Intelligent Control Equipment

System solutions for Vehicle Exhaust applications







PLYMOVENT®

www.plymovent.com





The right control equipment for every application.

Plymovent can offer the best control equipment solution for every application. It doesn't matter if it's for the one man shop or for the big workshop, we can supply an outstanding solution in every case.

Why control equipment?

To have the most suitable control equipment can mean many different things depending on application. In the small garage a fan starter on the wall is probably the best choice, for bigger garages or workshops a more advanced control system is preferred. More frequent use of an exhaust extractor increases the need for efficient and correctly chosen control equipment in order to get the best operation and lowest running cost possible for the system in every case.

What can be achieved?

The most apparent benefits when using Plymovent control equipment.

- **Simplicity**
  Manual starters are a simple and cost effective way to operate smaller systems.

- **Flexibility**
  Plymovent can customize your system to meet your needs.

- **Automatic operation**
  When installing automatic control equipment you don't have to worry about turning the system on or off the system will do it automatically when it needs to.

- **Energy savings on heating and power consumption**
  A smaller fan with less power consuming can do the same job as a bigger one when using energy saving equipment. A smaller fan will also save you money by only extracting heated air when it's needed. Global awareness also calls for any energy savings possible.

- **Cheaper duct-, mechanical- and electrical installation**
  Smaller filters, fans and duct make the total installation easier, faster and cheaper.

- **Better working environment**
  Lower noise levels thanks to automation, fans only running as much as, or when, needed.

- **High efficiency at any given time**
  Correct air volume at each extractor when you need it.

The equipment we use



ECMSO
Motor starter with built-in motor protection.



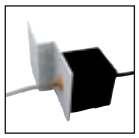
AD-160 (160mm)
Motorised damper 24V. Available in sizes 100-400 mm. Running time 8 seconds.



TR-24
Transformer 230/24 Volt to supply motor driven dampers when no other control equipment is used.



SA-24
Fan Starter to manually operate a local or central fan. Activated by hood switch



MSR-24/2
Micro switch that fits all Plymovent hose reels. To control a motor driven damper and/or fan starter.



DCV/TG
Inverter and pressure transmitter for demand controlled systems.



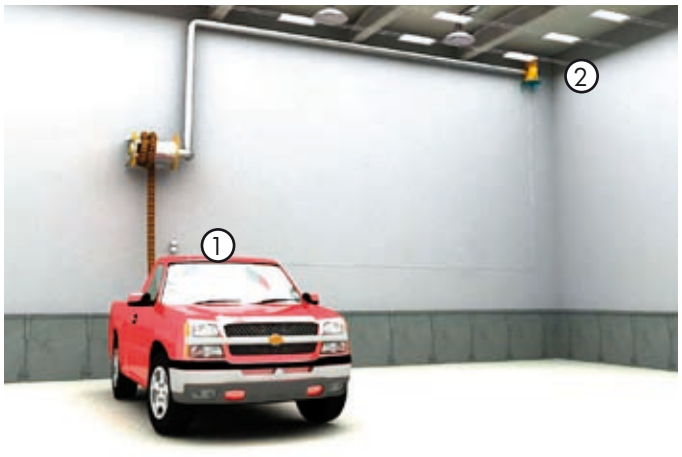
BRC-MS
Micro switch for installation on BRC balancer. To control a motor driven damper and/or fan starter.



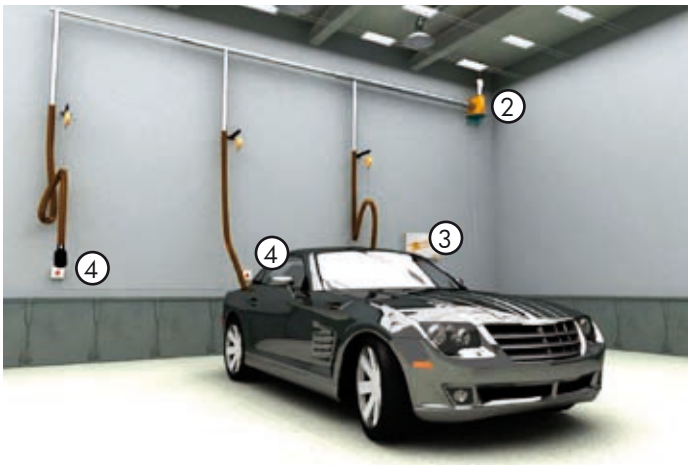
External switch
Example, supplied by other.

Manual controls

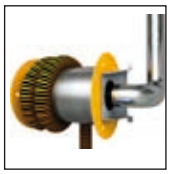
Suitable for small garages or in workshops with low frequency use a manual operation of the exhaust system can be acceptable.
The fan is turned on and off manually.



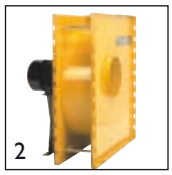
Hose reel, ECMSO fan starter and TEV fan.



FE hose drops, wall mounted external switches, fan starter SA-24 and TEV fan.
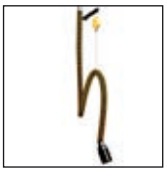










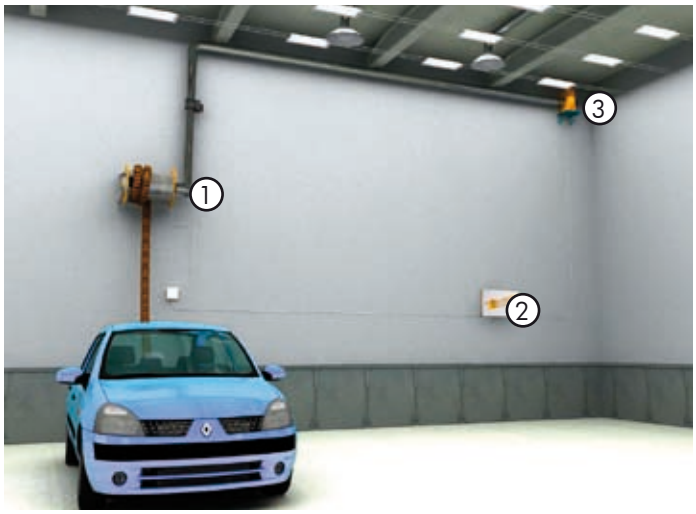


Manual controls can be supplied for small garages or workshops with low frequency use where manual operation is suitable. For single position start-stop we recommend the ECMSO motor starter, which has a built-in motor overload. If individual start-stop switches (supplied by others) are used at each workplace, an SA-24 fan starter should be used. The fan will run as long as any of the work station switches are on.

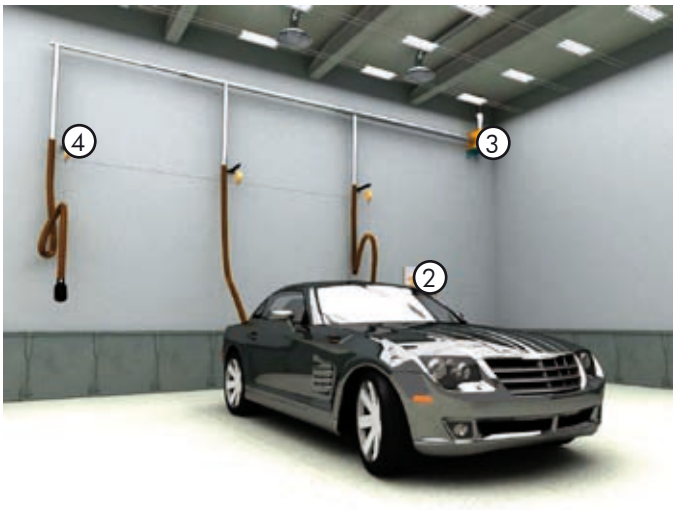
- **Manual operation**
  The fan is switched on and off manually.
- **For small garages**
  This solution is suitable where only a few hose reels or hose drops are installed.
- **For low frequency use**
  Suits application where the frequency of use is low.
- **Simple operation**
  Easy to use and install.

Automatic controls

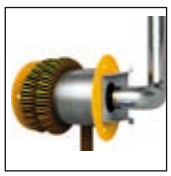
Suitable for small or medium sized garages (2-5 workplaces) or in workshops with low to medium frequency use where an automated control of the exhaust system is desired. Micro switches installed on the hose reel or hose drop balancer are activated by the use of the extraction system and they will activate the fan starter which controls the fan.

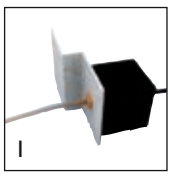


Hose reels with micro-svitches MSR-24/2, fan starter SA-24 and TEV fan.

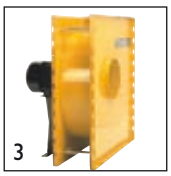


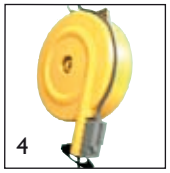
FE hose drops, BRC balancers with micro switch BRC-MS, fan starter SA-24 and TEV fan.
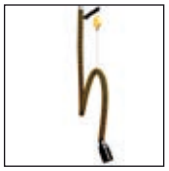










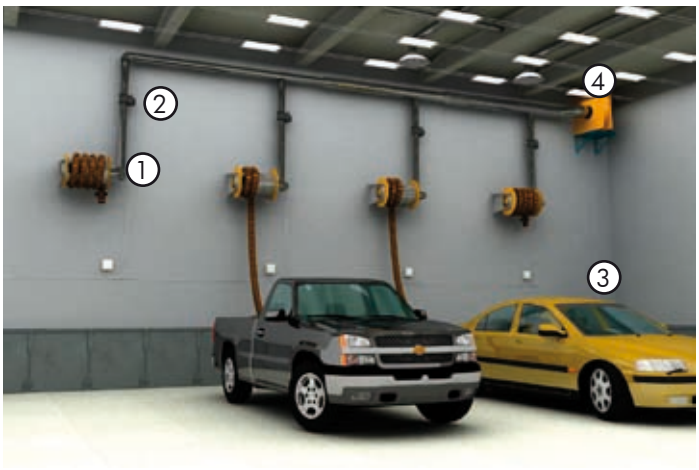


Automatic control system operates the fan automatically when either a hose drop or hose reel are in use. When the hose is pulled down or retracted, an impulse from the micro switch mounted on the balancer or hose, will make the fan start and stop automatically.

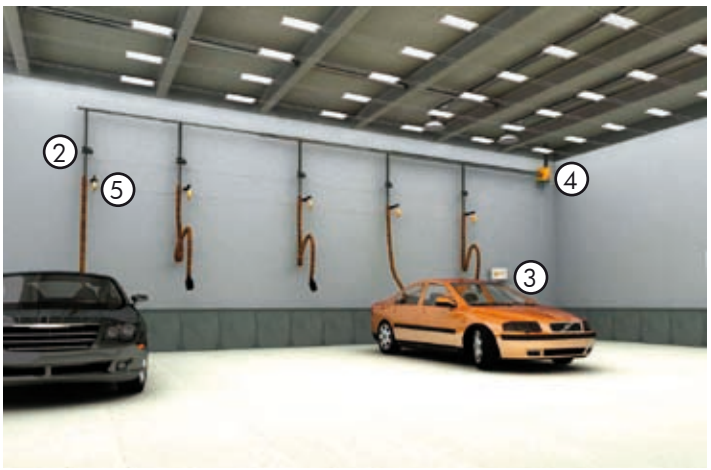
- **Automatic operation**
  The fan is switched on and off automatically when either hose drop or hose reel is used.
- **For small to medium sized garages**
  Suitable for garages with 2-5 workplaces.
- **Medium frequency use**
  Applications where the exhaust extractors are used on a daily basis.
- **Cost savings**
  Savings on extracted heated air and fan power consumption thanks to automation.

Automatic controls with energy saving functions

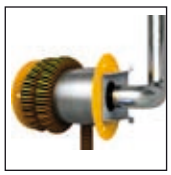
Suitable for medium or big sized garages (4-10 workplaces) or in workshops with medium to high frequency use where an automated control of the exhaust system is required. Micro-switches on the hose reels or balancers are activated by the use of the extractor. The micro-switch activates the local motorised damper and at the same time a fan starter will operate the central exhaust fan.

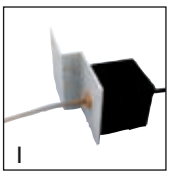


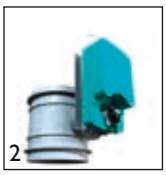
Hose reels with micro-svitches MSR-24/2, motorised dampers AD-160, fan starter SA-24 and TEV fan



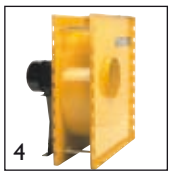
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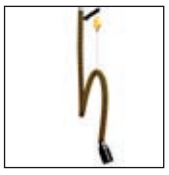














An automatic control system with energy saving functions is recommended when you require that only the exhaust extractor in use has air flow, and that all others are closed while not in use. When you pull down the hose, a signal will be sent from the balancer or hose reel mounted micro-switches activating the motor driven dampers, and at the same time activating the fan starter. By using this control system you will reduce the size of your fan, duct system and energy costs because air is only extracted from the extractor in use.

- **Automatic operation, local and central**
  The local extractors will open and the central fan starts when the hose is pulled or run down. When the hoses are retracted the local damper will close and the central fan will stop after the last local extractor is retracted.

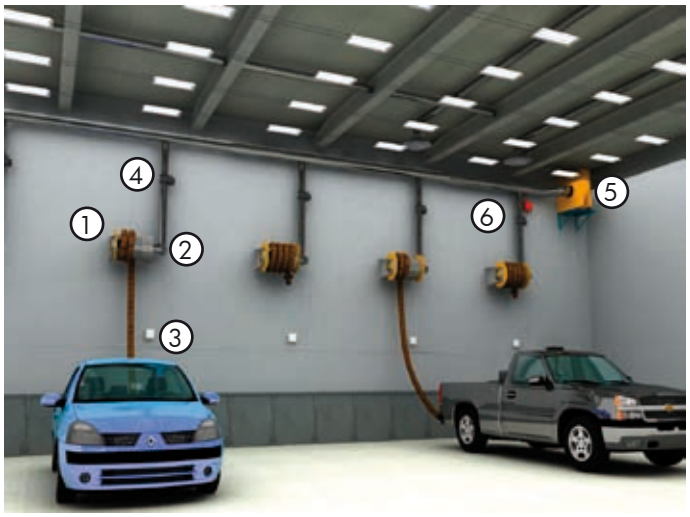
- **For medium sized garages**
  Suitable for garages with 4-10 workplaces.

- **Medium to high frequency use**
  In applications where the exhaust extractors are used regularly on a daily basis.

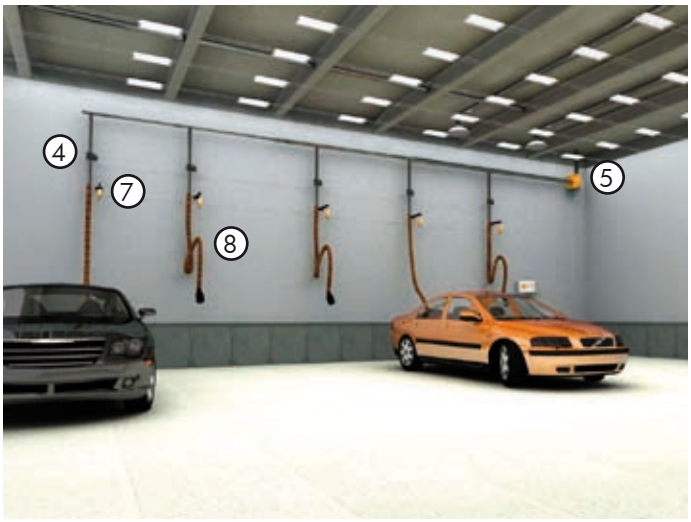
- **Cost savings**
  Down sizing of fan and duct system.
  Savings on extracted heated air and fan power consumption thanks to automation.

Fully automated with on-demand controls

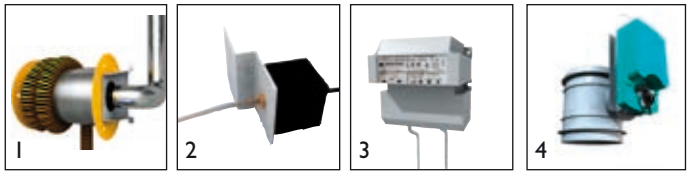
Suitable for medium (5 or more workplaces) or large sized garages, or in workshops with high frequency use applications where an on-demand automated control of the exhaust system is required. Micro switches installed on the hose reel or balancer are activated by the use of the extraction system, and they will activate the local hose reel or hose drop extractor. At the same time, the fan will start and the extracted air volume will be automatically adjusted to the correct level depending on how many extraction points are open at any particular time.

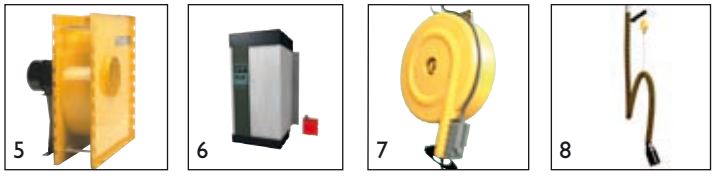


Hose reels with micro-switches MSR-24/2, motorised dampers AD-160, transformer 24V TR-24, DCV/TG controller and TEV-fan.



FE hose drops, Balancers BRC with micro-switch BRC-MS, motorised dampers AD-160, transformer 24V TR-24, DCV/TG controller and TEV-fan.





A fully automatic control system with demand control will operate your exhaust system by monitoring the number of hose reels or hose drops being used in your system. When you pull down the hose, a signal will be sent from the hose reel or balancer mounted micro-switch activating the motor driven damper. At the same time the DCV-Controller will start the fan, but only run it to meet the amount of air that is needed depending on how many hose drops or hose reels are being used, and it does so automatically. This is a state of the art extraction system which will reduce the size of your fan, duct work and energy costs for your exhaust system by working on demand instead of running it all the time.

- **Fully automatic operation**
  The local extractor damper will open when the hose is pulled down and the fan starts automatically and runs on demand depending on how many extractors being used.
- **For big garages**
  This solution is most suitable for garages with 5 or more workplaces
- **High frequency use**
  In applications where the exhaust extractors are used regularly on a daily basis.
- **Saves money, power and energy**
  Downsizing of fan and duct system.
  Savings on extracted heated air and fan power consumption thanks to automation.
- **Improved working environment**
  Fans will only run as much as needed.

Case Study

Customer
Pacific Detroit Diesel Allison in Ridgefield, WA.
Plymovent Dealer: Pacific Air
Consultants, Inc. La Center, WA.

Problem
New building with high ceilings. Customer required an effective and easy to operate vehicle exhaust system for 21 stations at temperatures up to 200°C/392°F. Since many stations will rarely be in use at the same time, an energy saving concept for the fans was desired

Plymovent equipment supplied:
21 MHR-850 - Motorised Exhaust Reels
21 MAP-150 - Hose mounting kits
21 EG-150-10 - Exhaust hoses
21 FHC-24 - Free hanging keysets
21 Stack-150-250 with TH-90
21 ICE-LC + AD-160 - Automatic dampers
21 MSR-24/2 - Micro-switches
2 TEV - Fans, 7,5 kW/10 HP
2 M-1000 - Fan Control units

Solution and how we did it
A Plymovent vehicle exhaust system, using 21 MHR-850-150 motorized hose reels with EG-150-10 hoses and Stack-150-250 vertical stacker nozzles with handle accessories. Automatic dampers were installed for each motorized hose reel to deliver airflow only to the hose reels in use.

This resulted in 2 Plymovent 7,5kW / 10Hp TEV fans instead of two larger 18,5kW / 25Hp fans otherwise needed. When the hose is let down or brought up, a micro-switch is tripped which opens or closes the damper. When the first hose is brought down the fan automatically starts, and when the last hose is recoiled the fan automatically stops.



Energy saving calculation

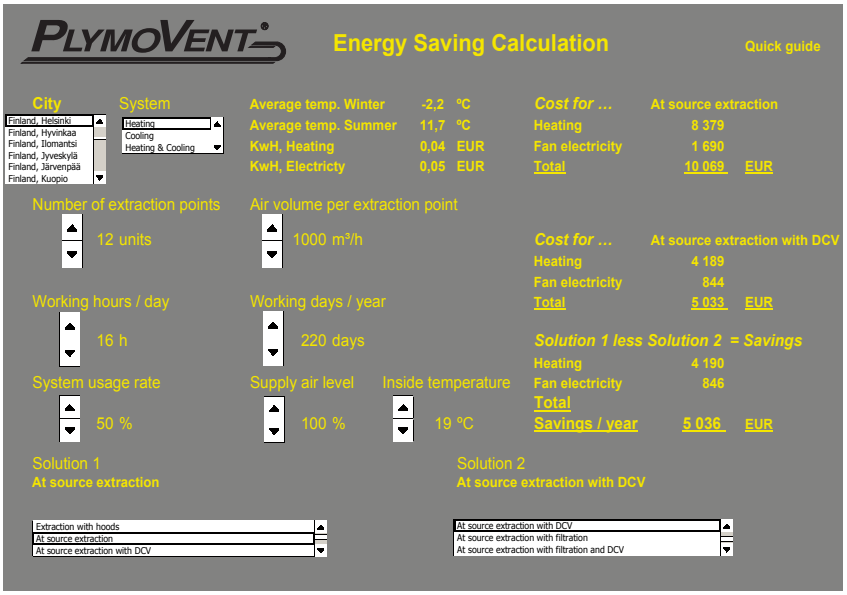
This example shows an application in Munich, Germany where the energy cost can be reduced by more than 50%!

System facts:
* Average winter temperature 1,7°C degrees and average summer temperature is 13,9°C
* 21 motorised hose reels
* 750m³/h each hose reel
* 9 working hours per day
* 220 working days per year
* Usage rate set to 40%. The system usage rate can be set as low as 40% due to the low numbers of extractors actually used at the same time.
* 100% supply air
* Inside temperature 19°C

If we run this size system 100%, the power for the electric motor and the heating cost would be approximately 8,300 Euros per year.

When we on the other hand install intelligent control equipment and on demand controls, the running cost can be reduced by 5,000 Euros.

This is how the calculation sheet looks.



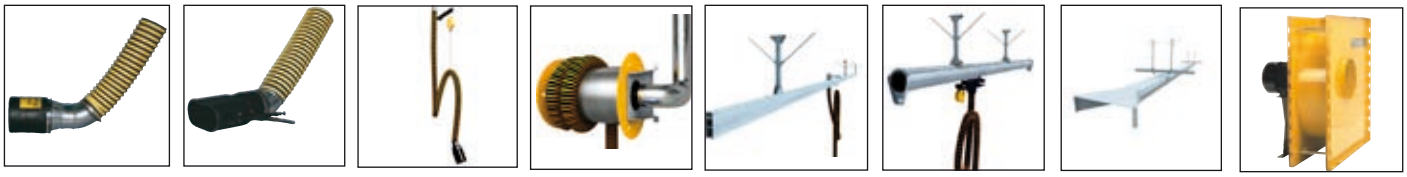
Make your own energy calculations at www.Plymovent.com



FEB hose dropper on boom arm



SBT emergency extraction system



Products within the vehicle exhaust range

- A variety of nozzles to fit most vehicles and applications.
- Hose drops in different configurations.
- Hose reels with spring return or motor-driven models.
- For the rescue & service there is a range of specially adapted exhaust extraction systems.
- Plymovent offers a range of central fans as a complement to your exhaust system.



At source capture - Intelligent process ventilation

Our mission is to protect people all over the world from airborne contaminants. We have developed a unique technology to capture the pollution directly at the source, instead of allowing it to spread into the local environment. A more intelligent ventilation solution that gives you a safe and healthy working environment for your employees - and minimal investments and energy consumption.
For more information, visit us at www.Plymovent.com.

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