SECTION 2 - STRUCTURE

MAIN FRAME

DESCRIPTION AND LOCATION (Figure 1)

The main frame is of double box section design fabricated from plates of high strength steel. The side plates are manufactured separately, then tied together by top and bottom wrappers which are welded to them. This construction forms a strong, durable frame that remains relatively light in weight.

The frame extends the entire length of the truck beneath the equipment it supports.

OPERATION

The frame serves as the basic support structure for the truck. It provides the mounting points for the front and rear suspension, axlebox assembly, engine module, drive train components, the superstructure, operator's cab, and the dump body.

TROUBLESHOOTING

Refer specific problems to Unit Rig for assistance in repairing damage and in determining and eliminating the potential causes.

MAINTENANCE AND ADJUSTMENT

Regularly inspect the frame for damage. Repair as directed by Unit Rig personnel and standards.

REPAIR

General instructions for field welding repairs are contained in Section 10 - Miscellaneous of this manual. For detailed instructions, it is recommended that Unit Rig personnel be consulted on an "as required" basis to ensure that correct, proper, up-to-date procedures and materials are used.

⚠ CAUTION

Do not weld on the top or bottom wrappers of the main frame, unless repair is required. Incorrect welding will weaken the frame. Follow current Unit Rig welding procedures.

KEY	13550
01.	Radiator Module Mounting Area
02.	Engine Module Mounting Area
03.	Front Suspension Upper Mount
04.	Superstructure Mount
05.	Front Axle Lateral Link Mount
06.	Upper or Front Crossmember
07.	Right Side Rail Assembly
08.	Dump Cylinder Mounting Bracket
09.	Center Frame Crosstube
10.	Axlebox Nosecone Inner Bearing Surface
11.	Dump Body Rear Mounting Point
12.	Rear Suspension Upper Mounting Point
13.	Rear Crossmember
14.	Left Side Rail Assembly
15.	Front Axle Link Mounting Points
16.	Front Bumper
17.	Axlebox Radius Rod Mounting Bracket

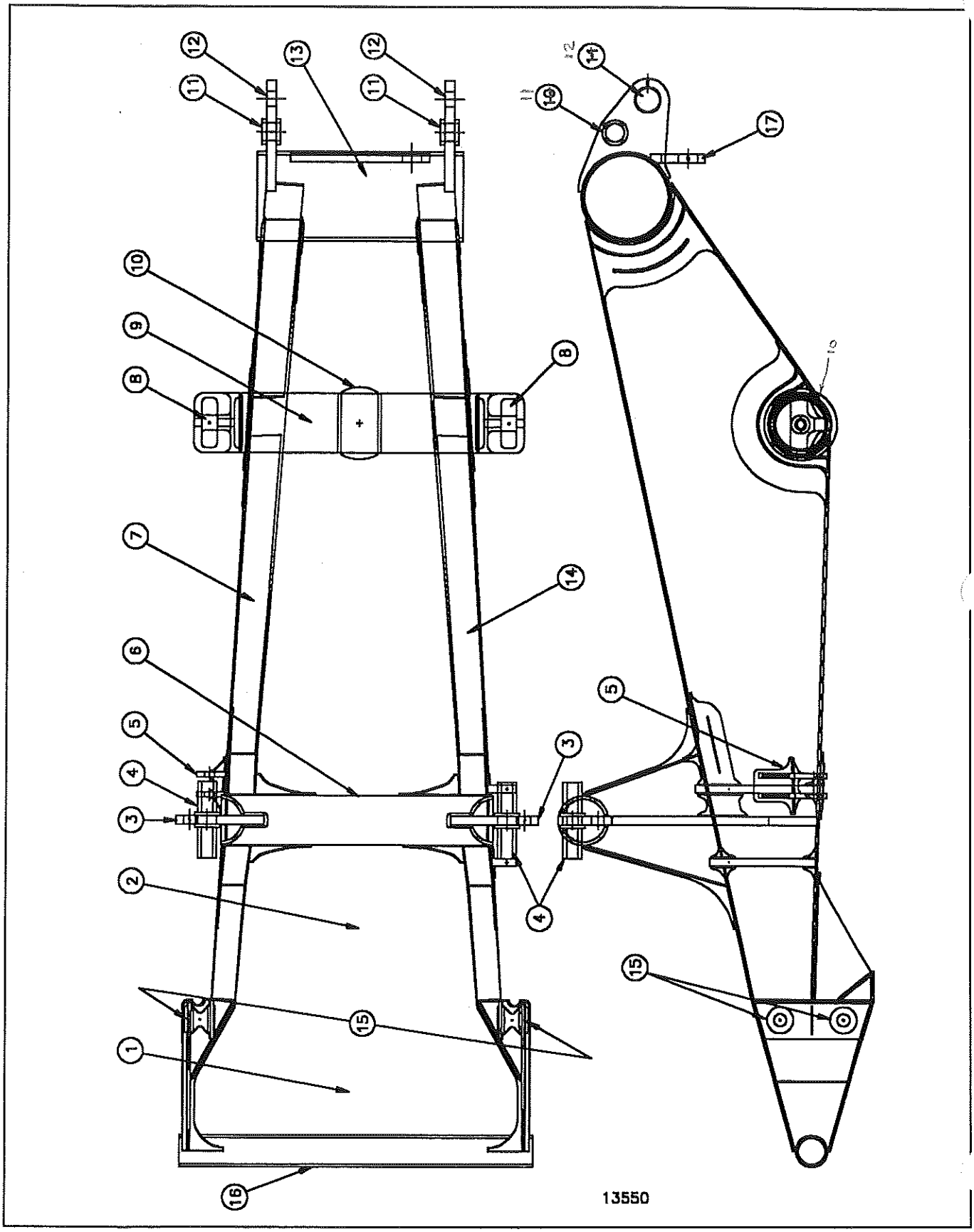


FIGURE 1 - MT 4400 MAIN FRAME

SUPERSTRUCTURE

DESCRIPTION AND LOCATION

The superstructure is the large floor like area on which the cab, control box and retarding grid package is mounted. It is mounted on the crossmember attached to the two vertical beams, secured on each side. Extra supports supplied where needed to assist in stabilizing the superstructure and its contents.

OPERATION

The superstructure is used as a mount for the components such as the cab, electrical system control box, and dynamic retarding grids. It also serves as a protective enclosure for various components in the hydraulic and electrical system. Several doors are provided in the superstructure for access to these components. A series of components are provided on the superstructure to protect the components from contamination and damage during operation.

TROUBLESHOOTING

Refer specific problems to the appropriate Unit Rig personnel for assistance in repairing damage and determining and eliminating the potential causes.

MAINTENANCE AND ADJUSTMENT

Normal maintenance of the superstructure includes inspecting for evidence of damage, verifying that all equipment is properly mounted and secure, and that all door hinges are in good repair and properly lubricated. Repair or replace equipment as required.

Also, verify that all mounts and mounting hardware and support arms are secure and that all drain holes are open and free of restrictions.

REMOVAL

The superstructure may be removed as follows:

1. Park the truck in a SAFE POSITION. It must be secured by means other than the truck's friction brake system.

2. Remove the dump body as outlined in the instructions in Section 2 - Structure, or raise it to its maximum position and properly secure it.

3. Drain all stored oil pressure from the hydraulic brake and steering accumulators by using the appropriate manual drain valves.

⚠ DANGER

Release all pressure in the hydraulic brake and steering accumulators before disconnecting any hydraulic lines.

4. If so equipped, drain all air from the truck's pneumatic system. Verify that all pressure is exhausted from all tanks and components.

5. Check all components to ensure that no residual hydraulic or air pressure remains.

6. Remove the positive and negative cables from the battery. Isolate and secure.

7. Remove all electrical, hydraulic, and pneumatic connections between the superstructure and the main frame assembly. Cap and plug all hydraulic and pneumatic connections. Label each connection to ensure proper reassembly.

8. Remove the flexible coupling between the cooling air inlet and the blower as outlined in the information in Section 4 - Power Package.

9. Remove the ladder and hand rail assembly as outlined in the instructions as in Section 2 - Structure.

10. Remove the hood assembly as outlined in the instructions in Section 2 - Structure.

11. Install the lifting eyes as required on the superstructure platform.

12. Connect the lifting eyes to an overhead crane using a spreader bar or other suitable means of proper support. Adjust the slings to ensure that the lines are equally tensioned and are free of slack.

13. Remove the capscrews and washers to the frame crossmember and all other supports.

14. Carefully raise the superstructure clear of the frame and lower onto support stands.

NOTE: *The stands should support the superstructure at the frame rails.*

INSPECTION AND REPAIR

The superstructure may be serviced as follows:

1. Inspect all mounting and support arms and brackets for evidence of damage and wear. Repair or replace as required.

2. Inspect all doors and hinges for evidence of wear, damage, and proper lubrication. Repair or replace as required.

3. Repair any structural damage. General field welding instructions are included in Section 10 - Miscellaneous. Detailed instructions and assistance may be available from Unit Rig; contact your local representative.

INSTALLATION

The superstructure may be installed as follows:

1. Before installation, verify that the proper lifting eyes are securely attached.

2. Connect the crane slings to the superstructure lifting eyes. A spreader bar or suitable substitute are recommended. Adjust the length of each sling that all four lines are equally tensioned and free of slack. Verify that the cable length is sufficient to permit the superstructure to be lifted with out interference or damage to mounted components.

3. Raise the superstructure platform into position on the frame. Align the superstructure mounting pads with all truck frame supports and brackets.

4. Install the ROPS links. Once the capscrews and nuts securing the pins are properly torqued to 200 ft.-lbs. (270 Nm), tack weld the nut (12) to the capscrew (11) threads.

NOTE: *The link should not be compression or tension. Rather the pin should be "floating" in its mount until secured with the capscrew and retainer.*

5. Install the capscrews, washers, and locknuts that attach the superstructure to the frame. After all are installed, tighten/torque sequentially as required.

6. Remove the lifting cables, eyes, and remainder of the lifting equipment.

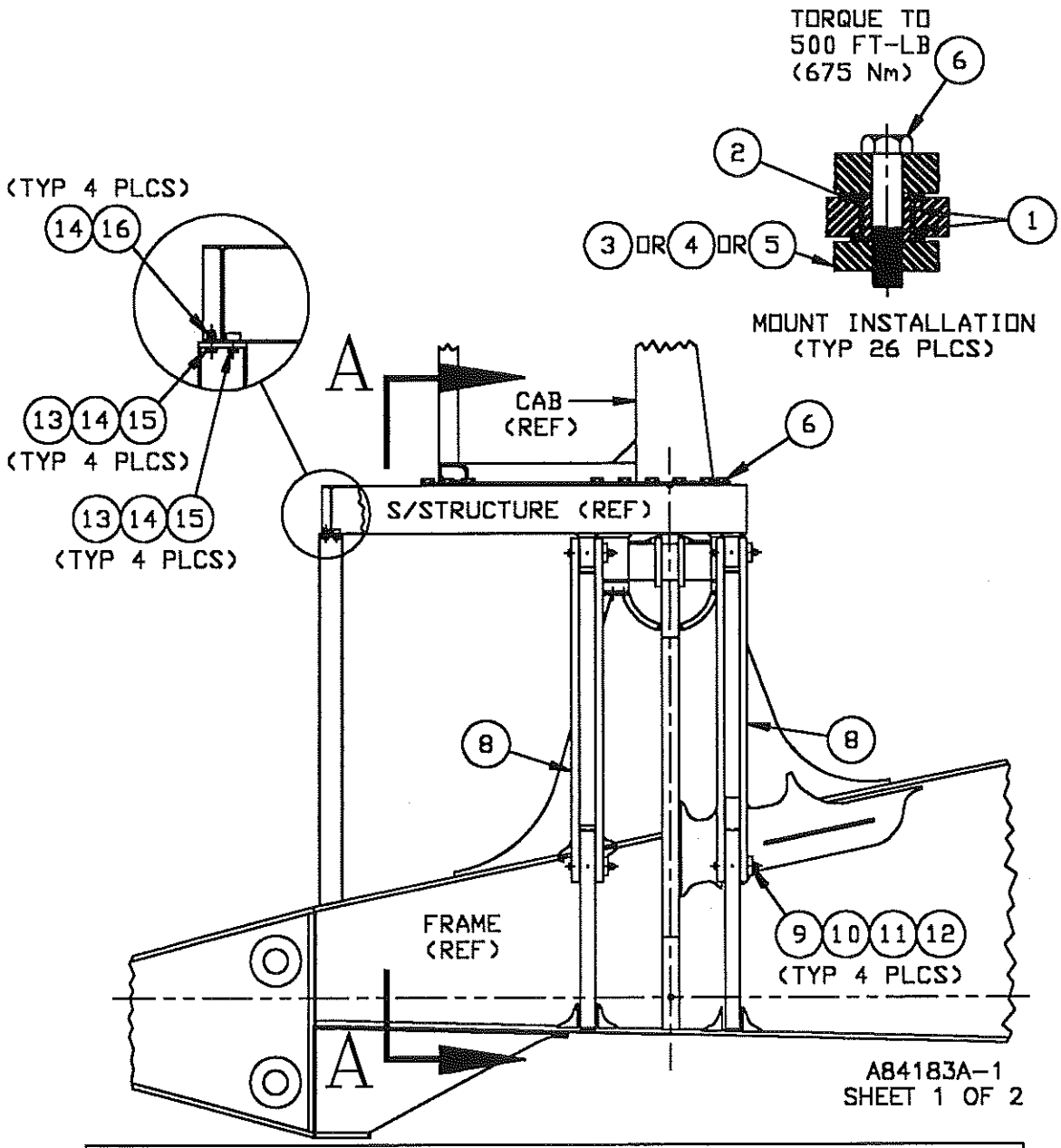
7. Install the ladder and railing assemblies removed as instructed in the Section 2 - Structure. Torque the mounting capscrews as required.

8. Install the hood assembly as outlined in Section 2 - Structure.

9. Connect and secure the flexible blower duct connections between the cooling air inlet and/or the superstructure.

10. Connect all electrical, hydraulic and pneumatic lines removed.

11. Test all operating functions as outlined in the appropriate procedures.



KEY			A84183A
01.	VIBRATION MOUNT	11.	CAPSCREW
02.	SPACER MOUNT	12.	LOCKNUT
03.	CAB FRONT RETAINER PLATE	13.	CAPSCREW (GRADE 8)
04.	CAB REAR RETAINER PLATE	14.	SPECIAL WASHER
05.	CAB REAR RETAINER PLATE	15.	FLATWASHER
06.	CAPSCREW (GRADE 8)	16.	LOCKNUT
07.	NOT USED	17.	ROPS MOUNTING CAP
08.	ROPS LINK	18.	CAPSCREW (GRADE 8)
09.	ROPS PIN	19.	HARDENED FLATWASHER
10.	ROPS PIN RETAINER		

FIGURE 1 - SUPERSTRUCTURE INSTALLATION

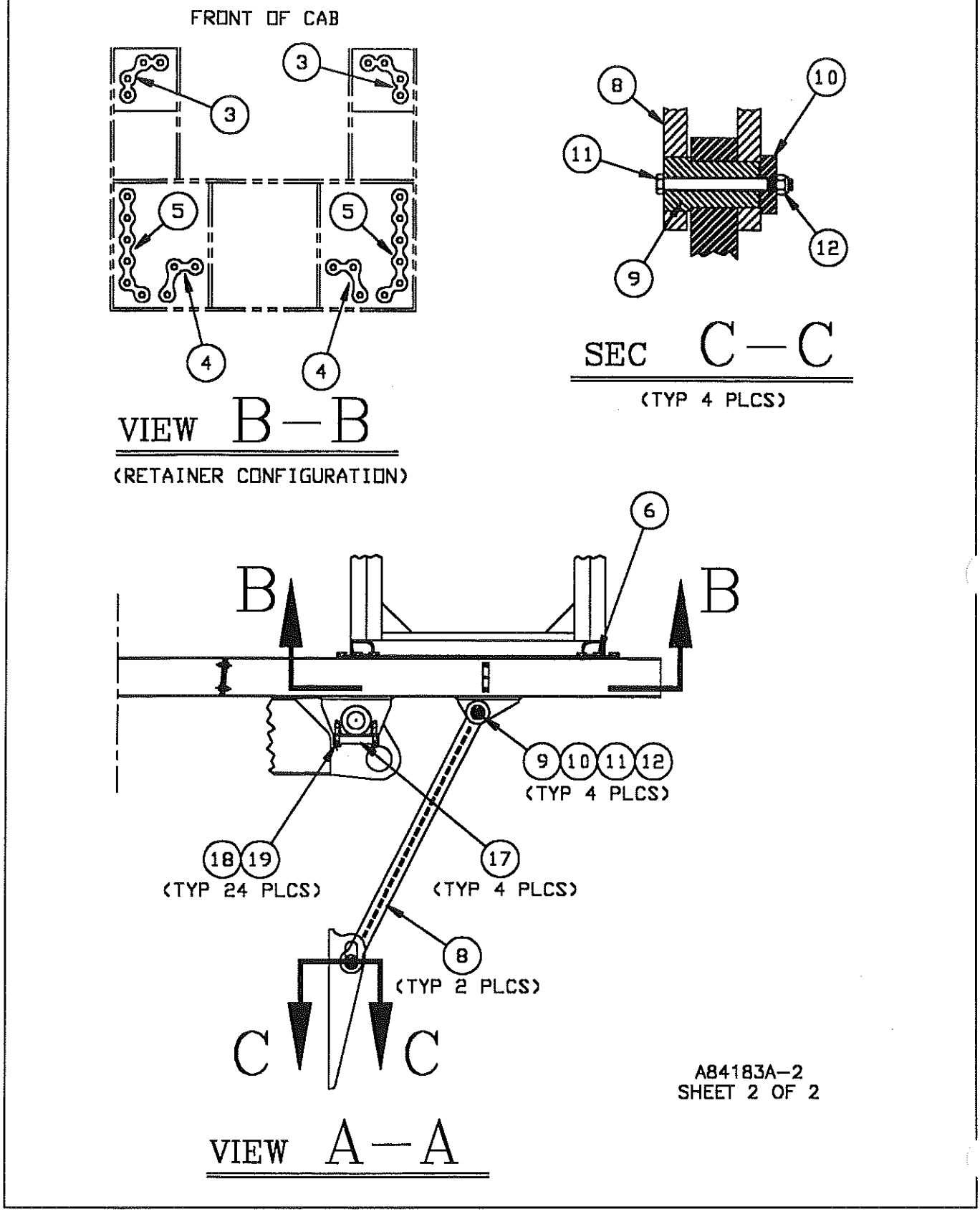


FIGURE 1 - SUPERSTRUCTURE INSTALLATION - CONTINUED

CAB

DESCRIPTION AND LOCATION

The cab is the metal shell structure mounted on the left side of the superstructure. The cab is equipped with controls and instruments necessary for operation of the truck.

OPERATION

The cab provides the operator with a large comfortable environment. Large windows provide good visibility in all directions. Doors on both sides provide easy movement in and out. Removable panels ease maintenance by improving access to cab mounted components.

The outer structural assembly includes the required integral ROPS fabrications.

NOTE: *The use and function of the cab indicators, gauges, controls is explained in the appropriate operator's manual.*

MAINTENANCE AND ADJUSTMENT

Periodically inspect the cab for evidence of damage. Repair or replace as required. Inspect each component as outlined in its respective module.

REMOVAL (Figure 2)

The cab may be removed as follows:

1. Park the truck in a SAFE POSITION. It must be secured by means other than the truck's friction brake system.

2. Remove the dump body as outlined in the instructions in Section 2 -Structure, or raise it to its maximum position and properly secure it.

3. Drain all stored oil pressure from the hydraulic brake and steering accumulators by using the appropriate manual drain valves.

⚠ DANGER

Release all pressure in the hydraulic brake and steering accumulators before disconnecting any hydraulic lines.

4. If so equipped, drain all air from the truck's pneumatic system. Verify that all pressure is exhausted from all tanks and components.

5. Check all components to ensure that no residual hydraulic or air pressure remains.

6. Remove the positive and negative cables from the battery. Isolate and secure.

7. Remove all electrical, hydraulic, and pneumatic connections between the cab and the superstructure assembly. Cap and plug all hydraulic and pneumatic connections. Label each connection to ensure proper reassembly.

8. Remove the weld securing the mounting capscrews (6) to the superstructure.

9. Secure the cab so that it will not move when the mounts are removed.

10. Remove the capscrews (6). As the individual retainer plates (3, 4, and 5) are removed, mark the location removed from to aid in installation.

11. Install the appropriate lifting device to lift the cab.

12. Connect the device to an overhead crane using a spreader bar or other suitable means of proper support. Adjust the slings to ensure that the lines are equally tensioned and are free of slack. Carefully raise the superstructure clear of the frame and lower onto support material.

NOTE: *The support material should support the cab at the mounting points and be secured to prevent unwanted movement.*

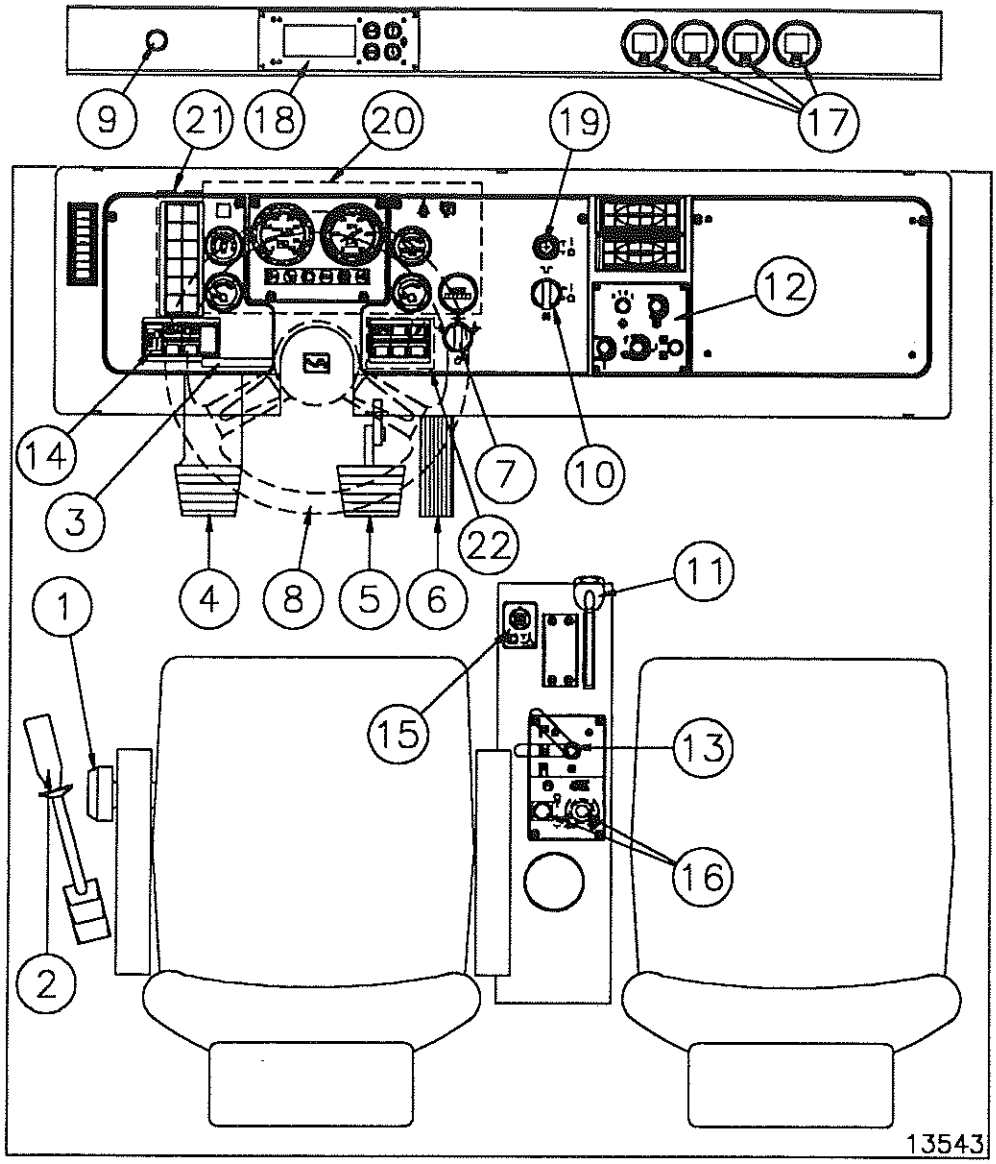
INSPECTION AND REPAIR

The cab may be serviced as follows:

1. Inspect all mounting and support arms and brackets for evidence of damage and wear. Repair or replace as required.

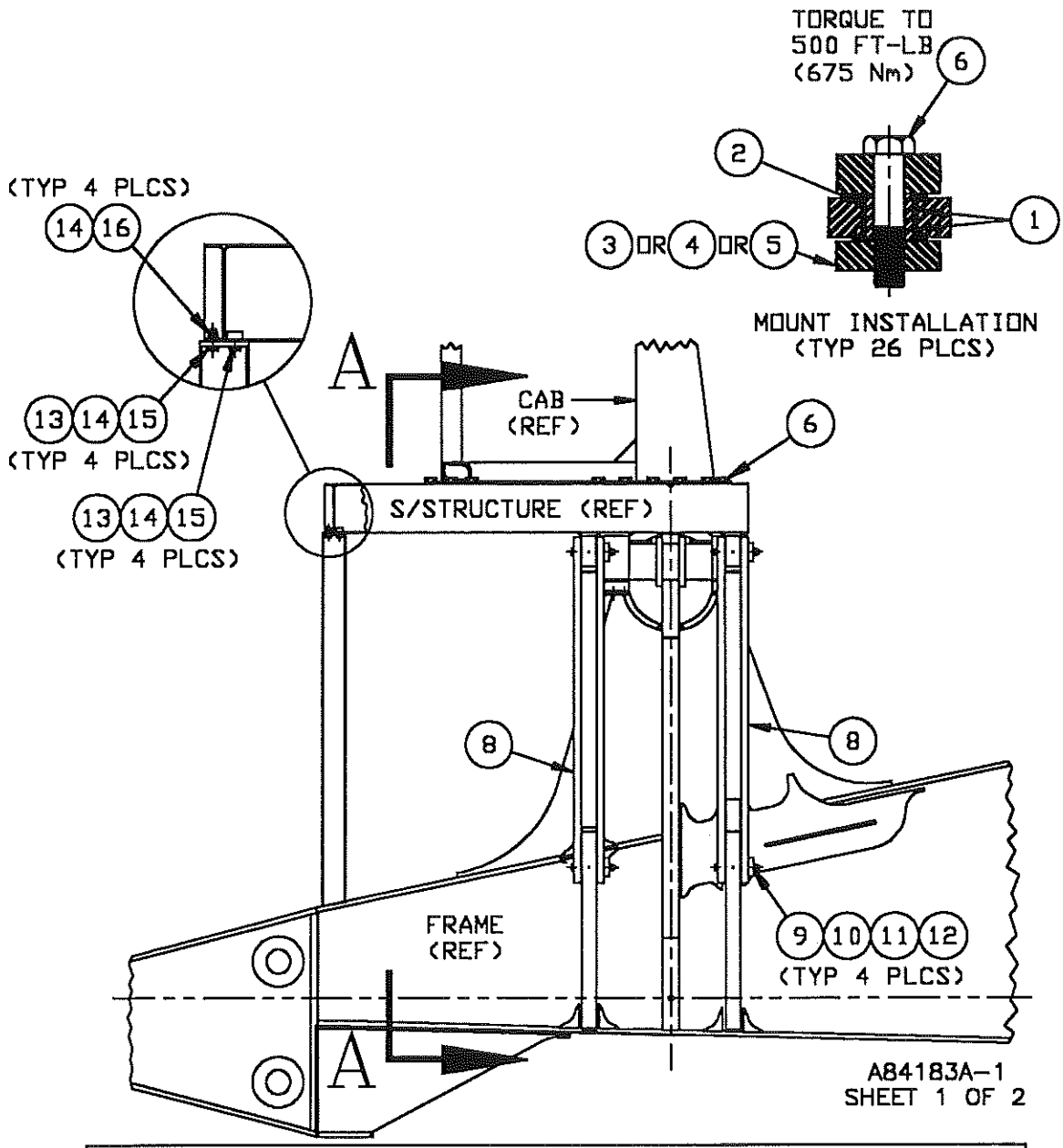
2. Inspect all doors and hinges for evidence of wear, damage, and proper lubrication. Repair or replace as required.

3. Repair any structural damage. General field welding instructions are included in Section 10 - Miscellaneous. Detailed instructions and assistance may be available



KEY			13543
1.	SEAT ADJUSTMENT CONTROLS	12.	HEAT & AIR CONDITIONER CONTROLS
2.	DUMP CONTROLLER LEVER	13.	SHIFTER
3.	DIMMER SWITCH	14.	LIGHT SWITCHES
4.	BRAKE PEDAL	15.	LOAD BRAKE SWITCH
5.	DYNAMIC RETARDER PEDAL	16.	RETARD SPEED CONTROLS
6.	THROTTLE PEDAL	17.	AIR CLEANER RESTRICTION INDICATORS
7.	ENGINE STOP/START SWITCH	18.	UNIT RIG WEIGH SYSTEM
8.	STEERING WHEEL	19.	MANUAL POWER SUPPLY
9.	WIPER CONTROL	20.	GAUGES
10.	PARK BRAKE	21.	INDICATOR LIGHTS
11.	HAND BRAKE	22.	MISCELLANEOUS SWITCHES

FIGURE 1 - TYPICAL CAB LAYOUT



KEY			A84183A
01.	VIBRATION MOUNT	11.	CAPSCREW
02.	SPACER MOUNT	12.	LOCKNUT
03.	CAB FRONT RETAINER PLATE	13.	CAPSCREW (GRADE 8)
04.	CAB REAR RETAINER PLATE	14.	SPECIAL WASHER
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06.	CAPSCREW (GRADE 8)	16.	LOCKNUT
07.	NOT USED	17.	ROPS MOUNTING CAP
08.	ROPS LINK	18.	CAPSCREW (GRADE 8)
09.	ROPS PIN	19.	HARDENED FLATWASHER
10.	ROPS PIN RETAINER		

FIGURE 2 - CAB INSTALLATION

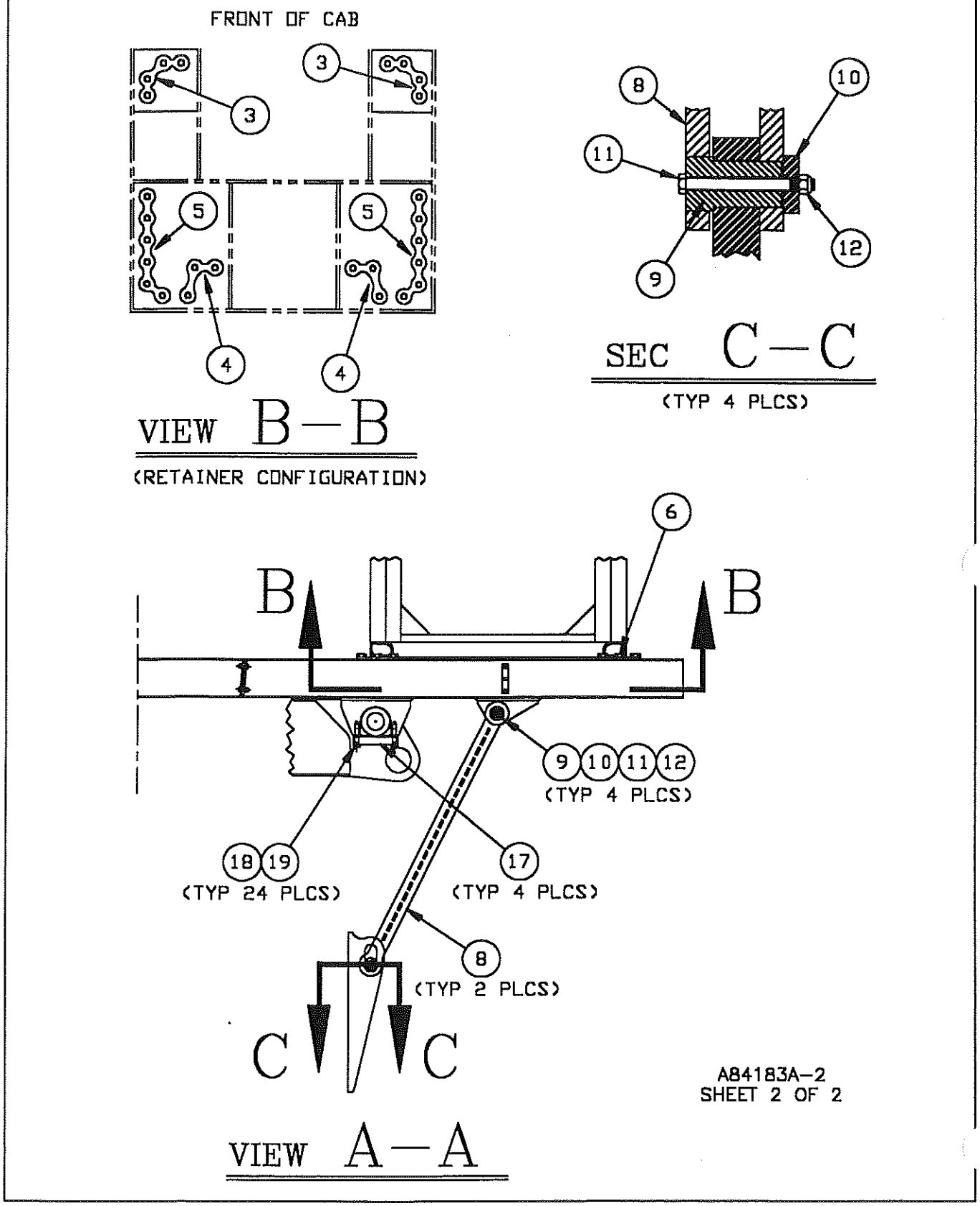


FIGURE 2 - CAB INSTALLATION - CONTINUED

from Unit Rig; contact your local representative. It is imperative that proper procedures be followed at all times to maintain the integrity of the ROPS structure in the cab shell.

4. Inspect the vibration mount (1) and spacer mounts (2) in the superstructure for evidence of wear or damage. Repair or replace as required.

INSTALLATION (Figure 2)

The cab may be installed as follows:

1. Before installation, verify that the vibration mount (1) and spacer mounts (2) in the superstructure are free of evidence of wear or damage. Repair or replace if required.

2. Connect the crane slings to the lifting fixture. A spreader bar or suitable substitute are recommended. Adjust the length of each sling that all four lines are equally tensioned and free of slack. Verify that the cable length is sufficient to permit the cab to be lifted without interference or damage to mounted components.

3. Raise the cab platform into position on the superstructure. Align the cab mounting pads with the corresponding locations in the superstructure.

4. Install the capscrews (6) and appropriate retainer plates (3, 4, and 5). After all are installed, tighten/torque sequentially to 500 ft.-lb.(675 Nm).

5. Remove the lifting slings.

6. Connect all electrical, hydraulic and pneumatic lines removed.

7. Test all operating functions as outlined in the appropriate procedures.

STEERING COLUMN

DESCRIPTION AND LOCATION

The steering column is a tilt type unit that also includes the electrical switches for the horn, turn signal, hazard warning, and headlight beam control assemblies. The steering hand pump or orbital valve assembly is attached to base end of the column assembly.

It is mounted in the cab assembly.

OPERATION

The primary function of the column is to transfer operator's steering input requirements from the movement of the steering wheel to corresponding movement of the hand pump assembly. The tilt function provides additional adjustment that improves the operator's comfort.

In the center of the steering wheel is a horn button assembly that controls the operation of the standard truck horn assembly.

The electrical switch assembly on the upper left hand side of the column provides several functions. Moving the lever up or down controls the operation of the turn signal assembly. Moving the switch toward the steering wheel controls the operation of the high and low beam of the headlights, alternating the configuration with each switch movement.

The hazard warning light function is controlled by a separate switch assembly.

MAINTENANCE AND ADJUSTMENT

Periodic maintenance of the column assembly should include:

1. Clean all foreign material from the assembly, especially the steering wheel and electrical controls. Use care not to contaminate the internal electrical components.

2. Test the operation of the horn, turn signals, hazard warning, and headlight beam control functions. Repair or replace as required.

3. If the steering wheel or horn button assemblies require service, it may be done as follows:

a. Park the truck in a SAFE POSITION. It must be secured by means other than the truck's friction brake system.

b. Turn the Master Switch Off.

c. Remove the steering column locking ring (3).

d. Remove the 3/8-16 nut securing the horn button (4). Remove the horn button.

e. Remove the stop bracket from the column assembly.

f. Remove the 7/8-20 nut securing the steering wheel to the column. Remove the steering wheel using a suitable puller assembly.

g. Install the steering wheel. Secure with the 7/8-20 nut, tightened to a torque of 50 to 55 ft-lbs (68 to 75 Nm).

h. Install the stop bracket.

i. Install the horn button assembly. Secure with the 3/8-16 nut, tightened to a torque of 8 to 10 ft-lbs (11 to 14 Nm)

j. Install the Steering column locking ring assembly.

REMOVAL

The steering column may be removed as follows:

1. Park the truck in a SAFE POSITION. It must be secured by means other than the truck's friction brake system.

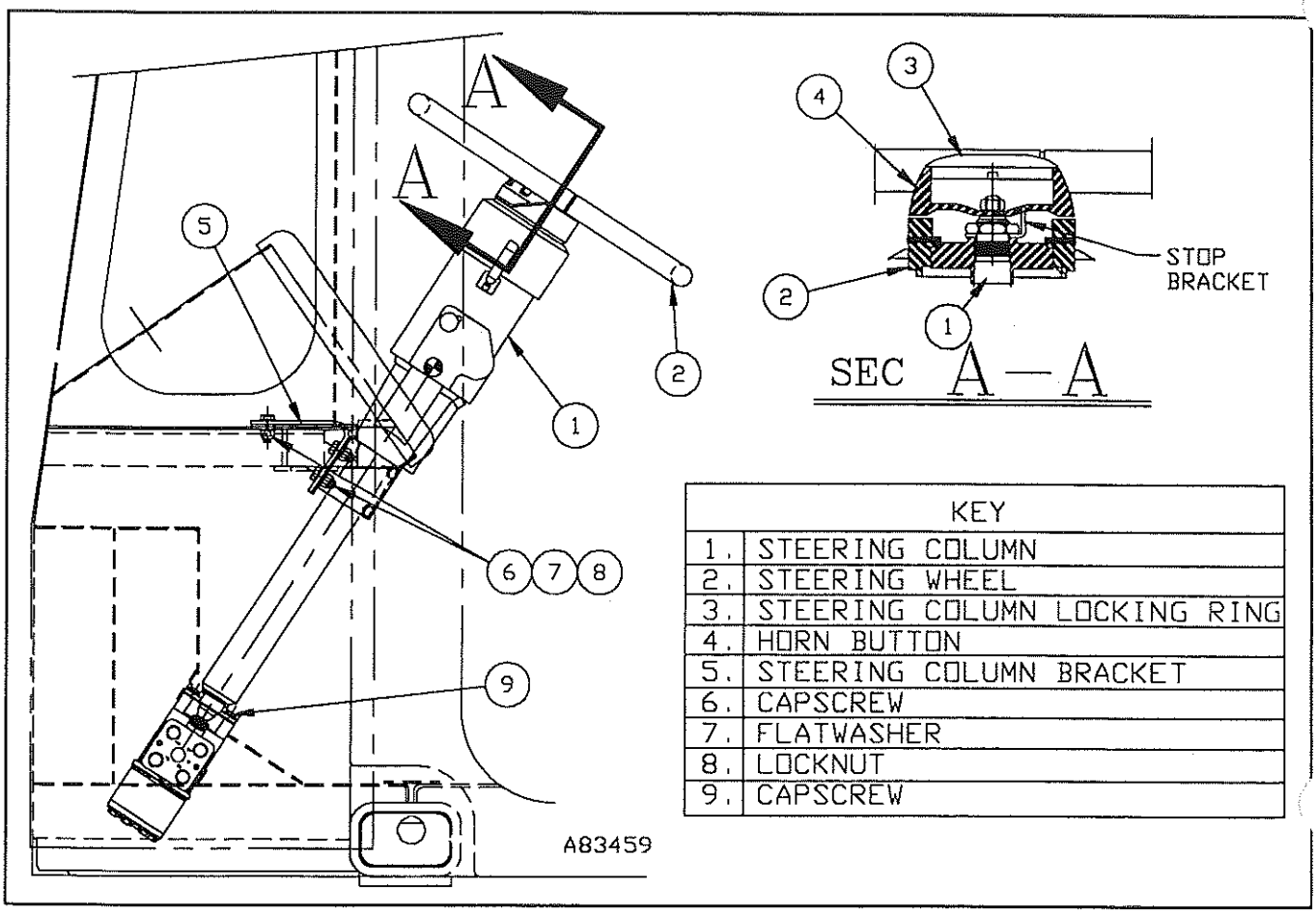
2. Turn the Master Switch Off.

3. Disconnect the electrical wiring from the cab by disconnecting the connector assembly at the base of the steering column.

4. Remove the hand pump assembly as outlined in the instructions in Section 5 - Hydraulic System.

5. Secure the column assembly to prevent unwanted movement.

6. Remove the capscrews, flatwashers, and locknuts securing the steering column assembly to the cab.



KEY	
1.	STEERING COLUMN
2.	STEERING WHEEL
3.	STEERING COLUMN LOCKING RING
4.	HORN BUTTON
5.	STEERING COLUMN BRACKET
6.	CAPSCREW
7.	FLATWASHER
8.	LOCKNUT
9.	CAPSCREW

FIGURE 1 - STEERING COLUMN INSTALLATION

7. Remove the column from the cab.

SERVICE

For detailed service instructions, contact your local Unit Rig representative.

INSTALLATION

The steering column may be installed as follows:

1. Insert the column into position.

2. Secure the column with the capscrews (6), flatwashers (7), and locknuts (8) securing the steering column assembly to the cab.

3. Install the hand pump assembly as outlined in the instructions in Section 5 - Hydraulic System.

4. Reconnect the electrical harness.

5. Test the steering column/hand pump operation as outlined in the instructions in Section 5 - Hydraulic system.

6. Test the electrical functions as outlined in Maintenance and Adjustment.

FUEL TANK

DESCRIPTION AND LOCATION

The fuel tank is the round, horizontally mounted tank mounted on the right side of the trucks main frame between the front and rear tires.

OPERATION

The fuel tank hold between 800 and 1300 gallons (3 030 and 4 920 liters) of diesel fuel, depending upon customer specification. Glass plugs allow the relative fluid level to be seen externally without removing any covering. Vent caps are installed to prevent the build up of positive pressure (during fuel filling) or vacuum (during normal operation when fuel is being used). An internal mounted sending unit provides the input needed by a cab mounted Fuel Level gauge to allow normal monitoring of the fuel level during normal operation.

The tank may be filled through either a hinged cap and strainer assembly or through a remote mounted quick fill assembly.

NOTE: *The tank is grounded to the truck frame to add additional safety and durability.*

MAINTENANCE AND ADJUSTMENT

Periodic maintenance should include the following:

1. Inspect the exterior of the tank for evidence of damage or leakage. Repair or replace as required.

2. Inspect the mounts and brackets. They should be secure and in general good repair. Adjust, repair, or replace as required.

3. Inspect the cap on the fill ports. It should seal sufficiently to prevent contamination from entering. Repair or replace as required.

4. Inspect the inlet strainers on the fill port. It should be free of contamination and in general good repair. Repair or replace as required.

5. Inspect all inlet and outlet lines and ports. They should be free of damage and in general good repair. Repair or replace as required.

6. Periodically inspect the inside of the tank for evidence of rust, dust, or other contamination. Flush the tanks and clean as required if evidence of contamination is found.

REMOVAL

The fuel tank may be removed as follows:

1. Empty the contents of the tank into the appropriate cleaned containers. This may be accomplished by use of a transfer pump or other suitable device. Plugs and/or drain cocks are provided in the bottom of each tank to allow for final draining.

IMPORTANT: *Check the fluid level in the tank prior to beginning the emptying procedure and make the appropriate provisions for the large volumes of fuel that will be transferred.*

2. Disconnect and cap or plug all lines attached to the tank. Label all hoses removed to assist in later reconnection.

3. Disconnect all wires connected to the tank.

4. Disconnect the ground strap.

5. Support the tank so the weight is removed from the mounting brackets. Secure so that it cannot move when the brackets are released.

6. Remove all remaining capscrews, pads, shims, etc.

7. Remove the tank assembly from the truck.

DISASSEMBLY

The tank assembly may be disassembled as follows:

1. Remove all fill ports and strainer assemblies.

2. Remove all clean-out port covers.

3. Remove all internal strainers and filters.

4. If necessary to remove the tank from the mounting bracket, remove the capscrews and separate the bracket sections. Remove the tank.

INSPECTION ND REPAIR

The disassembled tank may be inspected as follows:

1. Inspect all threads on ports or plugs for damage. Repair or replace as required.

2. Inspect all exterior and interior surfaces for evidence of corrosion, or damage. Clean, repair, or replace as required.

3. Inspect all welds and mounting brackets for evidence of damage. Repair or replace as required.

4. Inspect the mounted brackets for evidence of wear or damage. Inspect the neoprene webbing on the inside of the strap assemblies. Repair or replace as required.

ASSEMBLY

The tank may be assembled as follows:

IMPORTANT: *Always use new gaskets and gasket sealer during assembly.*

1. Verify that the internal surfaces and components are free of contamination.

2. Install all strainers, filters, and other components.

3. Install the clean out port covers using care to tighten and torque all of the capscrews sequentially and evenly in small stages to ensure proper sealing.

4. Install the inlet and outlet manifolds and attached hardware.

5. Install the fill port/strainer assemblies and tighten sufficiently to form a firm seal. Verify that the rubber seal material on the cover forms a good seal.

NOTE: *It is recommended that thread sealant be applied to all pipe threads.*

INSTALLATION

The tank may be installed as follows:

1. If removed, install the brackets and securing straps on the frame mounts. Use the appropriate mounting hardware to secure the brackets.

NOTE: *It is generally considered easier to install the brackets, straps, and tank separately.*

2. Separate the straps as required.

3. Lift the tank carefully and position on the straps. Verify that the filler cap is properly oriented and that the tank is located far enough away from the wheels to prevent contact.

NOTE: *During steering, the front wheels move rearward and sufficient clearance for this must be allowed for.*

5. Move the straps around the tank and secure with the capscrews. Use self-locking nuts to secure the capscrews.

NOTE: *Tighten the capscrews sufficiently to secure the tanks. Do not over-tighten, as damage to the tank or strap may result.*

6. Connect all wiring to the tank.

7. Connect all hoses removed from the tank.

8. Connect the ground strap making sure to make solid connections at both ends.

9. Fill the tank with fuel using the appropriate filtering transfer device.

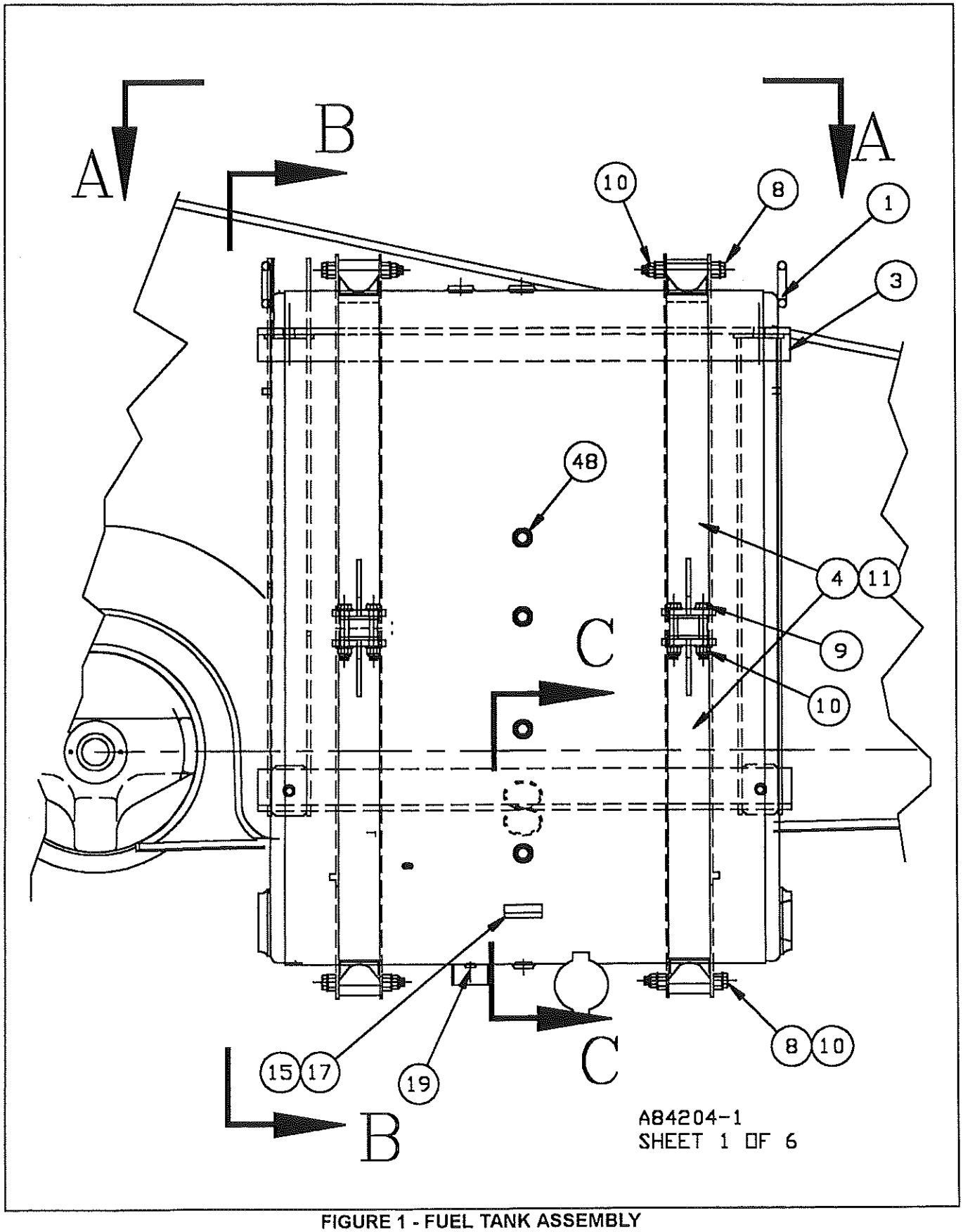


FIGURE 1 - FUEL TANK ASSEMBLY

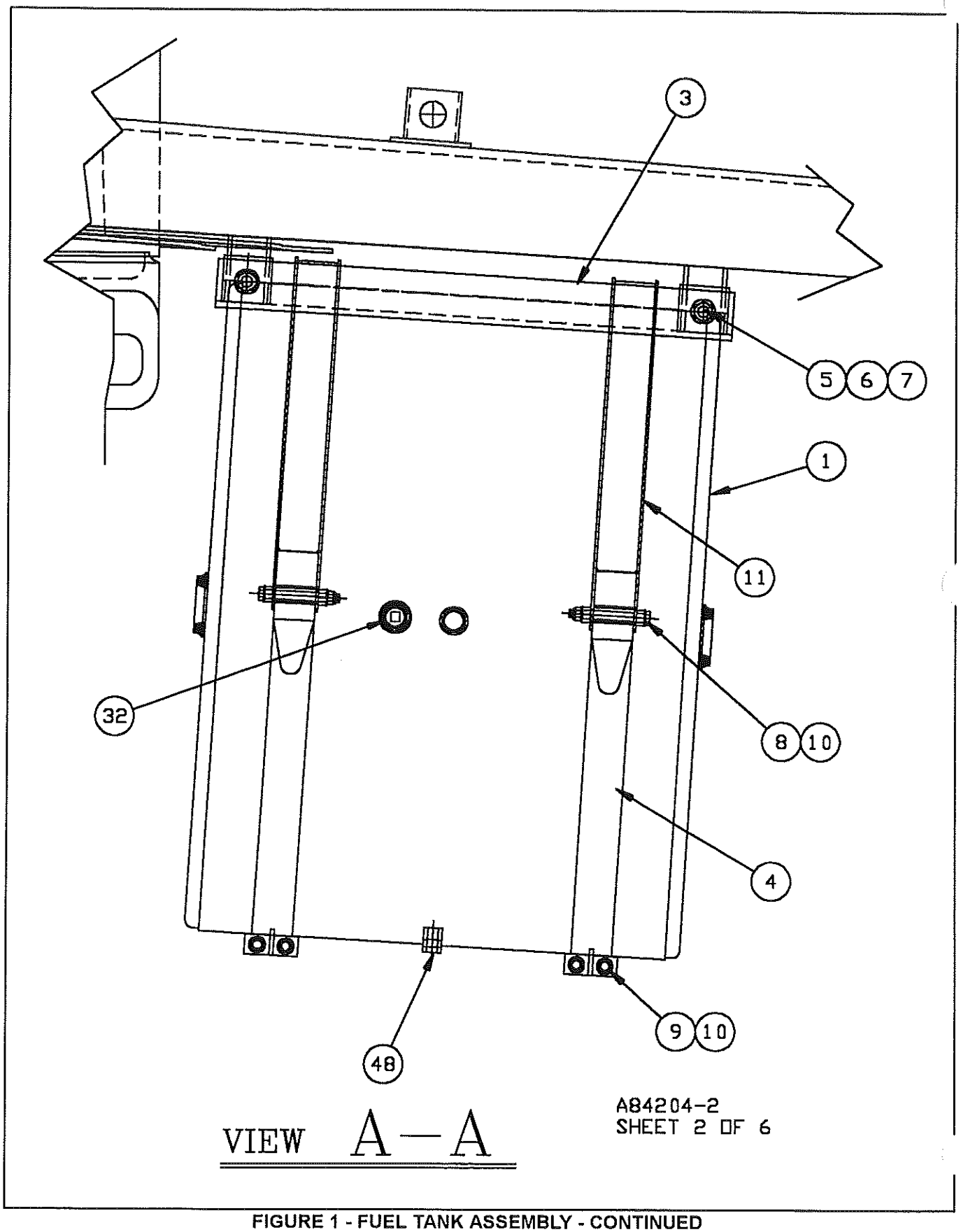


FIGURE 1 - FUEL TANK ASSEMBLY - CONTINUED

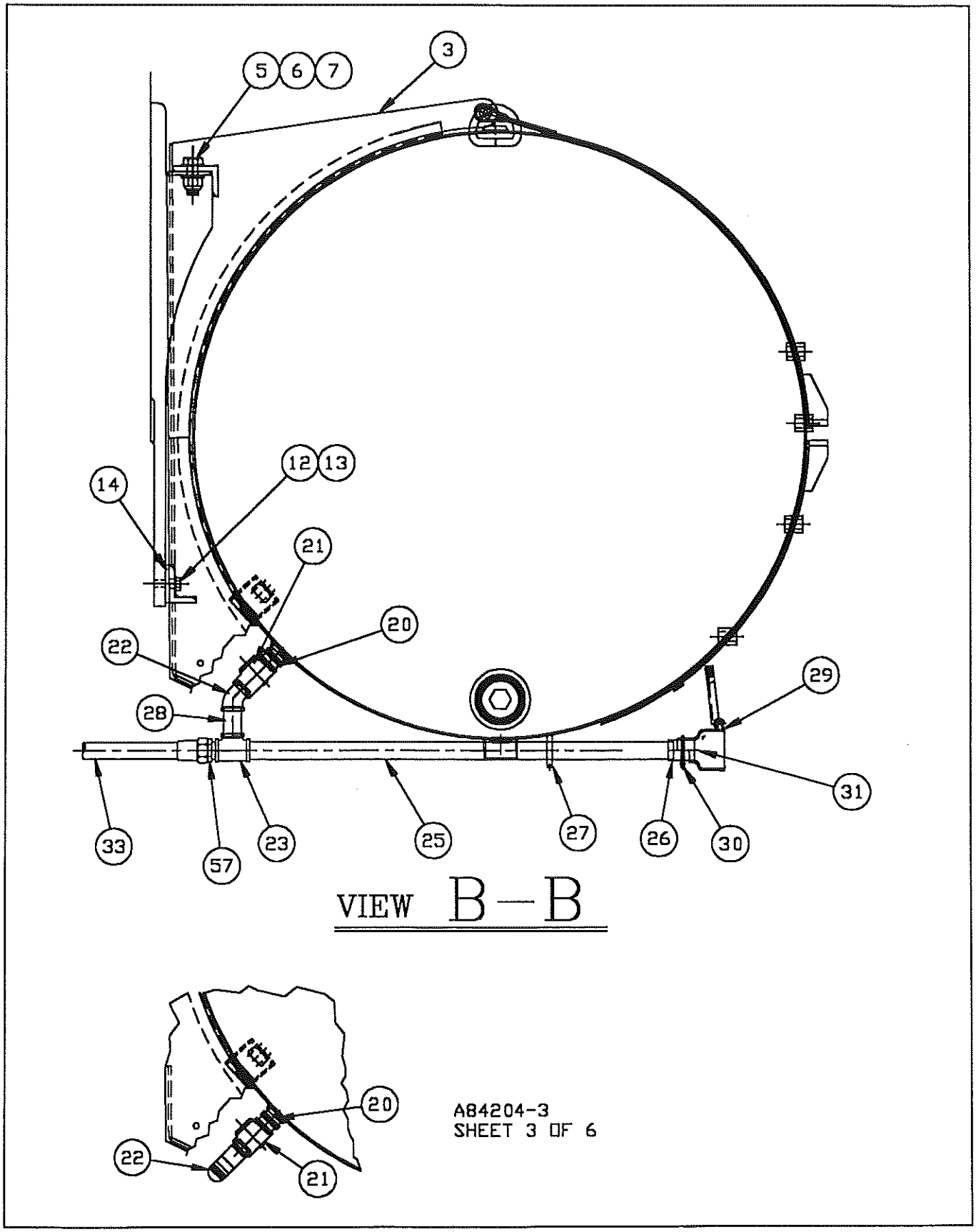


FIGURE 1 - FUEL TANK ASSEMBLY - CONTINUED

KEY					
01.	Fuel Tank	22.	45° Adapter	43.	Cover
02.	Not Used	23.	Pipe Tee	44.	Capscrew
03.	Fuel Tank Bracket	24.	Straight Adapter	45.	Lockwasher
04.	Fuel Tank Strap	25.	Pipe Nipple	46.	Grip
05.	Capscrew (Grade 8)	26.	Pipe Coupling	47.	Conduit Locknut
06.	Locknut	27.	Pipe Clamp	48.	Liquid Level Sight Plug
07.	Hardened Flatwasher	28.	Pipe Nipple	49.	Level Sensor
08.	Capscrew	29.	Dry Break Fuel Guard	50.	Dry Break Fuel Bracket
09.	Capscrew	30.	U-Bolt Clamp	51.	Cushion Clamp
10.	Locknut	31.	Dry Brake Receiver	52.	Bolting Pad
11.	Neoprene Webbing	32.	Fuel Tank Vent	53.	Capscrew
12.	Capscrew	33.	Hose Assembly	54.	Lockwasher
13.	Hardened Flatwasher	34.	Hose Clamp	55.	Capscrew
14.	Spacer	35.	Fuel Suction Pipe	56.	Chain
15.	Nameplate	36.	Pipe Nipple	57.	Adapter Fitting
16.	Lockwasher	37.	Pipe Elbow	58.	Capscrew
17.	Drive Screw	38.	Gate Valve	59.	Locknut
18.	Not Used	39.	Straight Adapter	60.	Flatwasher
19.	Drain Cock	40.	Fuel Level Transmitter	61.	Pipe Nipple
20.	Pipe Nipple	41.	Rubber Gasket		
21.	Ball Valve	42.	Capscrew		

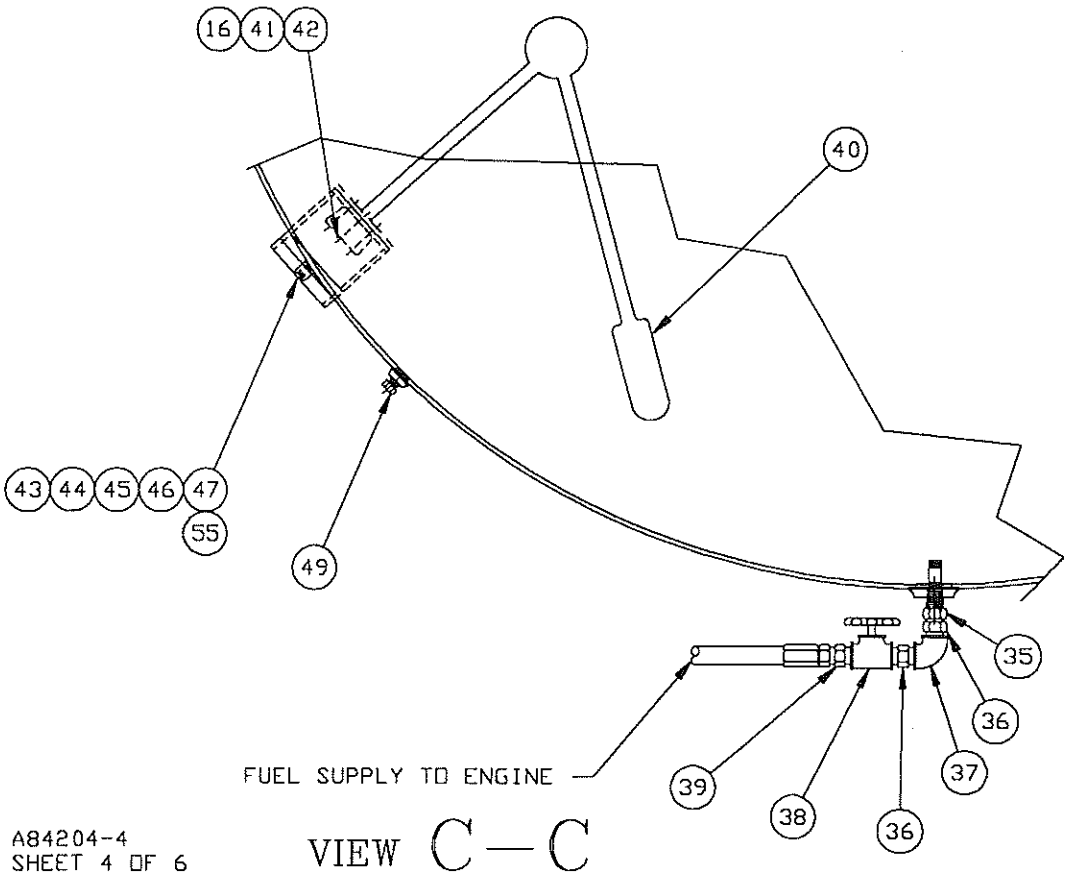


FIGURE 1 - FUEL TANK ASSEMBLY - CONTINUED

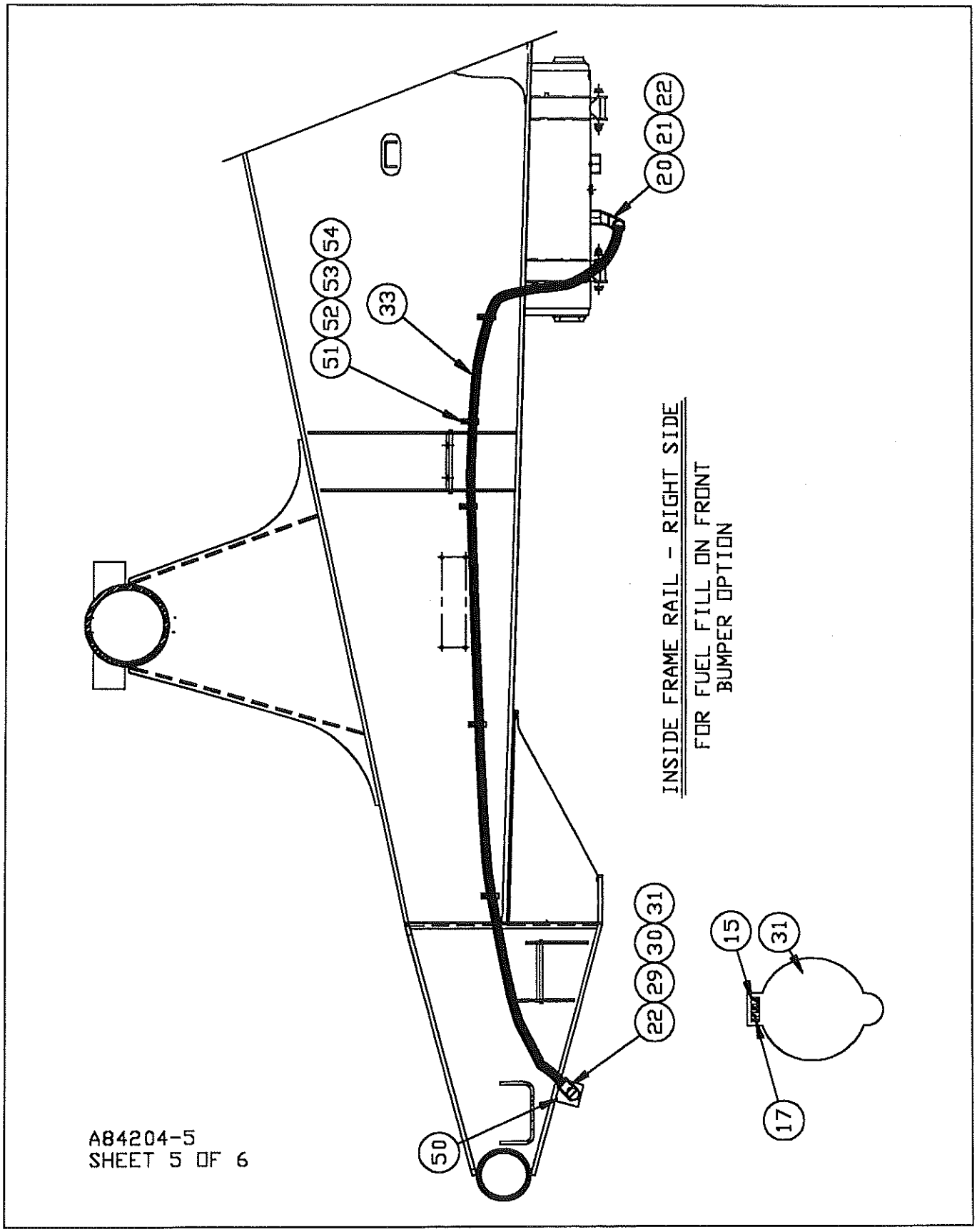
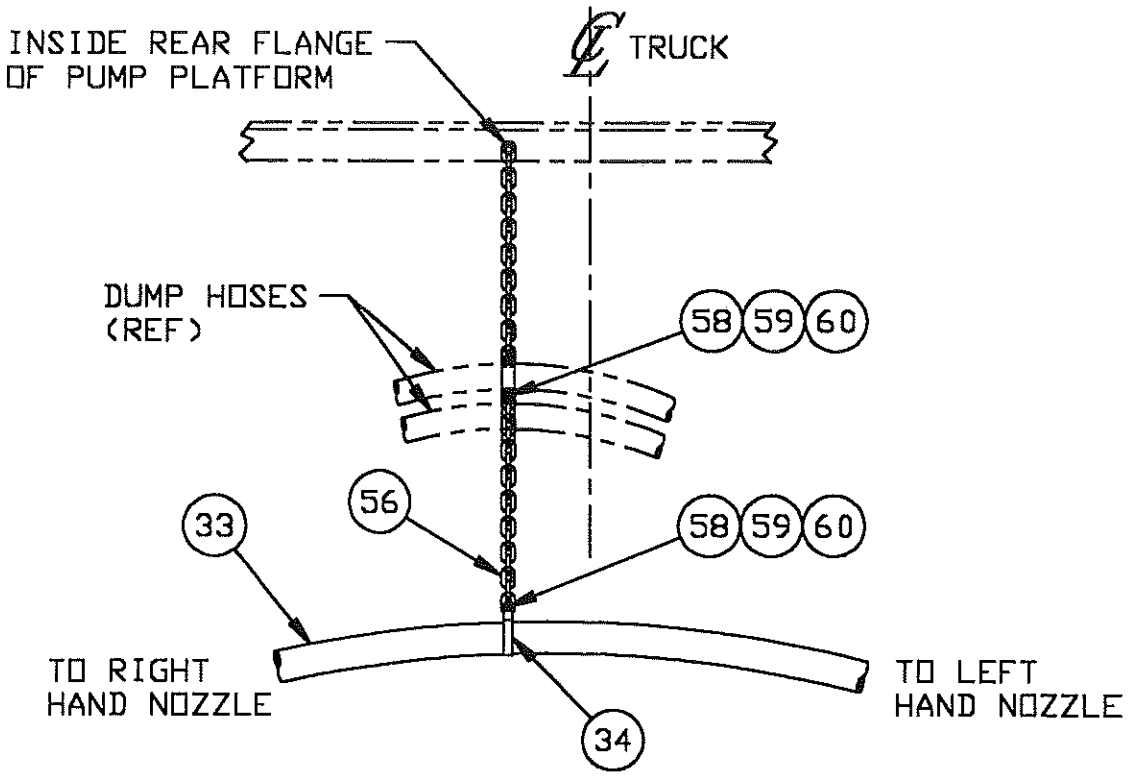
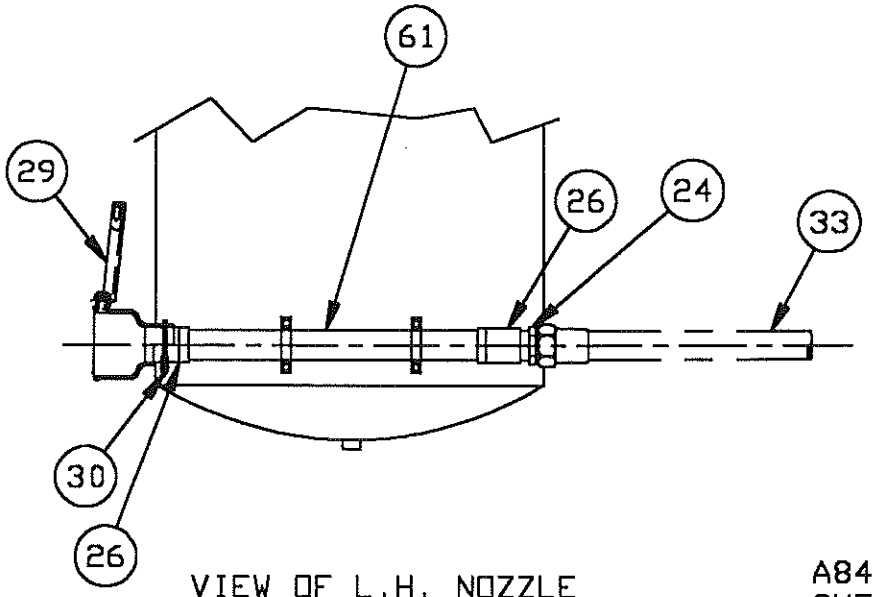


FIGURE 1 - FUEL TANK ASSEMBLY - CONTINUED



VIEW OF CROSSOVER HOSE
LOOKING TOWARD REAR OF TRUCK



VIEW OF L.H. NOZZLE
@ REAR SIDE OF HYD. TANK

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FIGURE 1 - FUEL TANK ASSEMBLY - CONTINUED

DUMP BODY

DESCRIPTION AND LOCATION

The dump body is the large load carrying area mounted above the rear of the frame. It is available in various sizes to accommodate the variety of materials hauled.

OPERATION

The dump body serves as the load-carrying member for moving the desired payload. The large, wide floor and low height eases loading requirements while the flat smooth walls, floor, and rear pivot mounts are designed to facilitate fast and efficient dumping.

Liners of high, abrasive-resistant steel are provided as an option to increase useful component life by reducing the wear caused by material in the high wear areas. Liners also provide a fast and efficient means of replacing worn out surfaces.

The dump body assembly has four major support components:

1. Rubber pads, mounted on the dump body, support the dump body when it is resting on the frame. They are designed to carry and distribute the weight of the dump body and load and require proper shimming.

2. The guide structure assists in limiting the lateral movement of the dump body when it is lowered and resting on the frame.

3. The dump cylinders raise and lower the front of the dump body. It is important that these cylinders do not carry any load except during the dumping operation. Detailed information about these cylinders is contained in Section 5 - Hydraulic System.

4. The dump body pivot assembly serves as the point of rotation for the body. It is designed to carry loads during the dumping operation and a limited load during haulage. This load should be controlled by proper shimming of the dump body pads.

On some trucks the engine exhaust is routed through channels on the outer portion of the dump body. The heat from the exhaust warms the dump body to assist in reducing sticking or freezing of material to the metal, especially in areas prone to these conditions.

Rock knockers or ejectors are provided to remove rocks and other material which may be wedged between the dual tires. These are suspended from the bottom of the dump body and are free to move on their pivots as required. Provisions have been included to support these devices in a temporary "storage" position to aid in tire, wheel motor and other removal and maintenance procedures that are affected by their presence. (See Figure 1.)

Provision has been made for securing the dump body in its fully raised (dump) position. Cables attach from the dump body to a lug located on the back of the axle box. To secure in position, raise the dump body fully, and connect the cables. During normal operation, the cables are stowed under the dump body with both ends attached to brackets on the body. (See Figure 2.)

⚠WARNING

Never work on the truck without the dump body resting on the frame or secured by the cables. Never operate the truck or attempt to lower the dump body with the cable securing the dump body in its raised position.

MAINTENANCE AND ADJUSTMENT (Figures 1, 2, 3 and 4)

Periodic maintenance should include the following steps:

1. Inspect the dump body for wear and damage. Repair as required by following the approved Unit Rig welding specifications and procedures as outlined on the instructions for Field Welding in Section 10 - Miscellaneous of this manual as well as other Unit Rig information.

2. Inspect the liners for wear or damage. Repair or replace as required.

3. Inspect the condition of the rock ejectors. They should have proper freedom of movement. Repair or replace as required.

NOTE: *If temporary "storage" of the ejectors in a raised position (clear of the tires) is desired during tire or other maintenance, it may be secured as shown in Figure 1.*

4. Inspect the dump body lock-up cables, brackets and other provisions for evidence of wear or damage.

NOTE: *The dump body is secured in the raised position as outlined in the information in Figure 2. The cable is*

TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	CORRECTIVE ACTION
Exhaust leakage	Damaged exhaust components	Check all components for damage and proper fit. Repair or replace as required.
Excessive lateral movement	Improperly shimmed guide assembly	Check guide assembly shimming. Reshim as outlined in Maintenance and Adjustment.
	Dump pins, hinge or pivot structure worn or damaged	Inspect and repair or replace as required.
Dump Cylinder damaged (bottomed out)	Dump body improperly shimmed (too low)	Check dump body shimming. Reshim as outlined in Maintenance and Adjustment.
	Dump valve not in FLOAT position during truck operation	Check operation of dump valve. Also check that perators are properly operating the control.
Dump Cylinder damaged (bent or pulled out lengthwise (piston damaged)) — damage to attachment pins	Dump body raised during truck operation (pulling away from the dump too soon)	Refer to operator's manual for dumping procedures. Report this condition to supervisor for corrective action.
	Dump body rear edge is being used to blade or spread material	
	Dump body is "powered up" too fast (especially when in overcenter condition)	

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stowed by securing the front eyelet assembly to bracket item 2.

5. Inspect the pivot pin assembly for evidence of wear or damage. Also verify that the pin is secured to cause the pin to rotate with the body only as shown in Figure 3. Repair or replace as required.

6. On trucks equipped with dump body heating:

a. Inspect the dump body heating exhaust ducting and connections for evidence of damage which might result in leakage or restriction in the exhaust flow. Repair as required.

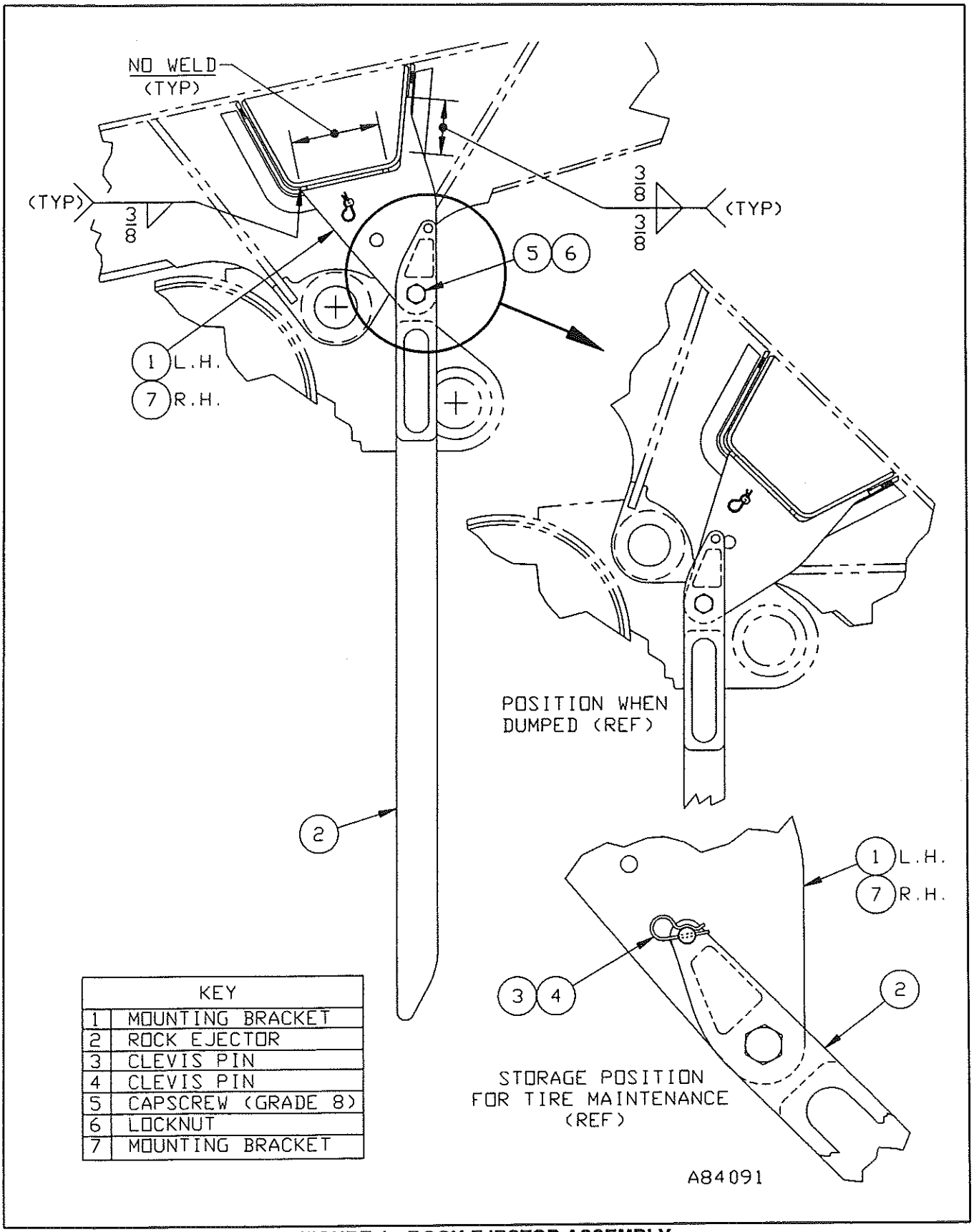
b. Inspect the internal dump body heating passages for excess carbon deposits. Accumulation of carbon and related deposits will block passages and restrict the flow of exhaust gases, reducing engine performance and body heating efficiency. To clean, raise the dump body and flush with water. Additional cleaning may be done by "rodding" or similar means. Do not use fire or similar methods to clean the passages.

⚠WARNING

Oxygen and oil should not be blown into the passages in an attempt to burn out deposits as they may form a highly explosive mixture.

7. Inspect the dump body pads at every service period (approximately 150-250 hours) for deterioration of the rubber, broken mounting lugs, or other evidence of wear or damage. Repair or replace as required. The proper installation and shimming procedure is included later in this portion of the module.

8. Inspect the dump body guide wear plates every 500 hours as follows: (Figure 4)



KEY	
1	MOUNTING BRACKET
2	ROCK EJECTOR
3	CLEVIS PIN
4	CLEVIS PIN
5	CAPSCREW (GRADE 8)
6	LOCKNUT
7	MOUNTING BRACKET

FIGURE 1 - ROCK EJECTOR ASSEMBLY

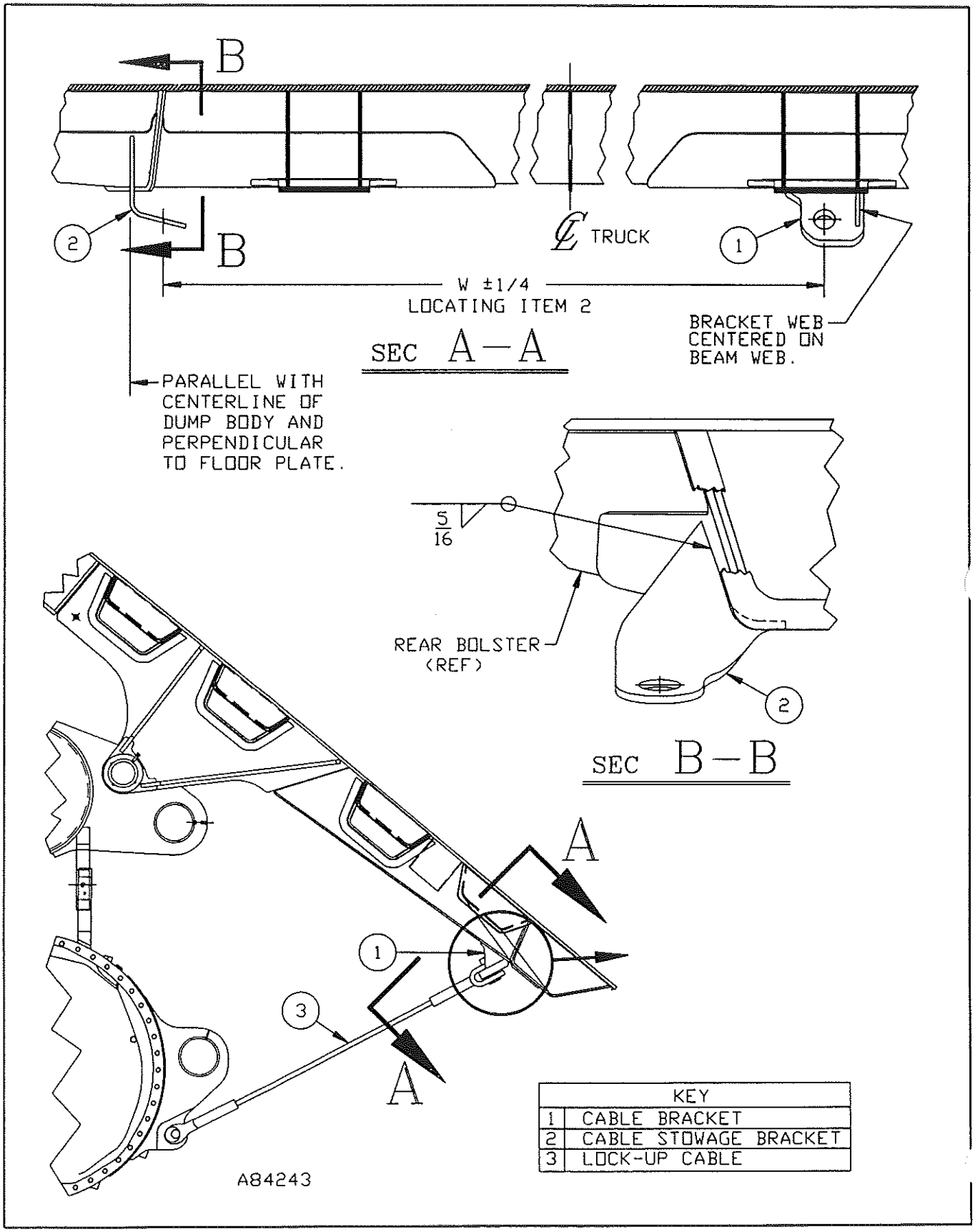


FIGURE 2 - DUMP BODY LOCK-UP PROVISION

a. With the dump body down and resting on the frame rails, measure the distance between the dump body guides (3) and rub plates (4 and 5) on both sides of the truck.

b. If the total of the two clearances is less than 1/2 inch (13 mm), the guides are properly shimmed and require no maintenance.

c. If the total of the two clearances is greater than 1/2 inch (13 mm), the guides should be re-shimmed as outlined in the appropriate procedures later in this module.

NOTE: *Excessive wear on one or both of the dump body guide assemblies may indicate excessive wear in other areas (e.g. pivot pins and/or bushings) or improper operating practices. These should be reviewed and corrected to minimize dump body guide wear.*

SHIMMING THE PADS (Figure 3)

The dump body pads may be shimmed as follows:

1. Park the truck in a SAFE POSITION in a level area. It must be secured by means other than the truck's friction brake system.

2. Raise the dump body and secure as required to prevent unwanted movement of the body.

⚠WARNING

Never work under or around the truck unless the dump body is solidly secured in place at all times it is not resting on the frame.

3. Inspect the condition of the rubber pad and securing assemblies. Replace any if found to be worn or damaged.

4. Install the shim block (15) on the top flange of the frame, perpendicular to the frame rail. The block should be located approximately 3 inches (76 mm) in front of the first set of pad mounting slots.

5. Remove the securing device and fully lower the dump body until the dump body runners rest on the shimming block.

NOTE: *If the pads contact the frame prior to this occurring, it may be necessary to remove the appropriate pad(s), marking their location for later reinstallation.*

6. Measure the distance between the dump body flange and the frame flange at a distance of approximately 3 inches (76 mm) behind the last set of pad mounting slots. If this dimension is found to be less than 1-3/16 inch (30 mm), raise the dump body and install an appropriate amount of shims to obtain this minimum dimension.

7. Measure the gap between the dump body and frame flanges at the center slot for each pad assembly, both on the inside and outside to the runners/rails. This provides the A1 though A5 dimensions shown.

NOTE: *If the inside and outside dimensions are found to be different, the dimension should be an average of the two measured gaps.*

8. Measure the thickness of each pad.

9. Subtract the pad thickness from the corresponding gap distance and record the required shim thickness.

10. Prepare a stack of shims of the required thickness. Raise and secure the dump body and install the shims under the correct pad.

NOTE: *The thicker pad goes against the frame.*

11. Remove the shim block. Correctly shimmed, the pads should contact the frame within +/- 1/32 inches (0.030 mm) at each pad location.

12. Place truck into service for 6 to 8 typical load cycles.

13. Re-inspect and re-shim (if required) as outlined previously.

NOTE: *At the next maintenance period of the truck, raise the dump body and inspect the contact areas for even wear on the dump body runners. Be sure to secure the body prior to working under it.*

SHIMMING THE GUIDES (Figure 4)

The dump body guides should be shimmed as follows:

1. Verify the truck is parked in a SAFE POSITION on level ground.

2. Verify that the:

a. Pivot pins and bushings are in good condition.

b. The rub plate and guide surfaces are in good repair.

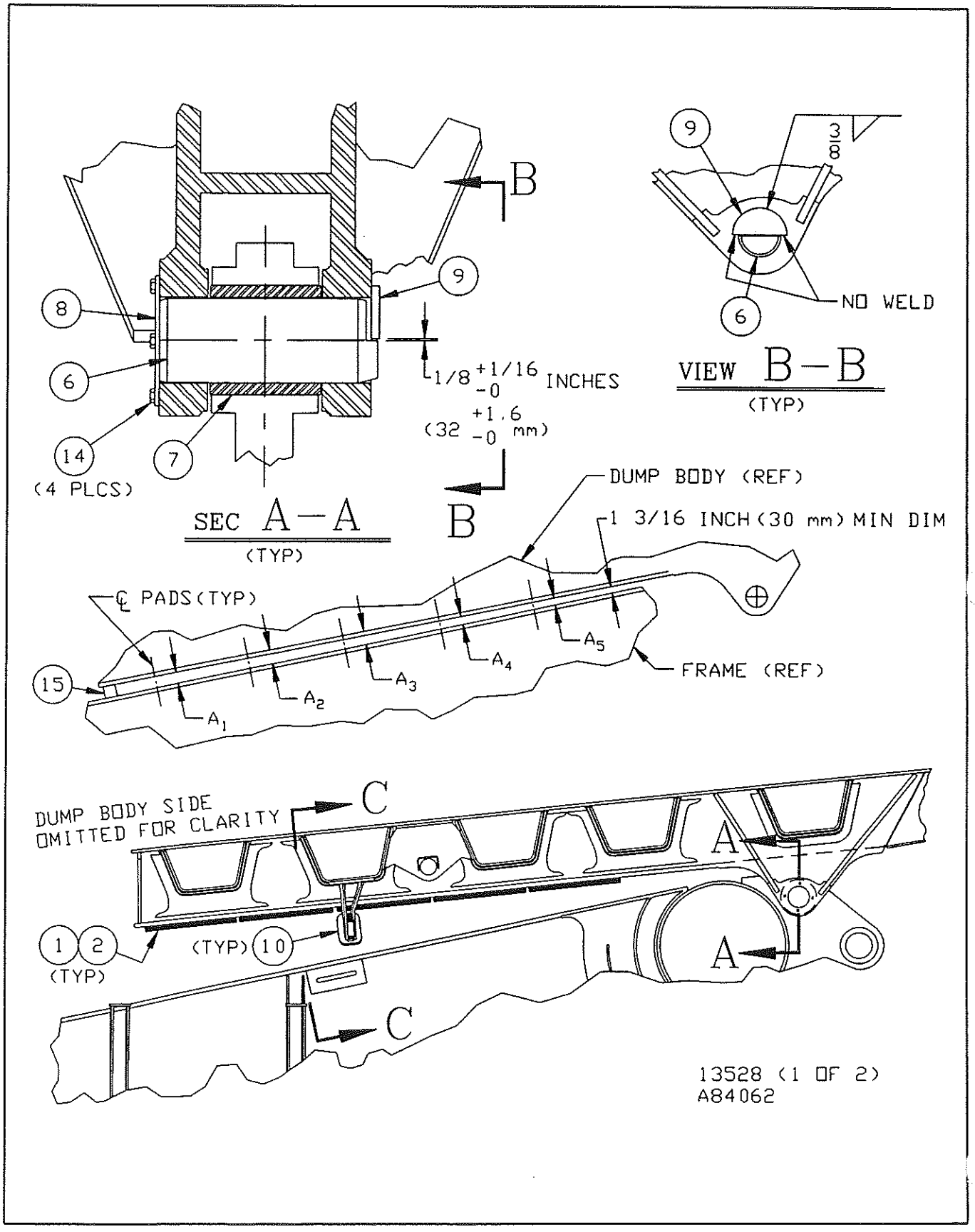
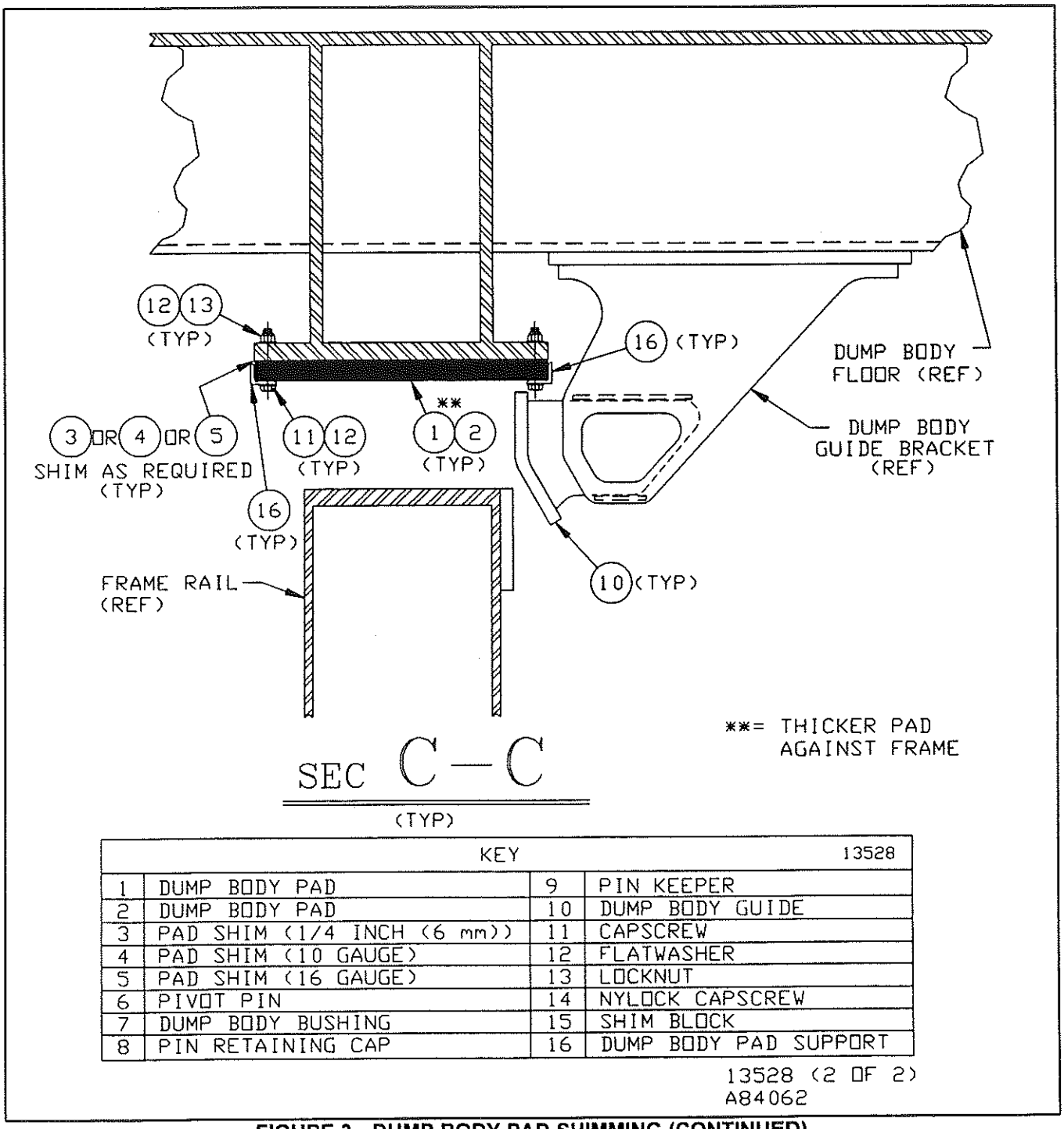


FIGURE 3 - DUMP BODY PAD SHIMMING



KEY			13528
1	DUMP BODY PAD	9	PIN KEEPER
2	DUMP BODY PAD	10	DUMP BODY GUIDE
3	PAD SHIM (1/4 INCH (6 mm))	11	CAPSCREW
4	PAD SHIM (10 GAUGE)	12	FLATWASHER
5	PAD SHIM (16 GAUGE)	13	LOCKNUT
6	PIVOT PIN	14	NYLOCK CAPSCREW
7	DUMP BODY BUSHING	15	SHIM BLOCK
8	PIN RETAINING CAP	16	DUMP BODY PAD SUPPORT

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FIGURE 3 - DUMP BODY PAD SHIMMING (CONTINUED)

c. Dump body is resting squarely on the frame rails, and that the body pads have been properly shimmed.

3. Completely raise and lower the dump body a minimum of 3 times.

4. With the dump body resting on the frame, in as near a centered position as possible, measure the gap between the dump body surface and the inside surface of each of the dump body guides.

a. If the total of the two clearances is less than 1/2 inch (13 mm), the guides are properly shimmed and require no maintenance.

b. If the total of the two clearances is greater than 1/2 inch (13 mm), the guides should be re-shimmed as outlined below.

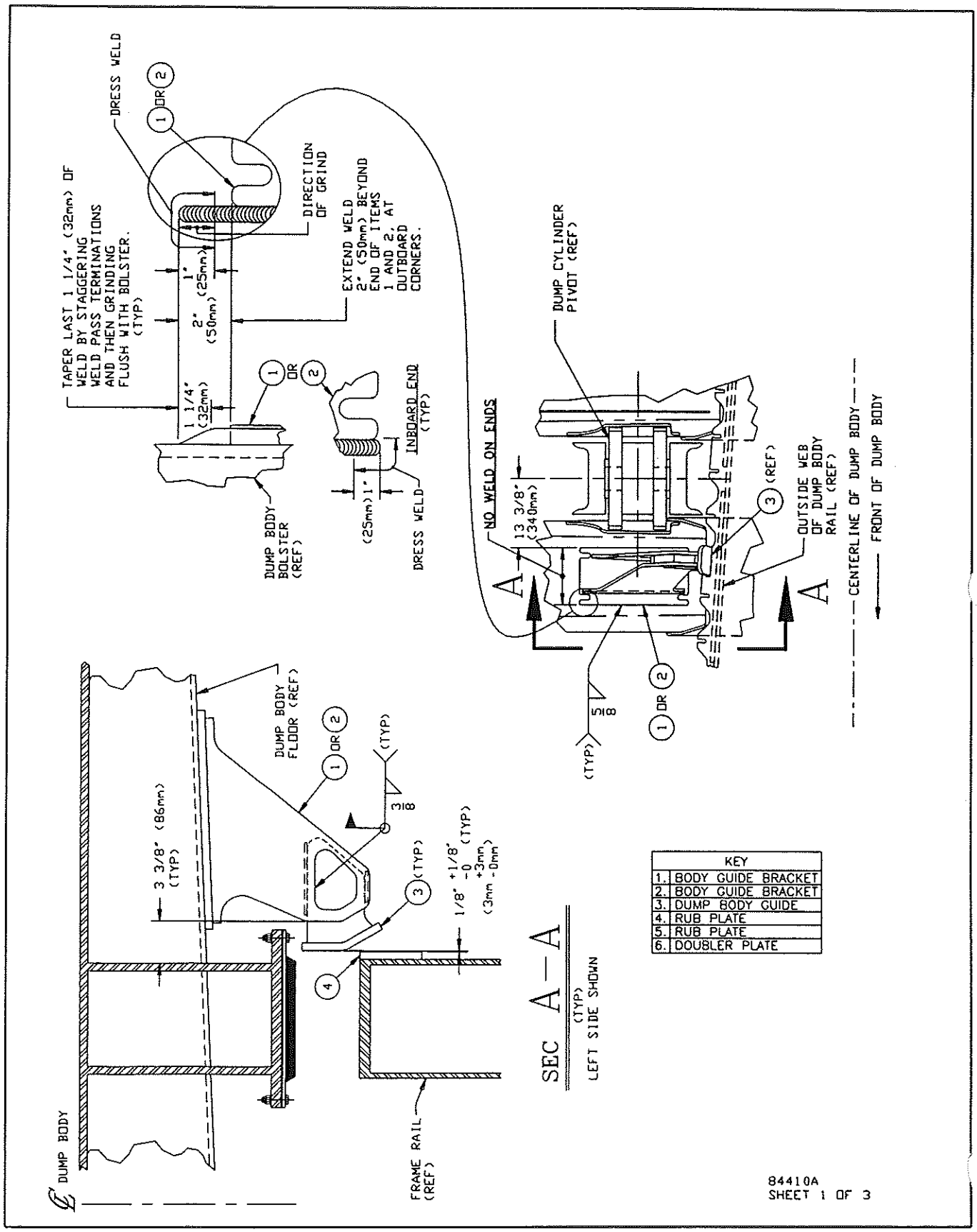


FIGURE 4 - DUMP BODY GUIDE SHIMMING

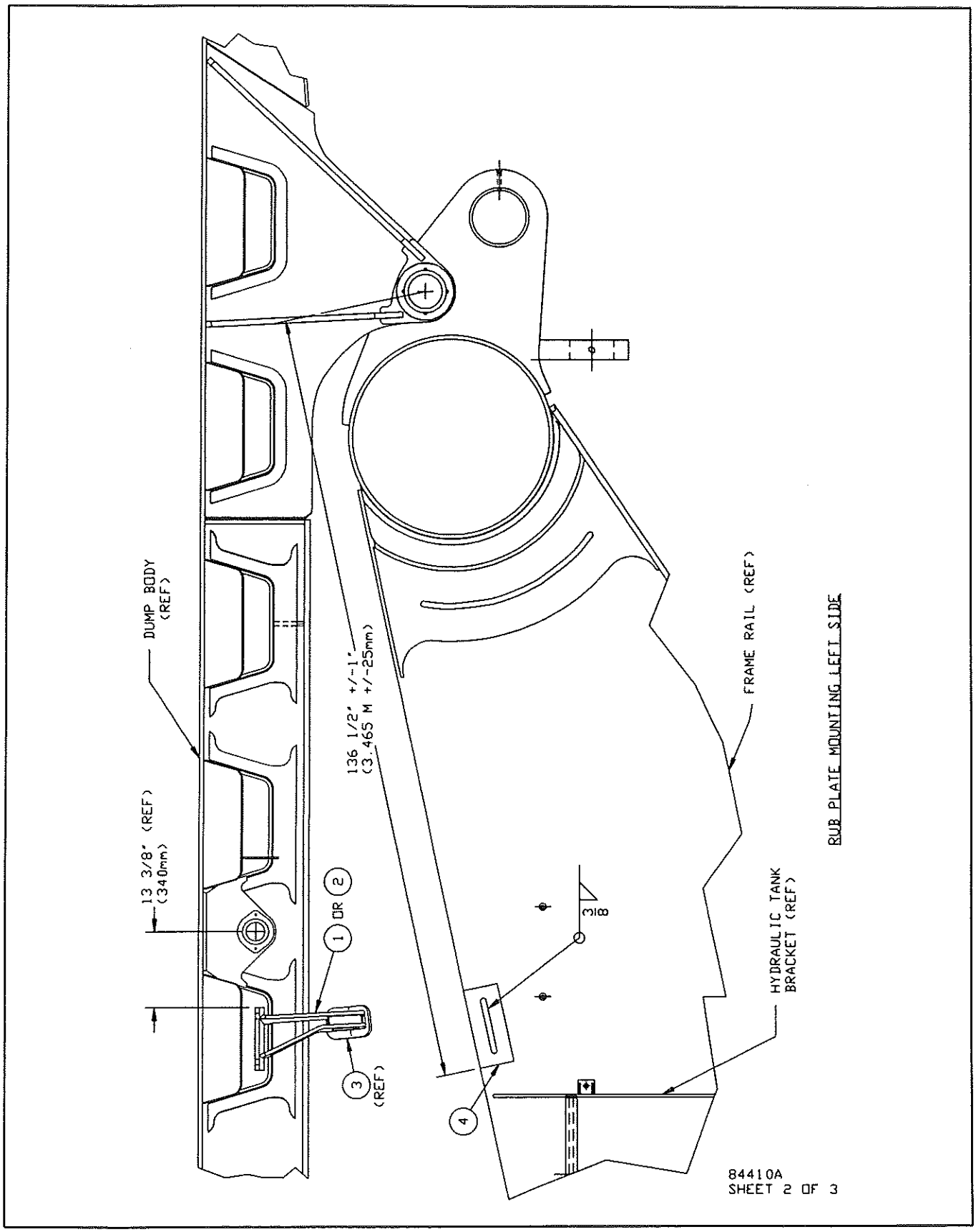


FIGURE 4 - DUMP BODY GUIDE SHIMMING (CONTINUED)

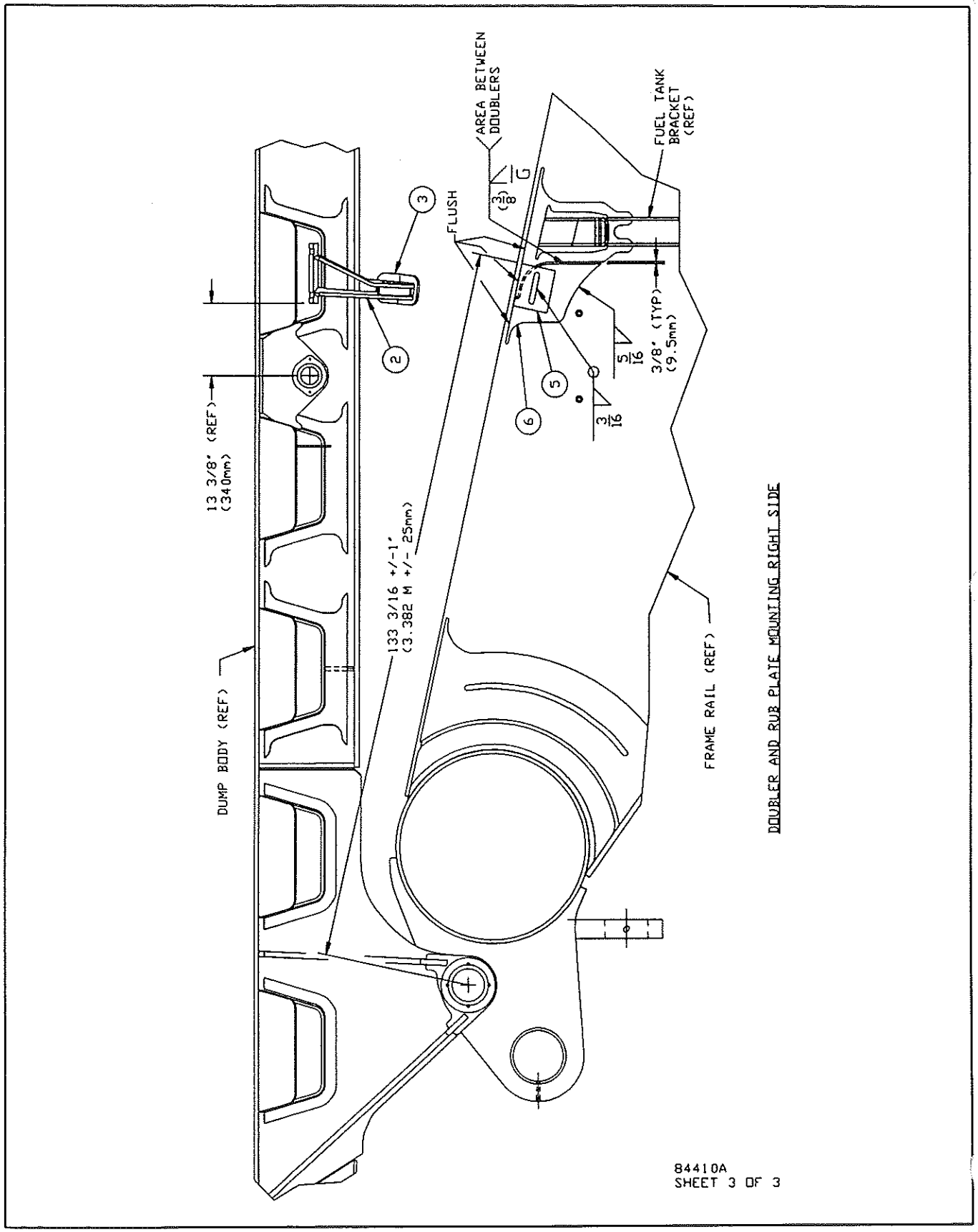


FIGURE 4 - DUMP BODY GUIDE SHIMMING (CONTINUED)

5. Examine the condition and relative thicknesses of the two guides (3) and rub plates (4 and 5). If damaged or worn severely, the appropriate components should be replaced.

NOTES:
Excessive wear on one or both of the dump body guide assemblies may indicate excessive wear in other areas (e.g. pivot pins and/or bushings) or improper operating practices. These should be reviewed and corrected to minimize dump body guide wear.

6. Remove the welds securing the dump body guides in place on the bracket assembly. Grind them off of both the bracket and the guide assemblies.

7. Install both of the dump body guides (3) with the 1/8 inch (3 mm) clearance to their respective rub plates (4 and 5) shown in Figure 4 and weld securely in place.

8. Raise and lower the body a minimum of 3 additional cycles, then recheck the guide clearances. Readjust as necessary.

REMOVAL

The dump body may be removed from the truck as follows:

1. Park the truck in a SAFE POSITION. It must be secured by means other than the truck's friction brake system.

2. Fully lower the dump body until it is resting on the frame. Place the Dump Control lever in the Float position.

3. Remove each "rock knocker" as follows:

a. Remove the locking pin.

b. Secure in place with a means suitable to allow lowering to the ground.

c. Remove the pivot pin on each side.

d. Remove the unit.

4. Raise the dump body slightly and securely block with dump body slightly above the frame rails. Once secure, move the Dump Control lever to the Float position to ensure that no pressure is entrapped in either cylinder.

5. Secure the dump cylinders in place with chains or other suitable means to prevent their movement when the dump body is lifted.

6. Remove the retaining or keeper bolts, and the dump cylinder pins securing the dump cylinders to the dump body.

7. Secure the dump body for lifting. Two holes (one on each of the upper runners) are provided as lifting points. When lifted at these points, the dump body should be in a position with the front end slightly higher than the rear.

IMPORTANT: *A special clevis lifting fixture is available for lifting the body. If slings are used, extra care must be taken, since a relatively flat sling multiplies the load factor, and decreases its effective load rating. Also, it is recommended that spreader bars be used between the upper rails and the sling legs to reduce the possibility of damaging the sides.*

8. Remove the pivot pin "keeper" bolts or strap assemblies and other retainers.

9. Remove the pivot pins.

10. Lift the dump body slightly to remove the load on the rear hinge pins. Be careful to ensure that the dump cylinders separate from the body cleanly, do not move, and remain securely fastened.

IMPORTANT: *Do not allow the cylinders to rotate in either direction as this may cause excessive twisting in the hoses.*

11. Lift the body clear of the truck and set on the ground as required. Tag or guide lines are recommended for guiding the structure.

SERVICE

For replacement of liners and repair of damage, refer to specific instructions on the details of the unit available from your mine personnel or Unit Rig representatives.

The pin bushings may be installed as follows:

1. Press/cut out the old bushing.

2. Remove all burrs or nicks from the ID of the tube.

3. Verify that the ID and OD of the new bushing is free of damage.

4. Measure both the ID of the outer bore and OD of the bushing. If an interference fit, it may prove helpful to

cool the bushing (typically in dry ice) and/or heat the bore prior to assembly.

5. Use an adequate press to install the new bushing.

INSTALLATION

The dump body may be installed as follows:

1. Verify the following:

a. The dump cylinders are fully retracted and secured in a position relatively close to their normal operating position.

b. The dump body is of the proper size and construction for the truck, and all repairs are complete.

2. Secure the dump body for lifting. Refer to the Removal instructions for details.

3. Slowly lift the dump body above the ground. Normally the front of the dump body will be slightly higher than the rear. This is the preferred position for installing the dump body.

4. Using a crane and guide lines, direct the dump body over the frame so that the hinge assembly aligns with the bushing in the frame.

NOTE: *When lowering the dump body, verify that the canopy or "headache rack" does not come in contact with the cab or other superstructure mounted components.*

5. Insert the pivot pins from the end opposite the anti-rotation stop. Verify that the pin is installed such that the longer portion protrudes under the stop to cause the pin to rotate with the body only.

6. Raise the dump body slightly and align the body and dump cylinders.

7. Lower the body and install the upper dump cylinder attachment pins.

NOTE: *With the Dump Control lever in the Float position, the dump cylinders can be moved in and out relatively easily to align the holes.*

8. Install the "keeper" or retention bolts on all four pins (Figure 3).

a. Where bolts are used as "keepers" self locking nuts (in good condition) should be used. If self locking nuts are not used, secure the nuts by:

(1) Locking with an additional nut - double nut, or

(2) Tack welding the nut on the bolt, or

(3) With a cotter pin.

b. Where straps or brackets are used, install with capscrews and lockwashers.

9. Shim the dump body pads and guides as directed in Maintenance and Adjustment.

10. Move the dump body through several complete cycles to ensure that it operates properly.

11. Reinstall any mudguards or other items removed with the previous body.

12. Check the operation the Dump Body Up Switch and adjust as required to obtain the desired operation.

LADDER AND RAILING ASSEMBLY

DESCRIPTION AND LOCATION

The standard superstructure access ladder is alternate tread, Lapeyre step ladder assembly with expanded steel steps and handrails. The upper section connects the superstructure deck and the lower frame mounted platform and is totally made of metal. The lower section is positioned perpendicular to the upper section and utilizes rubber side support members to secure the steps.

Separate access ladders are included to provide increased access to the engine and frame areas from the superstructure and ground level.

The handrail assemblies are tubular rails. There is a handrail assembly on both the left and right outer edges of the superstructure.

OPERATION

The main access ladder provides a means of reaching the superstructure and cab area. The other ladders provided increased access to the engine and main frame areas.

The handrail provides personal protection at each end of the superstructure.

MAINTENANCE AND ADJUSTMENT

Periodic maintenance should include the following:

1. Clean the ladder and all handrail assemblies.

2. Inspect the steps and handrails for damage. Repair or replace as required.

3. Verify that all mounting bolts and brackets are secure and in good condition. Tighten, repair, or replace as required.

4. Inspect the lower portion of the ladder for damage and loose components. Repair or replace as required.

REMOVAL (Figure 1)

The ladder may be removed by removing the mounting hardware and air-arcing the welded support from the ladder, removing the mounting capscrews, and appropriate sections from the truck.

The rails are secured to the superstructure in sockets. Removal is accomplished by lifting the rail clear of the sockets. (Railings are welded in place except as noted.)

INSPECTION AND REPAIR

Inspect all components for damage. Repair or replace as required.

INSTALLATION (Figure 1)

The ladder and handrail assemblies may be installed in the reverse order of removal.

KEY			A84213A
01.	Lapeyre Stair	39.	Flexible Ladder Tread
02.	Ladder Mudguard	40.	Flexible Ladder Tread
03.	Ladder Platform	41.	Flexible Ladder Tread
04.	Platform Mounting Plate	42.	Flexible Ladder Cap
05.	Lapeyre Bracket	43.	Flexible Ladder Cap
06.	Capscrew	44.	Spacer
07.	Hardened Flatwasher	45.	Capscrew
08.	Locknut	46.	Flatwasher
09.	Hardened Flatwasher	47.	Locknut
10.	Capscrew	48.	Switch Mounting Bracket
11.	Special Washer	49.	Capscrew
12.	Locknut	50.	Flatwasher
13.	Capscrew	51.	Locknut
14.	Lockwasher	52.	Left Rear Fender
15.	Flatwasher	53.	Right Rear Fender
16.	Left Air Cleaner Mount	54.	Capscrew
17.	Right Air Cleaner Mount	55.	Capscrew
18.	Capscrew	56.	Lockwasher
19.	Capscrew	57.	Flatwasher
20.	Lockwasher	58.	Fender Cover Plate
21.	Flatwasher	59.	Capscrew
22.	Rear Cab Handrail	60.	Lockwasher
23.	Front Cab Handrail	61.	Flatwasher
24.	Right Side Handrail	62.	Pipe Flange
25.	Left Hood Handrail	63.	Pipe
26.	Right Hood Handrail	64.	Not Used
27.	Chain	65.	PVC Conduit Adhesive
28.	Heat Shrink Chain Cover	66.	Capscrew
29.	Shackle	67.	Lockwasher
30.	Capscrew	68.	Access Ladder
31.	Lockwasher	69.	Not Used
32.	Not Used	70.	Fender Handrail
33.	Special Washer	71.	Capscrew
34.	Toe Board Plate	72.	Locknut
35.	Capscrew	73.	Flatwasher
36.	Flatwasher	74.	Capscrew
37.	Locknut	75.	Locknut
38.	Ladder Strap	76.	Chain Shackle Bracket

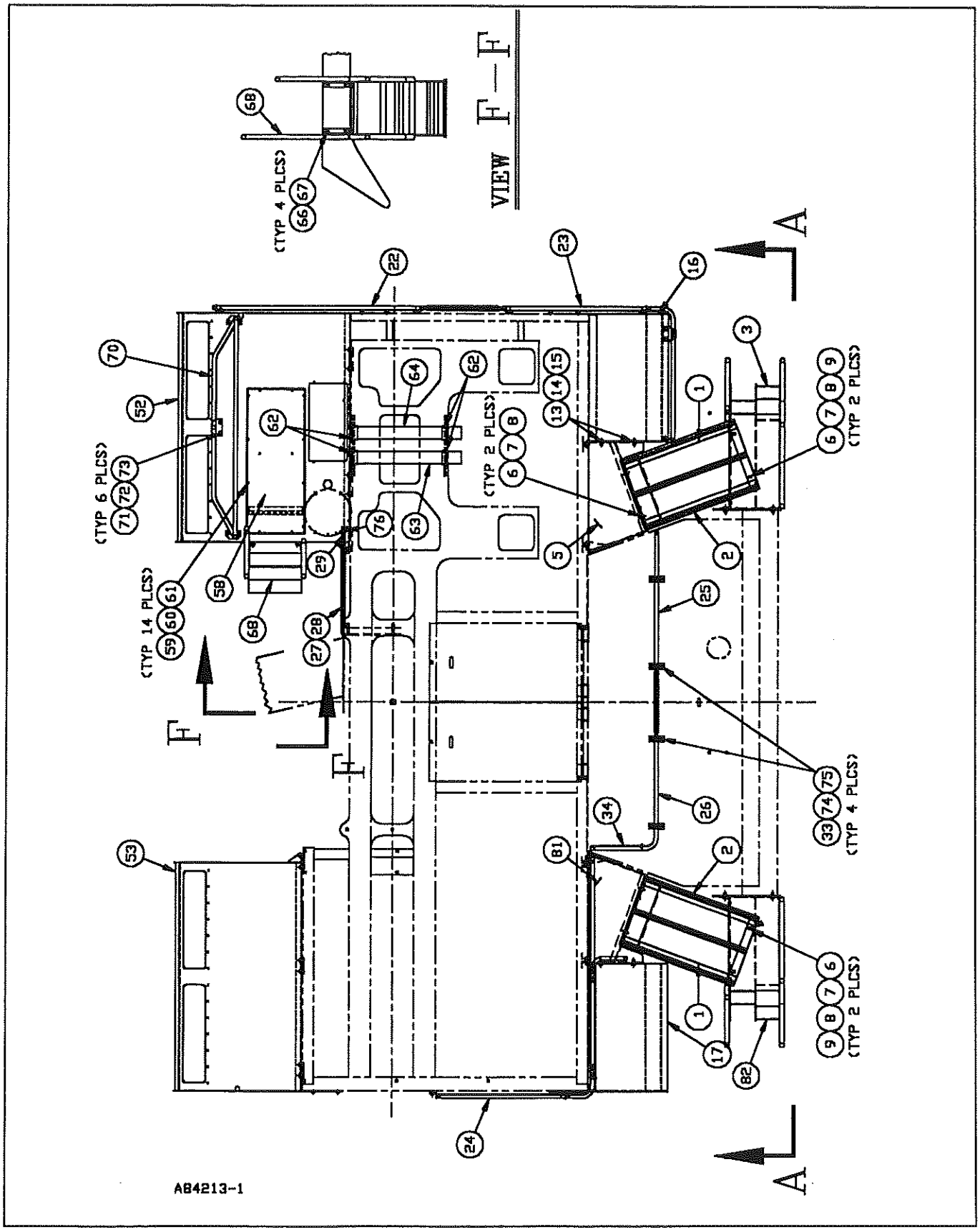


FIGURE 1 - LADDER AND RAILING ASSEMBLY

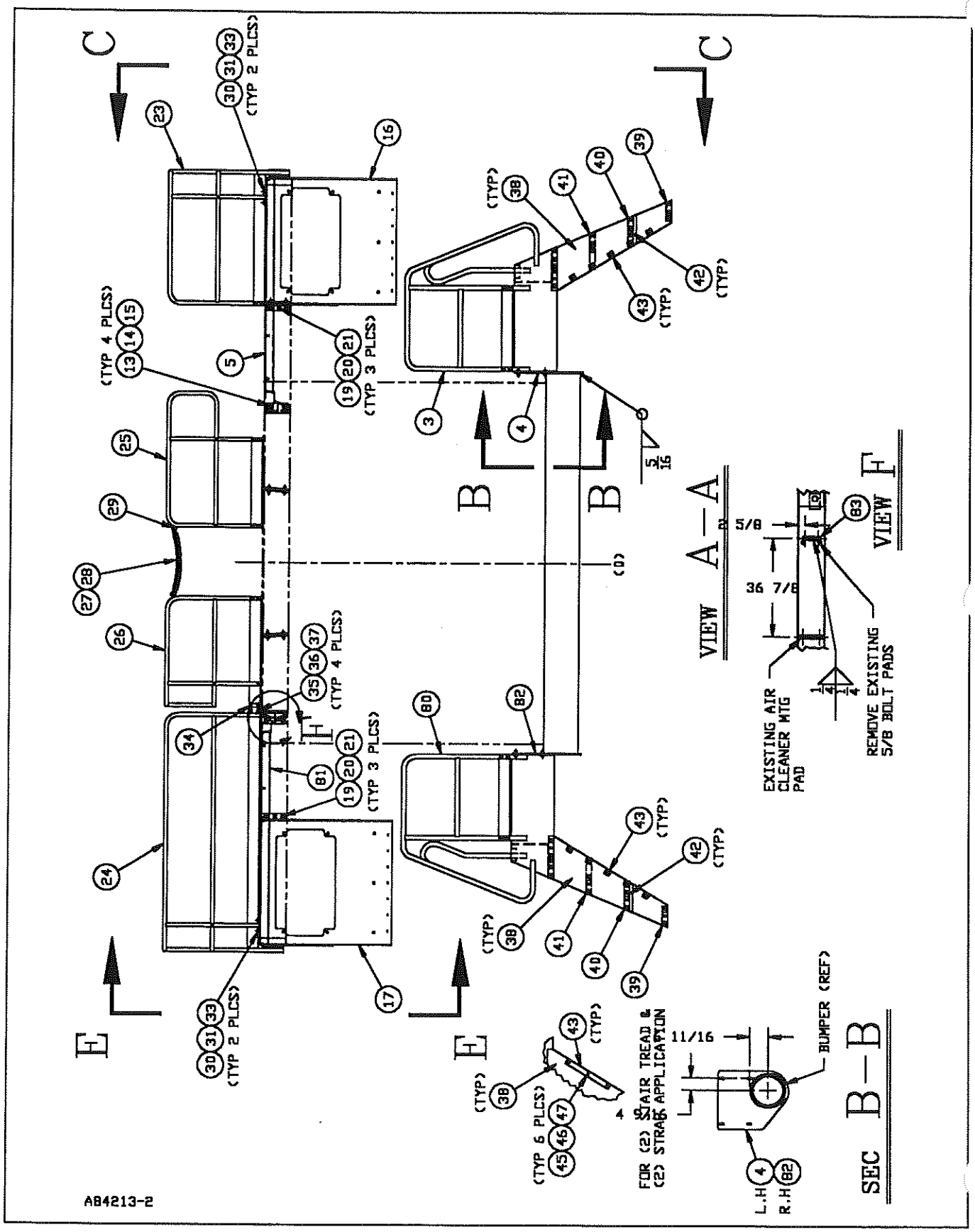


FIGURE 1 - LADDER AND RAILING ASSEMBLY - CONTINUED

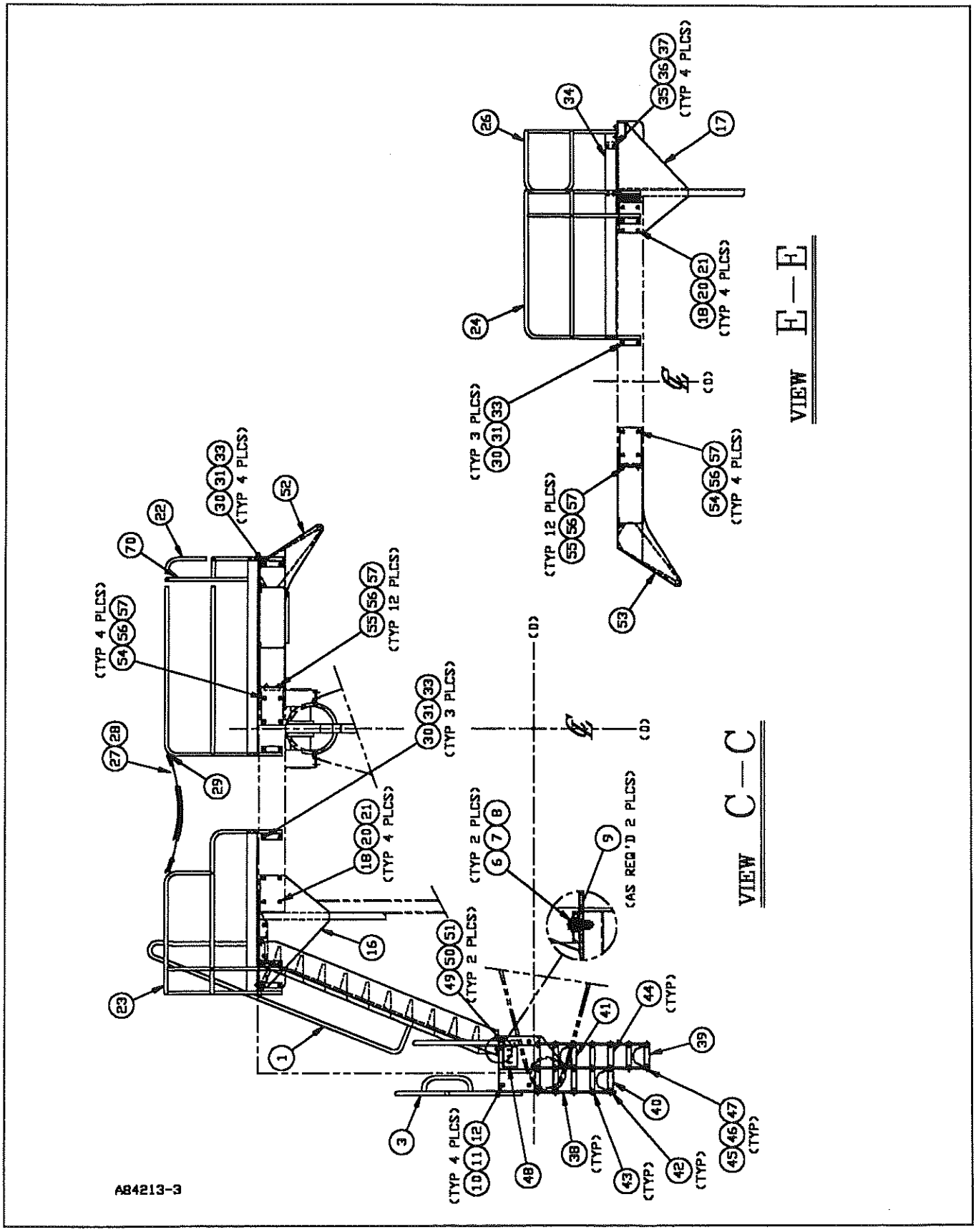


FIGURE 1 - LADDER AND RAILING ASSEMBLY - CONTINUED

HOOD ASSEMBLY

DESCRIPTION AND LOCATION

The engine hood assembly covers the engine area from the front of the superstructure to the front of the radiator area.

OPERATION

The hood assembly provides two distinct functions:

1. Protect the engine and radiator assemblies from damage from falling foreign and environmental material, and;

2. Serve as additional support for securing the top of the radiator assembly.

MAINTENANCE AND ADJUSTMENT

Maintenance of the assembly involves verifying that all mounts and mounting bolts are kept tight, the assembly is free of damage and in general good repair.

REMOVAL

The hood assembly may be removed as follows:

1. Disconnect the electrical wiring at the nearest connection or wire.

2. Attach the lifting cables from the crane to the hood.

3. Remove the capscrews and washers securing the hood to the superstructure.

4. Remove the capscrews and washers securing the hood to the radiator assembly.

5. Lift the hood assembly clear of the truck and set in an appropriate work area.

SERVICE

Service of the hood assembly should include the following:

1. Repair or replace any structural damage to the metal parts.

2. Inspect the condition of the radiator pads (6) and shock mounts (2). Repair or replace as required.

INSTALLATION

The hood assembly may be installed as follows:

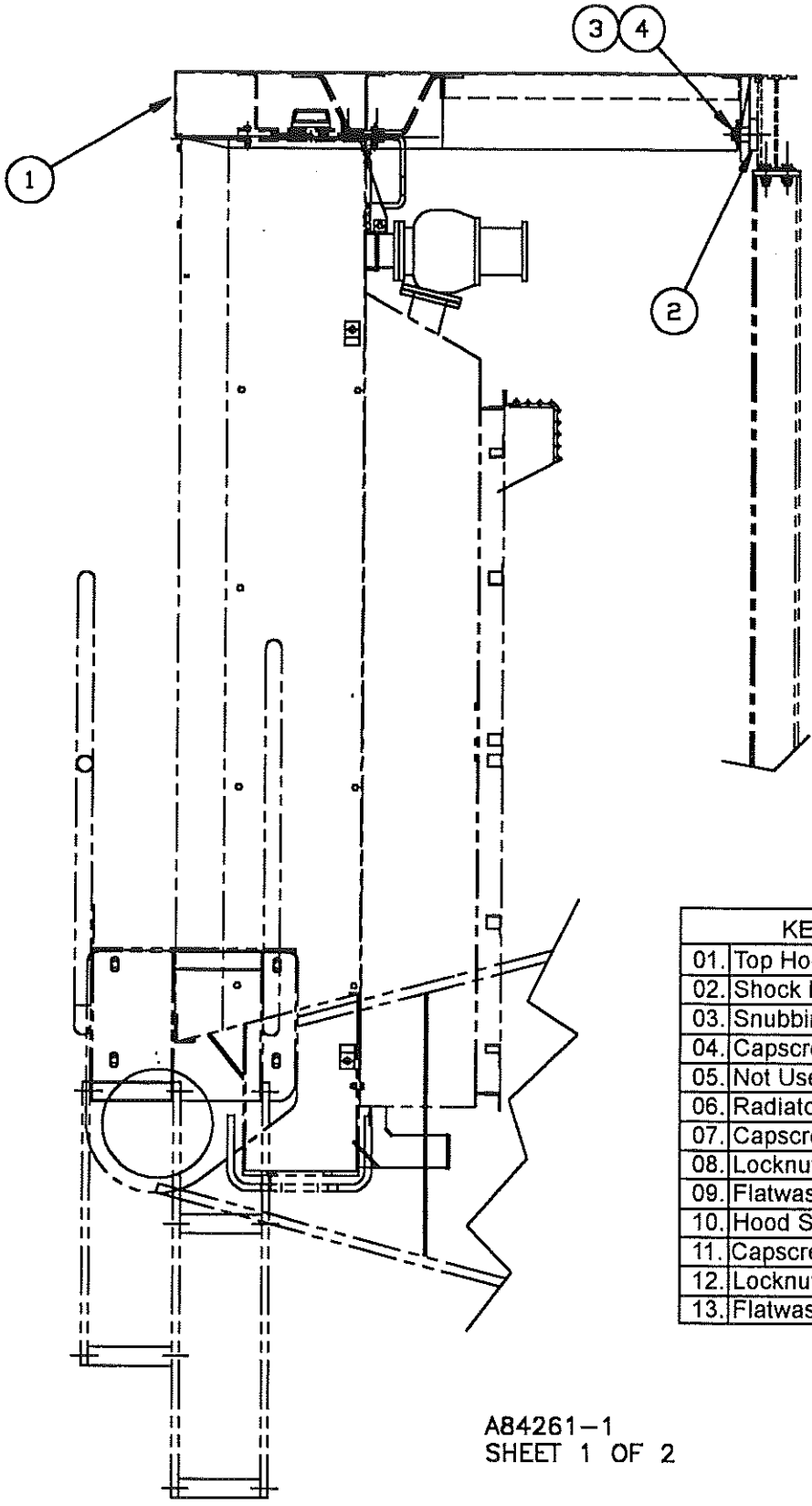
1. Lift the hood assembly from the work area and align the appropriate mounting holes on the hood, radiator and superstructure.

2. Install the capscrews and washers securing the hood to the radiator assembly.

3. Install the capscrews and washers securing the hood to the superstructure. Use care not to over-tighten and damage the shock mounts. Use sufficient snubbing washers to compensate for structural irregularities.

4. Remove the lifting cables from the crane to the hood.

5. Reconnect the electrical wiring removed.



KEY	
01.	Top Hood
02.	Shock Mount
03.	Snubbing Washer
04.	Capscrew
05.	Not Used
06.	Radiator Pad
07.	Capscrew
08.	Locknut
09.	Flatwasher
10.	Hood Spacer
11.	Capscrew
12.	Locknut
13.	Flatwasher

FIGURE 1 - HOOD ASSEMBLY

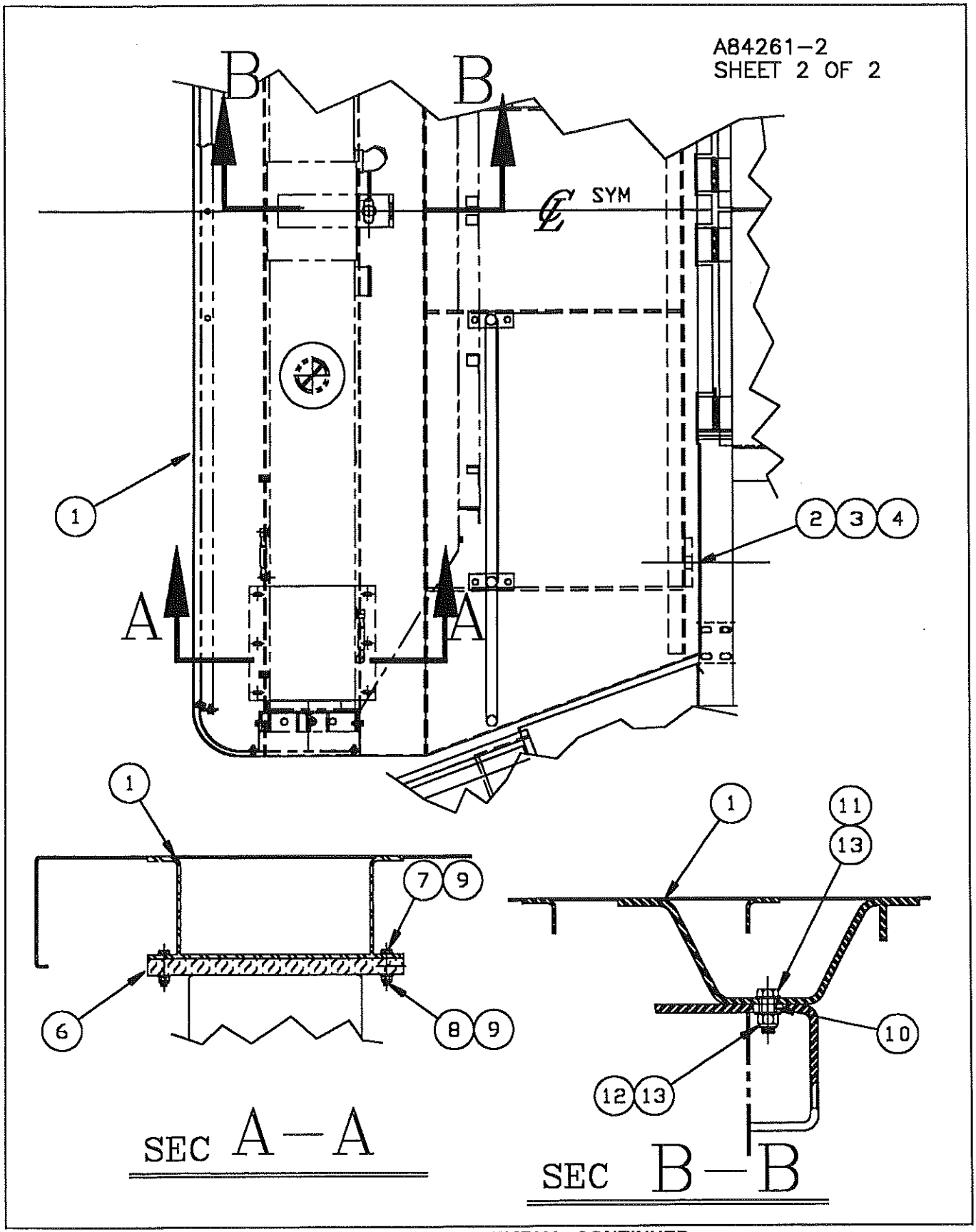


FIGURE 1 - HOOD ASSEMBLY - CONTINUED

CAB HEATER ASSEMBLY

DESCRIPTION AND LOCATION

The cab heater assembly contains the blower and air control assemblies and heater core to provide a flow of filtered, pressurized and, if desired, warmed air to the interior of the cab.

The heater blower and core assembly and related hardware is located in front of the cab in front of the passenger seat. The air filter assembly is mounted to the rear wall of the cab, behind the seats.

OPERATION

Depending upon the operator's setting of the controls, either outside air, drawn in through the filter assembly, or the interior air being recirculated, is pressurized by the dual fan assemblies and is directed either through the dash and console mounted or the defroster ducts.

Adjustment of the controls provides a method of obtaining the desired temperature and flow patterns required to maintain desirable environmental conditions within the cab.

MAINTENANCE AND ADJUSTMENT

Periodic maintenance of the heater system should include the following:

1. Park the truck in SAFE POSITION. It must be secured by means other than the truck's friction brake system.

2. Inspect the system for evidence of wear, leakage, damage, etc. and are in general good repair and operating condition. Repair or replace as required.

3. Verify that the blower motor operates in all of its speed settings. Repair or replace as required.

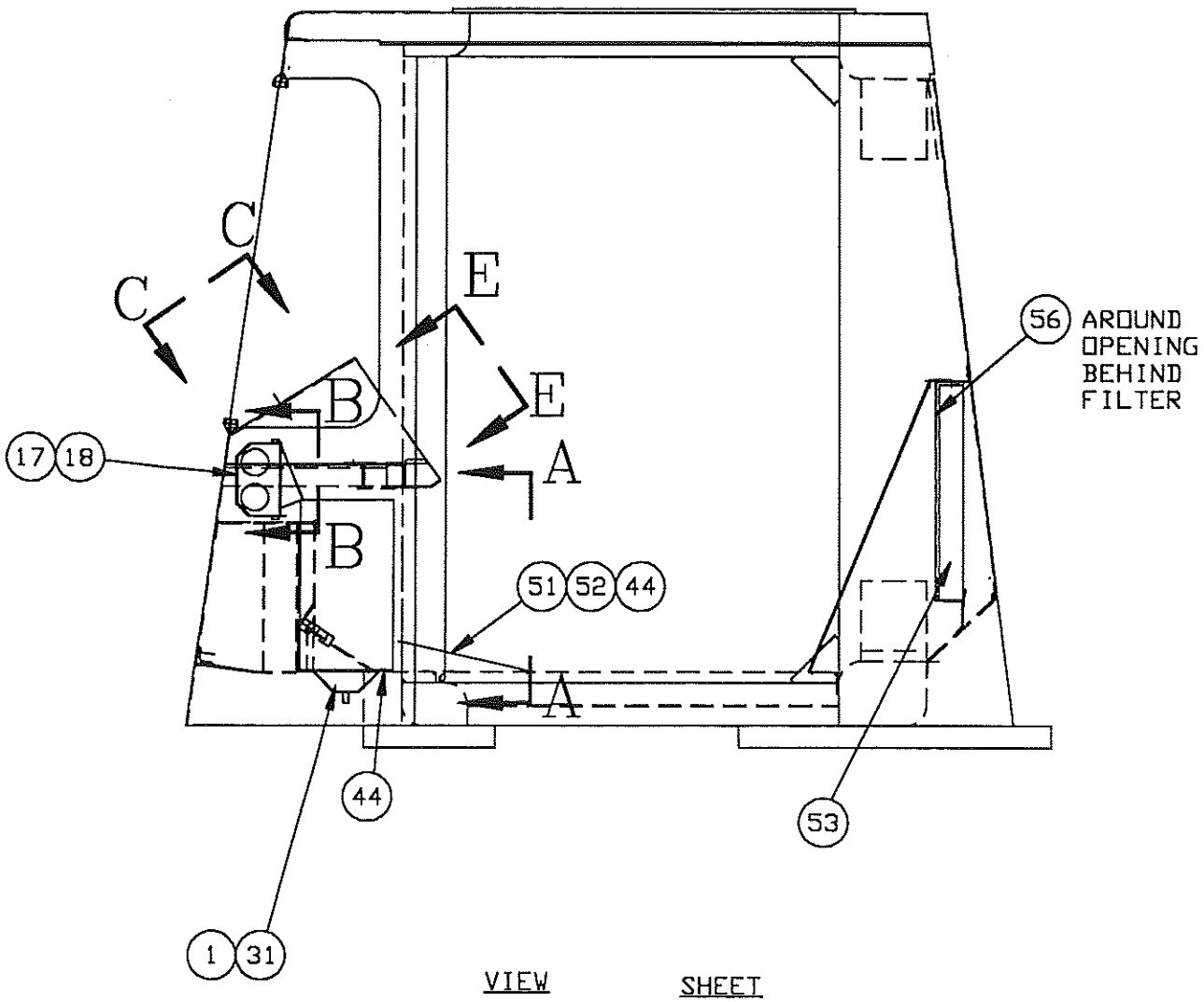
4. Check the air flow from the various outlets. If not to normal standards, check the condition of the filter assembly and the controls, particularly the doors and cable assemblies. Repair or replace as required.

SERVICE

The individual components are not serviceable and should be replaced if not operating properly.

KEY A83419

01.	Heater/Air Conditioner Box	16.	Duct Adapter	31.	Capscrew	46.	Resistor
02.	Blower Housing	17.	Back Diverter	32.	Hose Clamp	47.	Machine Screw
03.	Blower Wheel	18.	Front Diverter	33.	Cable Assembly	48.	Hose
04.	Motor	19.	Diverter Door	34.	Knob	49.	Nut
05.	Motor Mounting Plate	20.	Diverter Link	35.	Mounting Clamp	50.	Push-on Hose
06.	Heater core	21.	Torsion Spring	36.	Cable Retainer	51.	Air Duct Connector
07.	Cover Plate	22.	Tapping Screw	37.	Heater Control Panel	52.	Self Tapping Screw
08.	Capscrew	23.	Defroster Duct	38.	Blower (Speed) Switch	53.	Air Filter
09.	Retainer Clip	24.	Defroster Outlet	39.	Machine Screw	54.	Flatwasher
10.	Air Intake Door	25.	Dash Air Outlet	40.	Locknut	55.	Machine Screw
11.	Bushing Block	26.	Dash Air Outlet	41.	Flatwasher	56.	Gasket
12.	Nyliner Bushing	27.	Elbow	42.	Setscrew	57.	Adapter Fitting
13.	Diverter Lever	28.	Heater Valve	43.	Sponge	58.	Bushing
14.	Blower Outlet Adapter	29.	Defroster Hose	44.	Insulation Tape	59.	Barbed Fitting
15.	Duct Adapter	30.	Defroster Hose	45.	Jam Nut	60.	Thumb Screw



VIEW	SHEET
A-A	2
B-B	5
C-C	6
E-E	7

A83419-1
SHEET 1 OF 7

FIGURE 1 - CAB HEATER ASSEMBLY - SHEET 1 OF 7

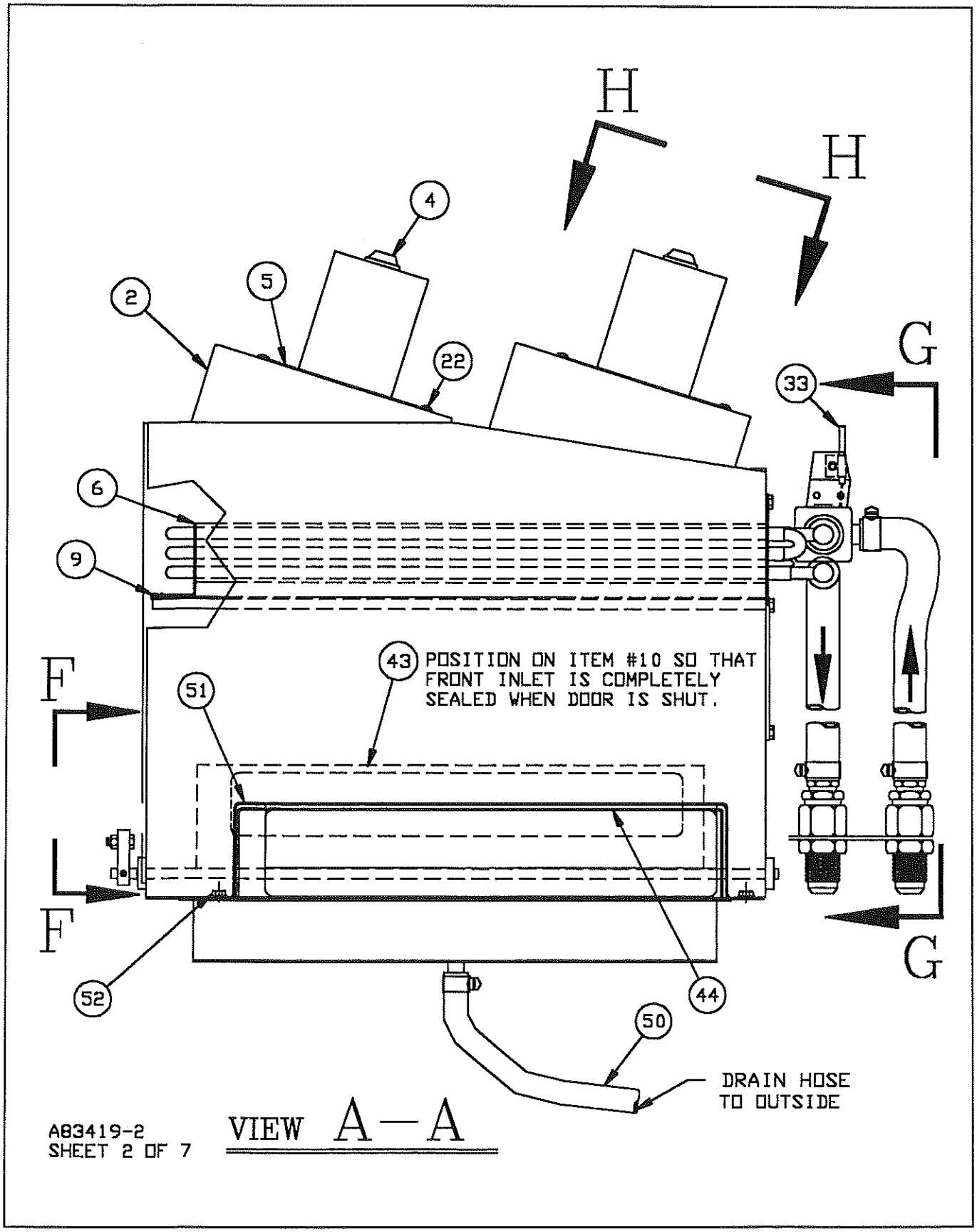


FIGURE 1 - CAB HEATER ASSEMBLY - SHEET 2 OF 7

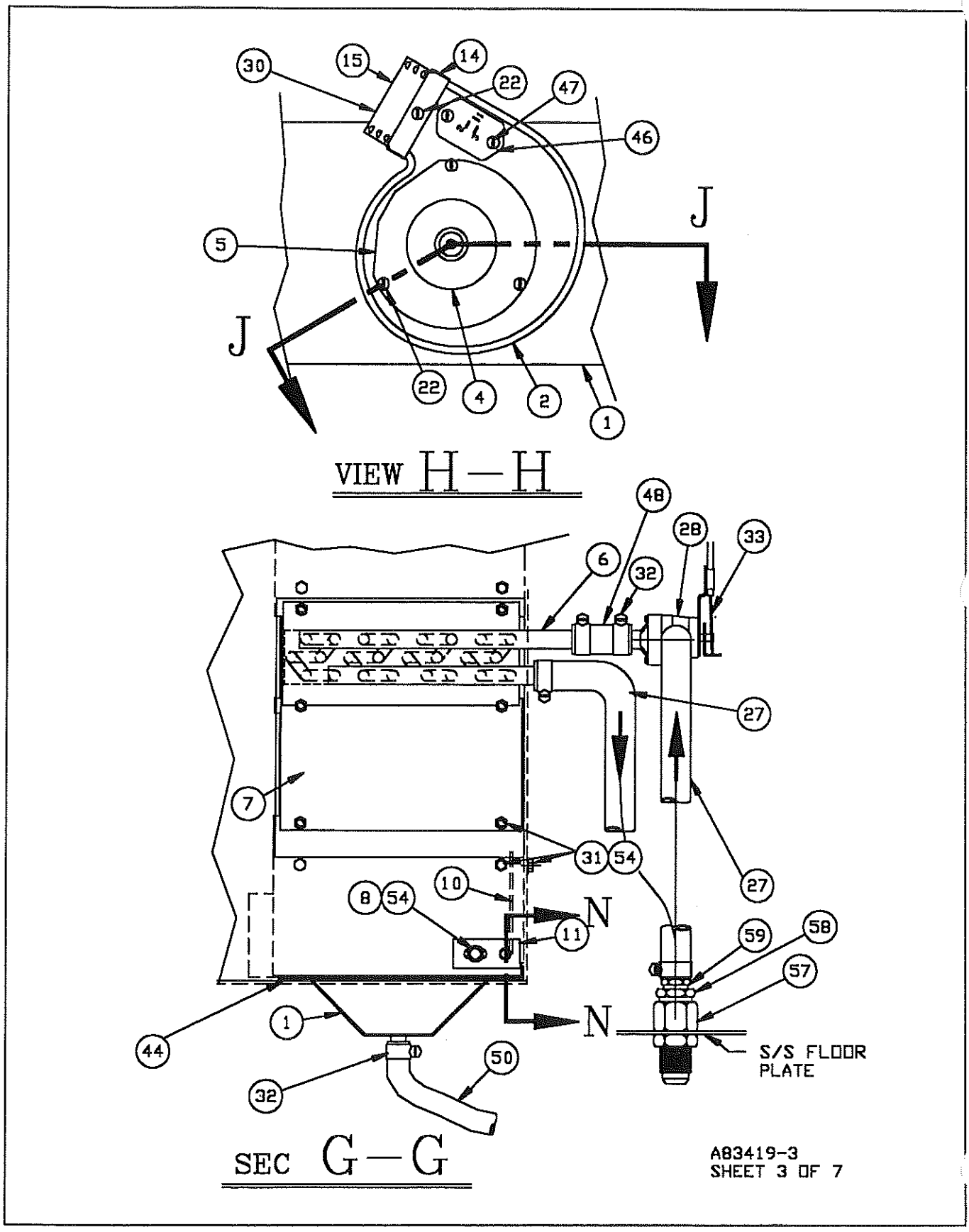
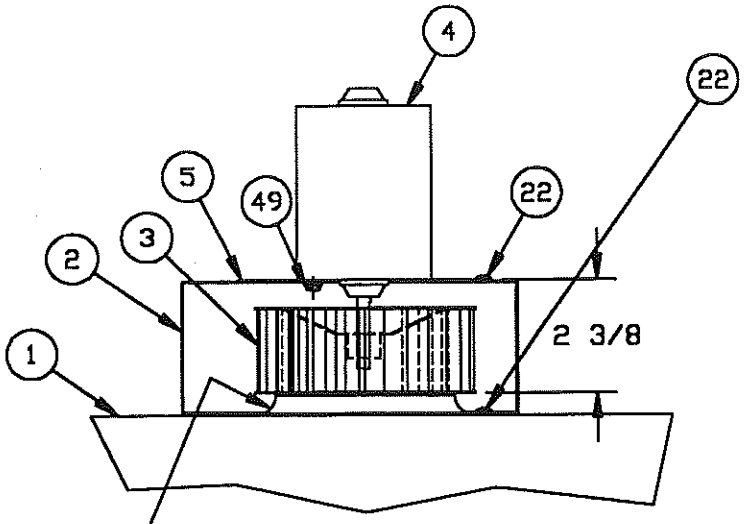
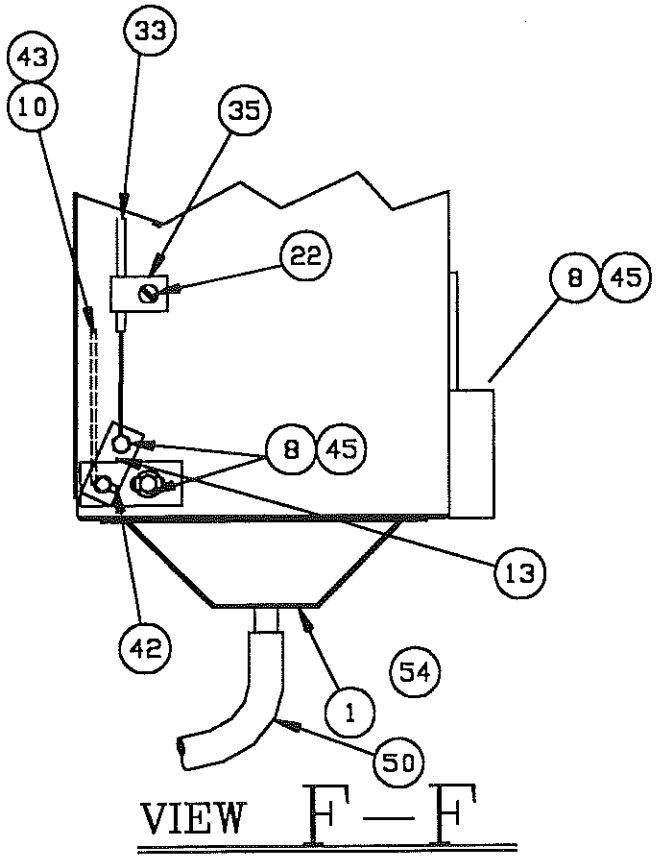


FIGURE 1 - CAB HEATER ASSEMBLY - SHEET 3 OF 7

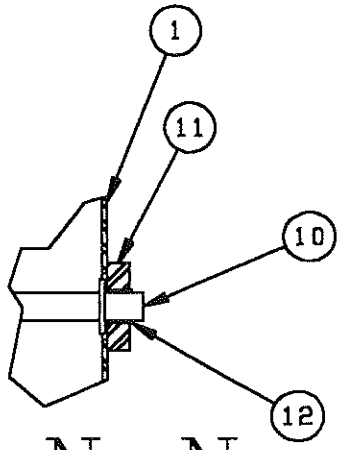


2 INSTALL VENTURI RING (PART OF ITEM 2) WITH LIP UP AS SHOWN.

VIEW J — J



VIEW F — F



VIEW N — N

(1/2 SCALE)
(TYP. 2 PLCS.)

A83419-4
SHEET 4 OF 7

FIGURE 1 - CAB HEATER ASSEMBLY - SHEET 4 OF 7

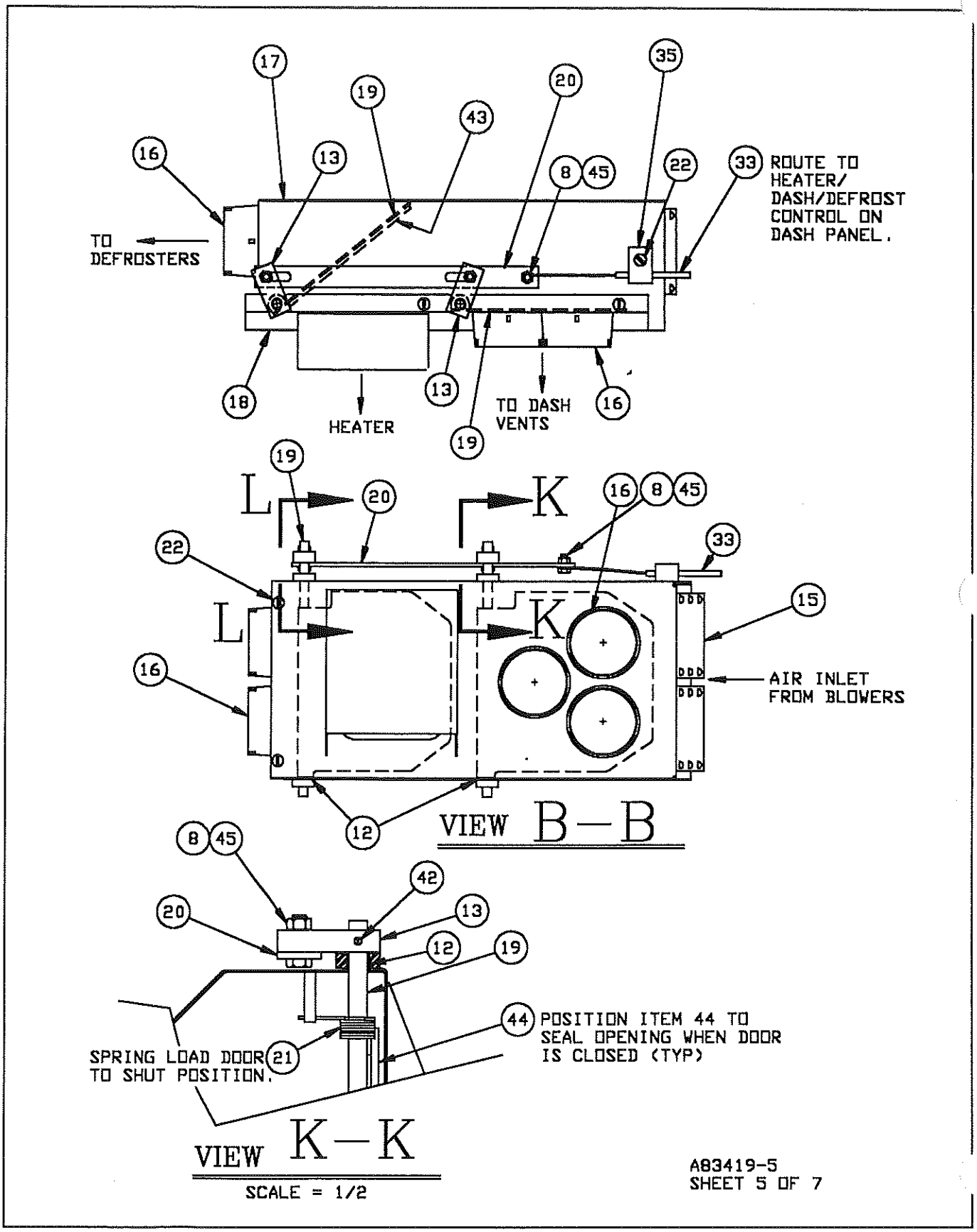


FIGURE 1 - CAB HEATER ASSEMBLY - SHEET 5 OF 7

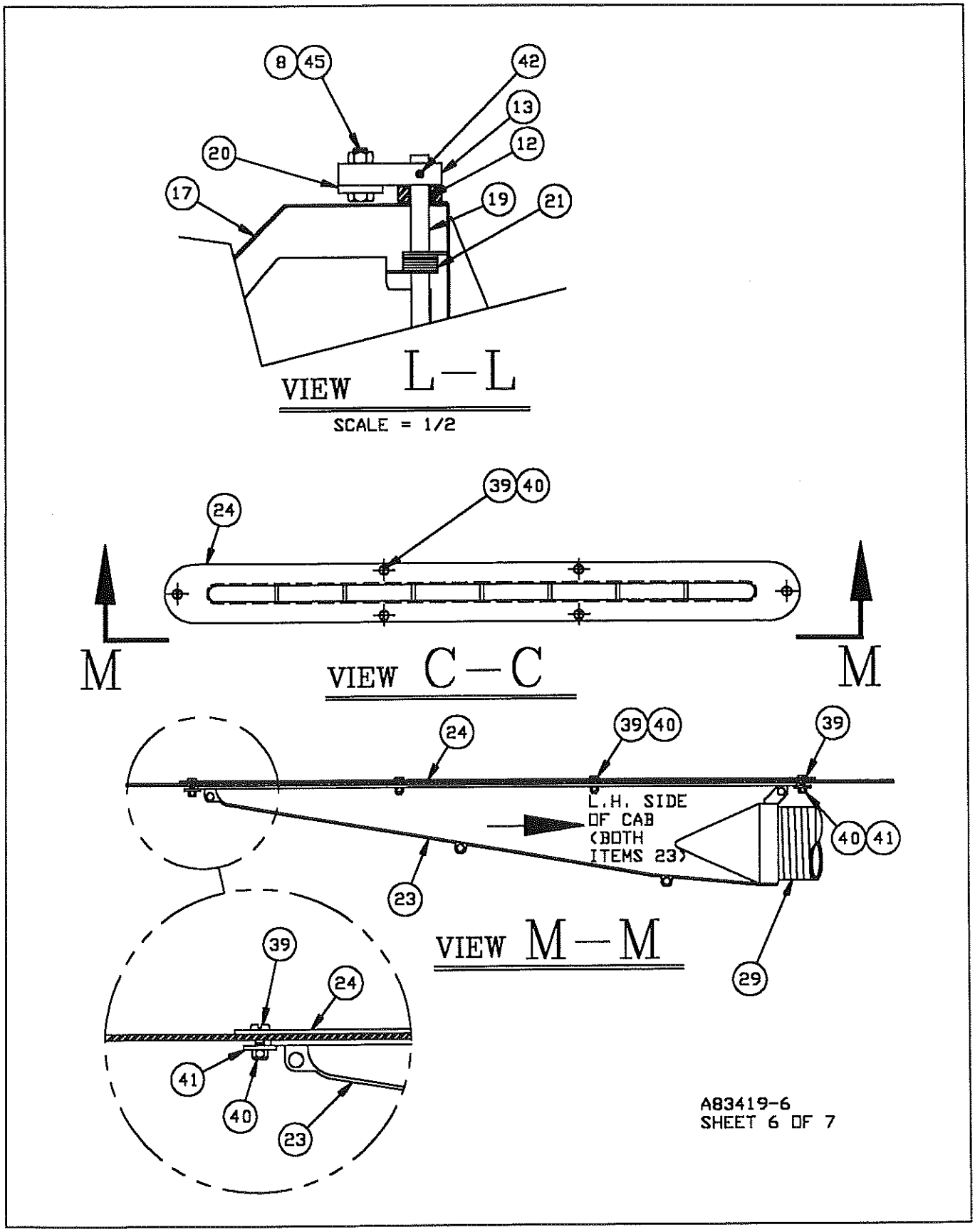


FIGURE 1 - CAB HEATER ASSEMBLY - SHEET 6 OF 7

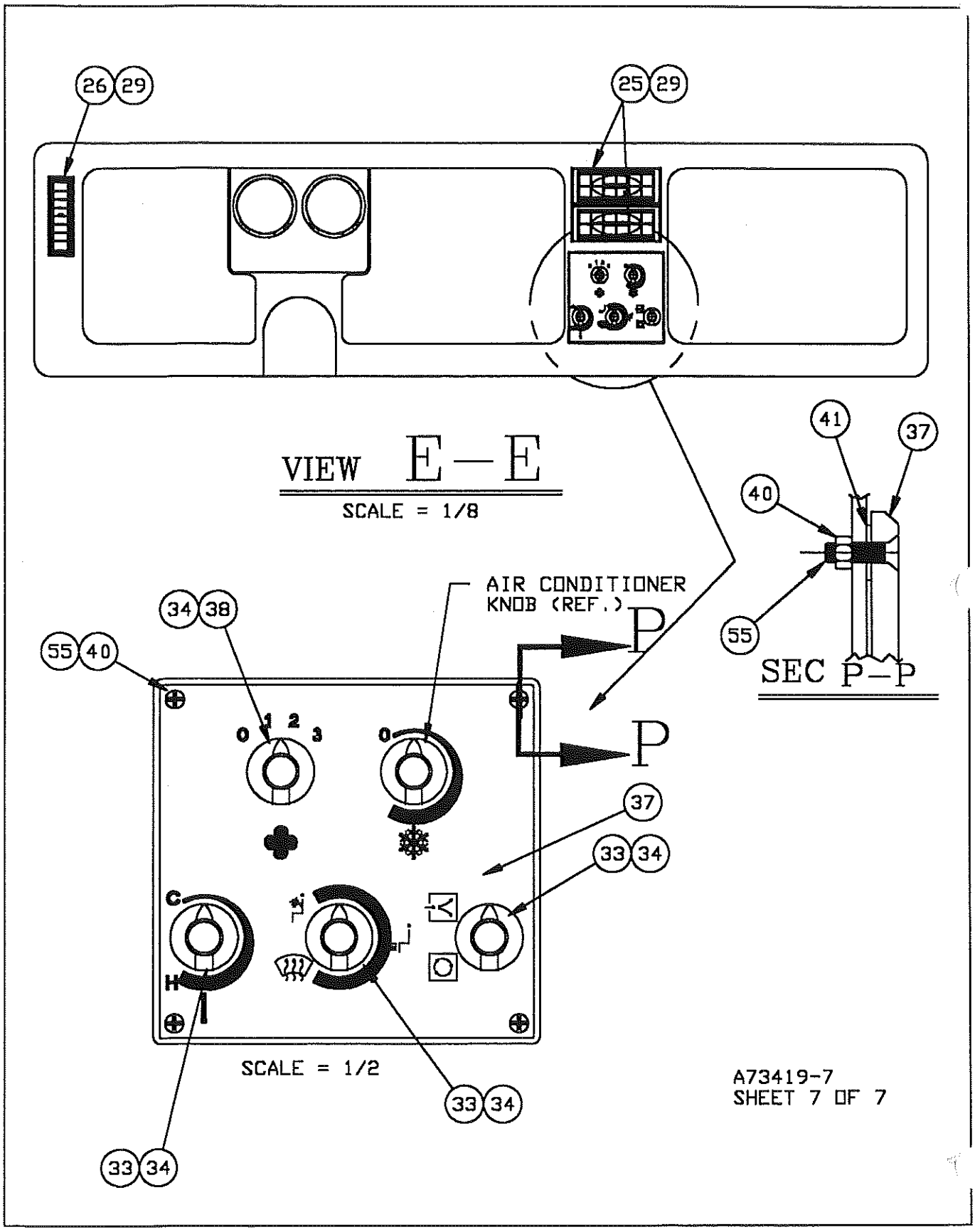


FIGURE 1 - CAB HEATER ASSEMBLY - SHEET 7 OF 7

WINDSHIELD WIPER/WASHER SYSTEMS

DESCRIPTION AND LOCATION

The windshield wiper assembly is the operating equipment that clears moisture and other materials from the windshield assembly. It generally consists of the following items:

1. Wiper Drive Assembly – Includes the 24 Vdc electric motor and drive assembly and the linkages to operate the two separate arms. These items are all installed in overhead panel in the cab interior above the dash assembly.

2. Arm and blade assemblies – includes the metal, mechanical arms and the rubber/metal blade assemblies that actually contact and clean the windshield area.

3. Switch Assembly – electrical switch that controls the operation and speed of the motor and "park" provisions in the wiper drive assembly.

NOTE: *In most installation configurations, a "delay" feature is incorporated into the switch that will provide for intermittent operation when full time wiping is not required.*

A separate, but integrated windshield washer assembly provides fluid to assist in removing materials that are stuck to the windshield's outer surface. This system consists of:

1. A reservoir assembly typically mounted in the hydraulic components cabinet on the superstructure behind the cab. An electric pump is mounted on the large reservoir to provide a flow of pressurized fluid to the remainder of the system. Operation of the pump is typically controlled by separate internal contacts in the wiper switch assembly.

2. Hoses and nozzles to transport and spray the liquid on the windshield surface.

OPERATION

The 24 Vdc power to operate the wiper motor assembly is controlled by a series of contacts in the switch assembly. Combinations of open and closed pairs of contacts allow the flow of electrical current to specific windings in the motor assembly, regulating the motor shaft output speed. This rotation is then converted to linear motion by an eccentric on the output shaft.

Linkages to each of the wiper assemblies transfer the movement to the drive splined hubs that convert it to a back and forth "semi-rotational" effect.

The arm assemblies transfer this motion to the individual blade assemblies. The rubber edges on the blades move liquids in the wiping path. Spring mechanisms in the arms maintain a constant force on the blade assemblies to aid in their cleaning efforts.

The windshield washer assembly stores the cleaning/washer antifreeze solution in a large reservoir. An integral electric motor draws fluid from the reservoir and transmits it through the hoses to the nozzles that spray it in a regular pattern on the windshield area.

NOTE: Special spring loaded "check" valves prevent fluid flow to the nozzles except when the system is operating.

MAINTENANCE AND ADJUSTMENT

Periodic maintenance of the system and its components should include the following:

1. Inspect the condition of the arm and blade assemblies for evidence of proper installation, contamination, wear or damage. Clean, repair, or replace as required.

a. The rubber edges on the blade should be clean, pliable, and free of cuts or other damage. They must be properly attached to the arms to allow adequate freedom of movement.

b. The arm assemblies should be free of damage and with adequate spring force to ensure proper contact to be maintained between the blade edge and the glass surface.

NOTE: *When cleaning the windows or inspecting or service any portion of the wiper assembly, never pull the arm away from the window. This will weaken the spring and reduce the arm and blades' tension against the glass.*

2. Inspect the drive assembly and associated linkages for evidence of proper installation, wear, or damage. Repair or replace as required.

3. Inspect the windshield washer assembly components for evidence of proper installation and routing, wear or damage. Verify that there is an adequate supply of the proper liquid for the conditions. Service, repair, or replace as required.

4. If there are any indications of corrosion, electrical noise in electronics, or faulty operation, clean all electrical connections in the two systems.

5. Test the operation of the systems to ensure that:

NOTE: *If the windshield is dry, it may be necessary to adequately wet the surface with a hose or other alternate source, to properly allow the system to operate.*

a. The wipers operate throughout their normal operating ranges in all speed and delay settings.

b. When switched to the Off position, the wipers "park" with the blades as close to and parallel to the upper rubber seal as possible. If they do not, adjust as outlined in the instructions in Installation later in the module.

c. The windshield washer assembly sprays fluid while the switch is activated, then stops and does not drip once the switch is released.

NOTE: *Clean the window and the blade edge often. This increases the blade life significantly and reduces the potential of scratching the glass.*

REMOVAL

The windshield wiper components may be removed as follows:

1. Park the truck in a Safe Position. It must be secured by means other than the truck's friction brake system.

2. Secure both the truck's Master and Battery Isolation switches in the Off positions. Tag appropriately to prevent accidental activation of the system power.

3. Before working on the system, verify that there is no electrical power to the switch or any component in the system.

4. Remove the blade/arm assembly as follows:

a. Remove the nut securing the arm to the serrated drive assembly.

b. Carefully remove the saddle to the arm assembly, using extra care not to damage the arm or the serrations on the drive end.

5. Open the overhead panel in the cab to allow access to the drive components.

6. Remove the arm and shaft assemblies (5) from the cab structure by removing the capscrews securing each. The assemblies may then be pushed inside of the cab.

7. Secure the drive system components to prevent unwanted movement.

8. Disconnect all wiring to the drive system components.

9. Remove the capscrews securing the drive assembly components in the console assembly and to the cab. Remove the drive assembly components.

10. Remove the switch assembly (18) as follows:

a. Separate and remove the wiring at the connectors.

b. While securing or holding the switch assembly, remove the knob and locknut securing the switch, then remove the switch.

If components of the washer system need to be removed, they may be serviced as shown in Figure 2.

NOTE: *Be sure to drain the fluid from the reservoir and lines prior to disconnecting or removing.*

SERVICE

The components may be serviced as follows:

1. Clean each component carefully with a soft brush (or equivalent). Inspect for evidence of contamination, wear, or damage. Repair or replace as required.

INSTALLATION

The components in the wiper assembly may be installed as follows:

1. To install the wiper switch:

a. Properly orient the switch in the mounting hole and secure with locknut.

b. Install the knob assembly.

2. To install the drive assembly:

NOTE: *In order to properly install the crank arms, linkages, and drive assemblies the drive motor must be in its "parked" or off position. If not, it may be installed and the installation positions modified as required prior to placing into service.*

IMPORTANT: *If a new motor or drive system is being installed, it is imperative that the component's wiring be configured as shown in the Wiper Motor Modification insert (below View B-B) in Figure 1.*

a. Install the drive motor/assembly into its location in the cab overhead console, carefully orienting each of the linkages and drive ends before finally securing.

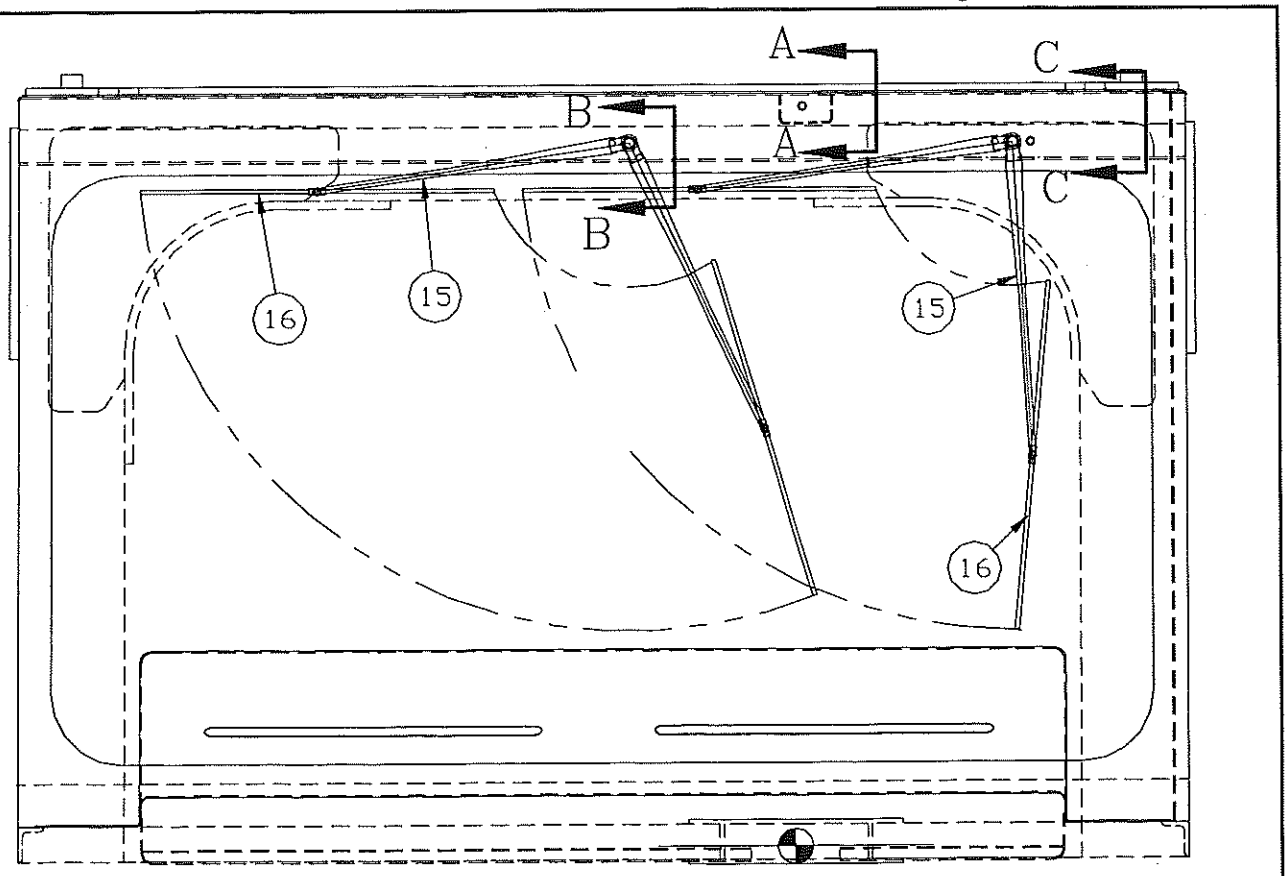
NOTE: *Loctite should be coated on the threads of capscrews (items 4 and 19) before installation.*

b. Verify or install the crank arm (3) on the wiper motor shaft as shown in Position 3 in View E-E, Figure 1.

NOTE: *The view is oriented as when looking from the driver's seat into the overhead console.*

c. Install the two arm and shaft assemblies (5) securing with the appropriate screws (12) and lockwashers (13).

d. Install the link (7) onto the crank arm (3) and right side arm and shaft assembly (5) in the inner hole as shown in Position 2 in View E-E, Figure 1.

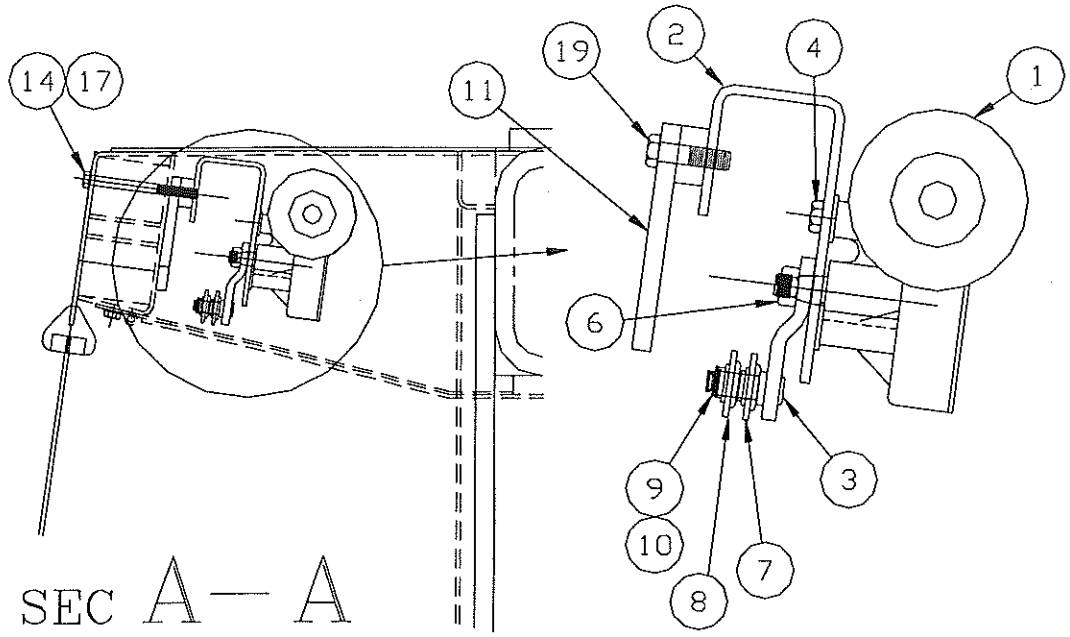


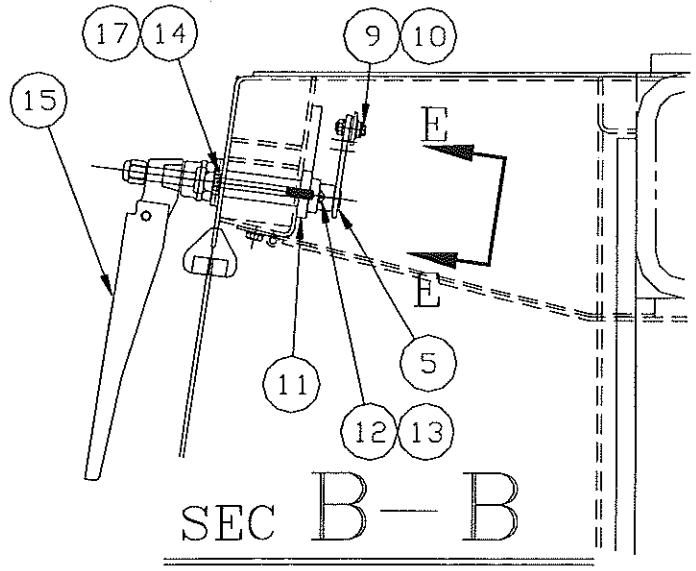
KEY A83432

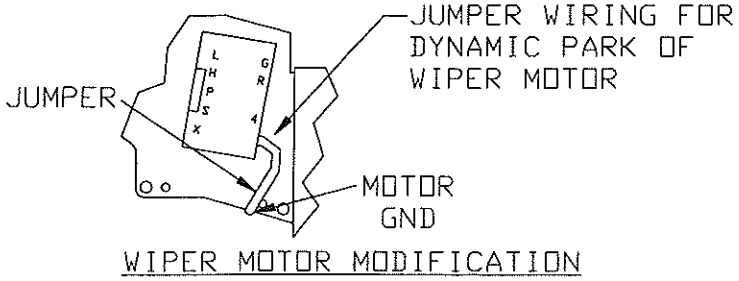
01.	Wiper Motor *	11.	Wiper Bracket *
02.	Wiper Motor Bracket *	12.	Machine Screw
03.	Motor Crank Arm *	13.	Lockwasher
04.	Capscrew *	14.	Capscrew
05.	Arm and Shaft Assembly *	15.	Wiper Arm
06.	Wiper Motor Nut *	16.	Flexible Blade
07.	Link *	17.	Insert Nut or Flatwasher
08.	Link *	18.	Wiper/Washer Control Switch
09.	Spring Clip *	19.	Capscrew
10.	Spacing Washer *	20.	Wiper Drive Assembly

* On later units, items 01 through 11 were all incorporated into a new assembly, item 20)

FIGURE 1 – TYPICAL WIPER SYSTEM INSTALLATION (A83432, SHEET 1 OF 3)



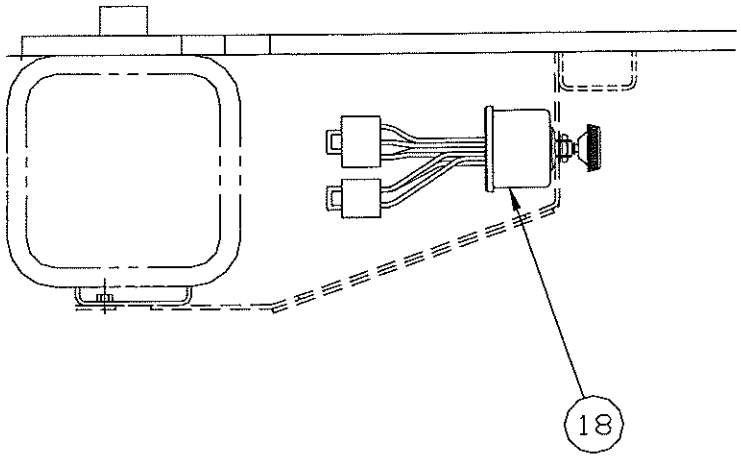




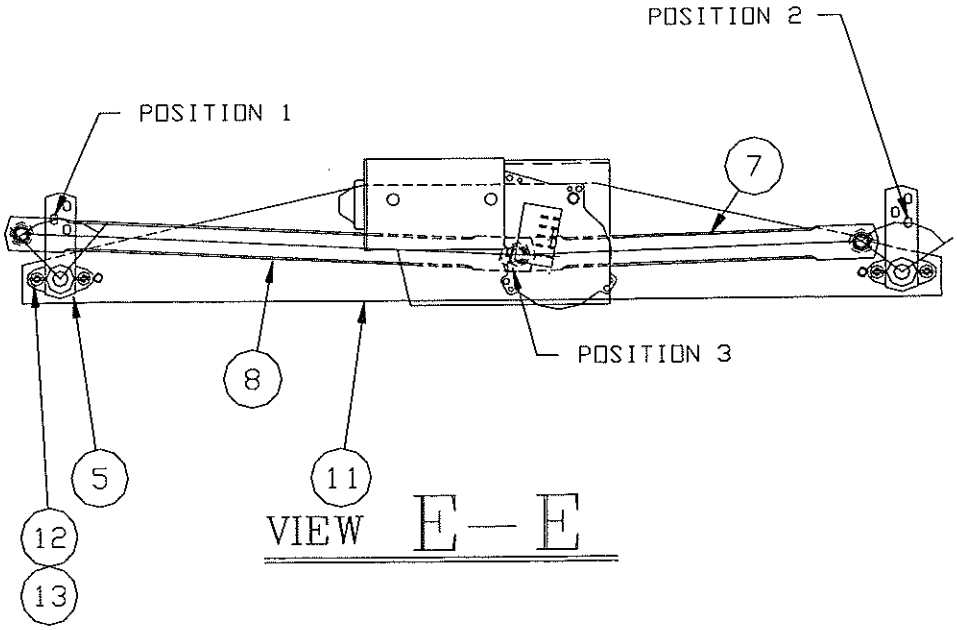
WIPER MOTOR MODIFICATION

KEY	A83432
01.	Wiper Motor *
02.	Wiper Motor Bracket *
03.	Motor Crank Arm *
04.	Capscrew *
05.	Arm and Shaft Assembly *
06.	Wiper Motor Nut *
07.	Link *
08.	Link *
09.	Spring Clip *
10.	Spacing Washer *
11.	Wiper Bracket *
12.	Machine Screw
13.	Lockwasher
14.	Capscrew
15.	Wiper Arm
16.	Flexible Blade
17.	Insert Nut or Flatwasher
18.	Wiper/Washer Control Switch
19.	Capscrew
20.	Wiper Drive Assembly
* On later units, items 01 through 11 were all incorporated into a new assembly, item 20)	

FIGURE 1 – TYPICAL WIPER SYSTEM INSTALLATION (A83432, SHEET 2 OF 3)

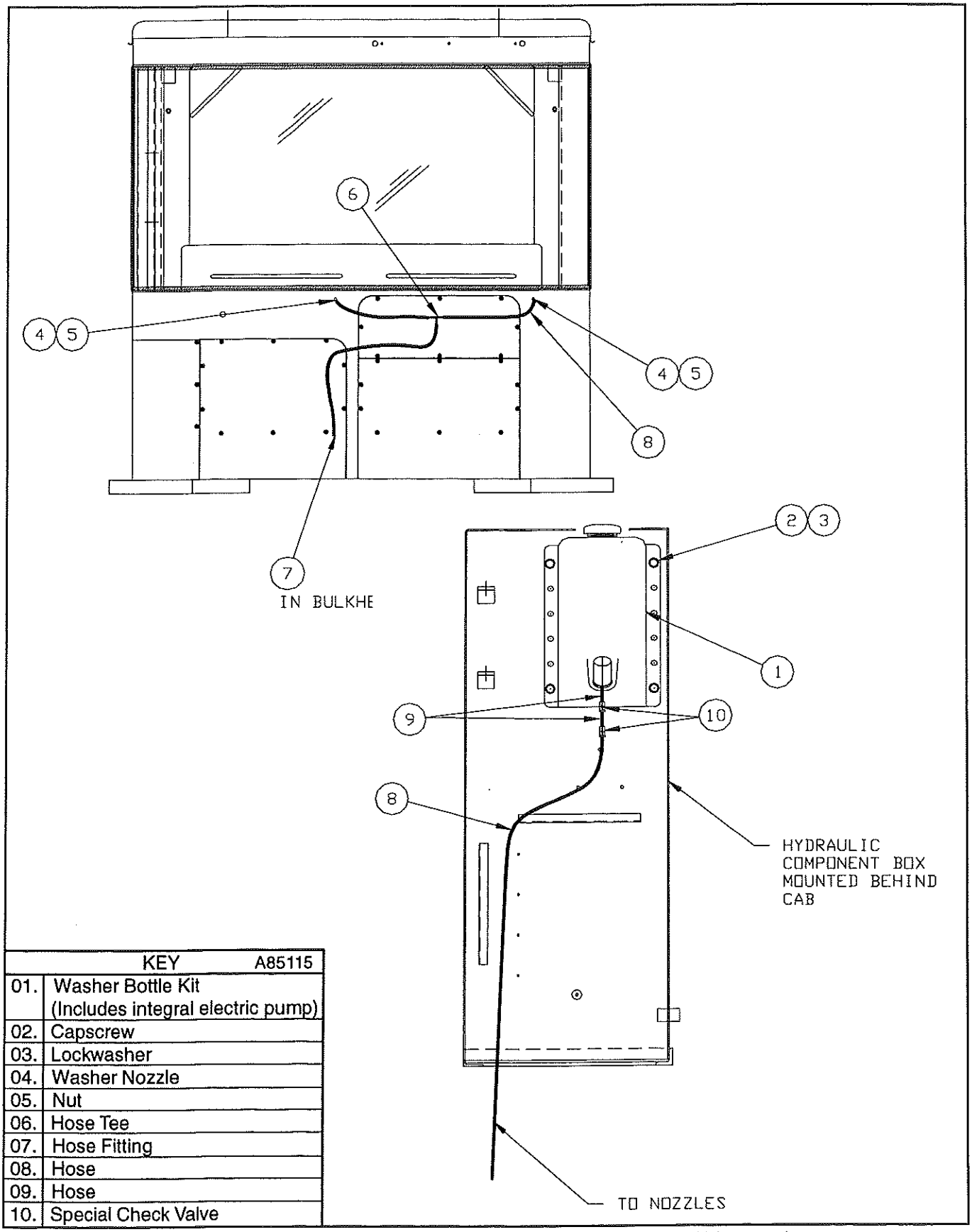


SEC C—C



VIEW E—E

FIGURE 1 – TYPICAL WIPER SYSTEM INSTALLATION (A83432, SHEET 3 OF 3)



KEY A85115	
01.	Washer Bottle Kit (Includes integral electric pump)
02.	Capscrew
03.	Lockwasher
04.	Washer Nozzle
05.	Nut
06.	Hose Tee
07.	Hose Fitting
08.	Hose
09.	Hose
10.	Special Check Valve

FIGURE 2 – TYPICAL WINDSHIELD WASHER INSTALLATION (A85115)

e. Install the link (8) onto the crank arm (3) and left side arm and shaft assembly (5) in the center hole as shown in Position 1 in View E-E, Figure 1.

f. Install the wiper arms (15) and flexible blades (16) in the park (upper) position as shown in Figure 1.

(1) Position the saddle on the wiper arms so the flexible blades are parallel to the upper windshield seal rubber.

(2) Position the wiper arms with the flexible blades as close to the upper windshield seal rubber as possible.

3. Tighten the shaft nut just enough to cause the arm and blade assemblies to travel across the glass together for testing.

4. Turn on the Master Switch.

5. Turn on the wiper switch and allow the assembly to operate through several cycles to verify that the arm position is correct.

NOTES:
1. It may be necessary to clean the window first to prevent scratching.
2. It may also be necessary to wet the glass surface sufficiently to allow smooth operation with minimal drag.

6. To correct alignment errors:

a. Turn off the switch and allow the wiper operation to totally stop.

b. Turn off the Master Switch to prevent unwanted operation.

c. Remove the shaft nut and gently pull the arm off of the shaft.

NOTE: *Do not attempt to rotate or twist the arm on the shaft. This will cause damage to the splined end of the driveshaft, allowing the arm and blade assembly to slip during regular operation.*

d. Re-align the blade/arm and shaft assemblies, reinstall and retest as outlined previously.

7. When the test is complete, stop the assembly operation and turn the Master Switch Off.

8. Tighten the shaft nut and serrated washer securely.

9. Close and secure the overhead console.

Components in the windshield washer assembly should be installed as shown in Figure 2.

NOTE: *The two special check valves are installed in line approximately 2 inches (50 mm) apart, as shown in Figure 2 with the arrows on both pointed in the direction of fluid flow to the nozzles.*