

DODGE TRUCK

B-4 SERIES

SHOP MANUAL

**MODELS: B-4-B, B-4-C, B-4-D, B-4-PW, B-4-DU, B-4-EU, B-4-F,
B-4-G, B-4-GA, B-4-H, B-4-HA, B-4-HM, B-4-HMA, B-4-J, B-4-JA,
B-4-JM, B-4-JMA, B-4-K, B-4-KA, B-4-KMA, B-4-R, B-4-RA, B-4-T,
B-4-TA, B-4-V, B-4-VA, B-4-Y, B-4-YA, B-4-YX**

SECTION 9

EXHAUST SYSTEM

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DETROIT 31, MICHIGAN**

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TIGHTENING REFERENCE

<i>Part Name</i>	<i>Size (inch) and number of threads per inch</i>	<i>Torque (foot-pounds)</i>
Intake manifold screw.....	3/8 — 16	25 to 30
Intake to exhaust manifold bolt nut.....	3/8 — 24	30 to 35
Manifold stud nut (brass).....	3/8 — 24	12 to 17

EXHAUST SYSTEM

1. DESCRIPTION

The exhaust system consists of the exhaust and intake manifolds, heat resistant gaskets between the intake manifold and the cylinder block, the exhaust pipe, muffler, tail pipe and a manifold heat control valve (if truck is so equipped). See Figures 1 and 2 and also refer to Service Standards.

Two types of mufflers are used on the B-4-Series models: the straight through (with restrictor) type, and the tube and baffle type. Refer to Service Standards.

The exhaust pipe, muffler and tail pipe are supported in such a manner that the system is held in alignment and noises and vibrations are minimized.

Although the exhaust system normally requires little service attention, it should be checked periodically for the presence of leaking

gaskets, broken supports, burned, blown out or damaged muffler or pipes. And, repairs should be made as required.

If the manifold heat control valve (truck so equipped) is operating improperly, or if restrictions are present in the muffler, exhaust pipe or tail pipe, loss of engine power, high fuel consumption, or pre-ignition may result.

On a truck so equipped, the manifold heat control valve in the exhaust manifold is controlled by a thermostatic spring and counterweight. When the engine is cold, the valve is open. As the engine is started, the exhaust gases pass up and around the hot spot chamber in the intake manifold and pre-heat the fuel passing through the intake manifold. As engine temperature increases, the manifold heat control valve closes and the exhaust gases then pass directly to the exhaust pipe, muffler and tail pipe.

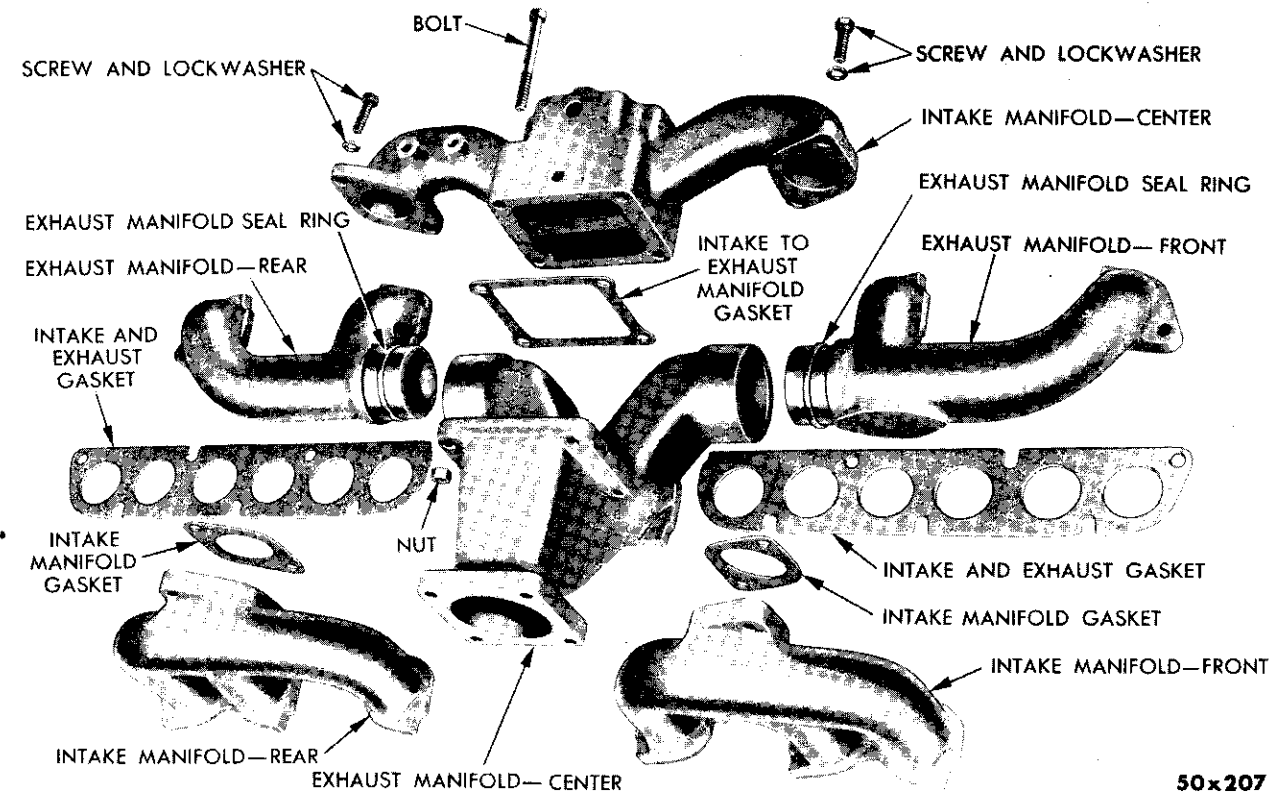


Fig. 1—Exhaust and Intake Manifolds (Disassembled View)
(Except B-4-R, B-4-T, B-4-V and B-4-Y)

EXHAUST SYSTEM

SERVICE STANDARDS

MODEL DESIGNATION →	B	C	D	PW	DU	EU	F, G, CA	H, HA, HM, HMA	J, JA, K, KA, JM, JMA, KMA	R, RA	T, TA, V, VA	Y, YA, YX
Muffler —												
Type	Straight through (with restrictor)	Straight through (with restrictor)	Straight through (with restrictor)	Straight through (with restrictor)	Straight through (with restrictor)	Straight through (with restrictor)	Straight through (with restrictor)	Straight through (with restrictor)	Straight through (with restrictor)	Tube and baffle (2 used)	Tube and baffle (2 used)	Tube and baffle (2 used)
Length (less connections)	22"	22"	22"	22"	22"	22"	22"	22" — H, HA 21 3/4" — HM, HMA	22"	21 1/4" — Single 22" — Dual	22"	22"
Outer diameter	5 1/16"	5 1/16"	5 1/16"	5 1/16"	5 1/16"	5 1/16"	5 1/16"	5 1/16" — H, HA 5" — HM, HMA	5 1/16"	6" — Single 5 1/4" — Dual	5 1/16"	5 1/16"
Exhaust Pipe —												
Outer diameter	2"	2"	2"	2"	2"	2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
Welded to muffler	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes	No	No	No
Tail Pipe —												
Outer diameter	1 5/8"	1 5/8"	1 5/8"	1 5/8"	1 5/8"	1 5/8"	1 3/4"	1 3/4"	1 3/4"	1 3/4"	1 3/4"	1 3/4"
Length	59 7/8" — Except Panel 67 1/2" — Panel	67 7/8"	67 7/8" — 116" W.B. 79 7/8" — 126" W.B.	18 7/8"	16 7/8" — 102" W.B. 34 3/8" — 117" W.B.	59 3/8"	10 1/4" — Except Schoolbus; 166 7/16" — Schoolbus	11" — Except Schoolbus; 220 9/16" — Schoolbus	11" — Except Schoolbus; 244" — Schoolbus	11 1/4" — Except Schoolbus; 263 7/16" — Schoolbus	1 3/4"	1 1/4"
Manifold Heat Control	Thermo-static	Thermo-static	Thermo-static	Thermo-static	Thermo-static	Thermo-static	Thermo-static	Thermo-static	None	None	None	Fixed type

*K and KA — Twin exhaust system with 2 1/4" outer diameter exhaust pipes (extra equipment)

2. SERVICING EXHAUST AND INTAKE MANIFOLDS (EXCEPT B-4-R, B-4-T, B-4-V, AND B-4-Y) (FIG. 1)

a. Removal

To remove the exhaust and intake manifolds (all models except B-4-R, B-4-T, B-4-V and B-4-Y), refer to Figure 1 and proceed as follows:

- (1) Disconnect exhaust pipe at manifold.
- (2) Disconnect and remove all throttle and choke controls attached to the manifolds.
- (3) Disconnect and remove the fuel line between fuel pump and carburetor (or fuel filter).
- (4) Disconnect and remove carburetor, fuel pump heat shield, fuel filter and air cleaner from intake manifold.
- (5) Remove exhaust and intake manifold to block stud nuts and pull manifold straight out—away from cylinder block.
- (6) Remove manifold gaskets from between

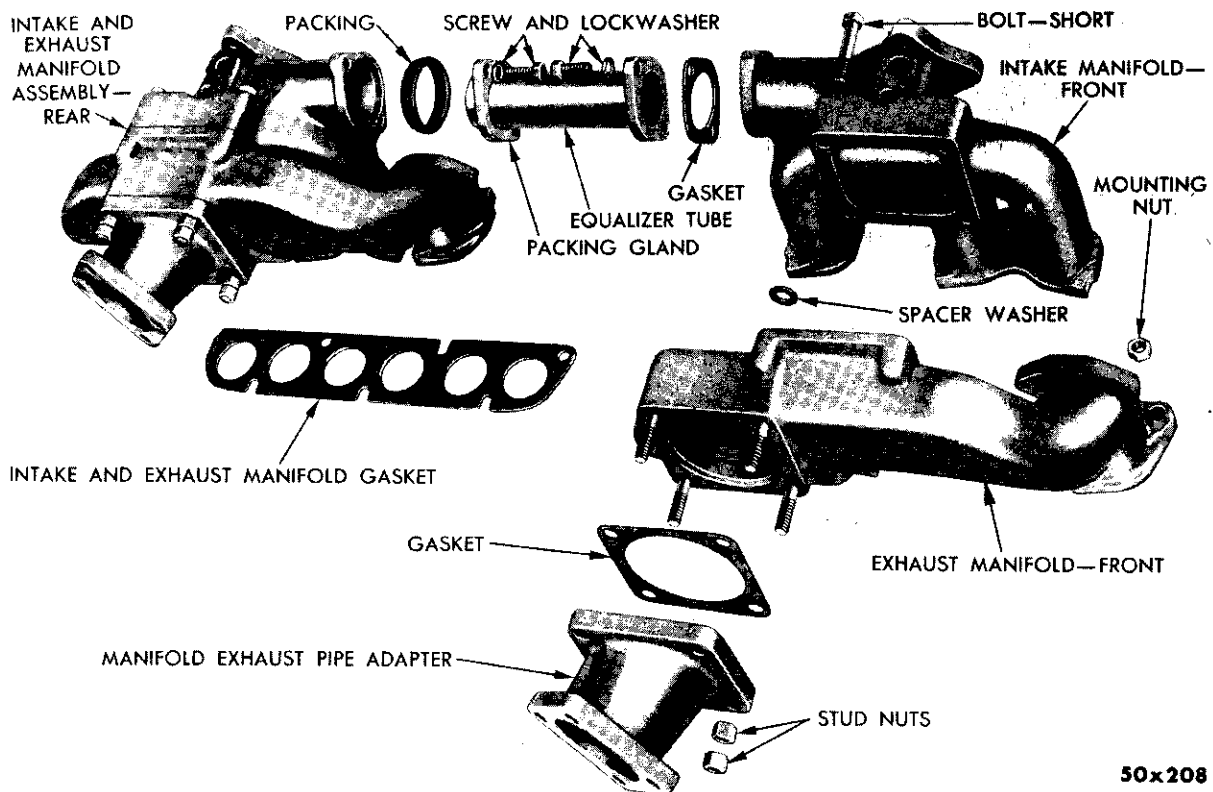
cylinder block and manifolds. Discard gaskets.

- (7) Remove bolts and nuts attaching the intake manifold to the exhaust manifold. Discard the gasket.

b. Cleaning and Inspection

Clean both manifolds in a suitable solvent. Dry the manifolds with compressed air. Inspect the manifolds for cracks or distortion. Install new manifolds, if either condition is evident. Replace stripped or damaged studs in the cylinder block.

The hot spot chamber in the intake manifold should receive particular attention. If this chamber is coated with hard, black carbon, it must be scraped clean or sandblasted to remove the carbon deposit. The layers of carbon on the walls of this chamber act as an insulator which retards the heating action of the exhaust gases on the hot spot which, in turn, affects the vaporization of the fuel passing through the intake manifold. When such a condition exists,



50x208

Fig. 2—Exhaust and Intake Manifolds (Disassembled View)
(B-4-R, B-4-T, B-4-V and B-4-Y)

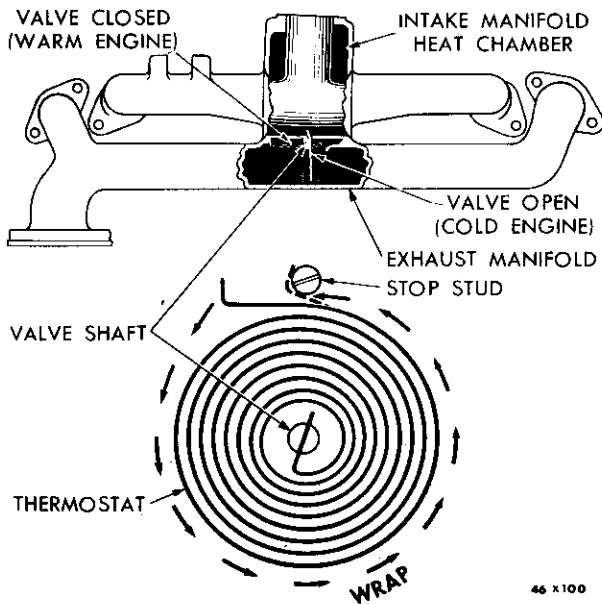


Fig. 3—Diagram Showing Thermostat Wrap

the engine will not warm up as rapidly as it should and its performance may be rough.

c. Installation

When installing the manifolds, use new gaskets and be sure all mating surfaces are clean and smooth.

Assemble the intake and exhaust manifolds, using a new gasket, and install bolts and nuts. **DO NOT TIGHTEN.**

Install manifold assembly on cylinder block, using new gaskets. Tighten stud nuts uniformly with a torque wrench from 12 to 17 foot-pounds, starting at the center and working out to the ends. Then, tighten the nuts and bolts that hold the intake and exhaust manifolds together.

Complete the remainder of the installation operation by following the disassembly procedure in reverse order.

3. REMOVING EXHAUST AND INTAKE MANIFOLDS (TWIN CARBURETOR INSTALLATION)

Refer to Figure 2 and proceed as follows:

- (1) Disconnect exhaust pipes at manifold flanges.
- (2) Remove fuel pump heat shield.

- (3) Disconnect and remove fuel line between fuel pump and carburetor (or fuel filter).
- (4) Disconnect carburetor throttle and control linkage.
- (5) Disconnect fuel line between carburetors.
- (6) Disconnect and remove the carburetors, governors (if used), fuel filters, and air cleaners from intake manifolds.
- (7) Remove exhaust and intake manifold to block stud nuts. Then, remove bolts holding equalizer tube flange to rear manifold bank. (Slide flange on tube and remove packing.)
- (8) Pull rear manifold bank off the studs and out and away from equalizer tube.
- (9) Remove front manifold bank and equalizer tube from the studs, pulling them straight out and away from the cylinder block.
- (10) Remove manifold gaskets from between the cylinder block and manifolds. Discard the gaskets.
- (11) Remove bolts holding equalizer tube to front manifolds. Separate and discard gasket.

Clean and inspect the manifolds as previously described.

When installing the manifolds, use new gaskets and make certain all mating surfaces are clean and smooth.

4. ASSEMBLING MANIFOLDS (TWIN CARBURETOR INSTALLATION)

To perform the operations, refer to Figure 2 and proceed as follows:

- (1) Install the front bank of manifolds on the cylinder block, using new gaskets.
- (2) Install equalizer tube and gasket. Secure with bolts.
- (3) Slide equalizer tube flange and packing over tube.
- (4) Install rear bank of manifolds on cylinder block. At the same time, engage the equalizer tube. Install manifold nuts and tighten uniformly with a torque wrench from 12

to 17 foot-pounds, starting at the center and working out to the ends.

- (5) Slide the packing into the recess and tamp into position. Secure with flange and bolts. Tighten bolts securely.
- (6) Complete the installation by following the disassembly procedure in reverse order.

5. SERVICING THE MUFFLER

Inspect the exhaust system if leakage of exhaust gases is evident. If the muffler has become clogged with carbon (this will be evident by loss of engine power), replace the muffler.

The service procedure to follow depends entirely upon the various adaptations and installations.

6. ALIGNING EXHAUST SYSTEM PARTS

Whenever any part of the exhaust system has

been replaced, allow the attaching bolts and clamps to remain loose and run the engine to permit all parts of the system to become aligned. Then, tighten all bolts and clamps securely and make certain that the tail pipe and muffler are not interfering with other parts of the truck.

7. MANIFOLD HEAT CONTROL (EXCEPT B-4-J, B-4-K, B-4-JM, B-4-KMA, B-4-R, B-4-T, B-4-V AND B-4-Y)

The exhaust manifold (on trucks listed above) is equipped with an automatic heat control valve which regulates the amount of heat by-passed around the "hot spot" chamber in the intake manifold. Refer to Figure 3.

The B-4-PW is provided with an adjustable heat control shaft. The position of the valve should be regulated according to the season of the year.

SERVICE DIAGNOSIS

CONDITIONS — POSSIBLE CAUSES — REMEDIES

8. EXCESSIVE EXHAUST NOISE

Possible Causes

- a. Burned or blown out muffler.
- b. Exhaust manifold cracked or broken.
- c. Blown gasket between exhaust manifold and cylinder block.
- d. Blown gasket between exhaust pipe and manifold outlet flange.
- e. Improper alignment between manifold and cylinder block.
- f. Burned, broken or cracked exhaust pipe.

Remedies

- a. Install new muffler. Check the complete exhaust system for signs of failure. Repair as required.
- b. Install new manifold. Be sure manifold registers evenly with cylinder block before tightening nuts and bolts.
- c. Install new gaskets, as required, after checking manifold for distortion. Be certain

manifold registers evenly with cylinder block. Then, tighten nuts to the proper torque.

d. Install new gasket after checking flange for cracks or for presence of foreign material that will not allow gasket to seat properly. Tighten bolts evenly.

e. Remove manifold and check mating surfaces. Place manifold on smooth surface and check mating flanges for alignment. If manifold shows signs of distortion, install new manifold and gaskets.

f. Install new exhaust pipe. Check system for alignment and adjust as necessary.

9. LEAKING EXHAUST GASES

Possible Causes

- a. Cracked exhaust manifold.
- b. Loose exhaust pipe connection.
- c. Burned or blown out muffler or exhaust pipe.
- d. Loose manifold mounting nuts or bolts.

- e. Distortion or misalignment at gasket surfaces.
- f. Damaged or improperly installed gaskets.
- g. Restrictions in muffler or tail pipe.

Remedies

- a. Install new manifold and gaskets. Tighten nuts securely.
- b. Install new gasket and tighten connections securely. Check the complete system for alignment and adjust as necessary. A leaking connection will be indicated by the presence of black streaks along pipes.
- c. Install new muffler and pipes if needed. Check alignment of exhaust pipe, muffler and tail pipe, and adjust as necessary.
- d. Install new manifold to block gaskets, if necessary. Tighten nuts to proper torque.
- e. Remove manifold. Check alignment of both intake and exhaust manifold mounting flanges. If misaligned, loosen bolts holding intake to exhaust manifold. Then, install assembly and secure.
- f. Remove manifold and install new gaskets after inspecting cylinder block and manifold mating surfaces. Tighten manifold nuts and bolts evenly, working from center to outer ends of manifold.
- g. Check for bent or pinched exhaust pipe or tail pipe which would retard flow of exhaust gases. Install new parts as needed. If excessive carbon deposits are present, or if truck is sluggish, install a new muffler.

10. VIBRATION NOISES IN EXHAUST SYSTEM

Possible Causes

- a. Bent support bracket at tail pipe or muffler.
- b. Broken supports or insulators.
- c. Muffler striking frame.
- d. Tail pipe striking frame, fuel tank, etc.
- e. Tail pipe broken.
- f. Exhaust pipe broken.
- g. Loose tubes or baffles in muffler.
- h. Loose connections at manifold outlet flange, at muffler, or at tail pipe.

Remedies

- a. Check for damaged support bracket and repair as needed. Check alignment of exhaust system and adjust as required.
- b. Replace broken supports or insulators as required. Check alignment of exhaust system and adjust as required.
- c. Realign exhaust system. Check for bent or broken supports or insulators.
- d. Loosen tail pipe clamp at muffler and rear support. Reposition tail pipe so that it clears all parts by $\frac{1}{2}$ inch.
- e. Install new tail pipe. Check entire exhaust system for alignment and adjust as necessary.
- f. Install new exhaust pipe. Check entire system for alignment and adjust as necessary.
- g. Install new muffler. Check system for alignment and adjust as required.
- h. Tighten connections and check for exhaust gas leakage. Check alignment and correct as needed.

11. ENGINE RUNS ROUGHLY AND IS DIFFICULT TO WARM UP

Possible Cause

Heat control valve not operating or frozen in manifold.

Remedy

Check heat control valve for operation. Repair or replace as needed.

12. ENGINE WILL NOT IDLE OR HAS NO POWER

Possible Causes

- a. Leak at intake manifold.
- b. Leak at carburetor to manifold gasket.

Remedies

- a. Install new manifold to block gaskets. Check operation of truck.
- b. Install new carburetor to manifold gasket. Check operation of truck.