# PL352R by Robo lent\*







# Breakthrough Technology Changing Air Quality in Metalworking Plants

From the very beginning, we have been passionate about redefining clean air technology for the future. Over the years, RoboVent has introduced a number of important breakthroughs in air cleaning technology, yet we recognized this technology could be taken to the next level to make products that are more capable, more powerful, but at the same time much simpler. We set out to bring all these aspects together and fuse them into one distinctly unique product platform.

These efforts combined to create a dust collector with very low operating costs, is incredibly simple to use, and remarkably easy to install – in any facility, and in any part of the world.

It was from this inspiration the RoboVent Plaser Series was born.

We started by re-examining metalworking dust collection from the ground up, using powerful CFD simulation software which allowed us to simulate the unseen airflow patterns in all parts of the equipment. Every part of the equipment was carefully reviewed and refined to maximize performance. By utilizing state-of-the-art fabrication technology and lean-manufacturing principles, along with fanatical commitment to quality, we have carefully structured the entire manufacturing process all the way through its culmination.

This rigorous process enabled us to create a collector built to last, minimize operational and reduce maintenance costs. The standard features and options available—such as rugged construction, vertical filters, Dynamic Pulse, eDrive, and RMO Technology—not only ensure the longevity of the collector itself, but provide energy savings and longer filter life!



#### eTell™ Intelligent Controls

Each Plaser unit comes standard with eTell Intelligent Controls, a revolutionary control system that learns your systems and routines, makes automatic adjustments to save energy and extend filter life and alerts you when maintenance is needed. With eTell, you can forget about your dust collector until it alerts you when necessary.



SafeSensor is the Plaser's advanced particulatemonitoring device that can detect leaks past the filters. If one should occur, SafeSensor will shut the equipment down and trigger an alarm.

#### Dynamic Pulse<sup>™</sup> System

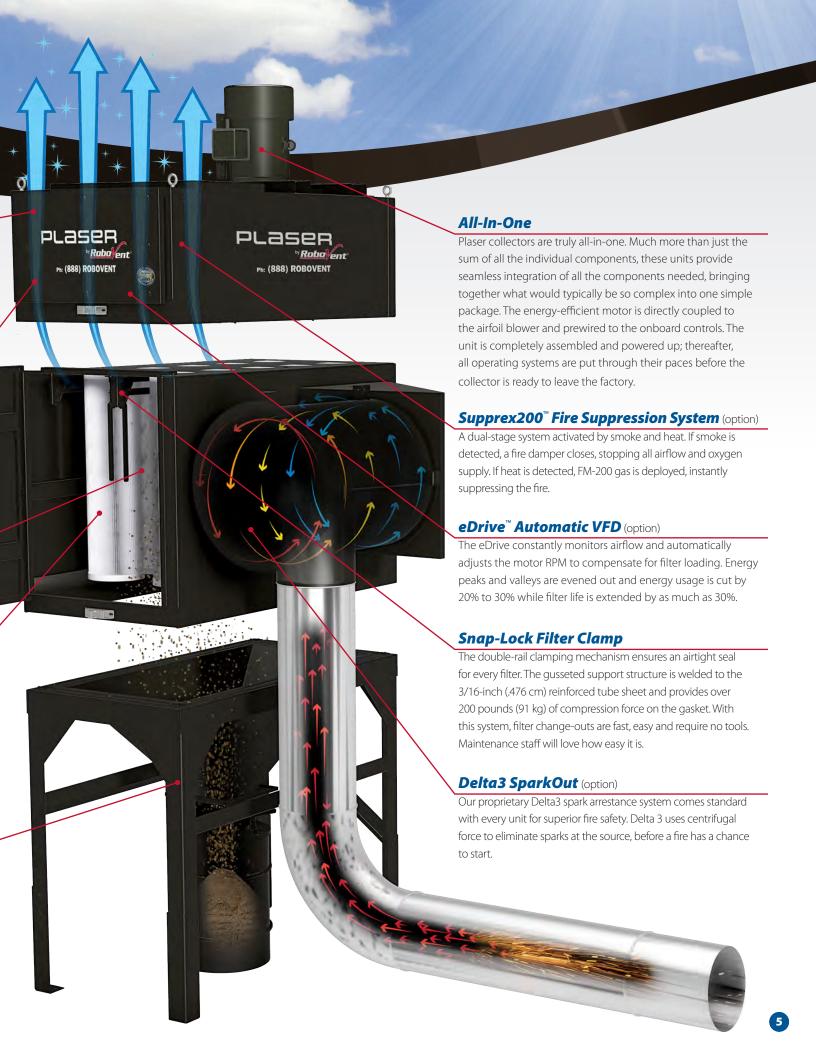
This patented system takes filter cleaning to an entirely new level. Far more than just a simple blast of compressed air, it has multiple valves working together in a computer-synchronized double-pulse sequence to virtually eliminate re-entrainment while propelling the dust down into the collection area.

#### **Endurex**<sup>™</sup> **B16 RMO Filters** (option)

RoboVent's Endurex B16 RMO filters use Reinforced Media
Optimization and a PTFE coating to allow collected material to
shed easily and quickly, extending the filter life and providing a very
high filter efficiency. Engineered specifically for laser and plasma
cutting applications, the Endurex B16 is rated at MERV 16, a level
that approaches HEPA filtration standards.

#### **Integrated Base & Containment Unit**

The collector base is constructed of 1/4-inch (6.35 mm) steel for strength and stability. The 20-gallon (76 L) particulate-containment drum locks in place with a quick-clamp mechanism. No tools are needed to empty it or to do regular maintenance. Configurations with a large-capacity 55-gallon (208 L) drum or a low-profile dust tray are standard options, and custom configurations are available upon request.



# All-in-One Complete Packaged Product

Plaser collectors come as a complete package and they come completely assembled. With RoboVent, you don't just get crates of components showing up at your facility; you get a finished product already run through its paces and fully tested by our trained factory technicians.

#### **Space Savings**

Plant floor space is one of your most valuable assets, so saving space equates to saving money. Our re-designed Plaser systems were engineered with you and your checkbook in mind. Whether your ventilation system is located inside or outside of your plant, obtaining a minimal footprint is of utmost importance.

#### **Convenience**

Save yourself the aggravation of sorting out the finger-pointing when things don't go together the way everyone hoped! RoboVent collectors have built-in blowers and built-in electrical controls, so there is minimal installation. Simply connect power and compressed air and the collector is ready to run. All components have been selected with low maintenance in mind and are professionally assembled by our factory technicians.



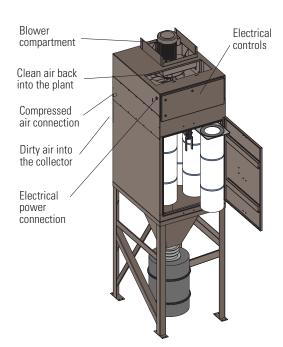
#### **Reduced Installation Costs**

You'll realize significant savings by purchasing a preassembled Plaser collector. Be sure to add up all your costs, and you will find that thousands of dollars of costly on-site electrical wiring can be eliminated, plus a lot of extra ductwork and installation time.

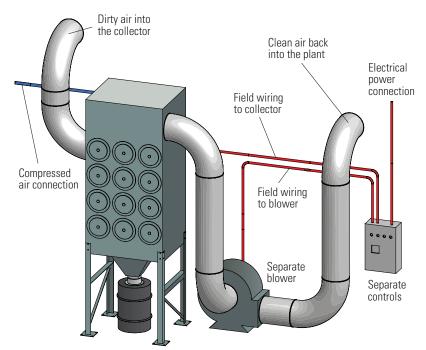
#### **Quality Control**

Every Plaser collector has been carefully engineered and all components have been selected to make sure they will work together effectively and efficiently. Our trained factory technicians assemble and test the equipment every day. The blower, the pulse valves, the control panel and the wiring in between have all been checked to make sure that everything is working properly. By removing the guesswork, we can give you the best warranty in the industry with confidence: up to five years on all parts! The RoboVent assurance means your satisfaction is guaranteed.

#### The RoboVent Complete Package



#### The Conventional System





Proprietary, computerized and efficient, the RoboVent Dynamic Pulse System uses a rapid-fire technique. The synchronized action of the pulsing mechanism virtually eliminates any re-entrainment of dust going from one filter to the next; instead, the dust falls into the containment tray or drum. The patented Dynamic Pulse System ensures filters are used to maximum capacity!

Saving filter life by shedding particulate effectively and eliminating re-entrainment, the synchronized Dynamic Pulse System has proven to be 1.5x more effective than other pulsing systems. As you can see in the charts below, this system has been tested thoroughly. With the Dynamic Pulse System, 30% more dust was removed from the filters than with a typical pulsing system! In addition, it demonstrated 82% effectiveness, compared to just 57% effectiveness with the standard pulsing system.

See the RoboVent Dynamic Pulse System in action by visiting www.robovent.com/videos

#### **RoboVent Dynamic Pulse System Testing**







Standard Pulse System Testing





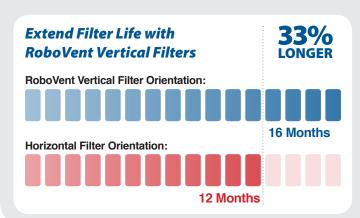


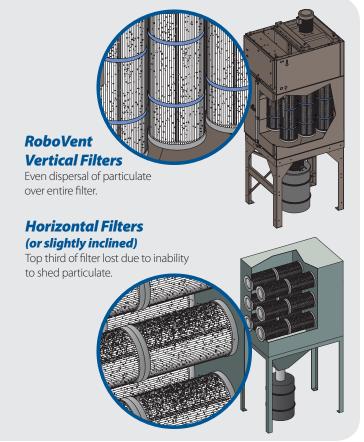
	Controlle	ed Variables	Dynamic Pulse System	Standard Pulse System	
	Particulate Volume	Number of Cycles	Recovered Volume	Recovered Volume	
Test 1	6 Gal. (22.7 L)	(1) Cycle; 12 Cartridges	4.76	3.42	
Test 2	6 Gal. (22.7 L)	(1) Cycle; 12 Cartridges	4.90	2.88	
Test 3	6 Gal. (22.7 L)	(1) Cycle; 12 Cartridges	4.88	3.36	
Test 4	6 Gal. (22.7 L)	(1) Cycle; 12 Cartridges	5.06	3.56	
Test 5	6 Gal. (22.7 L)	(1) Cycle; 12 Cartridges	4.90	3.76	
Test 6	6 Gal. (22.7 L)	(1) Cycle; 12 Cartridges	4.76	3.68	
Test 7	6 Gal. (22.7 L)	(1) Cycle; 12 Cartridges	5.08	3.22	
Test 8	6 Gal. (22.7 L)	(1) Cycle; 12 Cartridges	4.92	3.62	
Test 9	6 Gal. (22.7 L)	(1) Cycle; 12 Cartridges	4.98	3.28	
	Average F	4.92	3.42		

## Vertical vs. Horizontal Filters

#### Increase filter life with proper filter orientation.

The advantages of using vertical filters are significant: vertical filters allow the dust to shed off the filter and fall directly down into the containment system, while the dirt from horizontal filters tends to shed off only the bottom two-thirds. The top third of a horizontal filter is lost in the first 10% to 20% of the filter's life. The life of the remaining two-thirds of the filter is drastically reduced due to the increase in air-to-cloth ratio, resulting in an overall loss of 30% to 40% of the intended filter life. The only advantage in a horizontal-filter dust collector is the ease of manufacturing, as it is much simpler to build than a vertical-filter dust collector.





# RoboVent Endurex™ Premium Cartridge Filters

Whether you have an ultra-fine dust, metal cutting fumes or an aggressive abrasive particulate, RoboVent has you covered.

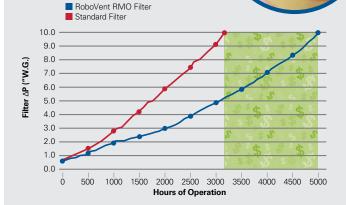
RoboVent's premium Endurex filter cartridges have been engineered to provide you the very best filtration protection for your plant and employees. Durable and proven, our filter media has been designed for outstanding performance in filtering fumes, smoke, dust, oil haze and other particulates/pollutants created during most manufacturing processes.

# It's no longer about media quantity — It's about media optimization.

Endurex Reinforced Media Optimization (RMO) is truly the future in efficient filtration. By widening the pleat spacing in our proprietary filter media and ensuring the pleats remain apart, we maximize the surface area of media available to dust and fume particles while maintaining the

highest level of filtration efficiency. The result is a reduction in static pressure and a superior release of particulate. In short: **longer filter life, using less media.** 

#### Extended Filter Life with Endurex™ RMO Filters



#### Results

Filter Life of Standard Filter: Filter Life of Endurex RMO Filter:

Filter Life Extended: 1800 Hours

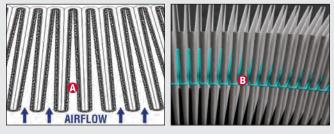
Extended Filter Life with Endurex RMO Filters 56% LONGER

3200 Hours

5000 Hours

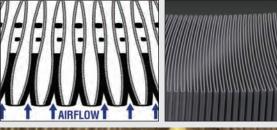
#### **Endurex RMO: The Next Generation of Filters**

Re-engineered to maximize efficiency while reducing static pressure, patent-pending Endurex RMO brings filter technology into the 21st Century.



- RMO support keeps the filter pleats at optimum spacing, allowing for maximum loading onto the media and more effective pulse cleaning.
- RMO support bands (shown in blue above) are continuous for the full length of the pleats ensuring none are collapsed. RMO structures ensure media surface area is maximized and the entire filter is used to its full potential.

#### **Traditional Filter Design**





In traditional filter design, the pleats are often pinched closed. The clean area seen on the inside of these pleats indicates that the dirty air never reached this media, resulting in less effective loading and ineffective pulse cleaning and as a result, short filter life.





#### **eDrive**<sup>™</sup> **Automatic VFD**

With the RoboVent eDrive, airflow within your collector is monitored and the motor's RPM is automatically adjusted to compensate for filter loading. As you can see in the graph below, a collector running without eDrive uses more energy in the beginning of the filter's life cycle than a collector with eDrive included.

Benefits of the RoboVent eDrive include:

- · Less stress on filter media, which leads to longer filter life,
- Decrease in energy usage by 20% to 40%,
- · Improved equipment performance,
- · Decreased filter costs and
- · Decreased maintenance costs.

Using eDrive with your dust collector will compress and straighten energy peaks and valleys, cutting energy usage by approximately 40% and increasing filter life by as much as 30%.

#### eDrive Saves You Money by Decreasing **Energy Use and Extending Filter Life**

In the example below, a 10 HP unit would be using 7.457 KWs per hour of operation. This example shows that you would save 41% over the 18 month period. For filters in this example you have increased the filter life by 4 months or 29% filter life savings.

"RoboVent is an excellent company to do business with, they are truly a one stop shop from start to finish. It's a great product, they have fantastic service and we often get positive remarks from our own customers about the experience they have with RoboVent staff and systems in general. For me, this is what it's about because I can go to bed at night knowing our units and customers are taken care of."

— ALLtra Corporation



#### **Helpful Hint**

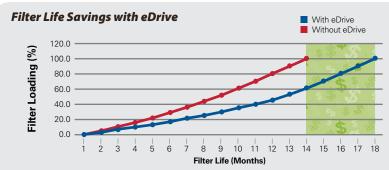
ROI on the eDrive varies from 8 to 24 months depending on horsepower and energy costs.



#### Results

Total KWHs without eDrive: 44.742 KWHs Total KWHs with eDrive: 26,396 KWHs Total KWH's Saved: 18,346 KWHs

**Power Savings with** RoboVent eDrive



#### Results

Filter Life without eDrive: 14 Months Filter Life with eDrive: 18 Months Filter Life Saved: 4 Months

Filter Life Savings with RoboVent eDrive

SAVINGS

# eTell™ Intelligent Controls

#### Forget about your air filtration equipment.

With patent-pending eTell™ Intelligent Controls from RoboVent, your dust collectors will tell you what they need and when they need it. It's not about preventative maintenance—it's about predictive maintenance.

eTell eliminates costly and time-consuming maintenance routines and targets your efforts where they are truly needed. Just install the cloud-based software once, and let it tell you what needs to be done each month, or in real time. It will even tell you how to perform maintenance activities with easy-to follow video instructions delivered right when you need them. eTell is the only control system that is:

- **Predictive:** eTell can predict exactly how much life is left in your filters and when maintenance tasks should be performed based on system usage patterns.
- **Cloud-based:** Our cloud-based application gives you anywhere, anytime visibility for all of your equipment from multiple facilities on a single application.
- **Smart:** eTell learns your systems and processes and makes real-time adjustments to save energy and extend filter life.

#### Maintenance Scheduling

Plant managers can easily monitor system performance and plan maintenance schedules based on needs for each collector. eTell lets you track updates, alerts and maintenance tasks for every collector in one place and will generate a task list for each machine in your facility.



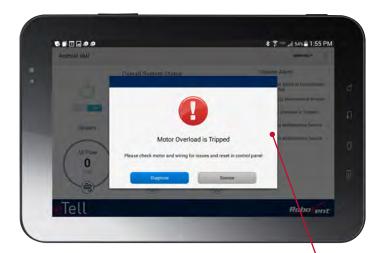


#### **Manage Multiple Collectors**

View and manage dust collectors across all of your facilities in one easy application. eTell lets you monitor the entire facility and see the alerts and alarms for all of your machines in one place.

#### **Predictive Analytics**

eTell uses advanced machine learning to analyze your systems and processes and make smart predictions on how future activities will impact filter life and maintenance needs. It uses this information to make simple, automatic adjustments that save energy and reduce costs. Easy-to-understand reports allow you to monitor energy use, filter life and other key metrics for each machine in your network.



#### **Push Notifications, Reminders & Alerts**

Get alerts and reminders right on your smartphone, tablet or computer. eTell will alert you if your dust collector needs immediate attention and send timely maintenance reminders. You can set your communication preferences so you can be reminded as often (or as seldom) as you like.



## **Fire Prevention System**

#### Is Your Plasma or Laser Cutting Operation a Fire Hazard?

According to the Bureau of Labor Statistics, fires and explosions account for about 3% of workplace fatalities. Because sparks, flames and combustible dust are an inherent part of the plasma and laser cutting process, companies must have a plan in place to prevent and mitigate the effects of fire and explosions. RoboVent focuses on stopping fires before they start with its advanced Delta3 SparkOut technology.

#### **Delta3™ SparkOut™ Technology**

The key to fire prevention is to stop sparks before they enter the dust collector. Delta3 is based on an advanced patent-pending technology that represents a major breakthrough in spark arrestance. It uses centrifugal action to drive sparks and embers against the outer wall of the device, stripping off the thermal envelope surrounding them so they are rapidly cooled and extinguished. Simultaneously, high air velocities are maintained on the inside surfaces, so the unit is constantly cleaning itself and maintains superior performance with low pressure drop.

Available as an in-line or collector-mounted option, Delta3 provides spark arrestance with very little maintenance required.



#### **Helpful Hint**

Under extensive lab testing, the Delta3 proved to be more effective than leading competitors at preventing sparks from entering the filter cabinet. Visit **www.robovent.com/videos** for a video demonstration.





# Four lines of Fire Prevention with the RoboVent SparkOut™ System

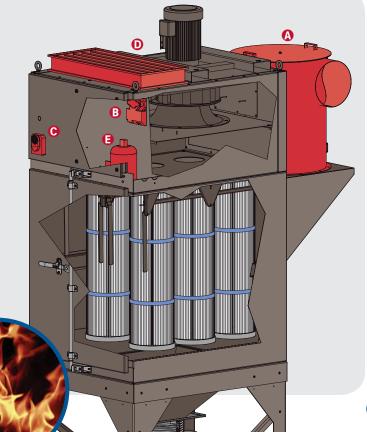
**STEP 1: Delta3** — The Delta3 **(1)** quickly extinguishes sparks created through metal cutting processes. The proprietary design represents many years of extensive field testing and performance under heavy manufacturing conditions.

**STEP 2: SafeSensor™** — The SafeSensor ③ particulate-monitoring device detects smoke or dust leaks past your filters. If a leak occurs, the system shuts the equipment down and sets off an alarm ④.

**STEP 3: Supprex-200 Damper™** — The Supprex-200 Damper System ① closes when smoke is detected, stopping the oxygen from feeding the fire. If a fire is present, it is typically contained to one filter and the Supprex-200 does not disperse.

**STEP 4: Supprex-200 Fire Suppression**™ — If and when heat is detected, FM-200 gas is released at the location of the fire. There is little or minimal cleanup after a fire with the Supprex-200 System **③**.

- A Delta3 SparkOut
- **B** SafeSensor Monitor
- SafeSensor Horn Alarm & Strobe Light
- Supprex-200 Damper
- **■** Supprex-200 Fire Suppression





#### What is a Combustible Dust?

steps are not taken.

The National Fire Protection Agency (NFPA) defines combustible dust as "any finely divided solid material that is 420 microns or smaller in diameter and presents a fire or explosion hazard when dispersed and ignited in air." If such a dust is suspended in air in the right concentration, under certain conditions, it can become explosible. Left uncontrolled, such dusts may migrate from the point of production/release, subjecting other parts of the facility to fire and explosion hazards.

#### The RoboVent Deflagration System

The RoboVent Plaser can be easily configured with a deflagration system to reduce the risks associated with combustible dusts. Each component of the deflagration system is designed to minimize potential damage in case of a fire or explosion inside the collector and prevent flames from spreading back into the facility.

When designing a Deflagration System, RoboVent's engineering team takes into careful consideration all aspects needed for NFPA combustible dust compliance. Our engineering process includes:

- Explosive testing in accordance with ASTM standards to determine if your dust is combustible.
- PHA (Process Hazard Analysis), sometimes known as risk assessment, is conducted for any dust with a KST value of greater than 200 bar-m/sec.
- RoboVent's engineering team incorporates explosion relief panels and other devices into our dust control systems to help you comply with the latest NFPA standards.

#### **Meeting Safety Regulations**

NFPA has issued a number of standards related to prevention of fire and dust explosions that manufacturers producing combustible dusts must follow. NFPA Standard 652, the Standard on Fundamentals of Combustible Dusts, provides an overview of required safety and risk mitigation practices and directs you to other resources and standards for explosion venting and/or explosion prevention.



# **Delta3™ Spark Arrestance System** Our proprietary spark arrestance system prevents sparks from entering the dust collector where they could ignite filter media or combustible dusts. Delta3 works with your deflagration system for added fire and explosion safety. See pages 11 for details. **Isolation Valve** The isolation valve acts like a "check valve" to prevent the deflagration (pressure wave) from propagating through the ductwork back into the facility. **Explosion Vent** If an explosion occurs inside the collector, the explosion vent will rupture to release excess pressure. This allows the energy from the explosion to be safely directed away from the building to minimize structural damage and injuries. **Rotary Airlock** The purpose of the rotary airlock is to prevent the deflagration (pressure wave) from propagating out the hopper in the event of an explosion, protecting personnel and property.

#### **How Combustible Dust Explosions Happen**

Combustible dust explosions are relatively rare, but when they happen, they can be catastrophic.

According to the Occupational Safety & Health Administration (OSHA), five elements are needed for a combustible dust explosion:

- Combustible dust (fuel)
- Ignition source (heat)
- Oxygen in the air (oxidizer)
- Dispersion of dust particles in sufficient quantity and concentration
- Confinement of the dust cloud



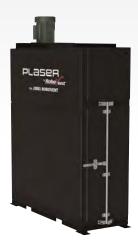
Source: OSHA

If the quantity of dust in suspension in the air that is moving through a dust collection system is above what is called the minimum explosive concentration (MEC), then the suspension can potentially explode in the presence of an ignition source (e.g., a welding gun).

Unlike most gas or vapor explosions, the major damage of a dust explosion often results from the secondary event, which happens when a primary explosion within a piece of equipment or local to an ignition source spreads to remote areas due to involvement of dust accumulations outside of the equipment. The initial explosion can dislodge more accumulated dust into the air or damage a dust containment system, again releasing more dust.

# **Equipment Inlets & Dust Containment**

The Plaser Series can be configured to meet your specific need!



#### **Dust Tray**

Perfect when height is a concern, the easy-to-use dust tray slides out to allow for dust removal. Not recommended for heavy loading applications.



#### **Standard Inlet**

Designed for direct-to-duct connections that do not have a spark arrestor, or applications where sparks are not an issue.



#### 20 Gallon (76 L) Drum

Captures up to twice the dust of the standard dust tray while reducing maintenance time. Suggested for medium loading applications.



#### **Delta3 Inlet**

Ideal for limited space and high spark yield environments, this proprietary design uses centrifugal force to create a safer work environment and increased productivity all while reducing maintenance costs.



#### 55 Gallon (208 L) Drum

Captures up to three times the dust of the standard dust tray while reducing your maintenance time. Recommended for heavy loading applications.



#### Silencer

The silencer option reduces the overall noise level of the collector and is available on all Plaser collectors.



## **Equipment Specifications**

Plaser Series Model #	<b>Dimensions</b> (D x W x H Excluding Motor or Options)	<b>CFM</b> (depending on HP)	<b>Air to Cloth Ratio</b> (CFM:Filter Media)	<b>Filter Media</b> (ft²)	Number of Filters
PL-2	51" x 30" x 97" (129.5 cm x 76.2 cm x 246.4 cm)	510 - 2,050	0.5:1 - 2.0:1	1,024 (95.1 m²)	2
PL-3	67" x 30" x 97" (170.2 cm x 76.2 cm x 246.4 cm)	770 - 3,075	0.5:1 - 2.0:1	1,536 (142.7 m <sup>2</sup> )	3
PL-4	83" x 30" x 97" (210.8 cm x 76.2 cm x 246.4 cm)	1,020 - 4,100	0.5:1 - 2.0:1	2,048 (190.3 m <sup>2</sup> )	4
PL-6	67" x 49" x 97" (170.2 cm x 124.5 cm x 246.4 cm)	1,540 - 6,140	0.5:1 - 2.0:1	3,072 (285.4 m <sup>2</sup> )	6
PL-8	83" x 49" x 97" (210.8 cm x 124.5 cm x 246.4 cm)	2,050 - 8,195	0.5:1 - 2.0:1	4,096 (380.5 m <sup>2</sup> )	8
PL-10	98" x 49" x 97" (248.9 cm x 124.5 cm x 246.4 cm)	2,560 - 10,240	0.5:1 - 2.0:1	5,120 (475.7 m <sup>2</sup> )	10
PL-15	97" x 74" x 97" (246.4 cm x 188.0 cm x 246.4 cm)	3,840 - 15,360	0.5:1 - 2.0:1	7,680 (713.5 m <sup>2</sup> )	15
PL-20	98" x 98" x 97" (248.9 cm x 248.9 cm x 246.4 cm)	5,120 - 20,480	0.5:1 - 2.0:1	10,240 (951.3 m²)	20
PL-24	83" x 147" x 97" (210.8 cm x 373.4 cm x 246.4 cm)	6,140 - 24,570	0.5:1 - 2.0:1	12,288 (1,141.6 m <sup>2</sup> )	24
PL-30	98" x 147" x 97" (248.9cm x 373.4 cm x 246.4 cm)	7,680 - 30,720	0.5:1 - 2.0:1	15,360 (1,427.0 m <sup>2</sup> )	30

PL-XX

Modular after 30 cartridges, just add the PL-10 to the side of your collector configuration.

### **Recommended Upgrades and Options**

- Abrasive-Inlet Package
- Air Quality Monitoring
- AutoSaver Sensor
- Barrel Level Sensor
- eDrive Automatic VFD
- Explosion Panels\*
- HEPA After-Filter
- HMI Screen (for eTell)
- Hopper Gate
- Noise-Reduction Packages
- Outdoor-Prep Packages
- Service Platform with Ladder
- Sprinkler Head Port
- Supprex-200 Fire-Suppression System

\* See our Combustible Dust Hazards in Dust Collection brochure for preventative measures relating to

combustible dust.

# **Service and Ongoing Support**

#### **RoboVent 24 Hour Hotline: 888.ROBOVENT**

The RoboVent 24-hour hotline is available seven days a week. We understand your requirement for production and stand ready to help at any time.

#### **Maintenance Contracts Available**

Sophisticated air-filtration equipment represents a wise investment in your plant and the health of your employees. Proper maintenance is critical to the performance of that investment. RoboVent ClientCare preventative maintenance programs provide the regularly scheduled expert maintenance needed to properly maintain your air filtration and dust collection systems and greatly reduce the risk of unexpected system breakdowns or production delays.



Manual Welding Fume Extraction





Integrated Cooling Equipment



Robotic Welding Fume Collection



Maintenance Programs



Oil Mist Extraction



Full-Plant / Ambient Air Cleaning Systems





Mobile Dust Collectors



Laser & Plasma Cutting Fume Collection









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