



**OPERATOR'S
HANDBOOK**

**MH
SERIES**



TABLE OF CONTENTS



REPORTING SAFETY DEFECTS	2
CUSTOMER SERVICE	3
ADVISORY LABELS	7
IMPORTANT	8
TO THE OWNER	9
SERVICE LITERATURE	10
WARRANTY	12
UNIT IDENTIFICATION	14
VEHICLE CERTIFICATION LABEL	18
CAB ENTRY	20
CAB EXIT	27
DOOR HANDLES	35
SEAT BELTS	36
STEERING COLUMN	38
TELL -TALES	41
INSTRUMENTS AND CONTROLS	43
INSTRUMENTS AND CONTROLS	51
DYNATARD ENGINE BRAKE	54
HEATER AND AIR CONDITIONER	58
INTER-AXLE POWER DIVIDER CONTROL	61
OVERHEAD FEATURES	63
BUNK AREA	64
CAB TILT	65
ELECTRICAL	70
OPERATION	73
DAILY INSPECTION	80
STARTING	82
MOVING THE VEHICLE	85
COOLING SYSTEM	86
ENGINE	88
POWER TAKE OFF UNIT	91
CLUTCH	92
TRANSMISSION	94
TWO SPEED REAR AXLE	117



TABLE OF CONTENTS



ALL WHEEL DRIVE	120
HOSE TENDER	122
BRAKES	123
ANTI-WHEEL LOCK	126
TIRES	127
WHEELS	130
TOWING	131
BATTERY	132
METRIC CONVERSION	133
BULB CHART	135
CLOSING NOTE	136
INDEX	138

MH OPERATOR'S HANDBOOK

TS55590

*THE INFORMATION CONTAINED IN THIS HANDBOOK
IS CURRENT AT TIME OF PUBLICATION.*

MACK TRUCKS, INC.® RESERVES THE RIGHT TO
MAKE CHANGES WITHOUT PRIOR NOTIFICATION.



“REPORTING SAFETY DEFECTS”

If you believe that your vehicle has a defect which could cause a crash or could cause injury or death, you should immediately inform the National Highway Traffic Safety Administration (NHTSA) in addition to notifying Mack Trucks, Inc.

If NHTSA receives similar complaints, it may open an investigation, and if it finds that a safety defect exists in a group of vehicles, it may order a recall and remedy campaign. However, NHTSA cannot become involved in individual problems between you, your dealer, or Mack Trucks, Inc.

To contact NHTSA, you may either call the Auto Safety Hotline toll-free at 1-800-424-9393 (or 366-0123 in Washington, D.C. area) or write to: NHTSA, U.S. Department of Transportation, Washington, D.C. 20590. You can also obtain other information about motor vehicle safety from the Hotline.

CANADIAN CONSUMER COMPLAINTS

For Canadian consumer complaints, refer your complaint to Transport Canada-Department of Public Complaints, Recalls and Investigations.

Call (613)-993-9851.



CUSTOMER SERVICE



Your satisfaction with the vehicle or service parts you purchase, and the service you receive at a Mack Trucks branch, distributor or service dealer, is our most important concern.

If questions or complaints arise, we suggest that you first discuss the matter with the service manager at the Mack facility involved. If you are not satisfied with the service manager's response, seek out the branch manager, principal or general manager of the distributorship, explain the situation and request assistance. Those requiring assistance at a service dealer should speak with the owner of the establishment.

If for any reason you need further assistance after dealing with the personnel at a Mack branch, distributor or service dealer, contact the nearest Mack regional service office and address your problem or request to our regional service manager. The regional service manager has the responsibility and the authority to recommend action on most cases and (with the aid of relevant district service personnel) will make every effort to conduct a fair review of your situation.



CUSTOMER SERVICE



The addresses and telephone and fax numbers of the Mack Truck regional offices are:

UNITED STATES

NORTHEASTERN REGION

475 KILVERT STREET
P. O. BOX 7152
WARWICK, R.I. 02886
(401) 738-5244
FAX: (401) 738-0935

ATLANTIC REGION

P. O. BOX "A"
ALLENTOWN, PA 18105
(215) 395-5824
FAX: (215) 395-6800

SOUTHERN REGION

5775-B GLENRIDGE DRIVE
SUITE 540
ATLANTA, GA 30328
(404) 252-5227
FAX: (404) 252-4482

CENTRAL REGION

101 BURR RIDGE PARKWAY
BURR RIDGE, IL 60521
(312) 920-8788
FAX: (312) 920-8798

WESTERN REGION

5605 N. MACARTHUR BLVD., #550
P. O. BOX 165408
IRVING, TX 75016-5408
(214) 518-1614
FAX: (214) 580-8520



CUSTOMER SERVICE



CANADA

EASTERN REGIONAL OFFICE

MACK CANADA INC.
1350 THE QUEENSWAY
TORONTO, ONTARIO
M8Z 1S5
TEL: (416) 255-1311
TLX: 06967510
FAX: (416) 255-4209

WESTERN REGIONAL OFFICE

MACK CANADA INC.
#101, 566 LOUGHEED HWY.
COQUITLAM, BC
V3K S3S
TEL: (604) 939-2261
TLX: 04351266
FAX: (604) 939-2367

AUSTRALIA

P. O. BOX 364
DARRA 4076, QUEENSLAND
AUSTRALIA
61-7-375-3333
FAX: 62-7-375-3469

INTERNATIONAL

P. O. BOX 1782
ALLENTOWN, PA 18105-1782
(215) 439-2470
FAX: (215) 439-3091



CUSTOMER SERVICE



If additional assistance is necessary, **Mack Trucks, Inc.** maintains a corporate customer service department staffed by experienced personnel, whose sole purpose is to aid the customer who needs information or assistance which isn't provided at the local or regional level.

**THE CUSTOMER SERVICE DEPARTMENT
PHONE NUMBER IS (215) 439-3961.**

When contacting our regional service offices or customer service department, it is imperative that you provide them with the following information:

VEHICLE IDENTIFICATION NUMBER (VIN) . You will find this 17 digit number located (on the MR and MC Fire Chassis) on a plate above the latch on the driver's door latch post. You can also find it behind the front axle on the right front frame rail.

MODEL AND YEAR OF VEHICLE.

DATE VEHICLE WAS PURCHASED AND PUT INTO SERVICE.

DATE OF REPAIR AND REPAIR MILEAGE.

BRANCH, DISTRIBUTOR OR SERVICE DEALER who sold and/or serviced the vehicle.

DESCRIPTION of unresolved service complaint or inquiry.

SUMMARY OF ACTION TAKEN TO DATE by the branch, distributor or service dealer as well as our regional service office.

NAMES (if known) OF INDIVIDUALS contacted at the branch, distributor or service dealer and Mack Truck's regional service office.



ADVISORY LABELS



THE READER MAY FIND ANY OR ALL OF THE FOLLOWING LABELS USED IN THIS PUBLICATION. AN UNDERSTANDING OF THEIR USE, AS GIVEN BELOW WILL AID THE READER.

SERVICE HINTS

A helpful suggestion which will make the servicing being performed, quick and easy.

NOTES

An operating procedure, practice, condition, etc., which is essential to emphasize

⚠ CAUTION

Directs attention to unsafe practices which could result in damage to equipment and possible subsequent personal injury or death if proper precautions are not taken.

⚠ WARNING

Directs attention to unsafe practices which could result in personal injury or death if proper precautions are not taken.

⚠ DANGER

Directs attention to unsafe practices and/or existing hazards which will result in personal injury or death if proper precautions are not taken.



IMPORTANT



Keep this handbook with this vehicle at all times to insure that each owner and/or operator will have access to all pertinent information.

This handbook is referred to as the MH SERIES OPERATOR'S HANDBOOK. We call it that because it covers the entire line of MH vehicles. The basic configuration of these models is a conventional styled, aerodynamic cab.

We at MACK TRUCKS, INC.® hope you will be happy with your new MH, and that you see many years of troublefree driving.



IN APPRECIATION

Thank you for buying a MACK® truck. With proper care and maintenance, your new MACK will help you gain a competitive edge with its aerodynamic design, its fuel efficient drive train combinations, low maintenance extended service intervals and eventually a good resale value. Maintenance and lubrication are covered in another manual, TS494. Important information is also found in the Operator's Handbook on Federal Regulations, TS505 (or TS523 for California certified vehicles) MACK TRUCKS, INC. WOULD LIKE TO EMPHASIZE THE IMPORTANCE THE DRIVER WILL PLAY IN THE LIFE OF THE TRUCK. ONLY TRAINED AND INFORMED DRIVERS FAMILIAR WITH HEAVY DUTY TRACTORS SHOULD OPERATE THIS VEHICLE.

This manual was prepared to help the driver in the daily operation of the truck. Please read it before you put the truck into service. Pay particular attention to the advisory labels described on the next page and referred to throughout this manual. They are placed in this handbook to bring attention to some thing of which you may not be aware.

The service manager of your local MACK branch or distributor will answer any question you may have and help you locate serial numbers on major components in order to fill in the blanks in the section of Unit Identification.

Information and illustrations in this manual are based on latest production usage at time of printing and are subject to change without prior notice.

Your new vehicle is built to conform to all federal standards and regulations applicable at its time of manufacture.



SERVICE LITERATURE



For customers who would like to know more about servicing their new Mack truck, several options are available to you. We offer three different types of literature which are described below. Decide which type fits your needs and order from your local branch or distributor.

NOTES

Mack Trucks, Inc. would like to point out the importance of properly servicing this truck. Servicing, repair and replacements must be done by certified licensed mechanics in accordance with pertinent Mack literature.

TS576-Mack Component Service Manual—A general collation containing numerous sections covering the service of engines, fuel system, transmissions, front and rear axles, cabs, electrical and many other systems and components on your vehicle.

Individual Master Manual Sections—Each manual contains complete overhaul, repair and other technical information for the component. Specify section number, title and quantity. Order one at a time if you prefer.

TS473-Custom Truck Service Manual—A tailor made service manual covering a specific vehicle or General Sales Order (GSO). When ordering this service manual, the complete model and chassis serial number must be supplied.



NOTES





WARRANTY



CAUTION

Any unauthorized adjustments of the injection pump and governor settings, other than as specified, can cause serious damage to the engine.

INJECTION PUMP AND GOVERNOR SETTING

You should be cautioned about the hazards of attempting to increase the power of the diesel engine in your chassis by adjusting injection pump and governor settings. Standard specifications for injection pump and governor settings permit the maximum allowable engine output. Adjustments of the injection pump and governor settings, other than as specified, can cause serious damage to the engine. In some engines, improper adjustments generally produce visual warnings of overfueling, excessive fuel consumption and smoke, the turbocharged diesel engine usually does not. The danger of damage from improper adjustments is greater in the turbocharged diesel engine because the usual warning signs may not be present.

In the event that damage results from such unauthorized adjustments, as evidenced by improper settings, in the injection pump and governor assembly, or broken fastener seals of the same, the cost of repairing such damage WILL NOT BE COVERED under the Mack Standard Vehicle Warranty.



WARRANTY



AIR BRAKE SYSTEM

The Mack Standard Vehicle Warranty shall apply to the air brake system, as set forth in the Warranty, but only if the air brake system has not been subjected to unauthorized additions, deletions or modifications. Should any such unauthorized additions, deletions or modifications be performed to the air brake system, Mack Trucks, Inc.[®] disclaims any and all liability for any loss or damage arising out of a malfunction of the air brake system.

If any unauthorized additions, deletions or modifications are made to any portion of the air brake system which is required by the Federal Motor Vehicle Safety Standards, Mack Trucks, Inc.[®] makes no representation as to conformity with the Standards.

For complete warranty information, refer to Pedigree Protection Plan (Mack manual number TS468) or Standard Vehicle Warranty (Form FO34) furnished with your truck.

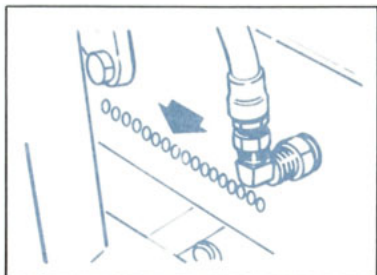


UNIT IDENTIFICATION



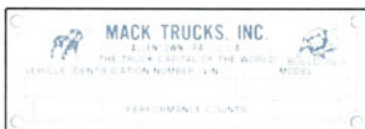
MACK COMPONENTS

(Record Serial Numbers on the Box Provided)

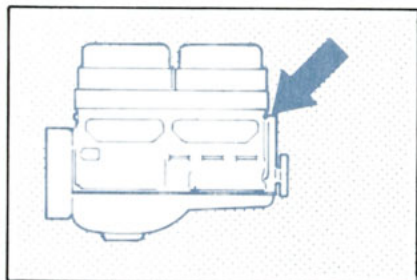


VIN

Located on the Right Hand Front Frame Rail

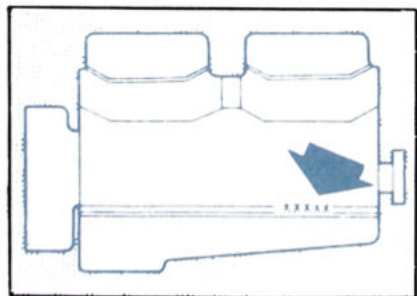


Located on a Plate Mounted on the Lower Edge of the Driver's Door Locking Edge



ENGINE STAMPING

E6—Located on Top of the Engine Timing Cover



Eight Cylinder—Located on Right Side of Oil Pan Rail Near the Front.



UNIT IDENTIFICATION

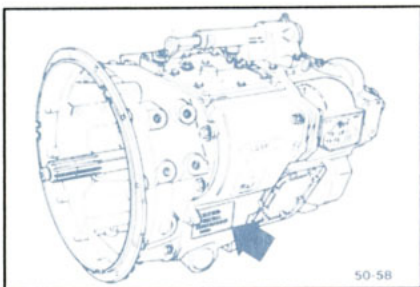


MACK COMPONENTS

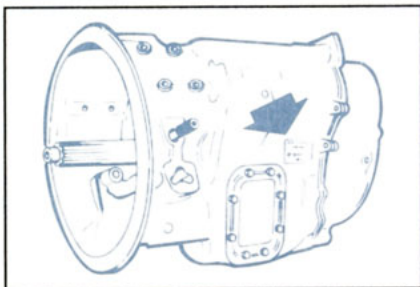
(Record Serial Numbers on the Box Provided)

TRANSMISSION

T200 Series—Located on the Left Side of the Main Case Near the Rear

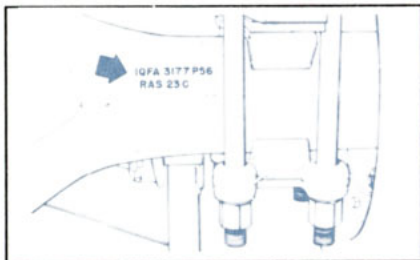


T107 SERIES—Located on the Left Side of the Main Case Near the Front

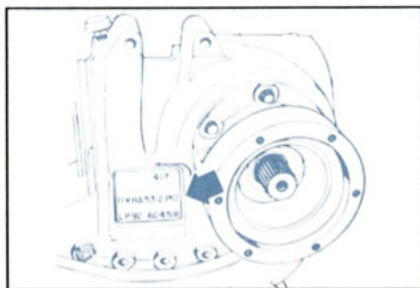


REARS

Arrangement Number—Located on the Right Side of the Rear Axle Housing



Carrier Assembly Number—Located on the Right Front of Housing





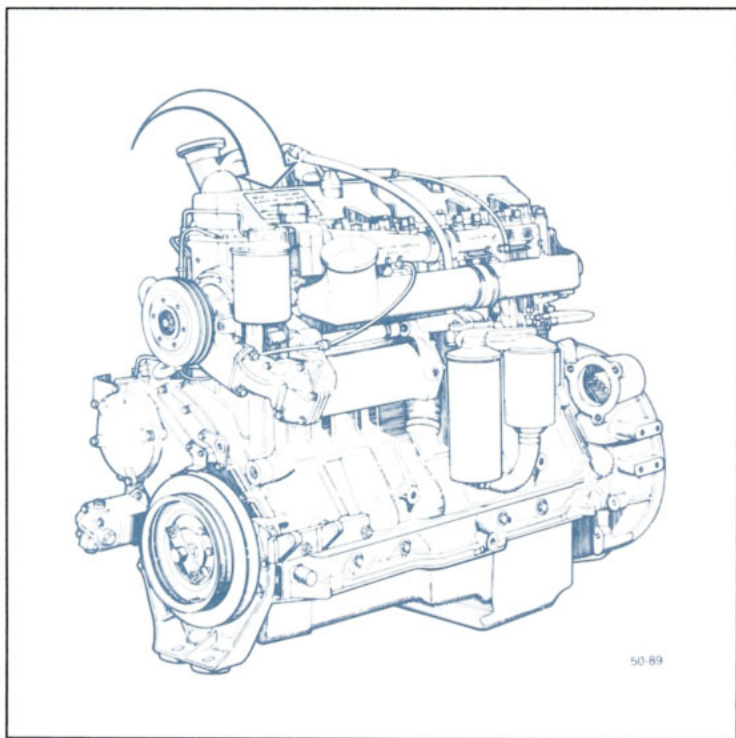
UNIT IDENTIFICATION



ENGINE INFORMATION PLATE LOCATION

(ALL E6-4VH, E7 AND E9 ENGINE MODELS)

The **Engine Information Plate** is mounted on the cylinder head cover on the above mentioned models. (See the illustration below.





NOTES





CERTIFICATION LABELS



Safety Certification Label

The National Highway Traffic Safety Administration (NHTSA) regulations require that a certification label be affixed to all vehicles.

The NHTSA regulations also require that the certification label be affixed to either the hinge pillar, door latch post, or the door edge that meets the door latch post, next to the driver's seat. If none of these locations are practical, it may be attached to the left side of the instrument panel, or affixed to an inward facing surface of the driver's door.

Mack Completed Vehicle

On Mack completed vehicles, this label will contain the following information as a minimum.

- Date of Manufacture
- Vehicle Identification Number (VIN)

On Mack vehicles, the certification label is generally affixed to the driver's side cab door hinge pillar. If not, it will be found at one of the other NHTSA specified locations.

Mack Trucks		VEHICLE TYPE		MANUFACTURED BY MACK TRUCKS, INC.	
VEHICLE IDENTIFICATION NUMBER (VIN)		VEHICLE IDENTIFICATION NUMBER (VIN)		DATE OF MANUFACTURE	
1	2	3	4	5	6
7	8	9	0	1	2
3	4	5	6	7	8
9	0	1	2	3	4
5	6	7	8	9	0
1	2	3	4	5	6
7	8	9	0	1	2
3	4	5	6	7	8
9	0	1	2	3	4
5	6	7	8	9	0
1	2	3	4	5	6
7	8	9	0	1	2
3	4	5	6	7	8
9	0	1	2	3	4
5	6	7	8	9	0
1	2	3	4	5	6
7	8	9	0	1	2
3	4	5	6	7	8
9	0	1	2	3	4
5	6	7	8	9	0
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7	8	9	0	1	2
3	4	5	6	7	8
9	0	1	2	3	4
5	6	7	8	9	0
1	2	3	4	5	6
7	8	9	0	1	2
3	4	5	6	7	8
9	0	1	2	3	4
5	6	7	8	9	0
1	2	3	4	5	6
7	8	9	0	1	2
3	4	5	6	7	8
9	0	1	2	3	4
5	6	7	8	9	0
1	2	3	4	5	6
7	8	9	0	1	2
3	4	5	6	7	8
9	0	1	2	3	4
5	6	7	8	9	0
1	2	3	4	5	6
7	8	9	0	1	2
3	4	5	6	7	8
9	0	1	2	3	4
5	6	7	8	9	0
1	2	3	4	5	6
7	8	9	0	1	2
3	4	5	6	7	8
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5	6	7	8	9	0
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5	6	7	8	9	0
1	2	3	4	5	6
7	8	9	0	1	2
3	4	5	6	7	8
9	0	1	2	3	4
5	6	7	8	9	0
1	2	3	4	5	6
7	8	9	0	1	2
3	4	5	6	7	8
9	0	1	2	3	4
5	6	7	8	9	0
1	2	3	4	5	6
7	8	9	0	1	2
3	4	5	6	7	8
9	0				




CERTIFICATION LABELS



Mack Incomplete Vehicles

A chassis cab is an incomplete vehicle with completed occupant compartment, that requires the addition of cargo-carrying, work-performing or load-bearing components to perform its intended functions.

The manufacturer of a chassis cab must affix a label to the incomplete vehicle in one of the previously noted locations. This label will provide the Chassis Cab Manufacture Date and the Vehicle Identification Number.

	DATE _____	CHASSIS CAB MANUFACTURED BY MACK TRUCKS, INC. VEHICLE IDENTIFICATION NUMBER (VIN) _____
<p>THIS CHASSIS CAB CONFORMS TO FEDERAL MOTOR VEHICLE SAFETY STANDARDS NOS. 101, 102, 103, 104, 106, 107, 111, 113, 115, 116, 118, 201, 202, 203, 204, 205, AND 302.</p> <p>THIS VEHICLE WILL CONFORM TO STANDARDS NOS. 108, 120, AND 121 IF IT IS COMPLETED IN ACCORDANCE WITH THE INSTRUCTIONS CONTAINED IN THE INCOMPLETE VEHICLE INSTRUCTIONS FURNISHED PURSUANT TO THE ORDER FOR THIS VEHICLE.</p> <p>IN ACCORDANCE WITH THE SAFETY STANDARDS APPLICABLE TO THIS VEHICLE WHEN COMPLETED, IT IS NOT SUBSTANTIALLY AFFECTED BY THE DEFECTS IN THIS CHASSIS CAB.</p>		



DRIVER'S SIDE ENTRY

CAB ENTRY

The primary rule to follow in entering a cab is for the driver to have at least three limbs in contact with the truck at all times. This means that a minimum of two hands and a foot or a hand and two feet must be in FIRM contact with the truck (or ground surface) to avoid mishaps due to careless entry procedure.

WARNING

GUIDELINES FOR ENTERING AND EXITING TO AVOID SERIOUS INJURY

Face cab when entering AND exiting.

Place papers, coats, etc., in cab BEFORE entering—take out AFTER exiting—keep hands free to grip handholds.

KeeP hands and shoes clean—check hands and shoes for grease, mud, etc., BEFORE entering or exiting.

KeeP three limbs (two hands and a foot or a hand and two feet) in FIRM contact with steps and handholds at ALL times.

Be sure of where you step and grab—keep these areas clean.

Be EXTRA careful in rainy, snowy, etc., weather.

Do NOT jump from the vehicle.

WARNING

To avoid serious injury, do NOT step on the fuel tank, battery box, frame, etc. unless adequate slip resistant surfaces and handholds are provided.

When entering and exiting the cab, be aware of the condition of the steps and handrails, especially in snow or icy weather. At such times when ice and snow may accumulate on the steps and handrails, they should be cleaned off to minimize the possibility of slipping.

The same warning applies to grease or oil which may be present on steps and handrails.



1. With right hand on the grabrail and right foot on the ground, start with your left foot and step up to the lower step.



2. Place your left hand on the inside grabrail.



CAB ENTRY-DRIVER



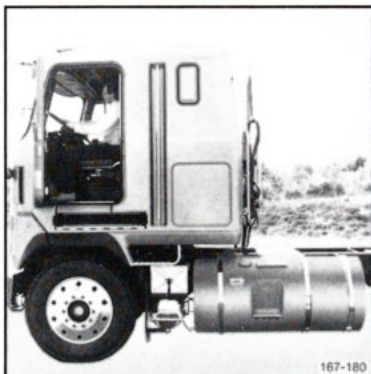
3. Step up with your right foot on to the second step.



4. Slide your left hand up the inside handrail and step up to the next step with your left foot.



5. Move your left hand onto the steering wheel and swing your right foot into the cab.



6. Move your right hand and left leg into the cab. Sit down and you're in the driver's seat. Buckle up and you're ready to go.



PASSENGER SIDE ENTRY

The primary rule to follow in entering a cab is for the passenger to have at least three limbs in contact with the truck at all times. This means that a minimum of two hands and a foot or a hand and two feet must be in FIRM contact with the truck (or ground surface) to avoid mishaps due to careless entry procedure.

WARNING

GUIDELINES FOR ENTERING AND EXITING TO AVOID SERIOUS INJURY

Face cab when entering AND exiting.

Place papers, coats, etc., in cab BEFORE entering—take out AFTER exiting—keep hands free to grip hand-holds.

KeeP hands and shoes clean—check hands and shoes for grease, mud, etc., BEFORE entering or exiting.

KeeP three limbs (two hands and a foot or a hand and two feet) in FIRM contact with steps and hand-holds at ALL times.

Be sure of where you step and grab—keep these areas clean.

Be EXTRA careful in rainy, snowy, etc., weather.

Do NOT jump from the vehicle.



CAB ENTRY-PASSENGER



⚠ WARNING

To avoid serious injury, do NOT step on the fuel tank, battery box, frame, etc. unless adequate slip resistant surfaces and handholds are provided.

When entering and exiting the cab, be aware of the condition of the steps and handrails, especially in snow or icy weather. At such times when ice and snow may accumulate on the steps and handrails, they should be cleaned off to minimize the possibility of slipping.

The same warning applies to grease or oil which may be present on steps and handrails.



1. Place your left hand on the outside handrail and lift your left foot up to the lowest step.



2. With your right hand, reach in to the inside handrail (on the door lock post).



CAB ENTRY-PASSENGER



3. With as firm grip on the handrails, raise your right foot up to the second step.



4. Bring your left foot up to the second step and then carefully slide your hands up the handrails.



5. Move your right foot up to the top step (the one just below the cab floor).



6. With your right hand, reach in to the inside, door hinge post handrail.



CAB ENTRY-PASSENGER



7. With both hands firmly gripping the handrails step onto the cab floor with your left foot.



8. Swing your body into the cab and onto the seat.



9. Move your foot into the cab, and don't forget to buckle your seat belt before you hit the road.



DRIVER'S SIDE EXIT

The primary rule to follow in entering a cab is for the passenger to have at least three limbs in contact with the truck at all times. This means that a minimum of two hands and a foot or a hand and two feet must be in FIRM contact with the truck (or ground surface) to avoid mishaps due to careless entry procedure.

WARNING

GUIDELINES FOR ENTERING AND EXITING TO AVOID SERIOUS INJURY

Face cab when entering AND exiting.

Place papers, coats, etc., in cab BEFORE entering—take out AFTER exiting—keep hands free to grip hand-holds.

Keeep hands and shoes clean—check hands and shoes for grease, mud, etc., BEFORE entering or exiting.

Keeep three limbs (two hands and a foot or a hand and two feet) in FIRM contact with steps and hand-holds at ALL times.

Be sure of where you step and grab—keep these areas clean.

Be EXTRA careful in rainy, snowy, etc., weather.

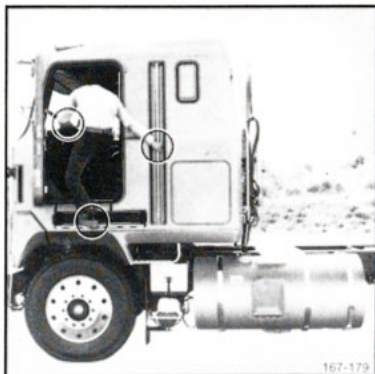
Do NOT jump from the vehicle.

WARNING

To avoid serious injury, do NOT step on the fuel tank, battery box, frame, etc. unless adequate slip resistant surfaces and handholds are provided.

When entering and exiting the cab, be aware of the condition of the steps and handrails, especially in snow or icy weather. At such times when ice and snow may accumulate on the steps and handrails, they should be cleaned off to minimize the possibility of slipping.

The same warning applies to grease or oil which may be present on steps and handrails.



1. Remove seat belt and prepare to descend with your left foot first.

2. As you slide out of the seat keep your left hand on the steering wheel, put your left foot (toe area) on top step and right hand on outside handrail.



CAB EXIT-DRIVER



3. Grab the inside handrail and put your right foot on the next lower step.

4. Move your left foot down to the next lower step as you slide your left hand down the inside handrail.



5. Move your right foot down on the ground.

6. Let go with your left hand and then you may move your left foot to the ground.



NOTES





PASSENGER'S SIDE EXIT

The primary rule to follow in entering a cab is for the passenger to have at least three limbs in contact with the truck at all times. This means that a minimum of two hands and a foot or a hand and two feet must be in FIRM contact with the truck (or ground surface) to avoid mishaps due to careless entry procedure.

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Do NOT jump from the vehicle.



CAB EXIT-PASSENGER



WARNING

To avoid serious injury, do NOT step on the fuel tank, battery box, frame, etc. unless adequate slip resistant surfaces and handholds are provided.

When entering and exiting the cab, be aware of the condition of the steps and handrails, especially in snow or icy weather. At such times when ice and snow may accumulate on the steps and handrails, they should be cleaned off to minimize the possibility of slipping.

The same warning applies to grease or oil which may be present on steps and handrails.



1. Exit the cab by first grabbing on to the inside (door hinge post) handrail.



2. Place your right foot out onto the top cab step, the one just below the cab floor.



CAB EXIT-PASSENGER



3. With your left hand, reach out to the outside handrail.



4. Move your left foot out to the top step with your hands still firmly gripping the handrails.



5. Move your right hand to the door lock post inside handrail.



6. Move your left foot down to the second step.



7. Move your right foot down to the second step.



8. Move your left foot down to the first step, and carefully slide your hands down the handrails.



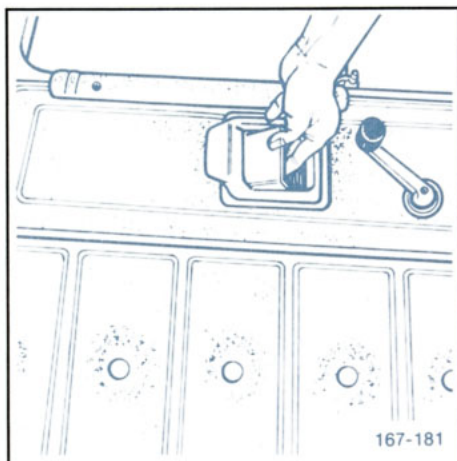
9. Place your right foot on the ground.



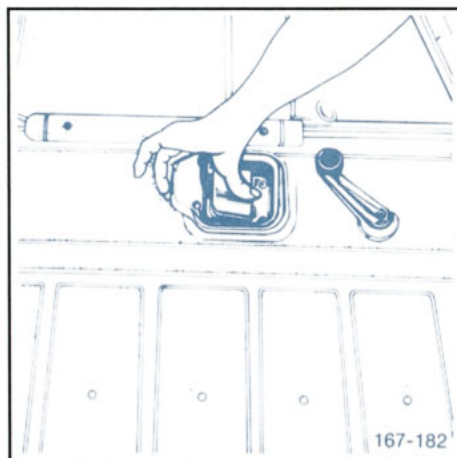
10. Place your left foot on the ground.

The inside door handles used on the MH are of the flush mounted paddle type design.

To open, get your fingers behind the handle and pull out while exerting some force on the door to open it.



To lock, (with door closed) from the inside, press the door handle inward.





SEAT BELTS



WARNING

The use of seat belts and bunk restraints (if so equipped) is recommended to minimize the risk of serious personal injury.

OPERATION

1. Grasp clip and buckle the ends of the belt and pull to a solid stop.
2. Insert clip into the buckle until an audible snap is heard.
3. Make sure clip to buckle connection is secure.
4. Position the belt around hips and adjust snugly by pulling the webbing, see the illustration in the next page.
5. For retractor equipped belts, pull retractor half of belt to a solid stop to make sure that webbing is completely unwound from the retractor drum.
6. Push down on the buckle to release the belt.

NOTES

In order to keep the ends of the seat belt off the floor, when not in use, clip the ends together and position on the seat.

MAINTENANCE

1. Keep belt clean and dry.
2. Clean with mild soap solution and luke-warm water.
3. Periodically inspect belt, retractor, and floor for damage or corrosion that could materially lessen effectiveness of belt installation and replace all inadequate parts.

WARNING

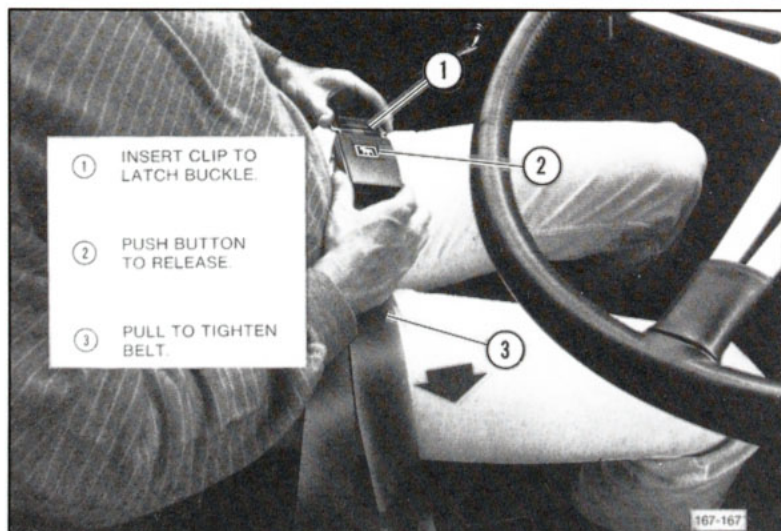
Do not bleach or dye belt because this may cause severe loss of strength.

Do not wear belt loosely.

Do not use one belt for more than one person.

Do not wear retractor belt with webbing wound on retractor drum.

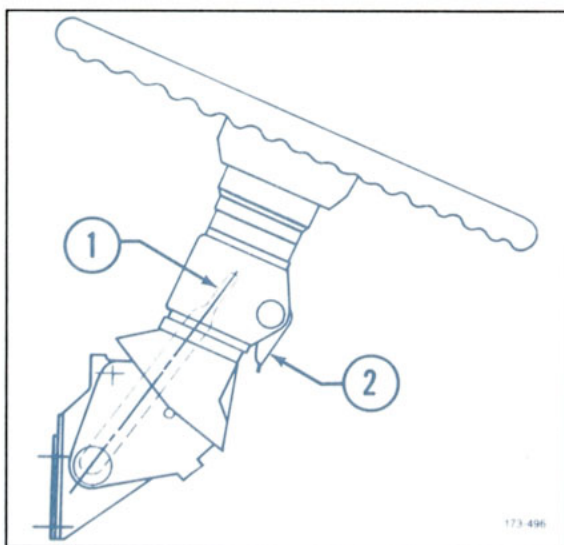
Do not install belt in truck with weakened floor until floor is replaced or reinforced.



ADJUSTMENT PROCEDURES

TILT MODE

1. Pull steering column tilt lever ① downward to stop (approximately 90°).
2. Push or pull on steering wheel to get desired angle for steering column.
3. While holding the steering wheel in position, pull up on tilt lever ① and allow it to snap into its locked position.
4. The tilt device has 4 positive lock positions but will lock in between. If enough force is applied, the unit will slide into one of these 4 positions and not move again until unlocked.





TELESCOPIC MODE

1. Pull up on steering column telescopic lever ② to release for adjustment.
2. Pull up or push down near steering wheel center for telescopic height adjustment.
3. While holding steering wheel in position, release lever ② to lock in position.
4. The telescopic device has 7 positive lock position but will lock in between. If enough force is applied, the unit will slide into one of the 7 positions and not move again until unlocked.

WARNING

Adjust the steering wheel position **BEFORE** attempting to start or move the vehicle.



NOTES





TELL -TALES



A **Tell-Tale**, by definition, is a display that indicates, by means of a light-emitting signal, the actuation of a device, a correct or defective functioning or condition, or a failure to function.

The operator should become familiar with these symbols to enable him to recognize and react, if necessary, to the indicated condition.

COLORS

To promote visual recognition internationally, specific colors for tell-tales have been established. Unless governmental regulations, where the vehicle is to be used, or Engineering directives specify otherwise, the standard colors shall be:

Blue—High beam headlights.

Flashing Green—Turn signals.

Flashing Red—Hazard condition involving the safety of personnel.

Steady Green—System in operation.

Steady Red—Warning, immediate action required.

Yellow—Early warning, such as low fuel or anti-lock malfunction.

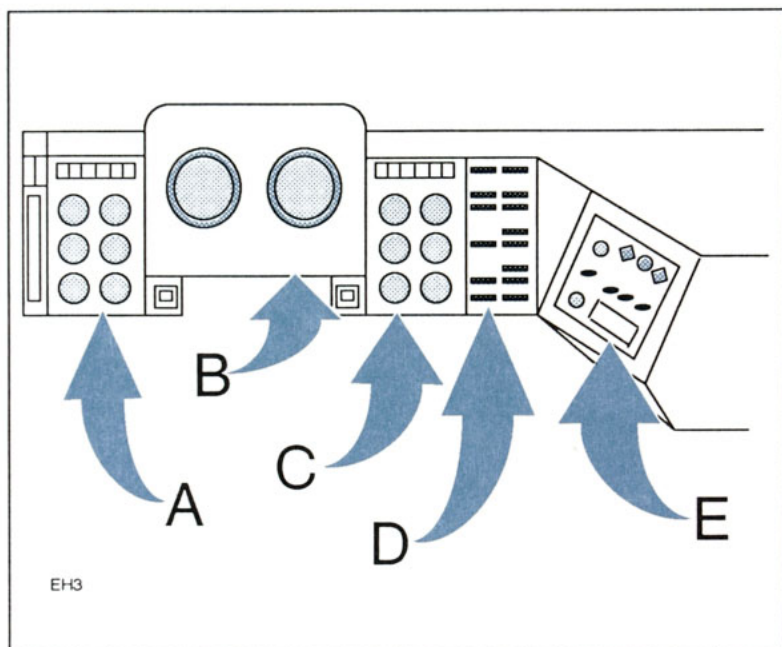
Tell-tale symbols are shown next to the callout and description of the instruments and controls on the following pages.



NOTES

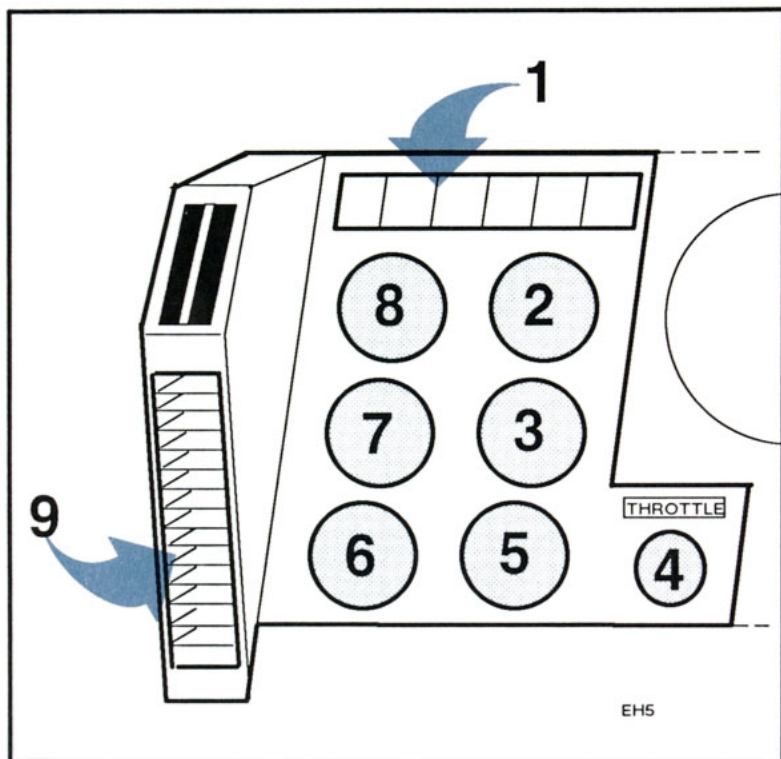


INSTRUMENT PANEL ARRANGEMENT



Your view from the driver's seat in an MH will look something like this. The layout has been planned to afford the operator a good view of the gages and controls which are within easy reach. The instrument panel as shown in the photo, is broken down into five main sections. For easy identification, we will call them, from left to right, A, B, C, D and E.

PANEL A



- ① **Indicator Lamp Panel**—Gives an indication of various items on the truck and whether they are functioning or malfunctioning. From left to right they are, left turn signal—**green**, high transmission fluid temperature warning—**red**, differential lockout engaged—**red**, engine protection warning—**red**, low air pressure warning light*—**red**, and parking brake on—**red**.



INSTRUMENT PANEL



* **Low Air Pressure Warning Light**—Lights up when air pressure drops below 65 ± 5 psi (448 ± 34 kPa) in either primary or secondary air system. When this occurs at any time other than vehicle startup, pull to the side of the road and determine problem. If air pressure continues to drop below 40 ± 5 psi in both systems, spring brakes will begin to be automatically applied.



② **Oil Pressure Gage**—Under normal operating conditions, the engine oil pressure will be between 40 and 95 psi (276 to 665 kPa) at governed speed on a Mack 6 cylinder and 50 to 100 psi (345 to 690 kPa) on a Mack 8 cylinder at governed speed, depending on engine type, speed and oil viscosity. Oil pressure should be about 25 psi (172 kPa) at idling speed. Should pressure at operating speeds drop suddenly from normal reading, stop engine immediately and determine cause.

Scania, Cummins, Caterpillar and Detroit Diesel engines may have different requirements and specs. Consult vendor engine manuals for their respective pressures.



③ **Exhaust Pyrometer**—Indicates temperature of exhaust gases about 12" to 16" from the turbocharger exhaust connections. This helps the operator to select the proper gear for load and grade conditions, thereby avoiding excessive exhaust temperatures. The maximum operating temperature is shown on the nameplate of the pyrometer glass.



- ④ **Throttle**—Pull out to increase idling speed. Turn clockwise to lock in position.

WARNING

The throttle was designed to allow the operator to increase the idle speed of the engine. Uses other than what the throttle was designed for are strictly prohibited. Misuse may cause damage to equipment or even fatal injuries.

- ⑤ **Plug**—(Space for optional gage.)



- ⑥ **Engine Oil Temperature Gage**—Indicates the temperature of the engine oil.

CAUTION

Maximum safe oil temperature is 235°F. (113°C.). Continued operation with oil above this temperature will cause rapid deterioration of the oil's lubricating properties and is NOT RECOMMENDED.



- ⑦ **Coolant Temperature Gage**—The normal operating range of a Mack engine as indicated by the coolant, is between 170°F. and 225°F. (77°C. to 107°C.).

CAUTION

Coolant temperature must not exceed 225°F. (107°C.).



INSTRUMENT PANEL



- ⑧ **Voltmeter**—This gage indicates the surface charge of the battery with the ignition switch on and the engine not running. With engine running, gage indicates condition of charging system.

The voltmeter will provide useful information. When the reading is observed during cranking, the reading normally should not drop below 10 volts. Lower readings indicate corroded connections at the cranking motor or at the battery terminals or defective or discharged batteries.

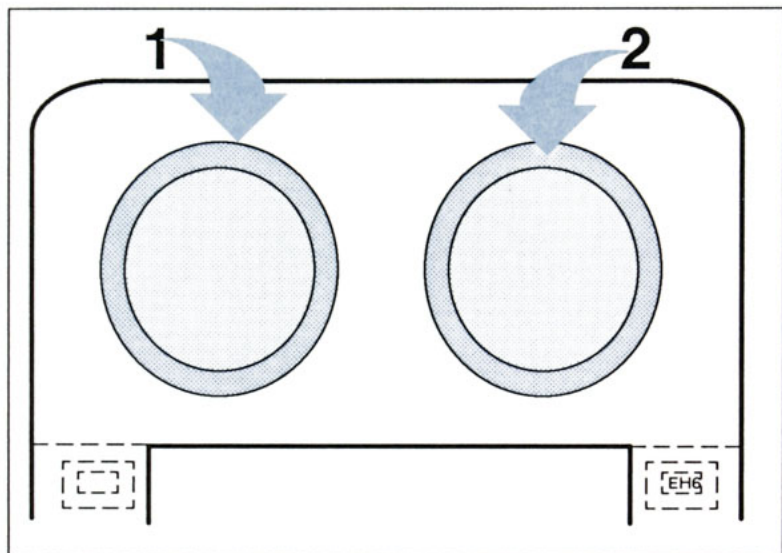
- ⑨ **Air Vent**



NOTES

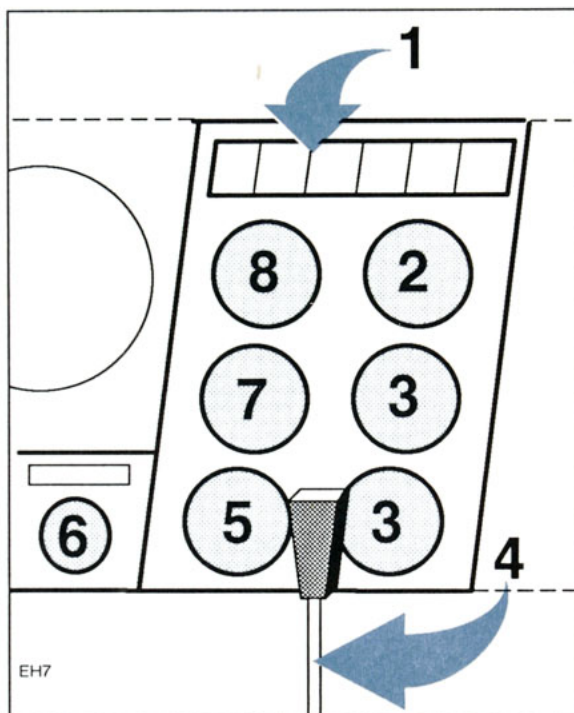


PANEL B



- ① **Tachometer**—Engine speed is indicated in revolutions per minute. The tachometer readings should be used as a guide for shifting and to prevent engine damage due to over-speed. The cyclometer indicates total elapsed engine revolutions times 100,000. In electronic tachometers, this indication is in actual hours of engine operation.
- ② **Speedometer and Odometer**—Indicates road speed in miles and/or kilometres per hour and total distance vehicle has traveled.

PANEL C



- ① **Indicator Lamp Panel**—Gives an indication of whether various vehicle components are functioning, engaged or malfunctioning. From left to right they are high beam—**blue**, hookup light—**green**, anti-lock brake system—**yellow**, mirror heat on—**yellow**, reverse engaged—**yellow** and right turn signal—**green**.



- ② **Fuel Gage**—Registers fuel level in supply tank(s).



INSTRUMENT PANEL



- ③ **Plug**—(Space for optional gage.)
- ④ **Trailer Brake Lever**—Applies the trailer brakes.

WARNING

The trailer brake system must not be used for parking.

- ⑤ **Air Restriction Gage**—Will indicate when air filter element must be changed.



- ⑥ **Engine Stop Control**—Pull out to stop engine.



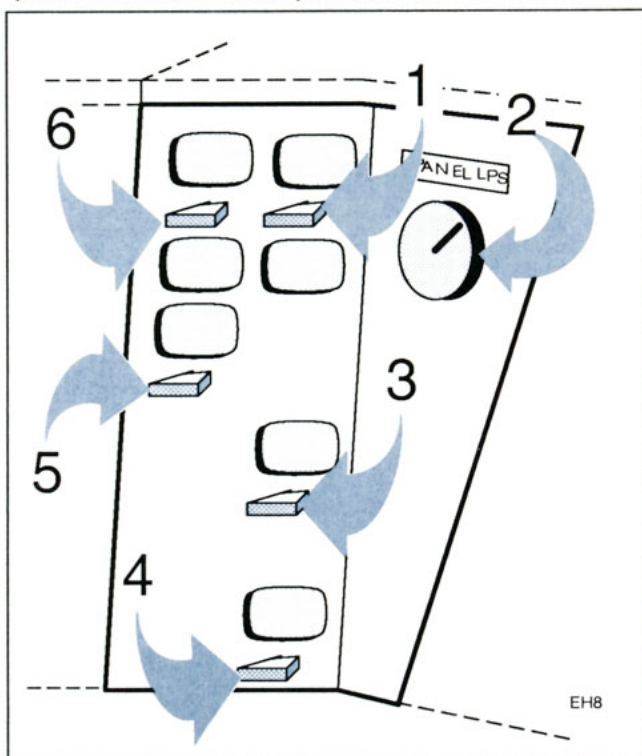
- ⑦ **Air Application Gage**—Measures the air pressure being delivered to the service brake chambers in the tractor (and trailer if attached).



- ⑧ **Dual Air Pressure Gage**—Normal operating air pressure is between 90 psi (620 kPa) and 125 psi (827 kPa) in both air brake systems. If pressure drops below 75 to 85 \pm 5psi in either system, the warning buzzer and warning lamp will operate. Determine the cause of failure before proceeding. Primary air pressure is supplied the rear brakes and is indicated by the green pointer on the gage. Secondary air pressure is supplied to the steering axle brakes and indicated by the orange pointer.

PANEL D

This panel is devoted to lighting and some optional items. Your particular chassis may not include some items shown.



① **Hook Up/Fog Lamp Switch**—This is a three position switch. Up, it activates the hook up light mounted at the rear of the cab. Down, it activates the fog lights. The middle position is the OFF position.

② **Panel Lights**—Rotate the knob clockwise to increase dash light intensity.



INSTRUMENT PANEL



- ③ **Mirror Defroster Switch**—Up position activates outside rear view mirror defrosters. Down position turns mirror defrosters off.



- ④ **Dynatard Engine Brake Switch**—See section on Dynatard Engine Brake.

CAUTION

Do not activate the Dynatard brake until the engine has reached normal operating temperatures.



- ⑤ **Clearance Lamp Switch**—This is a two position switch. Down is OFF. Up activates the clearance lights on the tractor and the trailer.



- ⑥ **Light Switch**—This is a three position switch allowing the operator to choose between parking lights (down), headlights (up), or OFF (middle position).



DYNATARD ENGINE BRAKE

WARNING

Operation of any vehicle on wet or slippery roads requires extreme caution. Since the Dynatard Engine Brake converts the engine to a retarding device, it should not be used on wet or slippery roads if the vehicle has a single driving axle or if it has tandem driving axles that are lightly loaded. Use of an engine brake of under these conditions can cause the vehicle to skid or jackknife.

The purpose of an engine brake is to assist in slowing down the truck and help save your brakes.

The best example of when to use the engine brake would be when descending a hill with a load on your truck.

The electrical controls which turn the Dynatard brake on and off consist of the cab switch, relay, fuel injection pump switch and the solenoids.

NOTES

Both the driver controlled cab switch and the fuel injection pump switch must be closed for the Dynatard brake to work.

The fuel injector switch closes only when the fuel injector rack is in the "no fuel" position. This assures that the brake can be energized only when no fuel is being injected into the engine. The engine can function as a brake ONLY when it is not producing power.

The purpose of the relay is to eliminate the need for the heavy solenoid current to pass through the fuel injection pump switch.



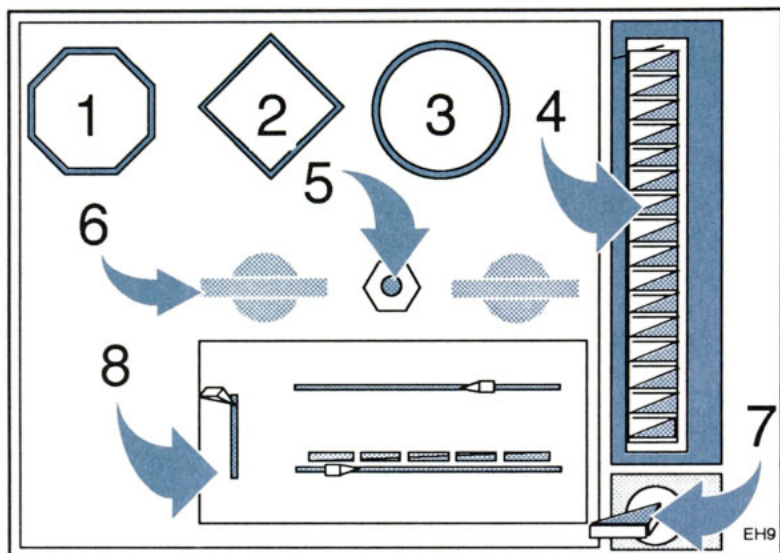
INSTRUMENT PANEL



When the driver moves the engine brake switch to the ON position while the accelerator pedal is still being depressed, engine brake will not be engaged. But when the driver takes his foot from the accelerator pedal, the pump rack move into the zero fuel position. This closes the injector pump switch allowing the electrical current to reach the solenoid control valve which forces the solenoid ball valve onto its lower seat and cuts off the constant oil supply to the on-off gallery and the rocker arm shaft. Oil is then vented from the upper chamber of the control piston. The oil pressure below the control piston now overcomes the springs, forcing the piston to lift and allowing the ball valve to seat. With the ball valve seated, oil is trapped in the chamber forming a hydraulic lock which keeps the lash adjuster expanded.

The Dynatard Engine Brake is now in operation. However, if the engine reaches idle speed the governor will automatically advance the rack from the no-fuel to a fuel delivery position, opening the injection switch and disengaging the Dynatard system.

PANEL E



① **Trailer Supply Valve**—THIS VALVE IS NOT TO BE USED FOR PARKING. Pull to apply trailer emergency brakes. Push to pressurize trailer air reservoir releasing the trailer emergency brakes.

② **Parking (Tractor Trailer) Brake Valve**—Pull to apply. Push to release.

③ **Tractor Parking Brake**—Pull to apply. Push to release.



INSTRUMENT PANEL



④ **Air Vent**



⑤ **Electric Windshield Washer**—Push button in and hold as long as windshield washer solution is required.



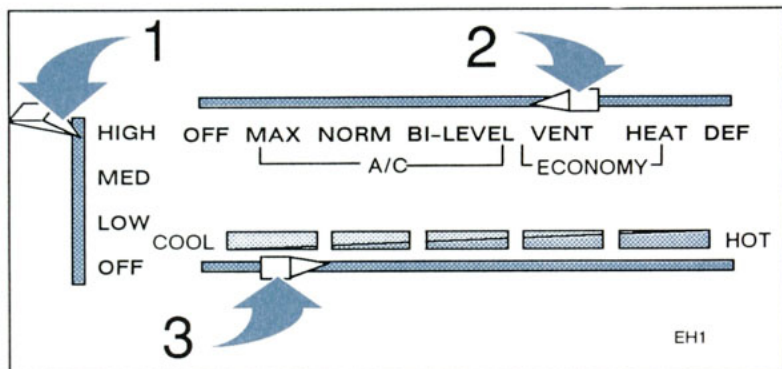
⑥ **Windshield Wipers**—Pull out for ON position. Turn knob to vary speed. Push in to park which returns wipers to original position, then OFF. Left switch controls left wiper. Right switch controls right wiper.

⑦ **Signal Switch**—A special toggle switch for flashing front and rear lights, eliminating the necessity of reaching for separate switches when signaling on passing or being passed by other vehicles. This switch is spring loaded so that it automatically returns to the neutral position when released.

In the daytime, with headlights normally off, moving switch forward turns high beams on. With marker lights normally off movement of the switch to rear turns these lights on. At nighttime, with headlights on low, forward movement of the switch turns on high beam. Movement of the switch to the rear turns marker lights off.

⑧ **Heater and Air Conditioner Control Panel**—See section on Heater and Air Conditioner.

HEATER AND AIR CONDITIONER



① **Fan Control Switch**—This is a four position switch to control the amount of air delivered through the vents. Down is OFF and up is HIGH speed. The middle positions are LOW and MEDIUM speeds.

② **Mode Selection Lever**—This lever lets you choose what type of climate you want in the vehicle.

Trucks without air conditioner—This lever provides for OFF, VENT (untreated outside air), HEAT and DEF (useful for removing condensation from the windows—eliminates inside wiping).

Trucks with air conditioner—This lever provides for OFF, A/C (recirculates and treats



INSTRUMENT PANEL



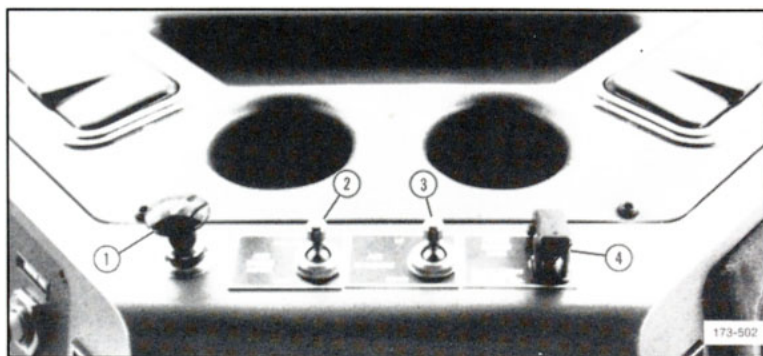
cab air for the fastest cool down), A/C (brings in and treats fresh air from the outside), BI-LEVEL (treated fresh air delivered through all the outlets in the dash), VENT (untreated outside air), HEAT and DEF (useful for removing condensation from the windows—eliminates inside wiping).

- ③ **Temperature Control Lever**—This sliding lever controls the temperature of air from cool (far left) to warm (far right).

NOTES

If your vehicle is equipped with air conditioning, the air conditioner unit should be run for five minutes at least once a week throughout the year to keep the moving parts well lubricated. The air conditioning system should be operated only after the engine compartment is warm and the interior of the cab is 70°F.(21°C.) or more.

CENTER CONSOLE



① **Electric Lighter**—Push in to activate. When element is fully heated the lighter will pop up.

② **Remote Door Lock**—Pull back to lock the passenger's door. Push forward to unlock. Air pressure activates the locking mechanism.

③ **Remote Window Switch**—Pull back to put the passenger's window down. Push forward to put window up. Air pressure moves the window.

④ **Inter-Axle Power Divider Control**—See section on Inter-Axle Power Divider Control.

INTER-AXLE POWER DIVIDER CONTROL

A driver controlled, air shifted lockout is available by which the Mack Power Divider may be rendered inoperative for short periods and then unlocked when the emergency is past. When the Mack sliding clutch lockout is engaged with mating teeth of the outer cam, both axles are locked together in positive through-drive for maximum traction with no differential action taking place between axles.

Normally, the driver controlled inter-axle power divider lockout control switch is in the OUT or unlocked position. On rare occasions, it is necessary to provide positive through-drive to both bogie axles for emergency situations.

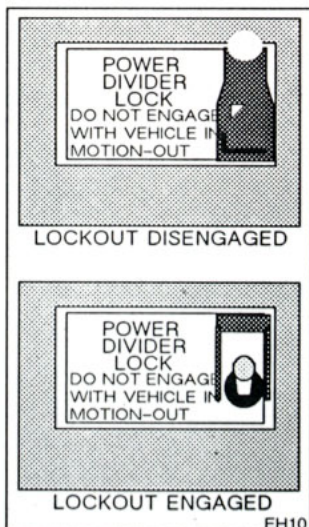
CAUTION

Stop the vehicle before actuating the air shift control valve.

Then declutch the engine, move lockout switch to the engaged position. Re-engage clutch and drive through the slippery area.

NOTES

An electric buzzer in the cab sounds continuously as long as the lockout is engaged. This is done to remind the driver to release the lock as soon as normal traction is regained.



EH10



INSTRUMENT PANEL



When driving conditions permit returning to normally unlocked power divider drive, move the lockout switch back to the OUT or normally disengaged position and let up momentarily on the accelerator pedal so the powershift out of locked position can be completed. Then drive as usual.

CAUTION

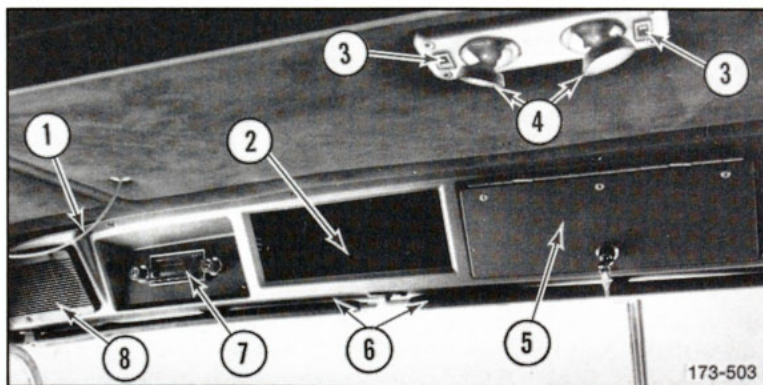
To avoid clash at the lockout sliding clutch and outer cam, under no circumstances should the air shift mechanism be activated while the drive wheels are actually slipping or spinning.

NOTES

Your vehicle may or may not have an Inter-Axle Power Divider. This section has been included just in case it does.

OVERHEAD FEATURES

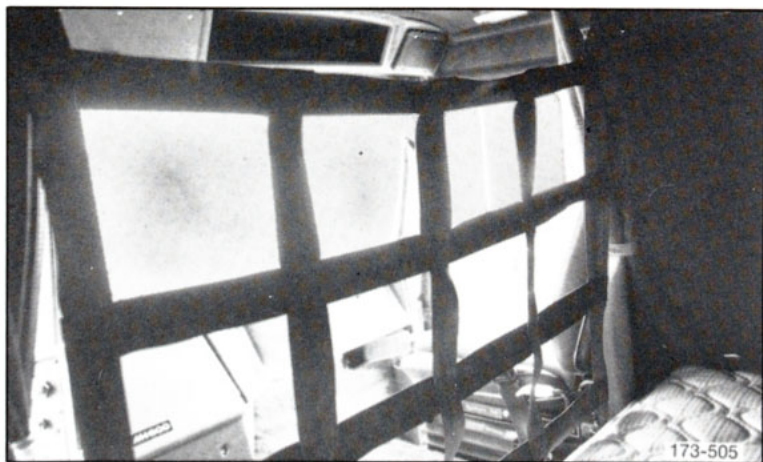
The following are features common to most MH cabs. They are designed to be within easy reach of the driver and to be used for his safety and comfort.



1. **Air Horn Cord**—Located directly above the driver and when pulled, activates the air horn.
2. **Open Compartment**—Allows for storage of some items. It contains electrical terminals for CB or other equipment compatible with MH wiring.
3. **Map Light Switch**—Turns on map lights.
4. **Map Lights**—Adjustable position lights which can illuminate driver and passenger areas for reading, etc.
5. **Glove Compartment**—A lockable storage compartment.
6. **Sun Visors**—Adjustable shades used to cut down on bright sunlight and glare.
7. **Radio**
8. **Radio Speaker**



The bunk is entered from the cab area. It features fan switch, overhead reading lamps and bunk speakers, all of which are controlled from the bunk and operate independently from the cab controls.



The above photo, with a view from inside the bunk area, shows the bunk restraint in place. This should be used when bunk area is occupied. See seat belt section for proper care and maintenance.



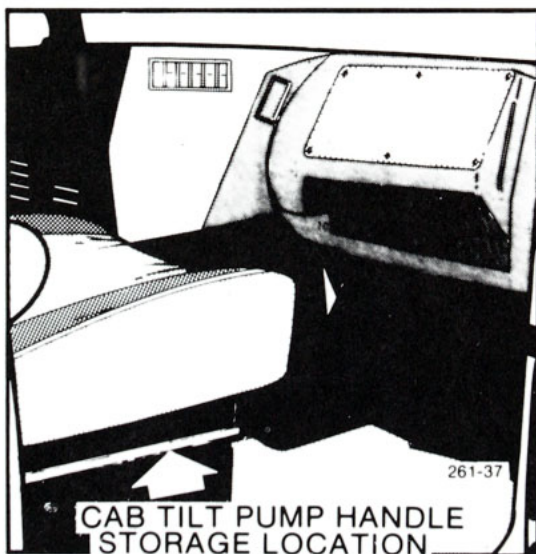
CAB TILT



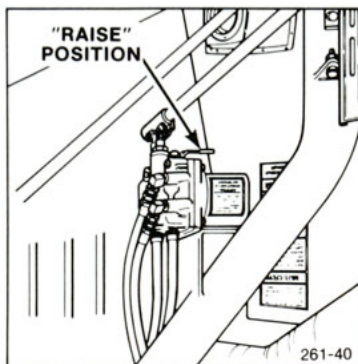
The cab tilt system on an MH uses two hydraulic cylinders. Each incorporates internal safety valves which lock up automatically if cab moves too rapidly in either direction. The hydraulic fluid pressure imbalance forces the check valves to seat, holding the cab in a hydraulically locked position. Release the hydraulically locked condition by operating the pump in the opposite direction to open the check valves. The system is then returned to normal operation.

SERVICE POSITION

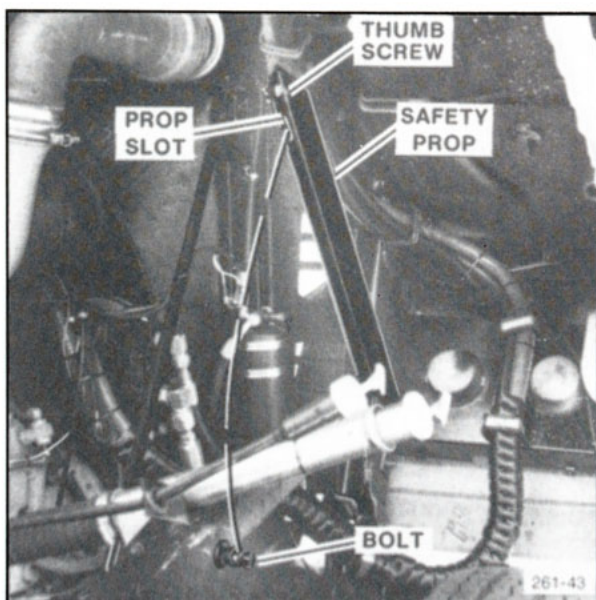
1. Shut off the engine. Secure all loose items within the cab.
2. Take cab tilt pump handle from the side of the passenger seat.



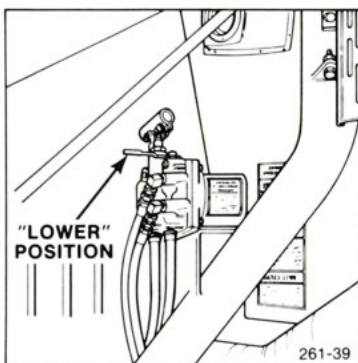
3. Insert pump handle into pump and shift pump control lever to RAISE position.



4. Pump cab to service height (about 62°).
In the service position, the cab must be secured on the lock bolt. Thumb screw must be loosened. Safety prop will swing down. Position lock bolt into the safety prop slot.



5. To lower the cab, put the safety prop back in its original position. Shift the pump control lever to the LOWER position.



WARNING

Be certain that no people, tools or unsecured vehicle parts are in the path of descending cab before shifting pump control lever at any time.

WARNING

Pump control lever must be in LOCK position before operating the vehicle.

FULL TILT POSITION

Follow the previous steps except, when passing the center of gravity, allow cab to descend by itself. The rate of descent may be controlled by manipulating pump[control lever from RAISE to LOWER positions. Maximum cab tilt position is regulated by hydraulic cylinders reaching fully extended positions.



RETURN TO NORMAL POSITION

1. Engine must be shut off. Be sure gear shift levers are in neutral and oil fill tube is in inboard position.
2. Move pump control lever to LOWER position.
3. Pump until the cab is past reverse center of gravity and allow cab to descend and latch.
4. Shift pump control lever to lock position.



SYSTEM BLEED PROCEDURE

1. Connect all hydraulic lines.
2. Tighten all connections except two at each of the tilt cylinders and one at each latch cylinder.
3. Fill pump reservoir to top with specified oil. Close and tighten fill plug.
4. Shift pump control lever to LOWER (return) position. Pump until LOWER lines are bled. Tighten corresponding connections.
5. Shift pump control lever to RAISE (tilt) position. Repeat procedure in step 4 for the RAISE lines. Bleed latch cylinders first and tighten connections. Repeat for push port of tilt cylinder.
6. After whole system is bled, shift pump control lever to LOCK position. Check and refill reservoir, if necessary.

SERVICE HINTS

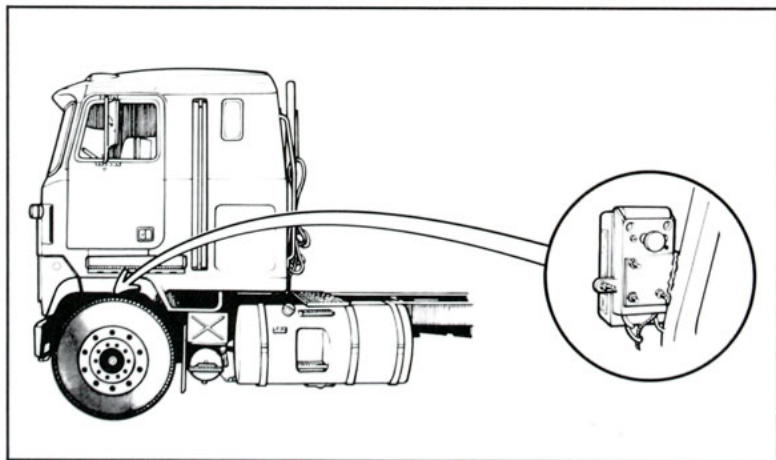
The recommended type of fluid for the MH cab tilt system is CF-A (MIL-H-5606B), capacity 3 pints (1.4 litres).

MASTER CIRCUIT BREAKER

The master circuit breaker is located on the transmission linkage bracket just above the left hand frame rail. It is easily accessible by reaching in the driver's side wheel well just above the tire. An audible click will be heard when the knob is pushed in or pulled out.

NOTES

Pull knob out to interrupt battery feed to total electrical system except starting motor and alternator permanently wired to the battery (hot).





CIRCUIT BREAKERS

The circuit breakers in the MH models are located behind a panel which is situated in front of the passenger's seat. Remove the fasteners and the circuit board will be exposed.

CAUTION

For safety reasons the turn signal circuit is wired into the circuit board with a fuse rather than a circuit breaker. **DO NOT** replace this fuse with a circuit breaker. If fuse blows, replace it with another fuse of equal rating.

Circuit breakers are used in the electrical system to automatically interrupt the flow of electrical current in the event of an overload.

SAE Type II (automatic reset non-cycling) provides a complete circuit disconnect until the overload is corrected. The power to the affected circuit breaker must be shut off before the circuit breaker will reset itself.

Type II's will be used in all accessory circuits including the headlight circuit. The headlights will be on separate circuit breakers so that if one goes out the other headlight will remain on.

CAUTION

For proper installation of electrical accessories, all wiring should be routed through the junction block with Type II circuit breakers.



NOTES





OPERATION



GETTING THE MOST FROM YOUR ULTRA-LINER®





NOTES





GENERAL OPERATIONAL PROCEDURES

A GUIDE TO SAFE, ECONOMICAL OPERATION

Don't overload your truck! The gross vehicle weight ratings for a given model truck vary with operating conditions, tire size, wheel base, frame length and overhang. For economy and safety, it is therefore important to observe the "GVW" ratings for your particular truck. This information can be found on your Vehicle Certification Label.

OBSERVE INSTRUMENTS

Glance at instruments frequently. When problems develop, take prompt steps to correct them.

STOPPING ENGINE

After a hard run, allow engine to idle three minutes before shutdown in order to stabilize the temperature of all engine parts. Quick shutdowns can cause engine damage and prevent the turbocharger from being properly lubricated.

PARKING

Use only parking brake for parking. **DO NOT USE TRAILER BRAKE LEVER FOR PARKING.** Check frequently to be certain brakes are adjusted to lock and hold vehicle when parked. Do not use for braking vehicle when in motion except in an emergency. When parking on a grade, use wheel chocks under the rear wheels of turn front wheels to the curb. Do not leave diesel engine vehicles in gear; if vehicle should move, the engine may start by heat of compression. Be sure the engine stop knob is left in the OUT (engine stopped) position to prevent accidental starting.



GENERAL OBSERVATION

Make it a habit, at stops to walk around your truck to look for fuel, oil and coolant leaks and condition of tires, wheel nuts, springs and lights. Stop trouble before it stops you.

BREAK IN

Your new Mack truck has been thoroughly inspected, adjusted and lubricated by your Mack service center. As moving parts "wear in" or as gaskets "take a set," an occasional oil, air or coolant leak may develop. Prompt action to correct these minor mechanical items will prevent a major repair later. Refer to the following "break in" recommendations and take the truck to the nearest Mack service center as soon as any abnormal condition becomes evident.

During the first 3,000 miles/5 000 kilometres,

–check the oil and coolant levels frequently.

–check brake and clutch adjustments frequently and adjust as needed.

Observe your dashboard instruments often and shut down the vehicle at the first sign of any abnormal readings.

Report all leaks, loose fasteners, unusual noises, etc., so they may be checked and corrected as soon as possible.

NOTES

All changes and adjustments referred to in this vehicle break-in section can be found in the Maintenance and Lubrication Manual, TS494.



BREAK IN / OIL CHECK



At the end of the first 3,000 miles/5 000 kilometres or before 4,000 miles/6 400 kilometres or 3 to 4 months

-change the engine lubricating oil, oil filters, fuel filters and coolant conditioner.

-change the geared units' (transmission, auxiliary transmission, transfer case, power take-off, front driving axle, rear driving axle[s]) lubricating oils.

-Lubricate the chassis.

OIL CHECK

As the operator of this vehicle, it is important to perform the daily inspections necessary to keep your truck in top shape. Maintaining the proper level in your engine crankcase cannot be overemphasized.

Before checking the oil, remember these important points.

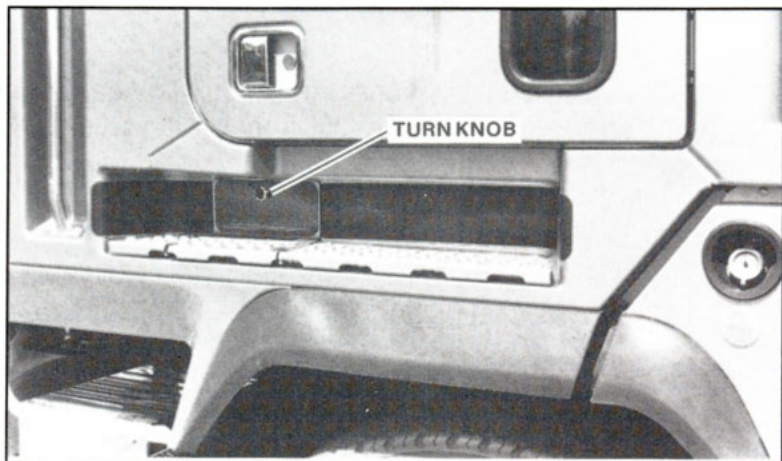
-Measurement of the oil level must be taken on level ground.

-If the engine has been running, allow about fifteen minutes after shutdown for oil to drain down to the oil pan.

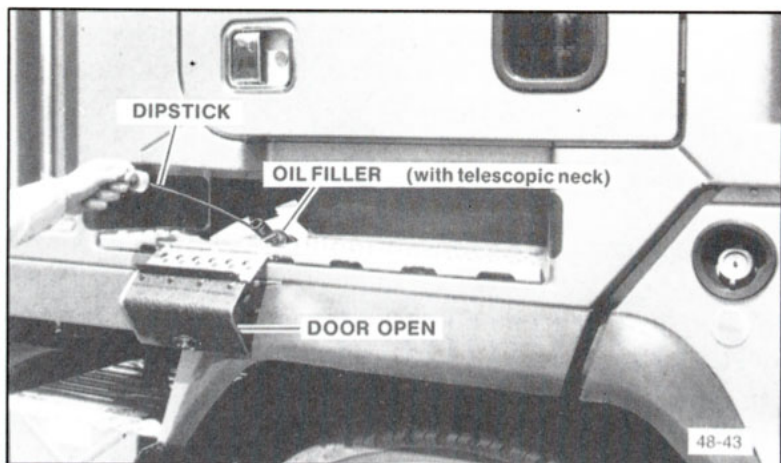
-The level must be close to the full line on the dipstick but must not exceed that line.

DIPSTICK LOCATION

On the MH, the dipstick and oil fill tube are located behind an access panel on the passenger side step area.



Turn the knob and pull the door open. It is hinged at the bottom.





NOTES





DAILY INSPECTION



This section has been written with two things in mind, the truck and its operator. The goal of this section is to get the truck and the operator to function as one unit. The truck has been designed to work hard and give the operator years of efficiency and performance with the proper care. It's the operator's job to provide the proper care, through maintenance and lubrication (see the TS494). Good operating habits formed early will make you and your truck a great team.

WARNING

To avoid serious injury, **DO NOT** step on fuel tank, battery box, frame, etc. unless adequate slip resistant surfaces and handholds are provided.

BEFORE STARTING OUT-TAKE A WALK

The driver of each shift should make a "walk around" inspection daily to check the safety equipment and levels or operation and conditions of the following:

INSIDE

- | | |
|---|---|
| <input type="checkbox"/> AIR PRESSURE AT GAGE | <input type="checkbox"/> FOOT PEDALS |
| <input type="checkbox"/> ALL INSTRUMENTS | <input type="checkbox"/> WINDSHIELD WIPERS |
| <input type="checkbox"/> ALL BRAKES | <input type="checkbox"/> WINDSHIELD WASHERS |
| <input type="checkbox"/> STEERING | <input type="checkbox"/> SIGNALING DEVICES |
| <input type="checkbox"/> HORN | <input type="checkbox"/> HEATER/DEFROSTER |
| <input type="checkbox"/> SEAT BELTS | <input type="checkbox"/> SEAT ADJUSTMENT |

CAUTION

Be sure door and hood latches are secured before attempting to move the vehicle.



DAILY INSPECTION



OUTSIDE

- ☐ FUEL IN TANK AND FUEL LINES
- ☐ OIL IN ENGINE
- ☐ COOLANT LEVEL
- ☐ PROPER AIR PRESSURE IN ALL TIRES
- ☐ DRAIN THE AIR SEPARATOR
- ☐ CHECK FOR FLUID LEAKS
- ☐ FRONT WHEEL BEARINGS (OIL)
- ☐ DOORS AND WINDOWS
- ☐ CHECK FOR BROKEN OR CRACKED LIGHTS AND LENSES
- ☐ PROPER LICENSING AND PLATES
- ☐ REAR VIEW MIRRORS PROPERLY ADJUSTED
- ☐ REFLECTORS IN PLACE AND NOT BROKEN
- ☐ WHEEL STUD NUTS TIGHT AND IN PLACE
- ☐ HOOD LATCHES SECURE
- ☐ CHECK OPERATION OF LIGHTS AND TURN SIGNALS
- ☐ CHECK GRAB HANDLES, DECK PLATES, BATTERY BOX COVERS, FUEL TANK AND STRAPS SECURELY FASTENED AND FREE FROM CORROSION

Get in the habit of making this daily walk-around inspection. You'll have the satisfaction of knowing your truck is in good shape. That means less unexpected down time from highway failures and less chance of a shakedown from highway inspections for faulty equipment.



STARTING THE TRUCK

CRANK IT UP—NORMAL TEMPERATURES

Climb up and into the cab (see Cab Entry). Before you put the keys in the ignition switch, set the parking (spring) brake, disengage the clutch (if so equipped) and move the shift lever into neutral. Push the engine stop button all the way in.

NOTES

If parking (spring) brakes are not applied, hard starting may be the result.

Put the key in the ignition. Turn the key clockwise to first "click" (about 2 o'clock position) to activate instruments. Disengage the clutch and press accelerator half-way down. Turn the key to 3 o'clock position and release as soon as engine starts. (If engine does not start immediately, limit cranking period to thirty seconds.) Keep clutch disengaged until engine runs smoothly. When oil pressure and air pressure approach normal operating ranges, you may put the vehicle into operation.

NOTES

Do not rev the engine to try to achieve a faster warmup. Lubricants need time to establish a film between moving parts.

CAUTION

Engine must be warmed up to operating temperature before attempting to move the vehicle in either reverse or lo-lo range.



CRANK IT UP—COLD WEATHER STARTING

NOTES

Before attempting to start the engine during cold weather, actuate the engine stop control rack several times to insure that the injection pump control rack is free. Condensation in the fuel could cause the control rack to freeze up after extended shutdown in cold weather.

Here are a few tips that will make cold weather starting easier on you and your truck.

–**Use the correct grade of oil** in your crankcase for the prevailing winter temperature.

–**Diesel fuel has some bad habits in cold weather.** It can gel and cause clogging of filters and small passages. In those circumstances where gelling may occur, it is permissible to mix a small percentage of number one fuel (kerosene) to your number two (diesel) fuel. The addition of kerosene is not recommended for general use since there will be a sacrifice in both performance and power.

–**Water/moisture can accumulate in the fuel system.** This can be avoided by regularly draining the tanks and filters. Water accumulation can freeze in the fuel tank, fuel lines and filter. The remedy for fuel freeze-up is to add **one pint of isopropyl alcohol for every 100 gallons of diesel fuel.**

WARNING

Under no circumstances should gasoline or other liquid materials be used in place of kerosene or alcohol.



STARTING



–**Use ether sparingly.** An ether capsule may be used to assist in starting the truck in cold weather. However, too much ether will damage the engine.

–**Save your batteries.** Do not overtax batteries and starting motor by cranking for more than thirty seconds without interruption. Allow about two minutes between attempts at starting the truck. This permits starter to cool and batteries to reenergize.

CRANK IT UP–AIR STARTER OR PUSH BUTTON

Put the key in the ignition switch. Turn the key clockwise to the first "click" (about 2 o' clock position) to activate the instruments. With clutch disengaged, press accelerator half-way down. Push starter button in and release as soon as engine starts. (If engine does not start immediately, limit cranking period to thirty seconds.) Keep clutch disengaged until engine runs smoothly. When oil pressure and air pressure approach normal operating ranges, you may put the vehicle into operation.

NOTES

Build up air pressure to a maximum (120 lbs/827kPa) before shutting down and parking for the night.

⚠ CAUTION

Idling engine unnecessarily for long periods of time wastes fuel and fouls injection nozzles. Unburned fuel causes carbon formation and oil dilution. If you must idle, set at fast idle, about 1000 to 1200 rpm. **NEVER RACE AND ENGINE DURING WARMUP.**



MOVING THE VEHICLE



1. To move the vehicle, begin by starting the engine and waiting until it reaches its operating range.
2. Disengage the clutch and push the pedal to the floor.
3. Shift transmission into first or low gear (see transmission section for your particular transmission and advice on how to shift and what gear you should start in).
4. Release the parking brake.

CAUTION

If the spring brake warning light is on, **DO NOT** move the vehicle because driveline damage may result.

5. Engage clutch smoothly by releasing the clutch pedal. At the same time, push accelerator down the amount necessary for the engine to move the load.

CAUTION

Never allow your foot to ride the clutch pedal when clutch is engaged. This will cause premature failure and short clutch facing life.

6. As vehicle gains speed, continue shifting until transmission is in highest gear possible with engine in operating range.

NOTES

Engine must be warmed up to operating temperatures before attempting to move the vehicle in either reverse or lo-lo range when vehicle is equipped with a torque limiting device.



COOLING SYSTEM

The cooling system is a pressurized system. The coolant is circulated by a centrifugal pump. It is a fairly typical system in most respects but there are a few things to keep in mind when checking or working on the cooling system.

NOTES

On the MH, use the folddown steps in the bumper to gain a solid foothold when filling or checking coolant at the radiator cap.

WARNING

Avoid injury when checking coolant in a hot engine. Turn the radiator cap counterclockwise to the first stop but do not depress. After the pressure has completely dissipated, press the cap downward and continue turning to remove.

DRAINING

Whenever repairs are to be made which would require disconnecting of coolant hoses, etc., the cooling system should be completely drained. Remove the filler cap and open all coolant drain cocks.



COOLING SYSTEM



FILLING

Close all drain cocks and fill with the proper coolant mixture. Run engine with radiator cap off until operating temperature is reached and the thermostat opens. Recheck level and add coolant if required. Run the engine long enough to be sure the system is free of air and has the correct amount of coolant.

CAUTION

The concentration of ethylene glycol in the cooling system must be checked with a hydrometer prior to traveling or operating in areas where sub-freezing temperatures may be encountered.

NOTES

Piping arrangement may cause capacity variation depending on the type of cooling system and optional external cooling devices which may be attached. Therefore it is difficult to tell exactly how much coolant it will take to fill any one particular system. As a general rule it is usually safe to say, fill to one inch below the bottom of the radiator filler neck. When making initial fill or adding ethylene glycol, operate the engine for twenty minutes and check the solution with a hydrometer.

CAUTION

DO NOT use coolant solutions which contain antileak additives in trucks equipped with coolant filters or conditioners.

DO NOT use soluble oil type coolant in ANY MACK cooling system.



ENGINE

To obtain peak efficiency and maximum performance, the operator will want to be familiar with certain aspects of the drive train with which he/she will be working. Downshifting is not necessary until the engine rpm is at or near the low limit of the operating range. Do not lug the engine.

CAUTION

Running the engine at an rpm that is too low for the load or grade of the road can cause damage to the drive train.

Shifting at the proper time will save both fuel and unnecessary repair bills, but remember that once your engine falls below the peak torque, both the torque and horsepower drop off very rapidly. Before this happens, downshift to the next lower gear.

On vehicles with transmissions having extreme reduction gearing, coupled with high rear axle loads, a torque limiting device will be used. This device selectively limits the amount of fuel that can be delivered to the engine by the injection pump and prevents overloading of the drive train components.

Use the same gear going down hill as you would going up hill. This will save your brakes and prevent damaging the engine due to overspeeding.

ENGINE TEMPERATURE

Before entering high speed traffic conditions, allow the engine to reach operating temperature. Normal operating range may go between 170°F. and 225°F. depending on weather and road conditions. Engines do not normally overheat and the cause should be determined and corrected if overheating occurs.



ENGINE



CAUTION

Use of a winter front is **NOT** recommended. It can cause high exhaust temperature and serious engine damage. If a winter front is used a Mack approved pyrometer **MUST** be installed. **DO NOT** exceed the temperature limit shown on the pyrometer. To reduce temperature, open winter front, downshift or reduce engine power.

Don't permit load to drive engine above governed speed. Operate in a gear low enough to allow engine to accelerate to or to maintain governed rpm when applying throttle.

WARNING

Misuse or modification of a turbocharger can result in serious injury and property damage. In addition, extreme care must be taken to avoid foreign material induction, excessive exhaust temperatures and lack of lubrication.

Low speed Maxidyne engines are designed to be used with five and six speed transmissions. These high torque rise, low speed engines coupled with five or six speeds mean excellent power, durability and fuel efficiency.

If you are operating a vehicle with one of the low speed engines, please be aware of its limits in high and low end drive and shift accordingly.

The low speed engines will have an "L" at the end of the model number. Pay attention to your tachometer and drive accordingly.



MODEL DESIGNATION

DESCRIPTION

The Mack engine unit symbol designation system is designed to provide total unit descriptive identification through a combination of prefix letters, numbers, digits and suffix letter as applicable.

PREFIX LETTERS AND NUMBERS

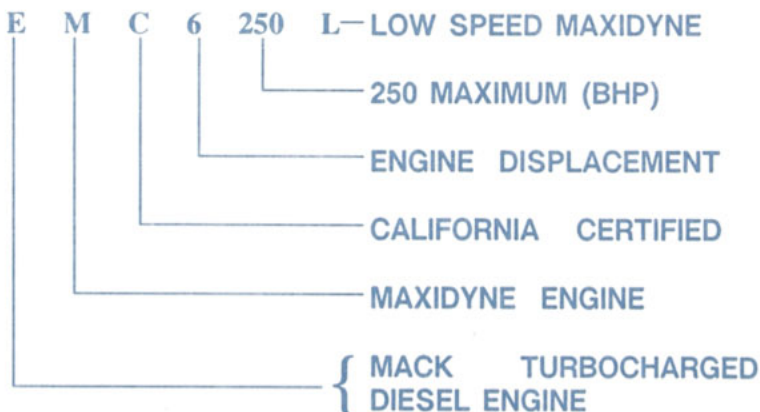
- E = MACK TURBOCHARGED DIESEL ENGINE
- M = MAXIDYNE ENGINE (HIGH TORQUE RISE)
- C = CALIFORNIA CERTIFIED
- 6 = 672 CUBIC INCH DISPLACEMENT
- 9 = 998 CUBIC INCH DISPLACEMENT

DIGITS: PEAK GROSS HORSEPOWER (BHP)

SUFFIX LETTER AFTER NUMBER

- L = LOW SPEED MAXIDYNE

EXAMPLE:





POWER TAKE OFF UNIT



If the vehicle you are operating is equipped with a Power Take Off Unit (PTO), be sure you read and understand the following WARNING!

WARNING

POWER TAKE OFF (PTO) UNITS, and their related equipment can be very dangerous. Any PTO installation, repair or replacement should include a warning lamp which indicates PTO engagement. The lamp must be located close to the PTO control and clearly visible.

PTO units are driven by the engine or drive train components (flywheel, crankshaft, transmission). No work of service should be performed or attempted on the PTO and related units unless the engine is shut down. Always keep body parts and loose fitting clothing out of the range of these powerful components or serious damage may be the result.

Be sure you are aware of the PTO's engagement or nonengagement status and the position of the truck's body (dump body controlled by PTO, etc.,). Be sure PTO is disengaged when not in use.

The engineering recommendations for our rear-mounted PTO units are as follows:

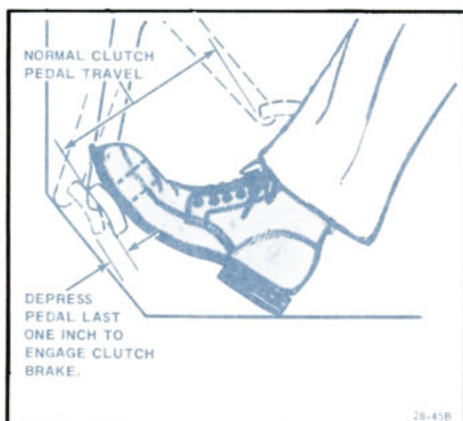
INTERMITTENT SERVICE—The PTO unit is operated, under load, for less than seven minutes and then allowed to cool before it is operated again.

CONTINUOUS SERVICE—The PTO unit is operated, under load, for seven minutes or more. Also, units operated for less than seven minutes and not allowed to cool down before operating again, should be considered continuous service.

Rear-mounted PTO units operating under the continuous service guideline must have the published torque or horsepower rating reduced by 30%.

TORQUE LIMITING CLUTCH

When used properly, the torque limiting clutch brake prevents tang breakage which is prevalent in the conventional clutch brake. The torque limiting clutch brake provides an amount of internal free travel that allows for torsional oscillation to prevent fatigue.



With the vehicle standing still, release the clutch (carefully apply clutch brake to synchronize clutching teeth), shift to first or reverse gear, engage clutch and accelerate.

The torque limiting clutch brake was designed to stop the input shaft of the transmission while the vehicle is stopped and the driver is attempting to shift into either first or reverse.

It was not designed to be used as an upshifting clutch brake.



CLUTCH



CAUTION

Once the vehicle is in motion, further clutch brake operation could damage the torque limiting clutch brake. The clutch brake must not be used when making a downshift or and upshift.

NOTES

When the clutch is engaged, a slight but definite resistance to clutch pedal downward travel will be felt in the last one inch.

DOUBLE-CLUTCHING

As with all nonsynchronized transmissions, double-clutching is necessary on downshifts as well as upshifts. It is advisable to use the torque limiting clutch brake in first and reverse gears and to double-clutch in the other gears.

Double-clutching is a means of bringing the speed of transmission gears into synchronization so that the shift can be make without clash. The engine is used to speed up the countershaft for a downshift and to slow it down for an upshift.

1. Depress clutch pedal and shift to neutral.
2. Let up clutch pedal and accelerate engine (when making downshift) or allow engine to slow down (upshift) until engine speed approximately corresponds to road speed of gear to be selected.
3. Depress clutch pedal and complete shift.



CAUTION

Maximum safe oil temperature is 235°F. (113°C.). Continued operation with oil above this temperature will cause rapid deterioration of the oil's lubricating properties and is **NOT RECOMMENDED**.

CAUTION

The vehicle must be completely stopped before attempting to shift from reverse to any forward speed or any forward speed to reverse or damage to transmissions may result.

TRTXL1070(B) * SHIFTING INSTRUCTIONS

* THE "B" DESIGNATION MEANS THAT INSTEAD OF A STICK SHIFT FOR THE FRONT COMPOUND, THERE IS A DASH MOUNTED SWITCH TO AIR SHIFT THE FRONT COMPOUND BETWEEN LOW AND DIRECT.

The TRTXL1070(B) is a twelve speed, triple countershaft, non-synchronized Maxitorque transmission. It consists of a five speed main box with an air shifted rear compound providing a Direct and Overdrive split in each of the five main box speeds, plus a manually shifted front compound providing a Direct and Low range for first speed gear. Due to a positive interlock, the only time Low range in the front compound can be used is with the main box in first gear.

NOTES

Main box cannot be shifted out of first gear until the front compound is in Direct.



Reverse is located in the rear compound, therefore five reverse speeds are available. Reverse is engaged by placing the Selectair valve in reverse position and then placing the main box gear shift lever in one of the five forward speeds.

Starting Out—FRONT COMPOUND IN DIRECT

Engine is running and rear compound and main gear box are in neutral. The front compound is in Direct.

Depress the clutch pedal.

Shift the Selectair Valve (rear compound) to desired mode.

Shift the main gear box to first gear.

Release the clutch pedal and accelerate the engine.

Starting Out—FRONT COMPOUND IN LOW

Engine is running and rear compound and main gear box are in neutral. The front compound is in Direct.

Depress the clutch pedal.

Shift the main gear box to first gear.

Shift the front compound to Low.

Shift the Selectair Valve to Direct.

Release the clutch pedal.

Accelerate the engine.



Main and Rear Compound-UPSHIFT

Select Direct on Selectair Valve

Release accelerator and depress clutch pedal.

Move the gear shift lever to next location.

Release clutch pedal and reapply accelerator.

Main and Rear Compound-DOWNSHIFT

Select High on Selectair Valve and downshift through normal procedure double-clutching as you go.

Main and Rear Compound-REVERSE

Neutral must be selected first in the main box before selecting reverse on the Selectair Valve.

Engage the gearshift lever in one of the forward speed positions, depending on how much speed is desired in reverse.

Rear Compound-UPSHIFT Only

Select High on Selectair Valve.

Release and reapply accelerator

Rear Compound-DOWNSHIFT Only

Select Direct on Selectair Valve.

Release and reapply accelerator.

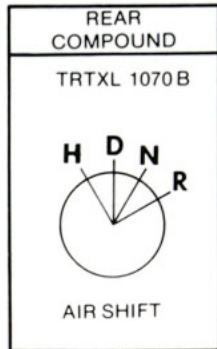
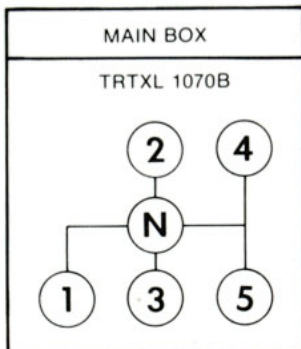
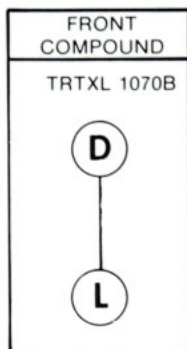
(Clutch pedal may be depressed for compound shifts.)

Depress the clutch pedal and move the Selectair valve to Direct.

Release the clutch pedal and accelerate.



TRTXL1070(B)



L - LO N - NEUTRAL D - DIRECT H - HIGH R - REVERSE

FRONT COMPOUND	GEAR (MAIN BOX)	TRTXL 1070	
		REAR COMPOUND (AIR SHIFT)	RATIO
L	1	D	14.44
		H	11.23
		R	(47.96)
D	1	D	8.59
		H	6.68
		R	(28.52)
D	2	D	4.99
		H	3.89
		R	16.59
D	3	D	2.84
		H	2.21
		R	9.42
D	4	D	1.66
		H	1.29
		R	5.50
D	5	D	1.00
		H	.78
		R	3.32

() RATIOS IN PARENTHESIS ARE NOT FUNCTIONAL TO OPERATIONS

36-96

T2050 SHIFTING INSTRUCTIONS

Upshift

The T2050 is a five speed overgear transmission designed for general highway usage. This is a non-synchronized model that shifts through the use of a single shift in the traditional "H" pattern. Start out in first and shift up to second, third, fourth and fifth, double-clutching from one gear to the next.

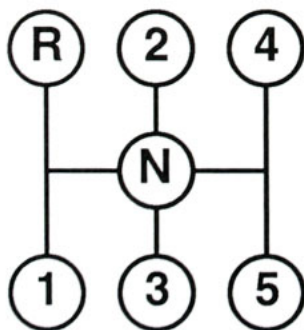
Downshift

Downshift in reverse order double-clutching through each gear.

CAUTION

Be careful not to overspeed the engine during downshifting. Damage to the drive train components may be the result.

T2050



EH2

GEAR (MAIN BOX)	RATIO
1	5.24
2	3.05
3	1.73
4	1.00
5	.60
R	5.38



T2060 AND T2070A SHIFTING INSTRUCTIONS

The T2060 and T2070A are non-synchronized transmissions. There is a Low and High auxiliary section controlled by an air shift flipper. In Low range you get one low ratio in the T2060 and two low ratios in the T2070A. In High range there are five forward gears which can be shifted in the standard manner, but remember to double-clutch whether moving up or down through the gears. For normal highway usage, start in High range, first gear and shift through second, third, fourth and fifth. The Low range in both transmissions is designed for use off highway and in slow moving (curb pouring, material spreading, heavy load/steep grade) operations. Reverse can be used in Low or High range.

Upshift-2060

To upshift the T2060, begin in first gear, Low range. Depress the clutch pedal and release accelerator pedal. Flip air shift flipper to High range (you are still in first gear). Release the clutch pedal and apply the accelerator to reach the top of the operating range. Shift through second, third, fourth and fifth, double-clutching as you go.

Downshift-T2060

To downshift the T2060, downshift as normal from fifth, fourth, third, second and first (don't forget to double-clutch all gears). When you get to the low end of the first high operating range, depress the clutch pedal, release the accelerator, and flip air shift to Low. Release the clutch pedal.



Upshift-T2070A

To upshift the T2070A, begin in first gear, low range. Upshift to second gear in the normal manner (double-clutch) and you are in second gear, Low range. When you are ready to upshift again, depress the clutch pedal and release the accelerator pedal. Move the stick to neutral. Flip the air shift flipper to High double-clutch and move the stick back to first gear. You are now in first gear, High range (which as you can see by the ratio chart) is the next highest ratio. Release the clutch pedal and apply the accelerator pedal. Shift through the normal second, third, fourth and fifth procedures, double-clutching as you go.

Downshift-T2070A

To downshift the T2070A, downshift as normal from fifth to fourth, third, second to first in High range (double-clutch between them all). The next lowest shift will be to second gear, Low range. When you are ready for this gear, depress the clutch pedal and release the accelerator pedal. Move the stick to neutral and flip the air shift flipper to Low. Double-clutch and move the stick to second gear. You are now in second gear, Low range. Your next lower gear (and lowest ratio in the T2070A) is first Low. Double-clutch down to first, Low range, at the proper time.

CAUTION

Be careful not to overspeed the engine during downshifting. Damage to the drive train components may be the result.

CAUTION

Do not preselect the air shift flipper on the T2060 and T2070A. Shift the rear compound only with the clutch pedal depressed and the gear shift lever in neutral.



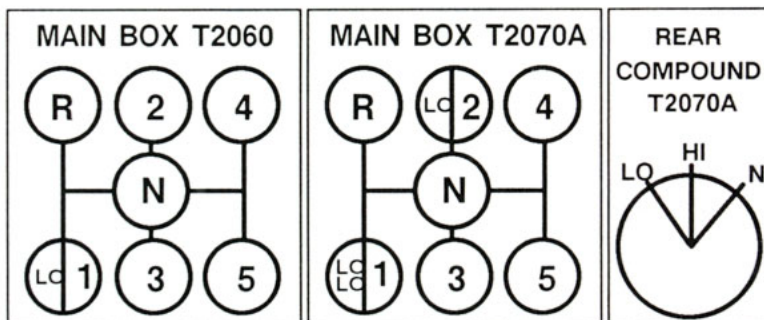
T2060/T2070A



OBTAINING NEUTRAL IN REAR (COMPOUND) CASE

The T2070A has a three position control valve mounted on the shift lever. In order to get into Neutral in the rear (compound) case, using the three position control valve, follow the procedure listed below.

1. Release the engine clutch.
2. Move the main box shift lever in Neutral.
3. Select Neutral on the shifter valve.
4. Select and engage the required main box ratio for PTO operation.
5. Engage the engine clutch for drive.



GEAR (Main Box)	RATIOS			
	T2060		T2070A	
	LO	HI	LO	HI
1	9.02	5.24	14.16	5.24
2	(5.25)	3.05	8.25	3.05
3	(2.98)	1.73	(4.67)	1.73
4	(1.72)	1.00	(2.70)	1.00
5	(1.03)	.60	(1.62)	.60
R	9.25	5.38	14.53	5.38

EH13



T2080 SHIFTING INSTRUCTIONS

The T2080 is a range shifted transmission with eight forward speeds. Low and high ranges are controlled by an air shift control button.

Never attempt to move type vehicle from a stopped position, in any gear higher than third Low. Depending on load, grade and road conditions you will very likely have to start in first Low or second Low. All three speeds in Low range are torque limited.

CAUTION

Do not move the air shift control button while moving in reverse. Also, when the truck is stationary do not shift into High range and then start moving the truck. Damage to the synchronizer may result.

Upshift

Let's assume that we will need all eight forward speeds to get up to fifth High. This is how the vehicle should be shifted.

With shift lever in neutral, push the shift control button down and shift the transmission into first Low. Shift up through second Low and third Low, double-clutching between the gears. When maximum rpm has been reached in third Low, pull the air control button up (preselect) and then move the shift lever through neutral to first High. Your shift lever, when passing through neutral will put you in High range. Now follow the normal sequence (second High, third High, fourth High and fifth High) double-clutching your way to High gear.

⚠ CAUTION

Be careful not to overspeed the engine during downshifting. Damage to the driveline may be the result.

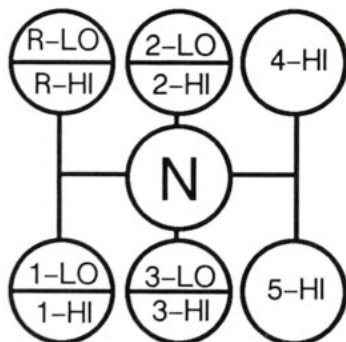
Downshift

To downshift the T2080, go from fifth High on down through High range (fourth High, third High, second High first High). While still in first High, push down on air shift control button (preselect) and move the shift lever through neutral to third Low. The move through neutral again activates the air shift mechanism, this time to Low range. Then shift down to second Low and first Low, double-clutching between all gears.

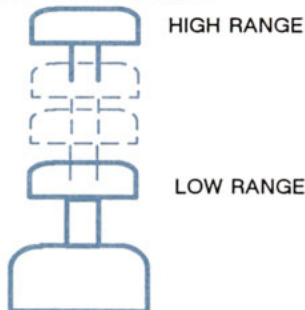
EH4

T2080

MAIN BOX



REAR COMPOUND



SPEED	LOW	SPEED	HIGH
FIRST	20.08	FOURTH	5.24
SECOND	11.68	FIFTH	3.05
THIRD	6.63	SIXTH	1.73
(FOURTH)	(3.83)	SEVENTH	1.00
(FIFTH)	(2.29)	EIGHTH	.60
REVERSE	20.61	REVERSE	5.38

() DENOTES RATIOS ARE NOT FUNCTIONAL TO OPERATIONS.



T2090 SHIFTING INSTRUCTIONS

CAUTION

Make sure air pressure is at least 100 psi before making range shifts. Warm units before making range shifts. Always start in Low range per shift decal instructions, fourth or lower in T2090 and fifth or lower in T2100, including dynamometer testing. Do not select high range and attempt to move a stationary vehicle.

Upshift

The T2090 is a range shifted transmission with eight forward speeds and an extra low gear in the Low range. Low and High ranges are controlled by an air shift control button. Under normal highway conditions, push the button down while shift lever is in neutral and shift the transmission into first gear (see shift pattern). Shift through second, third, fourth, double-clutching as you go. To continue while still in fourth gear, pull the air shift control button up (preselect) and then move shift lever through neutral to fifth gear (first position in Low range). As the shift lever passes through neutral, the air shift will be completed to high range. Now continue (double-clutching) through sixth, seventh and eighth.

The extra low gear was designed for off-highway use such as paving, material spreading and heavy load/steep grade conditions.

CAUTION

Do not move the air shift control button while moving in reverse. Also, when the truck is stationary, do not shift into High range and then start moving the truck. Damage to the synchronizer may result.

Downshifting

To downshift the the T2090, shift from eighth to seventh, sixth and fifth (don't forget to double-clutch between gears). While still in fifth gear, push the air control button to Low (preselect). As you shift through neutral, the range shift to Low will be completed. Move the shift lever to fourth, third, second and first.

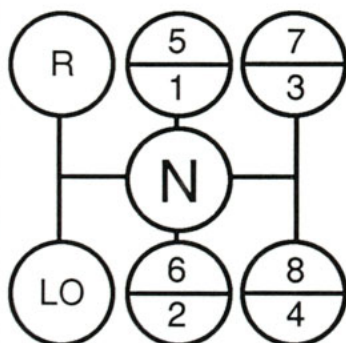
CAUTION

Be careful not to overspeed the engine during downshifting. Damage to driveline components may be the result.

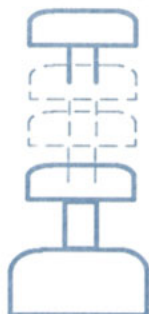
EH11

T2090

MAIN BOX



REAR COMPOUND



HIGH RANGE

LOW RANGE

GEAR MAIN BOX	RANGE REAR COMPOUND	RATIO
LO	LO	10.69
1		7.45
2		5.33
3		3.84
4		2.73
R		10.92
(LO)	HI	(2.78)
5		1.94
6		1.39
7		1.00
8		.71
(R)		(2.84)

() DENOTES RATIOS ARE NOT FUNCTIONAL TO OPERATIONS.



T2100 SHIFTING INSTRUCTIONS

CAUTION

Make sure air pressure is at least 100 psi before making range shifts. Warm units before making range shifts. Always start in Low range per shift decal instructions, fourth or lower in T2090 and fifth or lower in T2100, including dynamometer testing. Do not select high range and attempt to move a stationary vehicle.

Upshift

The T2100 is a range shifted transmission with ten forward highway speeds. Low and High ranges are controlled by an air shift control button. The T2100 is designed for highway travel. With shift lever in neutral push the shift control button down and shift the transmission into first gear (see shift pattern). Shift through second, third, fourth and fifth, double-clutching as you go. When maximum rpm has been reached in fifth, pull the air control button up, (preselect) and then move shift lever to sixth gear (first position in Low range). As the shift lever passes through neutral, the air shift will be completed to high range. Now continue (double-clutching) through seventh, eighth, ninth and tenth doubleclutching as you go.

The extra low gear was designed for off-highway use such as paving, material spreading and heavy load/steep grade conditions.

CAUTION

Do not move the air shift control button while moving in reverse. Also, when the truck is stationary, do not shift into High range and then start moving the truck. Damage to the synchronizer may result.

Downshifting

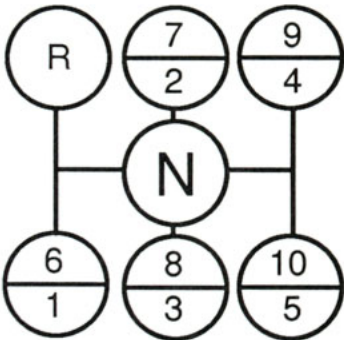
To downshift the the T2100, shift from tenth on down through Hi range (ninth, eighth, seventh and sixth). While still in sixth gear, push the air shift control button to (preselect) . As you shift through neutral to fifth, the range shift to Low will be completed. Move the shift lever to fourth, third, second and first.

⚠ CAUTION

Be careful not to overspeed the engine during downshifting. Damage to driveline components may be the result.

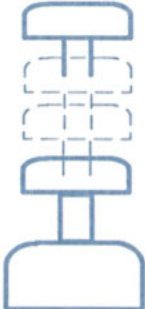
EH12
T2100

MAIN BOX



GEAR MAIN BOX	RANGE REAR COMPOUND	RATIO
1	LO	8.52
2		6.50
3		4.99
4		3.84
5		2.94
R		11.76
6	HI	2.22
7		1.70
8		1.30
9		1.00
10 (R)		.77 (3.06)

REAR COMPOUND



HIGH RANGE
LOW RANGE

() DENOTES RATIOS ARE NOT FUNCTIONAL TO OPERATIONS.



T2130 SHIFTING INSTRUCTIONS

CAUTION

Make sure air pressure is at least 100 psi before making range shifts.

Warm unit before making range shifts.

Always start in low range per shift decal instructions. This also applies to dynamometer testing.

Do not select High range and attempt to move a stationary vehicle.

The T2130 is a range shifted transmission with twelve forward highway speeds and an extra low gear in the low range. Lo and Hi ranges are controlled by an air shift control button. The air shift splitter section can be preselected and controlled by the splitter toggle switch on the hand control valve.

NOTES

If you chose to preselect a gear, especially under heavy loads the splitter will not shift until the drive-line torque is relieved. This can be done by depressing the clutch pedal and releasing or by backing off the throttle and then reapplying it.

Let's assume we have a full load and we are ascending a slight grade, for the purpose of showing a shift procedure through ALL the gears.



Upshifting

When you start the vehicle, put the shift lever in neutral. Flip the **range shift switch up** so it is in high range. (This must be done before the splitter switch can be selected to low due to a mechanical interlock.) **Select low with the splitter switch.** Now **move the range shift switch down** to make sure the splitter is toggled for low range.

To upshift the T2130, Shift the gear lever into first gear (see shift pattern). Shift through second, third and fourth gears double-clutching as you go. To continue while in fourth gear, flip the range lever to the high position (preselect) and then move gear shift lever through neutral to fifth gear. As the lever moves through neutral, the air shift will be completed to high range. At this point you must use the splitter to get fifth high, sixth low, sixth high, and so on through the low and high range until you reach eighth high.

NOTES

When upshifting with the splitter in high range, accelerate engine to governed speed, move splitter to high, tap clutch and back off accelerator pedal. Reapply accelerator when audible shift is heard or when engine speed falls by approximately 200 rpm. Tapping the clutch pedal may not be necessary to break the drive-line torque, but this will vary depending on road and load conditions.

The extra low gear in low range was designed for off-highway use such as paving, material spreading and heavy load/steep grade conditions.

CAUTION

Be careful not to overspeed the engine during downshifting. Damage to the driveline components may be the result.

Downshifting

To downshift the T2130, shift from eight high to eighth low, seventh high, seventh low, sixth high, sixth low, fifth high, to fifth low double-clutching between the gears. This is accomplished by using the splitter from high to low range.

NOTES

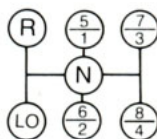
When downshifting with the splitter in high range, as engine speed falls, move the splitter to low range, release and reapply the accelerator pedal. An audible shift completion should be heard.

To continue while in fifth low, flip the range lever down to the low range position (preselect) and then move gear shift lever through neutral to fourth gear. As the lever moves through neutral, the air shift will be completed to low range. At this point you can downshift in as normal manner from fourth to third, second and first.

CAUTION

Be careful not to overspeed the engine during downshifting. Damage to the driveline components may be the result.

T2130



SPLITTER

HI
LO

RANGE
UP HI
DOWN LO



R - REVERSE N-NEUTRAL

GEAR	SPLITTER	RANGE	RATIO
LO	LO	LO	13.91
1	LO	LO	8.78
2	LO	LO	6.28
3	LO	LO	4.52
4	LO	LO	3.22
RANGE SHIFT HERE			
5	LO	HI	2.29
5	HI	HI	1.94
6	LO	HI	1.64
6	HI	HI	1.39
7	LO	HI	1.18
7	HI	HI	1.00
8	LO	HI	0.84
8	HI	HI	0.71

R	LO	LO	28.98
R	HI	LO	24.58
R	LO	HI	7.56
R	HI	HI	6.41

35/701



T2180 SHIFTING INSTRUCTIONS

CAUTION

Make sure air pressure is at least 100 psi before making range shifts.

Warm unit before making range shifts.

Always start in low range per shift decal instructions. This also applies to dynamometer testing.

Do not select High range and attempt to move a stationary vehicle.

The T2180 is a range shifted transmission with sixteen forward highway speeds and two extra low gears in the low range. Lo and Hi ranges are controlled by an air shift control button. The air shift splitter section can be preselected and controlled by the splitter toggle switch on the hand control valve.

NOTES

If you chose to preselect a gear, especially under heavy loads the splitter will not shift until the drive-line torque is relieved. This can be done by depressing the clutch pedal and releasing or by backing off the throttle and then reapplying it.

Let's assume we have a full load and we are ascending a slight grade, for the purpose of showing a shift procedure through ALL the gears.



Upshifting

When you start the vehicle, put the shift lever in neutral, **select low with the splitter switch, move the range shift down** to select low range. Engage first low with the lever (see shift pattern). To upshift the T2180, move the splitter switch to high (preselect) and when the engine reaches its peak rpm, release the accelerator pedal long enough to allow the upshift to take place. For the next upshift, move the splitter switch to low (preselect) and move the shift lever into second gear. The splitter shift will complete with rising engine speed. Flip the splitter to high and either actuate the clutch or get off the accelerator to complete the shift to second high. Repeat this procedure for third low and high and fourth low and high, double-clutching as you go. At this point you must use the range shift switch to get fifth low, fifth high, sixth low, sixth high, and so on through the low and high split until you reach eighth high.

NOTES

When upshifting with the splitter in high or low range, accelerate engine to governed speed, move splitter to high, depress and release clutch and back off accelerator pedal. Reapply accelerator when audible shift is heard or when engine speed falls by approximately 200 rpm. Tapping the clutch pedal may not be necessary to break the driveline torque, but this will vary depending on road and load conditions.

The extra low gears in low range were designed for off-highway use such as paving, material spreading and heavy load/steep grade conditions.



CAUTION

Be careful not to overspeed the engine during downshifting. Damage to the driveline components may be the result.

Downshifting

To downshift the T2180, shift from eight high to eighth low, seventh high, seventh low, sixth high, sixth low, fifth high, to fifth low double-clutching between the gears. This is accomplished by using the splitter from high to low range.

NOTES

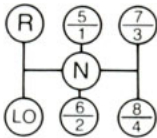
When downshifting with the splitter in high, as engine speed falls, move the splitter to low, release and reapply the accelerator pedal. An audible shift completion should be heard.

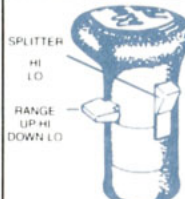
To continue while in fifth low, flip the range lever down to the low range position (preselect) and as you move gear shift lever through neutral to fourth gear, move the splitter switch from low to high. As the lever moves through neutral, the air shift will be completed to fourth high. At this point you can downshift using the splitter switch from fourth high to low, third high to low, etc. down to first low.

CAUTION

Be careful not to overspeed the engine during downshifting. Damage to the driveline components may be the result.

T2180





R - REVERSE N-NEUTRAL

GEAR	SPLITTER	RANGE	RATIO
LO	LO	LO	13.91
LO	HI	LO	11.80
1	LO	LO	8.78
1	HI	LO	7.45
2	LO	LO	6.28
2	HI	LO	5.33
3	LO	LO	4.52
3	HI	LO	3.83
4	LO	LO	3.22
4	HI	LO	2.73
RANGE SHIFT HERE			
5	LO	HI	2.29
5	HI	HI	1.94
6	LO	HI	1.64
6	HI	HI	1.39
7	LO	HI	1.18
7	HI	HI	1.00
8	LO	HI	0.84
8	HI	HI	0.71

R	LO	LO	28.98
R	HI	LO	24.58
R	LO	HI	7.56
R	HI	HI	6.41

35 702



REAR AXLE



Mack Trucks, Inc.® provides axle housings in three capacity classifications. They are medium-duty, heavy duty and extra heavy-duty. To deliver the appropriate amount of torque to the driving wheels, Mack Trucks, Inc.® offers single reduction and dual reduction carriers in a large variety of ratios for single axle applications. When required, a large variety of four wheel drive, two axle bogies are also available with top mounted, dual reduction carriers for straight line through drive. The bogie carriers are also available in a large number of ratios.

All four wheel drive bogie tandem carriers are available with the Mack Inter-Axle Power Divider third differential, with or without a driver controlled lockout.

Mack rear axles are designed so the entire load is carried by the axle housing through the wheel bearings mounted on the housing spindle. The rear axle shafts can be either free-splined, both ends, or integral flange type. Both types of axle shafts may be removed without removing or disturbing the rear wheels.

To avoid excessive tire wear, good maintenance must be practiced in the matching or tires on bogies without a compensating inter-axle power divider.

CAUTION

Maximum safe oil temperature is 235°F. (113°C.). Continued operation with oil above this temperature will cause rapid deterioration of the oil's lubricating properties and is NOT RECOMMENDED.



TWO SPEED REAR AXLE



The double reduction rear axle carrier employs selective fast and slow gear reductions. Electric shift (button on the transmission shifter lever) provides either fast or slow ratio by selecting these gearsets. The transmission is shifted in the usual manner and the two speed axle is shifted in the usual manner. The two speed axle is shifted as follows:

SPLIT SHIFTING

To shift to higher transmission gear and low axle speed at the same time (split shifting):

1. Make transmission shift to higher gear in the usual way.
2. Push the axle shifter button down just before re-engaging the clutch.
3. Re-engage clutch and depress the accelerator to maintain road speed.

To split to the lower transmission gear and high axle speed at the same time (split shifting):

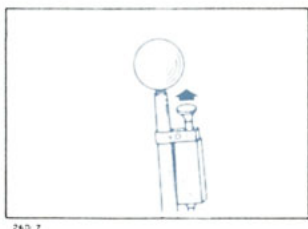
1. Hold accelerator down and pull axle shifter up.
2. Shift to lower transmission gear in the usual way, then depress accelerator to maintain road speed.

CAUTION

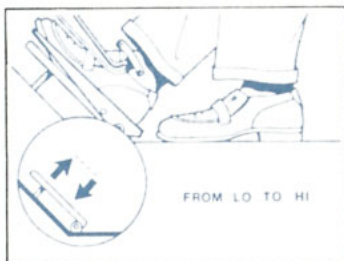
Always keep accelerator down when shifter button is moved except when split shifting to low axle speed.

Vehicle must be brought to a full stop before shifting from forward to reverse and vice versa.

TO SHIFT AXLE FROM LOW TO HIGH SPEED:



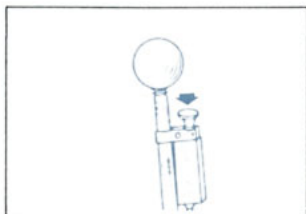
Shifter button
up (Hi)



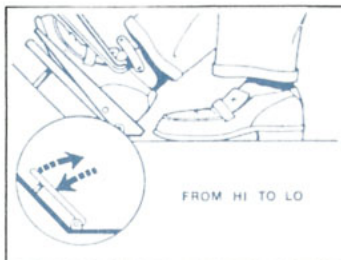
Up, pause and down
on accelerator

1. Hold accelerator down.
2. Pull axle shifter button up.
3. Ride with accelerator down until you want to complete shift. Release accelerator, pause until shift is completed, then depress accelerator to maintain road speed.

TO SHIFT AXLE FROM HIGH TO LOW SPEED



Shifter button
down (low)



260-6A

Up and down on accelerator quickly without declutching, or hold accelerator down while disengaging and re-engaging clutch as quickly as possible.

1. Push axle shifter button down.
2. Hold accelerator down until you want to shift.
3. Disengage and re-engage clutch as quickly as possible while holding accelerator down OR release and depress accelerator as quickly as possible without declutching.



TRANSFER CASE

NOTES

For complete information on using the Inter-Axle Power Divider, see the section on Inter-Axle Power Divider Control

The TC15 Series and TC25 Series are two speed transfer cases designed for all wheel drive vehicles. All gears are in constant mesh and are of the helical type for quiet running. The differential and all shafts are mounted in heavy duty tapered roller bearings. High-Low engagement is effected by means of a sliding clutch. A conventional fork spans the sliding clutch and moves in response to movement of the gear shifter hand control lever or air control valve.

A planetary gear type center differential is incorporated for front wheel drive availability at all times without requiring driver attention. However, for extremely slippery conditions, a driver controlled air actuated differential lockout is provided.

WARNING

Shifting between High (H) and Low (L) range or engaging the differential lockout while the vehicle is in motion must NOT be attempted. Drive component damage could occur.

NOTES

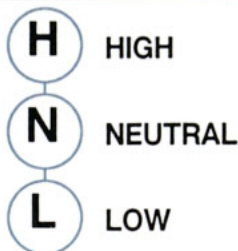
A transfer case Neutral (N) position is required when a transfer case power take-off (PTO) unit is incorporated. High (H) – Low (L) range air shift controls cannot be utilized when a PTO is installed.



ALL WHEEL DRIVE



TRANSFER CASE SHIFT PATTERN



TC(S)15 SERIES

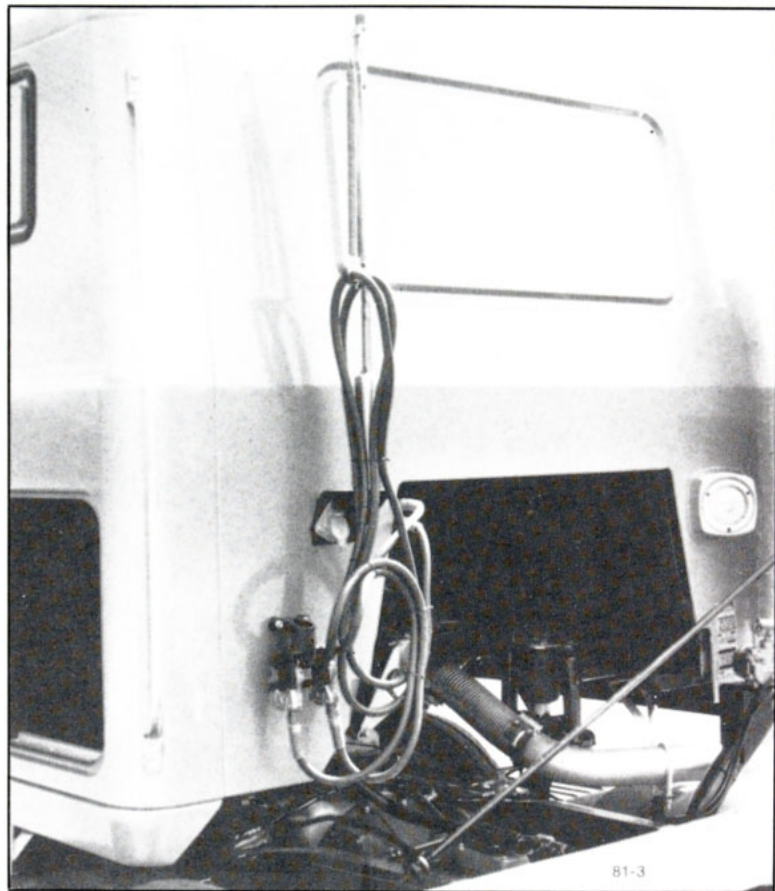
MODEL	HI RANGE	LO RANGE	FRONT DRIVE
TC(S)15	0.999	2.593	0.965
TC(S)150	0.768	1.992	0.965
TC(S)151	0.999	2.593	0.838
TC(S)1510	0.768	1.992	0.838
TC(S)152	0.999	2.593	1.000
TC(S)1520	0.768	1.992	1.000

TC(S)25 SERIES

MODEL	HI RANGE	LO RANGE	FRONT DRIVE
TC(S)25	1.36	2.593	0.965
TC(S)250	1.045	1.992	0.965
TC(S)251	1.36	2.593	0.838
TC(S)2510	1.045	1.992	0.838
TC(S)252	1.36	2.593	1.000
TC(S)2520	1.045	1.992	1.000



HOSE TENDER



⚠ CAUTION

AVOID LOOSE HOSES

Air lines and tractor to trailer electrical connections must be secured to the tractor's hose tenders (hose hanger, towel bar, pogo stick, etc.) to avoid getting them tangled in the drive line.



BRAKE OPERATION

This truck has been built to meet or exceed all applicable federal standards and regulations.

The air brake system consists of three main elements.

–The **compressor with governor and reservoirs** supply the air pressure.

–The **brake application valve** controls the braking pressures.

–The **brake chambers** perform the work on the truck brake mechanism.

Mack vehicle design has incorporated into this chassis a dual braking system. It has two complete air circuits, a primary circuit for rear brakes and a secondary circuit for front brakes. Each circuit receives air from separate reservoirs. Although there are two air circuits, they operate as one brake system through the dual circuit treadle valve. This provides the driver with an easy, graduated control of applying and releasing the brakes.

The air pressure in the two air brake circuits is monitored by air pressure gauge[s] on the dashboard. (See information about air pressure gauge[s] listed in the section on Panel C). When air pressure drops below 65 ± 5 psi (448 ± 34 kPa) in either primary or secondary air system, at any time other than vehicle startup, pull to the side of the road and determine problem. If air pressure continues to drop below 40 ± 5 psi in both systems, spring brakes will begin to be automatically applied. The low air pressure warning light or buzzer will be activated if low air pressure in either circuit occurs.



BRAKES



Driver caution should be exercised as this braking system is more sensitive to foot brake pressure and truck may stop in shorter distance than vehicles not equipped with this type of system.

CAUTION

Avoid sudden stops because constantly making such stops may have a negative effect on the performance of braking and driving parts.

When slowing for a stop, leave clutch engaged as long as possible to utilize the braking effect of the engine. When forward speed has dropped to a little above idling speed, push clutch pedal in and brake to a complete stop.

NOTES

The Mack puff limiter reversing relay normally bleeds a minute quantity of air unless the spring brake is applied. Whenever a vehicle is parked with the engine shut off and the spring brake not applied, the bleed air from the reversing relay will be audible. The bleed air from the reversing relay could be misinterpreted as a vehicle air leak and to stop the bleed air from escaping from the reversing relay, the parking (spring) brake must be applied.



PARKING BRAKE

Spring type parking brakes are standard on rear axles and bogies. The basic unit of a spring brake system is an air cylinder with heavy springs in it, either integrated with the service brake chamber or connected through linkage to the slack adjuster. It is so engaged in the brake linkage and thereby connected to the brake shoes, that with no air pressure in the spring cylinder, the springs expand and apply there force causing a brake application. When air pressure is again applied to the air cylinder, it compresses the heavy springs, making them ineffective and thereby releasing the brakes.

The spring type parking brake can be controlled from the cab by use of a hand operated valve. In order to apply or release the auxiliary system, the control valve in the cab is moved by the driver as directed on the knob and decal.

At a predetermined reduced air [pressure, in the event of air loss in the basic air system, the control will automatically exhaust the air from the spring chamber applying the brakes. Sufficient air pressure must then again be made available in the system to compress the heavy application springs.

CAUTION

Never use the trailer brake system alone as a parking brake. Use the tractor trailer brake system only. (It is activated by pulling the yellow diamond shaped knob on the dash panel.



ANTI-WHEEL LOCK

INSTALLATION OF ELECTRICAL EQUIPMENT ON VEHICLES EQUIPPED WITH ANTI-WHEEL LOCK BRAKE SYSTEM

Connection of electrically powered or electrically controlled equipment to the vehicle may cause interference with the proper operation of other vehicle components. This interference may be dependent upon the operating frequency and the degree to which transient signals are coupled into the vehicle system.

Every user and installer of electrical equipment has the obligation to assure the proper operation of all electrical systems on the vehicle with respect to conducted or radiated signals by his installation.

"Specific attention is directed to the anti-wheel lock control brake system." A vehicle checkout procedure should include operating any added circuitry under the following test conditions.

1. Engine running and brake air system pressure in operating range.
2. Vehicle stationary.
3. Depress and hold brake pedal in full application pressure mode.
4. Operate added equipment in all its starting, running and shutdown conditions. Listen for any exhausting of air from anti-wheel lock controllers.
5. Any exhausting of air from anti-wheel lock controllers will indicate an interference condition which must be corrected before the vehicle is released for highway use.



TIRES



WARNING

Tires used on multipiece rims must be assembled and inflated only by experienced, qualified personnel. Tires must be inflated in a safety cage whenever possible. If, however a safety cage is not available, use a portable lock ring guard.

The tire must be deflated prior to removal of the tire and rim assembly from the vehicle. Remove the valve core to insure complete deflation.

WARNING

NEVER POSITION YOUR BODY IN FRONT OF THE RIM DURING INFLATION.

The recommendations listed below, when followed, will provide the maximum in performance and mileage from your tires.

CORRECT INFLATION PRESSURE

In order to insure MAXIMUM MILEAGE AND OVERALL PERFORMANCE from your tires, it is essential that they operate at the CORRECT INFLATION PRESSURE for the LOAD CARRIED.

WARNING

Under no circumstances should you drive on UNDERINFLATED (OR OVERLOADED) tires. A tire in this condition builds up EXCESSIVE HEAT which can result in sudden tire destruction, property damage and personal injury.



At the end of this TIRE AND RIM section is a chart showing the maximum acceptable cold inflation pressures for the indicated loads for various tire sizes and types when used for NORMAL HIGHWAY OPERATION.

TIRE INSPECTION

Inspect you tires **daily**. Look for bulges, cracks, cuts, penetrations and/or oil contamination. If any such damage is found, the tire must be thoroughly inspected by a QUALIFIED TIRE INSPECTOR and repaired or discarded immediately, at his discretion.

Also, check for uneven wear. If found, a thorough inspection of front end parts and alignment should be made by a qualified mechanic.

TIRE MANUFACTURER'S DATA BOOK

Specific and more detailed information can be obtained by referring to the technical data books provided by each tire manufacturer.

Subjects of interest are:

- ☐ High speed or low speed operation
- ☐ Repair, retreading and regrooving
- ☐ Use of tire chains
- ☐ Mixing radial and bias tires on the same vehicle
- ☐ Use of dynamometers
- ☐ Tire mounting/dismounting

OIL CONTAMINATION OF TIRES

Lubricating oils, fuel oil, gasoline and other petroleum derivatives, if allowed to contact tires, will soften the rubber and destroy the tire. Preventive maintenance is necessary to insure that oil leakage does not occur. The following areas should be inspected on a regular basis:

- | | |
|---|---|
| <input type="checkbox"/> Axle end seals | <input type="checkbox"/> Drive axle seals |
| <input type="checkbox"/> Engine seals | <input type="checkbox"/> Oil filters |
| <input type="checkbox"/> Transmission seals | <input type="checkbox"/> Oil lines |



TIRES



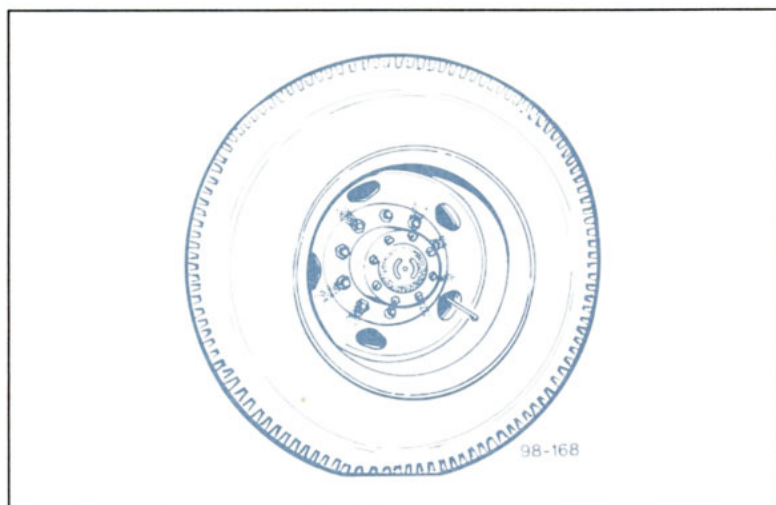
TIRE PRESSURE CHART

Maximum cold inflation tire pressures (psi) are listed below.
Add five (5) psi for all radial tires. D=DUAL / S=SINGLE

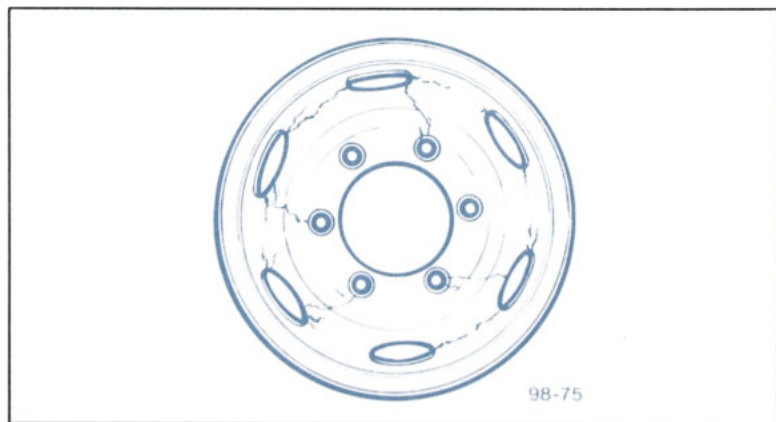
TIRE SIZE DESIG- NATION		LOAD RANGE (PLY RATING)			
		F(12)	G(14)	H(16)	J(18)
10.00-20	D	75	90	105	-
TUBE TYPE	S	85	100	115	-
10.00-22	D	75	90	105	-
TUBE TYPE	S	85	100	115	-
11.00-20	D	75	90	105	-
TUBE TYPE	S	85	100	115	-
11.00-22	D	75	90	105	-
TUBE TYPE	S	85	100	115	-
11.00-22.5	D	75	90	105	-
TUBELESS	S	85	100	115	-
11.00-24	D	75	90	105	-
TUBE TYPE	S	85	100	115	-
11.00-24.5	D	75	90	105	-
TUBELESS	S	85	100	115	-
12.00-20	D	-	80	95	105
TUBE TYPE	S	-	90	105	115
12.00-22.5	D	75	90	105	-
TUBELESS	S	85	100	115	-
12.00-24	D	-	80	95	105
TUBE TYPE	S	-	90	105	115
12.00-24.5	D	75	90	105	-
TUBELESS	S	85	100	115	-
15.00-22.5					
TUBELESS	S	-	85	100	-
16.5-22.5					
TUBELESS	S	-	-	90	-
18.00-22.5					
TUBELESS	S	-	-	85	100

WHEEL INSPECTION

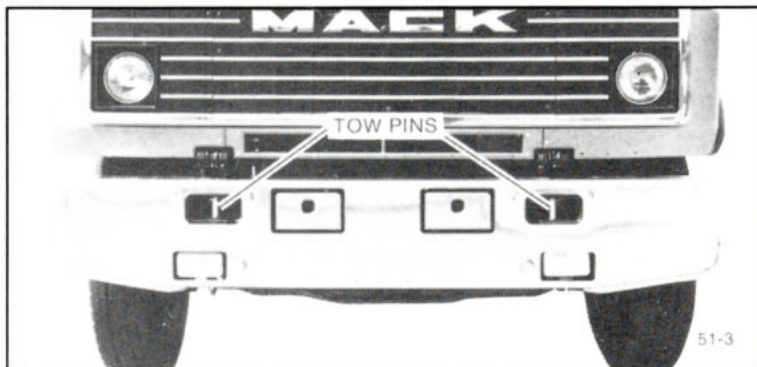
Check pressure when tires are cold. Look at wheels and cap nuts. Inspect them for evidence of cap nut looseness. Rust streaks from the cap nut ball seat are an indication of looseness.



Look for cracks around the hand hole, stud hole and wheel. Look for broken studs, wheel damage or improperly seated lock rings.



TOWING



CAUTION

DO NOT LIFT AND TOW VEHICLE BY TOW CLEVIS'.

There are two tow pins located in the front bumper on the MH models. They meet the requirements set forth by The Maintenance Council (TMC) for towing. The tow pins may be used for towing a disabled vehicle from the immediate location.

NOTES

This practice is not intended for long term wrecker pull of disabled vehicles.



BATTERY

JUMP STARTING AN ENGINE

You may encounter a situation where it becomes necessary to jump start an engine. Be aware of a few simple rules.

CAUTION

Batteries which are to be linked together must be of the same voltage (12 to 12, 24 to 24).

Batteries produce explosive gasses. Keep sparks, flames, cigarettes, etc. away from batteries at all times.

Protect your eyes and wear safety goggles.

Be sure vehicles are not touching each other.

1. Connect positive(+) cable to positive(+) post of discharged battery.
2. Connect the other end of the same cable to the positive(+) post of the booster battery.
3. Connect the second cable, negative(-) side, to the other post of the booster battery.
4. MAKE THE FINAL CONNECTION ON THE ENGINE BLOCK (of the stalled vehicle) AWAY FROM THE BATTERY AND STAND BACK.
5. Start the vehicle and remove the cables in the reverse order of connection.



WARNING

Potential external/internal thread mismatch condition(s) may occur with certain metric thread-inch thread fastener combinations, and with fastener combinations involving incompatible metric fastener systems. A given thread mismatch condition can result in thread stripping and/or assembly weakness leading to potential service failure, thereby rendering a vehicle non-operational and/or unsafe for operation.

The specific external/internal thread combinations from which such problems can result are identified and set forth in the TS494

When using tools on all fasteners, use them on the fasteners they were made to be used on. Use metric tools on SI metric units only. Never try to use metric tools on U.S. Inch-Pound Units or U.S. Inch-Pound tools on SI metric units. See conversion charts.

The first chart gives a U.S. to SI conversion.

U.S. TO SI CONVERSION CHART

1 inch	= 25.4 millimetres
1 mile	= 1.61 kilometres
1 pint (U.S. liquid)	= .473 litre
1 quart (U.S. liquid)	= .946 litre
1 cubic inch	= .01639 litre
1 pound-foot	= 1.3558 newton-metres
1 horsepower	= .746 kilowatt
1 pound/square inch	= 6.895 kilopascals
degrees Fahrenheit	= (1.8 X degrees Celcius) + 32
1 gallon (U.S. liquid)	= .83267 Imperial gallons



METRIC CONVERSION



The second chart shows SI to U.S. conversions.

SI TO U.S. CONVERSION CHART

1 millimetre	= .03937 inches
1 kilometre	= .6214 miles
1 litre	= 2.1134 pints (U.S. liquid)
1 litre	= 1.0567 quarts (U.S. liquid)
1 litre	= 61.024 cubic inches (U.S. liquid)
1 newton-metre	= .7376 pound-feet
1 kilowatt	= 1.34 horsepower
1 kilopascal	= .145 pound/square inch
degrees Celcius	= .556 X (degrees Fahrenheit - 32)
1 imperial gallon	= 1.2009 gallons (U.S. liquid)



BULB CHART



12 VOLT SYSTEM

LAMP	QUANTITY	CP/ WATT	TRADE NO.
ABC GAGE PANEL CLUSTER LAMPS	26	1.0CP	#161
GAGE PANEL D2	1.0CP	#161	
DOME AND DOOR COURTESY LAMP	3	12.0CP	#561
MAP LAMP	1	3.0CP	#1816
HEATER AND AIR CONDITIONER	1	1.0CP	#184
CLEARANCE & CAB ID MARKER (STANDARD)	5	3.0CP	#168
CLEARANCE & CAB ID MARKER (PREMIUM)	5	4.0CP	#904
SIDE TURN INDICATOR	2	32.0CP	#570
HOOK-UP LAMP	1	35W/600CP	#4406
FOG LAMP	2	55W	#H3
HEADLAMP INCANDES- CENT ROUND	2	60W/50W	#6015
HEADLAMP, HALOGEN (ROUND)	2	65W/35W	#H6024
HEADLAMP, HALOGEN (RECTANGULAR)	2	65W/45W	#9004
REAR TAIL LAMP BACKUP	2	32.0CP	#1156
REAR STOP, TAIL AND TURN LAMP	2	32.0/3.0CP	#1157
FRONT TURN LAMP	2	32.0/3.0CP	#1157



CLOSING NOTE



Preventive maintenance is the key to safe, cost effective operation. The Mack Preventive Maintenance Program, outlined in the Maintenance and Lubrication Manual (TS494) provides a good base upon which a complete preventive maintenance program may be built. Remember, a well balanced preventive maintenance program is far less costly both in time and money than down time due to personal injury or vehicle breakdown.



NOTES





INDEX



A

ADVISORY LABELS, 7
AIR APPLICATION GAGE, 51
AIR CONDITIONER CONTROLS, 57
AIR RESTRICTION GAGE, 51
ALL WHEEL DRIVE, 120
ANTI-WHEEL LOCK, 126

B

BATTERY, 132
 JUMP START, 132
BRAKES, 123
 ANTI-WHEEL LOCK, 126
 OPERATION, 123
 PARKING, 125
BREAK IN PROCEDURE, 76
BULB CHART, 135
BUNK, 64

C

CAB ENTRY, 20
 DRIVER'S SIDE, 20
 PASSENGER'S SIDE, 23
CAB EXIT, 27
 DRIVER'S SIDE, 27
 PASSENGER'S SIDE, 31
CAB TILT, 65
 BLEED PROCEDURE, 69
 FULL TILT POSITION, 68
 RETURN, 68
 SERVICE POSTION, 65

CENTER CONSOLE, 60
CIRCUIT BREAKER, MASTER, 70
CIRCUIT BREAKERS, 71
CLEARANCE LAMP SWITCH, 53
CLOSING NOTE, 136
CLUTCH, 92
 DOUBLE-CLUTCHING, 93
 TORQUE LIMITING, 92
COOLANT TEMPERATURE GAGE, 46
COOLING SYSTEM, 86
 DRAINING, 86
 FILLING, 87
CUSTOMER SERVICE, 3
 AUSTRALIA, 5
 CANADA, 5
 INTERNATIONAL, 5
 UNITED STATES, 4

D

DAILY INSPECTION, 80
 INSIDE, 80
 OUSIDE, 81
DOOR HANDLES, 35
DOOR LOCK, REMOTE, 60
DUAL AIR PRESSURE GAGE, 51
DYNATARD ENGINE BRAKE, 54
DYNATARD ENGINE BRAKE SWITCH, 53



INDEX



E

ELECTRICAL, 70
BULB CHART, 135
ENGINE, 88
MODEL DESIGNATION, 90
TEMPERATURE, 88
ENGINE INFORMATION
PLATE, 16
ENGINE OIL TEMPERATURE
GAGE, 46
ENGINE STOP CONTROL, 51
EXHAUST PYROMETER, 45

F

FUEL GAGE, 50

H

HEATER AND AIR CONDI-
TIONER, 58
FAN CONTROL SWITCH, 58
MODE SELECTION LEVER
TRUCKS WITH AIR
CONDITIONER, 58
TRUCKS WITHOUT AIR
CONDITIONER, 58
TEMPERATURE CONTROL
LEVER, 59
HEATER CONTROLS, 57
HOOK UP/FOG LAMP
SWITCH, 52
HOSE TENDER, 122

I

INDICATOR LAMP PANEL,
44, 50

INSTRUMENT PANEL AR-
RANGEMENT, 43

INSTRUMENTS AND CON-
TROLS, 43

CENTER CONSOLE, 60
HEATER AND AIR CONDI-
TIONER, 58
INTER-AXLE POWER DIVID-
ER, 61
OVERHEAD FEATURES, 63
PANEL A, 44
PANEL C, 50
PANEL D, 52
PANEL E, 56
PANELB, 49

INTER-AXLE POWER DIVID-
ER CONTROL, 61

See also INTER-AXLE POW-
ER DIVIDER

L

LIGHT SWITCH, 53
LIGHTER, ELECTRIC, 60
LOW AIR PRESSURE WARN-
ING LIGHT, 45

M

METRIC CONVERSION, 133
MIRROR DEFROSTER
SWITCH, 53
MOVING THE VEHICLE, 85

O

ODOMETER, 49



INDEX



OIL CHECK, 77
DIPSTICK LOCATION, 78
OIL PRESSURE GAGE, 45
OPERATION, 75—76
OVERHEAD FEATURES, 63

P

PANEL A, 44
PANEL B, 49
PANEL C, 50
PANEL D, 52
PANEL E, 56
PANEL LIGHTS, 52
PARKING BRAKE VALVE, 56
PARKING BRAKE(TRACTOR),
56
POWER TAKE-OFF UNIT, 91

R

REAR AXLE, 116
TWO SPEED (REAR AXLE),
117
REPORTING SAFETY DE-
FECTS, 2
CANADIAN CONSUMER
COMPLAINTS, 2

S

SEAT BELTS, 36
MAINTENANCE, 37
OPERATION, 36
SERVICE LITERATURE, 10

SIGNAL SWITCH, 57
SPEEDOMETER, 49
STARTING THE VEHICLE, 82
AIR STARTER, 84
COLD WEATHER, 83
NORMAL WEATHER, 82
STEERING COLUMN, 38
TELESCOPIC MODE, 39
TILT MODE, 38

T

TACHOMETER, 49
TELL-TALES, 41
THROTTLE, 46
TIRE PRESSURE CHART, 129
TIRES, 127
TO THE OWNER, 9
TOWING, 131
TRAILER SUPPLY VALVE, 56
TRAITER BRAKE LEVER, 51
TRANSFER CASE, 120
TRANSFER CASE RATIOS,
121
TRANSMISSIONS, 94
T2050, 98
T2060, 99
T2070, 99
T2080, 102
T2090, 104
T2100, 106
T2130, 108
T2180, 112
TRTXL1070(B), 94



INDEX



U

UNIT IDENTIFICATION, 14,
15
MACK COMPONENTS, 14

V

VEHICLE CERTIFICATION LA-
BELS, 18, 19
MACK COMPLETED VE-
HICLES, 18
MACK INCOMPLETE VE-
HICLES, 19
SAFETY CERTIFICATION LA-
BEL, 18

VOLTMETER, 47

W

WARRANTY, 12, 13
AIR BRAKE SYSTEM, 13
INJECTION PUMP AND GOV-
ERNOR, 12
WHEEL INSPECTION, 130
WINDOW SWITCH, REMOTE,
60
WINDSHIELD WASHER, 57
WINDSHIELD WIPERS, 57



NOTES



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