TM 9-4940-454-14&P

TECHNICAL MANUAL

OPERATOR'S ORGANIZATIONAL, DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE MANUAL INCLUDING REPAIR PARTS LIST

FOR

DEGREASER
MODEL AUC-81A
(ALPHA ULTRASONICS & ELECTRONICS)
(NSN 4940-00-566-8680)

HEADQUARTERS, DEPARTMENT OF THE ARMY

JANUARY 1981

WARNING

Sodium hydroxide can cause severe burns to skin and eyes. Wear goggles or face shield when handling. Avoid dust or fumes. Keep away from food products. In case of eye or skin contact, flush immediately with plentiful amounts of water for at least 15 minutes and get immediate medical attention.

WARNING

The cover must remain closed at all times while the impeller is in operation. For safety, it is recommended that the cover be kept closed at all times except when required to be open during fill, drain, loading and unloading operations or when the tank is empty.

WARNING

When using cold petroleum solvents, do not energize the oil burner as a fire hazard may exist with certain types of solvents. Solvents may emit fumes which may be hazardous if inhaled; or may be hazardous to skin and eyes if the liquid makes contact. Use extreme caution when handling or using these solvents. Follow the precautionary instructions listed on the solvent containers. Avoid fumes and in case of eye or skin contact, flush immediately with water and seek prompt medical attention.

WARNING

Under no circumstances should the equipment be operated while safety switches or devices are disconnected. The safety equipment is designed to fail safe. In the event a safety device requires replacement because it is defective, replace it immediately, never wire around it.

WARNING

The oil pump will continue operating for a short time after a flame or starting ignition failure; or a cutoff occurs due to stack switch relay control operation. In this event follow the procedures contained in the trouble shooting section of this manual.

WARNING

Motor rotation is critical for proper operation. To avoid excessive strain on impeller and shaft and their possible failure, motor must rotate counterclockwise when viewed from rear of motor. Rotation may be reversed by changing any two of its voltage supply leads.

WARNING

When a flame failure is experienced, or burner fails to operate immediately when thermostat is set at desired temperature, always delay about ten or eleven minutes before attempting a restart in order to allow fumes and oil spillage to dissipate. Open cleanout door and clean out major spills.

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REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms) direct to: Commander, US Army Armament Materiel Readiness Command, ATTN: DRSAR-MAS, Rock Island, IL 61299. A reply will be furnished directly to you.

NOTE

This manual is published for the purpose of identifying an authorized commercial manual for the use of the personnel to whom this degreaser is issued.

Manufactured by: Alpha Ultrasonics & Electronics Corp.
P. O. Box 4361, St Andrews Station
500 East Sixth Street
Panama City, FL 32401

Procured under Contract No. DAAA09-77-M-6443

This technical manual is an authentication of the manufacturers' commercial literature and does not conform with the format and content specified in AR 310-3, Military Publications. This technical manual does, however, contain available information that is essential to the operation and maintenance of the equipment.

INSTRUCTIONS FOR REQUISITIONING PARTS

NOT IDENTIFIED BY NSN

When requisitioning parts not identified by National Stock Number, it is mandatory that the following information be furnished the supply officer.

1 - Manufacturer's Federal Supply Code Number - 55735

2 - Manufacturer's Part Number exactly as listed herein.

3 - Nomenclature exactly as listed herein, including dimensions, if necessary.

4 - Manufacturer's Model Number - AUC-81A

5 - Manufacturer's Serial Number (End Item)

6 - Any other information such as Type, Frame Number, and Electrical Characteristics, if applicable.

7 - If DD Form 1348 is used, fill in all blocks except 4, 5, 6, and Remarks field in accordance with AR 725-50.

Complete Form as Follows:

(a) In blocks 4, 5, 6, list manufacturer's Federal Supply Code Number - 55735 followed by a colon and manufacturer's Part Number for the repair part.

(b) Complete Remarks field as follows:

Noun : (nomenclature of repair part)
For: NSN: 4940-00-566-8680
Manufacturer: Alpha Ultrasonics & Electronics Corp.

Model: AUC - 81A
Serial: (of end item)

Any other pertinent information such as Frame Number, Type. Dimensions, etc.

SECTION I

DESCRIPTION

1.0 General. The AUC-81A is a stationary, oil-fired, centrifugal impact type degreaser utilizing hot alkali or cold petroleum solvents as the cleaning solution. The equipment is specifically designed to meet the requirements of Size 1 degreasers described in Military Specification MIL-D-45099B (WC) and is intended for use in engine repair and rebuild shops for the removal of grease, sludge, and other foreign materials from vehicle engine blocks and parts. The cleaning action is effected by agitating a heated alkali solution or cold petroleum solution over the object being cleaned thus removing deposits of sludge, oil, metal chips, buffing compounds, varnish and paint from metal objects.

The degreaser tank is fabricated from steel of Manufacturers' Standard number 10 gage and is reinforced with structural steel where required. The cover is fabricated from steel of Manufacturers' Standard gage number 16 and may be fully opened to allow for the vertical insertion and removal of the work basket or any parts that are being cleaned. The tank rim is so constructed that solution dripping from parts being removed will drain back into the tank.

A sediment tank is located at the rear of the degreaser and the sediment can be removed while the main tank is filled to normal capacity. A steel heavy duty work basket is supplied with the AUC - 81A and is capable of holding at least 500 pounds of parts or engine blocks. Pad eyes are available on the basket to allow it to be lowered into the tank by chain fall. While in the tank, the work basket rests on supports to hold it above the tank base.

An overflow and drain is designed so as to carry off excess solution before it can overflow the tank. A water intake line with a shut off valve allows the operator to control the liquid level within the tank.

An impeller driven by a two horsepower electric motor is istalled to agitate the solution. The impeller is fabricated from stainless steel and is located so as not to interfere with the operation, loading or unloading of the tank. A safety screen is installed to protect the impeller from possible damage from the basket. The shaft of the electric motor is connected to the impeller through a sprocket and chain drive. A stuffing box prevents liquid leaking around the impeller shaft.

An oil burner. Model SH-2, is installed as the heating source to raise the solution to the proper working temperature. The burner may use diesel oil, number 2 grade fuel oil or lighter fuels. It is a high pressure atomizing burner which furnishes 100% of the combustion air through the burner. Oil atomization is accomplished through pressure generated by a gear type high-speed fuel pump assembled as a unit with an oil strainer and pressure regulating valve which is an integral part of the burner. Injection of oil by pressure through the nozzle produces a very fine oil spray. Air is delivered by a multivane fan through a non-reverberating blower tube equipped with a diffuser and is intimately mixed with oil mist for efficient combustion.

A transformer energizing a spark gap provides the igniting source for the burner.

The combustion chamber/fire box is constructed from low carbon steel lined with fire brick refractory and insulating material. A cleanout port is available for inspection and cleanout as necessary. An exhaust port is installed and should be vented to the outside atmosphere if the degreaser is installed in a confined area. Should repairs or alterations be required in the combustion chamber. the tank may be unbolted and lifted free to give complete access to the fire box/combustion chamber.

The temperature of the cleaning solution may be preselected and the temperature will then be maintained automatically. An overtemp control will automatically shutoff the oil burner should the liquid temperature exceed 225° F. A thermometer is mounted inside the control box in order that the operator may monitor the temperature of the solution at all times.

The control panel is mounted on the side of the degreaser near the oil burner. The panel allows the operator to maintain control of the various functions and operations of the equipment. A list of the controls and safety devices is set forth in the physical characteristics, paragraph 1.1.

1.1 Physical Characteristics.

a. Overall Dimensions:	62 1/4" H x 72" L x 35" W (includes stock extension)
b. Tank Dimensions:	Inside: 36" L x 24" W x 36 1/4" D.
	Working: 36" L x 24" W x 31 1/2" D.
	Sediment: 12" L x 12" W x 10" D.
c. Tank Capacity:	Overall: 134 gallons.
	Working: 117.8 gallons.
	Sediment: 6.2 gallons.
d. Work Basket:	28" H x 23" W x 27" D.
e. Basket Capacity:	Minimum 500 pounds.
f. Tank Material:	Manufacturers' Standard grade low carbon steel gage number 10.
g. Basket Material:	Low carbon steel angle.
h. Fire Box Material:	Low carbon steel lined with refractory and insulating material with a stainless steel deflector, oil burner tube, cleanout tube, and exhaust manifold.

i. Combustion Chamber Dimensions: 27 1/2" L x 16" W x 12" D.

j. Electrical and Utility Requirements:

1. 230 volts, 60 Hz, 3 phase power.

2. Water inlet, 1/2" NPT.

3. Suitable, approved drain facility for discharge of alkali or petroleum based solvents either from the overflow or tank or both,1 1/2" NPT.

4. Suitable and approved exhaust fume vents from oil burner stack as required. 6" O D

5. Fuel source and inlet line, 3/8" copper tubing is recommended.

k. Oil Burner:

Model SH-2, pedestal mounted with pump, strainer, pressure regulating valve, fan, and ignition transformer assembled as an integral part of the burner assembly.

1. Burner Capacity: 1.3 - 1.5 gallons per hour.

2. Fuel Type: Number 2 grade fuel oil or lighter grades may be used.

3. Burner Motor: 1/8 H P at 1725 RPM, 115 volts AC, single phase.

1. Impeller Motor: 2 H P electric motor of the induction squirrel cage type with Class B insulation, a continuous duty rating, and 1740 RPM. The motor is dual voltage 230/460 volts, and is initially wired on 230 volts, 60 Hz, 3 phase.

m. Impeller: Stainless steel 10 x 10 propeller.

n. Finish: All outside tank skin and the frame protected by a coat of primer followed by two coats of epoxy enamel.

o. Control Panel: Houses circuit breakers; impeller control; thermometer; oil burner variable temperature control.

p. Safety Devices and Instruments:	Circuit breakers including main power and individual circuit protection; over-temp cutout switch; built-in oil burner safety features in accordance with UL Oil Burners 296; and a thermometer.

SECTION II

OPERATING INSTRUCTIONS

2.0 General. This section contains the instructions for initial setup, operation with hot alkali solutions, operation with cold petroleum solvents, drain and sediment tank operation and a listing of the various safety devices built into the equipment.

2.1 Initial Setup. The AUC - 81A is packed in accordance with various military specifications and instructions. The packing and parts inventory list along with the diagram should be removed from the waterproof packet and used in conjunction with the instructions contained in this manual for set-up.

2.1.1 Check List.

a. The AUC-81A, while still in its packing materials should be placed near the desired location in order to avoid excessive handling after unpacking. Required utility lines and facilities should already be in place.

b. Uncrate and remove all packing materials from the AUC - 81A.

c. Certain parts are packed in consolidated packs in the degreaser tank. These are:

1. Exhaust stack extention.
2. Sediment tank and associated piping.
3. Basket and Rack.

Unpack these items carefully and inspect each for completeness and damage. Check the parts against the packing list and the parts diagram.

d. After unpacking the tank and consolidated packs, remove all cushioning materials and protective tape.

e. Utility lines and service requirements should have been prepositioned prior to receipt of the AUC-81A. This includes fuel tank and supply line; water fill line; 230 volts, 60 Hz, 3 phase electrical service; suitable drain lines 1 1/2" NPT; and necessary venting in the event the degreaser is installed in a building or enclosed area.

f. Move the AUC-81A into position.

CAUTION

FOR PROPER OPERATION, THE AUC-81A SHOULD BE PLACED ON A LEVEL BASE. WHILE EXACT LEVELING IS NOT REQUIRED, THE MACHINE SHOULD BE RELATIVELY LEVEL IN ORDER TO AVOID SPILLAGE WHEN AGITATION IS IN PROCESS.

g. Electric Motor Installation. The motor is in place and completely wired and ready for operation.

h. Oil Burner Installation. The oil burner has been wired and adjusted at the burner factory for proper operation.

i. Stack Extension. The stack extension (ES1) should be placed on the fixed stack. It is a telescope fitting and should be checked to insure that it fits tightly to prevent any gas leaks. Inspect the stack switch assembly to be sure it has not suffered shipment damage.

j. Electrical Hook-Up. The AUC-81A is wired for operation 230 volts, 60 Hz, 3 phase electrical service. The control panel is wired completely and all required wires to various locations have been pulled and are in place in the protective flexible electrical conduit ready for operation.

k. Fuel Oil Hook-Up. The fuel oil tank and fuel line should be installed in accordance with regulations of the National Board of Fire Underwriters. The fuel line should be no less than 3/8" O D copper tubing for line lengths under 50 feet; and 1/2" O D copper tubing for line lengths over 50 feet. Connect the line to the filter inlet port. If gravity system, bleed air by loosening unused intake port plug until there is a flow of oil from the port. Other than gravity feed, loosen Air Bleed Valve and Gage Port (Bright Hex Nut and hole just 1/4 turn for fast purging.

l. Water Supply. A water supply line 1/2" NPT should be connected to the water inlet near the control box to provide a source of fresh water.

m. Drains. A suitable drain facility should be connected to the drain outlet of the tank (1 1/2" NPT).

n. Sediment Tank. Find the sediment tank piping diagram and connect the sediment tank and its associated piping as depicted.

2.2 Theory of Operation. The AUC-81A is a stationary, high velocity centrifugal impact type degreaser utilizing hot alkali or cold petroleum solvents as the cleaning solution. An oil burner provides a source of heat to raise the alkali solution to the proper operating temperature between 190° and 200° F. 500 pounds can be loaded in the work basket and lowered into the solution.

The cover is then placed on the tank and the impeller motor energized.

The impeller creates a high velocity, turbulent flow of the solution into and around the items to be cleaned, flushing and removing heavy deposits of sludge, oil, metal chips, buffing compounds, varnish, paint, etc. , from the object.

Operating temperature for the hot alkali solution is maintained automatically on up to 1.5 gallons of oil per hour. Various safety and regulating devices are installed to ensure safety of operation.

2.3. 1. Operating Instructions. The following instructions are for operating the AUC-81A using a HOT ALKALI SOLUTION:

a. Check the drain valve to ensure that the valve is in the CLOSED position. Check the sediment tank valve and place it in the CLOSED position. Check to be sure sediment drain plug and cleanout port cover is in place. Remove the work basket from the tank.

b. Ensure all electrical equipment is OFF by placing the master circuit breaker in the OFF position. Position thermostat at the OFF position.

c. OPEN the water intake valve and begin filling the tank with water. After the liquid level in the tank has risen a few inches, sodium hydroxide base corrosive removing compound conforming to MIL-C-14460 Type I may be added to the water per local instructions as to the desired concentration or as specified in the Military Specification. Under no circumstances should the concentration exceed that specified in the MIL-SPEC.

WARNING

SODIUM HYDROXIDE CAN CAUSE SEVERE BURNS TO SKIN AND EYES. WEAR GOGGLES OR FACE SHIELD WHEN HANDLING. AVOID DUST OR FUMES. KEEP AWAY FROM FOOD PRODUCTS. IN CASE OF EYE OR SKIN CONTACT, FLUSH IMMEDIATELY WITH PLENTIFUL AMOUNTS OF WATER FOR AT LEAST 15 MINUTES AND GET IMMEDIATE MEDICAL ATTENTION.

CAUTION

THIS DEGREASER IF USED IN A CONFINED AREA SHALL BE PROVIDED WITH A FORCED VENTILATION SYSTEM.

d. Continue to fill the degreaser tank with water until reaching a level about 4" below the top of the safety screens.

e. Turn the master circuit breaker to the ON position.

f. SET the temperature control on the thermostat to the desired setting, that is between 190° and 200° F. It is suggested that the control be set at 200° F. Thereafter, the temperature will be maintained at the selected temperature automatically plus or minus 10° The oil burner should begin operation as soon as the thermostat is moved beyond the water temperature in the tank.

g. The AUC-81A requires about 2 hours to raise the temperature of the solution from 70° to 200° F.

h. While the solution is heating, load the work basket with the items or item requiring decreasing.

CAUTION

LOAD THE WORK BASKET SO THAT THE SOLUTION MAY REACH ALL SURFACES AND CREVICES AS WELL AS FREELY CIRCULATE THROUGH HOLES, CYLINDERS, ETC.

i. When the temperature has reached 200° F as indicated by the temperature gage, raise the cover, position the work basket over the tank, and lower it CAREFULLY into the solution. Replace the cover immediately.

NOTE

THE TEMPERATURE OF THE SOLUTION WILL DROP IMMEDIATELY AFTER THE WORK BASKET IS LOWERED INTO THE SOLUTION. THE TEMPERATURE SHOULD RISE TO 200° DEGREES PLUS OR MINUS FIVE DEGREES WITHIN TEN MINUTES.

j. After the temperature has stabilized at 200° F or the selected temperature, energize the impeller motor by depressing the electric motor START button. HOLD THE BUTTON DEPRESSED FOR ABOUT THREE SECONDS.

WARNING

THE COVER MUST REMAIN CLOSED AT ALL TIMES WHILE THE IMPELLER IS IN OPERATION. FOR SAFETY IT IS RECOMMENDED THAT THE COVER BE KEPT CLOSED AT ALL TIMES EXCEPT WHEN REQUIRED TO BE OPEN DURING FILL DRAIN, LOADING AND UNLOADING OPERATIONS OR WHEN THE TANK IS EMPTY.

k. When the desired degree of cleanliness has been reached, depress the impeller motor switch to the OFF position, raise the cover, remove the work basket allowing liquid to drain into the tank, and then remove contents. Reload the work basket and continue in accordance with sub-paragraph "h" above.

l. OPEN the sediment tank valve to drain the lower part of the main tank and remove sediment lower part of the main tank from bottom as necessary. Otherwise, the valve should remain closed.

NOTE

THE LENGTH OF TIME REQUIRED TO DEGREASE AND CLEAN METAL ITEMS VARIES ACCORDING TO THE DEGREE OF SOILAGE PRESENT; THE SIZE OF THE OBJECT; THE COMPLEXITY OF THE OBJECT; TYPE OF METAL AND SO FORTH. IT IS SUGGESTED THAT THE ITEMS BE INSPECTED AT INTERVALS FOR CLEANLINESS.

2. 3. 2 Use of Cold Petroleum Solvents. Cold petroleum solvents may be used as the cleaning vehicle. Using these solvents:

a. Check the master drain valve to ensure that the valve is in the CLOSED position. CLOSE the sediment tank valve. Ensure that the sediment tank drain plug and cleanout cover are in place.

b. Check the electrical control panel and ensure that the master circuit breaker is in the OFF position. Set the thermostat at the OFF position.

c. Remove the cover and fill the tank to a point four inches below the top of the safety screens with the proper solvent.

CAUTION

THE DEGREASER IS CONSTRUCTED FROM LOW CARBON STEEL. CERTAIN PETROLEUM SOLVENTS MAY ATTACK THE MATERIAL. IF IN DOUBT, CHECK SOLVENT COMPATIBILITY PRIOR TO USE.

d. Load work basket and lower into the tank. Place the cover on the tank.

e. Position master circuit breaker to the ON position.

f. Energize the impeller motor by depressing the start switch to the ON position.

WARNING

WHEN USING COLD PETROLEUM SOLVENTS, DO NOT ENERGIZE THE OIL BURNER AS A FIRE HAZARD MAY EXIST WITH CERTAIN TYPES OF SOLVENTS. SOLVENTS MAY EMIT FUMES WHICH MAY BE HAZARDOUS IF INHALED; OR MAY BE HAZARDOUS TO SKIN AND EYES IF THE LIQUID MAKES CONTACT. USE EXTREME CAUTION WHEN HANDLING OR USING THESE SOLVENTS. FOLLOW THE PRECAUTIONARY INSTRUCTIONS LISTED ON THE SOLVENT CONTAINERS. AVOID FUMES AND IN CASE OF EYE OR SKIN CONTACT, FLUSH IMMEDIATELY WITH WATER AND SEEK PROMPT MEDICAL ATTENTION.

g. When decreasing has been completed, depress impeller motor switches to the OFF position. OPEN sediment valve if necessary.

h. Raise cover, raise work basket, allow basket and contents to drain into tank, remove contents and reload. RECLOSE sediment valve.

i. Proceed as set forth in instruction d above.

2 3 3 SecuringEquipment. Upon completion of the cleaning operations the liquid may be left in the tank for use in the next scheduled cleaning period. To secure the machine for short time periods, i.e. a week or less, place the cover on the tank; place all electrical equipment in the OFF position; place master circuit breaker in the OFF position; ensure that the sediment tank drain valve remains in the OPEN position.

NOTE

IT IS SUGGESTED THAT SLUDGE AND SEDIMENT BE REMOVED FROM THE SEDIMENT TANK PRIOR TO THE NEXT SCHEDULED DEGREASING OPERATIONS. SEE SECTION 2.3.5 FOR THESE PROCEDURES.

2.3.4 Drain. To drain the degreaser:

a. Place all electrical switches in the OFF position.

b. OPEN the sediment tank drain valve.

c. OPEN the tank drain valve to the fully OPENED position.

d. When the tank has been completelv emptied, use a stream of water from a hose to wash or flush out any residue clinging to the sides, tank supports or bottom.

e. When completely drained and flushed, CLOSE the tank drain valve.

CAUTION

DRAIN FACILITIES INTO SEWAGE LINES MUST BE CERTIFIED AND APPROVED TO RECEIVE ALKALI OR PETROLEUM SOLVENTS.

2.3.5 Sediment Tank. The AUC-81A has a sediment settling tank with a means for removal of settled sludge and sediment. Removal can be accomplished when the degreaser tank is filled to normal capacity with a minimum loss of solvent. To remove sediment from the sediment tank while the degreaser tank is filled to normal capacity:

a. Ensure that the tank drain valve is CLOSED. CLOSE the sediment tank valve.

b. Remove the sediment tank bottom drain plug; remove the sediment tank top clean out port cover.

c. After the solution has drained from the sediment tank, rod the debris and sludge out and flush completely with a hot water flush.

d. When clean out is complete, replace the bottom plug and replace the top cleanout port cover.

e. OPEN sediment tank valve.

f. Continue with degreasing process or other operation. Check tank liquid level and refill as necessary.

NOTE

IT IS RECOMMENDED THAT THE SEDIMENT TANK BE CLEANED AT REGULAR INTERVALS AS DICTATED BY LOCAL EXPERIENCE; AND ALWAYS CLEANED WHENEVER THE TANK IS DRAINED COMPLETELY.

2.4 Safetv Devices.

The AUC-81A has been equipped with several safety devices in order to protect the operator, the equipment, and the surrounding environment..

WARNING

UNDER NO CIRCUMSTANCES SHOULD THE EQUIPMENT BE OPERATED WHILE SAFETY SWITCHES OR DEVICES ARE DISCONNECTED. THE SAFETY EQUIPMENT IS DESIGNED TO FAIL SAFE. IN THE EVENT A SAFETY DEVICE REQUIRES REPLACEMENT BECAUSE IT IS DEFECTIVE, REPLACE IT IMMEDIATELY, NEVER WIRE AROUND IT.

2.4.2 Safety Equipment.

a. Main circuit breaker. The main circuit breaker controls all electrical power for the AUC-81A. If the breaker trips, it signifies that an electrical component or wiring has developed trouble. Correct the trouble before continuing operations.

b. Secondary Circuit Breakers. The impeller meter and the burner are protected by circuit breakers.

c. Overtemperature Cutout Switch. This switch is wired in series with the oil burner control and is normally closed allowing the burner to operate. A situation wherein the temperature of the tank liquid rises to or above 225° F will cause the over-temp cutout switch to open and interrupt the electrical power to the oil burner causing it to cease firing.

d. (Oil Burner Safety Controls. The SH-2 oil burner has built-in safety devices conforming to the Underwriter's Laboratories' Standards for oil burner operation which will automatically shut off the fuel supply in the event of a flame failure.

A stack mounted relay control is another protection device to ensure fuel cutoff if the burner ignition system fails to ignite the fuel mixture when the thermostat is activated or in the event the flame is too high or out of control.

WARNING

THE OIL PUMP WILL CONTINUE OPERATING FOR A SHORT TIME AFTER A FLAME OR STARTING IGNITION FAILURE; OR A CUTOFF OCCURS DUE TO STACK SWITCH RELAY CONTROL OPERATION. IN THIS EVENT FOLLOW THE PROCEDURES CONTAINED IN THE TROUBLE SHOOTING SECTION OF THIS MANUAL.

CAUTION

DRAIN FACILITIES INTO SEWAGE LINES MUST BE CERTIFIED AND APPROVED TO RECEIVE THE ALKALI OR PETROLEUM SOLVENTS AS SEWAGE DISPOSAL PLANTS MAY BE DAMAGED, OR CANNOT PROCESS THESE COMPOUNDS. DRAINAGE INTO A STORM DRAIN EARTH OR GRAVEL DRAINAGE AREAS MUST BE DONE WITH CAUTION TO AVOID CONTAMINATION OF GROUND OR NEARBY WATER SUPPLIES.

CAUTION

THE FOREGOING INSTRUCTIONS COMPLETE THE INITIAL SET-UP OF THE AUC-81A DEGREASER AND IT IS NOW READY TO OPERATE. IT IS SUGGESTED THAT A REVIEW OF THE PROCEDURES BE CONDUCTED AND EACH ITEM CHECKED TO ENSURE THAT THE PROCEDURES HAVE BEEN FOLLOWED AND THAT THE EQUIPMENT IS WIRED AND MECHANICALLY ASSEMBLED CORRECTLY.

WARNING

MOTOR ROTATION IS CRITICAL FOR PROPER OPERATION. TO AVOID EXCESSIVE STRAIN ON IMPELLER AND SHAFT AND THEIR POSSIBLE FAILURE, MOTOR MUST ROTATE COUNTER CLOCKWISE WHEN VIEWED FROM REAR OF MOTOR. ROTATION MAY BE REVERSED BY CHANGING ANY TWO OF ITS VOLTAGE SUPPLY LEADS.

SECTION III

MAINTENANCE , REPAIR AND TROUBLESHOOTING

3.0 General. The AUC-81A is a relatively simple machine. Minimum preventative maintenance and repair is required, and troubleshooting requirements are also simple and at a minimum.

3.1 Maintenance. Little or no preventative maintenance other than occasional lubrication is necessary.

3.1.1 Electric Motor. The bearings in the electric motor are of the sealed oiled type and require no lubrication.

3.1.2 Chain Drive. The chain drive should be checked for alignment of the sprockets and removal of accumulated dirt and grime from the teeth every four months. After cleaning, lubricate the drive with a good grade of commercial chain drive lubricator.

3.1.3 Control Panel. Once a year, the accumulated dust and dirt should be blown away from switches and other control panel component using a low pressure air source.

3.1.4 Oil Burner. Once a year, the oil burner should be examined by a qualified oil burner repairman and the burner nozzle, diffuser, spark settings, pump operation etc. , inspected and adjusted as necessary to maintain an efficient flame pattern.

3.1.5 Combustion Chamber. After three years of operation, or if inspection shows a large accumulation of soot, it is recommended that the tank be unbolted from the combustion chamber and raised sufficiently to allow inspection and if needed, to clean out the entire firebox area.

3. 1.6 Stuffing Box. The stuffing box consists of a fixed body which is welded to the tank side which contains the shaft, bearings, lock rings and seals. A grease fitting is installed on the fixed body. Use a good grade multi-grade grease every six months. DO NOT OVERFILL BODY. In order to change the bearings, follow these steps:

a. Remove the chain guard (held with 3 bolts-3/8" head).

b. Remove the chain (loosen motor mount bolts to relieve tension).

c. Remove the impeller shaft sprocket wheel (1/8" socket wrench set).

d. Remove impeller (setscrews (2) - 1/8" socket wrench set).

e. Use gear puller to remove the impeller from the shaft.

f. Use pry tool or thin screwdriver, to remove the mechanical seal (this seal must be replaced with a new one!.

g. Remove snap retainer ring (use snap ring pliers).

h. Pul1 shaft out of housing- bearing will remain on shaft,

i. Remove damaged or defective bearings.

j. Reinstall bearings with replacements. Push shaft through housing.

k. Reinstall snap retainer ring into forward retainer groove.

1. Reinstall all new mechanical. seal..

m. Reinstall the impeller, tighten setscrew.

n. Reinstall sprocket, tighten setscrew.

o. Reinstall chain.

p. Using a lever or pry bar move motor away from large sprocket to retension and align change. Tighten motor mounting bolts.

q. Reinstall chain guard.

r. Grease housing with multi-purpose grease. DO NOT OVER FILL.

3.1.7 Table of Recommended Maintenance

ITEM	PERIOD	MATERIAL OR METHOD RECOMMENDED
1. Chain Drive	4-month intervals	Clean sprocket teeth and lubricate with chain drive lubricant.
2. Control Panel	1-year interval	Blow dust and dirt away from contacts with low pressure air.
3. Oil Burner	1-year interval	Inspect and adjust as necessary.
4. Combustion Chamber	3-year interval or as necessary	Unbolt and raise tank to inspect and clean as necessary.
5. Stuffing Box	As required	Follow instructions in paragraph 3 1. 6

3.2 Troubleshooting

WHAT HAPPENED	PROBABLE CAUSE	WHAT TO DO
Circuit breakers on, unit fails to operate.	Main electrical source is OFF or breaker tripped at source.	Check main power source; reset or restore main power
Main and secondary breakers on, thermostat set at desired temperature, burner fails to operate	1. No fuel oil	1. Check main oil supply for oil and proper number.
	2. Liquid temperature above desired temperature.	2. Operate thermostat beyond temperature desired
	3 Liquid temperature above overtemperature limit of 225° F; Cal Stat switch has interrupted electrical power to the burner.	3. Wait until fluid temparature falls below 225°F.
	4. Burner component failure.	4. If the foregoing items are not the source of trouble, then there is a possibility that the burner blower, fuel pump, and/or ignition transformer have failed. Test each component separately and replace as necessary.
Motor fails to start.	Blown fuse or open breaker.	Reset breaker.
	Open circuit in winding or starting switch	Evidenced by a humming sound from motor when switch is closed. Check for loose connections.
	Mechanical failure.	Check bearings.
	Short circuited starter.	Indicated by breaker tripping continuously. Rewind motor.
	One phase out.	Check main power source.

WHAT HAPPENED	PROBABLE CAUSE	WHAT TO DO
Motor stalls,	Low line voltage.	Check AC line and correct if possible.
Motor runs and then dies down.	Loss of line voltage.	Check AC line and correct if possible.
	Stator shorts when motor warms up.	Replace stator.
Motor overheats.	Motor overloaded.	Check water level in the tank (3 to 4" below safety screen.)
	Three phase motor may have one phase open.	Check power source.
	Line voltage too high or too low.	Check power source.
	Worn bearings.	Replace bearings and seals.
	Sprockets misaligned.	Realign sprockets.
Motor vibrates.	Mounting bolts loose.	Tighten mounting bolts.
	Worn bearings.	Replace bearings and seals.
Excessive Motor noise.	Fan rubbing cover.	Remove interference.
	Motor mounting bolts loose.	Tighten motor mounting bolts.
Chain climbs sprocket.	Chain does not fit on sprocket.	Check sprocket for oversize bottom diameters.
	Chain badly worn.	Replace chain.
	Excessive chain slack.	Take up slack.
	Material build-up in sprocket tooth pockets.	Clean sprocket teeth.
Excessive drive noise.	Sprocket misalignment.	Check alignment and correct.
	Inadequate lubrication.	Lubricate with chain drive lubricant.
	Chain or sprockets worn badly.	Replace chain or sprockets as necessary.

WHAT HAPPENED	PROBABLE CAUSE	WHAT TO DO
Excessive wear on sprocket teeth	Drive misalignment.	Realign drive.
Chain breakage.	Inadequate lubrication.	Lubricate with chain drive lubricant.
	Material build-up in sprocket tooth pockets.	Clean sprocket teeth.
	Drive misalignment.	Replace sprockets.
	Badly worn sprockets.	Replace sprockets.
Chain gets stiff.	Inadequate lubrication.	Lubricate.
Non-symmetrical wear on sprockets.	Shaft not parallel or in same place.	Check alignment,
Excessive vibration.	Broken or missing roller.	Replace chain.
Stuffing box leaks.	Mechanical seals need replacing.	Replace seals, see paragraph 3.
Flame fails to ignite when thermostat set at desired temperature.	Out of oil.	Check fuel supply, wait ten minutes before re-starting burner. Reset red button on stack switch.
	Spark gap too wide for ignition voltage.	Have repairman reset gap.
	Ignition transformer failure or short.	Replace transformer.

WARNING

WHEN A FLAME FAILURE IS EXPERIENCED, OR BURNER FAILS TO OPERATE IMMEDIATELY WHEN THERMOSTAT IS SET AT DESIRED TEMPERATURE, ALWAYS DELAY ABOUT TEN OR ELEVEN MINUTES BEFORE ATTEMPTING A RESTART IN ORDER TO ALLOW FUMES AND OIL SPILLAGE TO DISSIPATE. OPEN CLEANOUT DOOR AND CLEAN OUT MAJOR SPILLS.

3.3 Long Term Storage. If it is planned that the degreaser will not be used for a long period of time, it should be prepared for storage by:

a. Draining all fluids from the tank.

b. Flushing and draining the sediment tank.

c. Follow the procedures listed in MIL-D-45099B(WC) as pertains to preserving the inside tank walls from rust or other damage.

SECTION IV

PARTS LIST

4.0 General. This section contains a listing of replacement parts for the AUC-81A degreaser. The parts are listed alpha-numerically by parts number and the listing includes:

a. Master part number.

b. Description of part (see list of abbreviations).

c. Manufacturer.

d. Manufacturer's part number if different from master number.

e. Quantity required.

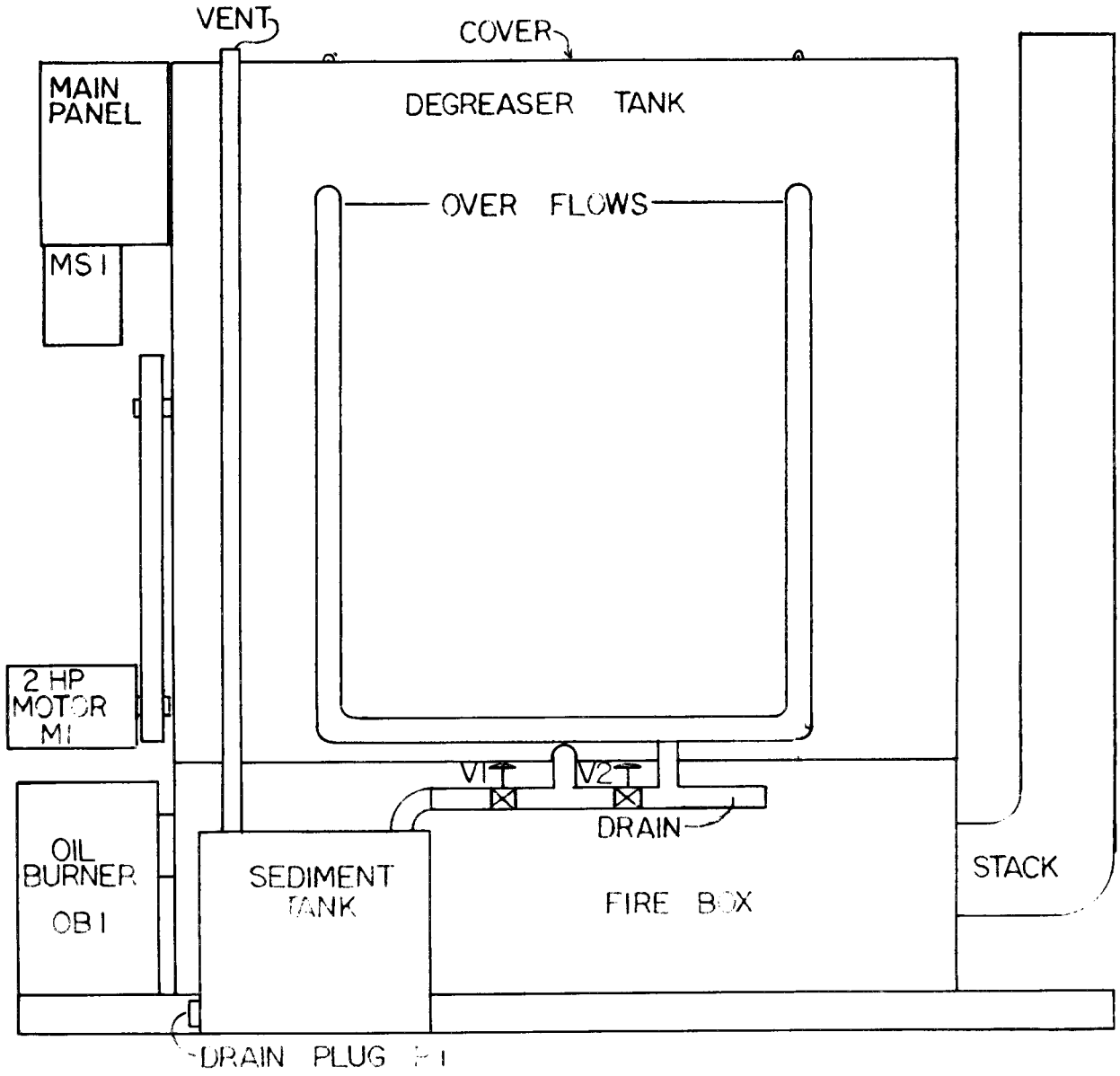
4.1 LIST OF MANUFACTURER'S CODE LETTERS

A	Alpha Ultrasonics & Electronics Corporation P. O. Box 4361, St. Andrews Station Panama City, Florida 32401 (904) 769-4430
AS	Automatic Switch Company 50- A Hanover Road Florham, N. J. 07932 (201) 966-2000
BG	Boston Gear 14 Hayward Street Quincy, MA 02171 (617) 773-0400
DA	Dayton Electric Manufacturing Company 5959 West Howard Street Chicago, IL 60648
GF	General Filters, Incorporated 43800 Grand River Avenue Novi, MI 48050
MW	Michigan Wheel Corporation 1501 Buchanan South West Grand Rapids, MI 49502
RS	Robertshaw Controls Company (Temperature Controls) New Stanton Division Youngwood, PA 15697 (412) 925-7211
SD	Square D Company Executive Plaza Park Ridge, IL 60028
SR	Sun-Ray Burner Manufacturing Corporation 45 South Service Road Plainview, NY 11803 (516) 293-6800
WI	Weston Instruments, Incorporated 614 Frelinghuysen Avenue Newark, NJ 07114 (201) 243-4700

LIST OF ABBREVIATIONS

B1	Bearing
B2	Bearing
Cl	Chain Drive
CB1	Circuit Breaker
CB2	Circuit Breaker
F1	Fuel Oil Filter
HTS	Overtemperature, Cal-Stat
I1	Impeller
M	Electric Motor
MSl	Motor Starter
OB1	Oil Burner
PB1	Pushbutton Block
PB2	Pushbutton Block
RR1	Retaining Ring
RR2	Retaining Ring
RS1	Seal
RS1	Seal
SP1	Chain Sprocket
SP2	Chain Sprocket
SV1	Solenoid Valve
TM	Thermometer
TT	Thermostat
VL	Gate Valve

REF. DESIG.	DESCRIPTION	MFR	MFR P/N	QTY
B1	Bearing		R14	1
B2	Bearing		S10K	1
C1	Chain Drive	BG	No. 40	1
CB1	Circuit Breaker	SD	QOU320	1
CB2	Circuit Breaker	SD	QOU115	1
F1	Fuel Oil Filter	GF	1A=25A	1
HTS	Overtemp, Cal-Stat	V	2C3D4	1
I-1	Impeller, 1" bore	MW	10 x 10 ss	1
M	Electric Motor, 230/60	DA	3N287	1
MS1	Motor Starter	SD	8536-SBG-2	1
OB1	Oil Burner, 1.5 GPH	SR	LC-2	1
PB1	Pushbutton Block	SD	KR-1B-H13	1
PB2	Pushbutton Block	SD	KR-1R-H13	1
RR1	Retaining Ring		N3000-200	2
RR2	Retaining Ring		N3000-187	2
RS1	Seal		8870	1
RS1	Seal		10158	1
SP1	Chain Sprocket		40BS24 x 7/8	1
SP2	Chain Sprocket		40B60 x 7/8	1
SV1	Solenoid Valve	AS	8262B208	1
T1	Impeller Drive Assy.	A	100462	1
TM1	Thermometer 50 - 300	WI	4303-0020050	1
TT1	Thermostat, 60 - 250 deg.	RS	D1/D18	1
VL	Gate Valve	U	1 1/2" NPT	2

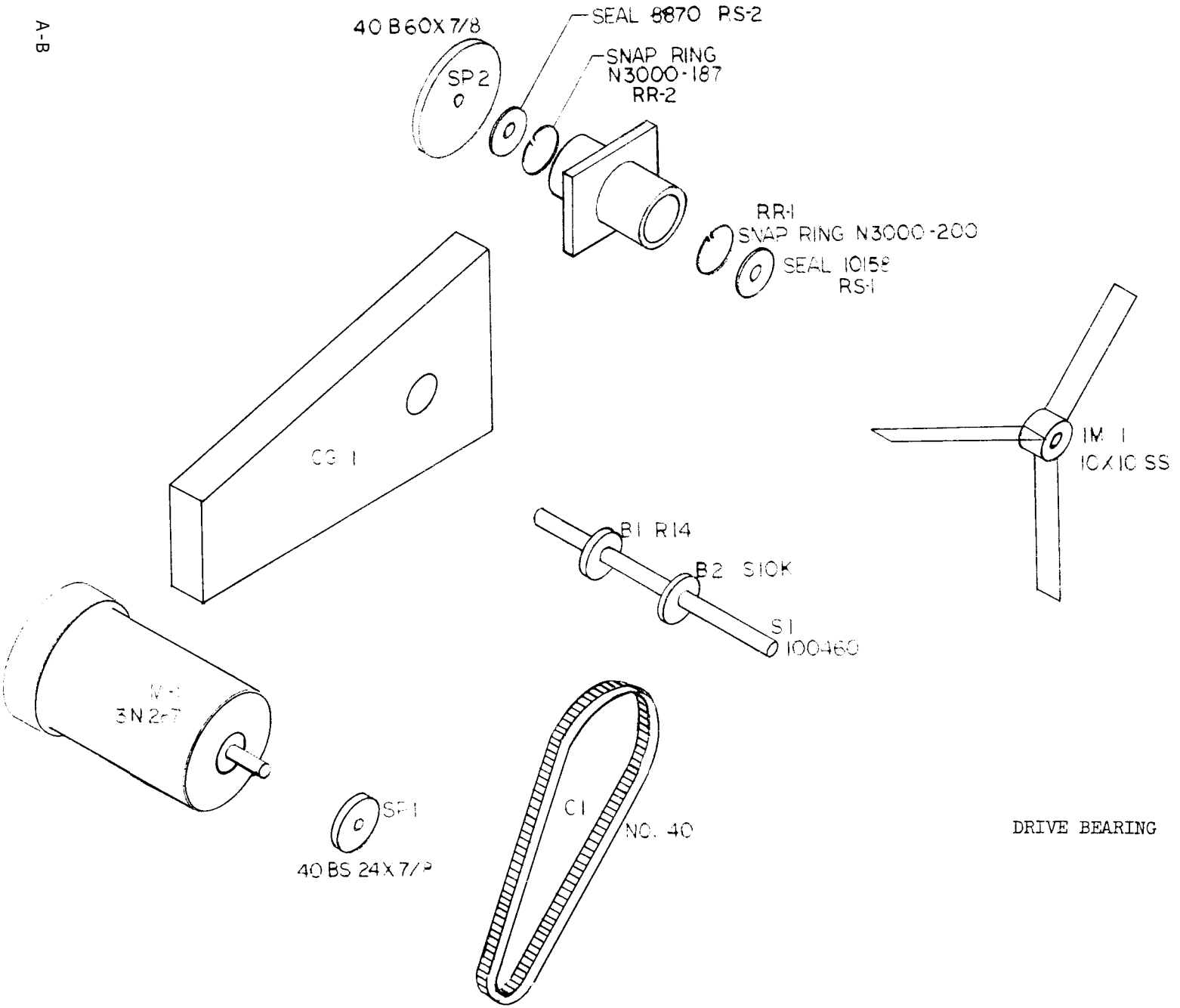


DEGREASER OIL FIRED CENTRIFUGAL
IMPACT TYPE AUC-81A

OVERALL LAYOUT

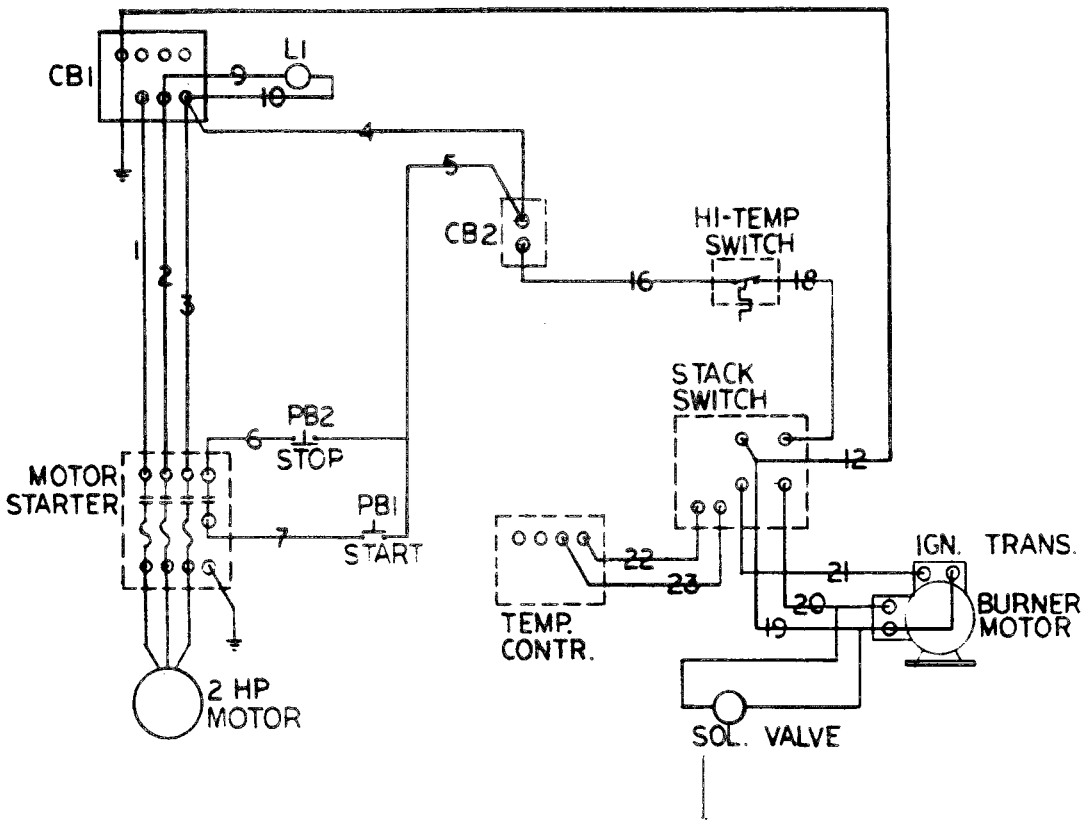
A-A

A-B



DRIVE BEARING

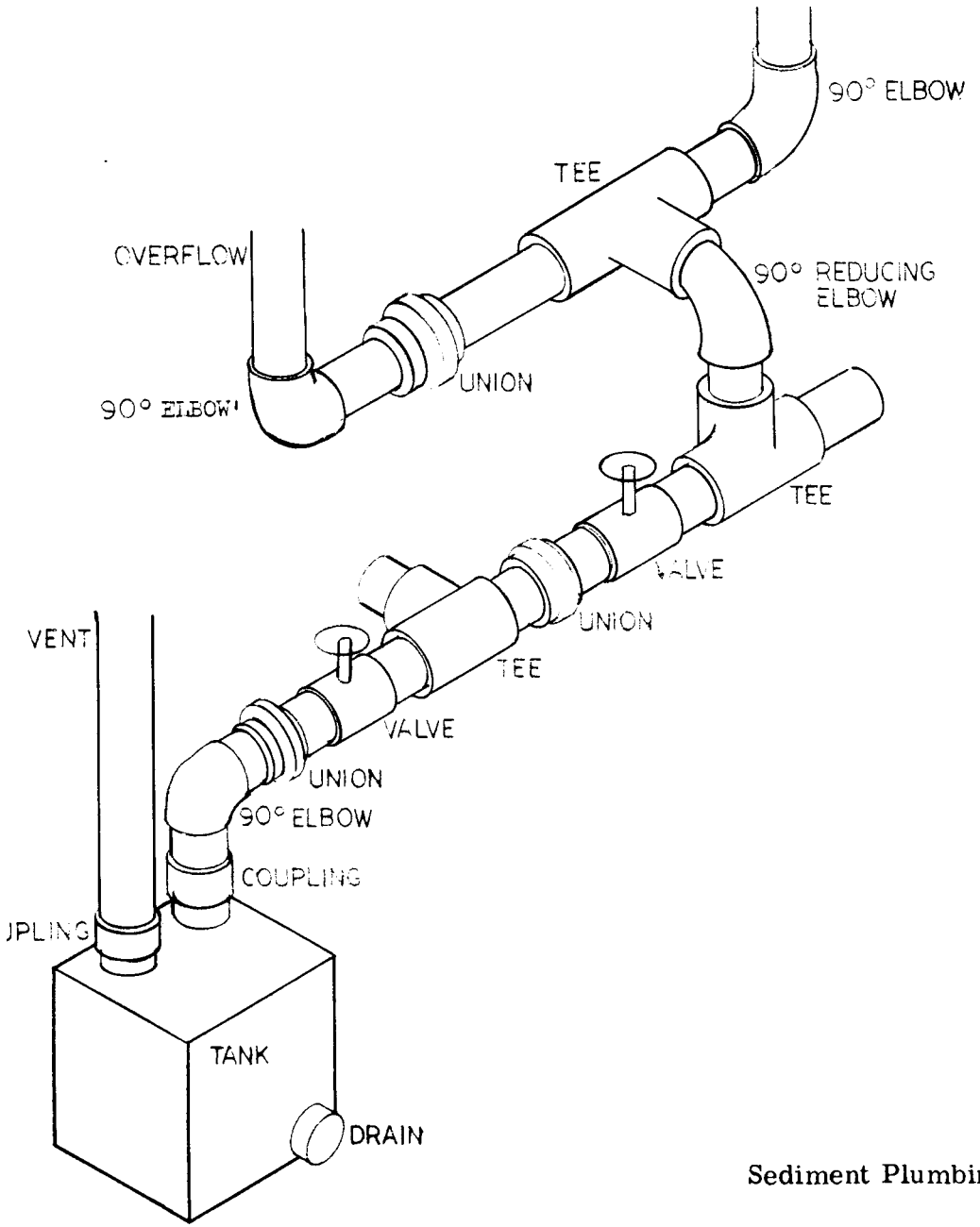
REVISIONS			
REV	DESCRIPTION	DATE	APPROVED



WIRING DIAGRAM

AUC-81A

A-C



Sediment Plumbing Layout

By Order of the Secretary of the Army:

E. C. MEYER
General, United States Army
Chief of Staff

Official:

J. C. PENNINGTON
Major General, United States Army
The Adjutant General

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