



1978 Car Shop Manual Volume 1 Chassis



IMPORTANT SAFETY NOTICE

Appropriate service methods and proper repair procedures are essential for the safe, reliable operation of all motor vehicles as well as the personal safety of the individual doing the work. This Shop Manual provides general directions for accomplishing service and repair work with tested, effective techniques. Following them will help assure reliability.

There are numerous variations in procedures, techniques, tools, and parts for servicing vehicles, as well as in the skill of the individual doing the work. This Manual cannot possibly anticipate all such variations and provide advice or cautions as to each. Accordingly, anyone who departs from the instructions provided in this Manual must first establish that he compromises neither his personal safety nor the vehicle integrity by his choice of methods, tools or parts.

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VOLUME 1 CHASSIS

IDENTIFICATION CODES GROUP 10

WHEELS, TIRES, HUBS AND BEARINGS GROUP 11 (1000)

BRAKES GROUP 12 (2000)

STEERING GROUP 13 (3000)

SUSPENSION GROUP 14 (3000-5000)

DRIVING AXLES AND DRIVESHAFTS GROUP 15 (4000)

CLUTCH AND MANUAL TRANSMISSION GROUP 16 (7000)

AUTOMATIC TRANSMISSION GROUP 17 (70000)

NOISE, VIBRATION AND HARSHNESS GROUP 18

IDENTIFICATION CODES

**GROUP
10**

Vehicle Identification

**PART
10-01**

GENERAL DESCRIPTION

OFFICIAL VEHICLE IDENTIFICATION NUMBER

The official Vehicle Identification Number (VIN) (Fig. 1) for title and registration purposes is stamped on a metal tab that is fastened to the instrument panel close to the windshield on the driver's side of the car and is visible from outside.

F 8S63H100001 F
(VEHICLE IDENTIFICATION NUMBER)

MFD. BY FORD MOTOR CO. IN U.S.A.
DATE: 08/77 GVWR 6538
GAWR: FRONT 2964, REAR 3375

THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE SAFETY STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.

F0033 R0155

VEH. IDENT. NO.				TYPE			
BODY	COLOR	TRIM	TRANS.	AXLE	DSO		
53M	1C-YA	DD	X	6	48		

(UNITED STATES)

① CONSECUTIVE UNIT NO.**

② BODY SERIAL CODE

③ MODEL YEAR CODE

④ ASSEMBLY PLANT CODE

⑤ BODY TYPE CODE

⑥ ENGINE CODE

⑦ BODY COLOR CODE

⑧ VINYL ROOF TYPE/COLOR

⑨ TRIM CODE (First Letter = Type of Trim; Second Letter = Color)

⑩ TRANSMISSION CODE

⑪ REAR AXLE CODE

⑫ DISTRICT - SPECIAL EQUIPMENT

⑬ VEHICLE TYPE*

⑭ ACCESSORY RESERVE LOAD

MFD. BY FORD MOTOR CO. IN U.S.A.

DATE: 08/77 GVWR 5892

GAWR: FRONT 2964 REAR 2928

THIS VEHICLE MANUFACTURED FOR EXPORT ONLY ON DATE SHOWN ABOVE.

8S63H100002 PASSENGER

VEH. IDENT. NO.		TYPE	
53H	1C-CA	D	X

(EXPORT)

MFD. BY FORD MOTOR CO. OF CANADA LTD.

THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE SAFETY STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE

VEH. IDENT. NO.		TYPE	
BODY	COLOR	TRIM	TRANS.
		AXLE	DSO

MADE IN CANADA

(CANADA)

*1978 BUILD MODELS DESIGNATED 1977 MODELS WILL HAVE "PASS 1977" IN THIS SPACE.

**1978 BUILD MODELS DESIGNATED 1977 MODELS WILL HAVE ALTERED CONSECUTIVE NUMBERING AS FOLLOWS:

PINTO/MUSTANG II - 400001 THRU 499999

BOBCAT - 750001 THRU 799999



VEHICLE CERTIFICATION LABEL

The Vehicle Certification Label (V.C. Label) (Fig. 1) is affixed on the left front door lock face panel or door pillar. The upper half of the label contains the name of manufacturer, month and year of manufacture, Gross Vehicle Weight Rating (GVWR), Gross Axle Weight Rating (GAWR), and the certification statement.

The V.C. label also contains the Vehicle Identification Number. This number is also used for warranty identification of the vehicle. The first number indicates the model year. The letter following the model year number indicates the manufacturing assembly plant. The next two numbers designate the Body Serial Code followed by a letter expressing the Engine Code.

The last six digits of the Vehicle Identification Number indicate the Consecutive Unit Number of each unit built at each assembly plant. The Consecutive Unit Numbers begin as follows:

100,001—Ford, LTD II, Ranchero, Mustang II, Thunderbird, Granada, Fairmont and Pinto.

500,001—Mercury, Cougar, Zephyr, Monarch and Mercury Bobcat.

800,001—Lincoln Continental and Continental Mark V.

The remaining information on the V.C. Label consists of the following vehicle identification codes:

The BODY code is two numerals and a letter identifying the body style.

The COL (color) code is a number and letter indicating the exterior paint color code and vinyl roof type and color (if equipped).

The TRIM code consists of a two-letter or a letter-number combination designating the interior trim.

The AXLE code is a number or letter indicating the rear axle ratio and standard or locking type axles.

The TRNS. code is a number or letter indicating the type of transmission.

The DSO code, consisting of two numbers, designates the district in which the car was ordered and may appear in conjunction with a Domestic Special Order or Foreign Special Order number when applicable. Ford of Canada DSO codes consist of a letter and number.

The following charts provide the various codes and their respective identification:

IDENTIFICATION CODES

ASSEMBLY PLANT CODES

Code Letter	District
A	Atlanta
B	Oakville (Canada)
E	Mahwah
F	Dearborn
G	Chicago
H	Lorain
J	Los Angeles
K	Kansas City
P	Twin Cities
R	San Jose
S	Allen Park (Pilot)
T	Metuchen
U	Louisville
W	Wayne
X	St. Thomas
Y	Wixom
Z	St. Louis

ENGINE CODES

Codes	No. of Cyls.	Displacement Litres	CID
A	8	7.5	460-4V
C	8	7.5	460-4V (Police Interceptor)
F	8	5.0	302-2V
H	8	5.8	351-2V
L	6	4.1	250-1V
S	8	6.6	400-2V
T	6	3.3	200-1V
Y	4	2.3	139-2V (2.3L)
Z	6	2.8	169-2V (2.8L)

TRANSMISSION CODES

Codes	Type
1	MANUAL
5	3 Speed
6	4 Speed Overdrive
7	4 Speed @
7	4 Speed (b)
V	AUTOMATIC
W	XP (C-3)
X	XP (C-4)
U	FMX
Z	XPL (C-6)
Z	XPL (Special)
@	Borg-Warner (b) Hummer

EXTERIOR PAINT COLOR CODES

Code	Ref. #	Color	Code	Ref. #	Color	Code	Ref. #	Color
1C	1724	Black	7Q	5479	Lt. Aqua Mt.	7T	5490	Med. Emerald Met.
1G	5299	Silver Met.	7S	5489	Dk. Emerald Met.	8J	5484	Med. Tan Met.
1N	5476	Dove Gray	8G	5466	Vista Orange	8W	5491	Chamois Met.
1P	5523	Med. Gray Met. (Two Tone only)	8H	5470	Tan	(RPD) DIAMOND BRIGHT (POLISH) "W"		
1Q	5527	Med. Silver Met.	8K	5486	Brt. Saddle Met.	2S	5444	Dk. Red Met.
2M	3413	Dark Red	8N	5496	Dk. Cordovan Met.	2G	5070	Med. Red Met.
2R	5440	Brt. Red	8P	5471	Lt. Cordovan	32	5511	Med. Blue Met.
2U	5455	Lipstick Red	8Y	5494	Champagne Met.	8V	5495	Med. Ember Met.
3G	5094	Brt. Dk. Blue Met.	83	5524	Chamois	8Z	5510	Med. Nectarine Met.
3U	5467	Lt. Blue	84	5525	Dk. Cordovan	1R	5512	Lt. Silver Met.
31	5499	Midnight Blue	9D	5418	White	(RPD) DIAMOND FLARE (POLISH) "G"		
34	5041	Med. Blue	(RPD) UNIQUE COLORS (NON POLISH) "D"			1J	5411	Silver Met.
46	5328	Dk. Jade Met.	2Y	5492	Rose Met.	1L	5472	Black Met.
47	5404	Lt. Green	3V	5480	Brt. Blue Met.	2T	5462	Rose Met.
4V	5233	Dk. Yellow Green Met.	6V	5298	Tan Met.	6Y	5461	Brt. Yellow Gold Met.
5Q	5477	Dk. Brown Met.		5460	Med. Gold Met.	7B	5463	Crystal Jade Met.
6E	5080	Brt. Yellow	7H	5482	Brt. Aqua Met.			
6P	5406	Cream	7L	5483	Lt. Jade Met.			
6U	5441	Lt. Tan						

DISTRICT CODES
LINCOLN-MERCURY

Code	District
00	Special
11	Boston
15	New York
16	Philadelphia
17	Washington
21	Atlanta
22	Dallas
23	Jacksonville
26	Memphis
31	Buffalo
32	Cincinnati
33	Cleveland
34	Detroit
41	Chicago
42	St. Louis
46	Twin Cities
51	Denver
52	Los Angeles
53	Oakland
54	Seattle
84	Home Off. Reserve
90's	Export

FORD OF CANADA

Mercury Code	Region	Ford Code
A1	Central	81
A2	Eastern	82
A3	Atlantic	83
A4	Midwestern	84
A6	Western	86
A7	Pacific	87
12	Export	12

REAR AXLE RATIO CODES

Conventional Lock	Ratio
Y	3.08
B	2.47
1	2.50
8	2.73
2	2.75
3	2.79
6	3.00
4	3.18
7	3.40

DISTRICT CODES
FORD

Code	District
00	Special
11	Boston
12	Buffalo
13	New York
14	Pittsburgh
15	Newark
16	Philadelphia
17	Washington
21	Atlanta
22	Charlotte
23	Memphis
24	Jacksonville
25	Richmond
26	New Orleans
28	Louisville
41	Chicago
42	Cleveland
43	Milwaukee
45	Lansing
46	Indianapolis
47	Cincinnati
48	Detroit
52	Dallas
53	Kansas City
54	Omaha
55	St. Louis
56	Davenport
57	Houston
58	Twin Cities
71	Los Angeles
72	San Jose
73	Salt Lake City
74	Seattle
75	Phoenix
76	Denver
83	Government
84	Home Off. Reserve
85	American Red Cross
86	Recreational Veh. Pool
87	Body Company
89	Transportation Services
90's	Export

BODY SERIAL AND STYLE CODES

Vehicle	Body Serial Code	Body Style Code	Body Type	Model
PINTO	10	62B	2-Dr. Sedan	Base
	11	64B	3-Dr. Sedan	Base
	12	73B	Wagon	Base
BOBCAT	20	64H	3-Dr. Sedan	U.S.A. & Canada
	22	73H	Wagon	U.S.A. & Canada
	23	62B	2-Dr. Sedan	Canada Only
	24	64B	3-Dr. Sedan	Canada Only
	25	73B	Wagon	Canada Only
MUSTANG II	02	60F	2-Dr.	Base
	03	69F	3-Dr.	Base
	04	60H	2-Dr.	Ghia
	05	69R	3-Dr.	Mach I
GRANADA	82	54H	4-Dr. Sedan	Base
	81	66H	2-Dr. Sedan	Base
MONARCH	34	54H	4-Dr. Sedan	Base
	33	66H	2-Dr. Sedan	Base
VERSAILLES	84	54M	4-Dr. Sedan	Base
LTD II	25	65B	2-Dr. Hardtop	LTD II S
	27	53B	4-Dr. Pillar Hardtop	LTD II S
	30	65D	2-Dr. Hardtop	LTD II
	31	53D	4-Dr. Pillar Hardtop	LTD II
	43	71K	LTD II Squire	Wagen
	47	97D	500	LTD II
	48	97R	GT	Ranchero
	49	97K	Squire	
FAIRMONT	92	54B	4-Dr. Sedan	Base
	91	66B	2-Dr. Sedan	Base
	93	66R	2-Dr. Sedan	Sport Coupe
	94	74B	Wagon	

Vehicle	Body Serial Code	Body Style Code	Body Type	Model
COUGAR	92	53D	4-Dr. Pillar Hardtop	Cougar
	91	65D	2-Dr. Hardtop	Cougar
	93	65L	2-Dr. Hardtop	Cougar XR-7
THUNDERBIRD	87	60H	2-Dr. Pillar Hardtop	Base
FORD	52	60D*	2-Dr. Pillar Hardtop	Custom 500
	53	53D	4-Dr. Pillar Hardtop	Custom 500
	62	60H	2-Dr. Pillar Hardtop	LTD
	63	53H	4-Dr. Pillar Hardtop	LTD
	64	53L	4-Dr. Pillar Hardtop	LTD Landau
	65	60L	2-Dr. Pillar Hardtop	LTD Landau
	72	71D	Custom 500/LTD II	Wagon
	74	71H	LTD	Wagon
MERCURY	62	53H	4-Dr. Pillar Hardtop	Marquis (FLD)
	61	65H	2-Dr. Hardtop	Canada Only
	66	53L	4-Dr. Pillar Hardtop	Grand Marquis
	65	65L	2-Dr. Hardtop	Grand Marquis
	64	53K	4-Dr. Pillar Hardtop	Marquis Brougham
	63	65K	2-Dr. Hardtop	Marquis Brougham
	74	71K	Marquis**	Wagon
CONTINENTAL MARK V	89	65D	2-Dr. Hardtop	Base
LINCOLN CONTINENTAL	81	60B	2-Dr. Pillar Hardtop	Base
	82	53B	4-Dr. Pillar Hardtop	Base
ZEPHYR	32	54D	4-Dr. Sedan	Base
	31	66D	2-Dr. Sedan	Base
	35	36R	2-Dr. Sedan	Sport Coupe
	36	74D	Wagon	

CY1615-2E

VINYL ROOF TYPE AND COLOR IDENTIFICATION

Code	Vinyl Type	Code	Vinyl Type	Code	Vinyl Color	Code	Vinyl Color
W	Lugano Full	Z	Valino Front Half	A	Black	F	Cordovan
X	Lugano Half	T	Valino Coach	B	Blue, Medium	K	Cordovan, Light
K	Lugano Front Half	B	Crosshatch Full	S	Blue, Midnight		Gold, Galveston
M	Lugano Coach	R	Crosshatch Half	5	Blue, Wedgewood	E	Gray, Dove
D	Milano Full	S	Levant Full	T	Brown, Dark	R	Jade, Dark
E	Milano Half	E	Levant Half Rear (Mustang Dev.)	V	Camel, Lt.	M	Jade, Light
F	Milano Halo			Y	Camel, Medium	4	Jade, Medium
Q	Cayman Full	G	Odense Full	U	Chamois	3	Jade, Wedgewood
U	Cayman Half	N	Odense Half	6	Champagne, Light	D	Red/Russet
V	Valino Full	A	Odense Front Half	J	Champagne, Midnight	P	Silver
Y	Valino Half					W	White

When a Vinyl Roof is installed the type and color codes will be reflected after the two digit Exterior Paint Color Code.

Example: Code - 1CYA = 1C--Black Car, YA--Valino Black Half Roof.

CY1615-2E1

WHEELS AND TIRES

GROUP
11

PART TITLE	PART NO.	PART TITLE	PART NO.
General Wheel and Tire Service	11-01	Wheel Hubs and Bearings — Rear — Refer to	
Wheels and Tires — Drop Center Rim	11-02	Rear Axles, Parts 15-02, 15-03, 15-06 or 15-10	
Wheel Hubs and Bearings — Front	11-10		

CF2508-2B

General Wheel and Tire Service

PART
11-01

Applies to All Models

SUBJECT	PAGE	SUBJECT	PAGE
ADJUSTMENTS		CLEANING AND INSPECTION	
Front Wheel Bearing Maintenance	01-1	Tire Inspection	01-3
Tire Sizes	01-1	Wheel Inspection	01-3
Wheel Balancing	01-1	SPECIFICATIONS	01-4

CF2509-2A

ADJUSTMENTS

WHEEL BALANCING

Use the instructions provided with the Rotunda Wheel Balancer or equivalent dynamic type wheel balancer.

Be sure brakes are not dragging before spinning the wheels. On vehicles equipped with disc brakes, push the brake shoes into the caliper to free the rotor.

FRONT WHEEL BEARING MAINTENANCE

Wheel bearings can be adjusted to correct bearing and spindle shoulder wear. Long bearing life depends on proper adjustment and correct lubrication.

If bearings are too tight, they will overheat and wear rapidly. Loose bearings can cause pounding and contribute to uneven tire wear, steering difficulties, and inefficient braking.

Check bearing adjustment at regular inspection intervals. Refer to Part 11-10 for front wheel bearing service instructions.

TIRE SIZES

It is mandatory to use only the tire sizes recommended on the tire chart attached to the vehicle. **Larger or smaller tires can damage the vehicle and affect durability and may require changing the speedometer drive gears.** Be sure wheel size and offsets match those recommended for the tire in use (Fig. 1 and 2).

Be sure all tires (including snow tires) and wheels on the vehicle are the same size, type, and load-carrying capacity. Never mix radial, belted, and conventional-type tires.

Use Rotunda Tire Changer 35-0010 or equivalent to install tires.

Follow the instructions provided with the changer.

Car Line	Code	Color/Style	Wheel Size	No. of Bolts	Bolt Circle Dia.	Offset	Tire Usage	Size
Pinto/Bobcat Mustang II	GM	Yellow-Yellow	13 x 5	4	4.25	.62	A70, A78, B78, BR78, BR70	-13
	MH	Styled-Steel Orange-Violet	13 x 5	4	4.25	.62	A70, A78, B78, BR78, BR70	-13
	SH	Alum.-Forged	13 x 5.5	4	4.25	.39	A78, B78, BR78, BR70	-13
Pinto/Bobcat/ Mustang II	RW	Alum.-Forged Painted White	13 x 5.5	4	4.25	.39	BR70, B78, BR78, CR70, A78	-13
Bobcat	MH	Pink-Pink Styled-Steel	13 x 5	4	4.25	.62	A78, B78, BR78, BR70	-13
Mustang II	GM	Yellow-Yellow	13 x 5	4	4.25	.62	B78, BR78, BR70	-13
	MH	Styled-Steel Pink-Pink	13 x 5	4	4.25	.62	B78, BR78, BR70	-13
	CD	White-White	13 x 5.5	4	4.25	.39	195/70R	-13
	MS	Styled-Steel Green-Violet	13 x 5.5	4	4.25	.39	195/70R	-13
	BB	Alum.-Forged	13 x 5.5	4	4.25	.39	B78, BR78, BR70, 195/70R	-13
	CS	Alum.-Cast	13 x 5.5	4	4.25	.39	B78, BR78, BR70, 195/70R	-13
	RF	Alum.-Cast White	13 x 5.5	4	4.25	.39	B78, BR78, BR70, 195/70R	-13
	RF	Alum.-Cast Tan	13 x 5.5	4	4.25	.39	B78, BR78, BR70, 195/70R	-13
Fairmont/Zephyr	MF	Brown-Brown	14 x 5	4	4.25	1.12	B78, BR78, C78, CR78, DR78	-14
		Alum.-Cast	14 x 5.5	4	4.25	1.12	C78, CR78, DR78, B78, BR78	-14
Grenada/Monarch	JG	Green-Violet	14 x 6	5	4.50	.00	DR78, ER78, FR78, D78*	-14
	KZ	Styled-Steel Orange-Orange	14 x 6	5	4.50	.00	DR78, ER78, FR78	-14
	BZ	Alum.-Cast	14 x 6	5	4.50	.00	DR78, ER78, FR78	-14
	WP	Alum.-Cast White	14 x 6	5	4.50	.00	DR78, ER78, FR78	-14
Versailles	MM	Alum.-Forged	14 x 6	5	4.50	.00	FR78	-14
	JG	Green-Violet	14 x 6	5	4.50	.00	FR78, F78*	-14
Ranchero	HG	Styled-Steel White-Red	14 x 7	5	4.50	.25	G78, H78, G70, H70, HR78	-14
	GK	White-Brown	14 x 6	5	4.50	.25	G70, G78, H70, H78, HR78	-14
LTD II - Cougar	EI	Pink-Pink	15 x 6	5	4.50	.45	HR78, H78	-15
	AK	Pink-Green	15 x 6.5	5	5.00	.45	Police INTERCEPTOR	-15
	AD	Pink-White	14 x 5.5	5	4.50	.25	HR78, H78*	-14
LTD II - Taxi	ZN	Brown-Violet	15 x 6.5	5	5.00	.45	HR78	-15
LTD II - Cougar - Cougar XR-7 - Thunderbird	AL	Alum.-Cast	15 x 6.5	5	4.50	.45	HR78, HR70	-15
Cougar XR-7 - Thunderbird	EI	Pink-Pink	15 x 6	5	4.50	.45	HR78	-15
	FA	Gray-Gray	15 x 6.5	5	4.50	.45	HR70	-15
	GG	Red-Brown	15 x 6	5	4.50	.45	HR78	-15
	GC	Yellow-Brown	15 x 6	5	4.50	.45	H70, HR70	-15
	AL	Alum.-Cast	15 x 6.5	5	4.50	.45	HR70, HR78	-15
Cougar XR-7	GG	Red-Violet	15 x 6	5	4.50	.45	HR78	-15

F1020-2M1

FIG. 1 Car Tire/Wheel Combinations

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Car Line	Code	Color/Style	Wheel Size	No. of Bolts	Bolt Circle Dia.	Offset	Tire Usage	Size
Cougar Sedans/LTD II 2-Door Spt. Sedan Option	HG	Styled-Steel White-Red	14 x 7	5	4.50	.25	HR78	-14
Ford/Mercury	Y8	Orange-Orange	15 x 6	5	5.00	.45	HR78, JR78, GR78†	-15
	ZN	Brown-Violet	15 x 6.5	5	5.00	.45	HR78, JR78, LR78	-15
	AK	Pink-Green	15 x 6.5	5	5.00	.45	Police Interceptor	-15
	AT	Alum.-Forged	15 x 6	5	5.00	.45	HR78, JR78, LR78, GR78†	-15
Lincoln/Mark V	YA	Red-Green	15 x 6	5	5.00	.45	JR78, 225, LR78, 230, L78*	-15
	AD	Alum.-Forged	15 x 6	5	5.00	.45	JR78, 225, LR78, 230	-15
	EW	Alum.-Cast	15 x 6	5	5.00	.45	JR78, 225, LR78, 230	-15
	XA	White-Yellow	15-5.5	5	5.00	.45	J76*	-15

*Collapsible Spare
† Ford Only

F1820-2M2

FIG. 2 Car Tire/Wheel Combinations

CLEANING AND INSPECTION

WHEEL INSPECTION

Inspect the hub nuts and torque to specification. Loose hub nuts can cause shimmy and vibration, and may also distort the stud holes in the wheels.

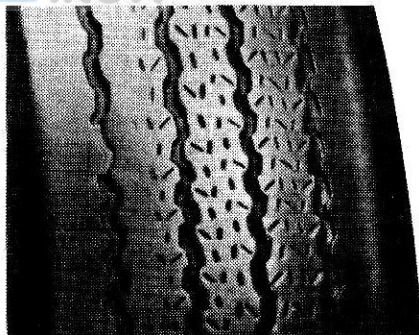
Be sure wheels and hubs are clean. Stones wedged between the wheel and rotor or rear drum or lumps of mud and grease can unbalance the wheel.

Check for wheel damage. Wobble or shimmy caused by a damaged wheel will eventually damage the bearings. Inspect the rims for dents that could leak air.

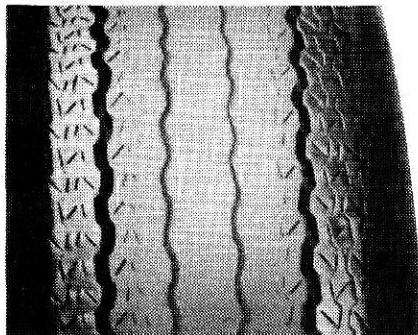
Inspect the front hubs and bearings whenever the hubs are removed, or at regular inspection intervals.

TIRE INSPECTION

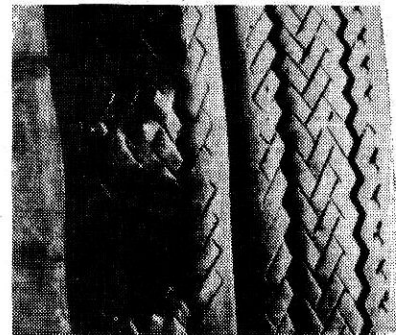
Inspect tires for wear. Abnormal or excessive wear may be caused by incorrect wheel alignment, wheel/tire imbalance, or improper tire pressure. Figure 3 shows typical wear patterns.



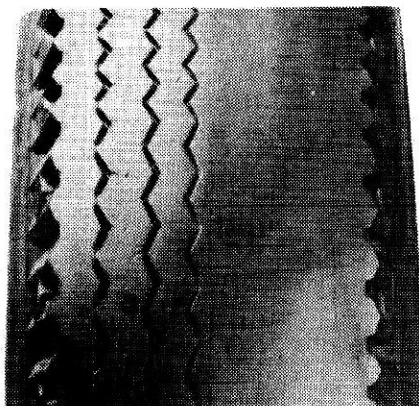
UNDERINFLATION



OVERINFLATION



CUPPING - UNDERINFLATION AND/OR MECHANICAL IRREGULARITIES SUCH AS OUT-OF-BALANCE CONDITION OF WHEEL AND/OR TIRE, AND BENT OR DAMAGED WHEEL.
POSSIBLE LOOSE OR WORN STEERING TIE-ROD OR STEERING IDLER ARM.
POSSIBLE LOOSE, DAMAGED OR WORN FRONT SUSPENSION PARTS.



INCORRECT TOE-IN OR EXTREME CAMBER



FEATHERING DUE TO MISALIGNMENT

F1467-2E

FIG. 3 Tire Wear Conditions**SPECIFICATIONS****TORQUE LIMITS - FT-LB**

Wheel Attaching	
Nuts - All Cars	70-115

CF2559-1A

Wheels and Tires— Drop Center Rim

PART
11-02

Applies to All Vehicles

SUBJECT	PAGE	SUBJECT	PAGE
DESCRIPTION		REMOVAL AND INSTALLATION (Cont'd.)	
Collapsible Spare Tire	02-1	Removing and Installing Tire	02-2
Front Wheel Assembly	02-1	Wheel and Tire Installation	02-2
Rear Wheel Assembly	02-1	Wheel and Tire Removal	02-2
REMOVAL AND INSTALLATION			
Hoisting Instructions	02-2		

CF2510-2B

DESCRIPTION

COLLAPSIBLE SPARE TIRE

The Collapsible Spare Tire, for Thunderbird, Continental Mark V, Lincoln Continental, Granada, Monarch, Versailles, LTD II, Cougar and Cougar XR-7 is installed on the wheel in a deflated condition and protrudes barely beyond the rim of the wheel.

The collapsible space saver spare tire is designed to provide more luggage room. A can of tire inflation propellant is provided with the tire, and is located in the luggage compartment. **Be sure to read all instructions on can and collapsible spare tire before use. Do not use this tire for extended mileage or for speeds above 50 mph. Do not exceed the vehicle maximum load rating. Do not use tire chains with this tire. Do not exceed 35 psi air pressure.**

Directions For Use

1. If temperature is 10°F or below, warm inflator before use. Place inflator over defroster outlet of car, set heater for "defrost" at highest temperature and run blower at highest setting for a minimum of 10 minutes.
2. Bolt Collapsible Spare Tire and wheel assembly on car with air valve at bottom before inflating tire (see diagram on inflator bottle).
3. Remove plastic cap from inflator and valve cap from tire. Push inflator onto valve stem until sound of gas entering tire can be heard.

While inflating, keep hands off the metal parts of the inflator, since it becomes extremely cold during discharge. **When completely used, the inflator will fill the tire within specifications.**

4. One minute after sound stops, remove inflator and replace valve cap. When first filled or after car has been standing for a considerable length of time, the tire may not appear fully inflated. In this case, drive slowly for the first mile; this will increase the pressure in the tire.

5. Dispose of the inflator in a safe waste receptable. Do not incinerate or puncture.
6. Remove the Collapsible Spare Tire as soon as the conventional tire can be repaired or replaced. The Collapsible Spare Tire is not designed for use as a conventional tire. To deflate Collapsible Spare Tire, remove valve core. Flatten tire and replace core and cap.
7. The tire inflator is not rechargeable. If you must use it, be sure to obtain a replacement for the next emergency use.
8. For Granada and Monarch use Ford Part D5DA-19F514-AA or equivalent. For Thunderbird, Continental Mark V, Cougar XR7 and Lincoln Continental use D60A-19F514-AA or equivalent. For LTD II and Cougar use D60A-19F514-AA or equivalent. For Versailles, use D50A-19F514-AA or equivalent.

Ordinarily, a vehicle is operated with only the original spare in the trunk. In the event that the *original spare and the Collapsible Spare Tire are stored together*, the Collapsible Spare Tire must be considered as luggage weight of 50 pounds when utilizing the rated luggage load information.

FRONT WHEEL ASSEMBLY

Each front wheel is bolted to the hub and rotor assembly. Two opposed and tapered roller bearings and a grease retainer, to prevent leakage onto the braking surface, are installed in the hub.

An adjusting nut, nut lock, and cotter pin attach the front wheel assembly including the hub and rotor to the spindle (Figs. 1 and 2, Part 11-10).

REAR WHEEL ASSEMBLY

The rear wheel brake drum or disc brake rotor is attached to studs on the rear axle shaft hub flange. The

wheel and tire mounts on the same rear axle shaft flange studs and is held against the hub and drum or rotor by the wheel nuts. The rear wheel bearing is pressed onto the axle shaft just inside the shaft flange,

and the entire assembly is held in the rear axle housing by the bearing retainer plate or disc brake axle adapter which is bolted to the housing flange or by C-locks which retain the axle shaft in the differential case.

REMOVAL AND INSTALLATION

HOISTING INSTRUCTIONS

Incorrect hoisting can damage steering linkage components and front-end suspension struts.

On two-post hoists, place the adaptors under the lower arms, or (except Pinto and Mustang) the No. 1 crossmember. **Make sure the adaptors do not rest on the steering linkage.** If the adaptors are placed under the crossmember, place a block of wood 2 x 4 x 16 inches on the hoist channel between the adaptors to prevent damage to the struts.

WHEEL AND TIRE REMOVAL

1. Remove the wheel cover. Loosen, but do not remove, the hub nuts.
2. Raise the vehicle until the tire clears the floor.
3. Remove the hub nuts and pull the wheel off the hub.

WHEEL AND TIRE INSTALLATION

1. Clean all dirt from the hub mounting surface.
2. Place the wheel on the hub. Install the hub nuts and tighten them alternately to draw the wheel evenly against the hub.
3. Lower the vehicle and torque the hub nuts to specification.

REMOVING AND INSTALLING TIRE

Follow the instructions provided with Rotunda Tire Changer 35-0010 or equivalent. Additional information about this tire changer can be found under Adjustments, Part 11-01.

Whenever a radial ply tire is removed from a wheel, it should be marked so it cannot be installed in a reversed position.

Wheel Hubs and Bearings—Front		PART 11-10	
Applies to All Models			
SUBJECT	PAGE	SUBJECT	PAGE
ADJUSTMENTS		REMOVAL AND INSTALLATION	
Front Wheel Bearing Adjustment	10-2	Front Wheel Grease Seal and Bearing Replacement and Lubrication	10-2
Hoisting Instructions	10-2	Front Hub and Rotor Assembly	10-4
DESCRIPTION		Hoisting Instructions	10-2
Front Wheel Assembly	10-1	SPECIAL TOOLS	10-3

CF2512-2A

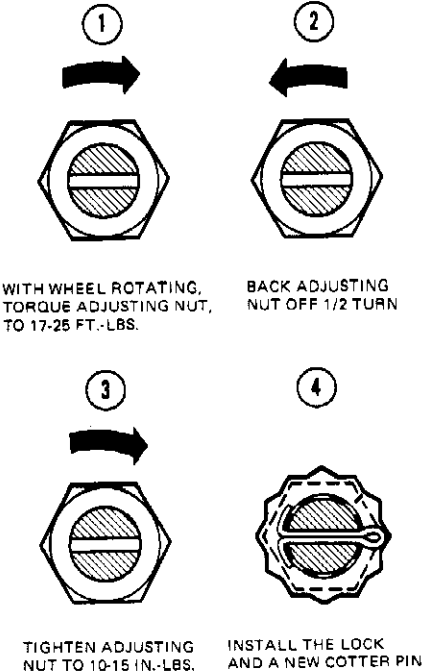
DESCRIPTION

FRONT WHEEL ASSEMBLY

Each front wheel is bolted to the hub and rotor assembly. Two opposed and tapered roller bearings and a grease retainer, to prevent leakage onto the rotor, are also installed in the hub.

An adjusting nut, nut lock, and cotter pin attach the assembly to the spindle (Fig. 2).

The front wheel spindle has a dog-nosed outer end fastened by a smaller, copper-colored nut lock and a heavier cotter pin. **These parts cannot be used on models built prior to 1974.**



F1417-1A

FIG. 1 Front Wheel Bearing Adjustment

ADJUSTMENTS

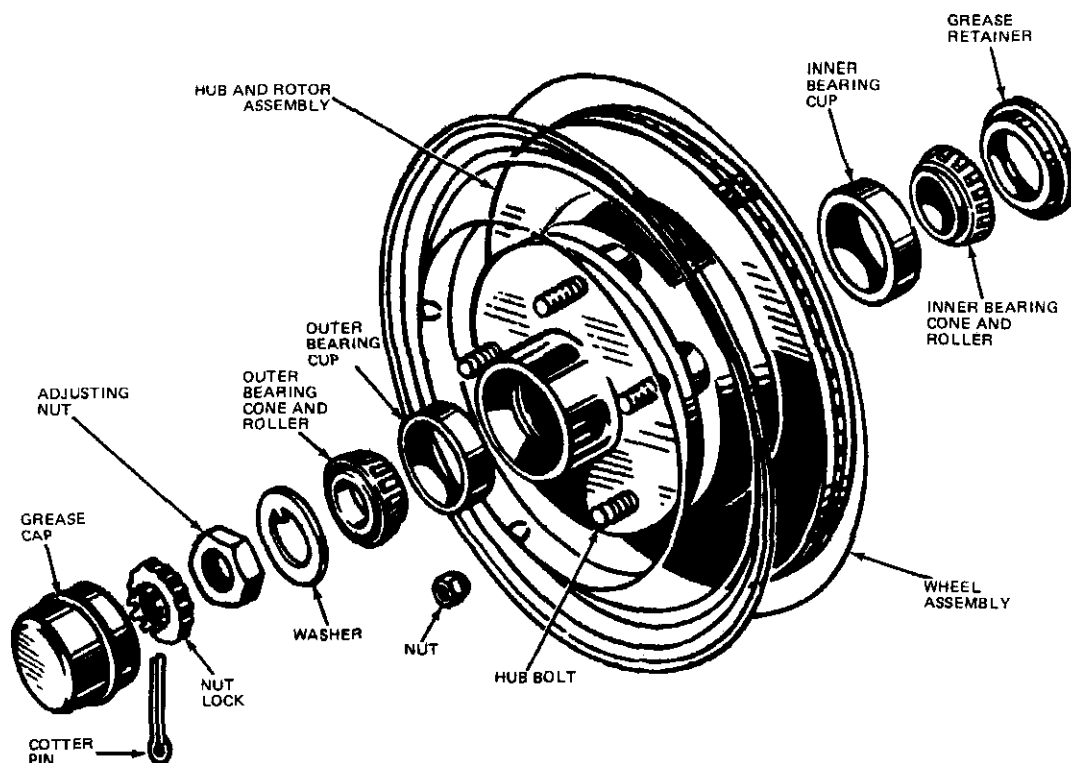
HOISTING INSTRUCTIONS

Refer to Part 11-02 for Hoisting Instructions.

FRONT WHEEL BEARING ADJUSTMENT

If the wheel is loose on the spindle or does not rotate freely, adjust the front wheel bearings as follows:

1. Raise the vehicle until the tire clears the floor.
2. Remove the wheel cover. Remove the grease cap from the hub.
3. Wipe the excess grease from the end of the spindle. Remove the cotter pin and nut lock.
4. Loosen the adjusting nut three turns and rock the wheel, hub and rotor assembly in and out several times to push the shoe and linings away from the rotor.
5. While rotating the wheel, hub, and rotor assembly, torque the adjusting nut to 17 to 25 ft-lb, to seat the bearings. (Fig. 1).
6. Loosen the adjusting nut one-half turn, then retighten to 10 to 15 in-lb, using a torque wrench.
7. Place the nut lock on the adjusting nut so the castellations on the lock are in line with the cotter pin hole in the spindle.
8. Install a new cotter pin and bend the ends around the castellated flange of the nut lock.
9. Check front wheel rotation. If the wheel rotates properly, reinstall the grease cap and wheel cover. If rotation is noisy or rough, follow the inspection, lubrication and replacement procedures given under Removal and Installation in this Part.
10. Before driving the vehicle, pump the brake pedal several times to restore normal brake pedal travel.



F1416-2B

FIG. 2 Front Hub, Bearing and Grease Retainer—Disc Brakes

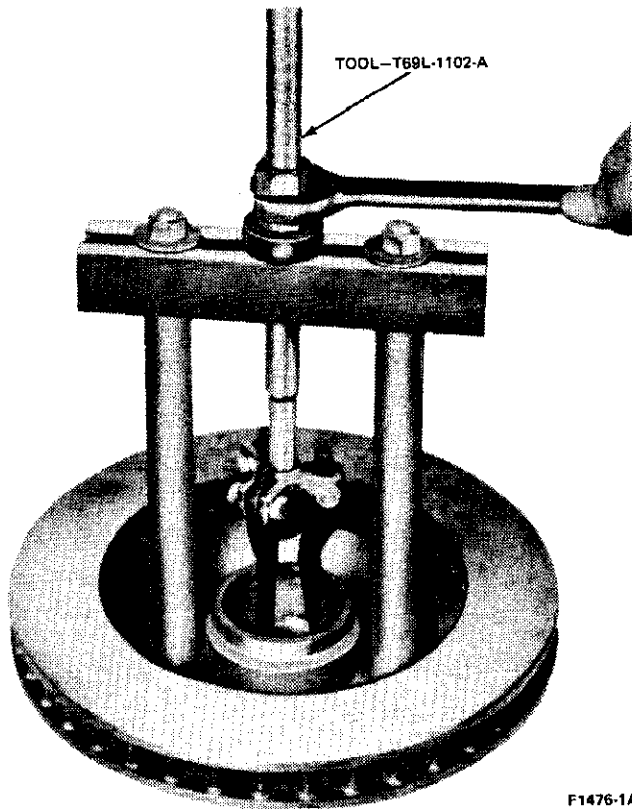
REMOVAL AND INSTALLATION

HOISTING INSTRUCTIONS

Refer to Part 11-02 for Hoisting Instructions.

FRONT WHEEL GREASE SEAL AND BEARING REPLACEMENT AND LUBRICATION

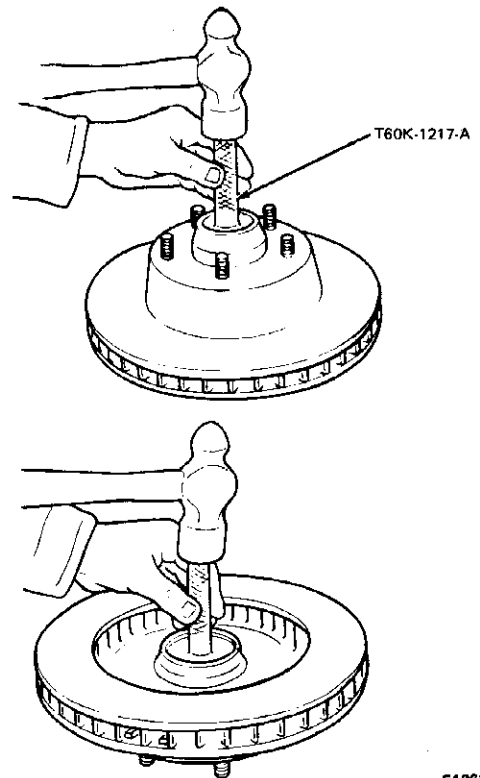
1. Raise the vehicle until the tire clears the floor and remove wheel from hub and rotor.
2. Remove the caliper from the anchor plate, as outlined in Group 12 and wire it to the underbody to prevent damage to the brake hose.
3. Remove the grease cap from the hub. Remove the cotter pin, nut lock, adjusting nut, and flat washer from the spindle. Remove the outer bearing cone and roller assembly. (Fig. 2).
4. Pull the hub and rotor assembly off the spindle.



F1476-1A

FIG. 3 Removing Front Wheel Bearing Cups

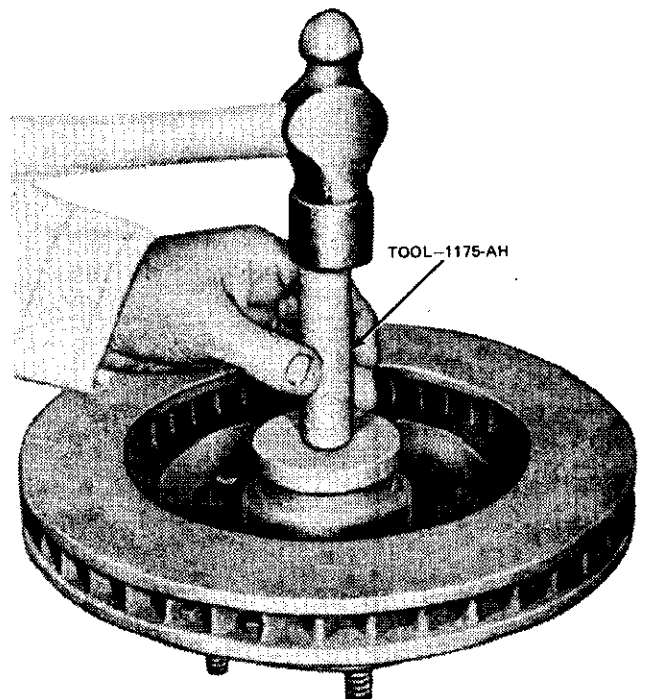
5. Using Tool 1175AC remove and discard the grease retainer. Remove the inner bearing cone and roller assembly from the hub.
6. Clean the inner and outer bearing cups with solvent. Inspect the cups for scratches, pits, excessive wear, and other damage. If the cups are worn or damaged, remove them with Tool T69L-1102-A (Fig. 3).
7. Wipe out all old lubricant from the spindle and the inside of the hub. Cover the spindle with a clean cloth, and brush all loose dust and dirt from the dust shield. **Carefully remove the cloth from the spindle, to prevent dirt from falling on it.**
8. If the inner or outer bearing cups were removed, install replacement cups using the tools or equivalent shown in Fig. 4. **Be sure to seat the cups properly in the hub.**
9. Thoroughly clean all old grease from the surrounding surfaces.
10. Using a bearing packer, pack the bearing cone and roller assemblies with the specified grease. If a packer is not available, work as much grease as possible between the rollers and cages. Grease the cone surfaces.
11. Place the inner bearing cone and roller assembly in the inner cup. Apply a light film of grease to the lips of a new grease retainer and install the retainer with Tool 1175-AH shown in Fig. 5. Be sure the retainer is properly seated.
12. Install the hub and rotor assembly on the spindle. **Keep the hub centered on the spindle to prevent damage to the retainer and the spindle threads.**



F1263-1C

FIG. 4 Installing Front Wheel Bearing Cups

13. Install the outer bearing cone, roller assembly, and flat washer on the spindle. Install the adjusting nut finger tight (Fig. 2). Adjust wheel bearings as outlined in this Part.



F1443-1A

FIG. 5 Installing Grease Retainer—Disc

14. Install the caliper to the anchor plate, as detailed in Group 12.
15. Install the wheel and tire on the hub.
16. Lower the vehicle and torque the lug nuts to specification (70-115 ft-lbs.). Reinstall the wheel cover.
17. Before driving the vehicle, pump the brake pedal several times to restore normal brake pedal travel.

FRONT HUB AND ROTOR ASSEMBLY— REMOVAL AND INSTALLATION

A new grease retainer must be installed when the hub and rotor assembly is replaced.

1. Raise the vehicle until the tire clears the floor. Remove wheel cover. Remove the wheel and tire from the hub and rotor assembly.
2. Remove the caliper from the anchor plate as outlined in Group 12, and wire it to the underbody to prevent damage to the brake hose.
3. Remove the grease cap from the hub. Remove the cotter pin, nut lock, adjusting nut, and flat washer from the spindle. Remove the outer bearing cone and roller assembly (Fig. 2).
4. Pull the hub and rotor off the spindle.
5. Remove the protective coating from the new hub and rotor with carburetor degreaser.
6. Using a bearing packer, force new grease into the bearing cone and roller assemblies. If a packer is not available, work as much grease as possible between the rollers and cages. Grease the cone surfaces.
7. Place the inner bearing cone and roller assembly in the inner cup. Apply a light film of grease to a new grease retainer and install the retainer with Tool 1175-AH. (Fig. 5) **Be sure the retainer is properly seated.**
8. Install the new hub and rotor assembly to the wheel spindle. **Keep the hub centered on the spindle to prevent damage to the retainer.**
9. Install the outer bearing cone roller assembly, and flat washer on the spindle. Install the adjusting nut. Adjust the bearings as outlined in this Part.
10. Install the caliper to the spindle and tighten the bolts to specification, as detailed in Group 12.
11. Place the wheel and tire on the new hub and rotor. Install the hub nuts and tighten them alternately to draw the wheel evenly against the hub and rotor.
12. Lower the vehicle and torque the wheel nuts to specification.
13. Before driving the vehicle, pump the brake pedal several times to restore normal brake pedal travel.

SPECIAL SERVICE TOOLS

Tool No.	Description	Tool No.	Description
Tool-1175-AC T69L-1102-A T60K-1217-A	Grease Seal Remover Front Wheel Bearing Remover Front Wheel Bearing Cup (Outer) Installer-Disc	Tool-1217-K Tool-1175-AH	*Front Wheel Bearing Cup (Inner) Installer-Disc Grease Seal Installer-Disc

*Pinto, Bobcat, Mustang II, Versailles, Fairmont, Zephyr, Granada and Monarch Only.

CF1826-2D

BRAKES

GROUP
12
(2000)

PART TITLE	PART NO.	PART TITLE	PART NO.
Disc Brakes — Single Piston, Sliding Caliper	12-20	Hydraulic Brake Booster	12-51
Drum Brakes — Single Cylinder, Dual Piston	12-02	Parking Brakes — Cable Actuated, Rear Wheels . . .	12-70
General Hydraulic Brake Service	12-01	Vacuum Brake Booster	12-50

General Hydraulic Brake Service

PART
12-01

Applies To All Cars

SUBJECT	PAGE	SUBJECT	PAGE
ADJUSTMENTS		DIAGNOSIS AND TESTING (Cont'd.)	
Centralizing the Pressure		Brake Pedal Travel Measurement	01-15
Differential Valve	01-20	Diagnostic Techniques	01-14
Hydraulic System Bleeding	01-18	General Brake System Diagnosis	01-3
Vacuum Power Brake Master Cylinder		General Brake System Diagnosis Guide	01-4
— Push Rod Adjustment	01-18	Hydro-Boost Power Brake Diagnosis Guide . . .	01-13
CLEANING AND INSPECTION		Hydraulic System Diagnosis	01-13
Brake Booster	01-32	Master Cylinder Diagnosis Guide	01-10
Brake Hose	01-32	Master Cylinder Diagnosis and	
Brake Tubing	01-32	Testing	01-13
Disc Brakes	01-31	Power Brake Functional Test —	
Disc Brake Service Precautions	01-32	Hydro-Boost	01-17
Drum Brakes	01-32	Power Brake Functional Test —	
Hydraulic Lines	01-32	Vacuum Booster	01-17
DESCRIPTION		OVERHAUL	
Control Valve Assembly	01-2	Dual Master Cylinder	01-30
Dual Brake System	01-2	REMOVAL AND INSTALLATION	
Pressure Differential and		Brake Control Valve Assembly	01-23
Proportioning Valve	01-2	Brake Pedal	01-29
DIAGNOSIS AND TESTING		Dual Master Cylinder	01-20
Brake Control Valve Diagnosis Guide	01-12	SPECIFICATIONS AND	
Brake Pedal Free Height Measurements	01-15	SPECIAL TOOLS	01-33

CH2560-2A