Mega 130/160/160TC

Operation and Maintenance Manual

022-00013BE

Mega 130 S/N 1003 and Up
Mega 160 S/N 1021 and Up
Mega 160TC S/N 1001 and Up
February 2003

Daewoo reserves the right to improve our products in a continuing process to provide the best possible product to the market place. These improvements can be implemented at any time with no obligation to change materials on previously sold products. It is recommended that consumers periodically contact their distributors for recent documentation on purchased equipment.

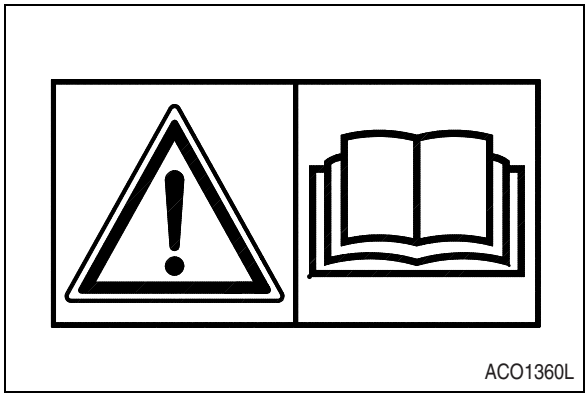
This documentation may include attachments and optional equipment that is not available in your machine's package. Please call your distributor for additional items that you may require.

Illustrations used throughout this manual are used only as a representation of the actual piece of equipment, and may vary from the actual item.

1. WARNING FOR OPERATION, INSPECTION AND MAINTENANCE (4190-2545, 190-00092)

⚠ CAUTION!

- **Read manual and labels before operation and maintenance. Follow instructions and warnings in manual and on labels on machine.**
- **Sound horn to alert people nearby before operating, and make sure all persons are clear of area.**
- **Always make sure when leaving operator's seat to:**
  - **Lower bucket or other working tools to ground.**
  - **"LOCK" transmission selector in "NEUTRAL."**
  - **Set park brake.**
  - **Turn starter switch "OFF." Remove key from switch.**
- **If hydraulic components and units are ABNORMAL, consult nearest DAEWOO dealer or authorized service shop. Do not attempt to make an overhaul.**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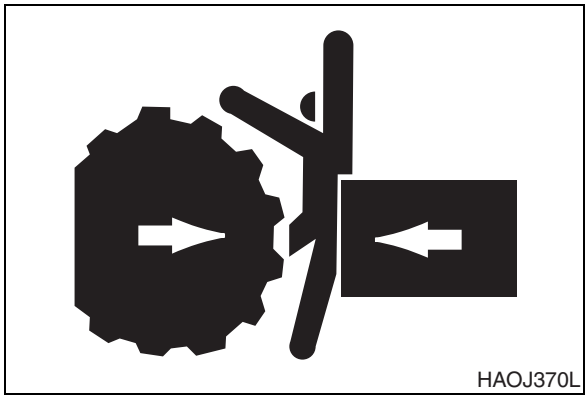
2. WARNING FOR CRUSH HAZARD (4190-2548)

⚠ DANGER!

Crushing Injury

Make sure people are clear of machine before starting engine or moving steering wheel.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BEFORE STARTING ENGINE, DO A "PRE-START" SAFETY CHECK:

- Walk around your machine before getting in operator's cab. Look for evidence of leaking fluid, loose fasteners, misaligned assemblies or any other indications of possible equipment hazard.
- All equipment covers and machinery safety guards must be in place, to protect against injury while machine is being operated.
- Look around work site area for potential hazards, or people or property that could be at risk while operation is in progress.
- Never start engine if there is any indication that maintenance or service work is in progress, or if a warning tag is attached to controls in cab.
- A machine that has not been used recently, or is being operated in extremely cold temperatures, could require a warm-up or maintenance service prior to start up.
- Check gauges and monitor displays for normal operation prior to starting engine. Listen for unusual noises and remain alert for other potentially hazardous conditions at start of work cycle.
- Check tire inflation and check tires for damage or uneven wear. Perform maintenance before operation.

NEVER USE ETHER STARTING AIDS

An electric-grid type manifold heater is used for cold starting. Glowing heater element can cause ether or other starting fluid to detonate, causing injury.

Figure 7

MOUNTING AND DISMOUNTING

Never get on or off a moving machine. Do not jump on/off. Entry/egress path should be clear of mud, oil and spills and mounting hardware must be kept tight and secure.

Always use handholds or steps and maintain at least 3-point contact of hands and feet. Never use controls as handholds.

Never get up from operator's seat or leave operator's station and dismount machine if engine is running.

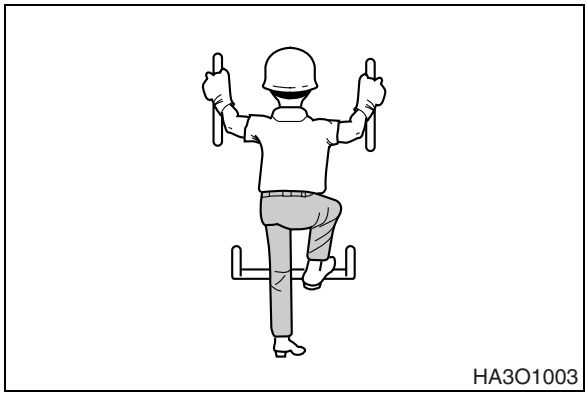


Figure 8

PRECAUTIONS WITH HIGH PRESSURE LINE, TUBES AND HOSES

When inspecting or replacing high-pressure piping or hoses, check that the pressure has been released from the circuit. Failure to release the pressure may lead to serious injury. Always do the following;

- Wear protective glasses and leather gloves.
- Fluid leaks from hydraulic hoses or pressurized components can be difficult to see but pressurized oil has enough force to pierce the skin and cause serious injury. Always use a piece of wood or cardboard to check for suspected hydraulic leaks. Never use your hands or expose your fingers.
- Do not bend high pressure lines. Do not strike high pressure lines. Do not install lines, tubes or hoses that are bent or damaged.
- Make sure that all clamps, guards and heat shields are installed correctly to prevent vibration, rubbing against other parts, and excessive heat during operation.
  - If any of the following conditions are found, replace the part.
  - Damage or leakage from hose end.
  - Wear, damage, cutting of covering, or exposure of strengthening wire layer.
  - Cover portion is swollen in places.
  - There is twisting or crushing at movable parts of hose.
  - Foreign material is embedded in the covering.
  - Hose end is deformed.

NOTE: *Refer to "Hose In-service Lifetime Limit (European Standard ISO 8331 and EN982 CEN)" on page 4-52, for additional European regulations.*

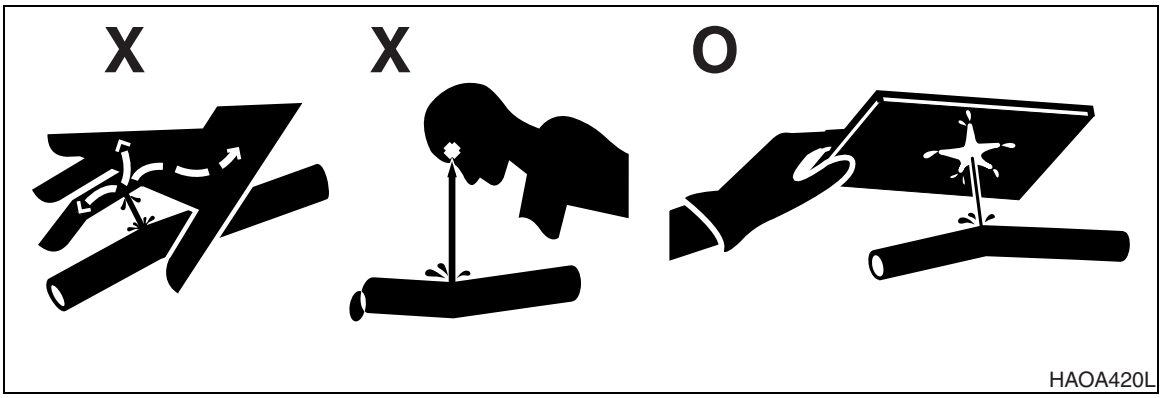


Figure 24

OBTAIN IMMEDIATE MEDICAL ATTENTION IF PRESSURIZED OIL PIERCES SKIN.

⚠ WARNING!

Failure to obtain prompt medical assistance could result in gangrene or other serious damage to tissue.

3. COMBINATION SWITCH

A. Left side directional switch - Pushing the lever forward, activates the left outside directional lights as well as the directional indicator light on the instrument panel.

B. Right side directional switch - Pulling the lever back, activates the right outside directional lights as well as the directional indicator light on the instrument panel.

NOTE: *When the turn is completed the lever automatically returns to the "NEUTRAL" position. Should it not, it can be manually returned by hand.*

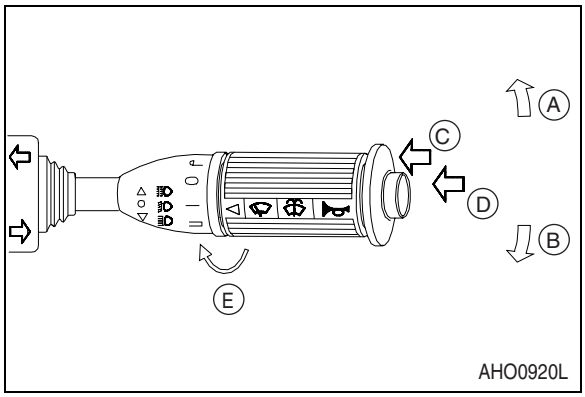


Figure 8

NOTE: *Turn signals will function with starter switch in "OFF" position.*

C. Window Washer Switch - When the outside area of the lever is pressed, it activates the washer pump and sprays fluid on the windshield. (Only while being pressed.)

CAUTION!

The washer pump can be damaged if it is activated while there is no fluid in the tank. The fluid level should be checked regularly and refilled if necessary.

Using soap or other solvents instead of the recommended washer fluid may damage the wiper blades and the paint finish.

Only use recommended washer fluid or equivalent.

D. Horn Button - The center button of the lever activates the horn. (Only while being pressed.)

E. Wiper Switch - Activates the wipers when the outside area of the lever is rotated.

J: Intermittent Mode - wipes every 5 seconds.

0: Stop (Off).

I: Normal speed mode.

II: High speed mode.

12. LEFT TURN AND HAZARD WARNING LIGHT

This light blinks when left blinker is turned "ON." Both lights blink when warning lights are turned "ON."

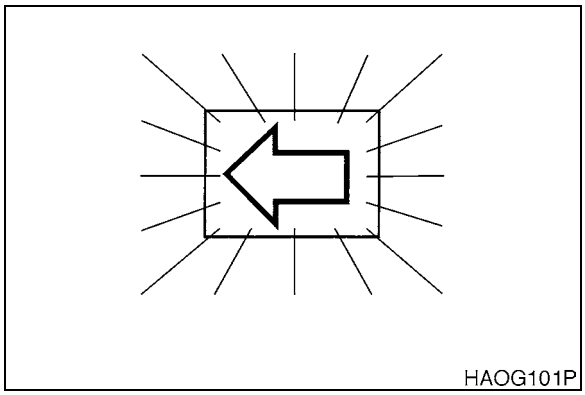


Figure 31

13. HIGH BEAM INDICATOR LIGHT

This light turns "ON" when headlights are turned to "HIGH BEAM."

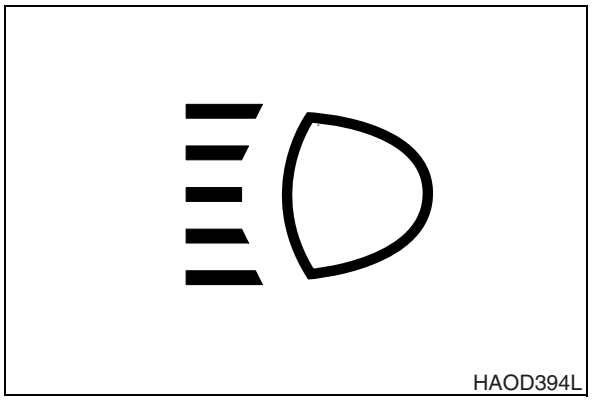


Figure 32

14. RIGHT TURN AND HAZARD WARNING LIGHT

This light blinks when right blinker is turned "ON." Both lights blink when warning lights are turned "ON."

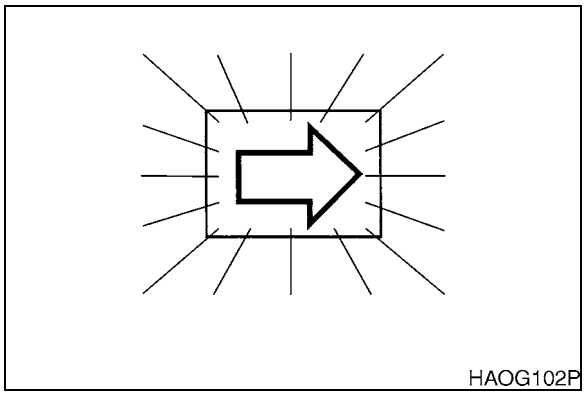


Figure 33

15. WORK LIGHT INDICATOR LIGHT

This light should turn "ON" when the front and/or rear work lights are activated.

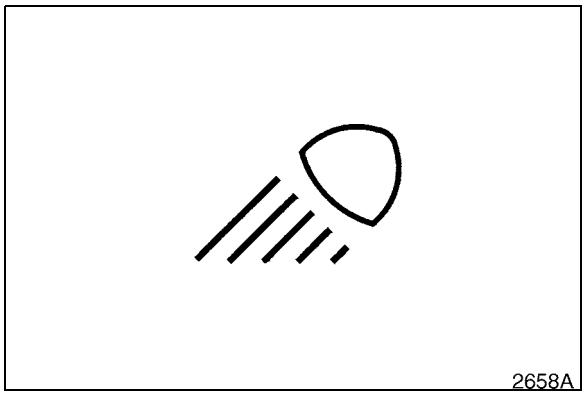


Figure 34

11. BLANK (EMPTY SWITCH SOCKET)

A blank socket is provided for addition of accessory switches.

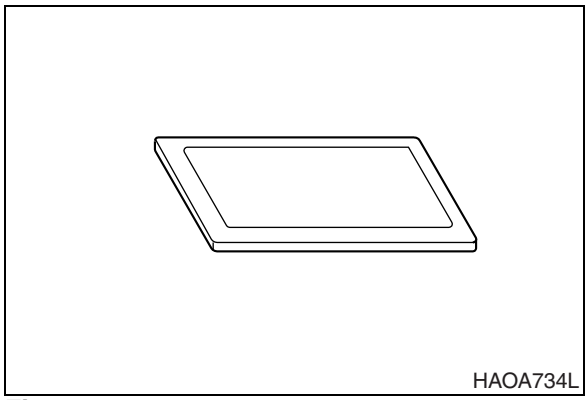


Figure 56

12. AUTOMATIC TRANSMISSION SWITCH

A. When this switch is in "OFF" position, travel mode is switched to "MANUAL" and allows operator to choose speeds manually.

B. When this switch is in "ON" position, gears are automatically changed to the appropriate speed up to the limit set by the transmission lever and according to travel load and engine rpm.

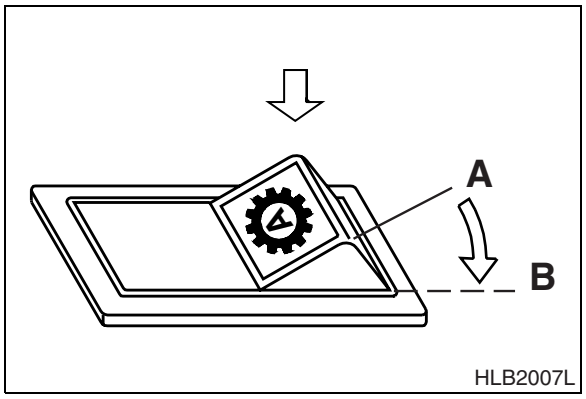


Figure 57

13. TRANSMISSION CUTOFF SWITCH

This switch changes over the modes of the brake pedal, inching and no-inching.

0. In this position, the "NO INCHING" mode is selected.

   In the "NO INCHING" mode, the power transmission line is still connected when the brake pedal is pressed, thus, making it easier to start off on an incline. This mode is also suitable for traveling, because both engine braking and the service brake can be used in descending grades.

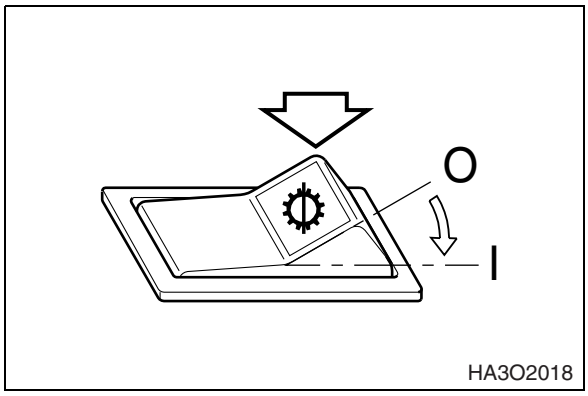


Figure 58

I. In this position, the "INCHING" mode is selected.

   In this mode, the transmission is put in "NEUTRAL" by pressing the brake pedal. This mode is suitable for load handling operation. When the accelerator pedal is pressed under this condition, more power is concentrated on the load handling system, to quicken the boom lifting speed.

If operating the air conditioner or heater for a long time, operate the ventilation switch, and when smoking, vent the air to the outside to prevent irritation to eyes.

Fuse Box One		
No.	**Name**	**Capacity**
1	Gauge Panel	15A
2	Transmission	15A
3	Front Wipers, Horn	15A
4	Pilot Cutoff, Log Fork (Option)	15A
5	Stop Lamp, Headlight	20A
6	Condenser Fan, Pre-heat	15A
7	Spare	15A
8	Air-conditioning, Heater	30A
9	Work Light (Front), Beacon (Option)	15A
10	Work Light (Rear)	15A
11	Turn Signal Light, Emergency Flashers, Indicator Light	15A
12	Stereo, Cab Light, Fuel Pump, Engine Stop	15A
13	Memory Backup, Pilot Buzzer	10A
14	Starter Switch	10A

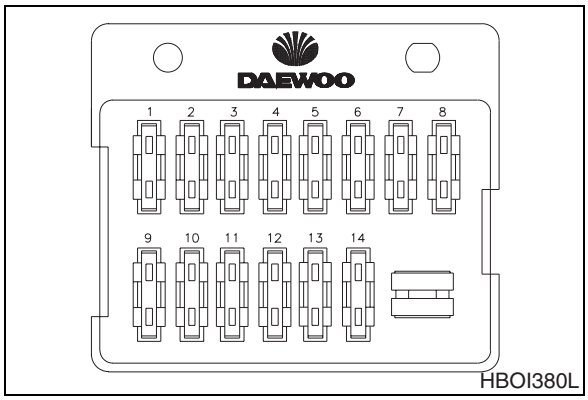


Figure 97 FUSE BOX ONE

Fuse Box Two		
No.	**Name**	**Capacity**
1	Cigar Lighter	15A
2	Rear Wiper	15A
3	Position Light (Right)	10A
4	Position Light (Left)	10A
5	Pilot Control Valve Lever (Joystick) Detent	15A
6	Spare	30A

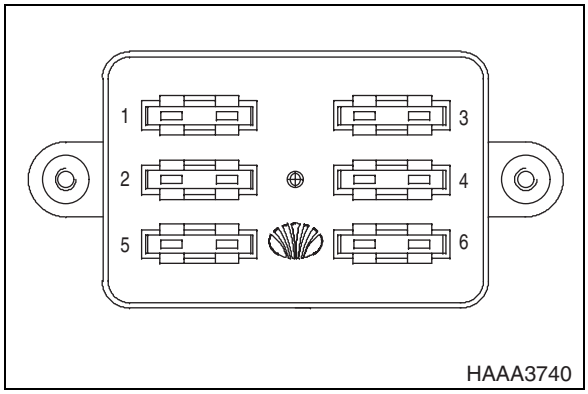


Figure 98 FUSE BOX TWO

8. Release starter key when engine starts. Key will return to "I" (ON) position.

IMPORTANT

If engine does not start after approximately 15 seconds of cranking, release starter key. Wait 5 minutes for starter motor to cool down. Repeat step 7.

9. After engine starts, check all indicator lights and gauges to be certain that all engine systems (oil pressure, oil temperature, coolant temperature, etc.) are in normal operating range. If any engine system is not normal, turn starter key to "OFF" position.

10. Perform “Hydraulic System Warm-up - Cold Weather” on page 3-10.

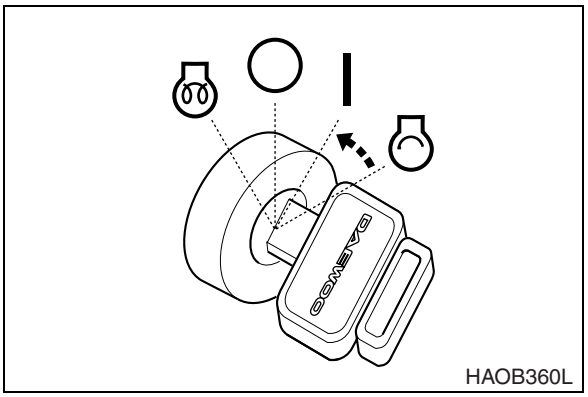


Figure 7

ADJUSTMENT OF BUCKET POSITION SWITCH

MEGA 130 / 160

When pilot control valve lever (joystick) is held in crowd detent position, after bucket has been dumped, bucket will pivot toward crowd position. Once full crowd position has been reached the lever (joystick) will automatically return to "NEUTRAL" position. If bucket is lowered after lever returns to "NEUTRAL," bucket will automatically position itself to be in a preselected digging position (usually flat). To adjust bucket to desired preselected digging position, perform the following steps.

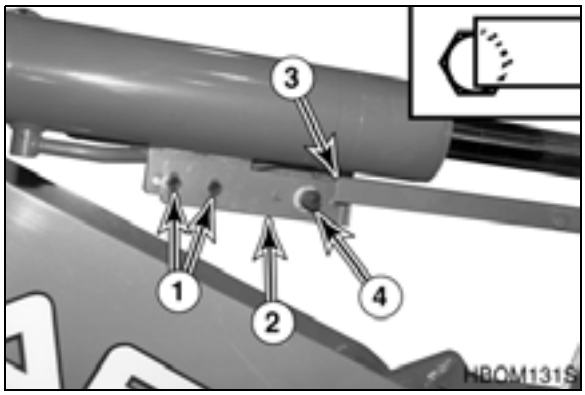


Figure 32

1. Operate controls to place bucket on ground and in desired digging position (usually flat). Return pilot control valve lever (joystick) to its "NEUTRAL" position.
2. Shut down engine.
3. Loosen bolts (1, Figure 32) on bracket (2).
4. Position bracket (2, Figure 32) so that end of arm (3) is aligned with center of magnetic switch (4).
5. Tighten bolts (4, Figure 32).
6. Start engine. Raise boom, dump bucket, then move pilot control valve lever (joystick) into crowd detent position. Now lower boom and check to see that bucket has stopped at required position. A small readjustment of bracket (2, Figure 32) may be necessary.

MEGA 160TC

When pilot control valve lever (joystick) is held in crowd detent position, after bucket has been dumped, bucket will pivot toward crowd position. Once full crowd position has been reached the lever (joystick) will automatically return to "NEUTRAL" position. If bucket is lowered after lever returns to "NEUTRAL," bucket will automatically position itself to be in a preselected digging position (usually flat). To adjust bucket to desired preselected digging position, perform the following steps.

1. Operate controls to place bucket on ground. Operate controls to place bucket in desired preselected digging position (usually flat). Return pilot control valve lever (joystick) to its "NEUTRAL" position.
2. Shut down engine.

FLUID CAPACITIES

Component		Capacity	
		Mega 160/160TC	**Mega 130**
Engine	Oil Pan with Filter	13 liters (3.4 U.S. gal.) **NOTE:** *Engine oil filter holds an additional 1.0 liter (1 U.S. qt) of oil.*	13 liters (3.4 U.S. gal.) **NOTE:** *Engine oil filter holds an additional 1.0 liter (1 U.S. qt) of oil.*
	Cooling System	29 liters (7.7 U.S. gal.)	20 liters (5.3 U.S. gal.)
Fuel Tank		185 liters (49 U.S. gal.)	160.0 liters (42 U.S. gal.)
Hydraulic Oil Tank		100 liters (26 U.S. gal.)	80.0 liters (21 U.S. gal.)
Transmission		20 liters (5.3 U.S gal)	20 liters (5.3 U.S gal)
Axles	Front / Rear Differential	15.0 liters (4.0 U.S. gal.)	7.50 liters (2.0 U.S. gal.)
	Front / Rear Planetaries	1.70 liters (0.45 U.S. gal.)	1.25 liters (0.33 U.S. gal.)

F. Bucket cylinder rod end, 1 location. (Figure 25)

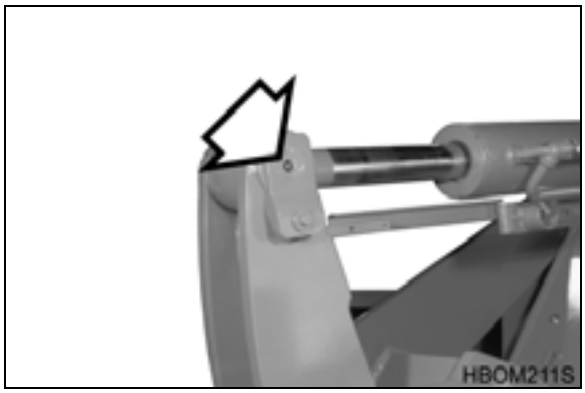


Figure 25

G. Lift cylinder heads, 2 locations (1 each side) (Figure 26).

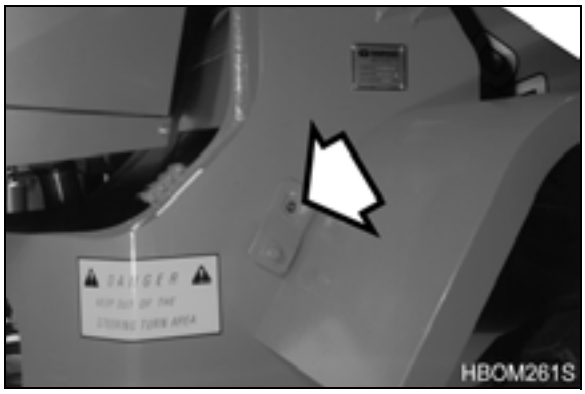


Figure 26

H. Remote grease fittings.

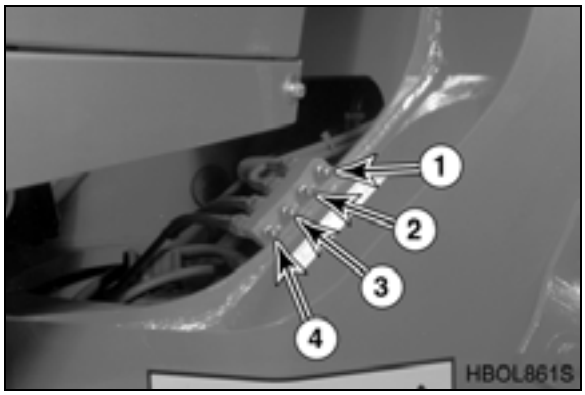


Figure 27

Reference Number	Mega 160/160TC	Mega 130
1, Figure 27 50 Hour	Right Arm	Bucket Cylinder Head End
2, Figure 27 50 Hour	Bucket Cylinder Head End	Drive Shaft Center Bearing
3, Figure 27 50 Hour	Left Arm	--------
4, Figure 27 500 Hour	Drive Shaft Center Bearing	--------

150 HOUR SERVICE

PERFORM ALL 10 HOUR / DAILY AND 50 HOUR SERVICE CHECKS

CHECK FAN BELT TENSION

IMPORTANT

A loose fan belt can cause engine overheating, poor charging, and/or premature belt wear. A belt that is too tight can cause damage to the water pump, alternator bearing or belt.

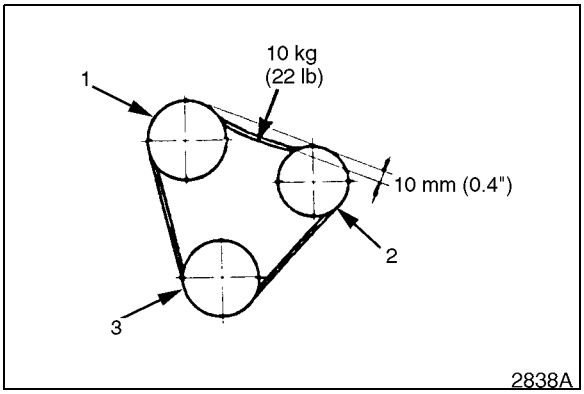


Figure 51

NOTE: *Fan belt tension must be checked after first 50 hours of operation to comply with new machine break-in requirements. After first check, fan belt must be checked every 150 hours. After first tension check, belt must be checked every 150 hours.*

NOTE: *Apply 10 kg (22 lb) of force to the midpoint of fan belt. (Figure 51). The fan belt should deflect 10 mm (0.4"). If belt deflects more than this, loosen control link and move idler pulley (2) to tighten belt tension until deflection is 10 mm (0.4"). Inspect fan belt for damage. If belt is damaged, replace it.*

If engine does not start, the fuel system may need priming. Prime fuel system using the following procedure.

1. Loosen plug on top of fuel filter head.
2. Unscrew and pump the hand operated primer pump (Figure 69) located by the fuel injection pump. Pump primer until fuel is present at plug hole in fuel filter head.
3. Tighten plug in fuel filter head.
4. Continue to pump primer pump until a strong resistance is felt. Screw the primer pump knob back into housing.
5. Start engine and look for signs of leaks.
6. Repeat procedure if necessary.

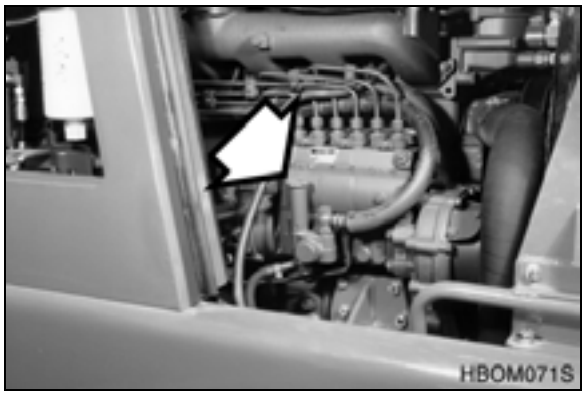


Figure 69 Mega 160/160TC

CLEAN TRANSMISSION TORQUE CONVERTER BREATHER

1. Clean area around breather located on top of converter by blowing compressed air.
2. Remove and clean breather with water.
3. Install breather.

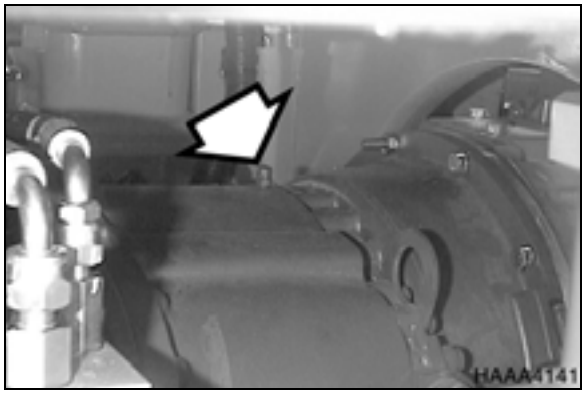


Figure 70

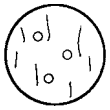
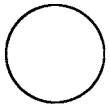
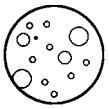
6. Compare the flow of bubbles in the sight glass with the drawings in the following table.

⚠ CAUTION!

Overfilling refrigerant may cause dangerous high pressure and poor cooling action; and low refrigerant level may cause compressor damage.

Always maintain refrigerant at normal level.

Figure 95

Amount of Refrigerant	Appearance of the Sight Glass	Solutions
Normal	 Almost clear. Any bubbles disappear if the engine speed is increased to 1500 rpm.	
High	 No bubble is seen.	Contact your local Daewoo loader dealer for inspection and recharging refrigerant.
Low	 A flow of bubbles is visible.	

BRAKE ADJUSTMENT

To adjust parking brake, perform the following steps:

1. Jack up machine enough to allow tires to rotate freely.
2. Shut down engine and place transmission lever in "NEUTRAL." Turn starter switch to "ON" position. Move parking brake switch to "UNLOCKED" position.

FRONT AXLE SERVICE BRAKES

Checking clearance between brake pad and brake disc in the front axle.

1. Locate the pinion adjusting bolt located in the upper part of the differential housing.
2. Remove lock bolt (2, Figure 105) and bracket (1).
3. Rotate the square pinion adjusting bolt (3, Figure 105) in counter clockwise direction until it stops. At this time the clearance of brake disk is "O."
4. Rotate adjusting bolt (3, Figure 105) clockwise three turns.
5. Install lock bracket (1, Figure 105) and bolt (2).
6. Repeat steps 1 - 5 for other side.

FRONT AXLE PARKING BRAKE EMERGENCY RELEASE

1. Locate parking brake release bolt located on the lower section on both sides of the housing.
2. Loosen lock nut (4, Figure 105) from adjusting bolt (5).
3. Tighten adjusting bolt (5, Figure 105) until it stops. This will manually release the parking brake so that the drive shaft will be free to turn.

The initial setting of adjusting bolt is 47 mm and should be readjusted to this length and lock nut tightened after towing is complete.

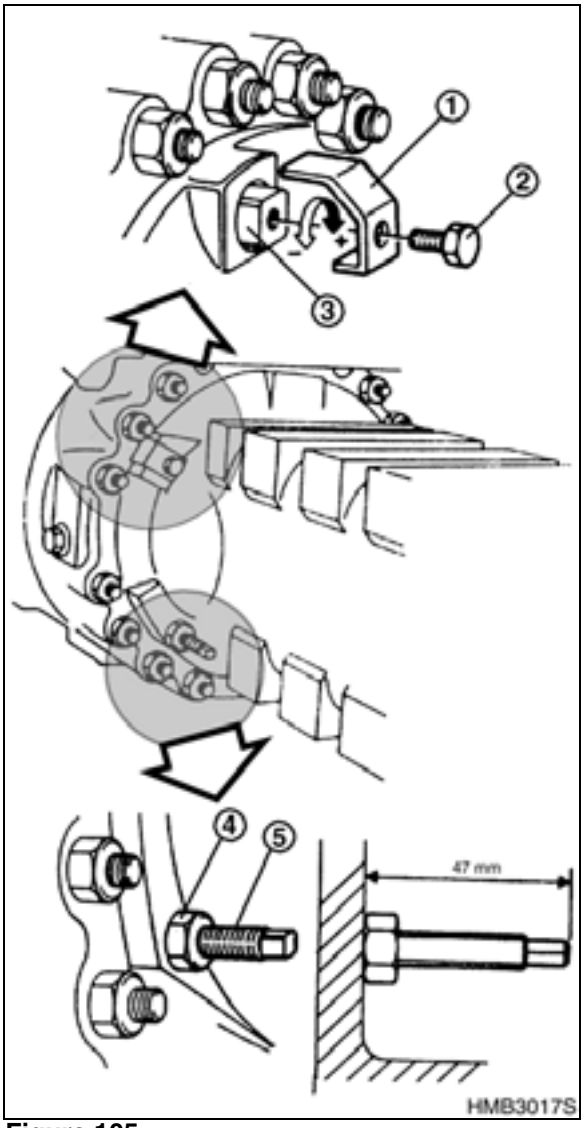


Figure 105

REAR AXLE SERVICE BRAKE

There are three adjusting bolts per side at 120° intervals for the rear axle brake adjustment. All three must be adjusted for proper operation. The adjusting procedure is same as the front brake adjustment method and must be repeated for both sides.

LOADING MACHINE ON A TRAILER

1. Position trailer on level ground. Block trailer tires.

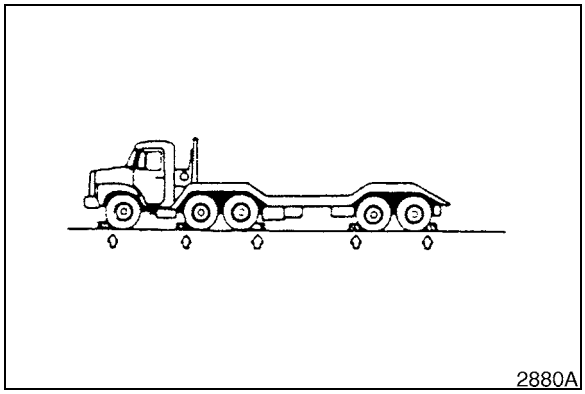


Figure 1

2. Use a ramp to load machine onto trailer (See Figure 2). Ramp should have an incline of from 10° - 15°.
3. When driving machine onto trailer, use lowest transmission gear and drive slowly. Center machine on trailer center line.
4. Lower bucket and shut down engine. Move pilot cutoff switch to "LOCKED" position.

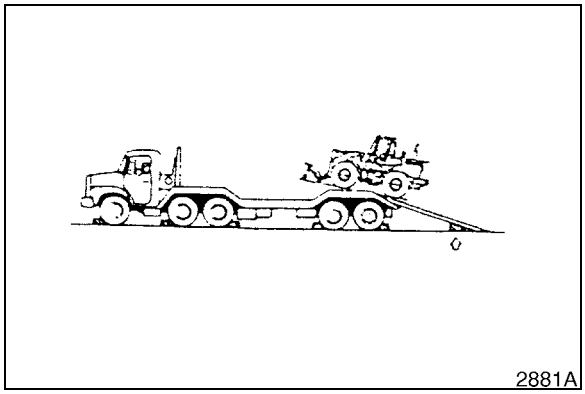


Figure 2

5. Apply parking brake. Install frame lock plate.

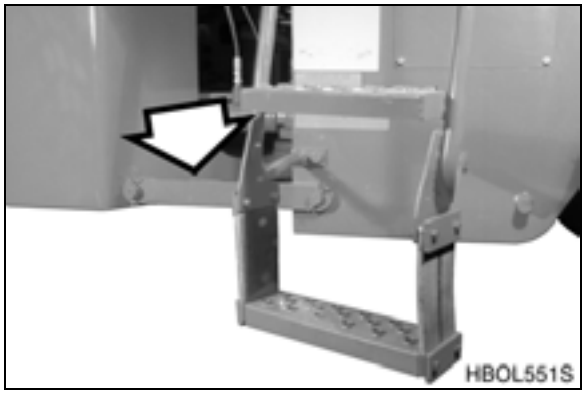


Figure 3

STEERING

Problem	Possible Causes	Remedies
Steering wheel is hard to turn.	Sediment blocking direction change spool orifice, inside priority valve.	Clean and repair.
	Sediment blocking amplifying spool orifice, inside priority valve.	Clean and repair.
	Sediment blocking load sensing line orifice, inside priority valve.	Clean and repair.
	Priority valve spool sticking, inside steering valve.	Clean and repair.
	Incorrect relief valve pressure drop, inside priority valve.	Adjust pressure.
	Steering pump failure.	Repair or replace.
	Leaking steering cylinder.	Repair cylinder.
	Rust on steering column bearing and spline.	Lubricate.
	Tire air pressure is low.	Inflate to proper pressure.
High initial resistance to movement of steering wheel.	Air in load sensing line, inside priority valve.	Bleed system to remove air.
	Sediment blocking orifice of load sensing line, inside priority valve.	Clean and repair.
	Sediment in direction change spool, inside priority valve.	Clean and repair.
	Damage to control spring damping inside priority valve.	Replace priority valve.
Steering wheel shakes.	Chattering bearing in axle end differential.	Replace bearing.
	Tire pressure not equal in left side and right side tires.	Equalize pressure.

Mega 160 (S/N 2001 and Up)	
Item	**Specification**
Performance	
Travel Speed	6.6 - 34.5 km/h (4.1 - 21.4 MPH)
Steering Angle	±40°
Min. Tire Turning Radius (Tire / Bucket)	4,640 mm (15' 3") / 5,250 mm (17’ 3")
Safe Operating Load	2,560 kg (5,645 lb)
Max. Breakout Force	7,800 kg (17,200 lb)
Bucket Rise Time	6.0 Seconds
Bucket Dump Time	1.5 Seconds
Bucket Descent Time	3.1 Seconds
Maximum Gradeability	58% (30°)

Mega 160TC (S/N 2001 and Up)	
Item	**Specification**
Performance	
Travel Speed	6.6 - 34.5 km/h (4.1 - 21.4 MPH)
Steering Angle	±40°
Min. Tire Turning Radius (Tire / Bucket)	4,640 mm (15' 3") / 5,250 mm (17’ 3")
Safe Operating Load	2,560 kg (5,645 lb)
Max. Breakout Force	7,400 kg (16,314 lb)
Bucket Rise Time	6.0 Seconds
Bucket Dump Time	2.4 Seconds
Bucket Descent Time	3.0 Seconds
Maximum Gradeability	58% (30°)