TECHNICAL MANUAL

OPERATOR, ORGANIZATIONAL, DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE MANUAL INCLUDING REPAIR PARTS LIST FOR DEGREASER MODEL AUC-81 (NSN 4940-00-356-9891)

HEADQUARTERS, DEPARTMENT OF THE ARMY

OCTOBER 1983

WARNINGS

THE FOLLOWING SUMMARY LIST IS ADAPTED FROM WARNINGS WITHIN THE MANUAL. HOWEVER, ALL WARNINGS SHOULD BE OBSERVED AS NOTED IN THE TEXT.

OBSERVE CUSTOMARY SAFETY PRECAUTIONS WHEN WORKING WITH HIGH VOLTAGES AND DANGEROUS CHEMICALS. BODILY INJURIES OR DEATH COULD OCCUR IF SAFETY PRECAUTIONS ARE NOT FOLLOWED.

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.

THE COVER MUST REMAIN CLOSED AT ALL TIMES WHILE THE IMPELLERS ARE 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.

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.

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.

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 CLEAN OUT DOOR AND CLEAN OUT MAJOR SPILLS.

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

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.

Technical Manual

No. 9-4940-503-14&P

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, 13 October 1983

OPERATORS, ORGANIZATIONAL, DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE MANUAL INCLUDING REPAIR PARTS LIST FOR

DEGREASER
MODEL AUC-81
(NSN 4940-00-356-9891)

REPORTING OF ERRORS

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), or DA Form 2028-2, located in the back of this manual 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 equipment is issued.

Manufactured By: Alpha Ultrasonics & Electronics
P.O. Box 4361, 500 E. 6th St.
Panama City, FL 32401

Procured under Contract No. DAAA09-77-C-7012

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-81.

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 or repair part)
For: NSN: 4940-00-356-9891
Manufacturer: Alpha Ultrasonics & Electronics
P.O. Box 4361, 500 E. 6th St.
Panama City, FL 32401

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

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

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SECTION I - DESCRIPTION

1-1. Scope. a. This manual contains the operating and maintenance procedures recommended for the AUC-81 model stationary degreaser. The procedures consist of a description, installation and operating instruction, maintenance, repair and troubleshooting instructions and a listing of replacement parts.

b. Before servicing and operating this equipment, the operator should be thoroughly familiar with this manual.

WARNING

OBSERVE CUSTOMARY SAFETY PRECAUTIONS WHEN WORKING WITH HIGH VOLTAGES AND DANGEROUS CHEMICALS. BODILY INJURIES OR DEATH COULD OCCUR IF SAFETY PRECAUTIONS ARE NOT FOLLOWED.

1-2. General. a. The AUC-81 is a stationary, oil-fired, centrifugal impact type degreaser utilizing hot alkali (MIL-C-14460, Type 1) or cold petroleum solvents (Federal Specification O-T-236) as the cleaning solution. The equipment is specifically designed to meet the requirements of Size 2 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 parts and blocks. 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.

b. The degreaser tank is fabricated from steel of Standard number 10 gage and is reinforced with structural steel where required. The cover is fabricated from steel of Standard gage number 16 and may be fully removed 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 safety step with a non-skid surface is provided for the operator's use.

c. A sediment tank is located at the rear of the degreaser and the sediment can be removed while the tank is filled to normal capacity. A steel heavy duty work basket is supplied with the AUC-81 and is capable of holding at least 2,000 lbs 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.

d. 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.

e. Two impellers, each driven by a five horsepower electric motor are installed to agitate the solution. The impellers are fabricated of stainless steel and are located so that they do not interfere with the operation, loading or unloading of the tank. A safety screen on each side of the degreaser protects the impellers from possible damage from the basket. The shafts of the electric motors are connected to the impellers through a sprocket and chain drive. A bearing housing prevents liquid leaking around the impeller shaft.

f. An oil burner, Model LC-134, is installed as the heating source to raise the solution to the proper working temperature. Use fuel oil meeting Federal Specification W-F-815. 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 multi-vane 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.

g. 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 stack 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.

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

i. The control panel is mounted on the side of the degreaser near the oil burner. This panel allows the operator to maintain control of the various functions and operations of the equipment. A list of controls and safety devices is set forth in the physical characteristics, paragraph 1-3.

1-3. Physical Characteristics.

a. Overall Dimensions: 58" H x 108" L x 65" W.

b. Tank Dimensions:

Overall: 60" L x 36" W x 36" D.

Sediment: 32" L x 18" W x 12" D.

c. Tank Capacity:

Overall: 336.6 gallons.

Sediment: 29.9 gallons.

d. Work Basket Dimensions: 42" L x 32" W x 27" D.

e. Work Basket Capacity: Minimum 2,000 lbs.

f. Tank Material: Manufacturers' Standard low carbon steel gage number 10.

g. Work Basket Material: Manufacturers' Standard low carbon steel angle.

h. Fire Box Material: Low carbon steel lined with fire brick refractory and insulating material with firebox deflectors, oil burner tube, cleanout tube and exhaust manifold.

i. Firebox/Combustion Chamber Dimensions: 52" L x 28" W x 13½" D.

j. Electrical and Utility Requirements:

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

(2) Water inlet, 3/4" NPT.

(3) Suitable, approved drain facility for discharge of alkali (MIL-C-14460) or petroleum based solvents (Federal Specification (O-T-236) either from the overflow or tank or both, 2" NPT.

(4) Suitable and approved exhaust fume vents from oil burner stack as required.

(5) Fuel source and inlet line, 3/8" copper tubing.

k. Oil Burner: Model LC-134, mounted with pump, strainer, pressure regulating valve, fan, and ignition transformer assembled as an integral part of the burner assembly.

(1) Burner Capacity: 2.5 to 2.75 gallons of fuel per hour.

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

(3) Burner Motor: 1/8 HP at 1725 RPM, 115 volt AC, single phase.

l. Impeller Motors: Five horsepower electric motors of the induction squirrel cage type with Class B insulation, a continuous duty rating, and 1740 RPM. The motors are dual voltage 230/460 volts, and are initially wired for operation on 230 volts, 60 Hz, 3 phase.

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

n. Control Panel: Houses circuit breakers; impeller motor control switches; thermometer; oil burner variable temperature control.

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

SECTION II - OPERATING INSTRUCTIONS

2-1. General. This section contains the instructions for initial setup, operation with hot alkali solutions (MIL-C-14460), operation with cold petroleum solvents (Federal Specification O-T-236), drain and sediment tank operation and a listing of the various safety devices built into the equipment.

2-2. Initial Set-Up. The AUC-81 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.

a. The AUC-81 while still in its crating 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-81.

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

(1) Sediment Tank.

(2) Basket.

(3) Step.

(4) Vent Pipe (stand pipe).

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

d. After unpacking the tank and consolidated packs, open the control panel and remove all cushioning materials and protective tape from the thermometer, switches, circuit breakers, and so forth.

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

f. Move the AUC-81 into the desired position.

CAUTION

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

g. Electric Hook-Up. The AUC-81 is initially wired for operation on 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 protected flexible or rigid electrical conduit. Bring power to the main circuit breaker. Ensure system is grounded to plant ground system.

h. 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" copper tubing for line lengths under 50 feet; and ½" copper tubing for line lengths over 50 feet. Connect line to the oil filter inlet port (3/8"). To bleed air: if gravity system, loosen the filter vent plug until there is a flow of oil from the plug.

i. Water Supply: A water supply line 3/4" NPT should be connected to the water inlet near the control box to provide a source of fresh water.

j. Drains: A suitable drain facility should be connected to the drain outlet of the tank (2" NPT).

k. The sediment tank should be connected to the main drain piping using the pipe union furnished. Install the stand pipe vent into the coupling located on the top of the sediment tank.

2-3. Theory of Operation. a. The AUC-81 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 (MIL-C-14460) to the proper operating temperature between 190 and 200 degrees F. Two thousand or more pounds can be loaded in the work basket and lowered into the solution. The cover is then placed on the tank and the impeller motors energized.

b. The impellers create high velocity, turbulent flow of the liquid 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.

c. Operating temperature for the hot alkali solution (MIL-C14460) is maintained automatically on less than 3.00 gallons of oil per hour. Various safety and regulating devices are installed to ensure safety of operation.

2-4. Operating Instructions. The following instructions are for operating the AUC-81 using a HOT ALKALI SOLUTION (MIL-C-14460):

a. Check the tank drain valve to ensure that the valve is in the CLOSED position. Sediment tank valve in the OPEN position. Check to be sure sediment drain plug and vent stand pipe are 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 Military Specification 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.

WARNING

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 2" below the overflow drain outlets.

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 degrees F. It is suggested that the control be set at 200 degrees initially. Thereafter, the temperature will be maintained at the selected temperature automatically plus or minus 10 degrees. The oil burner should begin operation a few seconds after the thermostat is moved beyond the water temperature in the tank.

g. The AUC-81 requires about 2 1/2 to 3 hours to raise the temperature of the tank liquid solution from 70 degrees ambient to 200 degrees F.

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

CAUTION

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

i. When the temperature has reached 200 degrees 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 degrees F or the selected temperature, energize the impeller motors by depressing the electric motor START buttons. The electric motors may be operated singly to obtain a certain level or direction of agitation; or operated together to obtain maximum agitation.

WARNING

THE COVER MUST REMAIN CLOSED AT ALL TIMES WHILE THE IMPELLERS ARE 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 impeller motor switches to the OFF position, raise the cover, remove the work basket allowing liquid to drain into the tank, and then remove the contents. Reload the work basket and continue in accordance with subparagraph h above.

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.

2-5. Securing Equipment. 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 2-7 FOR THESE PROCEDURES.

2-6. 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 completely 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.

2-7. Sediment Tank. The AUC-81 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. CLOSE the sediment tank valve.

b. Remove the sediment tank bottom drain plug; remove the stand pipe.

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

d. When clean out is completed, replace the bottom plug and replace the stand pipe.

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 AND ALWAYS CLEANED WHENEVER THE MAIN TANK IS DRAINED COMPLETELY.

2-8. Safety Devices.

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

WARNING

TINDER 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.

b. Safety Equipment.

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

(2) Secondary circuit breakers. Each impeller motor is protected by overload heaters. The oil burner has its own circuit breaker protection.

(3) 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 degrees F will cause the over-temp cutout switch to open and interrupt the electrical power to the oil burner causing it to cease firing.

(4) Oil burner safety controls. The oil burner is an extremely reliable equipment and has built-in safety devices conforming to the Underwriters 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 a further 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 of flame failure.

WARNING

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.

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.

CAUTION

THE FOREGOING INSTRUCTIONS COMPLETE THE INITIAL SET-UP OF THE AUC-81 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.

CAUTION

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 TROUBLESHOOTING SECTION OF THIS MANUAL.

SECTION III - MAINTENANCE, REPAIR AND TROUBLESHOOTING

3-1. General. The AUC-81 is a relatively simple machine designed for rugged, long, virtually trouble-free operation. Minimum preventative maintenance and repair is required, and troubleshooting requirements are also simple and at a minimum.

3-2. Maintenance. Little or no preventative maintenance other than oiling is necessary.

3-3. Electric Motors. All electrical motors are of the sealed bearing type and require no lubrication.

3-4. Chain Drive. The chain drive should be lubricated prior to operation with a good grade commercial chain drive lubricator, e.g., MIL-C-14460. It is suggested that the chain drive be checked for alignment of the sprockets and removal of accumulated dirt and grime from the teeth every four months.

3-5. Control Panel. Once a year the accumulated dust and dirt should be blown away from switches and other control panel components using a low pressure air source.

3-6. Oil Burner. Once a year the oil burner should be examined by a qualified oil burner repairman and the burner nozzle, diffuser, spark setting, pump operation, etc., inspected and adjusted as necessary to maintain an efficient flame pattern in accordance with the vendor's instructions.

3-7. Combustion Chamber. After three years of operation 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.

3-8. Shaft Bearing Housing. The shaft bearing housing houses the impeller shaft, with the necessary bearing races, seals and retaining rings. The shaft housing should be disassembled and the grease renewed every six to eight months of use. To inspect the bearing races and to renew the grease, follow the instructions below (see diagram in the appendices).

a. Disconnect the main power source to the degreaser and place a warning placard on the circuit panel.

b. Drain the main tank completely.

c. Using an Allen type wrench, loosen the impeller set screw and remove the impeller blade from the shaft (3/16" Allen head wrench required).

d. Loosen the electrical motor mounting bolts and slacken the drive chain. Remove the chain.

e. Using an Allen type wrench, loosen the sprocket set screw and remove the sprocket from the shaft (1/8" Allen head wrench required).

f. Remove the seal part number 14 from the housing.

g. Using a pair of snap ring pliers. compress the retainer ring part number 19 and remove. Now slip the entire shaft out (bearings will slip out on the shaft).

h. Remove seal part number 15.

i. Inspect all pieces and parts for abnormal wear.

j. Wipe and clean all pieces and parts as well as the shaft housing of old grease.

k. Replenish the bearing races with new grease.

l. Replace seal part number 15 into housing. Note: Always replace with a new seal.

m. Insert the shaft with greased bearings into housing and through seal number 15.

n. Reinstall snap retainer ring part number 19.

o. Reinstall front seal part number 14 (use new seal).

p. Using a grease gun, pump 12 to 15 pumps of grease into the cartridge (bearing housing) (see part number 44, Alemite fitting).

q. Reinstall impeller on the shaft and tighten the alien set screw securely.

r. Reinstall the sprocket part number 7 on the shaft. Do not tighten the Allen head set screw at this time.

s. Using a straight edge line up the rear sides of the shaft sprocket, part number 7, and the motor sprocket, part number 6. When aligned, tighten the Allen head set screw of the shaft sprocket securely.

t. Reinstall the chain.

u. Retighten the motor mounting bolts securely.

Recommended Lubrication or Maintenance

ITEM	PERIOD	MATERIAL OR METHOD
1. Chain Drive	4 month intervals	Clean sprocket teeth and lubricate with chain drive lubricant.
2. Control Panel	1 year interval	Blow dust & 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	Unbolt and raise tank to inspect. Clean as required.
5. Bearing Housing	6 months	See instructions, para 3-8.

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 fuel number.
	2. Liquid temperature above the 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 temperature 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 lower, fuel pump, and/or ignition transformer have failed. Test each component separately and replace as necessary in accordance with the vendor's instructions.
Motor fails to start.	Blow 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 stator.	Indicated by breaker tripping continuously. Replace motor.
	Overload tripped.	Press reset button.

Troubleshooting--Continued

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 motor.
Motor overheats and trip overloads.	Motor overloaded.	Check water level in the tank (2" below safety screen).
	Three phase motor may have one phase open, overload tripped.	Check power source depress reset button.
	Line voltage too high or too low.	Check power source.
	Worn bearings.	Replace.
	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 badly worn.	Replace chain.
	Excessive chain slack.	Take up slack.
	Material build-up in sprockets 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 sprocket are necessary.
Excessive wear on sprocket teeth.	Drive misalignment.	Realign drive.

Troubleshooting--Continued

WHAT HAPPENED	PROBABLE CAUSE	WHAT TO DO
Chain breakage.	Inadequate lubrication	Lubricate with chain drive lubricant.
	Material build-up in sprocket tooth pockets.	Clean sprocket teeth.
	Drive misalignment.	Realign sprockets.
	Badly worn sprockets.	Replace sprockets.
Chain gets stiff.	Inadequate lubrication.	Lubricate.
Non-symmetrical wear on sprockets.	Shaft not parallel or in same plane.	Check alignment.
Excessive vibration.	Broken or missing roller.	Replace chain.
Bearing housing leaks.	Seals damage.	Replace seals.
Flame fails to ignite when thermostat set at desired temperature.	Out of oil.	Check fuel supply, wait ten minutes before restarting 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. See vendor handbook.

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.

3-9. 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 MILSPEC MIL-D-45099B(WC) as pertains to preserving the inside tank walls from rust or other damage.

SECTION IV - PARTS LIST

4-1. General. This section contains a listing of replacement parts for the AUC-81 degreaser. The parts are listed alpha-numerically by part numbers and the listing includes:

a. Part number.

b. Description of part.

c. Quantity required.

4-2. Ordering Information. To order replacement parts specify the following information for each part:

a. Part number.

b. Description.

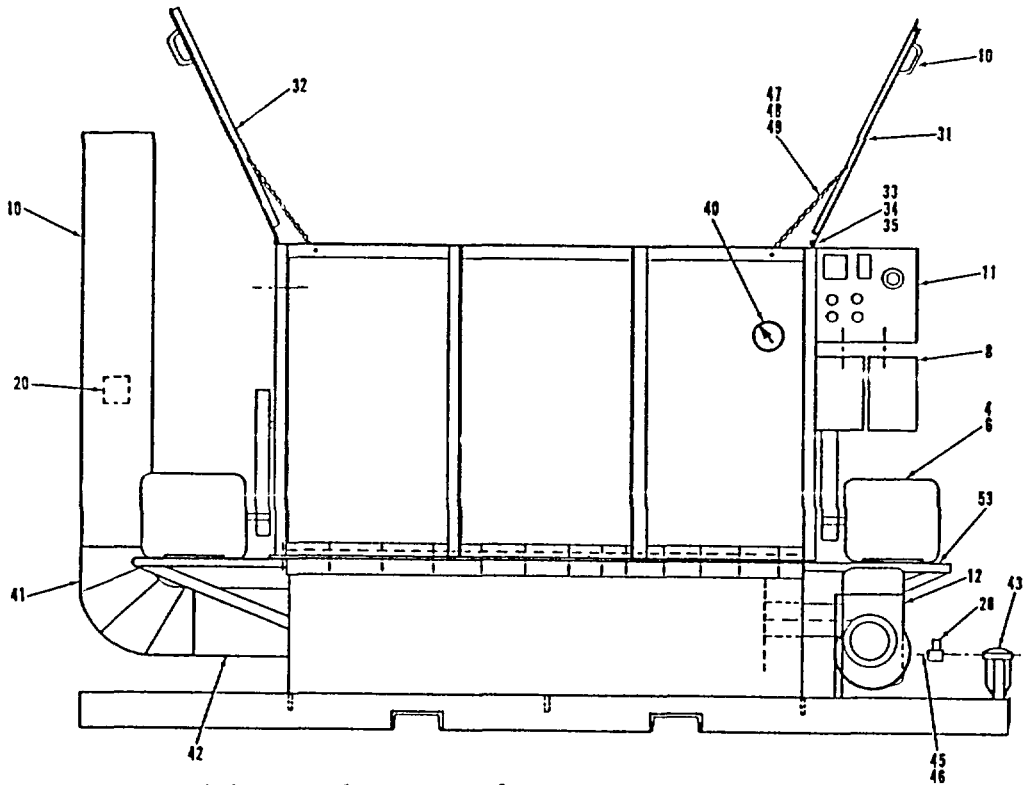


Figure 1 - AUC-81, Front Elevation

Part Number	Description	Qty	Part Number	Description	Qty
4	Motor, 5HP, 230/460V 60HZ, 3Ph, 1,800 RPM, 3N264	2	34	Screw, 10/32	8
			35	Nut, 10/32	8
6	Sprocket No. 40 Chain, 1-1/8" bore, 40B14	2	*38	Wiring Assembly, 100549	1
			40	3 1/2" Dial, 50-300 Deg., F., 4" Stem, Figure 100	1
8	Motor Starter, Size 1 with 14A O.L. HTR, Class 8536	2	41	Elbow, 8" Dia., 8" Double Wall, Gas Vent	1
10	Exhaust Stack 8" Stack Double Wall 8" Double Wall, Gas	1	42	Exhaust Stack Ext.,	1
11	Control Panel, 3/8" Tube, Brass	1	43	Union 3/8" Pipe to	2
12	Oil Burner, Complete 3.0 GPH, LC-134	1	45	3/8" Copper Tubing	4'
			46	Union 1/4" Pipe to 3/8" Tube, Brass	2
20	Safety Control (Stack Switch) 2E299	1			
*24	ASBESTOS Tape, 2" wide 20'		47	Nut, 10/32	4
*25	Impeller Guard, 100547-1	2	48	Screw, 10/32	4
			49	Chain, Cover Stop 20" Long	2
28	Solenoid Valve 3/8", 115V, 60HZ, 8262B208	1			
31	Cover, R.H., 100552-1	1	53	Motor Supports, 10053-4	1
32	Cover, L.H., 100552-2	1	*54	Platform Step, 100553-1	1
32	Cover, L.H., 100552-2	1			
33	Hinge, 3" Heavy Duty	4		*Not Shown	

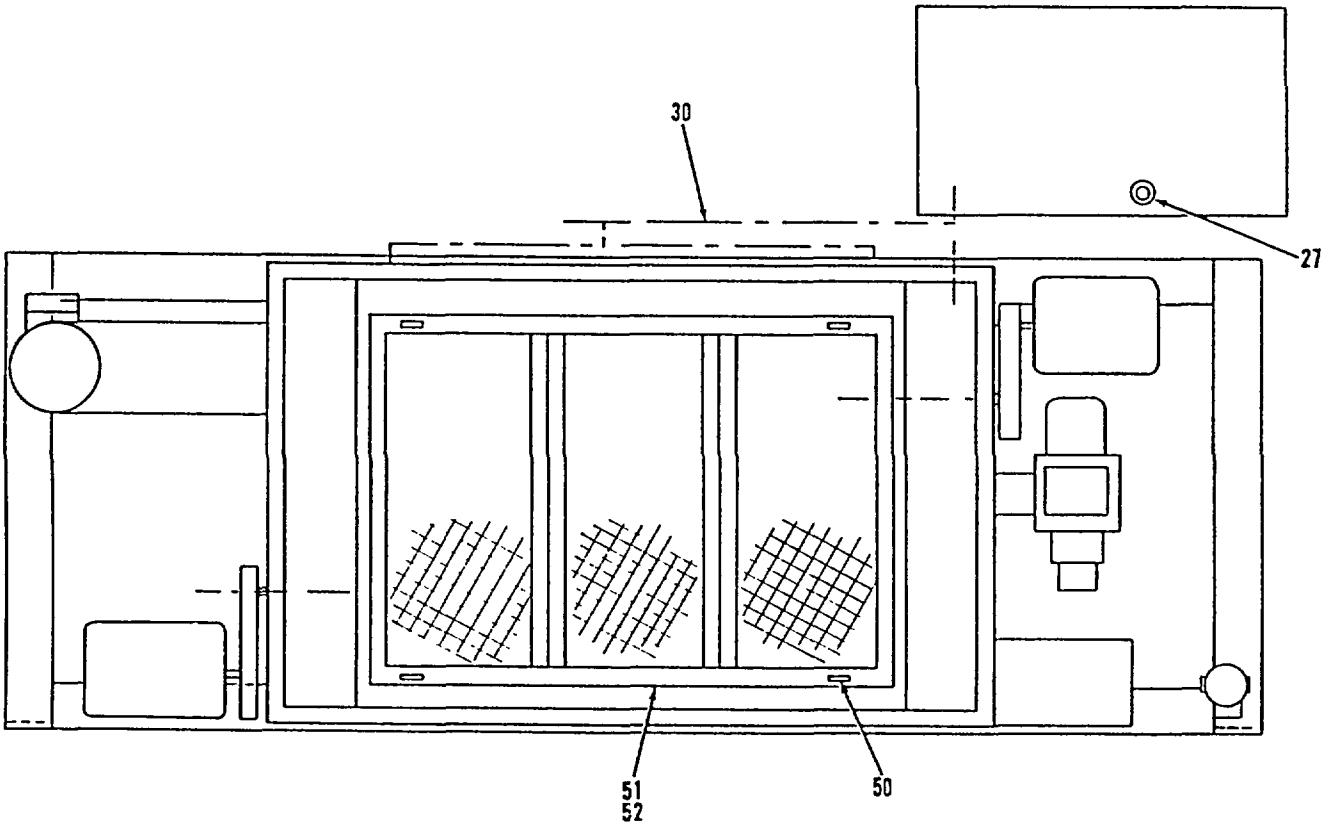


Figure 2 - AUC-81. Top View

Part Number	Description	Qty	Part Number	Description	Qty
27	Schedule 40 Pipe, 1"	4'	51	Basket, 100553-2	1
30	Piping Assembly, 100546	1	52	Rack, 100553-3	1
			*54	Platform, 100553-1	1
*38	Wiring Assembly, 100549	1			
50	Lifting Eye, 3/8" bolt, 8890Y14	4			

*Not Shown

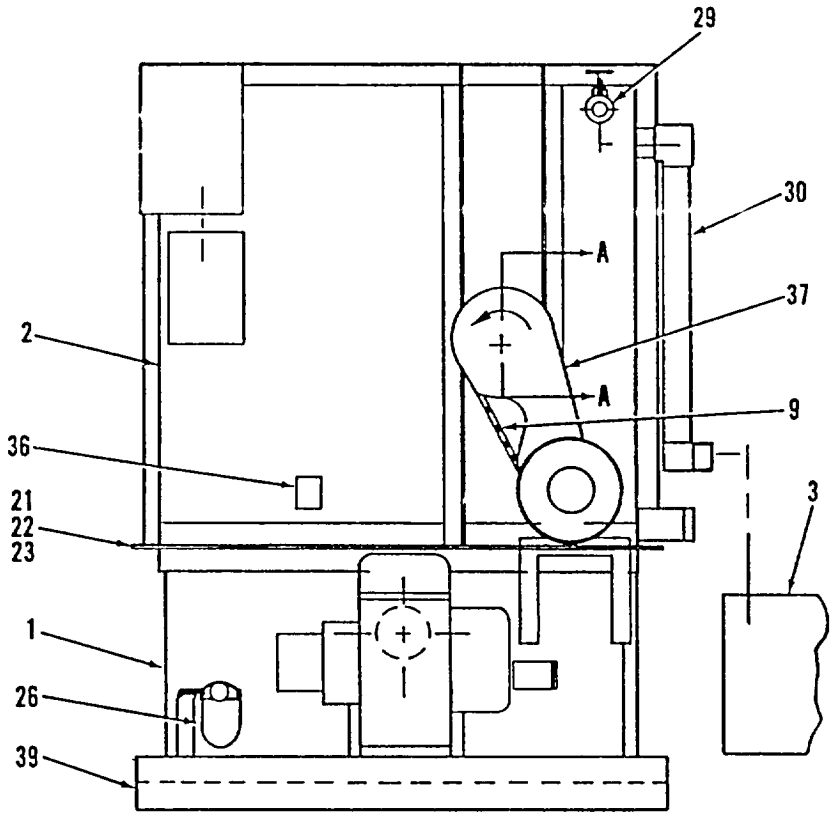


Figure 3 - AUC-81, Right End View

Part Number	Description	Qty	Part Number	Description	Qty
1	Fire Box, 100548	1	26	Oil Filter, 1A-25A	1
2	Boil Tank, 100547	1	29	3/4" Gate Valve, Brass Water Inlet	1
3	Sediment Tank, 100551	1	30	Piping Assembly, 100546	1
9	No. 40 Chain, 1/2" pitch 8'		36	Overtemp Switch Calstat, 1E2B2	1
21	Bolt Hex Hd, 3/8-16xl	32	37	Chain Guard, 100553-5	2
22	Lockwasher, Split type, 3/8"	32	*38	Wiring Assembly, 100549	1
23	Nut, Hex, 3/8"	32	39	Skid Assembly, 100544	1
*24	ASBESTOS TAPE, 2" wide 20'				
*25	Impeller Guard, 100547-1	2			

*Not Shown

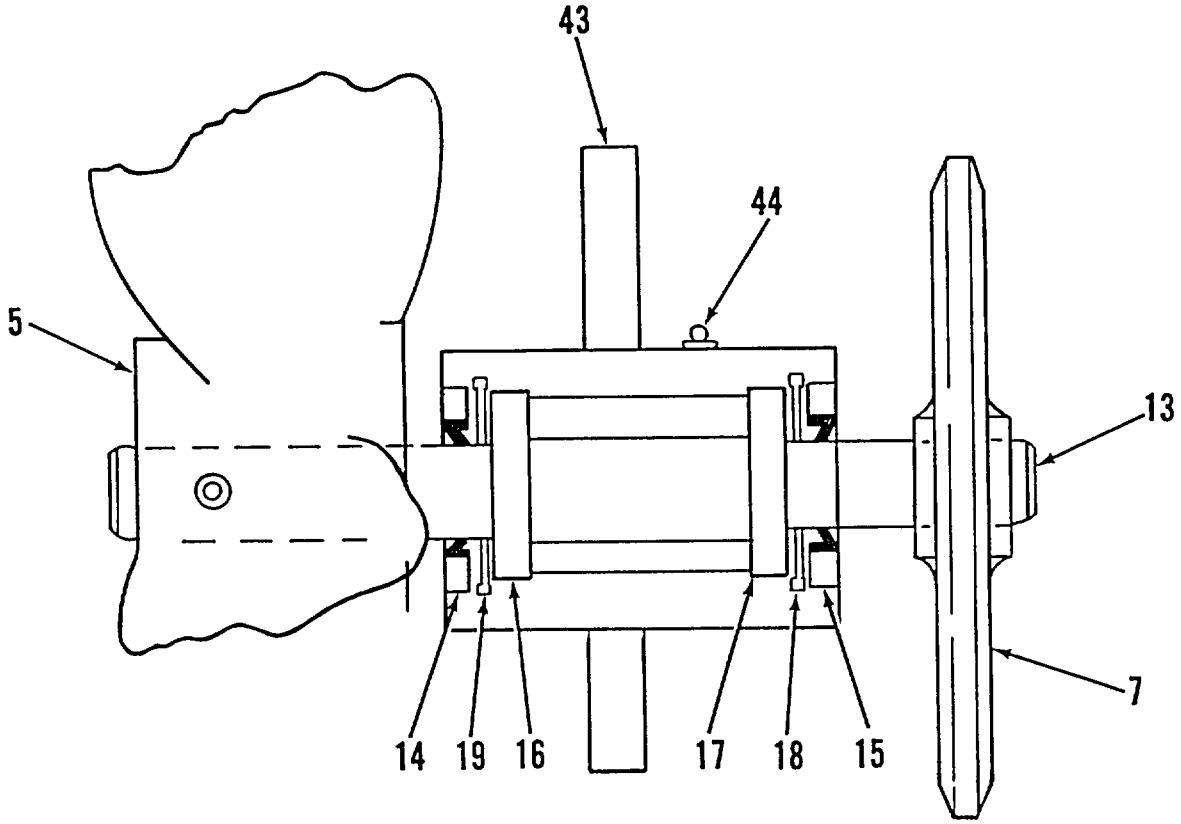
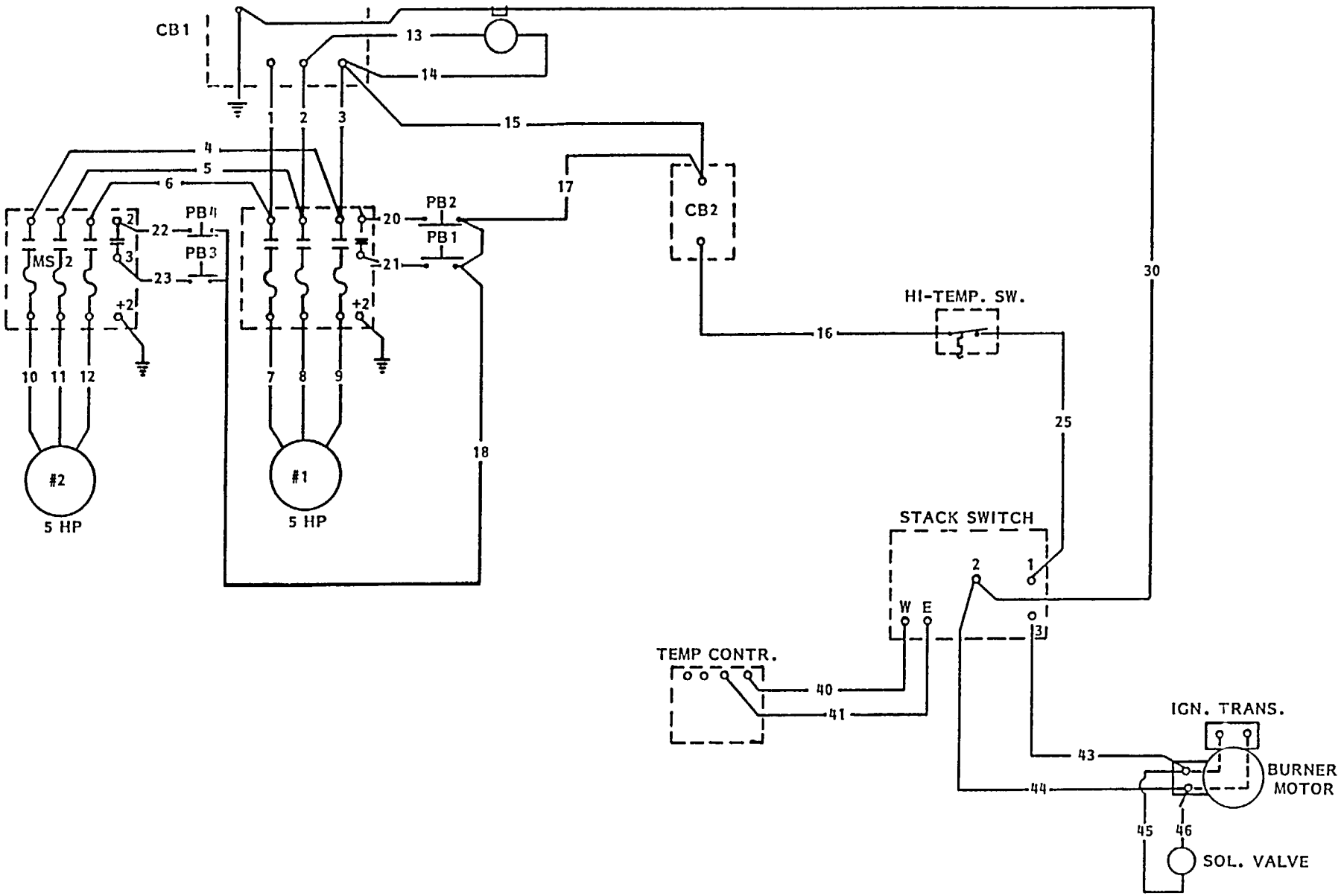


Figure 4 - AUC-81, Bearing Housing Assembly

Part Number	Description	Qty	Part Number	Description	Qty
5	10 x 10 Propeller 1" Bore, 1/8" x 1/4" Keyway Stainless Steel	2	16	Bearing, SK10	2
			17	Bearing, R-14	2
			18	Retaining Ring, N5000-187	2
7	Sprocket No. 40 Chain, 7/8" Bore, 40B25	2			
			19	Retaining Ring, N5000-200	2
13	Shaft, 100460	2			
			43	Union 3/8" Pipe to 3/8" Tube, Brass	2
14	Seal, 10158	2			
15	Seal, 8870	2	44	1/8" NPT Grease Fitting	2

*Not Shown


CB1
13
14
15
1
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3
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17
CB2
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PB2
PB1
PB4
PB3
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22
23
MS
2
3
+2
+2
HI-TEMP. SW.
16
25
10
11
12
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18
#2
5 HP
#1
5 HP
STACK SWITCH
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BURNER
MOTOR
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1 Meter = 100 Centimeters = 1000 Millimeters = 39.37 Inches
1 Kilometer = 1000 Meters = 0.621 Miles

SQUARE MEASURE

1 Sq Centimeter = 100 Sq. Millimeters = 0.155 Sq Inches
1 Sq. Meter = 10,000 Sq Centimeters = 10.76 Sq Feet
1 Sq Kilometer = 1,000,000 Sq Meters = 0.386 Sq Miles

WEIGHTS

1 Gram = 0 001 Kilograms = 1000 Milligrams = 0.035 Ounces
1 Kilogram = 1000 Grams = 2.2 Lb
1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons

CUBIC MEASURE

1 Cu Centimeter = 1000 Cu Millimeters = 0 06 Cu Inches
1 Cu Meter= 1,000,000 Cu Centimeters = 35 31 Cu. Feet

LIQUID MEASURE

1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces
1 Liter = 1000 Milliliters = 33.82 Fluid Ounces

TEMPERATURE

5/9 (°F - 32) = °C
212° Fahrenheit is equivalent to 100° Celsius
90° Fahrenheit is equivalent to 32 2° Celsius
32° Fahrenheit is equivalent to 0° Celsius
9/5 °C + 32 = °F

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid	Ounces Milliliters	29.573
Pints	Liters	0.473
Quarts	Liters	0.946
Quarts.	Liters	0.946
Gallons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.45
Short Tons	Metric Tons	0.0907
Pound-Feet	Newton-Meters	1.356
Pounds per Square	Inch Kilopascals	6.895
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

TO CHANGE	TO	MULTIPLY BY
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0 155
Square Meters	Square Feet .	10.764
Square Meters	Square Yards	1.195
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters Fluid	Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
Liters	Gallons	0.264
Grams	Ounces	0.035
Kilograms	Pounds	2 205
Metric Tons	Short Tons	1.102
Newton-Meters	Pound-Feet	0.738
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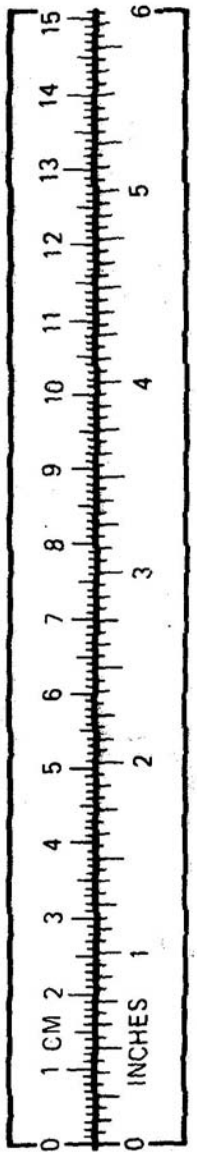
Kilometers per Hour	Miles per Hour	0.621



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