fan, wash system, power supplies, optional dampers, fire suppression, etc. Also includes the PWM (pulse width modulating) high voltage power supply. 120 Volt/1Phase/60hz AC.

**Kitchen Hood Exhaust  
(Smoke, Grease, Odors)**



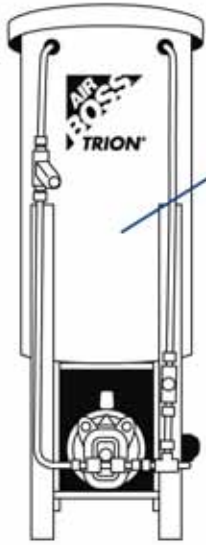
**AIR BOSS®**

**DUST SMOKE SWISS**



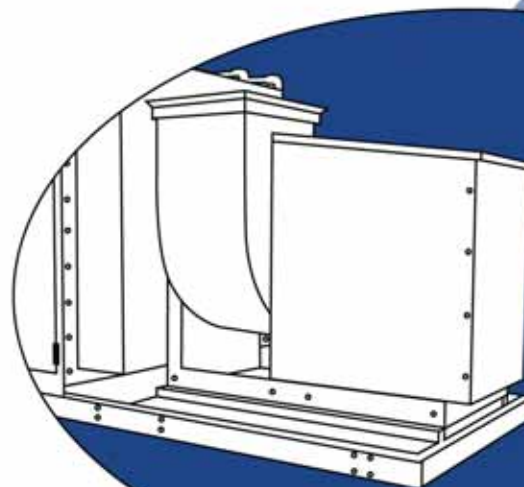
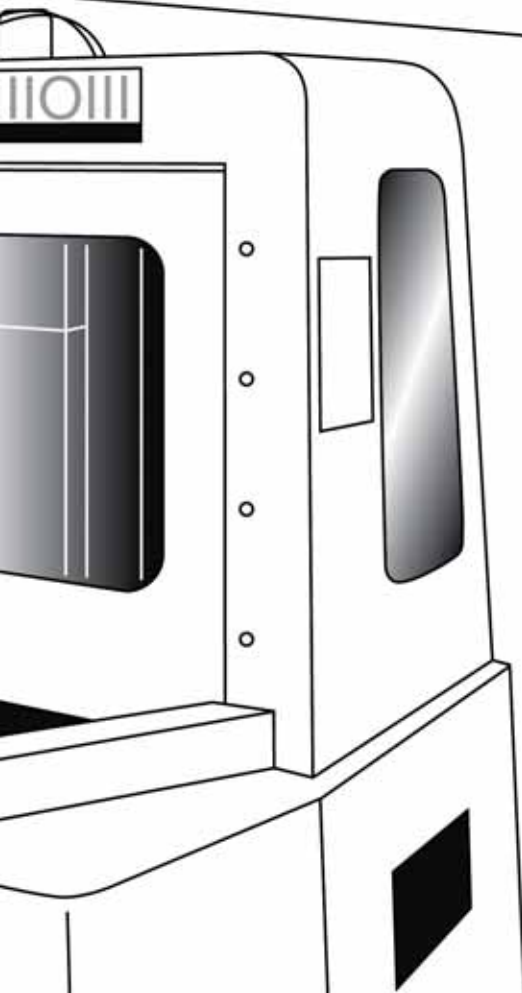
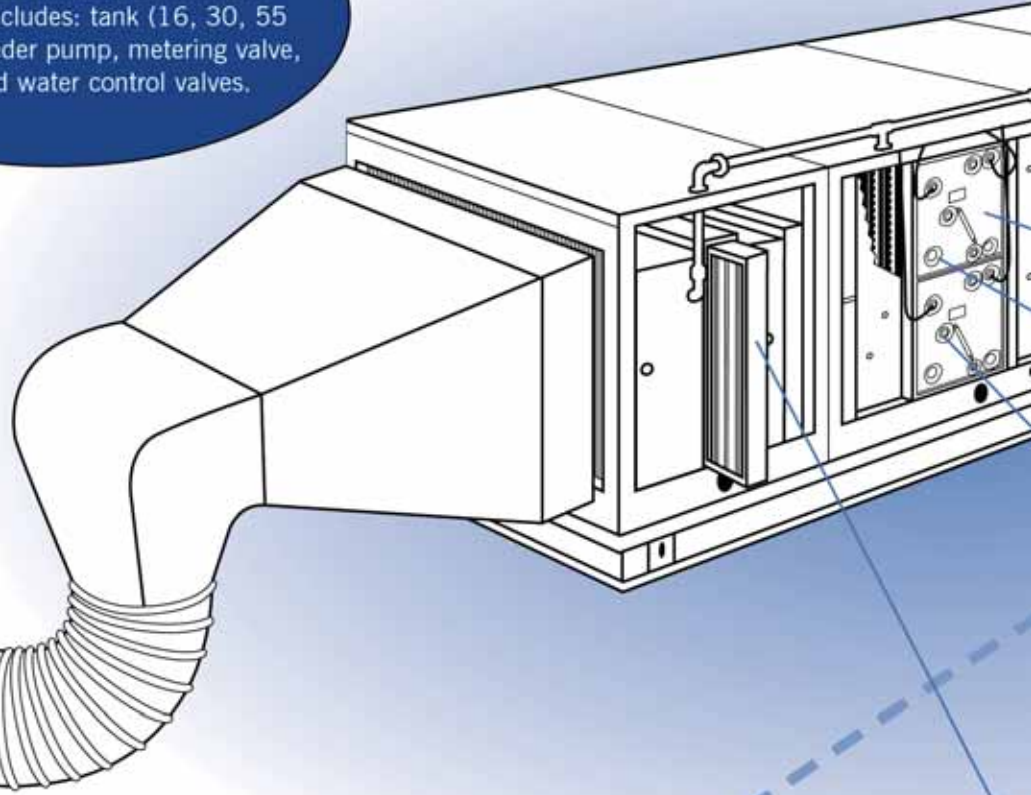






### Detergent System

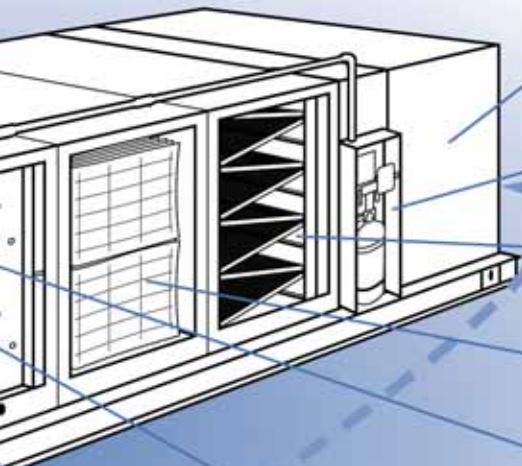
Trion-approved concentrated detergents used to clean commercial or industrial applications. Includes: tank (16, 30, 55 gallon sizes), feeder pump, metering valve, strainers and water control valves.



### Up-Blast Fan

Kitchen Package  
NFPA96

Backward-inclined energy-efficient centrifugal fans of heavy duty, high temperature arrangement 10 upblast design with drain, class II construction, belt-driven with belt and drive guards. UL labeled for grease-laden air products.



**Fan Package-Standard**

Backward-inclined, energy-efficient centrifugal fans of heavy duty AMCA arrangement 9 inline or arrangement 10 upblast design, class II construction, belt-driven with belt and drive guards.

**Fire Suppression Option**

Weather-tight enclosure includes ADP-S nozzles for the impinger section and electronic air cleaner section.

**Adsorber Module**

Activated carbon or optional potassium permanganate pellets for gaseous odor adsorption.

**Media Module**

Designed to house a variety of mechanical filters as required for a specific application or to insure extended life of the adsorption media.

**Spiked Ionizer Blade**

Revolutionary technology made of stainless steel blades, not wires. Reliable, unbreakable blades eliminate costly maintenance replacement and downtime.

**Ionizing-Collecting Cell**

High efficiency multi-stage collection cell, designed to maintain high efficiency under heavy loads.

**High-Voltage Stand-Off Insulators**

Made of self-glazing ceramic, insulates electrical current; helps to prevent and virtually eliminate arcing; prolongs power supply, life span; and aids in maintaining high efficiency. Prevents tracking, retards contaminant build-up and provides easy cleaning.

**Prefilter/Impinger Module**

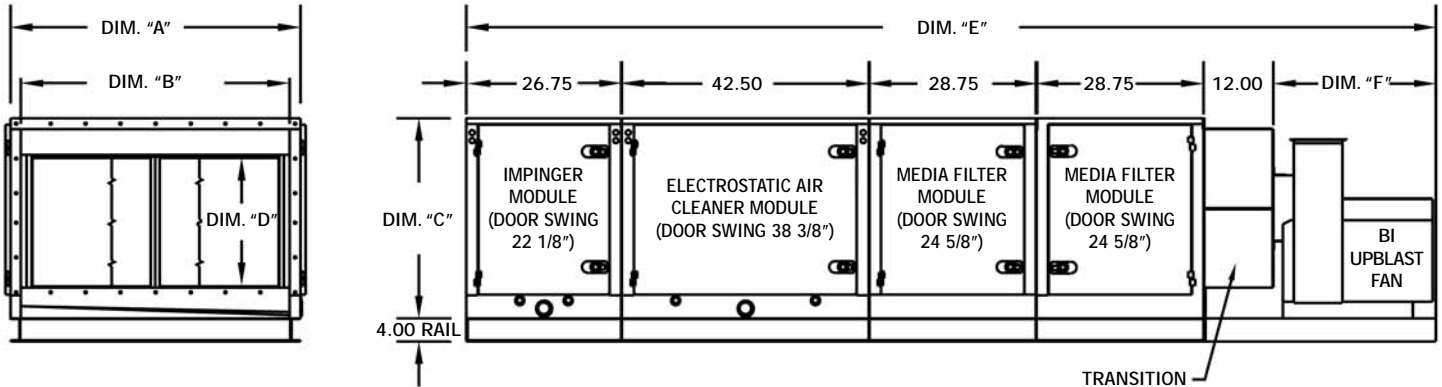
Metal mesh or perforated plate prefilter for safety and capture of oversize objects and agglomerated mists. Impinger may be used to knock down heavy mists and kitchen grease.



**AIR PURIFICATION SYSTEMS**

*ATS Series for Industrial Applications and Kitchen Hood Exhaust Systems*

# MODEL SELECTION GUIDELINES



SYSTEM (CFM)	MODULE DESIGNATION	MODULE SP @ RATED CFM	MODULE WIDTH DIM. "A"	INSIDE FLANGE ID DIM. "B"	UNIT HEIGHT DIM. "C"	INSIDE FLANGE ID DIM "D"	SYSTEM DEPTH DIM "E"	BLOWER DEPTH DIM "F"	MODULE WEIGHT (LBS)	SYSTEM WEIGHT (LBS)	AVG. WATER REQUIRED CPM/WASH @50 PSI	CELL FACE AREA (FT2)	DETERGENT PER CYCLE (GAL)
ATS-2 1,375 TO 2,000	IMPINGER ELECTROSTATIC MEDIA ADSORBER BLOWER	1.33" 0.39" 0.44" 0.25" -- (TOTAL SP 2.41")	27.96	24.25	34.25	27.19	174.25	35.00	175 320 115 315 270	1330	4.0 4.0 -- -- --	3.68	.20
ATS-4 2,750 TO 4,000	IMPINGER ELECTROSTATIC MEDIA ADSORBER BLOWER	1.33" 0.39" 0.44" 0.25" -- (TOTAL SP 2.41")	50.00	46.38	34.25	27.19	176.25 TO 183.25	37.00 TO 44.00	235 480 150 550 420	2050	9.3 9.3 -- -- --	7.37	.40
ATS-6 4,125 TO 6,000	IMPINGER ELECTROSTATIC MEDIA ADSORBER BLOWER	1.33" 0.39" 0.44" 0.25" -- (TOTAL SP 2.41")	72.38	68.75	34.25	27.19	179.25 TO 186.75	40.00 TO 47.50	295 640 185 785 535	2700	14.6 14.6 -- -- --	11.06	.63
ATS-8 5,500 TO 8,000	IMPINGER ELECTROSTATIC MEDIA ADSORBER BLOWER	1.33" 0.39" 0.44" 0.25" -- (TOTAL SP 2.41")	50.00	46.38	58.63	51.56	186.75 TO 190.25	47.50 TO 51.00	390 780 270 1070 675	3400	18.6 18.6 -- -- --	14.74	.91
ATS-10 6,890 TO 10,000	IMPINGER ELECTROSTATIC MEDIA ADSORBER BLOWER	1.33" 0.39" 0.44" 0.25" -- (TOTAL SP 2.41")	61.18	57.56	58.63	51.56	190.25 TO 193.25	51.00 TO 54.00	460 893 305 1297 770	3900	24.0 24.0 -- -- --	18.45	1.20
ATS-12 8,250 TO 12,000	IMPINGER ELECTROSTATIC MEDIA ADSORBER BLOWER	1.33" 0.39" 0.44" 0.25" -- (TOTAL SP 2.41")	72.38	68.75	58.63	51.56	190.75 TO 198.25	51.50 TO 59.00	520 1010 345 1545 870	4450	29.3 29.3 -- -- --	22.12	1.40

- (1) DIMENSIONS SHOWN IN INCHES
- (2) SYSTEM DEPTH AS SHOWN TO THE SUM OF ALL MODULE, TRANSITION & FAN DEPTHS AND 1/8" GASKET ALLOWANCE BETWEEN EACH MODULE.
- (3) SYSTEM WEIGHT EQUAL TO THE SUM OF ALL MODULE WEIGHTS AND MOUNTING RAIL.
- (4) IMPINGER MODULE AND ELECTROSTATIC MODULE SUPPLIED WITH (2) 1" WASH WATER SUPPLY COUPLINGS AND (1) 2" DRAIN COUPLING.
- (5) MODULE ACCESS DOORS LOCATED ON ONE SIDE. (LIFT-OFF HINGES) SPECIFY ACCESS REQUIRED.

# Cell Selection Guidelines

EFFICIENCY	DOP CFM CAPACITY		ASHRAE CFM CAPACITY	
	95%	90%	95%	90%
ATS-2	1,375	1,500	1,600	2,000
ATS-4	2,750	3,000	3,200	4,000
ATS-6	4,125	4,500	4,800	6,000
ATS-8	5,500	6,000	6,400	8,000
ATS-10	6,890	7,500	8,000	10,000
ATS-12	8,250	9,000	9,600	12,000
Face Velocity	374 fpm	406 fpm	433 fpm	540 fpm

## STATIC PRESSURE DROPS

TRION EQUIPMENT LOSSES INCHES H <sub>2</sub> O	
<b>ESP Section</b>	0.14"
40% open perforated prefilter or after filter	0.15"
Metal mesh prefilter or after filter	0.10"
2" impinger	1.25"
<b>Media Section</b>	0.11"
	<b>Initial    Final</b>
4" pleated prefilter, 40% efficient	0.17" - 1.00"
10 pocket bag, 95% efficient	0.40" - 1.20"
HEPA, 99.97% efficient	1.00" - 1.50"
<b>Adsorber Section</b>	0.28"
1" trays	0.26"
2" trays	0.28"
4" modules	0.36"
<b>Fan Transition</b>	0.11"

The ESP section must have both an internal prefilter and after filter, select and add for each.

External losses for ductwork, exhaust hoods, manufacturing equipment with associated entry losses, kitchen hoods, etc., must be added with the above Trion internal equipment losses to calculate total fan static pressure required.

# ENERGY ANALYSIS



## PROVIDING CLEAN, COMFORTABLE & SAFE IAQ SOLUTIONS FOR MORE THAN HALF A CENTURY

Since 1947, Trion has manufactured quality products for the commercial, industrial, residential, and military markets. All Trion products are engineered specifically to provide a clean, safe and comfortable indoor air environment. Trion's success has been driven by the dependable performance and superior quality of our products, as well as by our excellent customer service.

Trion's technical expertise allows us to create innovative products and cost-effective, environmentally sound solutions that solve the air cleaning problems of our worldwide customer base. Our products can be found in homes, offices, factories, clubs, hospitals and sea vessels.

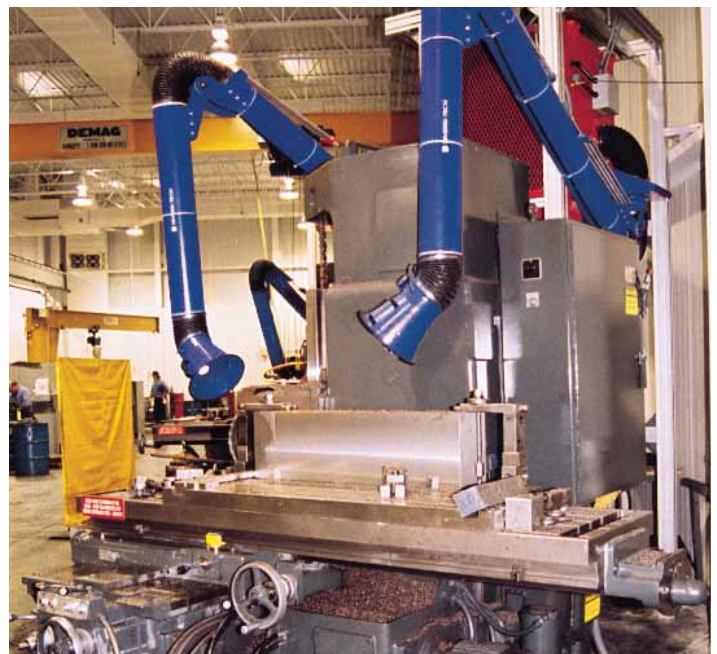
Headquartered in Sanford, North Carolina, Trion manufactures products in a dedicated 263,000 square-foot plant. Trion UK's European, Middle East and Far East operations are based in Andover, Hampshire in the United Kingdom.

Trion Deutschland GmbH, formed in 1984, is responsible for serving markets in Central and Eastern Europe.

In 1996, Trion purchased Herrmidifier, a well-known manufacturer of humidification products for use in a variety of commercial, residential and industrial settings.

Trion is part of Fedders Indoor Air Quality, which opened its first Asian manufacturing facility in Suzhou, China, in August 2002.

Today, and in the future, Trion will continue to develop innovative air cleaning solutions that meet the demands of our customers throughout the world .



# *Specifications*



Headquartered in Sanford, North Carolina

Leading Technology for Cleaner Exhaust Air Since 1947

**TRION**<sup>®</sup>  
Air Purification Systems