



ULTRA-MACT™

COMPOSITE MESH PAD (CMP) DRY SCRUBBERS



ENFORCER III™

- *wet scrubbers*
- *chrome (CMP) scrubbers*
- *mist eliminators (CMP)*
- *exhaust fans*
- *exhaust hoods*
- *canopy hoods*
- *ductwork*
- *installation*
- *maintenance programs*
- *custom fabrications*
- *design services*

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INTRODUCTION

Midwest Air Products Co., Inc. is a leading manufacturer of innovative, corrosion-resistant pollution control products for the metal finishing industry. Mapco equipment is designed for long service life in the most severe environments.

CHROME SYSTEM DESIGN

The ultimate system is one that guarantees compliance, is built to last, is easily maintained, is significantly less expensive to operate and competitively priced.

Midwest Air Products has developed such a system by implementing proprietary mesh pad technology at the source in conjunction with the Enforcer III™. By incorporating the Terminator™ exhaust hood or Mapco inline mist eliminator with mesh pad as the first stage, a high percentage of chromic acid is removed at the source. Periodic washdown of the first stage mesh pad yields a relatively concentrated effluent which is drained back to the tank, minimizing the need for tank make-up.

OPERATING PRINCIPLES

The Enforcer III™ offers the greatest design flexibility. Counter-current flow puts the cleanest water in contact with the cleanest air in order to maximize efficiency in a relatively small volume, saving valuable floor space.

Configured with (3) or (4) mesh pads, the Enforcer III™ removes the highest percentage of the larger droplets during the first stage. The second and third stages are equipped with Mapco's proprietary mesh pads with multiple filament diameters. By coalescing mist sizes and removing through inertial impaction, these stages remove mist particulate as small as 0.75 microns, resulting in the ultra high efficiencies typical of the Enforcer III™. Each mesh pad section is equipped with removable spray headers for periodic washdown. The light, periodic counter-flow rinsing assures the pads do not plug up or deteriorate while at the same time producing a slightly yellow effluent that can be recycled through the unit. The vertical configuration of the Enforcer III™ allows washdown without shutting the fan off and virtually guarantees no field modifications will be required to meet specified efficiencies.

CONSTRUCTION

The Enforcer III™ eliminator has the lowest pressure drop of any other comparable scrubbers with the same number of elimination stages. Our scrubber shells are designed for negative pressures as high as 12" w.g., resulting in a quality built unit, far superior to anything our competition has to offer.

All mesh pads are locked into a heavy duty retainer drawer type configuration. The drawer assembly is fitted into a close tolerance, 3/8" thick ***machined track system*** developed by Mapco for the Enforcer III™. This virtually insures that blow-by is negligible. In addition, the possibility of the pad breaking away from the retainer is greatly reduced.

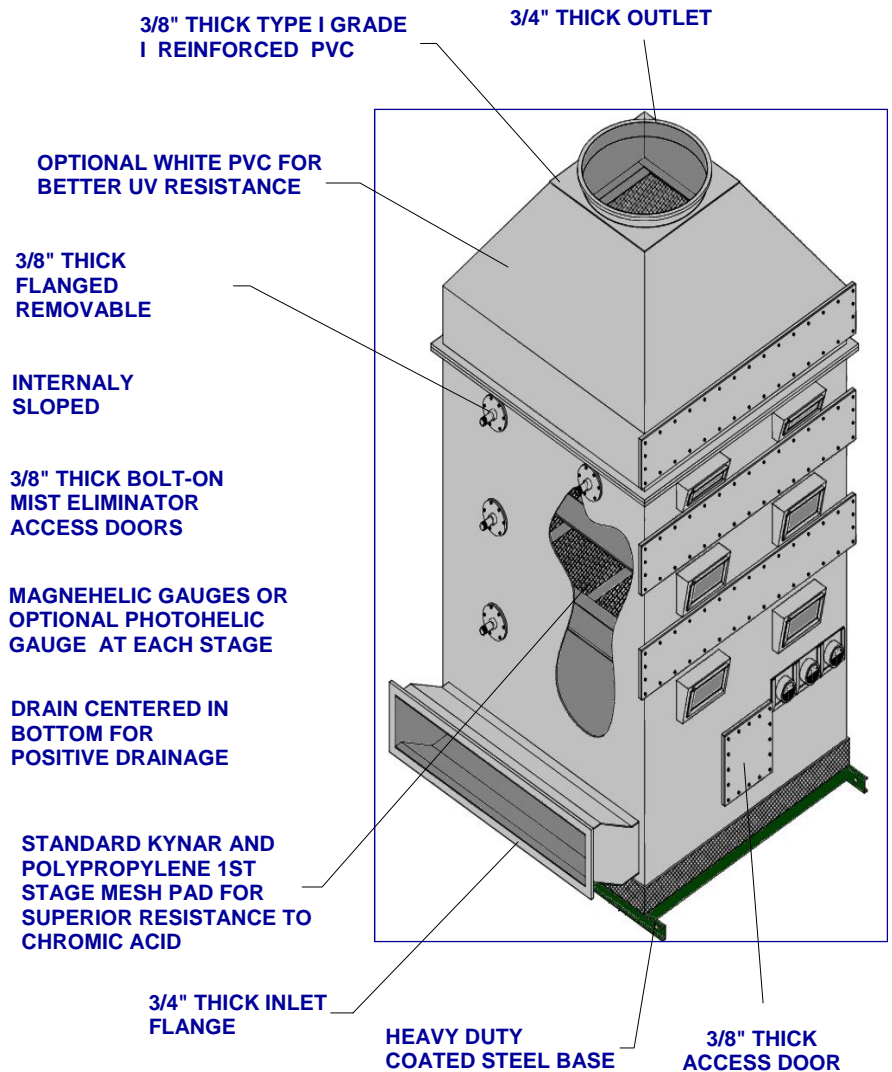
If you are considering another supplier, ***ask to see a system in operation.*** When you compare the Enforcer III™ system with any other system offered today, we guarantee you won't find more value for your dollar.

FEATURES AND BENEFITS

- All units are fabricated from 3/8" type I or type II, grade I PVC
- 3/4" thick inlet / outlet flanges, mating flanges and pad door flanges
- Outdoor installations supplied in white PVC for better resistance to heat and UV radiation
- Secondary overlay over complete bottom and 6" up the sides
- Removable 3/8" flanged spray headers
- Clear sliding inspection doors
- Removable 3/8" filter doors
- 3/8" full cone helical spray nozzles
- Reinforced retainer with machined track system providing seal between side wall and pad
- Vertical counter-current flow for best airflow distribution and cleansing action
- Magnehelic gauges at each stage
- Automatic closed loop operation (optional)
- Centrifugal CPVC pumps with run-dry capability
- Re-use of chrome resulting in substantial savings
- Built to withstand chromic acid induced corrosion
- Complete monitoring of components with optional alarms to indicate malfunction or need for inspection
- Low water consumption and effluent production
- Compliance with the toughest emission standards
- Documented success Nationwide
- Extensive Customer reference list available

Engineered from the ground up **ENFORCER III™** Consistently Achieves The Highest Efficiencies Of Any Comparable Device. Before You Invest In A Chrome Elimination System...Investigate The Advantages And Competitive Pricing The **ENFORCER III™** Has To Offer. Discover How The **ENFORCER III** Can Start Working For You **TODAY!!!**

- As the final stage is washed with clean water and the mesh pad begins to drain, the resulting rinse water also flows through and washes the preceding dirtier mesh pad stages below. The force of gravity creates an *automatic counter flowing rinse action within the Enforcer III.*
- The 4" thick mesh pad stages are washed from the underside. The negative pressure drop across each mesh pad stage is not great enough to overcome gravity and raise rinse water 4", where it could become entrained in the air stream and load the succeeding mesh pad with chrome. Therefore, all mesh pad stages can be washed *without shutting down the exhaust system.*
- In any multiple-stage composite mesh pad mist eliminator, the force of the airflow velocity is constantly trying to carry captured chrome through each progressive elimination stage and out the stack. The Enforcer's vertical design harnesses the force of gravity to counter air velocity, and *keep captured chrome from migrating toward the exhaust fan.*
- Horizontal Air Flow, "Positive Drainage" mesh pad eliminators tend to flood the lower portions of the mesh pad during wash downs, often allowing entrainment of rinse water and transferring captured chrome to the next mesh pad stage. This same occurrence usually makes it unwise to wash the final mesh pad stages while the exhaust fan is running. Counter flowing rinse action with horizontal models is not possible *without multiple pumps and recirculation tanks.*



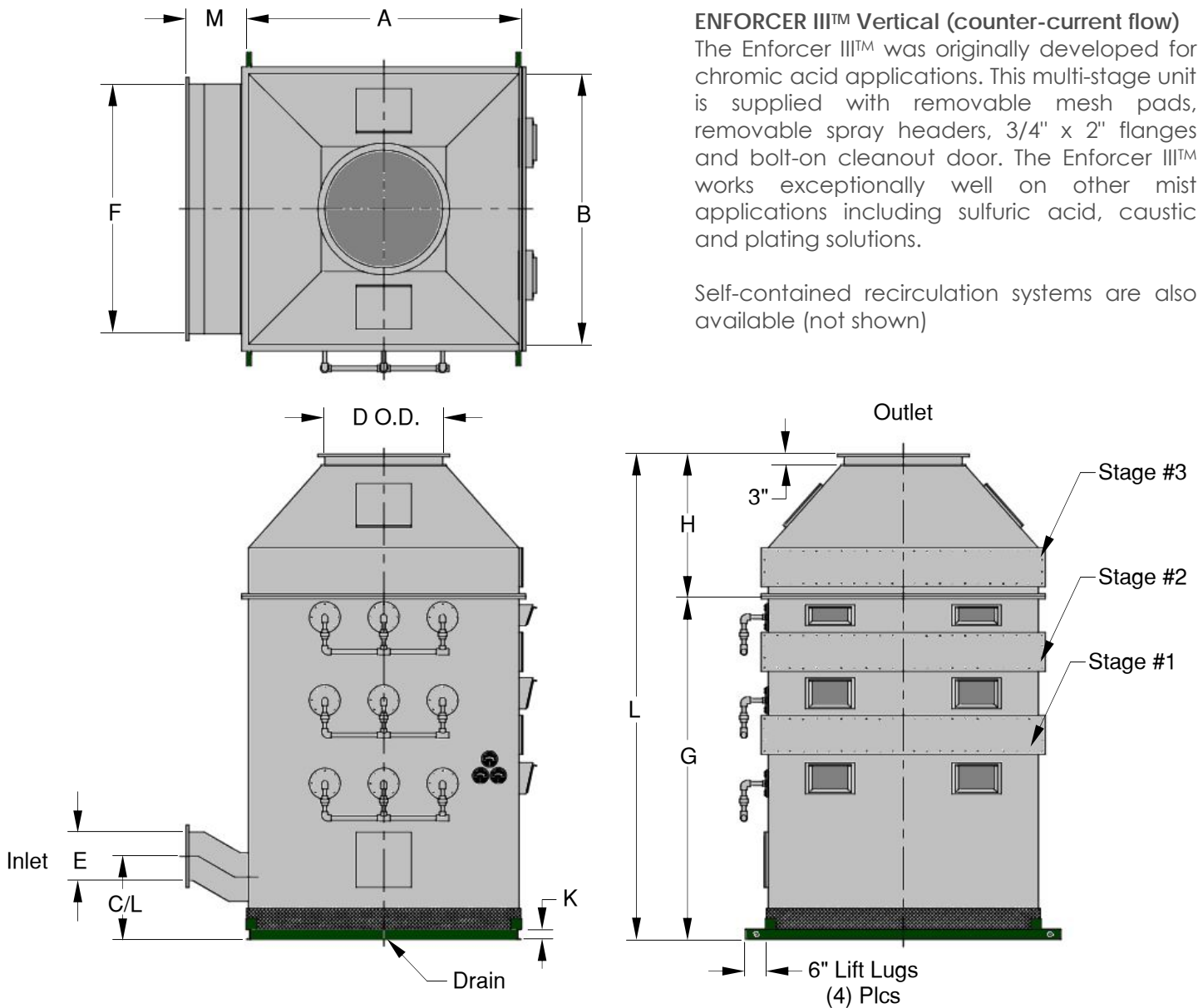
- **Lowest pressure drop of any CMP available**
- **Consistently exceeds E.P.A. Chromium NESHAP requirements**
- **Fabricated from 3/4" and 3/8" Type I, Grade I PVC**

ENFORCER III™

ENFORCER III™ Vertical (counter-current flow)

The Enforcer III™ was originally developed for chromic acid applications. This multi-stage unit is supplied with removable mesh pads, removable spray headers, 3/4" x 2" flanges and bolt-on cleanout door. The Enforcer III™ works exceptionally well on other mist applications including sulfuric acid, caustic and plating solutions.

Self-contained recirculation systems are also available (not shown)

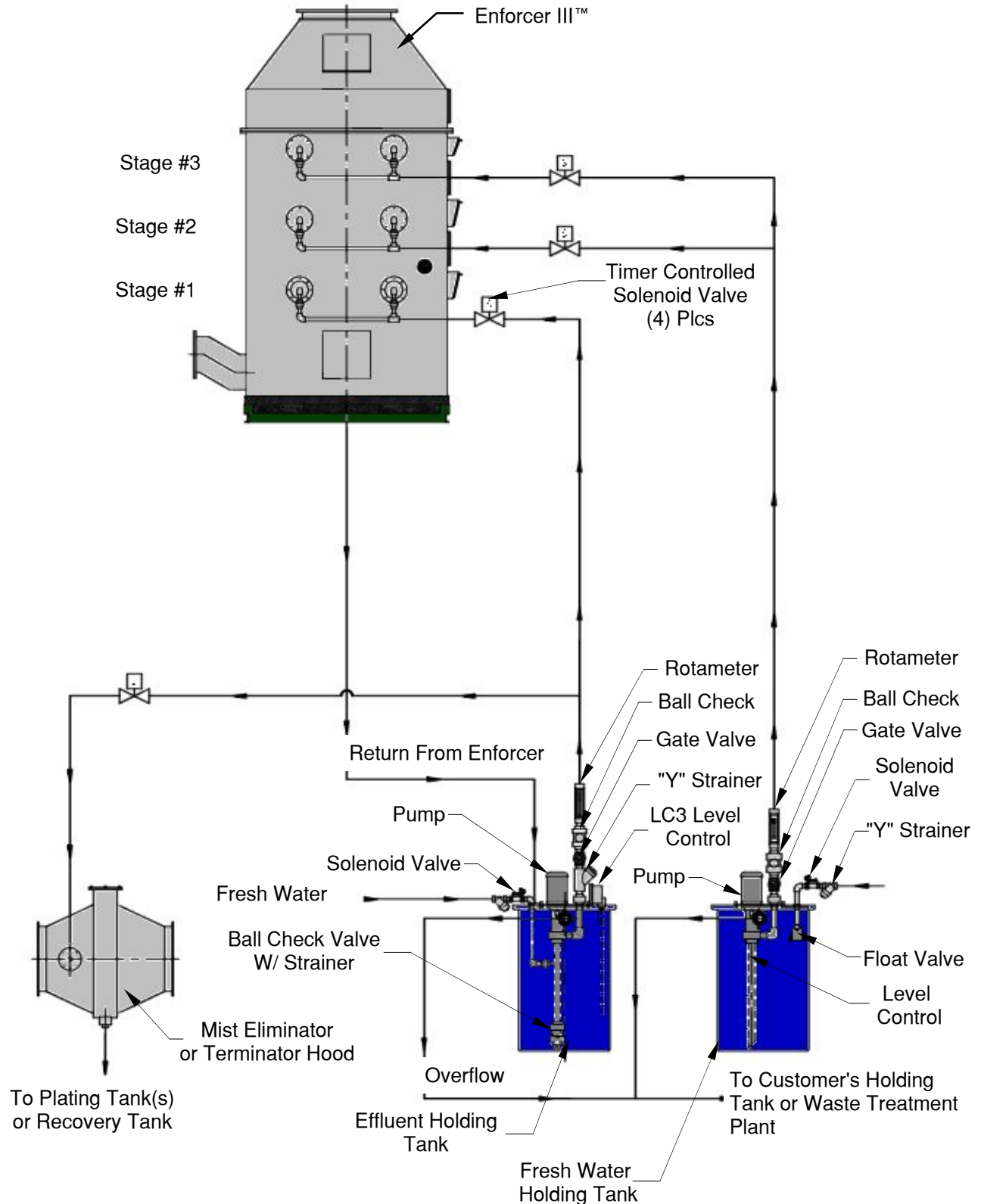


DIMENSIONS

CFM	0.5	1	2	3	4	5	6	7	8	10	12	14	16	18	20	22	24	26	28	30	35	40	45	50	55	60	
A	14	20	28	34	40	44	48	52	56	62	68	74	78	84	88	92	96	108									
B	14	20	28	34	40	44	48	52	56	62	68	74	78	84	88	92	96	104	112	120	126	144	162	178	194	212	
C.L.	13	15	17	18	19	20	21	23				24			25				26		28						
D	6	10	14	16	18	20	22	22	24	28	30	32	34	36	38	40	42	44	44	46	50	54	56	60	62	64	
E	6Ø	10Ø	14Ø	16Ø	18Ø	20Ø	22Ø	12				14		16	18				20								
F	N/A							34	42	54	64		72			78	86	90		96	112	128	144	160	176	192	
G	98							99					100					102									
H	32								38					44							48						
K	2							3					4					6									
L	133							134		140			141	147					149	153							
M	8							18																			
Drain	2 Φ							3 Φ					4 Φ														

OPTIONAL AUTOMATIC WASHDOWN SYSTEM

This suggested counter-flowing, 2- tank recirculation system can reduce daily effluent product from a high performance mist eliminator



ULTRA-MACT™

ULTRA-MACT™ CHROME MIST ELIMINATOR Up to 99.9995% efficient to 0.12 microns

Ultra High Efficiency

Midwest Air Products has designed and installed chrome exhaust systems worldwide. In the process, Mapco recognized a need for cost effective pollution control equipment that would meet risk assessment based regulations, such as South Coast AQMD, Rule 1401, 1402 and 1469. Smaller chrome plating shops in particular, usually have limited budgets for the purpose of capital equipment to comply with these regulations.

Since it is designed to comply with □chrome emission risk factors of less than one in one million, the ULTRA-MACT™ typically exhausts a concentration of 1—2% of that allowed by EPA Chromium MACT standards.

As an optional feature, Mapco Terminator™ exhaust hoods can be located at each process tank to recover as much as 99% of chrome mist directly back to the process bath.



ULTRA-MACT™



Terminator™

FEATURES AND BENEFITS

- Low effluent production
- Closed loop operation
- Extended filter life
- Integrated washdown and control system
- Fully automatic operation
- Low operating cost
- Corrosion resistant construction for long life
- Low maintenance
- Performance guaranteed

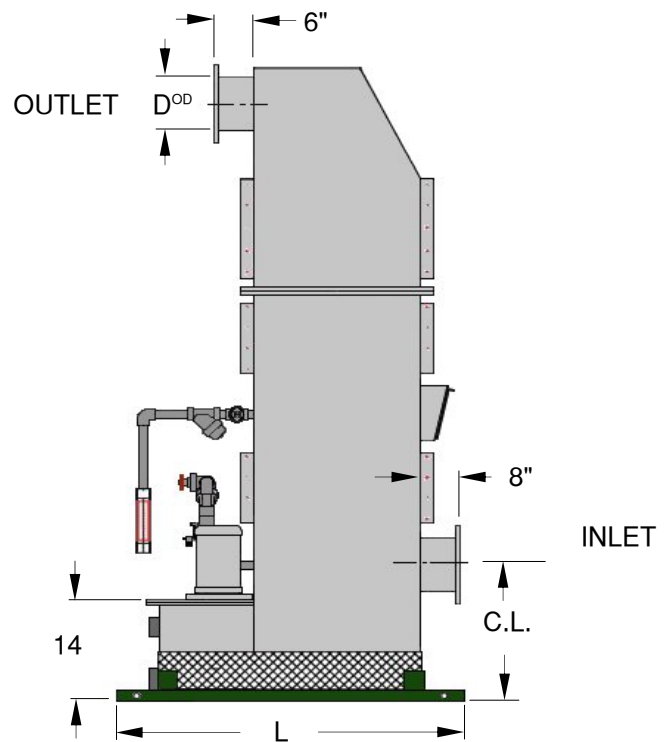
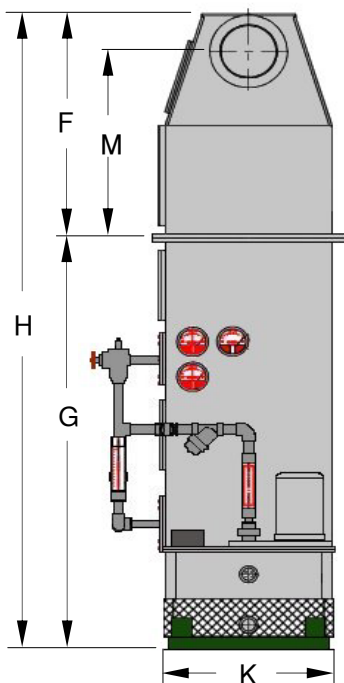
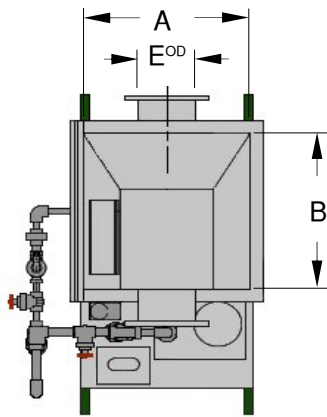
TYPICAL APPLICATIONS

- Metal Finishing Industry
- Roto Gravure
- Printed circuit
- Anodizing
- Battery charging
- Electrolytic nickel

TYPICAL CONTAMINANTS REMOVED

- Chromic acid mists
- Sulfuric acid mists
- Phosphoric mists
- Cyanide
- Electrolytic nickel
- Alkaline mists

ULTRA-MACT™



DIMENSIONS

CFM	1	2	3	4	5
A	20	28	34	40	44
B	20	28	34	40	44
C.L.	24	25	26	27	28
D	10-3/4Ø	14 Ø	16 Ø	18Ø	20Ø
E	10-3/4Ø	14Ø	16Ø	18Ø	20Ø
F	34	36	38	40	42
G	96				
H	132	134	136	138	140
K	21	29	35	41	45
L	47	55	61	67	71
M	26	27	28	29	30
Drain	2 Ø				

*Custom sizes available to 60,000 CFM

Highest Value
Exhaust and Pollution
Control Equipment

"old
school
quality,
old
school
service"

Corrosion Resistant PVC Duct
Corzan™ Duct
Fiberglass Overlaid Duct



Turnkey
Installations

Corzan™
Duct



Terminator™
Composite Mesh Pad
Exhaust Hoods



Motorized Dampers

