

## Before beginning the installation, please note:

- Please read all of the instructions thoroughly before beginning the installation. If you do not feel that you have the mechanical aptitude to complete the job in a safe manner, Eddie Motorsports strongly recommends that you employ the services of a knowledgeable technician to perform the installation.
- The V Drive pulley kits system is designed to work with mechanical or electrical electric cooling fan(s). Fasteners and spacers are NOT included for mounting a mechanical fan.
- If you have not done so already, verify that the V Drive will fit in your vehicle. Pay close attention to the power steering tank to A-arm and crank pulley to crossmember/rack & pinion clearances. Dimensions are available on [www.eddiemotorsports.com](http://www.eddiemotorsports.com). There are no returns for kits that have been installed.
- To prevent galling of stainless steel fasteners, apply anti-seize compound to any threads not calling for other sealer. Fasteners that have seized will not be warrantied.

## 1) Engine Prep

1. If the engine is in your car, disconnect the battery
2. Remove your existing accessories, brackets, and water pump.
3. Clean the front of your block.
4. Clean all of the threads on your block using a 3/8-16 thread chaser. Do not use a tap

## 2) Install Mounting Studs

1. Apply RTV silicone sealer to the end of the 4) 3/8" mounting studs that will go in the block.

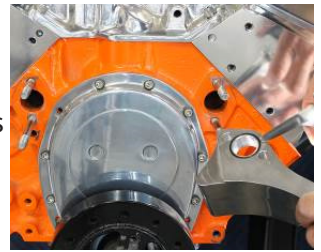


2. Use the 2) 3/8 nuts supplied, tightened against each other, to install the studs into the holes around the two water passages in the block. Note that the longest 4" stud, goes into the bottom right hand hole (marked by an arrow).



## 3) Install Mounting Brackets

1. Apply a thin coat of RTV silicone sealer to a water pump gasket and install over the studs on the driver's side and against the engine block. Slide the alternator bracket the studs on the driver's side. If you ordered a pulley kit WITHOUT power steering, install two 3/8-16 x 1 1/2" socket head cap screws into the bottom holes in the bracket. If your kit has power steering, these fasteners will be installed later.



2. Follow the previous step to install the rear air compressor mount on the passenger side of the engine.

3. Apply a thin coat of RTV silicone sealer to the gaskets for the outside of the mounts previously installed on the block. Slide the water pump over the studs. Apply anti-seize to the threads on the studs and attach the stainless steel stand-offs. The shortest stand-off (approx. 1 7/8") attaches to the bottom passenger side stud. **\*\* Note that the posts must be installed onto the studs with the end marked with the groove facing the water pump. The opposite end of the stand-off has metric threads which can be easily damaged if installed incorrectly.\*\* Only hand tighten the stand-off posts at this time.**



## 4) Install the Crank & Water Pump Pulleys

1. Install the crank pulley using four 3/8-24 x 1" socket cap screws on top of the "cone" of the Belleville cupped spring washers.



- Apply Loctite to the threads and tighten fully while using caution to prevent over torquing.





#### 4) Install the Crank & Water Pump Pulleys (cont.)

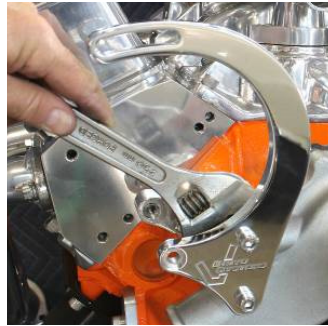
2. Install the water pump pulley using four 5/16-24 x 1/2" socket cap screws. Apply Loctite to the threads and tighten fully while using caution to prevent over torquing.

#### 5) Install the Air Conditioning Compressor

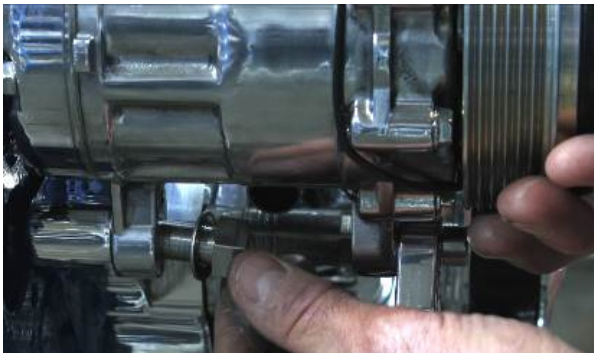


1. Install the front air conditioning compressor bracket to the passenger side stand-offs using two M8 X 1.25 X 25mm socket head cap screws and AN washers. Make sure the stand-off posts are only finger tight before attempting to install the fasteners. Apply anti-seize to the threads of the socket head cap screws and install them finger tight.

2. Tighten the stand-offs completely and then fully tighten the socket head cap screws using caution not to over torque them.



3. Install the AC compressor to the front bracket using one M8 X 1.25 X 25mm socket head cap screws and AN washer on the bottom and one socket head cap screw, a lock washer, and flat washer on the top side. Be sure to apply anti-seize to the threads and tighten the bolts only at this time



4. On the bottom/rear of the compressor, apply anti-seize to the threads of the 1/2" shoulder bolt and washer and thread into the rear compressor bracket. Do not fully tighten the bolt at this time

#### 6) Install the Air Compressor Manifold

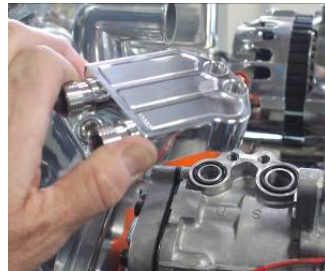
**\*\* IMPORTANT \*\***

**Do not perform this step until you are ready to install the AC lines and charge your system! Doing so can permanently damage the compressor and void the warranty!**

**Do not connect power to the AC clutch wire without first connecting hoses and fully charging the system.**

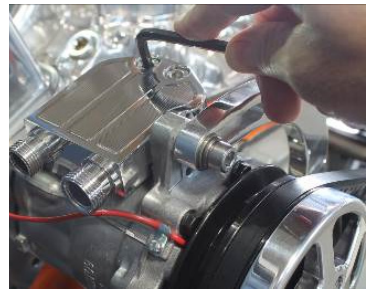
**Please follow all of the enclosed instructions for charging your system. Use of improper charging methods could cause serious damage to your compressor and will void the warranty**

1. Remove the plate from the top of the compressor body. The compressor is charged with Nitrogen to insure lubrication of all components during transport. You will hear the gas escaping when you loosen the fasteners.



2. With the plate removed, you will see the two sealing o-rings. Leave these on the compressor and be careful not to damage them.

3. Install the compressor manifold using two M8 x 25mm socket cap screws. Apply anti-seize to the threads and tighten fully while using caution to prevent over torquing.



4. To insure the proper operation of your compressor, it is imperative that you run a separate ground wire from the screw that holds the wire clamp on the compressor directly to your engine block.

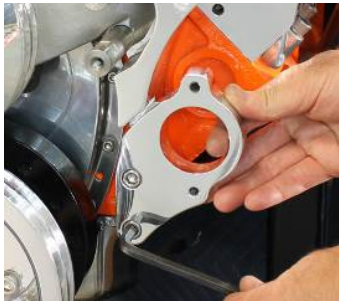
**\*\* IMPORTANT \*\***

**Do not perform this step until you are ready to install the AC lines and charge your system! Doing so can permanently damage the compressor and void the warranty!**

**Do not connect power to the AC clutch wire without first connecting hoses and fully charging the system. Please follow all of the enclosed instructions for charging your system. Use of improper charging methods could cause serious damage to your compressor and will void the warranty!**

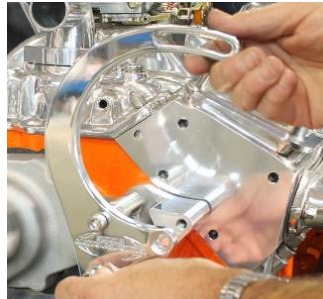


## 7) Install the Power Steering Pump Bracket



1. If you purchased a pulley kit WITHOUT power steering, you can skip this section. Install the front power steering bracket to the rear

bracket using two 3/8-16 x 2 1/4" socket head cap screws. Apply Loctite to the threads and tighten completely using caution to prevent over torquing.



## 8) Install the Alternator

1. Install the front alternator bracket to the driver side stand-offs using two M8 X 1.25 X 25mm socket head cap screws and AN washers. Make sure the stand-off posts are only finger tight before attempting to install the fasteners. Apply anti-seize to the threads of the socket head cap screws and install them "finger tight." Tighten the stand-offs completely and then fully tighten the socket head cap screws using caution not to over torque them.



2. Apply anti-seize to the 10MM -1.5 x10MM socket head cap screw and install with an AN washer through the front bracket and alternator and thread into the rear bracket. Do not tighten completely and do not install the socket head cap screw into the top of the bracket at this time.

3. Consult the wiring instructions supplied with the alternator. To insure proper operation of the alternator, it is imperative that you run a separate ground wire of the proper size from the threaded ground hole on the back of the alternator to your engine block. Contact Powermaster directly should you have any questions regarding the wiring or performance of your alternator 630-849-7754 tech@powermasterperformance.com



## 9) Install the Power Steering Pump

1. If you purchased a pulley kit WITHOUT power steering, you can skip this section. Kit with a power steering pump with an attached reservoir, install the hard line on the pump. Hand tighten the

fitting only as you will be removing it later to install Teflon power steering hose after determining the length.

2. Apply anti-seize to two 5/16-18 x 3" socket head cap screws and use with lock washers inserted through the slots in the pulley to install the power steering pump to the front power steering bracket. Tighten fully while using caution to prevent over torquing.

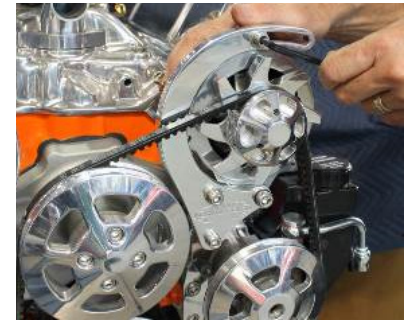
**WARNING! Do not start the engine until all power steering hoses are permanently installed and the power steering system is filled with fluid. Running the pump dry will void the warranty. See the enclosed instructions for details on bleeding the system.**

## 10) Install the belts

1. Route belt #7445 around the alternator, water pump, power steering pump, and crank pulley.

2. Apply anti-seize to the threads of a M8 X 1.25 X 25mm socket head cap screw and install with a lock washer and flat washer into the top hole on the alternator bracket. Do not tighten fully at this time.

3. Pulling on the alternator, tension the belt as necessary. Tighten the top fastener as well as the 10MM socket head cap screw on the bottom alter mount.



1. Route belt #7448 around the air conditioning compressor, water pump, and crank pulley.

2. Pulling on the compressor, tension the belt as necessary. Tighten the top and bottom fasteners as well as the 1/2" shoulder

bolt on the bottom/rear of the compressor.

3. Install the aluminum compressor pulley cover using three 1/4-20 x 3/4 socket head cap screws. Apply Loctite to the threads and tighten fully while using caution to prevent over torquing.



## YOUR INSTALLATION IS COMPLETE!!

PLEASE THOROUGHLY READ ALL OF THE INSTRUCTIONS FOR FILLING AND BLEEDING THE POWER STEERING SYSTEM AND FOR CHARGING THE AIR CONDITIONING **BEFORE STARTING YOUR ENGINE.**

**FOR ANY QUESTIONS PLEASE CALL: 888-813-1293**

### IMPORTANT INFORMATION ABOUT YOUR AIR CONDITIONING COMPRESSOR

**WARNING:** Do not connect power to the AC clutch wire without first connecting hoses and charging the system. Serious damage to your compressor can occur and the warranty will be voided.

All charging procedures should be performed by a licensed and certified technician. Installer and technicians should read this sheet and all component instructions carefully before starting work. Please call if you have any technical questions before, during or after the installation. Our knowledgeable staff will be glad to assist you with any of your questions.

The Sanden A/C compressor supplied with your Eddie Motorsports S-Drive kit is pre-filled with oil and Nitrogen charged from the factory to insure proper lubrication of the internals during storage and transport. Do not remove the block off plate on top of the compressor until you are ready to install the hoses and charge the system.

#### Refrigerant

The Sanden A/C compressor supplied with your Eddie Motorsports S-Drive kit is compatible with 134a refrigerant which is commonly used in late model and aftermarket A/C systems. All part warranties are voided if any refrigerant other than R134a is used. If your car is equipped with its original A/C system and components, it will be necessary to convert your system to use 134a. Consult a reputable A/C system manufacturer for details on this conversion. We recommend the factory air experts at Classic Auto Air 877-342-5526 [www.classicautoair.com](http://www.classicautoair.com)

EDDIE MOTORSPORTS IS NOT RESPONSIBLE FOR CUSTOMER APPLICATIONS THAT ARE OUTSIDE THE NORMAL INTENDED USE OF OUR PRODUCTS, INCLUDING SPECIFIC MODEL AND YEAR APPLICATIONS, ENGINES EQUIPPED WITH SUPER CHARGERS, & LATE MODEL EMISSIONS EQUIPPED VEHICLES.

### Air Conditioning System Charging Tips & Warnings PLEASE READ CAREFULLY BEFORE CHARGING YOUR A/C!

1. Please keep in mind that regardless of you or your technician's experience, the charging processes for your Sanden compressor will vary greatly from stock OEM systems. Failure to follow these steps and proper charging procedures will result in an improper installation or damaged item and **WILL VOID YOUR WARRANTY!**

2. **DO NOT ADD OIL!** All new Sanden compressors contain a full system charge of oil.

3. Before charging the system and putting power to the

compressor, it is necessary to clear the oil from the compressor head. With the belt removed and the lines hooked up, manually turn the compressor clutch hub (not the pulley) a minimum of 10 complete revolutions to clear the oil.

4. **DO NOT CHARGE THE SYSTEM IN LIQUID FORM.** Unlike later model vehicles, doing so will direct liquid refrigerant into the compressor piston chamber, causing damage to the compressor reed valves and/or pistons, as well as potentially seizing the compressor. Doing so voids all warranty claims.

5. Use a charging station to evacuate and charge your system. **DO NOT TILT, SHAKE OR TURN REFRIGERANT CAN UPSIDE DOWN DURING THE CHARGING PROCESS WHILE THE ENGINE IS RUNNING!** Evacuate the system for a minimum of 45 minutes before charging, longer if possible. When using a charging station, meter the refrigerant into the system with the vehicle turned off. Then allow a minimum of 30 minutes for liquid to "boil off," or hand turn the compressor hub (not the pulley) a minimum of 10 complete revolutions to clear liquid refrigerant from the compressor piston chamber.

6. **DO NOT CHARGE THE SYSTEM THROUGH THE HIGH (DISCHARGE) SIDE OF THE SYSTEM!** Refrigerant should be administered through the low (Suction) side of the system.

**WARRANTY:** All compressors carry a 1-year limited warranty.

### POWER STEERING FILLING/BLEEDING INSTRUCTIONS

**\*\* PLEASE READ! \*\***

#### IMPORTANT INFORMATION ABOUT YOUR POWER STEERING PUMP

Failure to read and follow these instructions **THOROUGHLY AND COMPLETELY** will void any warranty and possibly cause severe damage to your power steering components.

### BLEEDING AIR FROM POWER STEERING SYSTEMS

When bleeding air from a power steering system, please follow these bleeding Instructions only. We have found the following method is the only way to properly bleed a power steering system using a GM Type II Pump.

**\*\* IMPORTANT \*\***

**Do not start the engine until the power steering system is fully bled!**

Doing so may cause damage to the power steering components. Any air in the system can cause metal to metal contact and damage.

If using a Hydro Boost system, follow the Hydro Boost bleeding procedures from the original manufacturer.

#### Power Steering Fluid

Use only clear, name brand, premium, racing or synthetic power steering fluid with anti-foaming characteristics such as Valvoline, Royal Purple or Red Line. **DO NOT use brake or transmission fluid! These are NOT an acceptable substitute!** These fluids do not contain the same friction inhibitors and additives and tend to breakdown and overheat. Use of fluids other than power steering fluid will void the warranty.



**NOTE: Eddie Motorsports Billet Aluminum Power Steering Reservoirs** are not recommended for use in high usage or high performance applications or with Hydroboost systems. The reservoirs should also be used in conjunction with a high quality power steering fluid cooler.

Before Bleeding, carefully inspect the steering system.

Hoses must not touch any other part of the vehicle. Steering system noise could be caused by the hose touching the frame, body, or engine.

All hose connections must be tight. Loose connections might not leak but could allow air into the system. Do not over tighten O-ring hoses as the O-ring might be crushed. Check flare seat type connections for exact fit.

#### **Bleeding your Power Steering System**

1. Raise the front wheels off the ground, or remove the pitman arm or tie rod.
2. Turn the steering wheel fully to the left.
3. Fill fluid reservoir to "full cold" level and leave the cap off.
4. With someone checking the fluid level and condition, turn the steering wheel slowly and smoothly lock to lock until the fluid level drops in the pump reservoir. **Do not turn the steering wheel fast as this will cause the fluid to overflow the reservoir.**

If fluid level has not dropped, no fluid has moved through the system. This normally indicates a large air bubble in the reservoir or pump. Until this bubble passes, no fluid will circulate through the system.

On some systems, especially those with coolers, winches, or Rock Ram assist, you may need to cycle the system in excess of 40 times.

Trapped air may also cause fluid to overflow. Thoroughly clean any spilled fluid to allow for leak check.

5. Check fluid constantly to ensure proper level and that no bubbles exist. If you see any signs of bubbles, recheck all connections then repeat the steps above. Fluid level should be steady (Rock Ram's level will vary slightly).
6. Once the fluid level is steady, disable the engine from starting and crank the engine for several revolutions. If fluid level drops, there is compressed air trapped in the system. Repeat the above steps until fluid level is stable.

If fluid foams while cranking, wait 10 minutes or more until dispersed air has time to accumulate and purge through the reservoir.

7. Continue the above steps until fluid level remains constant and no air bubbles are visible.
8. Reinstall reservoir cap and return wheels to center.
9. Lower the front wheels to the ground or reinstall pitman arm or tie rod if removed in Step 2.
10. Run the engine for two minutes, turning the steering wheel in both directions. **DO NOT HOLD THE STEERING WHEEL AGAINST THE STOPS!**

11. The following conditions should now exist:

- Smooth power assist • Noiseless operation • Proper fluid level • No system leaks • Proper fluid condition • No bubbles, foam, or discoloration

12. If all of these conditions are satisfied, the bleeding procedure is complete.

13. If any problem exists, turn off the engine and see Special Conditions below.

#### **Troubleshooting:**

The following symptoms indicate that there is still air in the system:

- Foam or bubbles in fluid (fluid must be completely free of bubbles).
- Power steering fluid level in the reservoir rises when the engine is turned off.
- Periodic bubbles in the power steering fluid.
- Discolored fluid (milky, opaque, or light tan color).
- Whining or groaning noise originating from the power steering pump

#### **Eliminating Air in the Power Steering System**

Follow the steps below to eliminate air in the power steering system.

1. Turn ignition off and wait thirty minutes. Recheck hose connections. Repeat start up procedures.

If problem still exists, replace or check for possible causes including:

- Return hose clamps
- Return hose O-ring or flare seat
- Pressure hose O-ring or flare seat
- All other connections

2. Eliminating Noise in the Power Steering System

If you are sure that all of the air has been eliminated from the system and the power steering pump is still noisy, do the following:

1. Check belts for slippage.
2. Mark the power steering pulley and make sure that it is not slipping on the shaft.
3. With the engine running, recheck hoses for possible contact with frame, body, or engine. If no contact is found, allow the fluid to cool and re-pressurize the system.
4. Once the fluid has cooled, start the engine to allow fluid to come up to operating temperature and recheck.



#### **Eddie Motorsports**

11479 Sixth St • Rancho Cucamonga, CA 91730

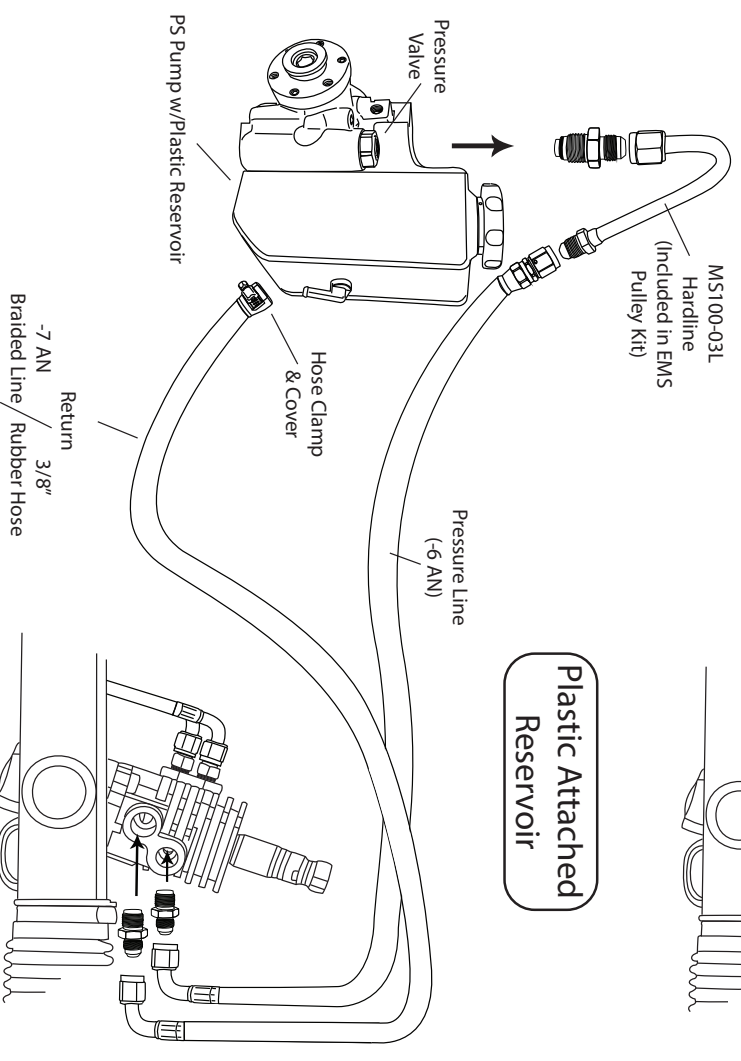
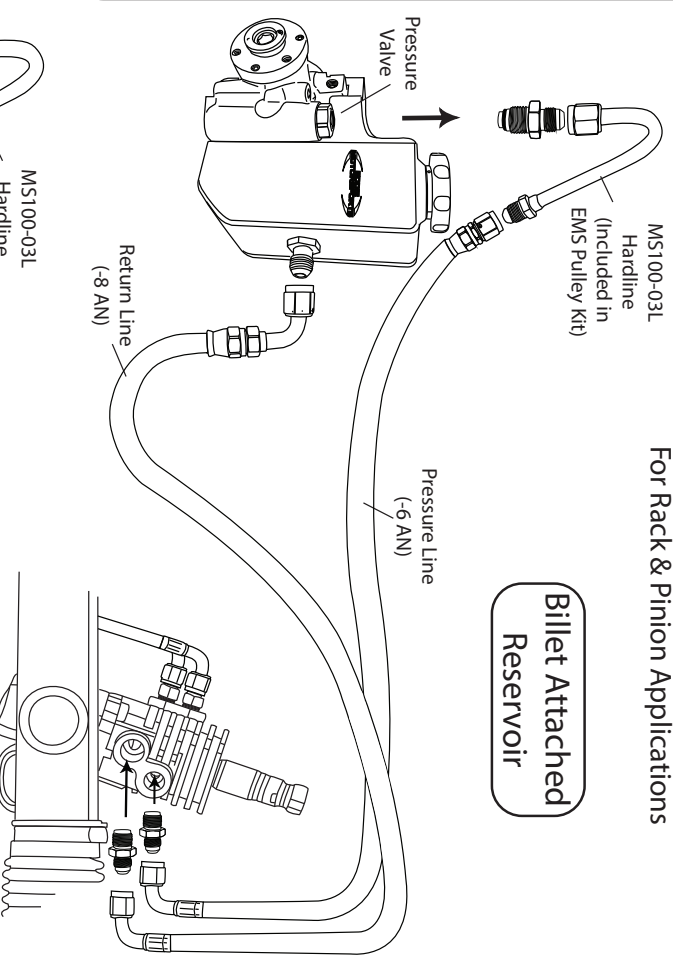
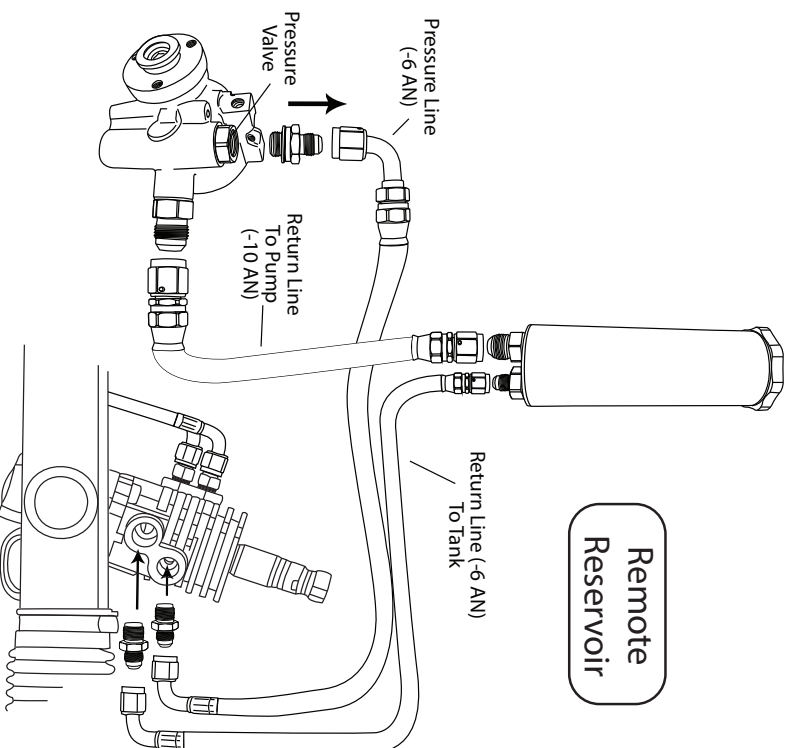
888-813-1293 ph • 909-945-9293 fax

[www.eddiemotorsports.com](http://www.eddiemotorsports.com)

# Power Steering Hose Diagram

For Rack & Pinion Applications

- When using a **Remote Reservoir** make sure that the power steering reservoir is mounted so that the fittings in the bottom of the tank are higher than the power steering pump.
- **Billet Aluminum attached Steering Reservoirs** are not recommended for use in high usage or high performance applications or with Hydroboost systems. These reservoirs should be used in conjunction with a high quality power steering fluid cooler.
- Identify the pressure and return ports on your rack and pinion, install the fittings, and connect the power steering lines.
- In most cases, the port on the rack and pinion that is higher/closer to the steering shaft is the return line and the port lower/closer to the rack is usually the pressure line. Often there is a "P" cast into the body of the rack that confirms the pressure port. But this is not always the case. **NOTE: It is the installer's responsibility to make sure that the hose connections are correct! CONNECTING LINES TO THE INCORRECT PORT CAN DAMAGE YOUR STEERING BOX OR RACK!**
- Hoses must not touch any other part of the vehicle. Steering system noise could be caused by the hose touching the frame, body, or engine.
- Make sure all hose connections are tight. Loose connections could leak and could allow air into the system. Do not over tighten O-ring fittings as the O-ring could be damaged.
- **Do not start your engine until the system is filled with fluid and fully bled.** Doing so may cause damage to the power steering pump components.
- For proper operation, read and follow the Eddie Motorsports power steering bleeding instructions THOROUGHLY AND COMPLETELY before beginning your installation.



# Power Steering Hose Diagram

For Gear Box Applications

- When using a **Remote Reservoir** make sure that the power steering reservoir is mounted so that the fittings in the bottom of the tank are higher than the power steering pump.
- **Billet Aluminum attached Steering Reservoirs** are not recommended for use in high usage or high performance applications or with Hydroboost systems. These reservoirs should be used in conjunction with a high quality power steering fluid cooler.
- Identify the pressure and return ports on your steering box, install the fittings, and connect the power steering lines.
- In most cases, the port on the gear box that is the tallest and farthest from the firewall is the high pressure line and the port closest to the firewall is the low pressure return line. Often, there are arrows cast into the valve body to show the fluid direction. But this is not always the case. **NOTE: It is the installer's responsibility to make sure that the hose connections are correct! CONNECTING LINES TO THE INCORRECT PORT CAN DAMAGE YOUR STEERING BOX OR RACK!**
- Hoses must not touch any other part of the vehicle. Steering system noise could be caused by the hose touching the frame, body, or engine.
- Make sure all hose connections are tight. Loose connections could leak and could allow air into the system. Do not over tighten O-ring fittings as the O-ring could be damaged.
- **Do not start your engine until the system is filled with fluid and fully bled.** Doing so may cause damage to the power steering pump components.
- For proper operation, read and follow the Eddie Motorsports power steering bleeding instructions **THOROUGHLY AND COMPLETELY** before beginning your installation.

