



Magnetic

Exhaust Venting System

Sliding Balancer Track

***MAINTENANCE
&
OPERATION MANUAL***

Phone 1- 800 - 875- 5440

MAGNEGRIP DIESEL EXHAUST SYSTEMS

Congratulations! You have made a major investment in the protection of your fire company's health by installing the most technologically advanced diesel exhaust system on the market today.

Clean Air Concepts has strived to bring a system to the market that is not only innovative but also user and maintenance friendly. We believe that with the few routine adjustments required to maintain the optimal performance of the MAGNEGRIP System, you'll agree that we have achieved our goal.

The following pages will explain the maintenance and adjustments needed to keep your system operating at peak performance.

If you should have any question or need assistance please call 1(800) 875-5440



WHY GETTING TO KNOW YOUR DIESEL EXHAUST SYSTEM IS IMPORTANT!

The MAGNEGRIP Vehicle Exhaust System has been designed and engineered to be the most user and maintenance friendly system available. As with all equipment a certain amount of maintenance is necessary to retain optimal performance. Your exhaust system is no exception!

It is important that you read and understand the operation and maintenance material supplied to you upon completion of your system. You must get to know the diesel exhaust system and use it just the same as any other equipment you are required to use on a daily basis for your protection and the protection of others.

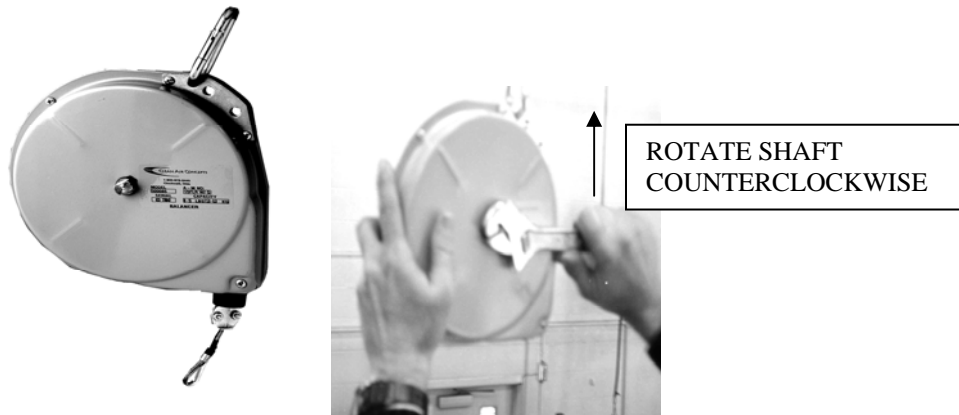
It is a proven fact that diesel exhaust emissions are carcinogenic and a major threat to everyone's health. The proper use and maintenance of your MAGNEGRIP System will significantly reduce or eliminate the exposure to harmful emissions.

It is the responsibility of the management of the fire company to see that the exhaust system is properly used and maintained on a daily basis. It is advised that one person be appointed to maintain the system on a routine schedule. If a problem should arise between scheduled maintenance periods, all personnel on each shift should report needed service requests to that person. That person should then try to rectify the problem and/or contact the product representative in that area for service. It is further advised that a person from each shift be appointed to inspect the system for proper operation either at the beginning or the end of each shift and report necessary service. This inspection would include proper adjustment of all hoses, nozzles, tailpipe adaptors and pressure sensors.

Remember, just like your fire protection gear the MAGNEGRIP Vehicle Exhaust System is the most beneficial when properly used and maintained.

3:1 BALANCER ATTACHMENT AND ADJUSTMENT PROCEDURE

The balancer is used to retract the hose after the vehicle exits the bay. It is a locking balancer and has approximately 40' of cable. On the cable near the end of its travel is a yellow tab. The tab is used to indicate the position in which the cable is to be locked before the nozzle is attached to the tailpipe of the apparatus. For proper operation the cable is to remain in the locked position when attached to the tailpipe adaptor.



The balancer is attached to the trolley by using the snap hook provided. When attached to the trolley the cable loop should be facing the bay door. Raise the hose and attach the hose saddle trigger snap to the balancer cable and perform the following adjustments:

BALANCER ADJUSTMENT: After attaching the lifting elbow to the cable, if the rubber stop does not touch the balancer housing when the cable is trying to retract, use a wrench on the flats of the mainspring shaft. Rotate the shaft counterclockwise until the rubber stop contacts the housing.

(Note: DO NOT ATTEMPT TO ADJUST THE BALANCER TENSION WITH THE CABLE IN A LOCKED POSITION.)

4:1 NOZZLE/TAILOPIPE ADAPTOR ATTACHMENT PROCEDURE

The nozzle is used to make the final connection from the spiral duct and flexible hose to the apparatus. It employs the use of rare earth magnets and specially designed cases, referred to as “MAGNEPAKS”. The nozzle mates with a specially designed tailpipe adaptor that attaches to the vehicle exhaust.

The nozzle has 3 notches at 12, 3 & 9 o'clock. The notches mate with 3 locating pins on the tailpipe adaptor to ensure proper positioning of the “MAGNEPAKS”.

The tailpipe adaptor incorporates an ambient air inlet ring with a heat resistant gasket. The gasket serves a check valve in positive air pressure (i.e.: fan not running while engine is on). The ambient air inlet ring allows the system to pull-in cooler ambient air from outside the engines exhaust when the fan is running. This feature lowers the temperature of the exhaust emissions; extending the life of the hose. The ambient air inlet ring also reduces the chance of damage to turbo-chargers that could occur with systems that do not offer this design.

IMPORTANT: The tailpipe adaptor must be installed with the locating pins positioned at 12, 3 & 9 o'clock for proper detachment of the nozzle.



IMPORTANT: All tailpipes must be provided with a solid brace attached to the underbody of the vehicle as pictured above.

5:1 NOZZLE & TAILPIPE ADAPTOR MAINTENANCE:

CLEANING AND INSPECTION -

The tailpipe adaptor should be maintained so as not to allow a build up of road dirt or salt on it. A build up could keep the magnets from making proper contact with the adaptor thereby reducing the systems performance. It is suggested that the adaptor be cleaned each time the apparatus is washed. For heavy build-up steel wool may be used to clean and smooth the surface.



Keep this area clean

(Note: When cleaning the “Tailpipe Adaptor” inspect for any possible damage that may hinder the systems performance. A damaged flange could prevent the nozzle from properly attaching and/or releasing.)

The nozzle should be inspected and cleaned to keep the “MAGNEPAKS” from collecting a build up of metal shavings and/or dirt on the pull-pieces. A build up could keep the magnets from making proper contact with the adaptor thereby reducing the systems performance. It is suggested that a clean wire brush be used in a back and forth motion to remove debris. The nozzle should be cleaned and inspected on a monthly basis.

(Note: When cleaning the “MAGNEPAKS” inspect the pull pieces for wear. If the nozzle and adaptor are clean and undamaged but the nozzle is not traveling to the exit point consistently worn pull-pieces are usually the culprit. The pull-pieces are a normal wear item and are easily replaced.)



Pull-Pieces Replacement:

To replace the pull-pieces remove the rubber boot from the elbow transition. Each “MAGNEPAK” is secured to the boot with four bolts and lock nuts. Removing one of the bolts is necessary to allow the pin that secures the pull-pieces to be removed. Using a 7/16” wrench and a 5/16” hex key remove the bolt. Then remove the snap ring that secures the pin and slide the pin out of the “pak”. The pull-pieces/magnets assembly can now be removed. Remove the magnets from the pull-pieces and transfer them to the new pieces and reassemble.

IMPORTANT: WHEN TRANSFERRING THE MAGNETS TO THE NEW PULL-PIECES THEY MUST BE PLACED SO THAT EACH MAGNET WANTS TO PUSH AWAY FROM EACH OTHER. THIS IS NEEDED TO ATTAIN THE PROPER POLARITY FOR THE ATTRACTION STRENGTH OF THE MAGNET ASSEMBLY TO THE TAILPIPE ADAPTOR.

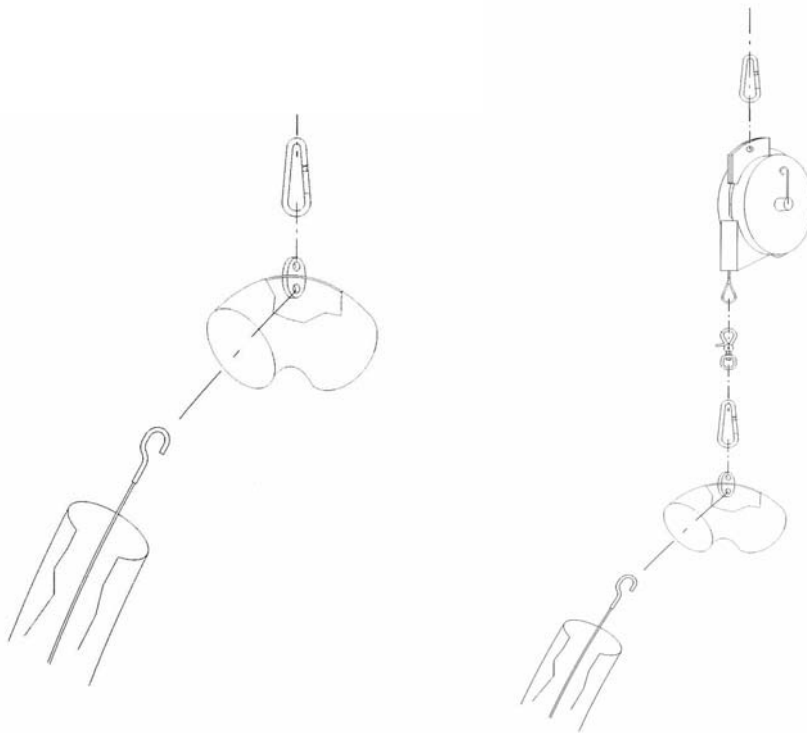


6:1 HI-TEMPERATURE FLEXIBLE HOSE AND LIFTING ELBOW ASSEMBLY

The Magnegrip system uses a hi-temperature flexible hose to make the connection to the apparatus. The hose is secured to the plenum of the crab unit of an SSR system or to the riser plate of an SBT system and is supported by the balancer cable using a lifting elbow. On the interior of the hose a cable is installed between the lifting elbow and the nozzle. The cable eliminates stress on the hose by transferring the tension at the release point of the nozzle to the balancer.

Assemble the complete hose drop as follows:

1. **For SSR systems** - cut 54" from the 5" x 13' hose. The 54" section will attach between the crab unit plenum and the lifting elbow. The remaining length will be used for attachment between the lifting elbow and the nozzle.
2. **For SBT systems** – cut 8' (96") from the 4" or 5" x 23' or 40" hose (for double tracks). The 8' section will be used for attachment between the lifting elbow and the nozzle. The remaining length will be used for attachment between the riser plate and the lifting elbow. (**Note: the section between the riser plate and the lifting elbow 8' measurement is for the maximum track height of 14'. It maybe necessary to shorten this section of the hose if the track is installed lower.**)
3. The lifting elbow consists of a 45 degree elbow, 1-snap hook, 1- trigger swivel hook, 2- hose clamps and 2- rubber sleeves. ***The rubber sleeves should be slid over each end of the elbow before attaching hoses.*** Prior to attaching the hoses to the lifting elbow connect the hook of the cable to the retaining ring inside the elbow. Then feed the cable through the nozzle side of the hose and connect both sides of the hose to the elbow. After the hoses are secured to the elbow with the hose clamps, install 2 – tek screws behind the clamps to prevent slippage then slide the rubber sleeves over the hose clamps.

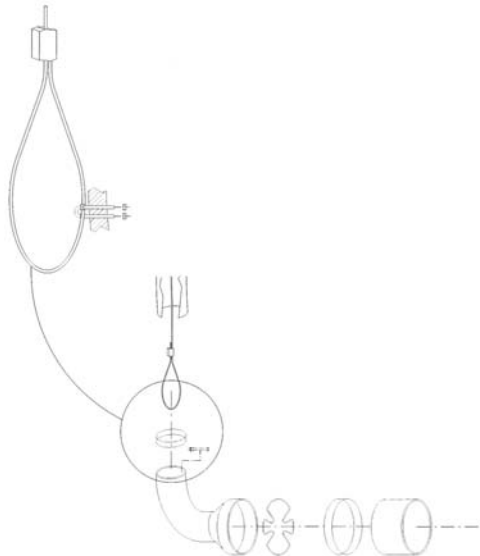


4. Secure the upper section of hose to the plenum of the crab on SSR systems or the riser plate on SBT systems with a hose clamp and then attach the trigger swivel hook of the lifting elbow to the balancer cable. (**Note: For SSR systems the trigger swivel hook is not necessary.**) Use a wrench to increase the tension of the balancer spring to raise the cable stop to the housing.

Cut hose 32" from floor



5. With the balancer cable fully retracted measure 32" from the floor up on the lower section of hose and cut. (**Note: after cutting the hose use pliers to bend over the end of the wire helix to prevent injury.**) Make a mark on the cable at 34" off the floor then slide the gripper fastener on to the cable so that it is just above your mark. Then feed the loose end of the cable through the u-bolt on the end of the nozzle and back through the other side of the gripper fastener and pull tight. Cut off the excess cable. (**Note: be sure to slide the rubber clamp sleeve over the nozzle prior to attaching the cable.**)
6. Attach the nozzle to the hose with a hose clamp and cover the clamp with the rubber sleeve. **IMPORTANT: For SSR systems the nozzle should be set to face the vehicle for easy attachment to the tailpipe adaptor. For SBT systems the nozzle should face the door to allow for easy attachment at the door or parked position.**



7. Adjust balancer tension as needed to raise the cable stop to the housing.

8:1 HOSE SADDLE AND LOOP ADJUSTMENTS FOR DOUBLE TRACKS:

The hose saddle consists of a wide band made of molded rubber, a hose clamp and a trigger snap swivel. The assembly is used to support the hose loops from a trolley on the secondary track of a 40' system or the third track on drive-thru tandem systems.



Attach the rear saddle in the center of the remaining length of hose between the lifting elbow and the riser plate. Adjust the saddle to make the loops equal. (**Note: The section between the riser plate and the lifting elbow is for the maximum track height of 14'. It may be necessary to shorten this section of the hose if the track is installed lower.**)

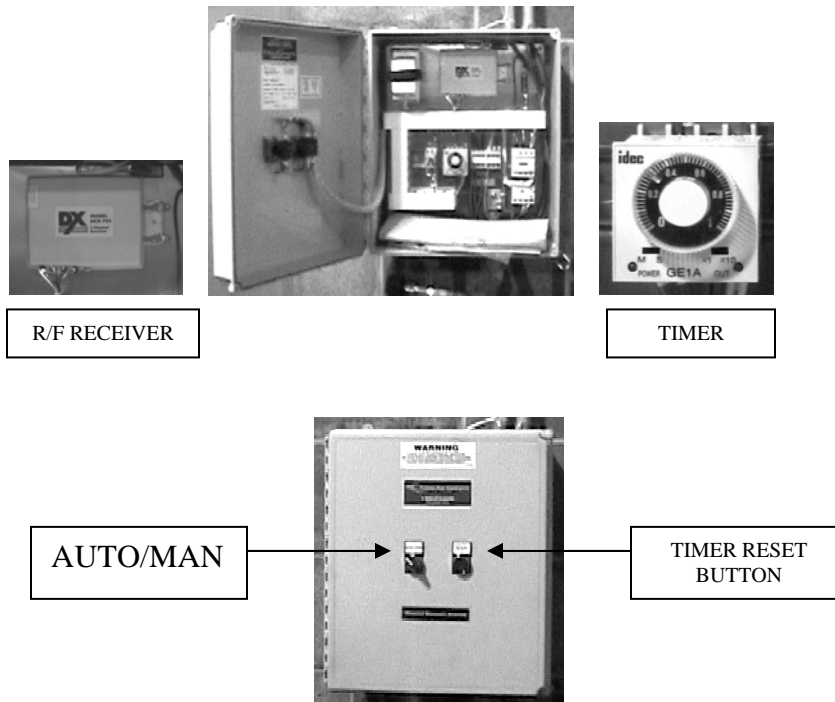


Adjust saddle to make the loops equal

9:1 WIRELESS CONTROL PANEL

The wireless control panel is used as means to operate the system; it is the actual starter. When the pressure sensor actuates the transmitter a signal is sent to the R/F receiver in the control panel to start the fan motor.

An adjustable timer incorporated into the panel allows the fan to run for 1 to 10 minutes before timing out. The average setting used by most departments is 3 minutes.

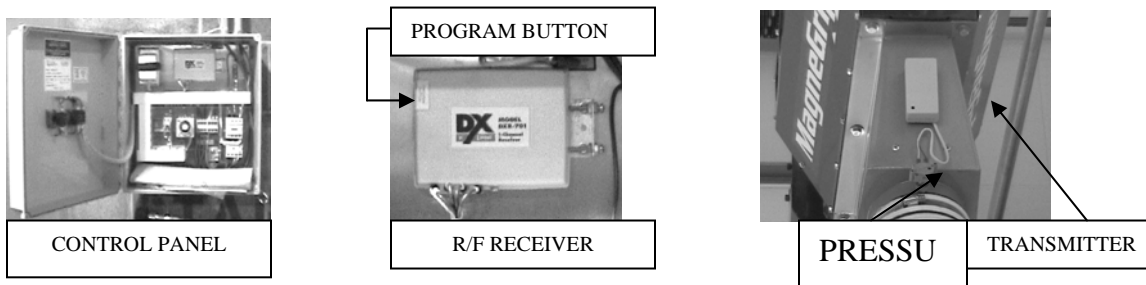


The panel is provided with a switch to by-pass the timer to run the fan in manual mode. When switched to the manual position the system will operate continuously. When the switch is returned to the auto position it will turn off the fan. A timer-reset button is provided to allow the system to be turned off manually. This convenience button is used to eliminate the need to adjust the timer or shut off the power to reset the timer when adjusting the sensors.

WARNING: If it becomes necessary to move or replace a sensor turn off the power to the control panel. Damage to the panel may result if the sensor wires are allowed to touch ground.

10:1 R/F CONTROLLED PRESSURE SENSOR ADJUSTMENT & MAINTENANCE:

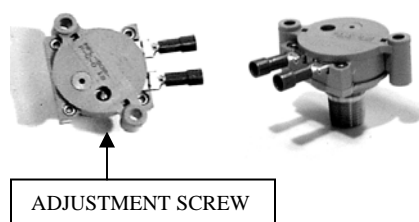
R/F PRESSURE SENSOR: A radio frequency controlled pressure sensor is used to actuate the system using the apparatus exhaust pressure from the engine when started. The control panel utilizes an integrated R/F receiver to receive a signal from a transmitter. The transmitter is mounted on board the roller crab unit. The transmitter is connected to a pressure sensor in the transition plenum.



Transmitter programming procedure:

1. Press and release the program button on the receiver unit in the control panel. A red light will appear.
2. Pressing on the bottom front of the transmitter will depress an internal switch to send a signal to the receiver. The red light on the receiver unit will flicker when the signal is received. Repeat this step for each additional transmitter. (**Note: the transmitter must be activated with in 4 seconds of pressing the receiver button.**)

Sensor adjustment: Adjust the sensor using the adjustment screw accessed through a hole in the sensors contact cover. Turning the screw clockwise will increase the sensitivity and turning it counterclockwise will decrease the sensitivity.



To set the sensor at the sensitivity level needed, connect the nozzle to the tailpipe of the apparatus and start the engine. If the system does not start, leave the engine running and turn the screw clockwise approximately a 1/8th of a turn. Repeat until the system starts. Shut off engine, allow for the system to time-out and then restart engine. If the system does not start, repeat this process.

WARNING: If it becomes necessary to replace a sensor turn off the power to the control panel. Personal injury may result due to unnecessary system start. If the leads make contact when removed from the sensor, a signal will be sent to the receiver to start the motor/blower.

Maintenance: The transmitter uses 2 – 3 volts lithium batteries. If the light on the transmitter does not illuminate when activated or the transmitter fails to send a signal replace the batteries.

11:1 STANDARD CONTROL PANEL LOCATION

CONTROL PANEL PN#'S 500170 THRU 500186: The control panel is used as means to operate the system; it is the actual starter. When the pressure sensor is actuated it sends a signal to the control panel to start the motor/blower. A timer is incorporated into the panel that allows the blower to run for 3 minutes before timing out.

The panel is provided with a switch to by-pass the timer to run the fan in manual mode. When switched to the manual position the system will operate continuously. After the switch is turned back to the auto position it will reset the timer and the fan will time out after 3 minutes.

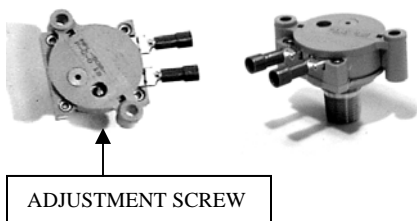
The control panel should be located with consideration to the electrical connection, the fan location, and accessibility. The ability to gain easy access to the manual start switch is needed so that personnel can turn the system on manually when vehicle checks are performed in the bay area.

The 18/2 thermal-wire that is used to connect to the sensor(s) is attached to terminals #3 and #4 in the control panel.

TIMER BY-PASS
SWITCH



Sensor adjustment: Adjust the sensor using the adjustment screw accessed through a hole in the sensors contact cover. Turning the screw clockwise will increase the sensitivity and turning it counterclockwise will decrease the sensitivity.



To set the sensor at the sensitivity level needed, connect the nozzle to the tailpipe of the apparatus and start the engine. If the system does not start, leave the engine running and turn the screw clockwise approximately a 1/8th of a turn. Repeat until the system starts. Shut off engine, allow for the system to time-out and then restart engine. If the system does not start, repeat this process.

WARNING: If it becomes necessary to move or replace a sensor turn off the power to the control panel! Damage to the panel WILL result if the sensor wires are allowed to touch ground!

11:1 FAN MAINTENANCE AND INSPECTION:**LUBRICATION:**

Depending on the age, size and brand of the motor that is installed on the blower assembly lubrication of the bearings may be necessary. Most blower motors today are permanently lubricated and do not require the bearings to be serviced.

In the event that the motor does require lubrication it should be serviced every six months. Be careful not to over lubricate as over lubricating will force grease on to the windings and could cause pre-mature failure due to overheating.

INSPECTION:

The motor/blower should be inspected to be sure that all mounting material and hardware are in good repair and tight. The inlet and discharge should be inspected to ensure that there are no obstructions to prevent proper air movement. The housing should also be checked for moisture build-up from rain and snow. A ¼" hole should be drilled in the bottom the housing to allow moisture to drain.



10:1 SYSTEM OPERATION PROCEDURE:

1. Prior to motioning the apparatus into the bay, pull the cable of the balancer down and lock it at the yellow locating tab.
2. Motion the vehicle into the bay and stop the tailpipe at the desired location for connection.
3. Attach the nozzle to the tailpipe adaptor by aligning the top notch of the nozzle boot with the top locating pin of the adaptor. Push down and in to secure the nozzle.
4. After attaching the nozzle, motion the apparatus into the bay. Upon exiting the bay the trolley will travel toward the bay door and will be stopped by the end stop at the front of the track. The nozzle will then detach from the tailpipe adaptor and the balancer cable will retract the hose.



IMPORTANT: For proper operation the balancer cable must remain in the locked position.