

VORTEX® MAX

POWERED ENGINE AIR PRECLEANER

Powered Engine Precleaner Installation Kit for John Deere 644K Wheel Loader



Sy-Klone Part Number: VMAX0705

Installation Time: 2 to 3 hours

Purpose:

The Vortex® MAX is a patented engine precleaner that combines proven, powered technology with high-efficiency filtration, protecting engines from the harmful impact of dust and debris. The Vortex MAX system is a precleaner. The primary factory engine filter **MUST** remain installed. The secondary engine filter element **MAY** be removed to reduce initial restriction and extend the primary engine filter life. **HOWEVER**, removal of the secondary element may void the factory warranty and the user assumes all risk of loss if they elect to remove the secondary element.

While routine cleaning and maintenance is not required, it is recommended that you perform periodic inspections to ensure the inlet screen does not become blocked. Care should be taken to prevent high-pressure water or high-pressure air from entering the Vortex MAX ejection slot.

VMAX0705 KIT CONTENTS:

Replaceable Parts:

Stock code	Description	Quantity
VMAX0002	VORTEX MAX, 24V POWERED PRECLEANER WITH RAIN CAP AND WIRING HARNESS	1
EF800	VORTEX MAX REPLACEMENT FILTER	1
VMAX0702	VORTEX MAX: HORIZONTAL MOUNTING PLATE	1
S600X350	6-INCH ID X 3.5-INCH STRAIGHT SLEEVE	1
60003U	6-INCH OD X 3-INCH LONG PIPE UNION	1
90L60	6-INCH ID 90° ELBOW	2
KT0009	DUMP VALVE CAP KIT	1

Also included in kit:

Description	Quantity
6.75-INCH WORM GEAR CLAMP	4
3/8 LOCK NUT	4
3/8 WASHER	12
3/8 LOCK WASHER	4
3/8-16 X 7/8-INCH BOLT	4
3/8-16 X 1.25-INCH BOLT	4

Technical Support

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VMAX0002 – 24V Vortex MAX
POWERED PRECLEANER



VMAX0702 – HORIZONTAL
MOUNTING BRACKET



60003U – 6-INCH OD
PIPE UNION



90L60 – 6-INCH ID 90°
ELBOW



S600X350 – 6-INCH ID X 3.5-
INCH STRAIGHT SLEEVE

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DECK PLATE REMOVAL:

Removing the two deck plates above the engine compartment is suggested and is the process followed during this installation procedure.

Follow the manufacturers suggested best practices for deck removal.



INTAKE MODIFICATION:



1. Turn off master power switch.
2. Remove the rain cap or precleaner from the intake pipe and discard.
3. Remove the intake pipe and retain mounting hardware.
4. Shorten the intake pipe by 5.5-inches.

Note: Deburr and paint the cut edge.

5. Reinstall intake pipe on deck plate.

Note: It may be necessary to adjust intake position when reinstalling deck plate.

MOUNTING PLATE INSTALLATION:

1. Use 3/8-16 X 7/8 bolts (4), 3/8 lock washers (4), and 3/8 washers (4) to secure mounting plate to Vortex MAX as shown.

Note: Suggested torque is 7.4 to 14.8 ft-lbs (10 to 20 Nm).



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PLUMBING INSTALLATION:

1. Install two 6.75-inch worm gear clamps on the **S600X350** straight sleeve and leave loose.
2. Install the **S600X350** assembly on the Vortex MAX outlet and secure with the worm gear clamp.
3. Insert the **60003U** pipe union into the **S600X350** approximately halfway or 1.5-inches and secure with the worm gear clamp.
4. Install two 6.75-inch worm gear clamps on the **90L60** 90° elbow and leave loose.
5. Install the **90L60** assembly fully on the **60003U**. Leave worm gear clamps loose.



TRIAL FITMENT:

1. Install the Vortex MAX assembly's 90° elbow on the intake pipe and leave the worm gear clamps loose.
2. Align the Vortex MAX assembly as shown in Fig. 1
3. Mark the location of the mounting plate mounting holes (4 places).
4. The Vortex MAX wiring can be passed through the deck plate and routed through the channel shown. Fig. 2
 - a) Measure the location of the channel.
 - b) Mark the location of the grommet hole in the deck plate.



Fig. 1

Note: The grommet location can be placed in the opening of the mounting plate. Fig. 3

5. Rotate the Vortex MAX assembly out the way or remove assembly. Drill the mounting holes for 3/8 hardware. Drill the grommet hole to 7/8-inch. (Fig. 4).

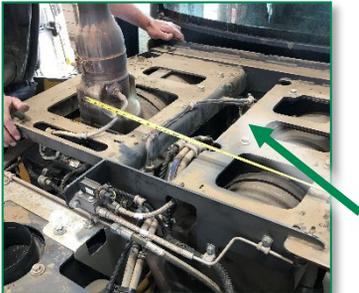


Fig. 2



Fig. 3

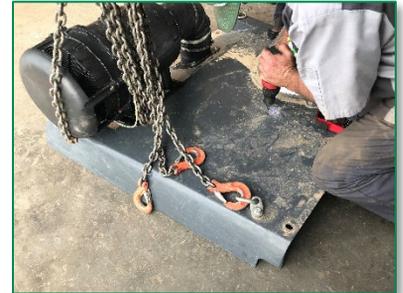


Fig. 4

VORTEX MAX INSTALLATION:

1. Install the large grommet.

Note: Grommet can be installed after routing wiring. Cutting the grommet may simplify installation if installed after wiring.
2. If removed, install the Vortex MAX assembly's 90° elbow on the intake pipe and leave the worm gear clamps loose.
3. Align Vortex MAX assembly with mounting holes and secure with 3/8-16 X 1.25 bolts (4), 3/8 washers (8), and 3/8 lock nuts (4).
4. Tighten the 90° elbow worm gear clamps.

5. If ejection port is not located on the mounting plate side of Vortex MAX, follow the filter orientation section in the Vortex Max Service & Installation manual to change the orientation.



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WIRING:

Note: The wiring used in this installation may not be available on all machines. If the spare ignition power is not available, follow the wiring section in the Vortex MAX Service & Installation manual.

1. Route the wire harness through the center channel of the engine compartment.

Note: Ensure enough excess wire harness is available to reach the location of the Vortex MAX assembly.

2. Route the wire harness over the firewall then down between the cabin and engine compartment.
3. Use a grommet or existing hole in cabin floor to route wire harness into the electrical compartment on right side of machine.
4. Use the spare ignition power, connector number X20, red wire P016, to power the Vortex MAX.

Note: Verify F16 fuse is 15 amp. Use a single pin connector for the red positive.

5. Finding a good ground is also critical to the unit's performance. Use an existing grounding point if possible. If not, grind a small area to bare metal and use a self-tapping screw and ring terminal to ground the system.



INSTALL VORTEX MAX / DECK ASSEMBLY:

1. Reinstall forward engine compartment deck plate.
2. Route wire harness through deck plate and reinstall deck plate with Vortex MAX assembly.
3. Connect wire harness to Vortex MAX.



COMPLETE THE INSTALLATION:

Note: It is recommended to install a new primary factory engine filter element at this time. With the installation of the Vortex MAX Powered Precleaners, the secondary engine filter element MAY be removed to reduce initial restriction and extend the primary engine filter life. HOWEVER, removal of the secondary element may void the factory warranty and the user assumes all risk of loss if they elect to remove the secondary element.

1. Remove the vacuator valve (dump valve) from the engine filter housing cap and install the included DVP cap plug on the vacuator port and secure with a pull tie.
2. Turn the master power switch ON to inspect the Vortex MAX system.

Note: If the system powers on while the ignition key is off, an alternate power source must be located.

3. Turn the ignition key to the ON position and inspect the following:
 - a. System is running. If not, an alternate power source must be located.
 - b. Airflow out of the Vortex MAX ejection slot is strong. If not, check system voltage is 24 volts.



Replacing Filters:

WHEN TO REPLACE FILTERS:

- Replace the Vortex MAX filter element when the restriction warning light turns on.
- Change the Vortex MAX filter element every 1000 hours of operation time, even if the restriction limit is not reached and there are no noticeable performance changes.
- Replace factory installed engine filters per the manufacturer's suggested maintenance cycle.

1. Work in a clean covered area to reduce intake exposure to harmful particles.
2. Wear appropriate personal protection equipment such as gloves, mask, and coverall to protect against contaminants.
3. The machine should be off.
4. Inspect the Vortex MAX system for any damage.
5. Remove the filter element following the filter removal section in the **Vortex MAX Service & Installation Manual**. Note the ejection port orientation.
6. Bag and seal used filter element and dispose of according to local regulation.
8. Inspect and remove any loose debris using a clean rag – never use compressed air.
9. Reinstall the filter element following the filter installation section in the **Vortex MAX Service & Installation Manual**. Ensure the ejection port orientation is correct and that the filter element seats properly on the filter housing.
10. Inspect the Vortex Max system for proper operation.
 - a. Verify that the Vortex MAX turns on with the ignition key.
 - b. Verify that the airflow out of the Vortex MAX ejection slot is strong.

Warnings:

When cleaning equipment, care should be taken to **prevent high-pressure water or high-pressure air from entering the Vortex MAX ejection slot.**

When replacing the filter element, verify port orientation.

REPLACE FILTER ONLY!
Do not clean or re-use filters.
Re-using filters can cause filter failure!
Replace with SY-KLONE filters only.
Order from your dealer or from Sy-Klone.