EXHAUST SYSTEM AND INTAKE MANIFOLD

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GENERAL INFORMATION

Exhaust Pipes, Mufflers and Tail Pipes

The single line exhaust system, used on Chrysler and Imperial models (Fig. 1), uses mufflers made of aluminized steel components. This system, when used on all models except station wagons, uses in addition to the conventional muffler, a straight-through resonator type muffler located rearward of the kick-up.

The dual exhaust system, used on Chrysler models (Fig. 2), uses mufflers made of aluminized and stainless or chromized steel components.

Tail pipes on all Chrysler and Imperial models are made of aluminized steel.

Ball joint connections are used in the exhaust pipes on all models to facilitate installation and alignment of the exhaust system. No gaskets are used at the ball joints connections.

The single and dual exhaust systems on all Chrysler and Imperial models are suspended from the shock absorber crossmember brackets at the top of the tail pipe kick-up by flexible, double loop type supports. A U-bolt and saddle clamping arrangement secures the tail pipe to the muffler outlet extension. Flexible "L" shaped supports are used to suspend the rear ends of the tail pipes.

Manifold Heat Control Valve

A thermostatic heat control valve is incorporated in the right hand exhaust manifold, (Fig. 4). This valve directs exhaust gases to the heat chamber beneath the carburetor mounting flange in the intake manifold to help vaporize the fuel mixture during the warm-up period.

SERVICE DIAGNOSIS

Condition	Possible Cause	Correction
EXCESSIVE EXHAUST NOISE	(a) Leaks at pipe joints.	(a) Tighten clamps at leaking joints.
	(b) Burned or blown out muffler.	(b) Replace muffler assembly.
	(c) Burned or rusted out exhaust pipe.	(c) Replace exhaust pipe.
	(d) Exhaust pipe leaking at manifold flange.	(d) Install a new gasket and tighten exhaust pipe flange nuts to 50 foot-pounds.
	(e) Exhaust manifold cracked or broken.	(e) Replace manifold.
	(f) Leak between manifold and cylinder block.	(f) Tighten manifold to cylinder block nuts to 30 foot-pounds.
LEAKING EXHAUST GASES	(a) Leaks at pipe joints.	(a) Tighten clamps at leaking joints.
	(b) Damaged or improperly installed gaskets.	(b) Replace gaskets as necessary.
	(c) Restriction in muffler or tail pipe.	(c) Remove restriction, if possible, or replace as necessary.
ENGINE HARD TO WARM UP OR WILL NOT RETURN TO NORMAL IDLE	(a) Heat control valve frozen in open position.	(a) Free up manifold heat control valve using a suitable solvent.
NOISE IN MANIFOLD	(a) Thermostat broken.	(a) Replace thermostat.
	(b) Weak, broken or missing anti-rattle spring.	(b) Replace spring.
MANIFOLD HEAT CONTROL VALVE RATTLE	(a) Thermostat broken.	(a) Replace thermostat.
	(b) Broken, weak or missing anti-rattle spring.	(b) Replace spring.

SERVICE PROCEDURES

EXHAUST PIPES, MUFFLERS, TAIL PIPES

Removal

(1) Raise vehicle on hoist and apply penetrating oil to all clamp bolts and nuts to loosen rust and corrosion. **If only the muffler is to be replaced, cut the extension pipe just forward of the muffler with a hack saw or cutter. It is not necessary to remove the exhaust pipe. The replacement muffler can be installed, using a U-bolt and saddle clamping arrangement at the front of the muffler.**

(2) Remove clamps and supports from exhaust pipe, muffler and tail pipe (Figs. 1 and 2).

(3) Remove bolts at ball joint connections.

(4) Disconnect exhaust pipe at exhaust manifolds and remove exhaust pipe. Discard gaskets and carefully clean manifold flanges of any gasket particles.

(5) Remove muffler and extension pipe.

(6) Raise rear end of vehicle to relieve body weight from rear springs and remove tail pipe.

Installation

(1) Assemble exhaust pipe, muffler and tail pipe loosely to permit proper alignment (Figs. 1 and 2).

(2) Assemble exhaust pipe to exhaust manifolds, using new gaskets. Tighten bolt nuts to specifications.

(3) Adjust tail pipe and muffler supports to provide proper clearance with underbody and adjacent parts. **Do not fully tighten attaching bolts and screws at this time.**

(4) Tighten all slip joint U-bolt nuts 150 inch-pounds, working from rear to front.

(5) Tighten tail pipe support attaching clamp screws to 95 inch-pounds, at same time maintaining proper clearance with adjacent parts.

(6) Tighten tail pipe front support clamp screws to 100 inch-pounds.

(7) Tighten exhaust pipe ball joint connection bolts to 24 foot-pounds. Alternate tightening to insure parallelism of flanges.

INTAKE MANIFOLD

Refer to "Engine" Group 9 for removal and installation of intake manfold.

With manifold removed, clean and inspect it as follows:

(1) Clean manifold in solvent. Blow dry with compressed air.

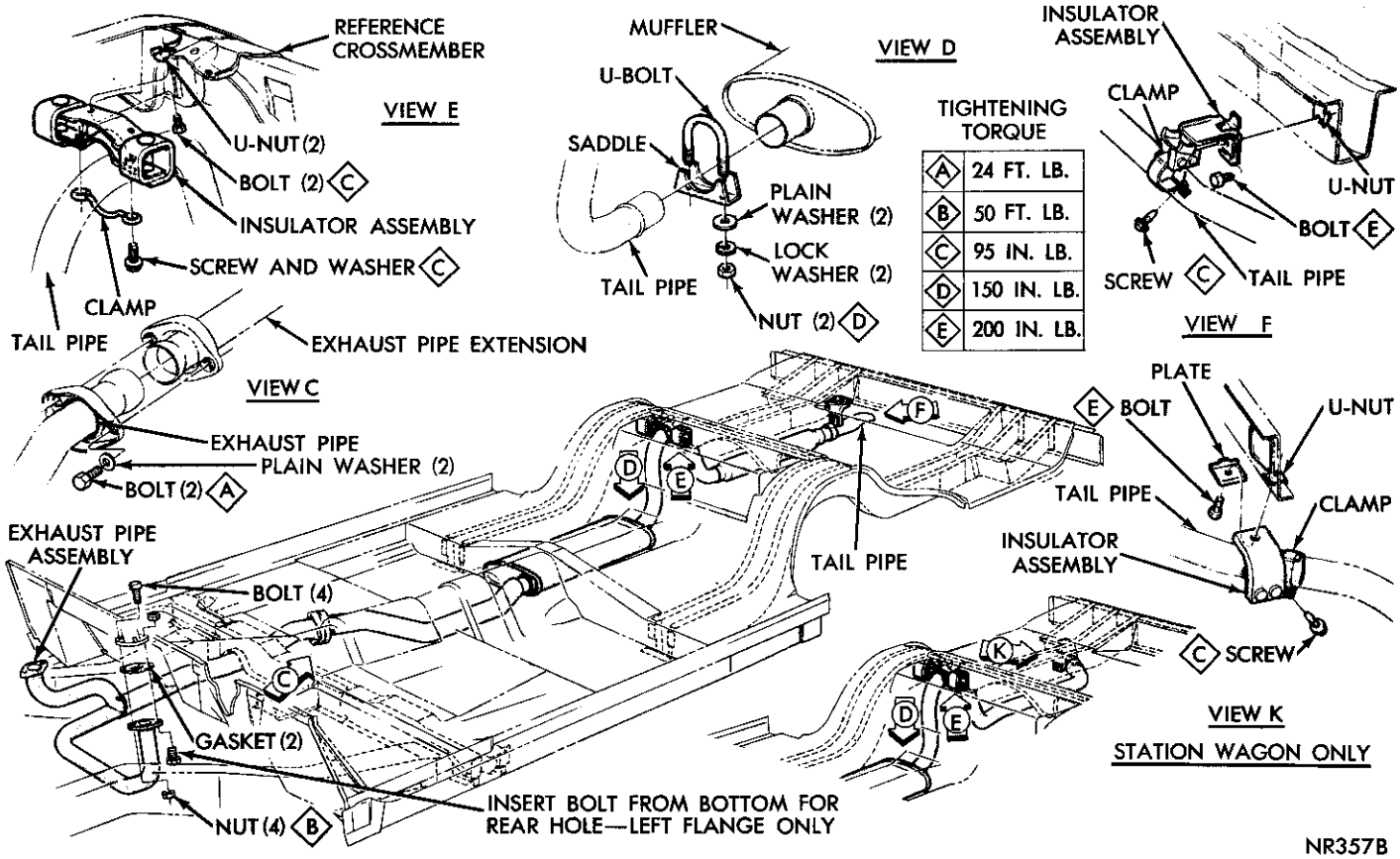

Fig. 1—Single Exhaust System

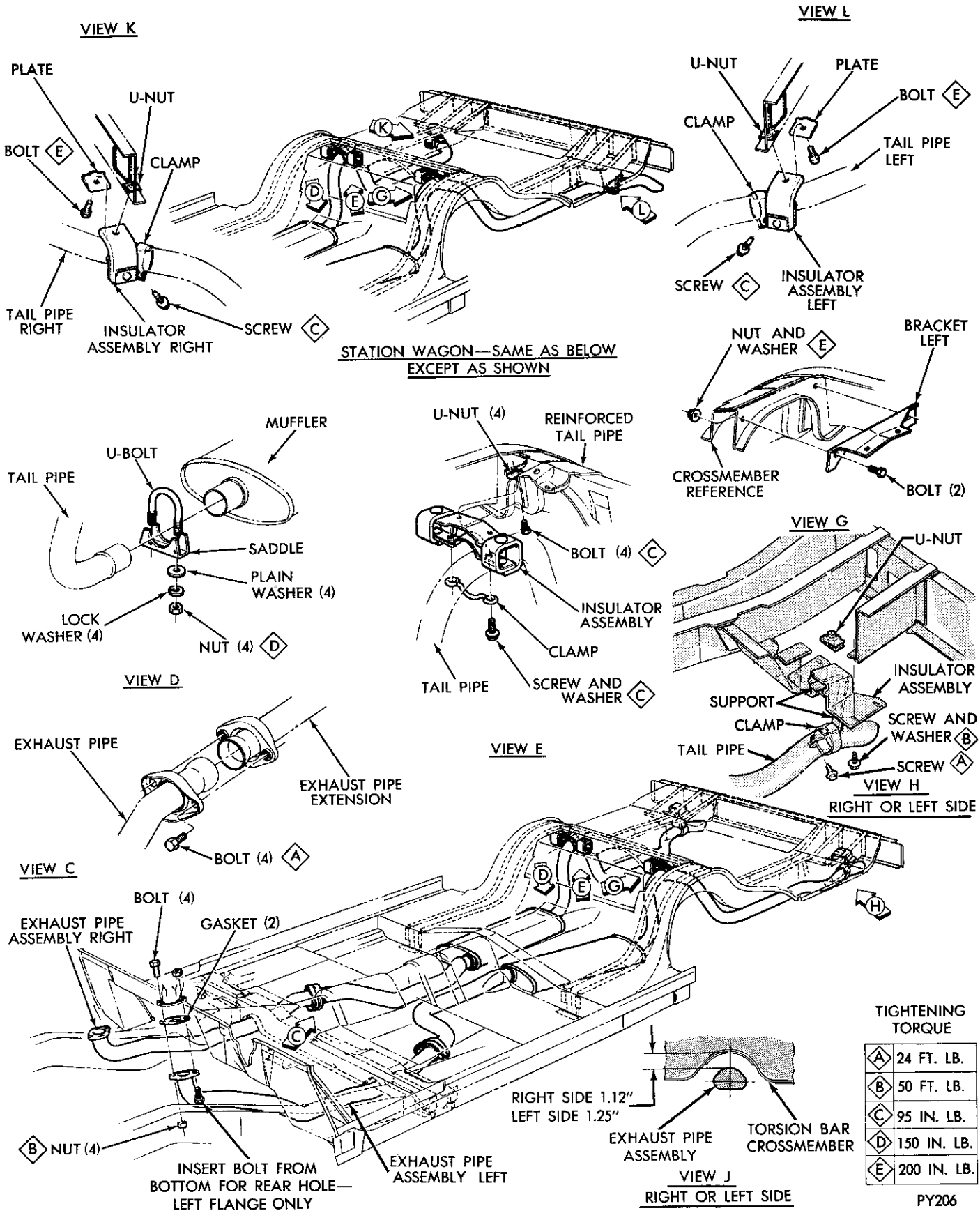

Fig. 2—Dual Exhaust System

(2) Inspect exhaust cross-over passages and pressure test for leakage into any of the intake passages.
(3) Inspect mating surfaces for parallelism.
(4) Use new gaskets when installing manifold.

CARBURETOR AIR HEATER

Removal

(1) Disconnect flexible connector between air cleaner and air heater (Fig. 3).
(2) Remove stud nuts attaching carburetor air heater to exhaust manifold.
(3) Remove upper half of carburetor air heater by lifting straight up.
(4) Slide lower half of carburetor air heater off studs and away from exhaust manifold.

Installation

(1) If studs come out with the nuts, install new studs and tighten to 45 inch-pounds.
(2) Install lower half of carburetor air heater on studs.
(3) Position upper half of carburetor air heater on manifold and studs.
(4) Install nut and washer assemblies and tighten to 45 inch-pounds.
(5) Install flexible connector between air cleaner and air heater.

EXHAUST MANIFOLD

Removal

(1) Remove spark plugs.
(2) Remove alternator from right hand cylinder head.
(3) Remove bolts and nuts attaching exhaust pipe to exhaust manifold flanges.
(4) Remove nuts attaching exhaust manifolds to cylinder heads.
(5) Slide manifolds off studs and away from cylinder heads.

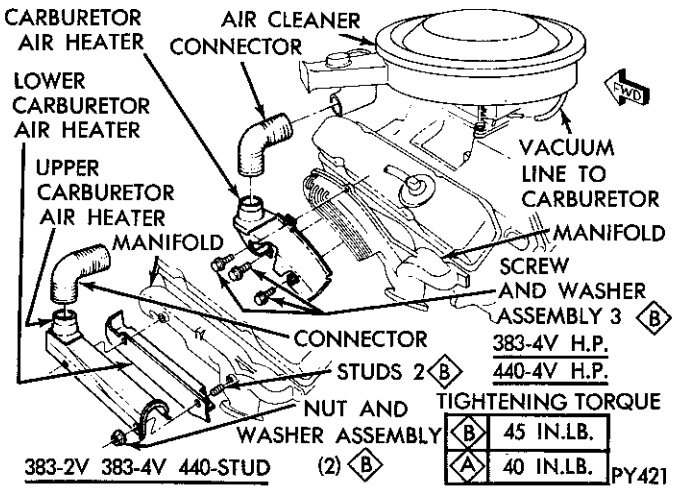

Fig. 3—Carburetor Air Heater

Cleaning and Inspection

(1) Clean exhaust manifolds in solvent. Blow dry with compressed air.
(2) Inspect manifolds for cracks and distortion.
(3) On **right hand** manifold test manifold heat control valve for free operation. If necessary to free up, apply a suitable manifold heat control valve solvent to both ends of valve shaft. A suitable solvent is available under Part Number 2525054, Manifold Heat Control Valve Solvent or equivalent. Be sure manifold is **COOL** and solvent is allowed to soak a few minutes to dissolve deposits. Then, work valve back and forth until it turns freely.

Installation

CAUTION: If studs came out with the nuts, install new studs, applying sealer on the coarse thread ends. If this precaution is not taken, water leaks may develop at the studs.

(1) Install manifolds on cylinder heads. No gaskets are required. Tighten stud nuts to 30 foot-pounds.
(2) Install exhaust pipe on exhaust manifolds. Tighten nuts to 50 foot-pounds.
(3) Install alternator on right hand cylinder head and adjust belt tension.
(4) Install spark plugs and tighten to 30 foot-pounds.

MANIFOLD HEAT CONTROL VALVE (All Models)

Operation of the manifold heat control valve should be inspected periodically. With engine idling, accelerate momentarily to wide open throttle. The counterweight should respond by moving **clockwise** approximately 1/2 inch and return to its original position. If no movement is observed, the shaft is binding due to accumulation of deposits or the thermostat is weak or broken.

The application of a suitable manifold heat control valve solvent, every engine oil change to both ends of the manifold heat control valve shaft at the bushings, will keep the valve working freely. A suitable solvent is available under Part Number 2525054, Manifold Heat Control Valve Solvent or equivalent. The solvent should be applied when manifold is **COOL** and allowed to soak a few minutes to dissolve deposits. Then, work valve back and forth until it turns freely.

383-440 CUBIC INCH ENGINES

Remove exhaust manifold as outlined on this page.

(1) Position valve plate, grind off spot welds from valve plate and shaft.

(2) Remove counterweight and shaft assembly, valve plate.

(3) Press out bushings and cup seals from manifold (Fig. 4).

(4) Inspect vent holes and clean out if necessary.

Installation

(1) **Press** in cup seals until seals extend into manifold .100 inch on each side with cupped ends facing outward (Fig. 4).

(2) **Press** in bushings flush with outer edge of exhaust manifold.

(3) Line ream bushings and seals .3095 to .3110 inch diameter. Test for free fit of shaft in bushings and seals.

(4) Mark one end of shaft with a suitable dye at 1,240 inches, press counterweight on marked end of shaft until flush with end of shaft.

(5) Install thermostatic spring on counterweight with center end or tab pointing **left** and outer end or hook pointing right.

(6) Install valve stop on counterweight with looped ends facing away from thermostatic spring hook end.

(7) Holding thermostatic spring wrapped 215 degrees in a **counterclockwise** direction viewed from counterweight end, install shaft assembly in manifold and valve plate with strap facing flange end of manifold; attach hook end of thermostatic spring to stop pin (Fig. 4).

(8) With counterweight end of shaft positioned 1,240 inches (previously identified) away from manifold, valve plate centered between seals and valve plate closed (Fig. 3).

(9) Arc weld valve plate to shaft with stainless steel rod. **Arc welding ground must be made at counterweight.**

(10) Test for free operation. Install anti-rattle spring.

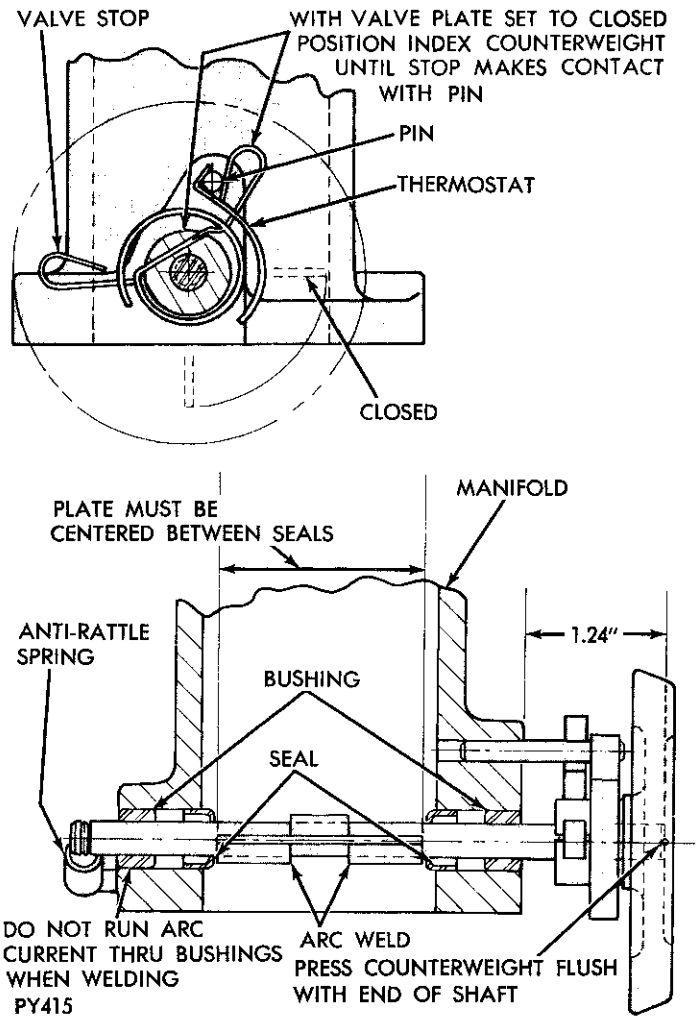

Fig. 4—Proper Manifold Heat Control Valve Installation

(11) Complete assembly and installation as outlined on page 4.

TIGHTENING REFERENCE

	Pounds Foot	Pounds Inch
Converter Housing Bracket Screw	15	
Exhaust Manifold Stud Nuts	30	
Exhaust Pipe U-Bolt Nuts		150
Exhaust Pipe Ball Joint Bolt	24	
Exhaust Pipe Flange Bolt Nuts	50	
Support Clamp Screws		95
Tail Pipe Front Support Clamp Screws		150
Tail Pipe Support to Crossmember Screws		200