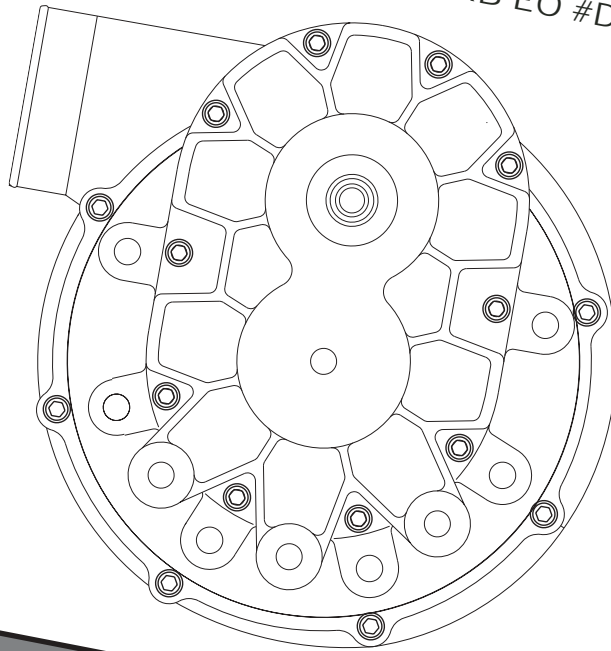


1999-2001 FORD 5.4L/  
1999-2003 6.8L  
**SUPER DUTY TRUCK**

Supercharger System  
Installation Instructions  
50 State Smog Legal per CARB EO #D-213-20



ENGINEERING, LLC

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FAX (805) 247-0669 • [www.vortechsuperchargers.com](http://www.vortechsuperchargers.com) • M-F 8:00 AM - 4:30 PM PST

# FOREWORD

Proper installation of this supercharger kit requires general automotive mechanic knowledge and experience. Please browse through each step of this instruction manual *prior* to beginning the installation to determine if you should refer the job to a professional installer/technician. Please call Vortech Engineering for installers in your area.

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# Ford 5.4L/6.8L Super Duty IMPORTANT NOTES

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## 1999-2003 Models

This kit requires ECM modification and the installation of a Vortech ECM Module. The ECM must be sent directly to Vortech by the installing customer (the charge for this service with module installation has been included in the purchase price).

- Included in this kit is a prepaid next-day air shipping box and a credit tag for one (1) Vortech ECM Module.
- The modules are made specifically for each individual vehicle with respect to the factory ECM calibration.
- Simply contact the Vortech Service Department at (805) 247-0226 to request a Return Authorization Number (see ECM Module Credit Tag for more details).
  - Mail to Vortech the enclosed "ECM Module Credit Tag" (send original tag - no photocopies will be accepted) and ECM in the supplied box.
  - Turnaround time will be 1-2 days (each application varies). Vortech will give an estimate at the time of your order.

Your Vortech ECM Module comes with a twelve (12) month limited warranty from the original date of purchase of your supercharger system (see Owner's Manual for details).

# 1999-2003 FORD SUPER DUTY Installation Instructions

1999-2001 50 State Smog Legal, as per CARB EO #D-213-17

*Congratulations on selecting the best performing and best backed automotive supercharger available today... the VORTECH® V-2® Supercharger!*

**Before beginning this installation, please read through this entire instruction booklet and the Street Supercharger System Owner's Manual which includes the Automotive Limited Warranties Program and the Warranty Registration form.**

Vortech supercharger systems are performance improving devices. In most cases, increases in torque of 30-35% and horsepower of 35-45% can be expected with the boost levels specified by Vortech Engineering. This product is intended for use on healthy, well maintained engines. Installation on a worn-out or damaged engine is not recommended and may result in failure of the engine as well as the supercharger. **Vortech Engineering is not responsible for engine damage.**

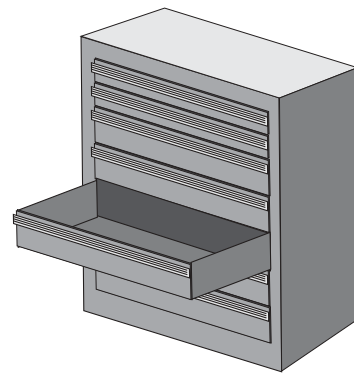
Installation on new vehicles will not harm or adversely affect the break-in period so long as factory break-in procedures are followed.

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

1. Use only premium grade fuel 91 octane or higher (R+M/2).
2. The engine must have stock compression ratio.
3. If the engine has been modified in any way, check with Vortech prior to using this product.
4. Always listen for any sign of detonation (pinging) and discontinue hard use (no boost) until problem is resolved.
5. Perform an oil and filter change upon completion of this installation and prior to test driving your vehicle. Thereafter, always use a high grade SF rated engine oil or a high quality synthetic, and change the oil and filter at least every 3,000 miles. **Never attempt to extend the oil change interval beyond 3,000 miles, regardless of oil manufacturer's claims as potential damage to the supercharger may result.**
6. Before beginning installation, replace all spark plugs that are older than 2 years or 30,000 miles with original heat range plugs as specified by the manufacturer and reset timing to factory specifications (follow the procedures indicated within the factory repair manual and/or as indicated on the factory underhood emissions tag). **Do not use platinum spark plugs unless they are original equipment.** Change spark plugs at least every 30,000 miles.

## TOOL & SUPPLY REQUIREMENTS:

- Metric and standard - socket set, wrench set
- Ratchet - 1/2" drive
- Extension
- 1/2" drive breaker bar
- Ford springlock tool 3/8" & 1/2"
- Pliers
- Drill motor
- Ø1/16" and #30, Ø9/32", and Ø11/16" drill bits
- Test light
- Rubber mallet or dead blow hammer
- Harmonic balancer puller and installer
- Wire cutters and crimping tool
- Standard hex key set (Allen wrenches)
- Alcohol (denatured or rubbing)
- Silicone sealer/RTV



*If your vehicle has in excess of 30,000 miles since its last spark plug change, then you will also need:*

- Spark Plug Socket
- NEW Spark Plugs



# 1999-2001 Ford Super Duty 5.4L

Part No. 4FT218-010/018SQ

## PARTS LIST

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

Part Number	Description	Quantity	Part Number	Description	Quantity
<b>4FT120-020</b>	<b>ECM CHIP PKG/SHIPPING ASSY</b>	<b>1</b>	<b>4FT130-026</b>	<b>OIL FEED ASSY. SUPER DUTY</b>	<b>1</b>
<b>2E228-340</b>	<b>V2 SQ SUPER DUTY 5.4L</b>	<b>1</b>	7U030-026	1/4" x 25" OIL FEED HOSE	25"
2E128-340	S/C S.D. 5.4 V-2SQ SATIN	1	7P250-034	STREET TEE	1
2A038-333	S/C PULLEY Ø3.33" 8 GROOVE	1	7P250-082	1/4"NPT x -4 x 90° FITTING	1
8R101-002	8-RIB PULLEY RET.ASSY	1	7P525-067	CRIMP FERRULES	2
<b>4FT111-062</b>	<b>CRANK PULLEY ASSY 5.4</b>	<b>1</b>	7P250-066	#4 SWIVEL x 1/4 HOSE BARB	2
4FT016-031	5.4 CRANK PULLEY	1	7U100-055	6" TIE WRAPS	4
4FT016-021	DAMPER 5.4 MACHINED	1	7P125-026	1/8 NPT x #4 X 90° FITTING	1
4FT017-010	SPCR, CRNK PULLEY	1	<b>4FT238-068</b>	<b>FMU ASSY SUPER DUTY</b>	<b>1</b>
2A048-730	BELT, K080730 GATES	1	4FT145-020	FUEL LINE, FEMALE 7"	1
7C120-065	M12 x 1.5 x 65mm HHCS	1	4FD145-010	FUEL LINE, MALE 17"	1
7C100-040	M10 x 1.5 x 40mm SHCS	3	7U030-046	5/32" X 18" VACUUM LINE	18"
7K437-001	7/16" AN WASHER	3	7P156-082	5/32" TEE	1
<b>4FT111-054</b>	<b>MNTG. BRKT. ASSY</b>	<b>1</b>	7U100-055	6" TIE WRAPS	2
4FM016-031	IDLER 8-RIB GROOVED	1	6Z110-136	7:1 FMU	1
4FA016-171	DUST COVER	3	<b>8F203-265</b>	<b>FUEL PUMP ASSY.</b>	<b>1</b>
4FT017-070	SPACER, IDLER S.D.	1	5W001-001	WIRE TAP	1
7A437-250	7/16-14 x 2.5" HXHD	1	5W001-011	16-14 GA EYELET .25" HOLE	2
7F437-000	7/16-14 NUT NYLOCK	1	7E010-050	#12 x 1/2 SHEET METAL SCREW	1
7J438-081	7/16 WASHER SAE	1	7P312-003	5/16 FEMALE FUEL	1
4FT110-044	MAIN BRKT ASSY, WELDED	1	7R004-003	14.5 STEPLESS CLAMP	2
4FT010-034	SUPPORT PLATE	1	7U100-044	TIE WRAP, 4" NYLON	3
7C100-085	M10 x 1.5 x 85mm HXHD	1	7U100-055	TIE WRAP, 6" NYLON	4
7C100-110	M10 x 1.5 x 110mm HXHD	2	7U031-018	5/16 FUEL HOSE HI-PRESSURE	11"
7J010-002	M10 WASHER	3	8F101-200	T-REX WIRING ASSY MUSTANG	1
7A375-178	3/8-16 x 1.75" HXHD GR8	5	5W001-014	FUSE HOLDER 10 GA WIRE	1
7K375-030	3/8 WASHER AN	5	5W001-015	FUSE, BLADE TYPE 20 AMP	1
4FM011-052	5.4 SPRING TENSIONER	1	5W001-010	16-14 GA FEMALE SLIDE	1
7C010-045	M10 x 1.5 x 45mm HXHD	1	8F001-002	155 INLINE FUEL PUMP	1
4FA016-170	IDLER 8-RIB SMOOTH	1	7R003-027	ADEL CLAMP	1
4FA016-171	DUST COVER	1	7R001-008	#8 STNLS HOSE CLAMP	2
4FT017-060	SPACER, SPRING TENSIONER	1	7E010-075	#12 x 3/4" SHEET METAL SCREW	1
7A375-400	3/8-16 x 4" HXHD PLTD	1	7P500-004	FITTING, FUL.ADAPT.1/2	1
7F375-017	3/8-16 NUT NYLOCK	1	5W001-017	LARGE RING TERMINAL	1
7K375-030	3/8 WASHER AN	2	5W001-019	SOLDERLESS CONNECTOR 10-12	2
7A250-075	1/4-20 x .75" SHCS	2	7U030-050	12mm FUEL HOSE	16"
7J250-001	1/4 WASHER PLTD	2	5W001-042	12-10 GA 3/16" RING TERMINAL	2
4FT010-020	DAMPER BRKT. S.D.	1	7A250-100	1/4-20 x 1" FLAT ALLEN	1
4FM017-020	5.4 SPCR LONG	1	7J250-001	1/4 SAE WASHER, PLATED	2
7C140-035	M14 x 2.0 x 35mm, HXHD PLTD	1	7F250-021	1/4-20 NYLOCK NUT ZINC PLATED	1
7J438-091	9/16" WASHER SAE PLTD	1	5W001-040	12-10 GA FEMALE SLIDE	2
4FT010-050	BRKT, WIRNG HRNS S.D.	1	<b>4FT130-036</b>	<b>OIL DRAIN ASSY. SUPER DUTY</b>	<b>1</b>
7A250-075	1/4-20 x .75" SHCS PLTD	2	7P100-121	SEALING NUT	1
7J250-001	1/4 WASHER PLTD	4	7P375-045	45° STREET ELBOW	1
7F250-021	1/4-20 NUT NYLOCK	2	7P375-017	3/8 NPT HOSE BEAD x 1/2 BEADED	1
5W018-070	WIRE 22-18GA GREEN	6"	7U030-036	1/2" OIL DRAIN HOSE x 1'	1
5W018-030	WIRE 22-18GA GRAY	6"	7R001-008	#8 HOSE CLAMPS	2
5W001-012	SOLDERLESS CONNECTORS 22-18GA	4	7R003-027	ADEL CLAMP	1
7A375-178	3/8-16 x 1.75" HXHD PLTD GR8	3	7R001-008	#8 HOSE CLAMPS	2
7K375-030	3/8 WASHER AN	6	<b>4FT011-032</b>	<b>CROWS FOOT, WATER PUMP</b>	<b>1</b>
7F375-017	3/8-16 NUT NYLOCK	3	<b>4FT011-022</b>	<b>CROWS FOOT, FORD V-8</b>	<b>1</b>
7C012-035	M12 x 1.75 x 35mm HXHD	3			
7J012-092	M12 WASHER	3			



# 1999-2001 Ford Super Duty 5.4L

Part No. 4FT218-010/018SQ

## PARTS LIST

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

Part Number	Description	Quantity
<b>4FT112-010</b>	<b>AIR INLET ASSY</b>	<b>1</b>
4FT012-030	DUCT, INLET Ø3.5" S.D.	1
7R002-056	#56 GOLDSEAL HOSE CLAMP	2
7R002-052	#52 GOLDSEAL HOSE CLAMP	2
8H040-045	AIR FILTER F-150	1
4FT110-010	BRKT ASSY, MAF SUPERDUTY	1
7P375-106	PCV VALVE, F150, 3/8" INLET	1
7P625-016	5/8" UNION	1
7U133-024	5/8" MOLDED ELBOW HOSE	1
7A250-075	1/4-20 x 3/4 SHCS PLATED	4
7F250-021	1/4-20 NYLOCK NUT ZINC PLATED	4
7J250-001	1/4 SAE WASHER, PLATED	8
7S350-200	3-1/2 x 2 SLEEVE	1
7U035-001	3-1/2" FLEX HOSE	15"
<b>4FT112-020</b>	<b>AIR DISCHARGE ASSY</b>	<b>1</b>
4FT012-020	DISCH. DUCT 5.4 SUPER DUTY	1
8D001-001	BYPASS VALVE	1
7U034-016	1" GS HOSE	3"
7R002-016	#16 GOLDSEAL HOSE CLAMP	5
7U133-090	RUBBER ELBOW, Ø1.0" x 90°	1
7U030-046	5/32" VACUUM LINE	25"
7S275-200	2-3/4 x 2 SLEEVE	2
7R002-044	#44 GOLDSEAL HOSE CLAMP	3
7R002-048	#48 GOLDSEAL HOSE CLAMP	1
7P750-102	3/4NPT x 1" x 90° HOSE FITTING	1
7U034-016	1" GS HOSE	3"



# 1999-2003 Ford Super Duty 6.8L

Part No. 4FT218-020/028SQ

## PARTS LIST

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

Part Number	Description	Quantity	Part Number	Description	Quantity
<b>4FT120-020</b>	<b>ECM CHIP PKG/SHIPPING ASSY</b>	<b>1</b>	<b>4FT111-054</b>	<b>MNTG. BRKT. ASSY</b>	<b>1</b>
<b>4FT130-036</b>	<b>OIL DRAIN ASSY. SUPER DUTY</b>	<b>1</b>	4FM016-031	IDLER 8-RIB GROOVED	1
7P100-121	SEALING NUT	1	4FA016-171	DUST COVER	3
7P375-045	45° STREET ELBOW	1	4FT017-070	SPACER, IDLER SUPER DUTY	1
7P375-017	3/8 NPT HOSE BEAD x 1/2 BEADED	1	7A437-250	7/16-14 x 2.5" HXHD PLTD	1
7U030-036	1/2" OIL DRAIN HOSE x 1'	1	7F437-000	7/16-14 NUT NYLOCK	1
7R001-008	#8 HOSE CLAMPS	2	7J438-081	7/16 WASHER SAE PLTD	1
<b>4FT112-030</b>	<b>DISCHARGE ASSY 6.8 SUPER DUTY</b>	<b>1</b>	4FT110-044	MAIN BRKT ASSY, WELDED	1
7R002-072	#72 HOSE CLAMPS	2	4FT010-034	SUPPORT PLATE	1
7S450-200	4 1/2 x 2 SLEEVE	1	7C100-085	M10 x 1.5 x 85mm HXHD PLTD	1
4FT012-010	DISCHARGE DUCT	1	7C100-110	M10 x 1.5 x 110mm HXHD PLTD	2
7S300-275	REDUCER Ø3.00 x Ø2.75	1	7J010-002	M10 WASHER	3
7R002-048	#48 HOSE CLAMP	1	7A375-178	3/8-16 x 1.75" HXHD PLTD GR8	5
7R002-044	#44 HOSE CLAMP	1	7K375-030	3/8 WASHER AN	5
8D001-001	BYPASS VALVE	1	4FM011-052	5.4 SPRING TENSIONER	1
7R002-016	HOSE CLAMPS #16	4	7C010-045	M10 x 1.5 x 45mm HXHD PLTD	1
7U030-046	5/32" VAC LINE x 25"	25"	4FA016-170	IDLER 8-RIB SMOOTH	1
7U133-090	HOSE, RUBBER ELBOW Ø1" x 90°	1	4FA016-171	DUST COVER	1
7U034-016	1" HEATER HOSE X 3"	3"	4FT017-060	SPACER, SPRING TENSIONER	1
<b>4FT111-052</b>	<b>CRANK PULLEY ASSY 6.8 V-10</b>	<b>1</b>	7A375-400	3/8-16 x 4" HXHD PLTD	1
7K437-001	7/16 AN WASHER	3	7F375-017	3/8-16 NUT NYLOCK	1
4FT016-011	DAMPER V-10 MACH	1	7K375-030	3/8 WASHER AN	2
4FT016-031	CRNK PULLEY 8 - RIB MACH	1	7A250-075	1/4-20 x .75" SHCS PLTD	2
4FT017-010	SPACER, CRNK PULLEY V-10	1	7J250-001	1/4 WASHER PLTD	2
7C120-065	M12 x 1.5 x 65mm HHCS	1	4FT010-020	DAMPER BRKT. SUPER DUTY	1
7C100-040	M10 x 1.5 x 40mm SHCS	3	4FM017-020	5.4 SPCR LONG	1
2A048-733	BELT, K080733 GATES	1	7C140-035	M14 x 2.0 x 35mm, HXHD PLTD	1
4FT017-011	SPACER, FAN V-10	1	7J438-091	9/16" WASHER SAE PLTD	1
<b>2E228-330</b>	<b>V2SQ S.D. 6.8L</b>	<b>1</b>	4FT010-050	BRKT, WIRING HRNS S.D.	1
2E128-330	S/C S.D. 6.8 V-2SQ SATIN	1	7A250-075	1/4-20 x .75" SHCS PLTD	2
2A038-347	S/C PULLEY Ø3.47" 8 GROOVE	1	7J250-001	1/4 WASHER PLTD	4
8R101-002	8-RIB PULLEY RET. ASSY	1	7F250-021	1/4-20 NUT NYLOCK	2
<b>4FT112-010</b>	<b>AIR INLET ASSY.</b>	<b>1</b>	5W018-070	WIRE 22-18GA GREEN	6"
4FT012-030	CAST AIR INLET	1	5W018-030	WIRE 22-18GA GRAY	6"
7S350-200	3.5"X2" SLEEVE	1	5W001-012	SOLDERLESS CONNECTORS 22-18GA	4
7R002-056	HOSE CLAMPS #56	2	7A375-178	3/8-16 x 1.75" HXHD PLTD GR8	3
7R002-052	HOSE CLAMPS #52	2	7K375-030	3/8 WASHER AN	6
7U035-001	3.5" FLEX HOSE x 15"	15"	7F375-017	3/8-16 NUT NYLOCK	3
8H040-045	AIR FILTER	1	7C012-035	M12 x 1.75 x 35mm HXHD	3
4FT110-010	MAF BRKT ASSY	1	7J012-092	M12 WASHER	3
7P375-106	PCV VALVE	1	<b>4FT130-026</b>	<b>OIL FEED ASSY. SUPER DUTY</b>	<b>1</b>
7P625-016	5/8" UNION	1	7U030-026	1/4" x 25" OIL FEED HOSE	25"
7U133-024	5/8" MOLDED ELBOW HOSE	1	7P250-034	STREET TEE	1
7A250-075	1/4-20 x 3/4" SHCS	4	7P250-082	1/4"NPT x -4 x 90° FITTING	1
7F250-021	1/4-20 NYLOCK NUTS	4	7P525-067	CRIMP FERRULES	2
7J250-001	1/4" WASHERS	8	7P250-066	#4 SWIVEL x 1/4 HOSE BARB	2
			7U100-055	6" TIE WRAPS	4
			7P125-026	1/8 NPT x #4 x 90° FITTING	1
			<b>4FT011-032</b>	<b>CROWS FOOT, WATER PUMP</b>	<b>1</b>
			<b>4FT011-012</b>	<b>CROWS FOOT, FORD V-10</b>	<b>1</b>



# 1999-2003 Ford Super Duty 6.8L

Part No. 4FT218-020/028SQ

## PARTS LIST

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

Part Number	Description	Quantity
<b>4FT238-068</b>	<b>FMU ASSY SUPER DUTY</b>	<b>1</b>
4FT145-020	FUEL LINE, FEMALE 7"	1
4FD145-010	FUEL LINE, MALE 17"	1
7U030-046	5/32" x 18" VACUUM LINE	1.5'
7P156-082	5/32" TEE	1
7U100-055	6" TIE WRAPS	2
6Z110-136	7:1 FMU	1
<b>8F203-265</b>	<b>FUEL PUMP ASSY.</b>	<b>1</b>
5W001-001	WIRE TAP	1
5W001-011	16-14 GA EYELET .25" HOLE	2
7E010-050	#12 x 1/2 SHEET METAL SCREW	1
7P312-003	5/16 FEMALE FUEL	1
7R004-003	14.5 STEPLESS CLAMP	2
7U100-044	TIE WRAP, 4" NYLON	3
7U100-055	TIE WRAP, 6" NYLON	4
7U031-018	5/16 FUEL HOSE HI-PRESSURE	11"
8F101-200	T-REX WIRING ASSY MUSTANG	1
5W001-014	FUSE HOLDER 10 GA WIRE	1
5W001-015	FUSE, BLADE TYPE 20 AMP	1
5W001-010	16-14 GA FEMALE SLIDE	1
8F001-002	155 INLINE FUEL PUMP	1
7R003-027	ADEL CLAMP	1
7R001-008	#8 STNLS HOSE CLAMP	2
7E010-075	#12 x 3/4" SHEET METAL SCREW	1
7P500-004	FITTING, FUL.ADAPT.1/2	1
5W001-017	LARGE RING TERMINAL	1
5W001-019	SOLDERLESS CONNECTOR 10-12	2
7U030-050	M12 FUEL HOSE	16"
5W001-042	12-10 GA 3/16" RING TERMINAL	2
7A250-100	1/4-20 x 1" FLAT ALLEN	1
7J250-001	1/4 SAE WASHER, PLATED	2
7F250-021	1/4-20 NYLOCK NUT ZINC PLATED	1
5W001-040	12-10 GA FEMALE SLICE	2



# 1999-2003 Ford Super Duty 6.8L w/Charge Cooler System

Part No. 4FT218-030/038SQ

## PARTS LIST

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

Part Number	Description	Quantity	Part Number	Description	Quantity
<b>008110</b>	<b>SMALL SILVER DIE CUT</b>	<b>2</b>	4FT016-011	DAMPER V-10 MACH	1
<b>008130</b>	<b>LICENSE PLATE FRAME</b>	<b>1</b>	4FT016-031	CRNK PULLEY 8 - RIB MACH	1
<b>8N101-110</b>	<b>WELDED CORE ASSY. V-10 S.D.</b>	<b>1</b>	4FT017-010	SPACER, CRNK PLY V-10	1
<b>4FT112-040</b>	<b>DISCH ASSY PWR COOLR V-10 SD</b>	<b>1</b>	7C120-065	M12 x 1.5 x 65MM HXHD PLTD	1
4FT010-060	BRKT, COOLER SUPPORT V-10 S.D.	1	7C100-040	M10 x 1.5 x 40MM SHCS PLTD	3
4FT012-040	DUCT, V-10 A.C. TUBE A	1	4FT017-011	SPACER, FAN V-10	1
4FT012-050	DUCT, V-10 A.C. TUBE B	1	<b>2E228-370</b>	<b>V2SQ SUPERCHARGER S.D. 6.8L H.O.</b>	<b>1</b>
4FT012-060	DUCT, V-10 A.C. TUBE C	1	<b>4FT111-054</b>	<b>MNTG. BRKT. ASSY</b>	<b>1</b>
4FT017-080	SPACER, COOLER SUPRT BRKT	1	4FM016-031	IDLER 8-RIB GROOVED	1
7C060-025	M6 x 1.0 x 25MM HHCS	1	4FA016-171	DUST COVER	1
7F008-020	NUT, M8 x 1.5	1	4FT017-070	SPACER, IDLER S.D.	1
7J006-094	M6 WASHER S.S.	1	7A437-250	7/16-14 x 2.5" HXHD PLTD	1
7L312-000	WASHER LOCK 5/16"	1	7F437-000	7/16-14 NUT NYLOCK	1
7R002-044	#44 HOSE CLAMPS	6	7J438-081	7/16 WASHER SAE PLTD	1
7S275-200	2 3/4" x 2" SLEEVE	3	4FT110-044	MAIN BRKT ASSY, WELDED	1
7U034-016	Ø 1.00" G.S. HOSE	6"	4FT010-034	SUPPORT PLATE	1
<b>8N106-100</b>	<b>WATER COOLER ASSY. V-10 S.D.</b>	<b>1</b>	7C100-085	M10 x 1.5 x 85MM HXHD PLTD	1
4FT006-001	WATER COOLER, SUPERDUTY	1	7C100-110	M10 x 1.5 x 110MM HXHD PLTD	2
5W018-020	18GA STRD WIRE BLK, UL1015	3'	7J010-002	M10 WASHER	3
7A250-050	1/4-20 x .50" SHCS	2	7A375-178	3/8-16 x 1.75" HXHD PLTD GR8	5
7A250-075	1/4-20X3/4 SHCS PLTD	1	7K375-030	3/8 WASHER AN	5
7A250-100	1/4-20 x 1" SHCS	1	4FM011-052	5.4 SPRING TENSIONER	1
7A250-275	1/4-20 X 2.75" SOC HD, ZINC	2	7C010-045	M10 x 1.5 x 45MM HXHD PLTD	1
7F250-021	1/4-20 NYLOCK NUT ZINC PLTD.	1	4FA016-170	IDLER 8-RIB SMOOTH	1
7F250-040	1/4-20 NUT PLATE	2	4FA016-171	DUST COVER	1
7J250-001	1/4 SAE WASHER, PLTD	6	4FT017-060	SPACER, SPRING TENSIONER	1
7J250-022	1/4" WASHER	2	7A375-400	3/8-16 x 4" HXHD PLTD	1
7P250-020	1/4NPT DRAIN COCK	1	7F375-017	3/8-16 NUT NYLOCK	1
7P500-026	1/2NPT-3/4 BARB 90°	2	7K375-030	3/8 WASHER AN	2
7P500-078	1/2NPT x 3/4 HOSE FIT	4	7A250-075	1/4-20 x .75" SHCS PLTD	2
7R002-052	HOSE CLAMP #52	4	7J250-001	1/4 WASHER PLTD	2
7R007-001	NYLON CLAMP 1-1/8"	8	4FT010-020	DAMPER BRKT. S.D.	1
7S325-200	3.25" x 2.00" SLEEVE	2	4FM017-020	5.4 SPCR LONG	1
7U038-000	3/4" HEATER HOSE	13'	7C140-035	M14 x 2.0 x 35MM, HXHD PLTD	1
7U100-066	TIE WRAP 11" NYLON	10	7J438-091	9/16" WASHER SAE PLTD	1
8N010-090	MNTG TAB, PLASTIC SURGE TANK	1	4FT010-050	BRKT, WIRNG HRNS S.D.	1
8N017-020	ADAPTER, WATER COOLER S.D.	2	7A250-075	1/4-20 x .75" SHCS PLTD	2
8N055-050	CAP, SURGE TANK PLASTIC	1	7J250-001	1/4 WASHER PLTD	4
8N056-060	SURGE TANK	1	7F250-021	1/4-20 NUT NYLOCK	2
<b>8N107-020</b>	<b>WATER PUMP ASSY. 4.6</b>	<b>1</b>	5W018-070	WIRE 22-18GA GREEN	6"
5W001-011	16-14 GA EYELET	1	5W018-030	WIRE 22-18GA GRAY	6"
5W001-012	SOLDERLESS CONNECTOR	1	5W001-012	SOLDERLESS CONECTORS 22-18GA	4
5W018-010	18GA STRD WIRE RED	8.25'	7A375-178	3/8-16 x 1.75" HXHD PLTD GR8	3
5W001-019	SOLDERLESS CONNECTOR	2	7K375-030	3/8 WASHER AN	6
5W001-014	FUSE HOLDER 10 GA	1	7F375-017	3/8-16 NUT NYLOCK	3
5W001-015	FUSE, BLADE TYPE 20A	1	7C012-035	12MM x 1.75 x 35MM HXHD	3
5W001-040	12-10GA FEMALE SLIDE	1	7J012-092	12MM WASHER	3
5W001-002	FUSE TAP	1	<b>4FT130-026</b>	<b>OIL FEED ASSY. S.D.</b>	<b>1</b>
7R003-027	ADEL CLAMP 1-11/16"	1	7U030-026	1/4" x 25" OIL FEED HOSE	25"
8F001-402	PUMP, WATER, PIERBURG	1	7P250-034	STREET TEE	1
7E010-075	#12 x 3/4" SHEET METAL SCREW	1	7P250-082	1/4"NPT x -4 x 90° FITTING	1
7J010-001	#10 FLAT WASHER	1	7P525-067	CRIMP FERRULES	2
7U133-060	3/4" x 90° HOSE ELBOW	1	7P250-066	#4 SWIVEL x 1/4 HOSE BARB	2
5W001-024	MINI ATC FUSE TAP	1	7U100-055	6" TIE WRAPS	4
5W001-025	FEMALE SLIDE, INSULATED, MINI	1	7P125-026	1/8 NPT x #4 x 90° FITTING	1
<b>4FT120-020</b>	<b>ECM CHIP PKG ASSY</b>	<b>1</b>	<b>4FT011-032</b>	<b>CROWS FOOT, WATER PUMP</b>	<b>1</b>
<b>4FT111-052</b>	<b>CRANK PULLEY ASSY 6.8 V-10</b>	<b>1</b>	<b>4FT011-012</b>	<b>CROWS FOOT, FORD V-10</b>	<b>1</b>
7K437-001	7/16 AN WASHER	3			



# 1999-2003 Ford Super Duty 6.8L w/Charge Cooler System

Part No. 4FT218-030/038SQ

## PARTS LIST

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

Part Number	Description	Quantity	Part Number	Description	Quantity
<b>4FT238-068</b>	<b>FMU ASSY S.D.</b>	<b>1</b>	7P375-017	3/8 NPT HOSE BEAD x 1/2 BEADED	1
4FT145-020	FUEL LINE, FEMALE 7"	1	7U030-036	1/2" OIL DRAIN HOSE x 1'	1
4FD145-010	FUEL LINE, MALE 17"	1	7R001-008	#8 HOSE CLAMPS	2
7U030-046	5/32" x 18" VACUUM LINE	18"	<b>4FT112-050</b>	<b>AIR INLET ASSY. GEN II</b>	<b>1</b>
7P156-082	5/32" TEE	1	4FT012-030	CAST AIR INLET TUBE	1
7U100-055	6" TIE WRAPS	2	7S350-200	3.5" x 2" SLEEVE	1
6Z110-136	7:1 FMU	1	7R002-056	HOSE CLAMPS #56	2
<b>8F203-265</b>	<b>FUEL PUMP ASSY.</b>	<b>1</b>	7R002-052	HOSE CLAMPS #52	2
5W001-001	WIRE TAP	1	7U035-001	3.5" FLEX HOSE x 15"	15"
5W001-010	16-14GA FEMALE SLIDE	1	8H040-050	AIR FILTER	1
5W001-011	16-14 GA EYELETS	2	4FT110-030	MAF BRKT ASSY GEN II	1
5W001-014	FUSE HOLDER	1	7P375-106	PCV VALVE	1
5W001-015	20A BLADE TYPE FUSE	1	7P625-016	5/8" UNION	1
5W001-017	12 GA LARGE RING TERMINAL	1	7U133-024	5/8" MOLDED ELBOW HOSE	1
5W001-019	12 GA SOLDERLESS CONCTR	1	7A250-075	1/4-20 x 3/4" SHCS	4
5W001-040	12 GA FEMALE SLIDE	2	7F250-021	1/4-20 NYLOCK NUTS	4
5W001-042	12 GA 3/16" RING TERMINAL	2	7J250-001	1/4" WASHERS	8
7A250-100	1/4-20 x 1" CAP SCREW	1	008721	FINISHING PLUGS STEEL	2
7E010-050	#12 X 1/2" SHET METAL SCREW	1	<b>4FT104-010</b>	<b>H.O. SUPPORT PARTS</b>	<b>1</b>
7E010-075	#12 X 3/4" SHEET METAL SCREW	1	7R002-016	HOSE CLAMPS #16	5
7F250-021	1/4-20 NUT NYLOCK	1	7R002-044	#44 HOSE CLAMP	1
7J250-001	1/4 WASHER PLTD	2	7R002-048	#48 HOSE CLAMP	1
7P312-003	5/16" FEMALE FUEL CONNECT	1	7R002-072	#72 HOSE CLAMPS	2
7P500-004	FTNG FUEL ADAPTER 1/2"	1	7S300-275	REDUCER Ø3.00 X Ø2.75	1
7R001-008	#8 HOSE CLAMPS	2	7S450-200	4 1/2 x 2 SLEEVE	1
7R003-027	ADEL CLAMP	1	7U030-046	5/32" VAC LINE X 25"	25"
7R004-003	14.5 STEPLESS CLAMPS	2	8D001-001	BYPASS VALVE	1
7U030-050	12MM x 16" FUEL HOSE	1	<b>8F001-265</b>	<b>FUEL PMP ASSY,98+ 4.6,INTANK</b>	<b>1</b>
7U031-018	5/16" X 11" HIGH PSI FUEL LINE	11"			
7U100-044	4" TIE WRAPS	3			
7U100-055	6" TIE WRAPS	4			
8F001-002	155 INLINE FUEL PUMP	1			
8F101-200	T-REX WIRING ASSY	1			
<b>4FT130-036</b>	<b>OIL DRAIN ASSY. S.D.</b>	<b>1</b>			
7P100-121	SEALING NUT	1			
7P375-045	45° STREET ELBOW	1			



## 1. PREPARATION/REMOVAL

- A. Disconnect the negative battery terminal from the battery.
- B. The Electronic Control Module (ECM) is the vehicles computer. The ECM should be located above the emergency brake pedal. The wiring harness and plug to the ECM is located on the opposite side of the firewall, in the engine compartment.
- C. Using a 10mm socket remove the harness and plug from the ECM located below the brake booster in the engine compartment (as the screw is loosened, the connector will slowly release).
- D. Remove the plastic bracket securing the ECM to the vehicle. Note the mounting orientation of the computer. Remove the ECM from the vehicle.
- E. Contact the Vortech Service Department for a Return Authorization Number. Send both ECM and supplied credit tag to Vortech using the enclosed shipping box.
- F. Detach the crankcase ventilation hose from the drivers side valve cover.
- G. Remove the stock air inlet ducting and mounting bracket.
- H. Disconnect the Mass Air Flow (MAF) sensor wiring from MAF and pull the wiring out from the air inlet. Remove the MAF from the stock air inlet.

## 2. HARMONIC BALANCER AND CRANK PULLEY INSTALLATION

**NOTE:** V-8 ONLY - This process can be done with the fan and fan shroud in place providing your balancer puller is equipped with a 5" or shorter forcing screw. Removing the fan and fan shroud will allow easier access to the crank pulley and the front of the engine.

- A. Drain approximately one gallon of coolant from the radiator (into a clean container for reuse later) using the drain valve located at the bottom of the radiator, driver's side.
- B. Remove the upper radiator hose (note hose orientation), tire iron, upper 1/4" hose and the three screws securing the surge tank. Rotate the surge tank out of the way.
- C. Disconnect the radiator hose support clamp, located on the underside of the fan shroud. Remove the two top fasteners securing the fan shroud. Do not remove the fan shroud at this time.
- D. Attach the supplied crows foot tool to a 1/2" breaker bar and slide onto the hex of the fan. Attach the crows foot with the larger opening to a 1/2" drive ratchet. Slide onto the four screws retaining the water pump pulley. Remove the fan and shroud together. Do not allow the fan to fall against the radiator.
- E. **V-10 only** - Install the fan spacer onto the water pump and tighten.

**NOTE:** With the fan properly installed, the fan, fan spacer and water pump assembly will keep itself "tightened" on a running engine due to its right handed threads.

- F. Using a 1/2" breaker bar on the vehicles spring tensioner remove the accessory drive belt.
- G. Remove the center balancer screw.

**NOTE:** If the center balancer screw rotates the engine and will not unscrew. Remove the rubber inspection plug on the left rear of the block to make the flexplate accessible. Using an 18mm socket and ratchet, rotate the engine until a flexplate nut is visible. Place a 14mm deep socket and extension on the flexplate nut and rotate the engine counterclockwise until the socket engages with the top of the access hole. This will block the movement of the crankshaft allowing the bolt to be loosened. This operation may require the assistance of another person.

## 2. HARMONIC BALANCER AND CRANK PULLEY INSTALLATION, cont'd.

- H. Install the harmonic balancer puller. Evenly start the three puller screws (M10 x 1.5). Engage the forcing screw against the pivot and check alignment.

**NOTE:** When using the harmonic balancer puller, pay special attention to alignment of the forcing screw and pivot. Improper alignment can result in crankshaft damage.

- I. After ensuring the puller is properly aligned on the face of the crank, slowly tighten the forcing screw until the harmonic balancer has been removed.

**NOTE:** The factory uses a small amount of silicone to seal the crankshaft keyway. Thoroughly clean the silicone and any oil residue off of the crankshaft prior to installing the Vortech harmonic balancer.

- J. With a small amount of silicone on the keyway of the new harmonic balancer, guide it on the crankshaft and feel for alignment of the woodruff key and the harmonic balancer keyway. After the harmonic balancer has been aligned on the crankshaft, use your harmonic balancer installation tool to install the new harmonic balancer. Slowly tighten until the harmonic balancer is seated on the crankshaft.

**NOTE:** The use of Loctite blue is recommended for all harmonic balancer and crank pulley screws.

- K. Remove the installation tool and place the supercharger drive pulley and spacer on the front of the harmonic balancer. (See Fig. 2-a.) Feeling for alignment, start the supplied M12 x 1.5 x 65mm center screw and rotate the supercharger drive pulley until the three screw holes are aligned. Start the three M10 x 1.5 x 40mm cap screws with washers, evenly tighten all beginning with the center screw. Torque the M12 screw to 80 ft/lbs and the M10 screws to 25 ft/lbs.
- L. Reinstall the rubber inspection plug (if previously removed) and the accessory drive belt.  
*Do not reinstall the fan and fan shroud at this time.*

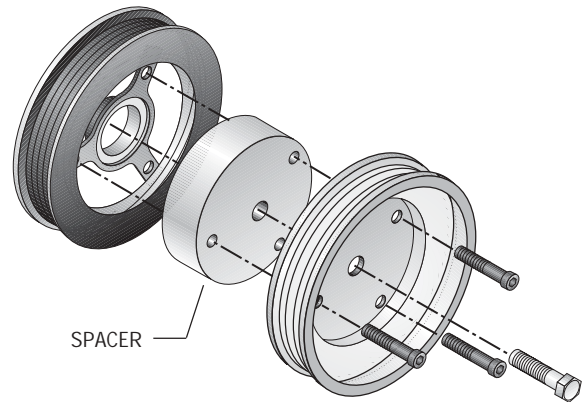


Fig. 2-a

### 3. OIL FEED LINE INSTALLATION

- A. Unplug the connector on the oil pressure sending unit (sending unit should be located on the driver's side of the block, behind the lower cast radiator inlet) and remove sending unit from engine block. Note a "catch can" may be required if engine oil constantly pours from block.
- B. Thread the supplied 1/4" NPT fitting into the engine block as shown and tighten. Reinstall the sending unit and connector.

**WARNING:** Use engine oil on the pipe threads, Teflon tape or sealant is not recommended as it might loosen and cause blockage of the oil feed orifice resulting in supercharger failure and voiding your warranty.

- C. Connect the supplied oil feed line to the -4 flare fitting previously installed and tighten.
- D. Temporarily cap off the swivel on the oil feed line to prevent dirt or debris from entering the line.

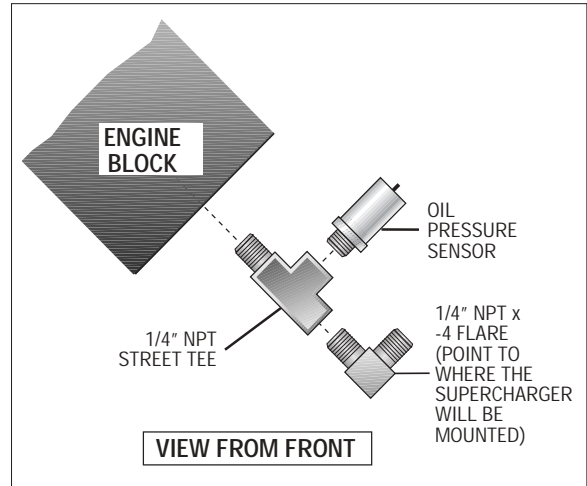


Fig. 3-a

### 4. OIL DRAIN INSTALLATION

- A. Completely loosen the screws securing the valve cover to driver's side of the head. (Note, the valve cover screws are captivated.) Remove valve cover, using care not to damage the sealing gasket. V-8 models may require the disconnection of the fuel return line (as described in the FMU mounting section) allowing clearance to remove the valve cover.
- B. Cover the exposed valve train with a clean cloth/rag to help prevent debris from contaminating the engine.
- C. Using the Fig. 4-a as a guide, mark the location where the oil drain is to be located. V-10 models, 5" back from the front edge of the valve cover and 2" up from the edge of the valve cover. V-8 models, five and a quarter inches (5 1/4") back from the front edge of the valve cover and 2-1/2" up from the edge of the valve cover. Using a drill motor and  $\varnothing 11/16$ " bit, drill through the valve cover at the previously marked location.
- D. Thoroughly clean the valve cover and install the oil drain fittings as shown in Fig 4-b. Thread the 1/2" hose bead fitting into the 45° elbow first and tighten, then install the drain assembly into the valve cover. Use a small amount of silicone sealer on the male threads of the 45° elbow.

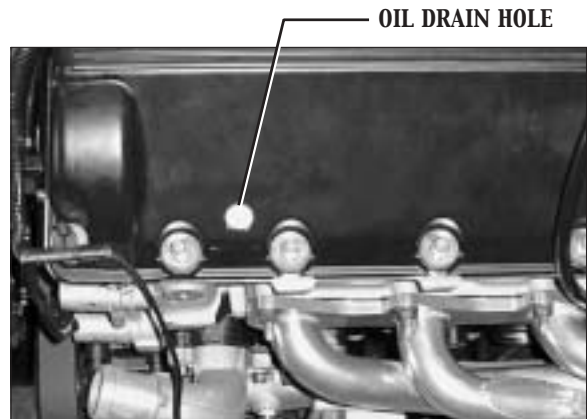


Fig. 4-a

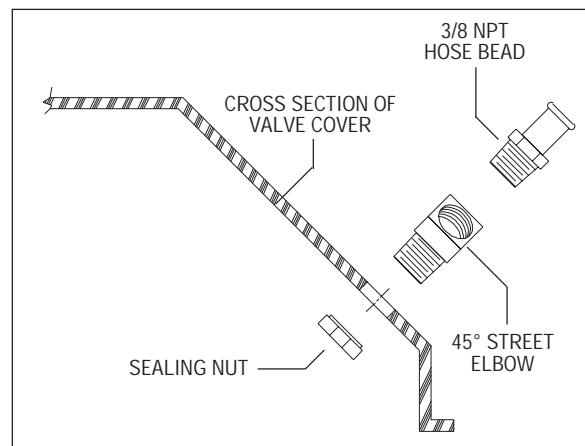


Fig. 4-b

#### 4. OIL DRAIN INSTALLATION, cont'd.

- E. Check for proper oil drain orientation (position of the oil drain assembly). Install the sealing nut onto the 45° elbow and tighten. (See *Fig. 10-b*.)
- F. Reinstall the valve cover and tighten all mounting screws. Replace the sealing gasket if it has been damaged in any way.

#### 5. FUEL PUMP INSTALLATION

- A. **V-10 only** - Locate the wiring looms secured to the inner frame rail with plastic snaps on the driver's side, above the fuel filter. Undo the three plastic snaps above the fuel filter, securing the wiring looms to the chassis, and pull the wiring looms up.
- B. **V-10 only** - Following the *Fig. 5-a*, attach the fuel pump to the chassis using one of the 1/4" sized holes that was securing the wiring looms above the fuel filter. The fuel filter bracket may temporarily have to be removed to accommodate mounting of the fuel pump.
- C. **V-8 only** - Following the *Fig. 5-b*, attach the fuel pump to the fuel filter clamping bolt using the supplied adel clamp.
- D. Release any pressure from the fuel tank by momentarily loosening the filler cap.
- E. Disconnect the line from the tank to the fuel filter using a 3/8" springlock disconnect tool.
- F. Connect the fuel pump inlet adapter fitting to the existing fuel line coming from the fuel tank. Attach the supplied 1/2" inlet hose to the adapter and pump inlet as shown in *Fig. 5-c*.
- G. Connect the fuel pump outlet to the filter inlet. Secure the pump inlet hose using the supplied #8 clamps. Trim hose length if necessary. Ensure that NO kinks or sharp bends are allowed on the pump inlet hose or pump failure may result.
- H. Attach the negative terminal on the pump to a clean ground. (Scrape the vehicles undercoating down to bare metal.)



*Fig. 5-a*



*Fig. 5-b*

## 5. FUEL PUMP INSTALLATION, cont'd.

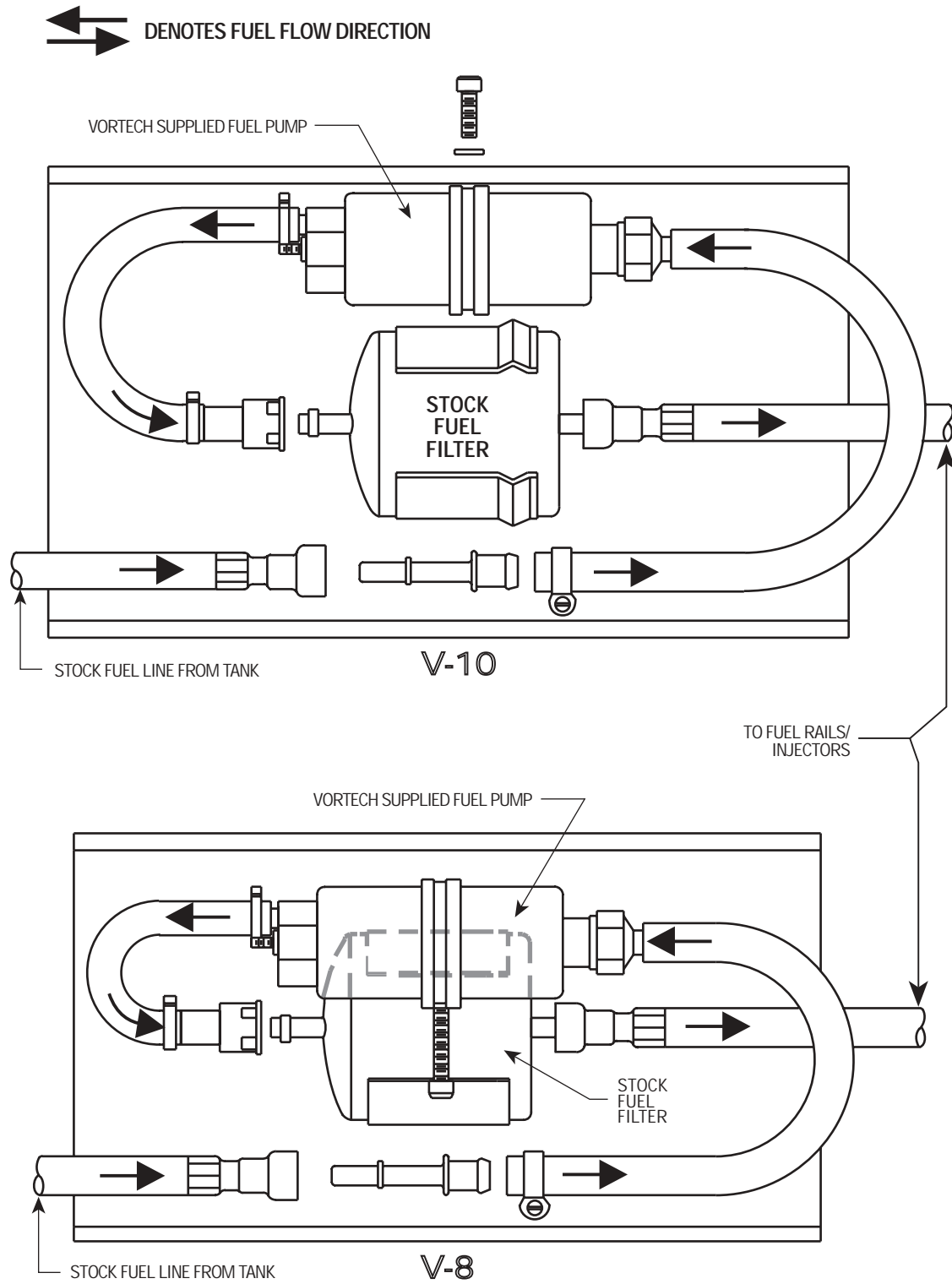


Fig. 5-c

## 6. FUEL PUMP RELAY INSTALLATION

- A. (See Fig. 6-a for the following instructions.) With the two wiring looms above the fuel pump, locate the red wire with black stripe in the wiring loom that runs to the fuel tank. Check the red/black wire (with a test light) for key-on power, this wire should show power for approximately two to four seconds with the key in the on position.
- B. From relay terminal #85 tap the yellow wire into the red wire with black stripe using the provided wiretap. Using the test light double check the wire to ensure a good electrical connection has been made.
- C. From terminal #30 route the heavy red wire along the chassis up to one of the main power lugs at the front of the power distribution box. With the supplied solderless connectors, install the fuse holder and 20 amp fuse in the red wire and check with a test light.
- D. Connect the short black wire from relay terminal #86 to a secure ground, free from paint or use the same ground as the fuel pump.
- E. From terminal #87 route and connect the long red wire to the positive (+) side of the fuel pump. Secure all wires with the provided tie wraps.

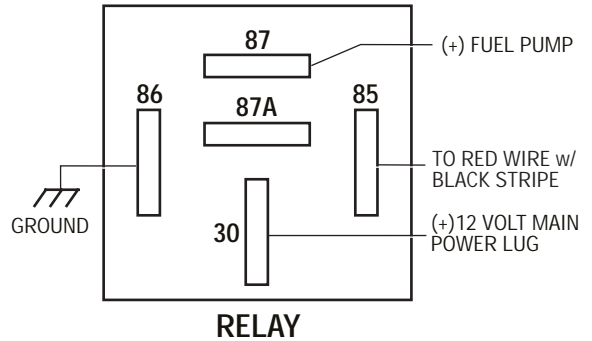


Fig. 6-a

**NOTE:** Double check that all wires are connected to their proper relay lug.

## 7. IN-TANK FUEL PUMP REPLACEMENT (6.8L H.O. Systems Only)

**NOTE:** The following steps are best performed with the gas tank with the least amount of fuel in it as possible.

- A. Support the gas tank with a jack and remove the screws securing the two gas tank straps.
- B. Slightly lower the gas tank and disconnect the fill & vent tubes from the gas tank, front and rear.
- C. Disconnect the fuel pump/sender wiring harness located in the frame rail and the fuel fill and overflow lines.
- D. Disconnect the fuel feed and return lines using a springlock tool.
- E. Completely lower the gas tank to the ground.
- F. Unscrew the outer ring securing the fuel lines and remove the cover.
- G. Depress the two clips securing the plastic fuel pump enclosure and slide it out of the tank, the fuel sender float is attached to the fuel pump enclosure and must be handled with care. Be careful not to damage the filter.
- H. Remove the two screws securing the plastic fuel pump outlet manifold to the enclosure cap. Pull the manifold up and away from the fuel pump.

## 7. IN-TANK FUEL PUMP REPLACEMENT (6.8L H.O. Systems Only), cont'd.

- I. Remove the three screws securing the fuel pump enclosure's cover using a 3/16 nut-driver and remove the cover.
- J. Remove the stock fuel pump from its enclosure. Separate the rubber pump support from beneath the filter and install it on the supplied pump. Secure the support with the new filter provided.
- K. Using the supplied fuel pump, reassemble the fuel pump assembly and canister with cap.
- L. Reinstall the canister assembly into the fuel tank and reattach the electrical connections.
- M. Reinstall the fuel tank, reconnect the fuel filter inlet line, reattach the fuel filler neck and reinstall the fuel cap.
- N. Turn the ignition key on and check the fuel pump for leaks.

## 8. FUEL MANAGEMENT UNIT (FMU) INSTALLATION

- A. Using a 3/8" springlock disconnect tool, disconnect the fuel return line at the back of the engine on V-10 models (See Fig. 8-a) or drivers side valve cover on V-8 models (See Fig. 8-b).
- B. Following the diagram connect the 17" male FMU inlet line to the fuel rail. Route the fuel line to the -4 x 90° brass fitting on the FMU and tighten.

**NOTE:** Refer to the Appendix for complete diagrams.

- C. Connect the 7" female FMU outlet line to the vehicles stock return line. Route the opposite end to the -4 straight fitting on the FMU and tighten.
- D. Position the FMU against the upper firewall (driver's side) directly under the plastic wire harness cover. Mark and drill two #30 holes on the firewall to mount the FMU. Secure with the #8 sheet metal screws and washers provided. (See Fig. 8-c.)
- E. Secure the fuel lines away from abrasion and exhaust heat with the provided tie wraps.
- F. Tap into the factory fuel regulator vacuum line with the supplied 5/32" hose and TEE. Route the new hose to the fitting on top of the FMU.

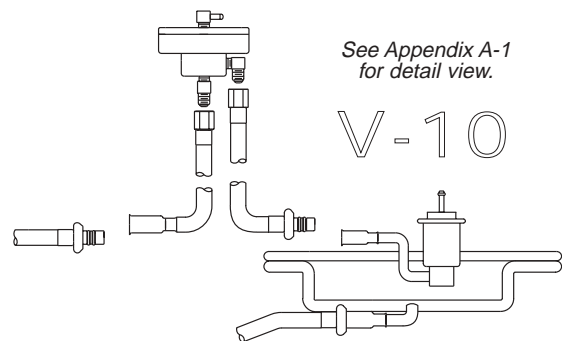


Fig. 8-a

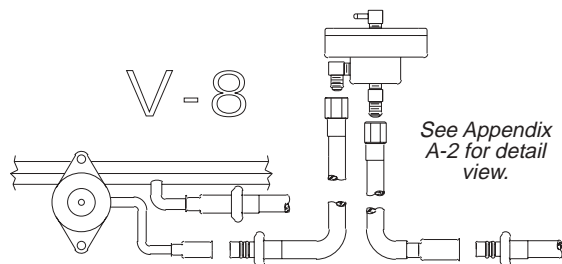


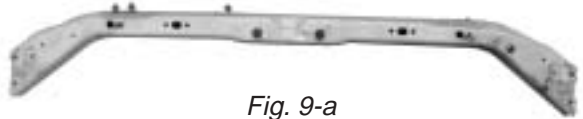
Fig. 8-b



Fig. 8-c

## 9. WATER PUMP AND COOLER INSTALLATION (6.8L H.O. Systems Only)

- A. Remove the upper shroud, located between the core support and the grille.
- B. Remove the three screws securing the radiator reservoir and rotate out of the way.
- C. Remove jack tools and tray holding brackets.
- D. Remove the upper two supports securing the condenser.
- E. Remove the hood latch from the core support (leaving it attached to the cable) and set out of the way.
- F. Remove the upper core support - secured with (8-10) screws. (See *Fig. 9-a*.)
- G. Following *Fig 14-b* on page 14, install the supplied water fitting adapters onto the heat exchanger securing with the provided  $\text{\O}3.25" \times 2"$  sleeves and clamps.
- H. Using the diagram as a guide (see *Fig. 14-b*), install the supplied  $3/4"$  NPT brass fittings into the charge cooler as shown. A small amount of thread sealant may be used on these threads.
- I. Lower the heat exchanger into place between the vehicle's condenser and radiator. Rest the heat exchanger on the pads of the lower core support. (See *Fig. 9-b*.)
- J. Remove the factory nut clips if any, from the engine side of the core support and replace with the ones provided. Secure the heat exchanger to the vehicle using the supplied  $1/4\text{-}20 \times 2"$  cap screws and washers.
- K. Reinstall the upper core support, hood latch and condenser supports.
- L. Using the *Fig. 9-c* as a guide, measure down 20" from the top of the fan shroud and over 5" and drill a hole through the fan shroud using a  $\text{\O}9/32"$  drill bit.
- M. Using the supplied adel clamp and  $1/4"$  screw, washers and nylock nut secure the pump to the fan shroud.
- N. Cut the stock connector off of the pump wiring and install the provided solderless connectors. Connect the supplied red wire to the green wire and the supplied black wire to the brown wire using the previously installed connectors.
- O. Reinstall the vehicle's stock fan, spacer, shroud and tighten.
- P. Connect the black wire to a suitable ground, free from paint and vehicle undercoating.
- Q. Route the red wire to the vehicle's fuse box located near the master cylinder. Using the supplied fuse tap, fuse holder and slide connectors, tap into the #7 mini-fuse. Check that the fuse only receives power when the key is in the ON position using a test light.



*Fig. 9-a*



*Fig. 9-b*



*Fig. 9-c*

## 10. MOUNTING BRACKET & SUPERCHARGER INSTALLATION

- A. Remove the wiring harness bracket and the three mounting screws from the driver's side front cover of the engine.
- B. Cut and extend the cam sensor wires using the supplied wire and solderless connectors. Following *Fig. 10-a*, use a tie wrap to secure the wires to the sensor.
- C. Loosely screw the 1" wide damper bracket to the driver's side head using the spacer, M14 screw and washer. Do not tighten. (See *Fig. 10-b*.)

**NOTE:** There are two threaded holes. Attach the bracket to the one closest to the firewall.

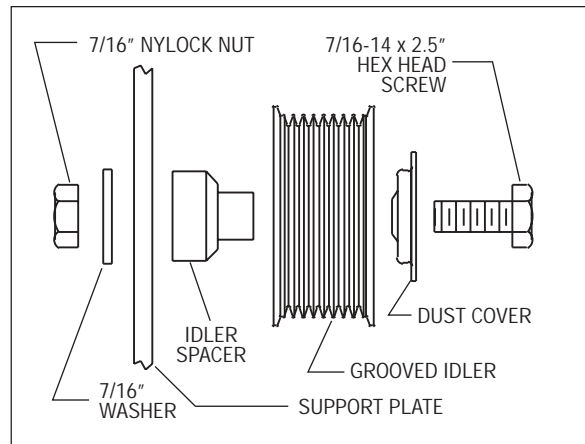


*Fig. 10-a*

- D. Following *Fig A-3* in the Appendix, attach the wiring harness bracket to the backside of the mounting plate with the supplied 1/4-20 x 3/4" socket heads, and 1/4" nylock nuts and washers. Secure the support plate to the mounting plate using only two (2) 3/8-16 x 1.75" screws, 3/8" nylock nuts and washers.
- E. Attach the mounting bracket assembly to the front cover of the engine using the M10 screws and washers. Attach the damper bracket to the mounting plate and secure using the 3/8" hardware. Finally, secure the damper bracket by tightening the M14 screw.
- F. Bolt the grooved idler with dust cover and idler spacer to the support plate using the 7/16-14 x 2.5" hex head screw, 7/16" nylock nut and washer. Do not over tighten. (See *Fig. 10-c* or *Fig. A-3* in the Appendix.)
- G. Mount the spring tensioner spacer to the mounting bracket using the 1/4" hardware. Note the orientation or position of the mounting holes of the spacer (screws thread through the bracket and into the spacer from the rear). Secure the spring tensioner to the spacer/mounting plate using the 3/8-16 x 4" bolt, 3/8" nylock nut and washers. (See *Fig. A-3* in the appendix.)
- H. Attach the oil drain line to the supercharger and secure with one #8 hose clamp. Hold the supercharger into position on the mounting plate and determine the correct oil drain line length and trim. Ensure that there are no kinks, sharp bends or upward travel in the drain line.
- I. Mount the supercharger to the mounting bracket and support plate using five 3/8-16 x 1.75" screws, 3/8" washers and three M12 screws and M12 washers. Connect the oil drain line coming from the supercharger to the fitting on the valve cover and secure with the other #8 hose clamp.



*Fig. 10-b*



*Fig. 10-c*  
*Grooved Idler Assembly (Side View)*

## 10. MOUNTING BRACKET BRACKET & SUPERCHARGER INSTALLATION, cont'd.

- J. Thread the 1/8" NPT x #4 x 90° fitting into the oil feed fitting on the supercharger. Rotate the fitting down. Connect the oil feed line to the #4 fitting and tighten. Use only clean engine oil on the oil feed fittings threads.

**NOTE:** Do not use any type of sealant on the oil feed fittings. It may become dislodged and clog the oil feed orifice, causing premature failure of the supercharger and voiding your warranty.

- K. Secure the oil feed line away from heat and abrasion with the provided tie wraps.
- L. Route the supplied supercharger drive belt around the crank pulley, supercharger drive pulley and grooved idler. Using a 1/2" drive breaker bar, rotate the spring tensioner clockwise and align the belt. (See Fig 10-d.)
- M. Relocate the capacitor (previously attached to the upper front cover mounting stud) to one of the screws securing the water neck or upper manifold. (See Fig 10-e.)

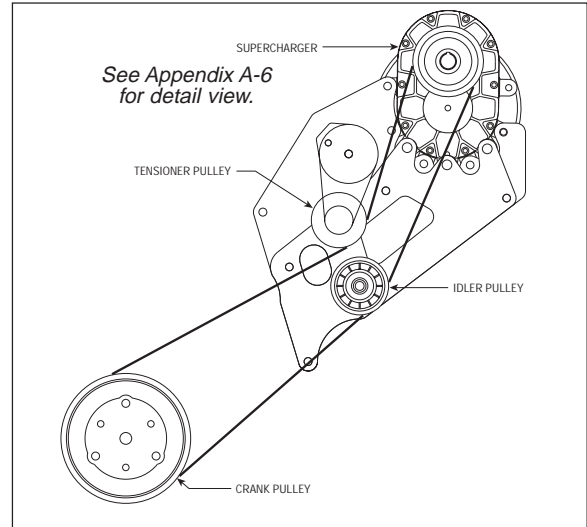


Fig. 10-d

CAPACITOR

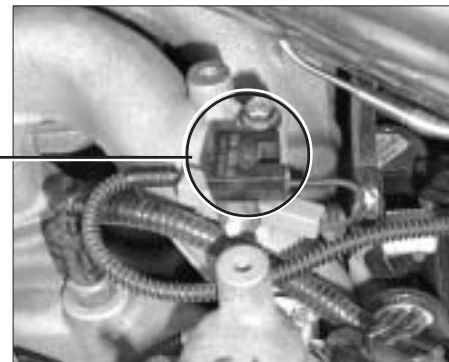


Fig. 10-e

## 11. AIR INLET ASSEMBLY

- A. Attach the MAF meter to the MAF bracket using the supplied 1/4" hardware. Slide the air filter onto the tube of the MAF bracket. Using a 5/16" nut driver or socket, reach in through one of the Ø5/8" holes and tighten the hose clamp. Cover the holes with the provided finishing plugs.
- B. Install the MAF assembly onto the driver's side of the core support using the factory hardware. (See Fig. 11-a.)

**NOTE:** The thick rubber mat may need to be unsnapped and folded over toward the radiator to allow proper mounting of the MAF assembly.

- C. Reconnect the MAF wiring connector to the MAF meter.
- D. Install the Ø3.5" x 2" silicone sleeve and #56 hose clamps onto the supercharger inlet. Install the cast aluminum inlet duct into the silicone sleeve and tighten the hose clamps.



Fig. 11-a

## 11. AIR INLET ASSEMBLY, cont'd.

- E. Connect the cast aluminum duct to the MAF meter using the supplied  $\text{\O}3.5"$  x 15" flex hose and secure with #52 hose clamps.
- F. Install the short end of the  $\text{\O}5/8"$  molded elbow hose onto the  $\text{\O}5/8"$  bung on the air inlet.

*NOTE: Refer to Figs. A-4, A-5 and A-7 in the Appendix.*

- G. Cut a 90° section from the stock crank case breather hose and attach to the  $\text{\O}5/8"$  molded elbow hose with the  $\text{\O}5/8"$  union. Reconnect the other end to the crank case breather on the valve cover. Trim hose length for a proper fit.

## 12. DISCHARGE DUCTING (Standard Output Systems Only)

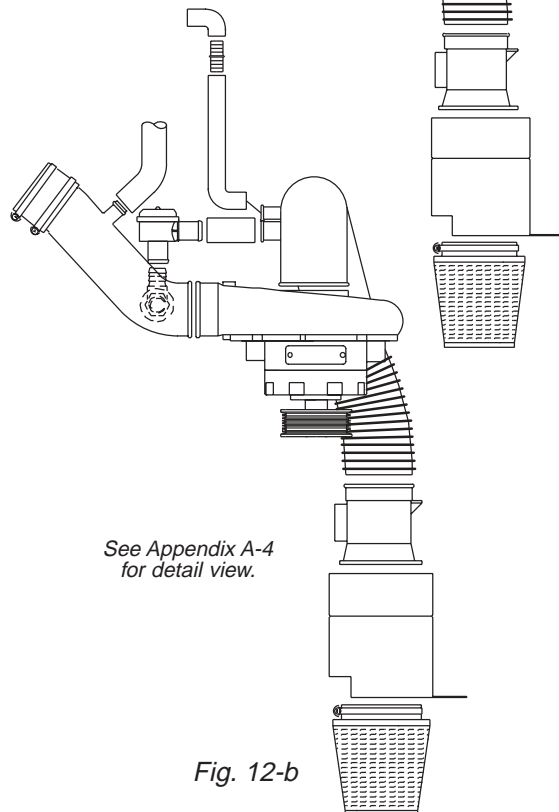
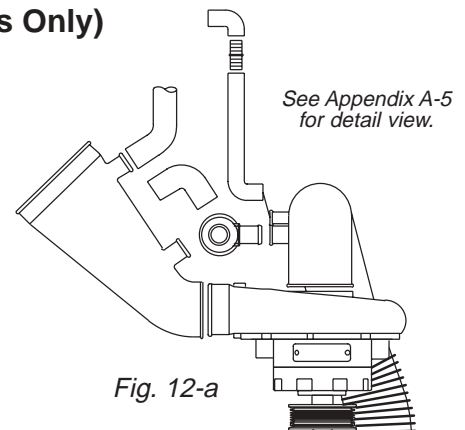
- A. **V-10 ONLY** - Slide the 4-1/2" sleeve and #72 hose clamps onto one end of the discharge duct and the  $\text{\O}3.00"$  to  $\text{\O}2.75"$  reducer with hose clamps onto the other end. Install the discharge duct in between the supercharger and the throttle body and secure with the hose clamps.

*NOTE: If the discharge duct is difficult to install, the supercharger may require slight re-clocking. Call Vortech for the proper procedure.*

- B. **V-8 ONLY** - Slide the  $\text{\O}2.75"$  sleeves and #44 hose clamps onto both ends of the discharge duct.

*NOTE: The #48 hose clamp is to be used on the throttle body end of the discharge duct.*

- C. **V-8 ONLY** - Thread the 3/4" NPT x 1" hose barb x 90° into the discharge duct. Following the diagram, install the discharge duct in between the supercharger and the throttle body and secure with the hose clamps. The previously mentioned 3/4" NPT fitting should be pointing toward the firewall.
- D. Following the diagram, install the bypass as shown. Use the provided hose clamps to secure the bypass valve to the discharge duct and the inlet duct as shown. Attach the  $\text{\O}5/32"$  vacuum line to the bypass valve and connect to the vacuum line on the FMU/ fuel regulator. Ensure the vacuum line has no kinks.
- E. Connect the idle air tube to the bung on the discharge tube and secure with the provided hose clamp.
- F. Locate and remove the PCV valve on the passenger's side valve cover and replace with the one provided.



### 13. CHARGE COOLER INSTALLATION (6.8L H.O. Systems Only)

- A. Remove the coolant line attached to the intake manifold (see Fig. 13-a). Remove approximately 2" from the bottom of the coolant line (to allow for clearance of the cooler support bracket) and reinstall.
- B. Cut 4-1/2" off of the supplied piece of foam tape and the remaining 7-1/2" in half. Thoroughly clean the top portion of the cooler support bracket with alcohol and allow it to dry. Following the diagram (see Fig. 13-b) attach the foam tape to the top of the cooler support bracket. Trim the excess from any over hanging edge.
- C. Following the photo (see Fig. 13-c) install the supplied cooler support bracket onto the front passenger's side of the intake manifold and secure it using the provided spacer and 6mm hardware.



Fig. 13-a

**NOTE:** The spacer is located between the cooler support bracket and the top of the manifold.

Secure the lower part of the bracket to the front cover's M8 stud using the M8 nut and lock washer provided.

- D. Install the provided  $\text{Ø}2\text{-}3/4$ " x 2" sleeves onto each one of the cooler ducts along with four #44 hose clamps (2 per sleeve).
- E. Install the plastic discharge duct onto the throttle body and secure with the supplied  $\text{Ø}4\text{-}1/2$ " sleeve and two #72 hose clamps. (See Fig. 13-d.)
- F. Connect the idle air line and the bypass valve to the duct as shown (see Fig. 13-d) and secure using the #16 hose clamps.
- G. Connect the bypass valve to the cast air inlet duct using the supplied  $\text{Ø}1$ " x 6" hose and secure using two #16 hose clamps.
- H. Slide the  $\text{Ø}3$ " x  $\text{Ø}2\text{-}3/4$ " reducer sleeve onto the plastic discharge duct and secure with one #48 hose clamp.
- I. Slide one  $\text{Ø}2\text{-}3/4$ " x 2" sleeve and two #44 hose clamps onto the discharge of the supercharger.
- J. Following Fig 13-d, attach discharge duct "A" to the supercharger and discharge duct "B" to the previously installed plastic duct leading to the throttle body.
- K. Set the charge cooler on top of the cooler support bracket and connect the discharge ducts to the charge cooler securing it with the previously installed hose clamps.

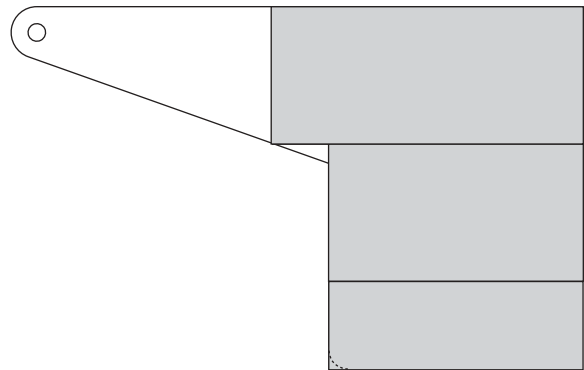


Fig. 13-b

**NOTE:** Discharge duct "A" must be rotated over enough so that the vehicle's hood does not come in contact with the duct.



Fig. 13-c

### 13. CHARGE COOLER INSTALLATION (6.8L H.O. Systems Only), cont'd.

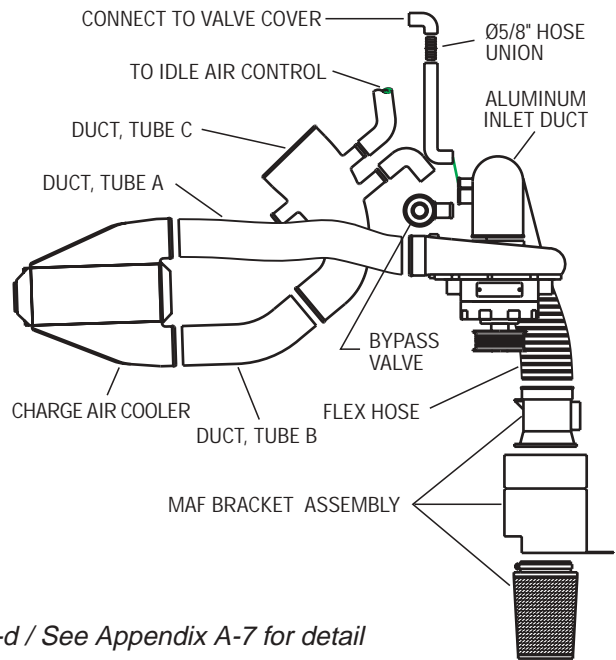


Fig. 13-d / See Appendix A-7 for detail

### 14. HOSE INSTALLATION & SYSTEM FILLING (6.8L H.O. Systems Only)

- A. Attach the surge tank mounting bracket to the surge tank using the supplied 1/4" hardware. Using Fig. 14-a and the surge tank assembly as a template, drill a Ø9/32" hole in the vehicle's evaporator bracket and secure the surge tank assembly with the 1/4" hardware.
- B. Cut an 8" section of the Ø3/4" hose and attach one end to the driver's side fitting on the water cooler and the other end to the water pump inlet.
- C. Secure both ends with the provided nylon clamps. (See Fig. 14-b.)
- D. Cut an 8" section of the Ø3/4" hose and attach one end to the inlet of the water pump and the fitting on the water cooler. Secure with nylon clamps.
- E. Route the hose toward the firewall and back of the engine. Connect the hose to the straight fitting on the charge cooler and secure with a nylon clamp. Make sure the hose is away from sharp edges and the exhaust system. Ensure that NO kinks or sharp bends are allowed on any of the hoses.
- F. Cut a 23" section of the Ø3/4" hose and connect between the bottom of the surge tank and the water cooler. Secure both ends with nylon clamps.
- G. Temporarily plug the hose fitting on the surge tank that is to connect to the 90° fitting on the charge cooler.
- H. When filling the system, ensure that the pump is OFF and the drain valve on the water cooler is OPEN.



Fig. 14-a

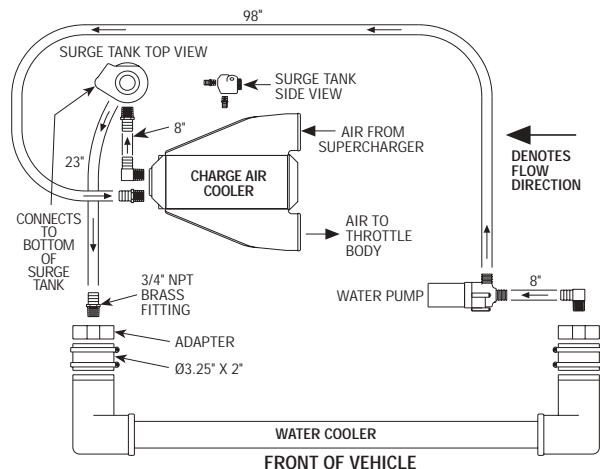


Fig. 14-b / See Appendix A-7 for detail

## 14. HOSE INSTALLATION & SYSTEM FILLING (6.8L H.O. Systems Only), cont'd.

- I. Pour 3/4 of a gallon of antifreeze into the surge tank. Fill the system with water until water comes out of the drain fitting, then close the drain valve being careful *not to over tighten*.
- J. Continue to fill the system with water until it pours out of the OPEN fitting on the charge cooler.
- K. Connect the water line from the surge tank to the charge cooler and secure with the provided clamps. Top off the system with water and install the surge tank cap.

## 15. REASSEMBLY AND FINAL CHECK

**NOTE:** Once the ECM is received back from Vortech with the ECM module installed, reinstall the ECM into the vehicle. In some cases, the extra length of the ECM module will not allow the use of the factory hold-down bracket unless it is modified. Reconnect the factory harness.

- A. Reinstall the stock surge tank and tire iron. Reinstall the upper radiator hose opposite of the factory installation (the short leg of the hose should connect to the radiator). (See Fig. 15-a.) Refill the radiator.
- B. Reconnect the battery.
- C. Check all fittings, nuts, bolts and clamps for tightness. Pay particular attention to oil and fuel lines, especially around moving parts, sharp edges and exhaust. Make sure all wires and lines are properly secured with clamps or tie wraps.
- D. Check all fluid levels, making sure that your fuel tank is filled with 91 octane or higher fuel before commencing test drive.
- E. Start engine and allow to idle a few minutes, then shut off.
- F. Recheck to be sure that no hoses, wires, etc. are near exhaust headers or moving parts and for signs of fluid leakage.

**WARNING:** Operating the vehicle without ALL the subassemblies completely and properly installed may cause FAILURE OF MAJOR COMPONENTS.

- G. Test drive the vehicle. Listen for any sign of detonation (pinging) and discontinue hard use (no boost) until problem is resolved.
- H. Read the STREET SUPERCHARGER SYSTEM OWNER'S MANUAL AND RETURN THE WARRANTY REGISTRATION FORM within thirty (30) days of purchasing your supercharger system to qualify for the 3 year limited warranty.



Fig. 15-a



Fig. 15-b

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# ***APPENDIX***

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# APPENDIX A-1

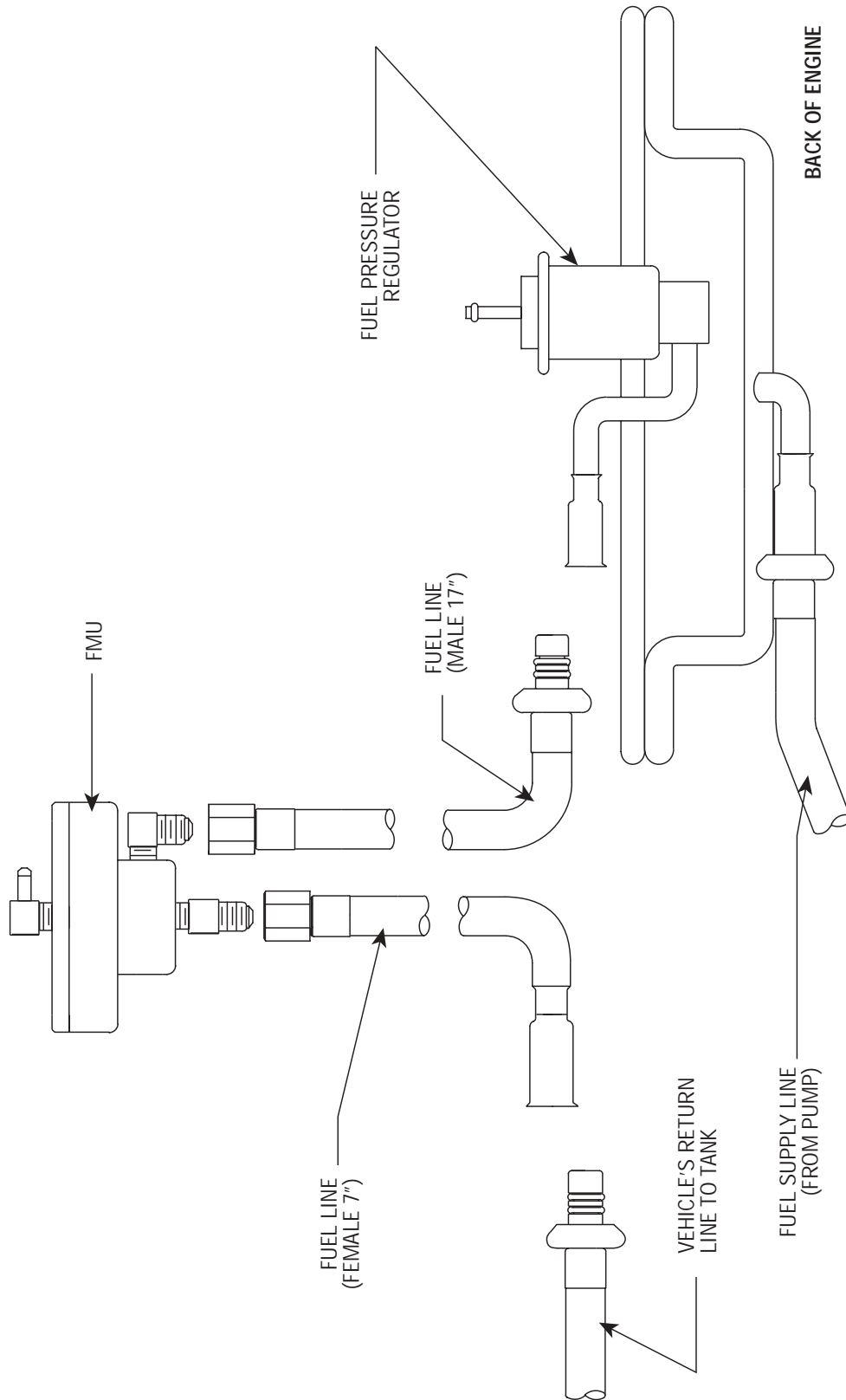


Fig. A-1  
V-10 Diagram

# APPENDIX A-2

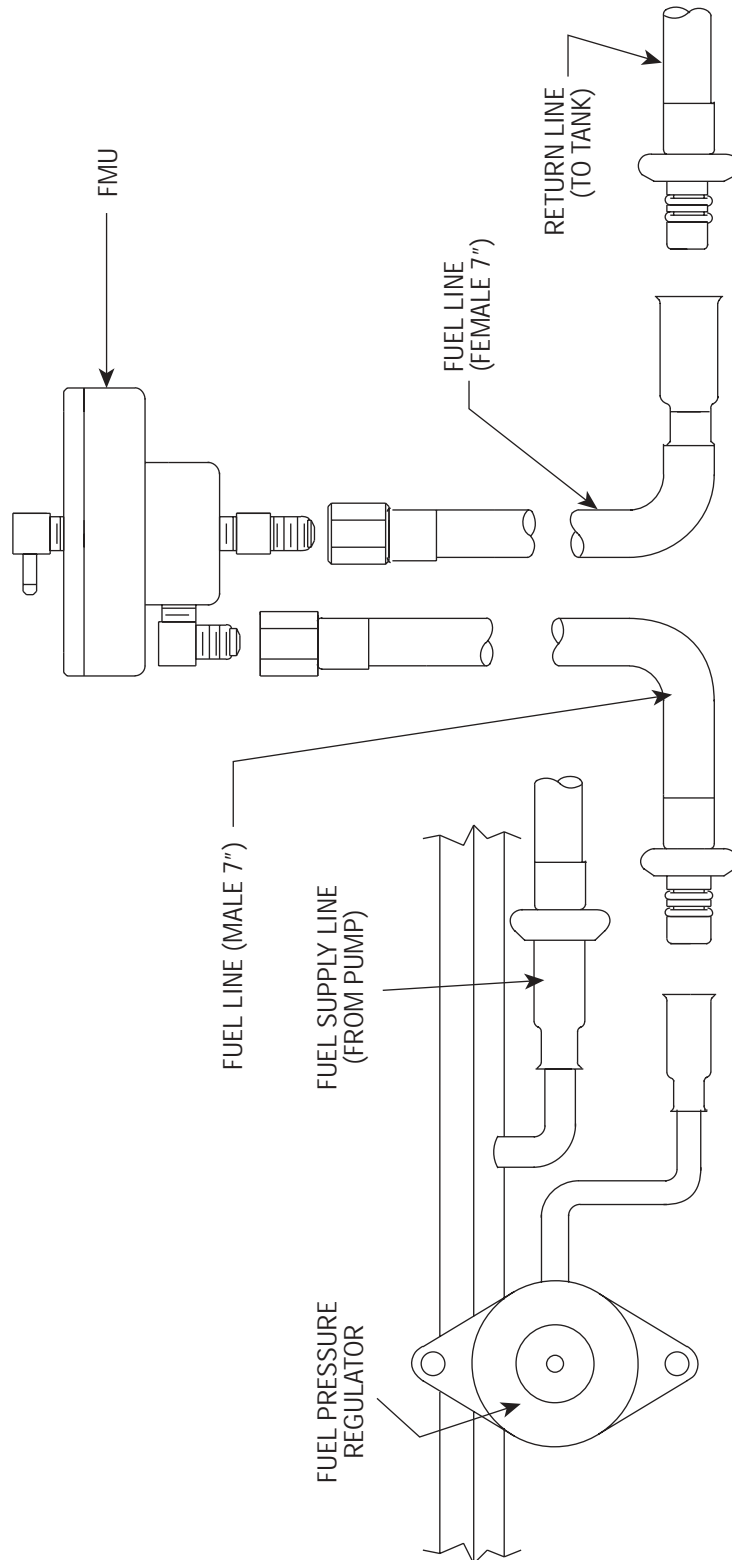


Fig.A-2  
V-8 Diagram

# APPENDIX A-3

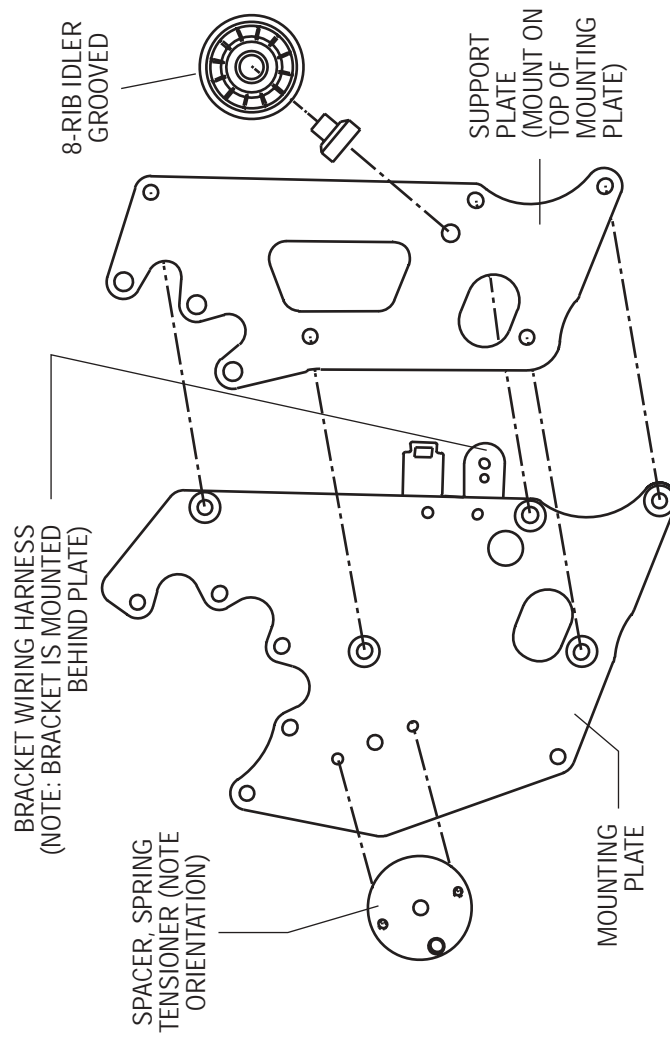


Fig. A-3

# APPENDIX A-4

## V-8 INLET AND DISCHARGE DIAGRAM Standard System

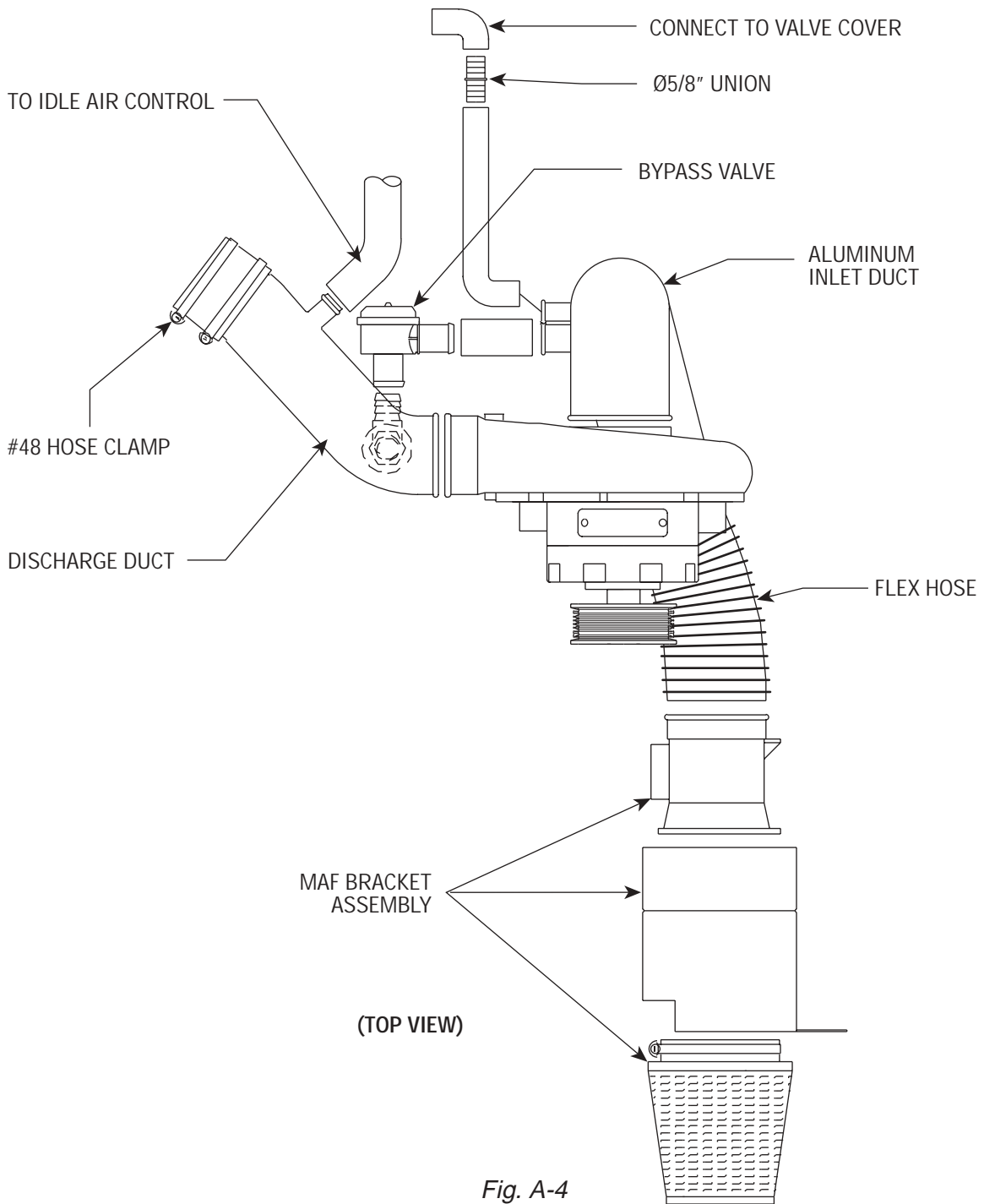


Fig. A-4

# APPENDIX A-5

## V-10 INLET AND DISCHARGE DIAGRAM Standard System

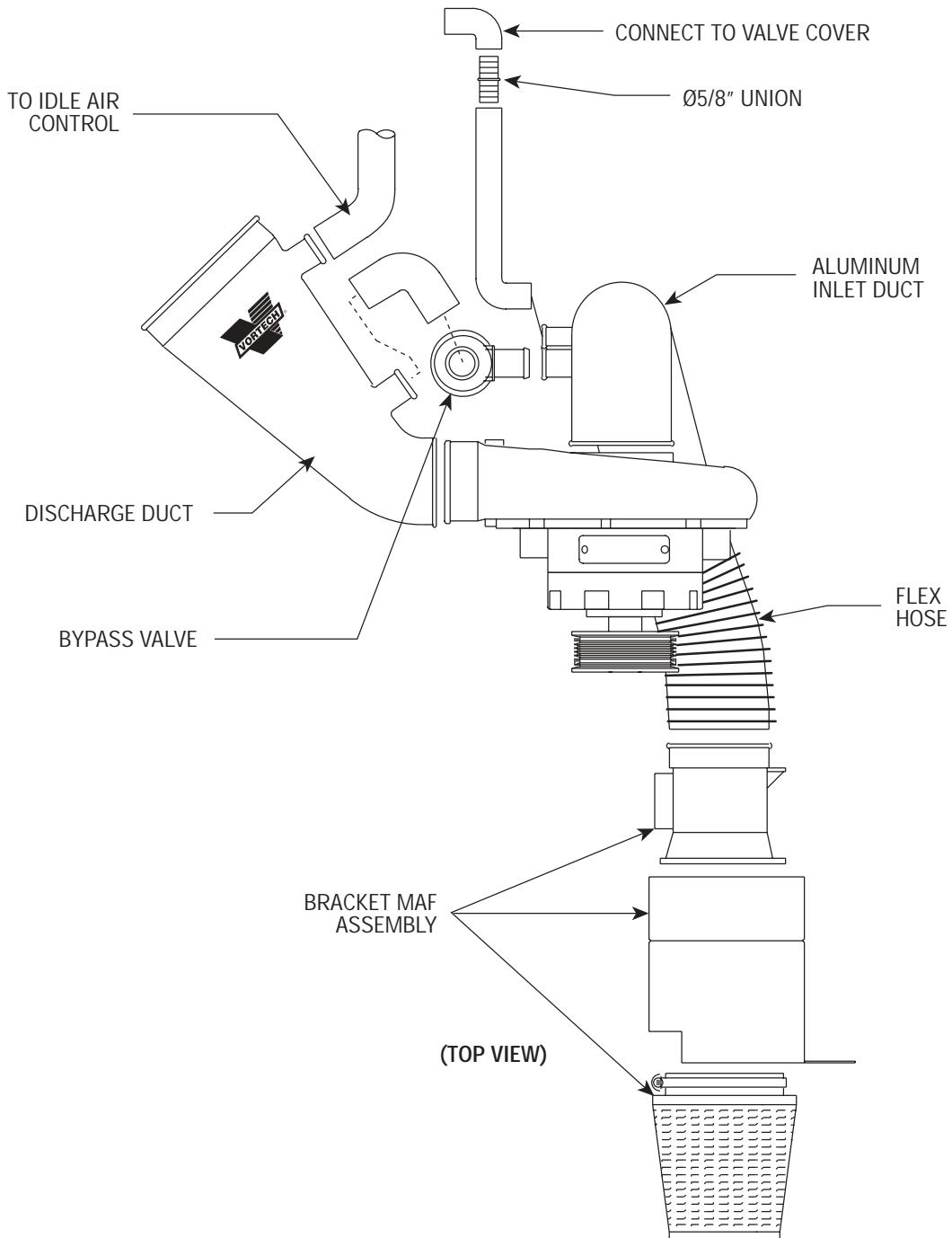


Fig. A-5

# APPENDIX A-6

## Belt Routing Diagram

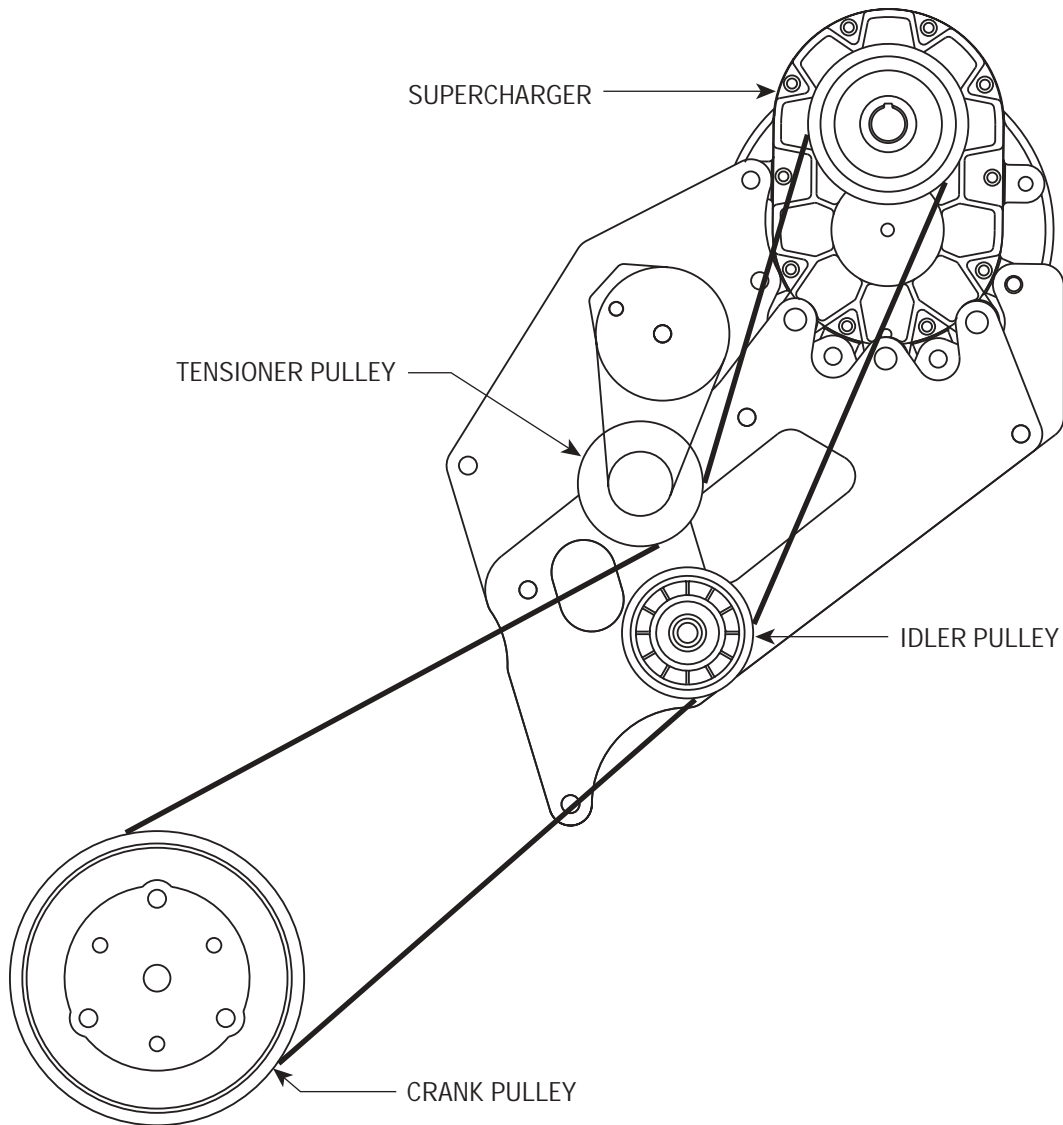


Fig. A-6

# APPENDIX A-7

## V-10 Inlet And Discharge Diagram (H.O. System)

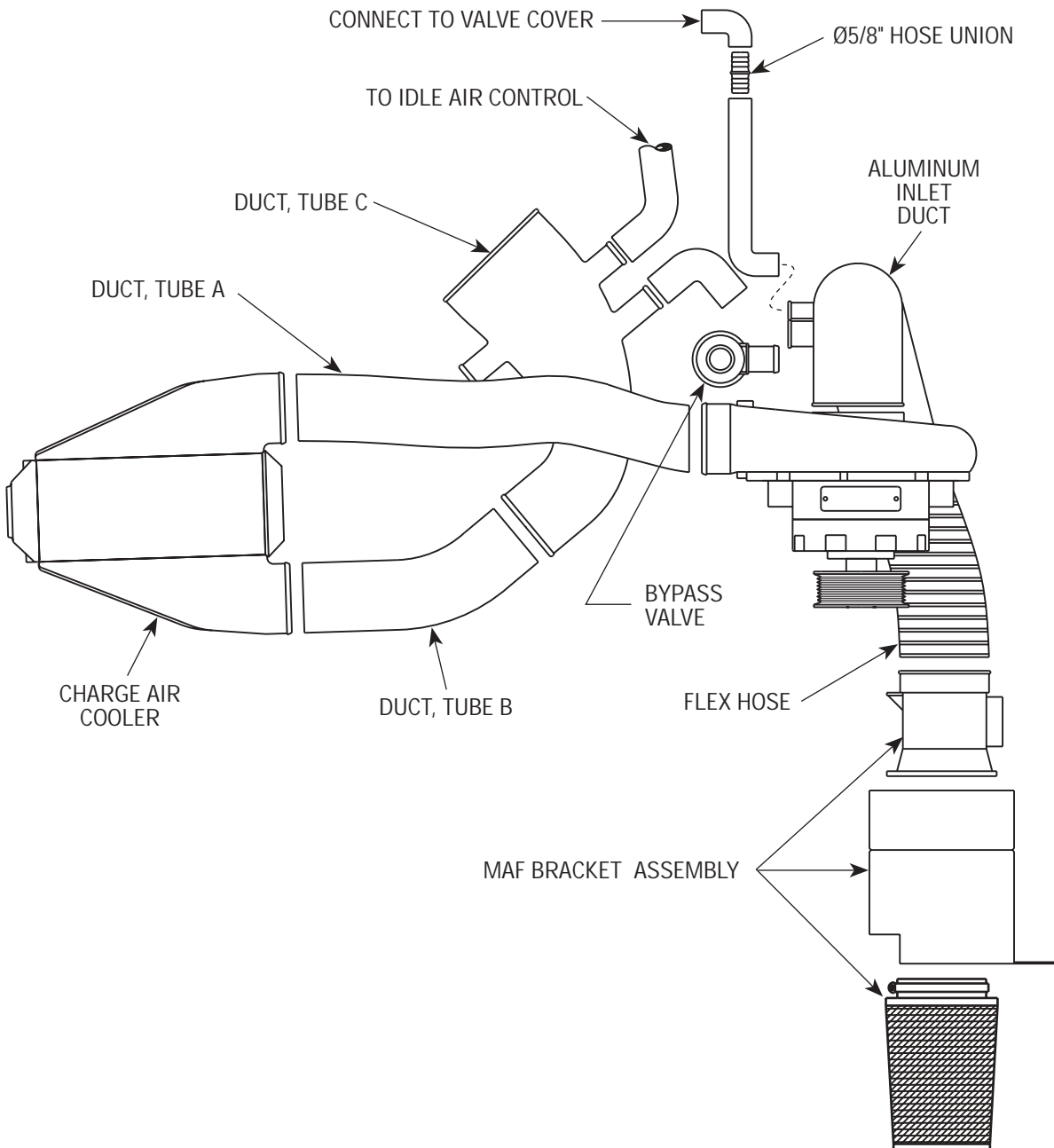


Fig. A-7

# APPENDIX A-8

## Water Hose Diagram

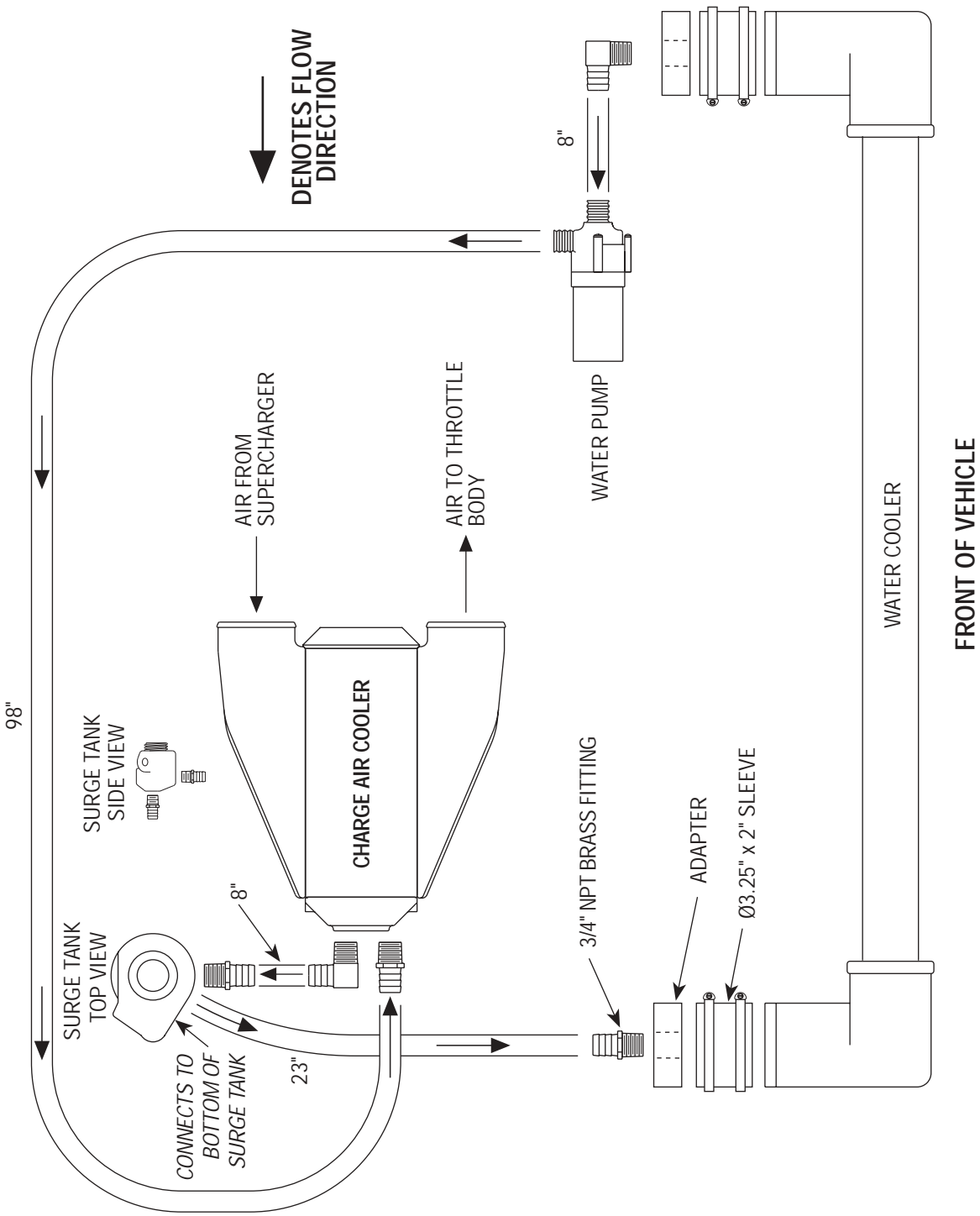


Fig. A-8



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