

# TM 9-1816

WAR DEPARTMENT TECHNICAL MANUAL

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*ORDNANCE MAINTENANCE*

## Power Train, Chassis, and Body for 4- to 5-Ton 4 x 4 Tractor Truck (Autocar and Federal)

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*WAR DEPARTMENT*

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*29 APRIL 1944*

**FOR ORDNANCE PERSONNEL ONLY**

*WAR DEPARTMENT TECHNICAL MANUAL*

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**Power Train, Chassis, and  
Body for 4- to 5-Ton  
4x4 Tractor Truck  
(Autocar and Federal)**



**WAR DEPARTMENT**  
Washington 25, D. C., 29 April 1944

TM 9-1816, Ordnance Maintenance: Power Train, Chassis, and Body for 4- to 5-ton 4 x 4 Tractor Truck (Autocar and Federal), is published for the information and guidance of all concerned.

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BY ORDER OF THE SECRETARY OF WAR:

G. C. MARSHALL,  
*Chief of Staff.*

OFFICIAL:

J. A. ULIO,  
*Major General,*  
*The Adjutant General.*

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(For explanation of symbols, see FM 21-6.)

# CONTENTS

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	Paragraphs	Pages
CHAPTER 1. INTRODUCTION	1- 2	6- 8
CHAPTER 2. CLUTCH	3- 16	9- 24
SECTION I. Description and data .....	3- 4	9- 12
SECTION II. Removal .....	5- 6	13- 14
SECTION III. Disassembly, cleaning, inspection, repair, and assembly of subassemblies .....	7- 12	14- 20
SECTION IV. Installation .....	13- 14	20- 22
SECTION V. Test and adjustment .....	15	22- 23
SECTION VI. Fits and tolerances .....	16	24
CHAPTER 3. FUEL SYSTEM .....	17- 25	25- 30
SECTION I. Description and data .....	17- 18	25- 26
SECTION II. Fuel tank .....	19- 23	26- 28
SECTION III. Test and adjustment .....	24	28- 29
SECTION IV. Fits and tolerances .....	25	30
CHAPTER 4. INTAKE SYSTEM .....	26- 28	31- 33
SECTION I. Description .....	26	31
SECTION II. Air cleaner .....	27- 28	31- 33
CHAPTER 5. COOLING SYSTEM .....	29- 41	34- 46
SECTION I. Description .....	29	34
SECTION II. Radiator .....	30- 32	34- 37
SECTION III. Water pump .....	33- 36	37- 43
SECTION IV. Fan .....	37- 40	43- 45
SECTION V. Fits and tolerances .....	41	46
CHAPTER 6. TRANSMISSION — FEDERAL	42- 54	47- 76
SECTION I. Description and data .....	42- 43	47- 54
SECTION II. Disassembly into subassemblies .....	44	54- 58
SECTION III. Disassembly, cleaning, inspection, repair, and assembly of subassemblies .....	45- 51	58- 72
SECTION IV. Assembly of transmission .....	52	72- 74
SECTION V. Test and adjustment .....	53	75
SECTION VI. Fits and tolerances .....	54	75- 76

★This manual supersedes pertinent information in TM 10-1569, dated 6 March 1942. Together with TM 9-816 and TM 9-1832A, this manual supersedes TM 10-1569.

# CONTENTS – Contd.

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	Paragraphs	Pages
<b>CHAPTER 7. TRANSMISSION — AUTOCAR</b>	55– 67	77– 97
<b>SECTION I. Description and data</b> .....	55– 56	77– 81
<b>II. Disassembly into subassemblies</b>	57	81– 85
<b>III. Disassembly, cleaning, inspection, repair, and assembly of subassemblies</b> .....	58– 64	85– 95
<b>IV. Assembly of transmission</b> .....	65	95– 96
<b>V. Transmission test</b> .....	66	97
<b>VI. Fits and tolerances</b> .....	67	97
<b>CHAPTER 8. TRANSFER CASE</b> .....	68– 78	98–115
<b>SECTION I. Description and data</b> .....	68– 69	98–103
<b>II. Disassembly into subassemblies</b>	70	103–105
<b>III. Disassembly, cleaning, inspection, repair, and assembly of subassemblies</b> .....	71– 76	105–113
<b>IV. Assembly of transfer case</b> .....	77	114
<b>V. Fits and tolerances</b> .....	78	115
<b>CHAPTER 9. PROPELLER SHAFTS AND UNIVERSAL JOINTS</b> .....	79– 82	116–121
<b>SECTION I. Description and data</b> .....	79– 80	116–119
<b>II. Disassembly, cleaning, inspection, repair, and assembly</b> ....	81	119–121
<b>III. Fits and tolerances</b> .....	82	121
<b>CHAPTER 10. FRONT AXLE</b> .....	83– 98	122–150
<b>SECTION I. Description and data</b> .....	83– 84	122–124
<b>II. Disassembly into subassemblies</b>	85	124–126
<b>III. Disassembly, cleaning, inspection, repair, and assembly of subassemblies</b> .....	86– 89	126–138
<b>IV. Assembly of front axle</b> .....	90	138
<b>V. Test and adjustment</b> .....	91	138–139
<b>VI. Front end alinement</b> .....	92– 97	139–148
<b>VII. Fits and tolerances</b> .....	98	149–150
<b>CHAPTER 11. REAR AXLE</b> .....	99–108	151–167
<b>SECTION I. Description and data</b> .....	99–100	151–153
<b>II. Disassembly into subassemblies</b>	101	153–157
<b>III. Disassembly, cleaning, inspection, repair, and assembly of subassemblies</b> .....	102–105	157–161
<b>IV. Assembly of rear axle</b> .....	106	161–164
<b>V. Test and adjustment</b> .....	107	164–167
<b>VI. Fits and tolerances</b> .....	108	167

# CONTENTS—Contd.

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	Paragraphs	Pages
CHAPTER 12. WHEEL BRAKES .....	109–111	168–169
SECTION I. Description and data .....	109–110	168–169
SECTION II. Cleaning, inspection, and repair .....	111	169
CHAPTER 13. PROPELLER SHAFT BRAKE AND LINKAGE .....	112–115	170–172
SECTION I. Description and data .....	112–113	170–172
SECTION II. Cleaning, inspection, and repair .....	114–115	172
CHAPTER 14. WHEELS, HUBS, AND TIRES .....	116–124	173–178
SECTION I. Wheels and hubs .....	116–118	173–175
SECTION II. Tires .....	119–121	176
SECTION III. Balancing wheels .....	122–124	176–178
CHAPTER 15. SPRINGS AND SHOCK ABSORBERS .....	125–135	179–186
SECTION I. Springs .....	125–129	179–182
SECTION II. Shock absorbers .....	130–135	182–186
CHAPTER 16. STEERING GEAR .....	136–146	187–200
SECTION I. Description and data .....	136–137	187–188
SECTION II. Removal .....	138–139	188–192
SECTION III. Disassembly into subassemblies .....	140	192–193
SECTION IV. Disassembly, cleaning, inspection, repair, and assembly of subassemblies .....	141	193–195
SECTION V. Assembly of steering gear .....	142	196
SECTION VI. Installation .....	143–144	196–198
SECTION VII. Test and adjustment .....	145	199–200
SECTION VIII. Fits and tolerances .....	146	200
CHAPTER 17. CAB AND FRAME .....	147–163	201–227
SECTION I. Cab .....	147–160	201–225
SECTION II. Frame .....	161–163	225–227
CHAPTER 18. FIFTH WHEEL .....	164–170	228–230
SECTION I. Description and data .....	164–165	228
SECTION II. Disassembly, cleaning, inspection, repair, and assembly .....	166–168	228–230
SECTION III. Test and adjustment .....	169	230
SECTION IV. Fits and tolerances .....	170	230
CHAPTER 19. SPECIAL TOOLS .....	171–172	231
REFERENCES .....		232–234
INDEX .....		235–240

**TM 9-1816****1****ORDNANCE MAINTENANCE – POWER TRAIN, CHASSIS, AND BODY  
FOR 4- TO 5-TON 4 X 4 TRACTOR TRUCK (AUTOCAR AND FEDERAL)****CHAPTER 1****INTRODUCTION****1. SCOPE.**

a. The instructions contained in this manual are for the information and guidance of personnel charged with the maintenance and repair of the Autocar and Federal 4- to 5-ton, 4 x 4 tractor trucks. These instructions are supplementary to field and technical manuals prepared for the using arms. This manual does not contain information which is intended primarily for the using arms, since such information is available to ordnance maintenance personnel in 100-series TM's.

b. This manual contains a description of, and procedure for disassembly, inspection, repair, and assembly of the components of the Autocar and Federal 4- to 5-ton, 4 x 4 tractor trucks. In addition, removal and installation of units are covered in cases where they are the responsibility of higher authority than that of the using arms.

c. TM 9-816, 4- to 5-ton, 4 x 4 Tractor Truck (Autocar) contains a description of, and procedures for, maintenance, adjustment, removal, and installation of components of the Autocar truck.

d. TM 9-820, 4- to 5-ton, 4 x 4 Tractor Truck (Federal) contains a description of, and procedures for, maintenance, adjustment, removal, and installation of components of the Federal truck.

e. TM 9-1825A, Ordnance maintenance: Electrical equipment (Delco-Remy) contains maintenance instructions for Delco-Remy units used on these vehicles.

f. TM 9-1825B, Ordnance maintenance: Electrical equipment (Auto-Lite), contains maintenance instructions on Auto-Lite units used on these vehicles.

g. TM 9-1826C, Ordnance maintenance: Carburetors (Zenith), contains maintenance instructions on the carburetor and governor used on these vehicles.

h. TM 9-1827A, Ordnance maintenance: Power brake systems (Bendix-Westinghouse), contains maintenance instructions on the service brake system.

i. TM 9-1828A, Ordnance maintenance: Fuel pumps, contains maintenance instructions on the fuel pump used on these vehicles.

## INTRODUCTION



**Figure 1 – Autocar Tractor Truck – Right Front View**

j. TM 9-1829A, Ordnance maintenance: Speedometers and tachometers, contains maintenance instructions on the speedometers and tachometers used on these vehicles.

k. TM 9-1832A, Ordnance maintenance: Hercules engines, contains maintenance instructions on the engine used in these vehicles.

## 2. VEHICLE MODIFICATION RECORDS.

### a. MWO and Major Unit Assembly Replacement Record.

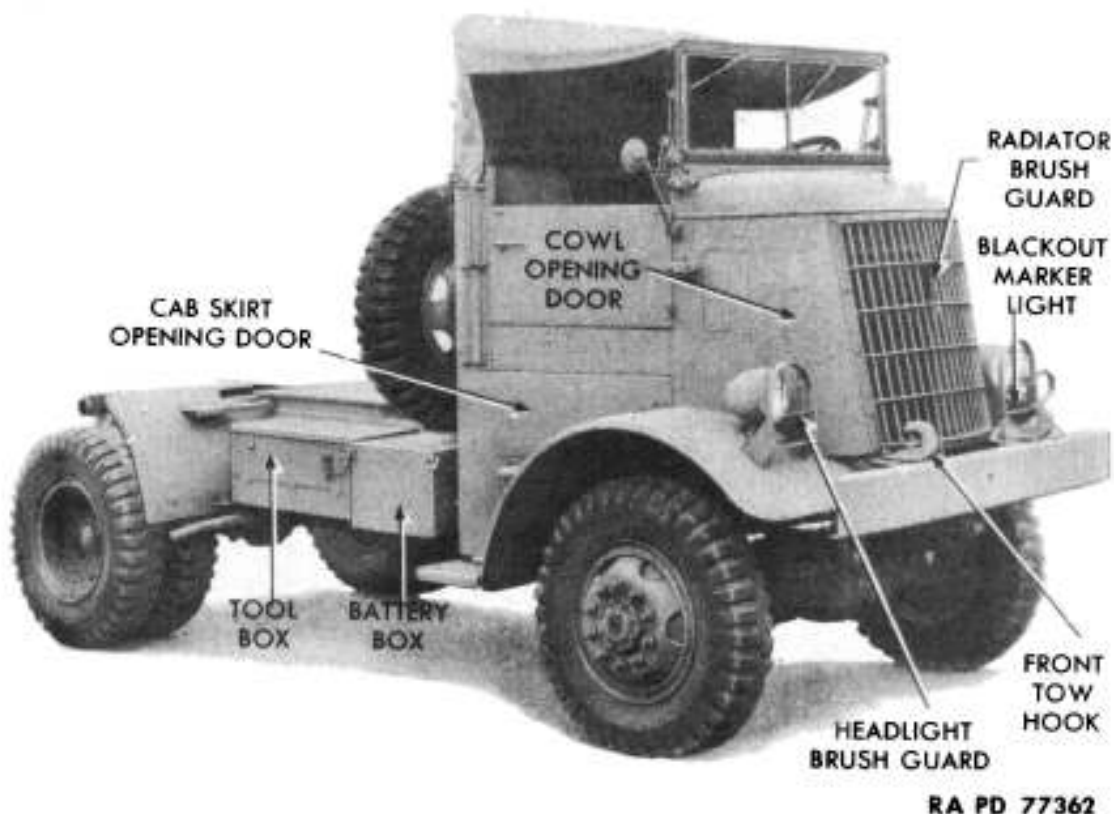
(1) **DESCRIPTION.** Every vehicle is supplied with a copy of AGO Form No. 478 which provides a means of keeping a record of each MWO completed or major unit assembly replaced. This form includes spaces for the vehicle name and U.S.A. Registration Number, instructions for use, and information pertinent to the work accomplished. It is very important that the form be used as directed and that it remain with the vehicle, until the vehicle is removed from service.

(2) **INSTRUCTIONS FOR USE.** Personnel performing modifications or major unit assembly replacements must record clearly on the form a description of the work completed and must initial the form in the columns provided. When each modification is completed, record the date, hours and/or mileage, and MWO number. When major unit assemblies, such as engines, transmissions, or transfer cases are

TM 9-1816

2

**ORDNANCE MAINTENANCE – POWER TRAIN, CHASSIS, AND BODY  
FOR 4- TO 5-TON 4 X 4 TRACTOR TRUCK (AUTOCAR AND FEDERAL)**



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**Figure 2 – Federal Tractor Truck – Right Front View**

replaced, record the date, hours and/or mileage and nomenclature of the unit assembly. Minor repairs and minor parts, and accessory replacements need not be recorded.

(3) **EARLY MODIFICATIONS.** Upon receipt by a third or fourth echelon repair facility of a vehicle for modification or repair, maintenance personnel will record the MWO numbers of modifications applied prior to the date of AGO Form No. 478.

## CHAPTER 2

# CLUTCH

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### Section I

## DESCRIPTION AND DATA

### 3. DESCRIPTION.

a. **Construction** (fig. 3). The single, dry, disk-type clutch, which engages and disengages the engine with the power train, is located within the engine bell housing and the clutch housing between the engine and transmission. The disk, called the driven plate, has friction facings of copper wire reinforced asbestos fiber riveted to each face. It is splined to a shaft or main drive gear, which extends from the transmission and rides on two ball bearings, the clutch pilot bearing in the flywheel and the drive gear ball bearing in the transmission. A main drive gear bearing cap, a flanged tube, extends from the transmission enclosing the main drive gear; fitted on the main drive gear bearing cap is a clutch release sleeve bearing. A pull type coil spring is attached between clutch release sleeve and flange on rear end of main drive gear bearing cap. Twelve cap screws and lock washers attach a flywheel ring and stud assembly to the outer edge of engine flywheel. An adjusting plate rides between the flywheel ring and a clutch throwout sleeve, which encircles the front end of main drive gear bearing cap. The adjusting plate and flywheel ring are attached to each other by studs and nuts which are shimmed to allow clutch adjustment. A large conical coil spring, called the clutch pressure spring, is compressed between clutch throwout sleeve and adjusting plate. A snap ring secures two pressure lever fulcrum rings to the extreme front end of the throwout sleeve. Grooves in the lever fulcrum rings hold 20 clutch pressure lever balls in position; these balls, in turn, hold in position 20 clutch pressure levers which extend onto a clutch pressure plate. Four pressure plate retractor springs, assembled around pins threaded to pressure plate and extending through openings in flywheel ring, connect pressure plate and flywheel ring. The throwout or release bearing on the Autocar truck is lubricated by means of an external oil cup, while a grease cup is used on the Federal truck. The drive gear ball bearing receives its lubrication from the transmission; the clutch pilot bearing is packed with heat resistant grease each time clutch is assembled.

b. **Operation.** Clutch engagement is caused by releasing the clutch pedal, which is connected by linkage to two clutch trunnion levers (Autocar) or to a throwout yoke (Federal). These levers (or this yoke, as the case may be) move back from trunnions on