

# Maxflow® Power Cooler®

## Installation Instructions



**1996 - 1998 Ford 4.6 Mustang Cobra (4 Valve)**

**P/N: 8N301-040**

**CARB EO #D-213-15**



**ENGINEERING, INC.**

This product may not be legal for use on public roads in all 50 states.

P/N: 8N020-040  
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**ENGINEERING, INC.**

## **NOTE**

### ***(Read before installation is started)***

Included in this kit is a smaller than originally supplied supercharger pulley. This new pulley is recommended to achieve the best performance results. Removal of the factory sealed pulley will void the supercharger warranty unless the supercharger unit (with the original pulley still attached) and new pulley are sent into Vortech for removal, installation and re-sealing. If the supercharger warranty is not an issue, the pulley may simply be removed and replaced with the new part supplied. Hammering/prying etc. on the supercharger and/or pulley will cause damage to the parts. Light heating of the supercharger pulley with a propane torch (if the pulley is tight on the shaft) will aid removal. A return authorization number is required before the supercharger and pulley are sent into Vortech. Call the Vortech service department at (805) 247-0226 for a return authorization number. Return freight (ground) will be paid by Vortech.

## **NOTICE**

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**[www.vortechsuperchargers.com](http://www.vortechsuperchargers.com)**

# Vortech Maxflow Power Cooler Installation Instructions

## 1996 - 1998 Ford 4.6 Mustang Cobra (4 Valve)

*Congratulations on selecting the best performing and most efficient aftercooler today... the Vortech® Maxflow Power Cooler!*

Before beginning this installation,  
please read through this entire instruction booklet

The Vortech Maxflow Power Cooler system was designed as a street/strip oriented aftercooler, specifically for use on 1996 - 1998 Ford 4.6 Mustang vehicles equipped with a Vortech supercharger producing up to approximately 580 horsepower.

As with any power enhancing product, this system is intended for use on healthy, well-maintained engines. **Vortech Engineering is not responsible for engine damage.** Installation on new vehicles will not harm or adversely affect the break-in period so long as factory break-in procedures are followed.

**For best performance and continued durability, please take a note of the following key points:**

1. Use only premium grade fuel 92 octane or higher (R+M/2).
2. Always listen for any sign of detonation (pinging) and discontinue hard use (no boost) until problem is resolved.

IMPORTANT NOTE: If the vehicle still has the battery located in the factory position, it must be relocated into the trunk to make room for the water tank assembly. Vortech part number 8N150-010 is a Heavy-Duty Battery Relocation Kit that may be purchased separately. Commonly available "universal" relocation kits may be used but they will most likely contain a smaller cable. Additional fabrication may also be necessary when using a "universal" kit.

## TOOL & SUPPLY REQUIREMENTS

- Open End Wrenches (7/16", 9/16", 5/8", 11/16")
- 3/8" Ratchet
- 8mm, 13mm, 9/16" and 18mm Sockets
- 5/32", 3/16", 9/16" Allen Wrenches
- Flat #2 Screwdriver
- Phillips #2 Screwdriver
- Utility Knife
- Wire Cutters, Strippers and Crimpers
- Drill Motor
- 1/8", #21 Drill Bits
- Tape Measure
- Pipe Tape (Teflon)
- Adjustable Wrench

# FORCEPOWER® PARTS Basic Limited Warranty

Vortech Forcepower parts carry a ninety (90) Day LIMITED WARRANTY from the date of purchase from your dealer or Vortech. The part(s) must be used in the manner intended by Vortech. Any component found to be defective in either material or workmanship, will be replaced or repaired at our option, at no charge to the customer. This warranty does not include any part that is used for racing. **This warranty is nontransferable and is extended to original purchasers residing within the United States or Canada only.** The warranty excludes hoses and sleeves, as well as all electronic support components manufactured by any other company.

Vortech Engineering, Inc. agrees to honor any warranty claim at its sole discretion and **only after inspection by Vortech engineers at the Vortech factory.** No warranty will be honored if any Forcepower part being submitted for inspection is found to have been tampered with, improperly installed, or mishandled in any way. Claims for freight damage must be held against the freight company. NOTE: THE DURATION OF ANY AND ALL WARRANTIES ON FORCEPOWER PARTS ARE LIMITED TO THE NINETY (90) DAY DURATION OF THE EXPRESS WARRANTY. IN NO EVENT WILL VORTECH BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

If you require any additional details regarding Vortech warranties, please call at (805) 247-0226, M - F, 8:00-4:30 Pacific Standard Time.

## WARRANTY/REPAIR PROCEDURE NINETY (90) DAY LIMITED WARRANTY

If the product should fail within the ninety (90) day warranty period as outlined above, follow the procedures below:

1. Phone Vortech directly (805) 247-0226 and be prepared with the following information:
  - A. Copy of the invoice on which the part was purchased.
  - B. Year, make, model, vehicle mileage and engine specifications of vehicle on which the part is installed.
  - C. Description of perceived problem.
  - D. Mileage on Vortech product(s) - if applicable.
2. Once the information is given to Vortech as outlined in Warranty/Repair Procedure item 1 above, Vortech will either:
  - A. Issue you a RETURN AUTHORIZATION NUMBER, or
  - B. Offer suggestions to aid you in additional troubleshooting.

**NO RETURNS WILL BE ACCEPTED WITHOUT A RETURN AUTHORIZATION NUMBER APPEARING ON THE OUTSIDE OF THE RETURN CARTON.**
3. Once you are assigned a RETURN AUTHORIZATION NUMBER, you must box and carefully "safety package" the Vortech product(s) being returned. "Safety package" means to pack each product within the box in such a way so that it will not hit other product(s) components, or the side of the box during shipping. The box must be strong enough to easily hold the weight of the product(s) plus the packaging and sturdy enough to maintain its shape during shipping.

**CLEARLY MARK THE RETURN AUTHORIZATION NUMBER IN 2" HIGH ALPHANUMERIC CHARACTERS IN TWO LOCATIONS ON THE BOX WITH A BOLD BLACK MARKER.**
4. Include in the box the following six (6) items:
  - A. A copy of the original invoice or receipt.
  - B. Your name, address and daytime phone number.
  - C. A description of the year, make, model, vehicle mileage and specification of the engine (noting ALL modification in detail, if applicable).
  - D. A description of the perceived problem or defect.
  - E. The RETURN AUTHORIZATION NUMBER.
  - F. The address to which the product is to be returned after inspection by Vortech.
5. Ship the properly safety packaged and marked box by UNITED PARCEL SERVICE (UPS), prepaid and insured for the retail value of the product(s) being returned for inspection, to the Vortech factory at:

**Vortech Engineering, Inc.  
Warranty Dept.  
1650 Pacific Avenue  
Channel Islands, CA 93033-9901**
6. If Vortech's limited warranty applies, your product(s) will be repaired or replaced at Vortech's option and returned to you freight prepaid, via UPS ground service. If the limited warranty does not apply, we will advise you of the specific reason for denial and tell you the costs involved in repairing your product(s). After relating such information we will, at your option, either proceed with repairs as quoted or return your product(s) to you in the condition they are in at the time of inspection for warranty evaluation via UPS COD insured for the new retail replacement value. This means that you must pay any disassembly and/or inspection charges, return shipping and insurance charges if the Vortech limited warranty does not apply.

# Vortech Maxflow Power Cooler

Part No. 8N301-040

1996 - 1998 Ford 4.6 Mustang Cobra (4 Valve)

## PARTS LIST

IMPORTANT: Before beginning installation, verify that all parts are included in the kit. Report any shortages or damaged parts immediately.

### Air/Water Aftercooler Assembly (8N201-040)

PART NUMBER	DESCRIPTION	QUANTITY
8N101-040	Air/Water Aftercooler 4V	1
7S275-300	2-3/4" x 3" Sleeve	1
8N012-060	Cooler Discharge Tube 4V 4.6	1
7S375-200	3-3/4" x 2" Sleeve	1
7R002-060	No. 60 Goldseal Hose Clamps	2
7P500-078	1/2 NPT x 3/4 Hose Fitting	2

### Water Tank Assembly (8N105-030)

PART NUMBER	DESCRIPTION	QUANTITY
8N105-010	Water Tank w/ Fittings	1
7U038-000	3/4" Heater Hose (228")	19'
7R007-001	Plastic Double Grip Clamps	7
7R003-016	15/16" Adel Clamps	3
7E010-075	#12 x 3/4 HXHD	3
7J010-001	#10 Flat Washer	3
7U100-044	Nylon Tie Wraps 4"	16
7U100-066	Nylon Tie Wraps 11"	6

### Water Cooler Assembly (8N106-030)

PART NUMBER	DESCRIPTION	QUANTITY
8N006-010	Water Cooler	1
7P500-026	90° Brass Fittings	2
8N010-050	Mounting Tabs	2
7E010-075	#12 x 3/4 HXHD Sheet Metal	4
7J010-001	#10 Flat Washer	4
7A250-075	1/4-20 x 3/4 SHCS	5
7F250-021	1/4-20 Nylock	5
7J250-001	1/4" Flat Washer	10

### Support Components (8N104-030)

PART NUMBER	DESCRIPTION	QUANTITY
2A100-030	Retainer, Volute 1/2 size	2
7U133-024	5/8" Molded Elbow Hose	1
7U133-060	3/4" x 90° Hose Elbow	1
7P625-016	5/8" Union	1
7P375-075	3/4" Hose Barb	1
2A036-325	Supercharger Pulley, 3.25" 6 Groove	1

### Water Pump Assembly (8N107-020)

PART NUMBER	DESCRIPTION	QUANTITY
8F001-403	Water Pump	1
8N010-060	Bracket, Bosch Water Pump	1
5W001-011	14-16 GA Eyelet	1
5W001-012	18-22 GA Butt Connector	1
5W018-010	18 GA Strd Wire Red (99")	8.25'
5W001-019	12 GA Butt Connector	1
5W001-014	Fuse Holder	1
5W001-015	Fuse Blade Style	1
5W001-002	Fuse Tap	1
5W001-040	12-10GA Female Slide	1
5W001-050	Connector, Fuel Injector	1
7E010-075	#12 x 3/4" Sheet Metal Screw	2
7J010-001	#10 Flat Washer	2
7U133-060	3/4" x 90° Hose Elbow	1

# 1. Preparation and Removal

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- A. Remove strut tower brace from the vehicle.
- B. Disconnect and remove the battery (if located in the factory position, the battery will need to be relocated to the trunk).
- C. Remove the supercharger discharge tube and bypass valve assembly.
- D. Remove belt, supercharger and bracket.  
Disassemble the bracket from the supercharger.

**NOTE: Temporarily cap oil feed and oil drain to protect your engine from foreign particles.**

- E. Disconnect lines from the air inlet that connects to the idle air control and valve cover vent.

## 2. Supercharger Reclocking and Reinstallation

- A. Loosen and remove the six (6) 1/4-20 cap screws and retaining plates that hold the compressor housing to the gearcase.
- B. Carefully rotate the supercharger volute to the specified location as shown.

**NOTE: Boss on volute should line up with oil feed fitting.**

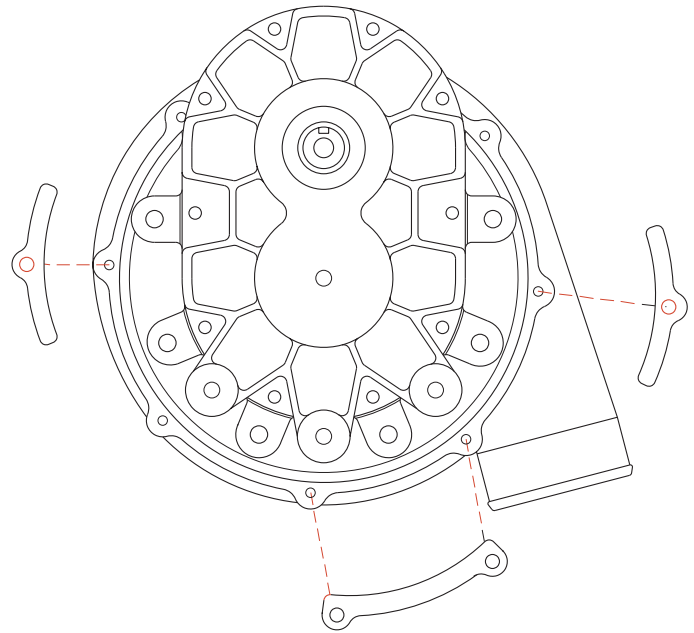
- C. Install the two (2) single bolt retainers in the locations shown.

**NOTE: If the compressor housing does not rotate freely relative to the gearcase, DO NOT FORCE IT. SERIOUS SUPERCHARGER DAMAGE MAY OCCUR. The machined mating surfaces are designed to prevent pressurized air from escaping and have minimal tolerances. If the housing will not move or is very tight, contact Vortech Engineering immediately at (805) 247-0226 and ask for our service department for further assistance.**

- D. Evenly retighten the four (4) cap screws, torque to 60 in/lbs (5ft/lbs).
- E. Remove original 3.60" supercharger pulley from the supercharger and install the supplied 3.25" pulley.

**NOTE: Included in this kit is a smaller than originally supplied supercharger pulley. This new pulley is recommended to achieve best performance results. Removal of the factory sealed pulley will void the supercharger warranty unless the supercharger unit (with the original pulley still attached) and new pulley are sent into Vortech for removal, installation and re-sealing. If supercharger warranty is not an issue, the pulley may simply be removed and replaced with the new part supplied. Hammering/prying etc. on the supercharger and/or pulley will cause damage to the parts. Light heating of the supercharger pulley with a propane torch (if the pulley is tight on the shaft) will aid removal. A return authorization number is required before the supercharger and pulley are sent into Vortech. Call the Vortech service department at (805) 247-0226 for a return authorization number. Return freight (ground) will be paid by Vortech.**

- F. Mount the supercharger on to the bracket and re-connect oil feed and drain lines.
- G. Reinstall the supercharger and bracket onto the vehicle.



Modified Clocking

# 3. Aftercooler and Discharge Tube Mounting

- A. Install the bypass valve onto the 1" cooler inlet barb using the original hose. Secure the assembly to the aftercooler.
- B. Remove the silicone sleeves and clamps from the original discharge tube.
- C. Install the 2-3/4" diameter silicone sleeve onto the supercharger outlet and slide the sleeve back as far as possible, leaving the two #44 hose clamps loose.
- D. Slide the supplied 3-3/4" diameter silicone sleeve and #60 hose clamp onto the aftercooler outlet. Leave the two #60 hose clamps loose.
- E. Reinstall the original 4-1/2" sleeve onto the throttle body leaving the two #72 hose clamps loose.
- F. With cooler into position, slide the silicone sleeve and clamps from the supercharger outlet onto the aftercooler inlet and secure.
- G. Install the discharge tube between aftercooler and throttle body and secure sleeves and clamps (see photo - 1).
- H. Reconnect the bypass valve outlet to the 90° plastic elbow on the air inlet and secure with the original hose clamps. A small amount of trimming to the 1" hose may be necessary to ensure proper fit.



Photo - 1



## 4. Idle Air Control and Valve Cover Vent Lines

- A. Using the 3/4" 90° elbow slide the shortest end onto the 3/4" barb of the 3-1/2" x 45° inlet elbow and insert the 3/4" hose union into the opposite end (see photo - 2).
- B. Reconnect the idle air control line to the hose union. Trim excess line as needed to ensure a proper fit.

**NOTE: Trimming the 90° elbow may also be required to avoid any possible kinks in the line.**

- C. Following the procedures from the step A and B duplicate this utilizing the 5/8" hose and union instead and reconnect the valve cover vent line to the 5/8" union.

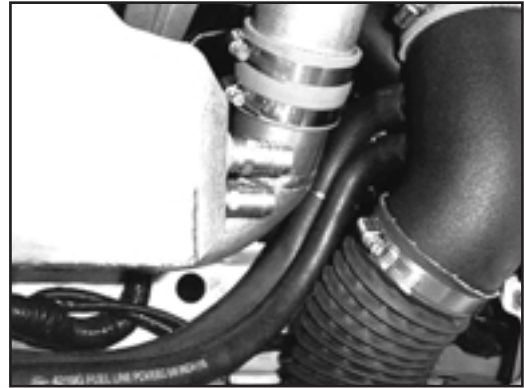


Photo - 2

# 5. Water Tank Mounting (Plumbing Schematic)

- A. Remove battery tray and notch to allow tank to sit flush with bottom of tray and reinstall (see photo - 3).
- B. Place the water tank in the tray previously occupied by the battery and secure using the original battery hold down (see photo - 4).
- C. Cut a piece of the 3/4" hose 50 in. length and attach to the 3/4" 90° fitting (located at the lower rear of the water tank). Route downward and toward the front of the car. (See schematic on the next page.)
- D. Cut a piece of the 3/4" hose 98" in length and attach it to the water return fitting on the tank. Route the hose downward and secure with the supplied adel clamps and #12 hardware to the bottom of the radiator core support. Connect the hose to the outlet fitting on the aftercooler routing it up and through the passenger side headlight well (see photo - 5 and 6).

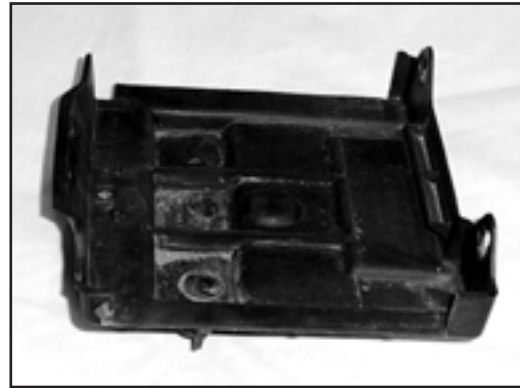


Photo - 3



Photo - 4

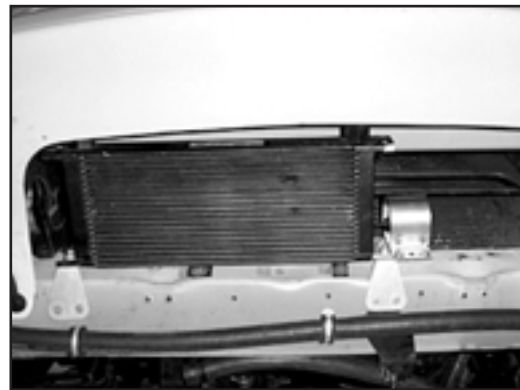


Photo - 5  
(water cooler not yet installed)

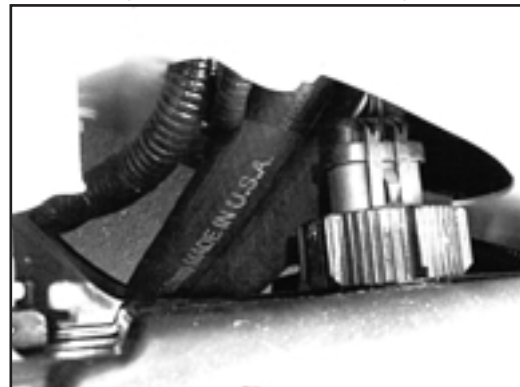


Photo - 6



## 6. Water Cooler and Pump Installation

- A. Remove the air dam from the lower radiator core support.
- B. Loosely attach the supplied water cooler brackets to the cooler using the supplied 1/4" hardware (see photo - 7). Following the photo, position the cooler on the core support as far towards the passenger side as possible. Using the mounted cooler brackets as a guide, mark the position on the lower radiator core support where the bracket mounting holes must be drilled (see photo - 5). Drill the four mounting holes and attach the cooler assembly to the core support with #12 hardware.
- C. Notch the air dam to allow clearance for the cooler mounting brackets and reinstall.
- D. Route the previously attached 50" section of hose extending downward from the lower 90° fitting on the water tank to the inlet of the water pump. Secure hose with nylon ratchet clamps.
- E. Secure the hoses to the chassis with provided tie wraps.



Photo - 7

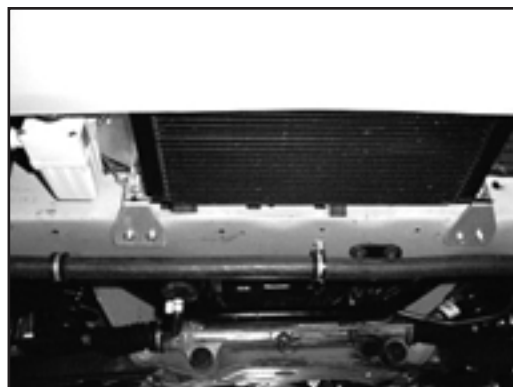


Photo - 8

**NOTE: Hoses must not be kinked or restricted. Route away from moving parts and direct engine heat.**

- F. Cut a piece of the 3/4" hose 42" in length and attach to the outlet fitting of the water cooler. Connect hose to the inlet fitting on the aftercooler. The line should run parallel with the return line. Trim the ends appropriately and secure both with nylon ratchet clamps.
- G. Following photo 8 and 9, attach the 90° hose bend to the water cooler inlet. Slide the water pump bracket onto the water pump and position outlet of pump in line with the 90° hose bend. Using the bracket as a guide mark and drill holes in core support and attach with the supplied hardware. Trim the 90° hose if necessary, and secure with nylon ratchet clamps.

## 7. Water Pump Wiring and FMU Mounting

- A. Connect the wiring harness to the water pump. Attach a 16 GA eyelet to the brown wire (negative) and route to a clean ground free from paint and vehicle undercoating. A cooler mounting tab works well for this.
- B. Route the red wire from the water pump through the firewall to the fuse panel. Connect to fuse #18 using the supplied fuse tap, fuse and fuse holder (make sure that the supplied secondary fuse is spliced into the power wire). Secure the red wire to the chassis using the provided tie wraps. Connect the red wire using a solderless connector to the black wire with yellow stripe (positive) on the wiring harness of the water pump.

**NOTE: Do not attach the red wire to the power until the water tank is full of water, running the water pump without water will lead to premature failure and void your warranty.**

- C. Fill the water tank with 25% antifreeze and 75% water to approximately 3" from the top. **Do not fill past the water return fitting** (Doing so will not allow system to purge itself of air).
- D. Turn the ignition key to the "ON" position and check that the water is flowing through the system. Once water is flowing, allow to run for approximately 1 (one) minute. This will allow any trapped air to be purged from the system. Once all the air is removed, fill the tank to one inch below the filler ring.

**NOTE: In some cases, the water pump must be primed on initial start-up. This may be accomplished by turning on the pump, removing the RETURN line from the tank and providing light suction on the hose to remove the air in the system.**

- E. The FMU will have to be moved forward (toward the air inlet) if it comes in contact with the aftercooler (see photo - 9).
- F. Reinstall vehicle strut tower brace.



Photo - 9

# 8. Final Check

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**WARNING: Do not attempt to operate the vehicle until ALL components are installed and ALL operations are completed including the final check.**

- A.** Check all fittings, hose and clamps for tightness and leaks. Make sure all wires and lines are properly secure with clamps or tie wraps.
  
- B.** Make sure all wires and hoses are routed away from hot, moving or sharp objects.
  
- C.** Double check to ensure water is flowing through the system.