



DOLPHIN

BY NATIONAL RV, INC.

OWNERS OPERATION & MAINTENANCE MANUAL



MODEL
32D
34D

TURBO DIESEL

MODEL
632
634

DELIVERY, WARRANTY & SERVICE INFORMATION

TAKING DELIVERY

You have made a sizable investment in the purchase of your motor home and are entitled to all the benefits and services contained in the warranty for your R.V. and separately warranted products. With your help, we intend to see that you fully receive those benefits and service. It is important that you become familiar with the proper procedures for obtaining service and parts, in and out of warranty. Your dealer is instructed to provide you with orientation in these matters at time of delivery as a supplement to these instructions.

Your R.V. is a product which has undergone a series of rigid inspections by highly qualified factory personnel throughout the manufacturing process. Our final factory check by quality control inspectors before shipment to the dealer is not the last one before you take delivery. Your dealer has been advised to perform additional pre-delivery inspections and system checks, to condition and service your R.V., and assist you in understanding and completing warranty forms.

LIST OF ITEMS FURNISHED LOOSE

1. Owner's manual
2. Warranties for R.V. and separately warranted products
3. Operational and installation manuals, descriptive literature and parts list (where applicable for separately warranted products)
4. Fire Extinguisher
5. Spare tire
6. 3 x 3 drain hose adapter and 20' hose
7. Two sets of keys

CUSTOMER RELATIONS

We are particularly interested in maintaining the best of customer relations. Only by having your complete confidence and satisfaction with our product and its service can we assure our continued success as manufacturers of vehicles. We have found that continuing a pleasant and effective relationship through our dealers is equally as important as maintaining the technical excellence of our product. Your authorized dealer and our service department will cordially assist you in providing service, maintenance, selection of options, and instructions concerning the operation of your vehicle.

Most problems arise from misunderstandings concerning warranty and service. These problems can usually be solved at the dealer level. If your problems persist, we invite you to contact our factory service department. We will make every effort possible to take actions that meet with your approval. Please understand that in most instances we will eventually refer you back to the local dealer with our recommendations for servicing. In all your contacts with our factory, always refer to your vehicle model number, year, serial number and date of purchase.

Thank you for your cooperation.

National R.V.Inc.
3411 North Perris Boulevard
Perris, California 92571
(909) 943-7007 FAX (909) 043-5204

DEALER RESPONSIBILITIES

1. Provide the customer with an adequate orientation in the general operation of the R.V. use of its containment systems and components, and safety considerations concerning the use of those systems.
2. Insure that the customer receives a complete **Important Papers packet** containing warranty cards and various registrations for the R.V. and separately warranted products.
3. Carefully review all warranty entitlements with the customer, pointing out the importance of mailing warranty cards and various registrations to manufacturers within thirty (30) days of taking delivery. Assist the customer in properly completing the forms if he desires. Request that the customer read all warranty information at his earliest convenience and contact the dealer to clear up any provisions which are not understood.
4. Perform pre-delivery inspections as prescribed and provide the customer with a copy of the complete pre-delivery check list and optional equipment check-out form.
5. Inform the customer concerning insurance considerations for his protection.
6. Instruct the customer on how to obtain local and out-of-area service on the R.V. and its separately warranted products during and after warranty periods.

WARRANTY INFORMATION

Basic warranty coverage: 1 year or 18,000 miles from date of retail sale. There are limitations and exclusions to this warranty. They are as follows:

Fiberglass: Covered - 1 year or 18,000 (delaminations, stress cracks); Not Covered - Damage due to collision, misuse, discoloration.

Furniture: Covered - 1 year or 18,000 (mechanism, frames, zippers, abnormal fading, separation of sewed seams); Not Covered - Rips, tears, cuts, stains, fading due to direct sunlight for long periods of time, misuse.

Cabinets, Tables and Counter Tops: Covered - 1 year or 18,000 (splits, delamination, defects in handles, sliding mechanisms, drawer guides or door props); Not Covered: Chips, scratches, tears, water damage, misuse of drawers, slides or props, forced breakage.

Shower Stalls: Bath sinks covered, 1 year or 18,000 (cracks, discoloration, sealant); Not Covered - misuse, damage due to harmful cleaners or dropped objects (breakage).

Headliners: Dash, plastic trim in cockpit area covered, 1 year or 18,000 (cracks, discoloration); Not Covered - Misuse, damage due to harmful cleaners

THIS WARRANTY DOES NOT COVER

Damage from neglect, accidents, misuse or failure to follow service and operating instructions, lack of proper maintenance, normal wear and tear, unauthorized repairs, or unauthorized modifications, or overloading or normal deterioration of trim, plastics or rubber materials that results from use and exposure to the elements. We do not assume responsibility for loss of vehicle, loss of time, inconvenience or expense due to equipment failure. Normal maintenance and service; such as tires, wheel balancing, wheel alignment etc.

Wheel alignments- Your motor home has been aligned by our *state of the art* alignment equipment. A copy of the setting at the time of shipment from our factory is enclosed in your owners packet. **No further alignments or adjustments are covered by National R.V. Inc.**

Warranty Authorization

If it is necessary to have warranty work performed on your motorhome by an agency other than the factory or the selling dealer, prior authorization from the factory will eliminate misunderstandings and will expedite payment.

Defects in items subject to severe wearing in the camping environment such as carpets, cushions, interior trims and paint, bumpers, etc. should be reported within thirty (30) days from date of purchase, so that they may be properly repaired and not excluded as normal wear and tear.

SEPARATELY WARRANTED PRODUCTS

1. National R.V. makes every effort to select high quality equipment from reputable manufactures; however, National R.V. assumes no responsibility or liability for defects in the workmanship or operation of separately warranted products. These products are usually backed by a nationwide factory authorized service system. Use of other than factory authorized service agencies may void your warranty for their product. Some R.V. dealers, at the time of need, may not be authorized service centers for certain separately warranted products, so we advise you to check with the dealer first to reduce delays. If the dealer is not an authorized service center for the product in question, he will assist you in obtaining authorized services.
2. These products include, but not limited to, Refrigerator, L.P. oven, microwave, television sets, VCR, furnace, stereos, awning and hydraulic jacks. Not all these products may pertain to your particular coach.

Copies of individual products warranties and lists of factory authorized service centers have been included in your **Important Papers Packet**.

It must be understood that in order to obtain repairs or replacement of these items, the individual manufacturer's warranty cards must be submitted within thirty (30) days of date of purchase. If service or parts are required for these products, refer to the furnished list of factory authorized service centers. If the list is not available for the particular product, write or call the manufacturer concerned to obtain the location of the nearest authorized service center.

IMPORTANT CHASSIS WARRANTY:

The manufacturer of the chassis and its related parts is responsible for the warranty repair of that portion of the vehicle. Certain additions and modifications to the chassis by National R.V. Inc. is the responsibility of National R.V. Inc. Any additions or modifications to the chassis by the consumer may effect the warranty offered by the chassis manufacturer or National R.V. Inc. Any questions concerning the additions or modifications covered by the warranty offered by National R.V. Inc. should be directed to:

**National R.V. Inc.
Customer Assistance
3411 N. Perris Blvd
Perris, CA 92571
(909)943-6007**

SPECIAL WARRANTY PROCEDURES

Special warranty procedures are used for certain electronic components installed in your motorhome. These items include; televisions, stereo systems, microwaves, coffee makers, back-up monitor systems, video cassette recorders. It is very important that you follow the procedures outlined in the appropriate manuals as to warranty coverage and service procedures. Chassis cab components are not covered under National R.V. Inc. warranty. National R.V. Inc. does not authorize any of its selling dealers or repair centers to perform or authorize any repairs to the chassis.

National R.V. Inc. does not give an expressed or implied warranty to the chassis. Any chassis warranty repairs or authorization for repairs must be approved by the manufacturer of the chassis. Please read and follow the chassis manufacturers guidelines as to warranty procedures, scheduled maintenance and any limitations that might apply.

HOW TO OBTAIN WARRANTY SERVICE

Contact your local dealer during normal business hours for any warranty service. If you are traveling or have moved from the area of purchase, or are having difficulties in obtaining warranty service, call National R.V. and we will arrange for repairs under our warranty policy to be made at an appropriate vehicle service center.

Please keep all operator's and owner's manuals, service centers lists, warranty stubs, parts lists and other related documents in the R.V. for handy reference. All records for maintenance and service should be kept current and filled for ready access.

HOW TO OBTAIN PARTS

Contact your selling dealer for parts assistance. If your dealer is unable to provide the parts contact National R.V. Inc. at (909)943-6007.

COACH SYSTEM INFORMATION

If you have any problems concerning warranty, please contact National R.V. Warranty Department immediately.

Our service personnel are here to assist you and your dealer to make sure you enjoy your motorhome. National R.V. encourages our motorhome owners to use our service experts.

INSURANCE

As with your automobile, it is important that you protect yourself and others with insurance coverage's for personal liability, theft, collision, property damage, etc. Your dealer and/or auto insurance agent will assist you in obtaining appropriate insurance for your protection.

There are numerous reliable insurance companies that specialize in providing insurance for recreational vehicles. Many times adequate recreational vehicle insurance may also be obtained as a rider to your automobile policy at considerable savings. Do not put off insuring yourself for R.V. coverage.

OPERATING INSTRUCTIONS

Normal Starting Procedure (above 0 C (32 F))

When starting a cold engine, increase the engine speed (RPM) slowly to make sure adequate lubrication is available to the bearings.

Caution: Do not idle the engine for excessively long periods. Long periods of idling (more than 10 minutes) can damage an engine because combustion chamber temperatures drop so low the fuel will not burn completely. This will cause carbon to clog the injector spray holes and piston rings, and can cause the valve to stick. If the engine coolant temperature becomes too low (60 C (140 F), raw fuel will wash the lubricating oil off the cylinder walls and dilute the crankcase oil; therefore, all moving parts of the engine will not receive the correct amount of lubrication.

Idle the engine 3 to 5 minutes at approximately 1,000 RPM before operating with a load. **Caution:** When using jumper cables to start the engine, make sure to connect the cables in parallel: positive (+) to positive (+) and negative (-) to negative (-). When using an external electrical source to start the engine, turn the disconnect switch to the "OFF" position. Remove the key before attaching the jumper cables to prevent unintentional starter engagement.

OPERATING THE ENGINE

Do **not** operate the engine at full throttle below peak torque engine speed (RPM) for extended periods (more than 1 minute) of time.

Caution: Never idle engine in closed areas. Never sit in a parked or stopped vehicle for any extended amount of time with the engine running. Exhaust gases, particularly carbon monoxide, may build up. These gases are harmful and potentially lethal.

Allow the engine to idle 3 to 5 minutes before shutting it off after a full load operation.

Monitor the oil pressure and coolant temperature gauges frequently. Refer to Lubricating Oil System or Cooling System for recommended operating pressures and temperatures. Shut off the engine if any pressure or temperature does not meet the specifications.

Caution: Continuous operation with low coolant temperature (below 60 C [140 F]) or high coolant temperature (above 100 C [212 F]) can damage the engine.

If an overheating condition starts to occur reduce the power output of the engine by releasing the throttle pressure or shifting the transmission to a lower gear, or both, until the temperature returns to normal operating range. If engine temperature does not return to normal, shut off the engine and refer to Troubleshooting or contact a Cummins Authorized Repair Location.

Most failures give an early warning. Look and listen for changes in performance, sound, or engine appearance that can indicate service or engine repair is needed. Some changes to look for are as follows:

Engine misfires

Vibration

Unusual engine noises

Fuel, oil or coolant leaks

Sudden changes in engine operating temperature or oil pressure

Excessive smoke

Loss of power

An increase in oil consumption

An increase in fuel consumption

ENGINE SHUT-DOWN

Allow the engine to idle 3 to 5 minutes after a full load operating before shutting it off. This allows the engine to cool gradually and uniformly.

Turn the ignition key switch to the OFF position.

FUEL-WATER SEPARATOR

Draining

Drain the water and sediment from the separator daily.

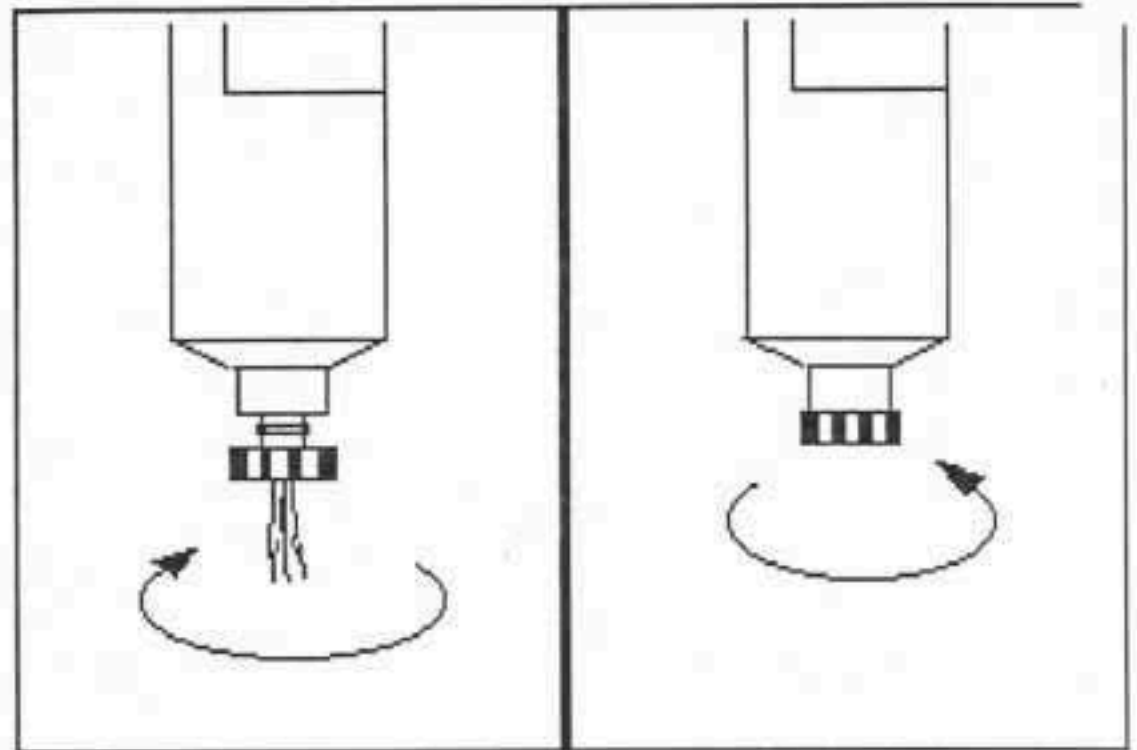
Shut off the engine. Use your hand to open the drain valve. Turn the valve **counterclockwise** approximately 1 1/2

to 2 turns until draining occurs. Drain the filter sump of water until clear fuel is visible.

Caution: Do not overtighten the valve.

Overtightening can damage the threads.

Turn the valve **clockwise** to close the drain valve.



AIR CLEANER RESTRICTION

Check

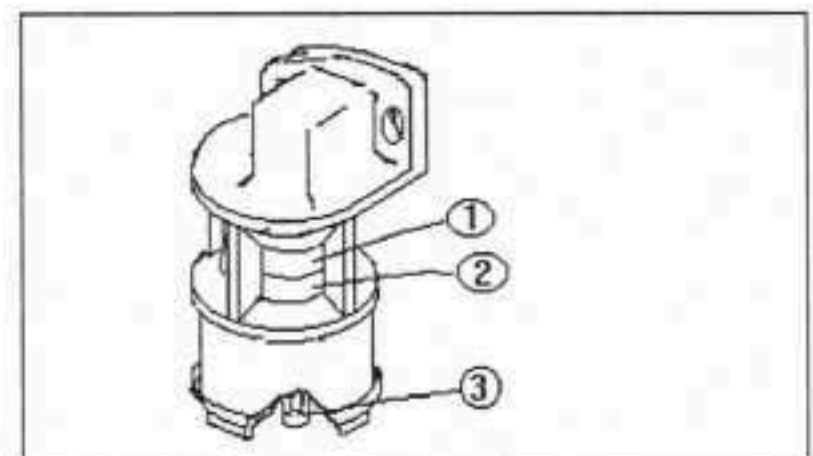
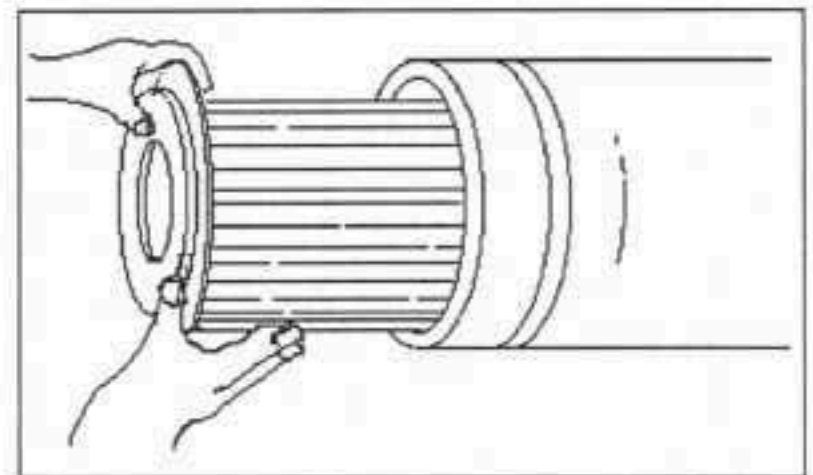
Maximum intake air restriction is 635 mm [25.0 in.] of water for turbocharger engine. Naturally aspirated engines have a maximum restriction of 510mm [20.0 in.] of water.

Turbocharger engines must be operated at rated RPM and full load to check maximum intake air restriction. Replace the air cleaner element when the restriction reaches the maximum allowable limit or clean according to the manufacturer's recommendations.

NOTE: Follow the manufacturer's instructions when cleaning or replacing the air cleaner element.

Check the air cleaner service indicator, if equipped. Change the filter element when the red indicator flag (2) is at the raised position in the window (1). After the air cleaner has been serviced, push the button (3) to reset the service indicator.

NOTE: Never operate the engine without an air cleaner. Intake air must be filtered to prevent dirt and debris from entering the engine and causing premature wear.



FRESH WATER SYSTEM

Fresh water in your motorhome is supplied either through the on-board water tank system or directly from an outside water connection.

Motor homes equipped with water filter systems are shipped from the factory in a winterized mode.(cartridge not installed) To install or replace the cartridge please see the enclosed owner's service guide.

FILLING YOUR FRESH WATER TANK

Fill your water only with fresh potable water. Wash down the area around the fill before removing the cap. When water spills out from the water vent the tank is filled.

ON-BOARD WATER SYSTEM OPERATION

After the water tank has been filled, water to all the plumbing fixtures is fed by an electric water pump. Once the water pump switch at the monitor panel is turned on and air purged from the system, the water pump is totally automatic and self-priming, operating on demand when any fixture is turned on.

When the pump is first turned on upon delivery or after the system has been drained, purge all air from the pipe lines and water heater by turning on all plumbing fixtures. Be sure to purge system of trapped air before lighting the water heater.

CAUTION

Hydrogen gas may result if you have not used the water heater for two weeks or more. Hydrogen gas is extremely flammable. To reduce the risk of injury under these conditions open the hot water faucet for several minutes at the kitchen sink. If hydrogen gas is present you probably will hear an unusual sound like air escaping through the pipe as the water begins to flow.

Do not smoke or have any open flame near the open faucet.

After the system has been purged, turn off all fixtures. The water pump should automatically switch off when fixtures are turned off. If the pump switches on and off when you are not using any water, inspect your water system for leaks.

Turn switch off when the system is not in use or the vehicle is unattended. Do not permit the pump to operate when the water tank is empty or when the motor home is not in use, damage to the water pump can occur.

SANITIZING THE ON-BOARD WATER STORAGE

Sanitizing the on-board water storage system upon first delivery, after long periods of non-use and after any suspected contamination. There are various commercial solutions approved for R.V. use available to assist you in sanitizing the system.

One sanitizing procedure is as follows:

1. Prepare a chlorine solution using one gallon of water with 1/4 cup of household bleach (5% sodium hydrochloric solution). With tank empty, pour one gallon of solution into tank for each 15 gallons of capacity.
2. Complete filling the tank with fresh water. Open faucets to release air. Pressurize system with pump until water flows. Turn off pump.
3. Allow to stand for three (3) hours.
4. Drain the entire system including the water heater. See instructions on "Water Drains".

5. Flush the entire system with fresh water and drain. All plumbing lines and the water heater may be flushed through the outside water connection.
6. To remove excessive chlorine taste or odor which may remain, prepare a solution of one quart vinegar to five gallons of water and allow solution to agitate in the tank by vehicle motion (several days, if possible).
7. Drain tank and again flush with potable fresh water.

CITY WATER SUPPLY

Connect a flexible hose with 3/4" fitting to the city water service and the R.V. water inlet fitting. Turn on the city water and you will receive pressure to the vehicle's water system. The on board water pump should be turned off when connected to the city water service.

The flexible hose used to bring water to your on board water system or to fill your fresh water should be drinking water safe and made with F.D.A. approved material.

CAUTION

Excessive pressure from water supply systems may be encountered in some parks especially in mountain regions. Damage to the plumbing system can occur. Water pressure regulators are available to protect your system against high pressure. The recommended operating pressure is **35 P.S.I.**

WATER DRAINS

Water system drains are located at or below the floor of the motor home so that water lines may be drained of water for sanitizing, or winterizing. Some models use the outside shower faucets as the system drain. The water heater has a separate drain built in (see Manufacturer's instructions). When it becomes necessary to drain the system, the following instructions are recommended:

1. Level your motor home.
2. Make certain that the LP Gas system has been turned off.
3. Turn on all faucets inside the motor home.
4. Open the low point drains for the hot and cold water lines.
5. Open the drain for the water tank found near the tank or on the outside of the motor home. Be sure the vent for the water tank is clear so the system is properly vented for faster draining.
6. After the system has completely drained, check all interior fixtures including the toilet flush valve for trapped water. Turn on the water pump for a few seconds to clear the pump of water.
7. Turn off all drain valves and plumbing fixtures when the system is completely drained.

NOTE: For winterization see chapter on winterization.

PHYSICAL PROTECTION OF INTERIOR WATER LINES

Be careful not to store heavy items such as canned foods, tools, etc. in areas where they may come in contact with water piping and cause damage due to road and shifting of the load.

WASTE DRAINAGE SYSTEM

Your waste drainage system is designed to provide adequate safe storage and disposal for liquid waste. Two waste tanks are provided. The solid or black tank, located directly beneath the toilet, holds the toilet waste. The liquid or gray tank holds waste from your sink, lavatory* and shower.

Waste holding tanks should be dumped at a waste disposal station or sanitary sewer connection.

All dumps or termination valves should be closed and the sewer drain cap securely in place when the vehicle is in motion.

*Some models have the lavatory drain into the black waste tank.

DUMPING PROCEDURE

To drain the holding tanks, the following procedures are suggested:

1. Be certain that both termination valves are closed.
2. Remove the sewer drain cap.
3. Securely attach sewer adapter and drain outlet. Be certain the hose is securely attached to the adapter.
4. Insert hose outlet into sewer inlet.
5. Open the solid waste termination valve in a slow continuous motion. A sudden jerk could cause the liquid to gush through and pull the hose out of the disposal inlet.
6. Close the solid waste termination valve after draining.
7. Open the gray water tank termination valve. After dumping, follow up with a fresh water rinse. Add several gallons through sink and toilet. Open valves to drain as above to complete the dumping procedure.
8. Close both termination valves.
9. Remove drain hose, clean and stow.
10. Replace sewer drain cap.
11. When staying in a park with on-site sewer connections, do not leave the valve on the solid waste holding tank open. Dump the tank as necessary.

CLEANING HOLDING TANKS

There are many waste tank chemicals on the market. These chemicals assist in breaking down the solids and have components that mask waste odors.

Unwanted solids can build-up in waste tanks due to using too little water and not flushing the tank out properly after each use. If you wish to dump a partially full tank, it is better to fill the remaining space with water first, to provide the volume necessary to complete flushing.

DISPOSAL STATIONS

The dumping of raw sewage from toilet waste into other than regular facilities or sewer system is universally prohibited.

Most government and privately-owned parks have either a central dump facility or offer on campsite hook-ups for sewage. By referring to various camping publications you will find lists

of many dump facilities throughout the U.S. Some major oil companies offer dump facilities at selected service stations (get their dump station list). Plan ahead and you will have very little inconvenience in proper disposal of wastes.

LIQUEFIED PETROLEUM GAS SYSTEM (LPG)

Your motor home is equipped with a LP-Gas system to provide energy for comfort heating, cooking, hot water and refrigeration. LP Gas is a colorless highly flammable fuel. Butane and Propane are the two most common types of LP Gas. Both work equally well in your R.V.

Butane can only be used in warmer climates since Butane will not vaporize in temperatures 30 degrees Fahrenheit and below. Propane can be used in colder areas as propane will vaporize down to minus 44 degrees Fahrenheit. Each gallon of liquid LP Gas contains about 92,000 BTU's of energy.

To determine how long a gallon of LP Gas will last, total up the BTU inputs from all your LP Gas appliances being used. This information is found on the appliance name plate. The total inputs divided into 92,000 will tell you how many hours a gallon of LP Gas will last. Allowances must be made for the actual time various appliances will be used. Diesel powered motor homes may be equipped with LP Gas powered auxiliary generator sets which must also be taken into consideration when calculating fuel consumption.

LP GAS TANKS

Under floor mounted LP Gas tanks are built to the American Society of Mechanical Engineers (ASME) standards for pressure vessels. All valves, gauges, hoses and fittings are inspected, tested and listed by a nationally recognized listing agency. The tank, valves and gauges are located outside your motor home below the floor.

FILLING UP THE TANK

Before filling your LP Gas tank, turn off all pilot lights and close the main tank valve. Filling should be done by an authorized LP Gas dealer.

A safety relief valve found on all tanks will discharge liquid LP Gas if the pressure in the tank exceeds safe limits. **Keep all open flames and cigarettes away from this area.** As the outside temperature rises, the liquid LP Gas expands increasing tank pressure which could cause LP Gas to discharge through the safety relief valve.

When LP Gas tanks are filled to the proper level, a safe expansion space remains for the LP Gas. This assures LP vapor gas withdrawal through the gas piping system. **Over-filled tanks are unsafe and can cause damage to the LPG regulator.**

CHECKING FOR LEAKS

Upon delivery and periodically thereafter check your gas system for possible leaks. Although the entire distribution system and its attached appliances have undergone extensive factory testing for leaks, connections and fittings can develop leaks due to road vibrations. Usually you can detect these leaks by their strong garlic-like odor. If you do encounter this odor turn off all open flames immediately and commence a systematic search for leaks throughout the gas

system. Use a bubble solution or soapy water. NEVER USE A MATCH. Use two wrenches on connections and fittings with opposing torque to prevent twisting of copper tubing. If the leak does not show up in the manifold or copper tubing distribution system, then check the appliances.

If at this time the odor still persists turn off the main valve at the LP Gas tank and all appliance pilots. Check with your LP Gas dealer or your authorized National R.V. dealer for professional help.

A LP Gas detector has been installed in your motor home to aid in the detection of LP Gas. For your safety, please read and follow the operating instructions.

WARNING: Do not use a detergent containing ammonia or chlorine when testing gas lines for leaks, as they may cause a chemical reaction causing corrosion to the gas lines, resulting in dangerous leaks. Never use an open flame to test for gas leaks,. Use a mild soapy water for testing lines.

START-UP OPERATION OF LPG APPLIANCES

Check to be sure all appliances control valves are in the off position. Familiarize yourself with the operation of each gas-fired appliance by reading the instruction manuals provided. When all appliances are turned off, including their pilots, the LP Gas system is ready to use. Turn the main valve to full open to supply gas to all appliances. Each appliance can now be lit. For initial lighting of the LP Gas appliances, air in the lines must first be purged before any gas will flow through the burners. Hold a flame near the range burner while the air is being purged. After a few seconds all the air will have cleared and gas will ignite and burn. The other appliances can now be lit following the operational instructions found on each appliance.

If your vehicle is equipped with a Range Top and/or Oven Pilot: The pilot light in the range top will be equipped with a valve that can be turned on when the vehicle is going to be in use at one location for a period of time. This valve should be turned off unless the pilot is lit.

SAFETY IN USING LP GAS

You should check for leaks at the connections on the LP-Gas system soon after the initial filling of the LP-Gas tank. **Even though the manufacturer and the dealer have already made test for leakage, periodic checks are advisable because of vibration that occurs during travel.** Your vehicle was manufactured to provide you with full access to all gas line connections. Leaks can be found easily with a soapy water solution applied to the outside of the gas piping connections. If bubbles form, a leak exists. Shut off the main gas valve at the LP Gas tank if a leak is detected. LP Gas is heavier than air. Leaking gas tends to flow to low places, same as water. Never light a match or allow any open flame if leaking gas is suspected.

WARNING:

Do not use a detergent containing **ammonia** or **chlorine** when testing gas lines for leaks, as they may cause a chemical reaction causing corrosion to the gas lines, resulting in dangerous leaks. Use a mild soapy water solution for testing connections. Be sure to shut off the main LP Gas supply valve when the vehicle is not in use.

This gas piping system is designed for use of Liquefied Petroleum Gas only. DO NOT CONNECT NATURAL GAS TO THIS SYSTEM.

WARNING: All pilots and appliances must be turned off during refueling of motor fuels tanks and/or LP Gas containers. ASME Tanks mounted beneath the floor are equipped with an automatic stop fill device for your protection. Instructions on the tank tell LP Gas dealer how to fill the tank.

ELECTRICAL SYSTEM

Your motor home is equipped with (3) basic electrical power systems to meet your R.V. electrical needs.

1. A 12-volt DC automotive system; battery supplied
2. A 12-volt DC house system; battery and/or converted supplied
3. A 110-volt AC system; supplied from an external source or from an on-board generator.

AUTOMOTIVE ELECTRICAL SYSTEM

1. Headlights
2. Turn indicators/hazard warning lights
3. Instrument panel lights
4. Windshield wipers and washers
5. Engine ignition switch
6. Cigarette lighters
7. Automotive heater/air conditioning fans
8. Clearance lamps
9. License and back up lights
10. Courtesy lights
11. Electrical dash gauges
12. Starter motor
13. In dash radio memory
14. Remote control mirrors
15. Cruise control
16. Cab lighting
17. Horn
18. Windshield fans

See the chassis manual for the location of the fuse panel and for more detailed description.

EMERGENCY START SWITCH

The switch on the dash, when activated, connects the auxiliary R.V. battery to the engine, it will also assist in starting the generator.

AUTOMOTIVE FUSES

Fuses are located in the cabinet to the right of the drivers foot behind the back panel

AUXILIARY R.V. BATTERIES -- 2-6 VOLT D.C.

All interior lights, furnace motor, exhaust fans, water pump, and electrical equipment, operate on 12-volt DC provided by 2-6 volt auxiliary storage batteries and the power converter when connected to 110v power or generator.

Battery charging is done automatically through the vehicle's alternator when traveling. The auxiliary battery is also charged through the power converter when connected to 110ac power or the on-board generator. The automotive battery is not charged by the converter.

Charging the battery produces hydrogen gas which is explosive when mixed with air. Do not disconnect the battery cables or produce a spark by any means close to the battery while it is charging. Be sure to check the liquid level regularly and when adding water use distilled water to promote longer battery life.

The electrolyte level of batteries in motor homes connected to 110ac park receptacles for long periods of time should be checked once a week.

12-VOLT D.C. FUSES & BREAKERS

Your motor home is fused to protect all 12v DC circuits. The line from the auxiliary battery to the power converter and 12 volt fuse panel is protected by a 50 amp circuit breaker. Another 30 amp circuit breaker powers the electric step. To reset 12 volt circuit breakers, disconnect the power going to the breaker, turning the ignition key off and on will reset the breakers power by the automotive battery and turning the house battery disconnect switch off and on will reset the breakers powered by the house battery. The fuse panel protects all interior lighting, and equipment circuits. If any fuse blows, replace it with the same size fuse.

The carbon monoxide detector we have installed is protected by an in-line fuse located behind the body of the C.O. detector. To check or change this fuse, remove the C.O. detector from its location and follow the wires to the fuse holder.

The propane detector installed in your motor home is protected by an in-line fuse. The fuse is located behind the body of the propane detector, to check or change fuses remove the detector from its location and follow the wires to the fuse holder.

The in-dash radio has two (2) fuses located behind the radio. One fuse is for the radio and the other fuse is the radio memory. In order to check or change the fuses the radio needs to be removed.

Optional Rear Observation System (Back-up camera)- The in-line fuse is located on the cable going from the back of the monitor into the overhead cabinet. To check or change this fuse, pull wire cable from the overhead until the fuse holder is visible.

POWER CONVERTER

When your motor home is connected to an outside 110v AC power source or to the on board generator, the converter provides energy to all interior lights, fans motors, and water pump. The converter housing itself will become warm from use, therefore avoid storing any flammable materials near the converter housing and allow space for air circulation.

INTERIOR LIGHTING

All interior lights operate only on 12 volt DC. When the bulbs burn out replace them with the same type bulb. Each bulb is identified by a number on the base and are automotive type bayonet socket bulbs or slim line florescent tubes. Automotive bulbs may be purchased from service stations or auto supply stores, but the florescent tubes will have to be purchased from a R.V. dealer or supply store.

MONITOR/CONTROL PANEL

Your monitor control panel is designed to give you instant systems information at your fingertips. It monitors your fresh water supply, your gray and solid waste holding tanks fill level, LP Gas tank liquid level, the condition of your R.V. battery and houses the on/off switch to your water pump. A second water pump switch is located in the toilet area.

Taking a measurement

1. The pump switch is to turn the water pump on and off.
2. Pressing the LPG pad will indicate the liquid level in the LPG Gas tank.
3. Pressing the BLACK pad will indicate the liquid level in the solid waste tank.
4. Pressing the GRAY pad will indicate the liquid level in the sink and shower water holding tank.
5. Pressing the FRESH pad will indicate the liquid level in the potable water tank.
6. Pressing the BATT pad will indicate the charge condition of the house battery.

110-VOLT A.C. ELECTRICAL SYSTEM

110-Volt AC power is available in your motor home when you are plugged into a 110-volt receptacle, or when the power cord is connected to the receptacle from the generator. Your motor home is equipped with a three-pronged, 30 amp supply cord which is stored in the electrical compartment. Do not disconnect or remove this cable. When connected to a 110-volt power source, both the 110-volt AC outlets and all interior 12-volt light and equipment circuits will become energized. The auxiliary R.V. battery is automatically recharged from the 12-volt power converter.

110V A.C. BREAKERS

Circuit breakers are installed to protect the 110-volt AC wiring in your motor home. The breakers are located in the distribution panel. Become familiar with its location. If a circuit breaker should open a circuit, locate and remove the cause for overload and then reset the breaker.

Ground fault circuit interrupters (GFCI) designed to protect people from shock hazards are used in motor homes with 110-volt receptacles inside bath compartments, on the exterior of the vehicle, and at the kitchen convenience receptacles.

This device is not a substitute for proper grounding of your vehicle. Test the device regularly as described on the receptacle.

ENERGY MANAGEMENT SYSTEM

E.M.S. is designed to be used in RV's equipped with 30 amp cords. When the shore cord is first plugged in the E.M.S. begins providing power to the controlled loads as long as the current doesn't exceed 30 amps.

The E.M.S. senses the current drawn by all the loads in the R.V and turns off selected loads if the total current exceeds a preset limit. It will hold the loads off until the total load current drops below a level that allows them to operate again.

This system avoids circuit breaker breakers in the park from tripping do to overloading. It will also allow vehicles equipped with 2 air conditioners to operate both of them at the same time if no other large loads are turned on.

GENERATOR SYSTEM

A comprehensive set of instructions on the operation, care and maintenance of the generator set is supplied with each vehicle. Read these instructions before attempting and servicing of this equipment. An hour meter at the generator control switch makes it convenient to log the number of hours that the generator has run so routine servicing can be scheduled.

General safety precautions: A generator set, like any other electro-mechanical device, can pose dangers to life and limb if improperly maintained or imprudently operated. The best safeguards against accidents are to ever mindful of the potential dangers and to always use common sense. In the interest of safety some general precautions relating to operation of an R.V. generator set follow. Please keep these in mind.

WARNING--LETHAL EXHAUST GAS

An engine discharges deadly carbon monoxide as part of the exhaust when operating. Carbon monoxide is particularly dangerous in that it is an odorless, tasteless, and non-irritating gas, but it can cause death if inhaled for even a short time. Have only thoroughly qualified specialists install and replace exhaust system components and have the system inspected frequently. Be careful when parking your R.V. to avoid obstructing the exhaust outlet. The exhaust gases must discharge freely, otherwise carbon monoxide may deflect under and into the vehicle or enter through open doors, windows, or vents. Also make sure that your exhaust cannot be discharged toward neighboring R.V.'s, campers, or any occupied building. Be especially watchful for exhaust accumulation under calm windless conditions.

A carbon monoxide detector has been installed for your safety. Carbon monoxide is a colorless, odorless and DEADLY gas. The presence of carbon monoxide could be fatal. Always take the appropriate action when the unit sound the alarm.

1. Press the reset switch and evacuate the vehicle including pets.
2. Turn off all gas appliances.
3. Leave doors and windows open on the way out
4. Call the local fire department to determine the source of the carbon monoxide if you are unable to do so on your own.
5. Do not re-enter until the problem is corrected.

WARNING--HIGH VOLTAGE!

Remember that the function of a generator set is to produce electricity and that wherever electricity is present, there is the potential danger of electrocution. Take the same precautions with electrical appliances in your R.V. that you would observe in your home. Keep away from electrical circuits and wiring while the set is running and have electrical service performed only by a qualified electrician. Make sure unqualified persons, especially children, cannot gain access to your set. Keep the compartment door securely latched at all times.

Never touch electrical leads of appliances with wet hands or when standing in water or on wet ground as chance of electrocution is especially prevalent under such conditions.

GENERAL PRECAUTIONS!

Keep the compartment and generator set clean and free of debris to minimize the chance of fire. Also remember that hot exhaust gases and exhaust system parts could start grass fires. Keep away from hot engine and generator parts to avoid burning yourself.

Operation instructions--to insure continued satisfactory operation the following items should be checked before each start up:

Prestart Checklist:

Oil Level.....Should be at or near the full mark
Air Inlets.....Must be clean and unobstructed
Compartment.....Interior must be clean
Air Cleaner.....Must be cleaned and properly installed
Air Shrouding.....Must be tight and in proper position
Exhaust.....Tail pipe must be clear; and piping tight and in good position

Start-Stopping Procedure--Depress the Start-Stop switch in the start position and hold in this position until the engine is running then release. Normally the engine will start within five seconds, however, if it fails to start after cranking for ten seconds release the switch and wait for a few seconds before activating the start switch again. This procedure will allow the automatic choke to reset in the full choke position. Whenever possible allow a brief cooling period by running the set at low or no load for a few minutes just prior to shutdown. To stop depress the switch in the stop position and hold until the set comes to a complete halt.

If your generator runs out of fuel replenish the fuel supply. Then activate the start switch at ten-second intervals to pump gasoline back into the system and allow starting on full choke when the system is refill

ELECTRIC STEP - Optional on some Models

If your motor home is equipped with an automatic electric step at the main entry door and the main switch, located on the wall near the door, is in the on position the step will extend and retract each time the door opens and closes. While parked, turning the switch to the off position will leave the step extended or retracted. If the engine is started with the step extended and the door closed the step will retract regardless of the position of the wall switch.

SERVICING AND MAINTAINING YOUR R.V.

CHASSIS MAINTENANCE

1. CHASSIS

Your motor home chassis like all fine vehicles requires regular maintenance for long and trouble-free service. Study your chassis owner's manual for suggested maintenance intervals and for detailed instructions. Day-to-day care starts with the use of factory recommended fuel. Using the coolant level at least once a month when the engine is cool. Should coolant be necessary add water and anti-freeze as recommended. Check oil level frequently. Avoid operating the engine with the oil level below the "add" mark on the dip stick. Use only the Chassis Manufacturer specified oil.

Other day-to-day care included checking and maintaining the chassis and coach batteries. Check the fluid level in the battery cells monthly. remove corrosion around terminals by rinsing with baking soda. After cleaning, coat terminals with grease to retard corrosion.

Keep windshield washer reservoir filled with water and windshield washer solution.

Check your brake fluid level. Add only the Chassis Manufacturer recommended brake fluid.

Satisfactory operation of your automatic transmission requires the use of automatic transmission fluid meeting the Chassis Manufacturer specifications.

Visually inspect the tires daily and have the air pressure checked regularly. Tire pressure lower than recommended will reduce tire life. Higher pressures will tend to give a harsher ride. Always keep tires inflated as recommended by the tire manufacturer.

2. ENGINE OIL

To check the oil level in the engine open the rear grill and pull the dip stick located above the radiator. To add oil to the engine remove the filler cap next to the dip stick.

3. RADIATOR COOLANT

To check the coolant level in the engine open the rear grill and visually check the level of the coolant in the reservoir bottle. To add coolant remove the top of the reservoir bottle and add coolant to the bottle. Do not remove the radiator cap.

4. TRANSMISSION FLUID

To check the fluid level in the transmission open the rear grill and pull the dip stick located on the left side of the radiator. Fluid may be added through the dip stick port.

5. WINDSHIELD WASHER

To check the liquid in the windshield washer reservoir open the rear grill and observe the liquid level in the washer reservoir located on the just behind the rear grill. Washer fluid may be added to the reservoir by removing its top.

6. BRAKE FLUID

Brake fluid container is located on the front of the motor home on the driver's side behind the grill.

R.V. BODY

1. Fiberglass: Your motor home has an exterior that is both rugged and functionally beautiful. Its smooth aerodynamic finish is resistant to dents and scratches. By keeping the motor home cleaned and waxed the fiberglass exterior will maintain its original luster indefinitely. **DO NOT USE ABRASIVES ON EXTERIOR DECALS.** The use of a wax or a polish with an ultraviolet protector aids in preventing deterioration of the exterior fiberglass.

Damaged surfaces should be repaired by professionals. Your dealer or our factory will often be able to repair the damage. If not, check with your local automotive body shops.

2. Roof: Coat all seams and around roof vents once a year with a good quality roof sealer. Be sure the sealer used is recommended for use with rubber roof material. These are available from your dealer or R.V. store. The roof of your motor home when walked on, will feel soft and have some flex or give, this is normal. Your roof has a rubber sheet as its surface (rubber roof) which can be slippery when wet. Exercise extreme caution when on the roof. The rubber membrane can be damaged by small rocks or other items wedged into the soles of your shoes. Be sure to brush them off before walking on the roof.

3. Windows and Doors: Vibration occurs through normal use of your motor home. Screws may need tightening periodically. Use a weather proof sealer around all windows and door frames as needed. Lubricate all locks with graphite. Clean all windows. Proper sealant: Can be obtained through your dealer of National R.V. Parts Department.

4. Tires: To avoid sidewall cracking, apply a liberal coating of Armoral or similar product twice a year. For proper tire rotation changing of flat tires and jacking instructions see chassis owners manual. It is recommended that you call a road service company to change flat tires. These companies have the proper equipment and know how to do the job safely.

5. Inspect your coach thoroughly before you store or before the winter season for possible leaks. National R.V. cannot be held responsible for coaches left unattended for long periods of time.

6. Spare Tire Removal: Warning: To remove the spare tire from underneath the motorhome, a support device (i.e., small hydraulic jack) must be placed under metal the frame for support.

A. To remove spare tire, place hydraulic jack under frame that holds spare tire

B. Remove the bolt that holds frame in place

C. Slowly release jack so the metal frame and spare tire lowers from bottom of coach

D. When spare tire is fully lowered from coach, remove from frame

E. Reverse procedure to reinstall spare tire assembly under coach

CAUTION: Spare tire assembly and carrier are extremely heavy and can pose a danger if removal and reinstallation procedures are not followed.

INTERIOR MAINTENANCE

- 1. Paneling:** The interior cabinetry may be cleaned with a damp cloth. Periodically apply a coating of furniture polish to preserve the finish. Clean vinyl-covered decorator paneling with a liquid household cleaner. Do not use solvents or abrasive cleaners as these could damage the decorated surfaces.
- 2. Vinyl and velour cleaning:** use an upholstery cleaner or a mild soapy solution. Do not use an abrasive cleaner.
- 3. Floor covering:** Vacuum the carpets after each trip. Remove stains with standard household carpet cleaner. For stubborn stains, see your carpet cleaning specialist for advice.
- 4. Ceiling fabric:** Vacuum frequently using a rotating brush attachment to agitate the pile helps in maintaining a soil-free surface. For cleaning see care and cleaning instructions.
- 5. Draperies and upholstery:** the fabrics used in your motor home are not washable and should be dry cleaned only. Do not launder. Seat covers may be spot cleaned with a foam type spot remover. If overall cleaning becomes necessary have them dry cleaned by professionals.
- 6. Table and counter tops:** high quality counter surfaces have been selected for their durability and good looks. Regular cleaning with mild detergent will keep the surface like new. Do not use scouring pads to clean. Do not use as a cutting board. The tops can be scratched. Do not place hot pots and pans directly on the surface.
- 7. Corian® Countertops:** see Corian® care and maintenance guide included in the pack.
- 8. Lavatory and shower cleaning:** Wash with mild soap and water. Do not use abrasive cleaners, scouring pads, or solvents as they can damage and dull the finish.

TOWING DISABLED VEHICLES

Class A motor homes may be towed from the front end by a reliable towing service. Special care must be taken to prevent damage. **Follow the chassis manufacturers recommendations.**

WINTERIZATION

COLD WEATHER OPERATION

Special precautions must be taken if you wish to camp when temperatures are below freezing and additional winterizing equipment may be needed.

WARNING:

NEVER USE THE RANGE OR OVEN FOR SUPPLEMENTARY COMFORT HEATING. All other gas appliances in the R.V. are vented to the outside and are safe to use continuously but the appliances should be used only while cooking and when in use with one or more vents or windows should be open. **DO NOT BE CAUGHT DEAD WITH YOUR GAS RANGE OR OVEN BURNING.**

WINTER FREEZE PROTECTION

If the motor home is to be stored in temperatures below freezing the following precautions should be taken:

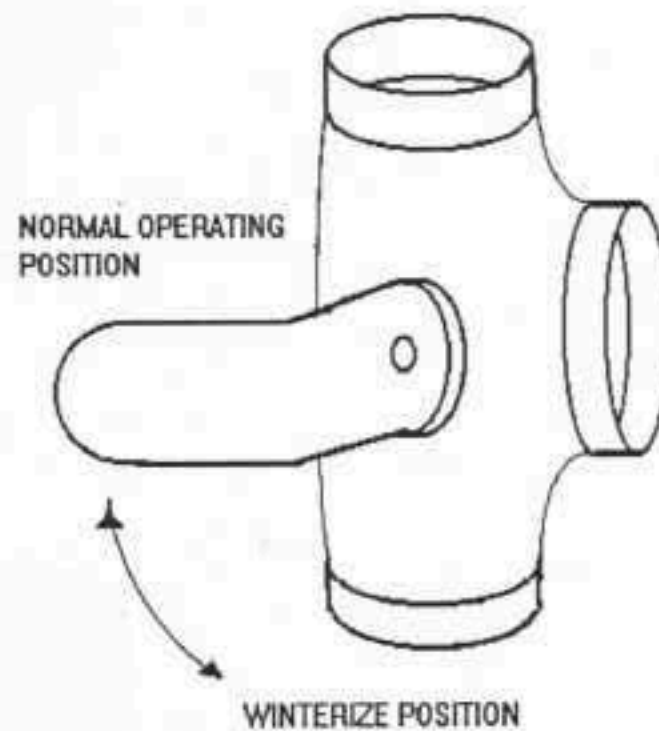
1. Drain the fresh water system by opening the valve from the fresh water tank, the low point water line drains and removing the threaded plug from the water heater. The city water connection is equipped with a check valve. This valve can be drained by inserting your finger tip into the fitting and depressing the spring loaded valve until all water is drained. The outside shower valves must be opened and the hose and shower head drained.
2. Clean out your holding tanks.
3. Check your automotive radiator solution to ensure that the anti-freeze mix is as recommended for the anticipated temperature.
4. Check water levels and make sure that batteries are fully charged. Batteries will self discharge is not used for a period of time. A partially charged battery will freeze at low temperatures.
5. Turn water pump switch on, allow pump to run dry for a minute and then switch off.
6. Leave all faucets and valves closed during storage. Before operating the R.V. again, be sure to sanitize the water system in accordance with the instructions in an earlier part of these instructions.

WINTERIZING FRESH WATER SYSTEM WITH ANTIFREEZE

If you decide that draining the fresh water system is not satisfactory and you wish to fill the system with antifreeze be sure it is of a type approved for potable water systems. **DO NOT USE AUTOMOTIVE TYPE ANTIFREEZE.**

1. Your vehicle must be equipped with a water heater by pass system. These systems are available as an option from National R.V. Inc., they can be installed by qualified service centers or you may devise your own system with fittings and tubing available at hardware stores.

2. After draining the water lines, tank and water heater turn the by pass valve to the winterize position. (see illustration)



3. Add 2 gallons of polypropylene base R.V. antifreeze (potable type) to the fresh water tank. An extra half gallon may be needed in larger units. (See Step 6).
4. Close faucet valves and turn on water pump at wall switch.
5. Pull toilet valve and hold open until red color of antifreeze shows. If the pump fails to draw fluid through the system add more antifreeze until it pumps.
6. Turn on cold water valve at the kitchen sink (slowly) until the red fluid shows, then turn off. Repeat this procedure with the hot water valve.
7. Repeat step 6 for each water outlet including the lavatory, shower and outside shower.
8. The city water connection is equipped with a check valve. This valve can be opened by inserting your finger tip into the fitting and depressing the spring loaded valve until antifreeze flows out.
9. As a final step pour one capful of the antifreeze into the shower drain and both sinks to protect the traps. You're ready for a safe winter!

STORAGE DURING NON-FREEZING WEATHER

Battery protection should be the same as for freezing weather as unused batteries will shortly discharge themselves. For prolonged storage drain and flush out all systems. Leave ventilators open as much as possible without admitting rain. Remove perishables and empty refrigerator/freezer leaving it clean with door ajar. Put a cap or screen over the roof vent of the refrigerator.

GENERAL STORAGE NOTES

Closed window coverings will reduce fade of rugs and upholstery. Leaving an air freshener agent will minimize odors from plastics and other materials. Slight openings of vents will allow air circulation without worry of water entering. For prolonged storage it is advisable to go over all roof seams and vent flashing seams with a good roof coating material. Spraying silicone on mechanisms will minimize effects of corrosion. Covering wheels to eliminate direct rays of the sun on tires will reduce the sidewall cracking.

WIRING DIAGRAMS

Wiring diagrams are included to assist in making repairs, additions and modifications to your vehicle's electrical system. Work of this type should only be done by a qualified technician.

Wiring pertaining to the engine and related chassis functions is covered by the chassis owners manual.

FOR YOUR OWN SAFETY

LP GAS

1. **WARNING:** LP Gas containers shall not be placed or stored inside the vehicle. LP Gas containers are equipped with safety devices which relieve excessive pressure by discharging gas to the atmosphere.
2. **WARNING: IT IS NOT SAFE TO USE COOKING APPLIANCES FOR COMFORT HEATING. COOKING APPLIANCES NEED FRESH AIR FOR SAFE OPERATION.**

BEFORE OPERATION:

1. OPEN OVERHEAD VENT OR TURN ON EXHAUST FAN AND,
2. OPEN WINDOW.

This warning label had been located in the cooking area to remind you to provide an adequate supply of fresh air for combustion. Unlike homes, the amount of oxygen is limited due to the size of the recreational vehicle and proper ventilation when using the cooking appliances will avoid dangers of asphyxiation. It is especially important that cooking appliances not be used for comfort heating as the danger of asphyxiation is greater when appliance is used for long periods of time.

The following label has been placed in the vehicle near the range area:

IF YOU SMELL GAS:

1. EXTINGUISH ALL OPEN FLAMES, PILOT LIGHTS AND ALL SMOKING MATERIAL.
2. DO NOT TOUCH ELECTRICAL SWITCHES.
3. SHUT OFF THE GAS SUPPLY AT THE TANK VALVE(S) OR GAS CONNECTION.
4. OPEN DOORS AND OTHER VENTILATING OPENINGS.
5. LEAVE THE AREA UNTIL ODOR CLEARS.
6. HAVE THE GAS SYSTEM CHECKED AND LEAKAGE SOURCE CORRECTED BEFORE USING AGAIN.
7. LP Gas regulators must always be installed with the diaphragm vent facing downward. Regulators have been equipped with a protective cover. Make sure that regulator vent faces downward and that cover is kept in place to minimize vent blockage which could result in excessive gas pressure causing fire or explosion.

3. A warning label has been located near the LP Gas contain. This label reads: DO NOT FILL CONTAINER(S) TO MORE THAN 80 PERCENT OF CAPACITY.
4. **WARNING:** Portable fuel-burning equipment, including wood and charcoal grills and stoves, shall not be used inside the recreation vehicle. The use of this equipment inside the vehicle may cause fires or asphyxiation.
5. **WARNING:** Do not bring or store LP Gas containers, gasoline, or other flammable liquids inside the vehicle because a fire or explosion may result.

6. **WARNING:** Never allow the LPG tank to be filled above the 80% level. make sure the motor home is level when filling, it is possible to accidentally overfill the tank if the vehicle is not level: especially if the valve is on the uphill side. 20% of the tank area must be remain empty to allow gas to vaporize.
7. **WARNING:** When filling the motor home tanks with LPG, or gasoline, be sure all pilot lights are out.
8. **WARNING:** Because of the extreme flammability of LP Gas, and it is heavier than air qualities, do not smoke or expose the tank to an open flame while near a refueling area. Never use and open flame to test for gas leaks. Replace all protective covers and caps on LP system after filling.

WARNING: LP Gas containers are equipped with safety devices which relieve excessive pressure by discharging gas to the atmosphere.

IF YOU SMELL GAS:

1. EXTINGUISH ANY OPEN FLAMES, PILOT LIGHTS AND ALL SMOKING MATERIALS.
2. DO NOT TOUCH ELECTRICAL SWITCHES.
3. SHUT OFF THE GAS SUPPLY AT THE TANK VALVE(S) OR GAS SUPPLY CONNECTION.
4. OPEN DOORS AND OTHER VENTILATING OPENINGS.
5. LEAVE THE AREA OPEN UNTIL ODOR CLEARS.
6. HAVE THE GAS SYSTEM CHECKED AND LEAKAGE SOURCE CORRECTED BEFORE USING AGAIN

(LABEL IN GALLEY AREA)

WARNING:

IT IS NOT SAFE TO USE COOKING APPLIANCES FOR COMFORT HEATING
COOKING APPLIANCES NEED FRESH AIR FOR SAFE OPERATION.
BEFORE OPERATION:

1. OPEN OVERHEAD VENT OR TURN ON EXHAUST FAN AND,
2. OPEN WINDOW

(LABEL AT STOVE)

LPG

THIS GAS PIPING SYSTEM IS DESIGNED FOR USE OF LIQUEFIED PETROLEUM GAS ONLY. DO NOT CONNECT NATURAL GAS TO THIS SYSTEM.

Securely cap inlet(s) when not connected for use. After turning on gas, except after normal container replacement, test gas piping and connections for leakage with soapy water or bubble solution which does not contain ammonia or chlorine.

**DO NOT FILL LP-GAS CONTAINER(S) TO MORE THAN
80% OF CAPACITY**
(LABEL AT LPG CONTAINER)

**WARNING: ALL PILOT LIGHTS AND APPLIANCES SHALL BE
TURNED OFF DURING REFUELING OF MOTOR FUEL TANKS
AND/OR LP-GAS CONTAINERS.**

(LABEL AT LPG CONTAINER AND AT FUEL FILL)

ELECTRICAL SYSTEM SAFETY

As delivered, your R.V. electrical system has been engineered and checked for performance and safety. Circuit breakers and fuses are installed to protect electrical circuits from overloading. Do not make unauthorized changes to circuitry or add on fixed appliances yourself. If alterations are required, consult your dealer and he will assist you in obtaining a safe installation.

An approved power supply cord is attached to the vehicle for hook-up to a 110 volt on the vehicles on board generator. Note the cord has a three-pin plug which provides proper grounding through the third (round) pin. Grounding is your protection from electrical shock...do not use any adapter or extension cord that will break the continuity of the grounding circuit connected to that third pin. **NEVER** remove the grounding pin or connect to a non-grounded (only two-pronged) receptacle.

NEVER operate your RV's 120 volt system with an inadequate ground. If you can feel a shock--even a small one--from the R.V. while standing on the ground, you should immediately disconnect the R.V. and locate the trouble. Ground continuity should be continuous from any electrical appliance or the vehicle frame to the distribution panel board through the third pin on the power supply cord and then to the park receptacle and earth ground.

Label at electrical entrance

| |
|--|
| This connection is for 110-125 volt AC,60Hz 30 ampere supply |
|--|

PLUMBING SYSTEM SAFETY

1. Sanitize the fresh water supply system periodically (see Sanitizing Instructions)
2. Try to keep water connection fittings from coming in contact with the drain hose to reduce chances on contamination.
3. Always rinse the sewer drain before storing.

SAFETY WHEN TRAVELING

Your motor home was designed to be open and spacious. While this provides delightful aspects to traveling. It also requires additional safety awareness. All loose objects are potentially dangerous missiles in the event of sudden stops and maneuvers. To eliminate this hazard, all appliances are secured and closets, drawers, and cabinet doors are provided with latches. free standing dinette chairs are equipped with restraining belts, use them.

Child Restraint systems are designed to be secured in the vehicle by lap belts and should be secured in accordance with the restraint system manufacturer instructions. Accident statistics have shown that children are safer when properly restrained in a rear seating position than in a forward position.

BEFORE STARTING:

1. Prior to each start, check all open areas to see that gear has been stowed.
2. Check all appliances, doors, and drawers for proper locking or latching.
3. All passengers should take their seats. Fasten the seat belt by engaging the buckle and adjusting the belt (by pulling excess through clamping mechanism at the buckle) so that the belt is snug and buckle is located for your comfort and easy access.

HOW TO WEAR SAFETY BELTS PROPERLY

ADULTS: This section is only for people of adult size

CAUTION:

There are special things to know about safety belts and children. And there are different rules for babies and smaller children. If a child will be riding in your vehicle. See the section after this one, called "Children". Follow those rules for everyone's protection.

DRIVER AND FRONT PASSENGER POSITIONS:

This section describes the driver's and front passenger restraint systems.

Lap-belt

The driver has a lap belt. Here's how to wear it properly.

1. Close and lock the door.
2. Adjust the seat so you can sit up straight.
3. Pick up the latch plate and pull the belt across you. Don't let it get twisted.
4. Push the latch plate into the buckle until it clicks.

If the belt isn't long enough, see "Safety Belt Extender" at the end of this section.

Make sure the release button on the buckle faces upward or outward so you would be able to unbuckle it quickly if you ever had to.

The Lap belt should be worn low and snug on the hips, just touching the thighs. In a crash, this applies less force to the strong pelvic bones. And you'd be less likely to slide under the lap belt. If you slid under it, the belt would apply force at your abdomen. This could cause serious or even fatal injuries.

The safety belt locks if there's a sudden stop of crash.

CAUTION:

You can be seriously injured by a twisted belt. In a crash, you wouldn't have the full width of the belt to spread impact forces. If a belt is twisted, make it straight so it can work properly, or ask your dealer to fix it.

To unlatch the belt, just the button on the buckle. The belt should go back out of the way.

SAFETY BELT USE DURING PREGNANCY:

Safety belts work for everyone, including pregnant women. Like all occupants, they are more likely to be seriously injured if they don't wear safety belts

A pregnant woman should wear the lap belt, as low as possible throughout the pregnancy. The best way to protect the fetus is to protect the mother. When a safety belt is worn properly, it's more likely that the fetus won't be hurt in a crash. For pregnant women, as for anyone, the key to making safety belts effective is wearing them properly.

REAR SEAT PASSENGERS:

Not all seating positions are equipped with safety belts due to the unique configuration of motor homes. Those seats not equipped with safety belts should not be occupied while the vehicle is in motion. These seats are identified by a warning label adjacent to the seat.

It's very important for rear seat passengers to buckle up!

Accident statistics show that unbelted people in the rear seat are hurt more often than those who are wearing safety belts.

While in transit occupants must sit in seats equipped with safety belts. Here's how to wear one properly.

1. Pick up the latch plate and pull the belt across you. Don't let it get twisted.
2. Push the latch plate into the buckle until it clicks. If the belt stops before it reaches the buckle, tilt the latch plate and keep pulling until you can buckle it. If the belt is not long enough, see "Safety Belt Extender" at the end of this section.
Make sure the release button on the buckle faces upward or outward so you would be able to unbuckle it quickly if you ever had to.
3. To make the belt tight, pull down on the loose end of the belt.

The belt should be worn low and snug on the hips, just touching the thighs. In a crash, this applies force to the strong pelvic bones. And you'd be less likely to slide under the lap belt. If you slid under it, the belt would apply force at your abdomen. This could cause serious or even fatal injuries.

To unlatch the belt, just push the button on the buckle.

CHILDREN:

Everyone in a vehicle needs protection!!

That includes infants and all children smaller than adult size. In fact, the law in every state and Canadian province says that children up to some age must be restrained while in a vehicle.

Smaller Children and Babies:

CAUTION: Smaller children and babies should always be restrained in a child or infant restraint. The instructions for the restraint will say whether it is the right type and size for your child. A very young child's hip bones are so small that a regular belt will not stay low on the hips, as it should. Instead, the belt will like be over the child's abdomen. In a crash, the belt would apply force over the child's abdomen, which could cause serious or fatal injuries. So, be sure that any child small enough for one is always properly restrained in a child or infant retrained in a child or infant restraint.

CAUTION: Never hold a baby in your arms while riding in a vehicle. A baby doesn't weigh much --until a crash. During a crash a baby will become so heavy you can't hold it. For example, in a crash at only 25mph (40km/h), a 12 pound (5.5 kg) baby will suddenly become 250 pounds(110kg) on your arms. The baby would be almost impossible to hold.

Secure the baby in an infant restraint.

Securing a Child Restraint in the Rear Seat:

1. Pull out the vehicle's safety belts and run the lap part through or around the restraint. The child restraint instructions will show you how. Tilt the latch plate to adjust the belt if needed.
2. Buckle the belt. Make sure the release button faces upward or outward, so you'll be able to unbuckle it quickly of you ever need to.
3. To tighten the belt, pull up on the loose end of the belt while you push down on the child restraint.
4. Push and pull the child restraint in different directions to be sure it is secure.

To remove the child restraint, just unbuckle the vehicle's safety belt.

Larger Children:

Children who have out grown child restraints should wear the vehicle's safety belts.

Accident statistics show that children are safer if they are restrained in the rear seat. But they need to use the safety belts properly.

Children who aren't buckled up can be thrown out in a crash.

Children who aren't buckled up can strike other people who are.

CAUTION: Never allow two children to wear the same belt. The belt can't properly spread the impact forces. In a crash, the two children can be crushed together and seriously injured. A belt must be used by only one person at a time.

Wherever the child sits, the belt should be worn low and snug on the hips, just touching the child's thighs. This applies belt force to the child's pelvic bones in a crash.

Safety Belt Extender:

If the vehicle's safety belt will fasten around you, you should use it.

But if a safety belt isn't long enough to fasten, your dealer will order you an extender. When you go in to order it, take the heaviest coat you will wear, so the extender will be long enough for you. The extender will be just for you, and just for the seat in your vehicle that you chose. Don't let someone else use it, and use it only for the seat it is made to fit. To wear it, just attach it to the regular safety belt.

Checking Your Restraint System:

Now and then, make sure all your belts, buckles, latch plates, retractors, and anchorage are working properly. Look for any loose parts or damage. If you see anything that might keep a restraint system from doing its job, have it repaired.

Replacing Safety Belts After a Crash:

If you've had a crash, do you need new belts?

After a very minor collision, nothing may be necessary. But if the belts were stretched, as they would be if worn during a more severe crash, then you need new belts.

If belts are cut or damaged, replace them. Collision damage also may mean you will have to have safety belt parts, like the retractor, replaced or anchorage locations repaired--even if the belt wasn't being used at the time of the collision.

CAUTION: Torn or frayed belts may not protect you in a crash. They can rip apart under impact forces. If a belt is torn or frayed, get a new one right away.

The model number on the replacement belt must be listed on the safety belt you want to replace.

CAUTION: Motorcoaches equipped with free standing dinette option--the chairs provided with this option are not designed to be occupied during operation of the motorhome. No seat belts are provided and these chairs do not meet minimum safety standards.

SAFE VEHICLE LOADING

Your motor home is labeled in accordance with federal regulations to indicate safe limits which each axle and the total vehicle can be loaded. This label is located on the wall beside the drivers seat.

It is recommended that you have your vehicle weighed at a public scale with full fuel, water and LP Gas tanks. Subtract the indicated weight from the GVWR printed on the certification label to find the maximum cargo and passenger load that can be safely carried.

To meet marketing demands, National R.V. INC. has equipped your vehicle with water, fuel, and storage capacities. If you find it necessary to carry several people in your vehicle, it may be necessary to remove some cargo or reduce the amount of water on board. It is seldom necessary and not recommended to travel with full holding tanks. They should be drained prior to leaving the campground. Unless you are staying in an area or campground without water hook-ups, it is not necessary to travel with a full water tank. Ten or twenty gallons is plenty for use in route or even overnight.

The storage compartments on your vehicle have been made as large as possible to accommodate bulky items; lawn chairs, barbecues, etc. It is very easy to over load these areas with "stuff". Often much of this "stuff" is not needed and decreases your vehicle's capacity to safely carry additional people and cargo. When loading your vehicle, always place heavy items low in the RV and lighter items in the overhead cabinets.

FACTORY INSTALLED TRAILER HITCHES ON NATIONAL'S CLASS A MOTOR HOME WILL SAFELY TOW A TRAILER OR ANOTHER VEHICLE WHOSE WEIGHT DOES NOT EXCEED 5,000 POUNDS GROSS WEIGHT AND 500 LBS HITCH WEIGHT. SEE YOUR CHASSIS MANUFACTURERS OWNERS GUIDE FOR THE COMBINED VEHICLE WEIGHT RATING (CVWR). (THE WEIGHT OF YOUR MOTOR HOME FULLY LOADED PLUS THE WEIGHT OF ANY TOWED VEHICLE OR TRAILER).

FUEL SYSTEM TROUBLE SHOOTING

If a problem is encountered with supplying fuel to the engine, here are some are to look for the cause:

Check to see if the electrical fuel pump is running when the engine is running. If the pump runs check the fuel filter in the line between the electric fuel pump and the engine.

REPORTING SAFETY DEFECTS--NHTSA INFORMATION

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

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

To contact NHTSA, you may either call the auto safety hotline toll-free at 1-800-422-9393 or 366-0123 in Washington D.C. areas or write to: NHTSA, Department of Transportation, Washington, D.C. 20590. You can also obtain other information about motor vehicles from the hotline.

EMERGENCY AND WARNINGS

Selected doors and windows have been designated as exits in case of emergency. They are marked with an exit label and the latches on the windows are red. Learn where the exits are and how to use them.

THE FOLLOWING IS A LIST OF WARNINGS AND CAUTIONS WHICH SHOULD BE ADHERED TO WHEN OPERATING YOUR MOTOR HOME. CONSULT YOUR IMPORTANT PAPERS PACKAGE FOR OTHER WARNINGS FROM VARIOUS MANUFACTURES.

WARNING: Avoid inhaling exhaust gases as they contain carbon monoxide which by itself is colorless, odorless and poisonous.

WARNING: Hydraulic brake fluids not conforming to the vehicle manufacturer specifications should never be used. A fluid with a lower boiling point or one that is unidentified may result in sudden brake failure under hard braking conditions.

WARNING: Driving through water deep enough to wet the brakes can effect braking performance and cause the vehicle to pull to either side when the brakes are applied.

WARNING: If brake failure is indicated immediate repair service is necessary. Continued operation of the vehicle in this condition is dangerous.

WARNING: Do not use parking lights when the vehicle is in motion. Parking lights denote a parked vehicle.

WARNING: Operating the hazard flasher system while moving on a highway is prohibited by law.

WARNING: Inspection and service should be performed anytime a malfunction is observed or suspected.

WARNING: Small children should be properly restrained in approved restraint systems whenever the vehicle is in motion.

WARNING: Do not adjust driver's seat belt while vehicle is in motion.

WARNING: Before beginning a vacation or trip of any extended travel in your R.V., it is recommended that the fire extinguisher be checked for proper charge and inspected to assure proper operating condition.

WARNING: When performing maintenance on any gas fired appliance shut off gas at the tank. Perform a gas leak test on tank valves and check connections before re-lighting.

WARNING: The starter should not be operated longer than 10 seconds at a time. If the engine fails to start always wait a few seconds before trying again to protect the starter from overheating.

WARNING: Extended running of engine while vehicle is stationary (5 minutes or more) without reducing idle speed could result in damage to the engine or exhaust system due to overheating.

WARNING: The radiator cap should be removed only when checking coolant freeze point or for complete replacement with antifreeze coolant. DO NOT remove radiator cap until the radiator has cooled completely. Use caution with a hot coolant system. Place a cloth over the cap, turn left to first stop on the cap. Pause to allow any pressure to release through overflow tube, then press down and turn left to remove cap.

CAUTION: Always check for sufficient overhead clearance before entering an area with low overhead clearance such as garages, drive-ins, car washes, etc.

CAUTION: It is recommended that the windows and door seams and joints sealants be checked every 6 months and resealed if necessary.

National R.V. Inc. is committed to provided you with the finest Recreational Vehicle we possibly can. If questions rise, or a situation that the dealer cannot resolve happens, we encourage you to write or telephone our customer service personnel. National R.V. Inc., will do everything possible within the warranty guidelines to assist you. If you are having difficulties with a product that National R.V. Inc. warranty does not cover, we would also encourage you to inform us so we may assist you.

National R.V. Inc. strives to make your ownership of this Recreational Vehicle a very pleasurable experience.

**National R.V. Inc.
Customer Assistance
3411 N. Perris Blvd.
Perris, CA 92571
(909) 943-6007**

WHAT IS A TIRE'S FUNCTION?

The tire designed for your RV is a very technical and precisely engineered product. To obtain the maximum safe use and best service out of your tires, it's helpful to understand the function of the tire. A tire is a "container" that holds air. It is the combination of air and tire that supports the vehicle and its contents. In addition, since the tire is the only contact that the vehicle has with the road surface, it must provide other functions such as traction for moving, stopping, and steering, as well as providing a cushion for the vehicle.

THE IMPORTANCE OF AIR PRESSURE

The most important factor in maximizing the life of your tires is maintaining proper inflation. Driving on any tire that does not have the correct inflation pressure for the load of the vehicle is dangerous and may cause premature wear, tire damage, and/or loss of control of the vehicle. A tire that is underinflated will build up excessive heat that may go beyond the prescribed limits of endurance of the rubber and the radial cords. This could result in sudden tire failure. A tire that is underinflated will also cause poor vehicle handling, rapid tire wear, and a decrease in its fuel economy.

Overinflation will reduce the tire's footprint, or contact patch with the road, thus reducing the traction, braking capacity, and handling of the vehicle. A tire that is overinflated for the load that it is carrying will also contribute to a harsh ride, uneven tire wear, and will be more susceptible to impact damage.

Maintaining correct tire inflation pressure for your vehicle's loaded axle weight is of the utmost importance and must be a part of regular vehicle maintenance.

HOW MUCH AIR SHOULD I CARRY IN MY TIRES?

Federal law requires that the tire's maximum load rating be molded into the sidewall of the tire. If you look on your tire's sidewall, you'll see the maximum load allowed for the size tire and load rating, and the cold air inflation pressure needed to carry that stated maximum load.

Utilizing less air pressure means lesser load can be carried by the tire. Please reference weight inflation chart which will show weights that can be supported by various air pressures.

The amount of air pressure you need to use is dependent on the weight of your fully loaded vehicle.

DANGERS OF OVERLOADING

What are the risks of driving on overloaded RV? In addition to possible problems with tires, wheels, and springs, there can be problems of break failure, drive train failure, and wheel bearing failure. Plus an overloaded RV uses more fuel, is harder to handle and can lead to driver fatigue. If anyone component should fail, it could result in vehicle damage and/or loss of vehicle control. In addition to the above dangers, there are some states that require motor homes and RVs to utilize the Highway Patrol's weight scales to check for overloaded axle weights. Citations can be issued.

HOW TO DETERMINE YOUR RV's CORRECT WEIGHT

G.V.W.R. (GROSS VEHICLE WEIGHT RATING)

G.A.W.R. (GROSS AXLE WEIGHT RATING)

The GVWR and GAWR stickers on your RV (normally located on the wall next to the driver's seat) will show you the chassis manufacturer's and/or National's total vehicle maximum weight rating and per axle weight rating for your vehicle. The GVWR is the maximum total weight for which the vehicle is rated--including passengers, fluids, and cargo. The GAWR is the maximum for which a single axle is designed. These per axle and total maximum weight ratings could be limited by the tires, wheels, axle, axle bearings, springs, the vehicle frame or other components of the vehicle.

The GAWR sticker is only a guide in knowing your maximum loaded axle weights and subsequently your correct tire inflation pressure. Every RV, even of the same make and model, will vary in actual loaded axle weights, because of different options and personal loads. While your actual loaded weight should be below the GAWR, you must weigh your RV in a loaded condition to know its actual weight. Weigh the front axle, the total unit, and then the rear axle. If possible, also weigh the left and right sides. Once you know the total weight, and the weight on each axle, the tire load data chart will show you the correct cold inflation pressure per tire for each axle.

HOW MUCH STUFF CAN I CARRY?

Listed below are:

1. The dry, unloaded weight and GVWR of each Dolphin Diesel model produced during the 1994 Model year.
2. Also shown are the capacities and weights of all of the fluids provided for in each model.

You must decide what cargo you wish to carry based on how many people you are carrying and the actual weight of the liquids on board. It is recommended that the holding tanks be emptied before leaving the campground.

| | 32-D 190 | 34-D 230 | 632-D 190 | 634-D 230 |
|-------------------------------|--------------------|------------|------------|------------|
| GVWR | 18,340 | 19,840 | 18,340 | 19,840 |
| Unloaded Dry Weight | 14,200 | 15,750 | 15,000 | 15,950 |
| Motor Fuel Weight | GAL 90 LB. 630 | 90 630 | 90 630 | 90 630 |
| Water incl. W.H. Weight | GAL 106 LB. 840 | 106 840 | 106 840 | 106 840 |
| LP Gas Weight | GAL 35 LB. 145 | 35 145 | 35 145 | 35 145 |
| Gray Holding Weight | GAL 50 LB. 420 | 50 420 | 50 420 | 50 420 |
| Black Holding Weight | GAL 50 LB. 420 | 50 420 | 50 420 | 50 420 |

The weight of optional equipment and owner add-ons must also be added to the unloaded/dry weight of your vehicle.

Most campgrounds have fresh water, so unless you are going to camp in primitive areas, it is seldom necessary to travel with a full water tank. Ten gallons will normally suffice for convenience while traveling.

If you travel with full fuel, water and LPG tanks your vehicle will be able to carry between *1700 and *2700 pounds of people and cargo.

*dependant on model motorhome

WHERE TO WEIGH YOUR VEHICLE

There are probably several certified public scales in your area. You will find public-access scales in a variety of places, such as moving and storage company lots, farm suppliers with grain elevators, gravel pits, recycling companies and large commercial truck stops. If you are not aware of a nearby public scale, check your telephone book yellow pages under the "scales-public" section or "weights". A nominal fee will be charged but it is money well spent.

HOW TO WEIGH YOUR VEHICLE

Most of the scales will be a large platform type that is long enough to handle a large truck and trailer. A few will be the single axle type. If the scales are the single axle type, drive your front axle onto the scale and stop long enough for the weight to be obtained. Then pull forward until the rear axle is on the scale. To know the total weight of your unit, add the weights together. If the scales are the platform type, drive your front axle onto the platform scale and stop just before the rear tires reach the platform. In some cases, it may take a "spotter" working with you to tell you where to stop. After the front axle weight is obtained, drive the unit fully onto the center of the scale, stop and obtain the weight for your total unit. Then drive forward until the front tires are just off the scale and stop. Obtain the weight for the rear axle. For the best results, the axle that is off the scale should be level with the scale.

If there is room to the sides of the scale, it would be helpful to obtain the right and left side weights of your RV. Again the RV should be as level as possible. When comparing the weights of your axles and/or sides, the total of the front and rear axles and the totals of the right and the left sides should match up closely with your total RV weight.

EFFECT OF TOWED VEHICLES OR TRAILERS

If you are towing a vehicle or a trailer, you need to know your RV's GCWR (Gross Combined Weight Rating). This is the total actual loaded weight of your RV plus total actual loaded weight of the towed vehicle. This rating can be found in your chassis owners manual. The total actual weight of the RV and towed vehicle should not exceed the GCWR. While this GCWR has more to do with the drivetrain (engine, transmission, axle, and bearings) design limits, this additional weight can also affect the tires and how your RV handles. And finally, please don't forget to consider the tongue weight of the trailer.

WHEN TO CHECK YOUR RV TIRES' AIR PRESSURE

Now that you have found what the correct air pressure per axle needs to be for your RV, you need to know when to check your air pressure. You should check your air pressure every two weeks or at least once a month and before any major trip. Your RV tires' air pressure should be checked every "drive" morning on long trips. On short trips of a day or less driving each way, your tires should be checked before you leave on your trip and again before you start your trip home. If your vehicle is stored for any length of time, air pressure should be checked prior to storage, but more importantly, when it comes out of storage.

Check your tires when they are "cool" and have not been driven on for more than a few miles. The stated "cold" inflation pressure is based on an approximate outside temperature of 68 degrees. If you must check your tires when they are warm or hot, do allow for a slight increase in air pressure and make sure that they are within a couple of pounds of each other on the same axle. Never let air out of a hot tire.

It is recommended you purchase a quality air gauge which should be a truck-style gauge. Some newer RV wheels are such that a normal truck tire gauge needs to have a bend in it to reach the valve on the inside of the outside dual. Bend the gauge, if approved by the gauge manufacturer, or use a good quality stainless steel braided valve extension. These can be used on any dual tire setup for ease in checking your pressure. Some RVs have hub caps that need to be removed prior to checking the air pressure. Remove them. Nothing should restrict you from checking your air pressure daily when you are driving your RV daily.

PREFLIGHT CHECKLIST

What if you don't check your air pressure? If you pick up a nail or screw while driving that creates a slow leak and causes some pressure loss, you might eventually spot it with a quick look if its a front tire. If its an outside rear dual, you might spot it with a long look. However, if it is an inside rear dual, the chances of spotting it without a air pressure check are very slim. If you begin driving without finding it, very quickly (in most cases, a few miles) your outside rear tire next to the low air pressure tire is going to heat up from carrying double its loads and it can come apart. Then you'll have two tires down on the same side and on the same axle, and a five ton or more vehicle at any speed is difficult to bring under control.

As you "preflight" check your vehicle every "drive morning," include an air pressure check of your tires. Your life is worth the extra few minutes!

ADDITIONAL TIRE CARE RECOMMENDATIONS

Tire Repair:

Even the best drivers can drive over a nail and the best tires can pick up that nail or screw and go flat. If you pick up an object that causes a flat with your RV tire, the repair must be made to the inside of the tire to be repaired properly. To do this, the tire needs to be dismounted and inspected on the inside of the casing for any other damage that the object may have caused. The tire should always be removed from the wheel to inspect for internal damage.

Tire Inspection:

Your RV tires should be inspected thoroughly at least once a year, and any time you drive in rough or rocky terrain, or when you have your RV serviced. This inspection should include both the outside and inside sidewalls, the tread area and the valves, caps, and any valve extensions. Inspect for nails, cuts, bulges, aging, or fatigue cracks and weathering or ozone cracking. Also check between the duals for objects lodged between them. See a tire dealer at once if there is anything found to be in question.

On a regular basis, rub the palm of your hand across the face of the tread on your front tires to feel for any feathered wear from "toe" alignment problems. (Be careful since severe wear can expose steel belt edges that are very sharp.) A "toe" misalignment problem can be caused by impact with a "chuck" hole in the road. Bad "toe" wear can be hard to find visually, but can be felt very quickly with the hand. This type of alignment can wear the rubber off the tread of your tires in just a few hundred miles.

Tire Rotation:

If correct air pressure and proper alignment rate are both continually maintained, tire rotation may never be needed. However, in other cases, tire rotation may be needed to help even out alignment or underinflation problems. There are no restrictions as to the method of rotation with your RV tires. They can be rotated front to rear and side to side.

Proper Cleaning:

Like the rest of your RV, it pays to keep your tires clean. Road oil will cause deterioration of the rubber and dirt build up will help hold the chemicals in the air next to the tire and will also deteriorate the tire.

As with the cleaning of any rubber product, proper care and methods in cleaning must be used to obtain the maximum service years out of your tires. A soft brush and the normal mild soap that you would use to clean your RV may be used. If you use a dressing product to "protect" your tires from aging, use extra care and caution. Tire dressings that contain petroleum products or alcohol may cause deterioration or cracking.

In many cases, it is not the dressing itself that can be a problem, but the chemical reaction that the product can have with the anti oxidant compound in the tire. Heat can add to the negative reaction. When these same dressing products are used on a passenger car tire that is replaced

every three to four years, it is rare to see a major problem. However, in most cases, RV tires will last much longer due to limited annual mileage, and the chemical reactions have much longer to take effect.

RV TIRE LONG-TERM STORAGE

Rubber tires age faster when not being used. There are a few steps that you can take to reduce the aging effects from long-term RV storage. Before putting your RV into storage, thoroughly clean your tires. Then cover the tires to prevent direct sunlight and ultraviolet rays. Failure to take these steps can lead to early deterioration and shorten the life of your tires.

THE LIFE OF AN RV TIRE

The life of a tire used on an RV cannot be measured by miles alone. Your RV tire life depends on driving habits, driving conditions, and geography, as well as the age of your tires. You can determine the age of the tire by looking at the DOT number. The last digit in the right is the last digit of the year in which it was manufactured. For example, if your RV is a 1993 model with O.E. tires still on it, and the number 3 appears at the DOT, this means the tire was manufactured in 1993. If the tires you have on your RV were being driven on a small commercial truck, they might last 80,000 to 120,000 miles and be replaced every two years. With the average (non-full timer) RV driving 5,000 miles per year, that could take close to 20 years to obtain. In this case, the age of the tire is more important than the amount of tread depth remaining. Just like your fan belt and radiator hose, the rubber in your tire ages as well. In cooler, clean air locations, the expected tire life will be longer than in high temperature, high ozone areas. Of course, as a tire ages, you should inspect it more frequently.

SELECTING REPLACEMENT TIRES FOR YOUR RV

One of the most important RV equipment purchases that you will make will be the replacement tires on your RV. If you obtain good service with your first set of tires, chances are that they were matched well for your RV's weight needs and your type and area of driving. You will be sure only if you have weighed your loaded RV.

If there is reason to replace your tires with another size, be very careful with this selection. There are some basic areas of concern, such as the load rating of the new tire and the overall diameter of the new tire for vehicle clearance and speedometer reading.

Then there is the matching of the tires to the dual wheel offset for the dual spacing clearance and the load rating of the wheel. For example: buying a new tire with a higher load rating that might require 105 P.S.I. would be of no advantage if your wheel is limited to 80 P.S.I. (And be sure that the wheel width is compatible with the new size.)

There are some critical areas to look at in picking out replacement tires. For the best information on doing this, you should see a tire dealer.

ALLISON TRANSMISSION CUSTOMER SERVICE

OWNER ASSISTANCE

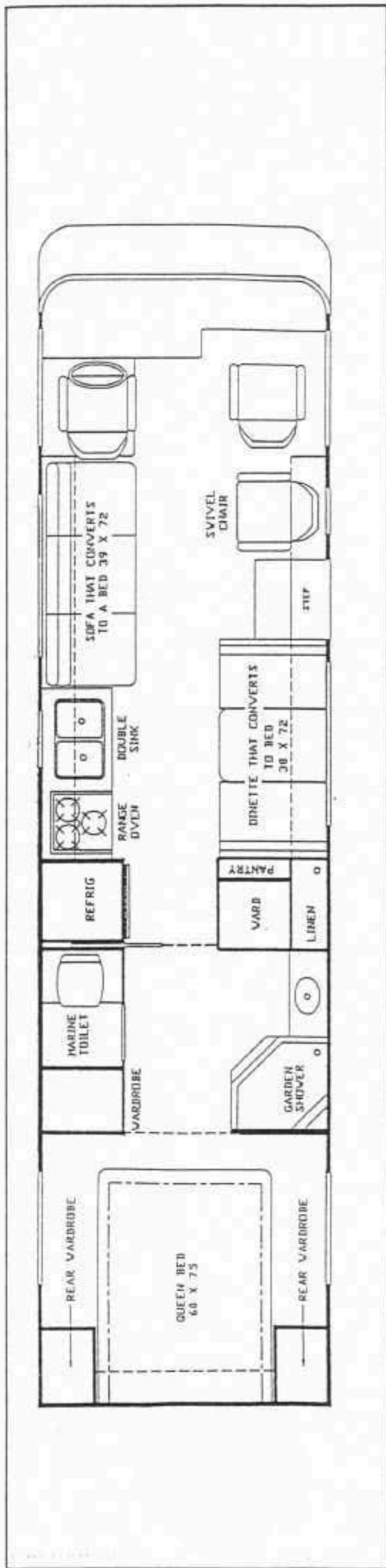
There are distributors and dealers around the world ready to stand behind every Allison Transmission product. Any situation that arises in connection with the sale, operation or service of your transmission will be handled by the distributor or dealer in your area.

Reference to the North American Parts and Service Directory (SA 2229) or the International Parts and Service Directory (SA 2338) for the current listing of Allison Transmission authorized distributors and service dealers.

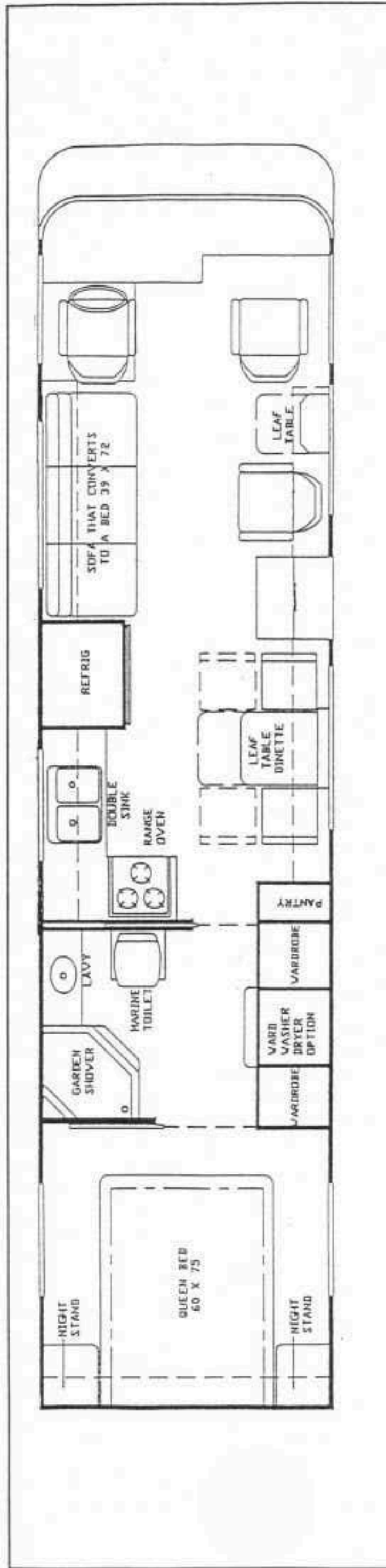
SERVICE LITERATURE

additional service literature is available. This service literature provides fully illustrated instructions for the operation, maintenance, service, overhaul and parts support of your transmission. To ensure that you get maximum performance and service life from your unit, see your dealer or distributor for the following publications. Check the telephone directory for the Allison Transmission service outlet nearest you.

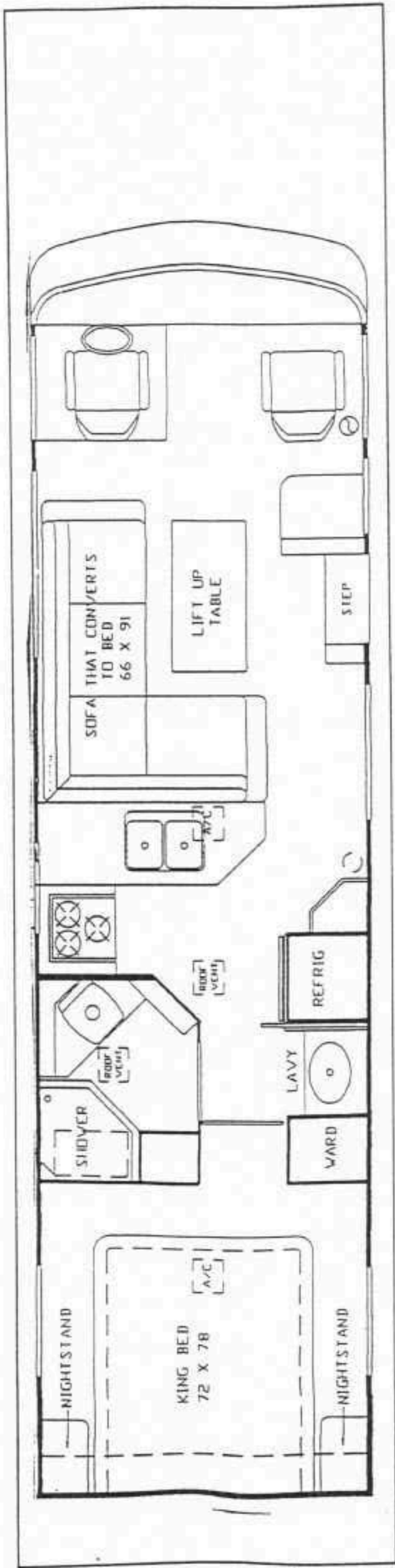
| Transmission Series | Mechanic's Tips | Service Manual | Parts Catalog | Technician's Guide |
|---|-----------------|----------------|---------------|--------------------------------|
| AT 542 | | SA2125 | SA2126 | SA2055* SA2123** |
| AT545 | SA1321 | SA1241 | SA1235 | SA1948 SA2055* |
| MT, MTB643, 653CR | SA1357 | SA1317 | SA1316 | SA2009*** SA2055* |
| MT, MTB647 654CR | SA1357 | SA1546 | SA1551 | SA2006 SA2009*** SA2055* |
| HT740, 747, 754CR , 750DR 750DR DB | SA1366 | SA1270 | SA1268 | SA2033 SA2055* |
| * Automatic Transmission Fluid ** Principles of Operation *** Output Retarder Inspection/Analysis | | | | |



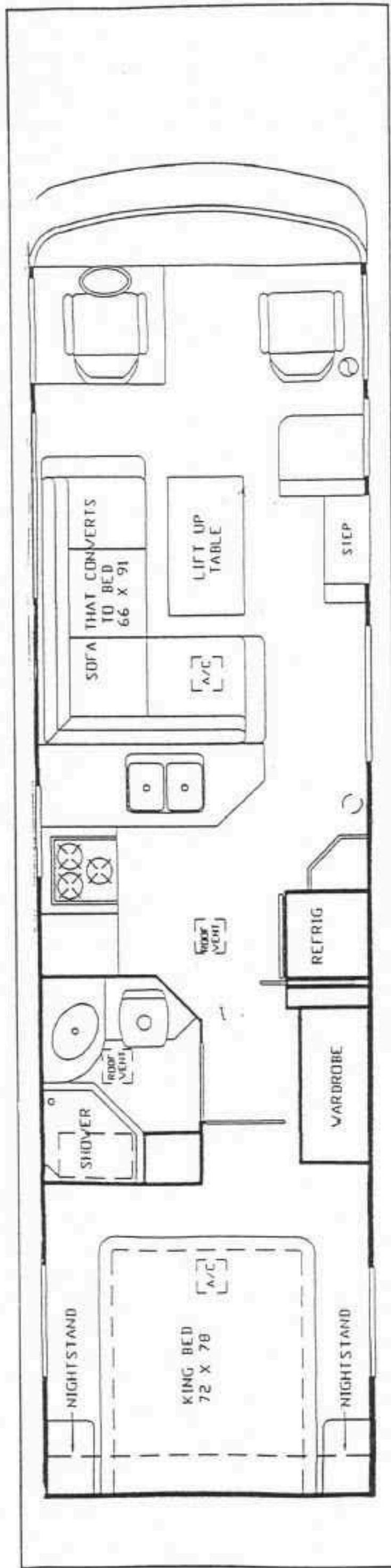
MODEL 32D



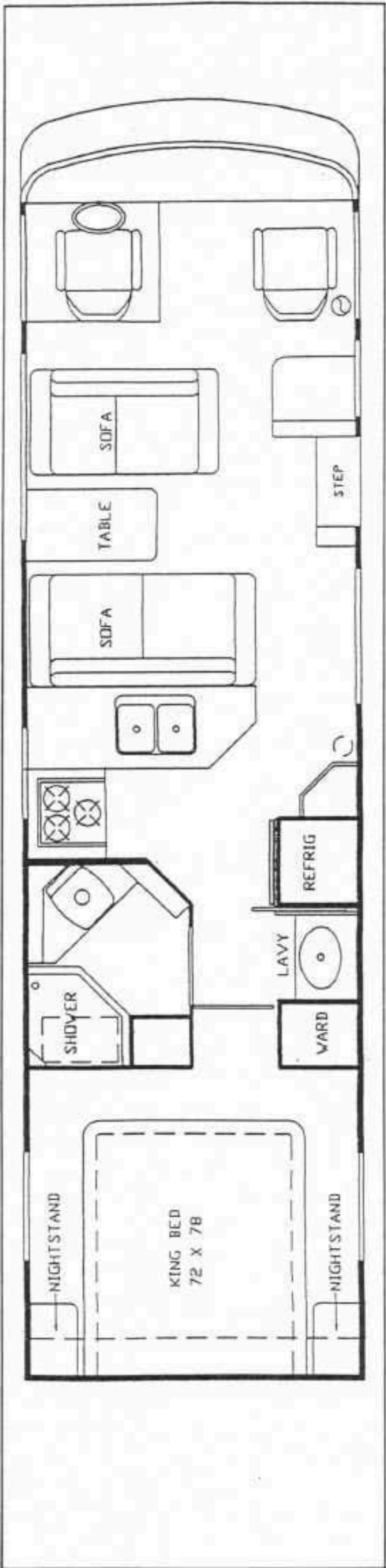
MODEL 34D



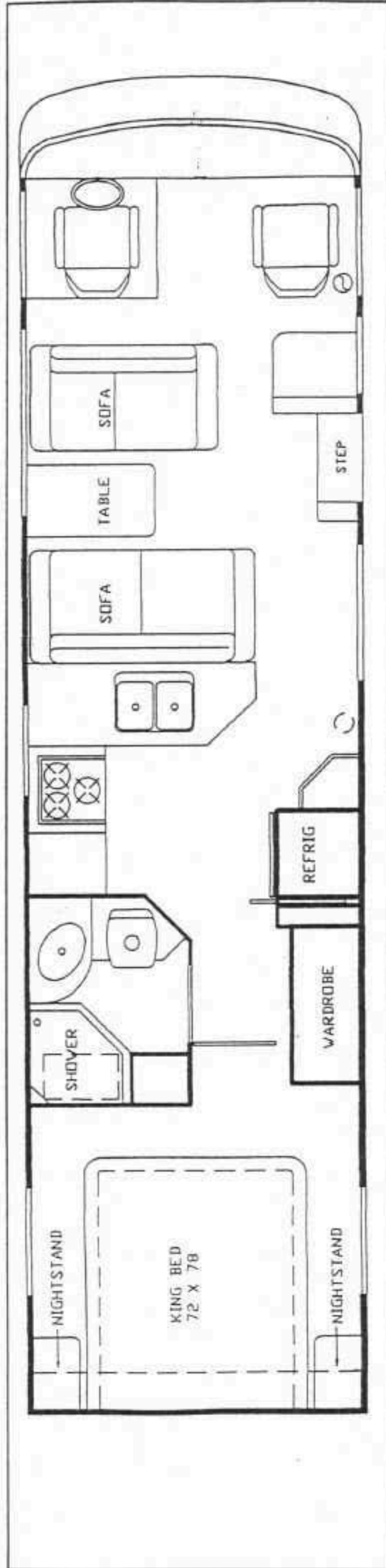
WIDE BODY MODEL 632



WIDE BODY MODEL 634

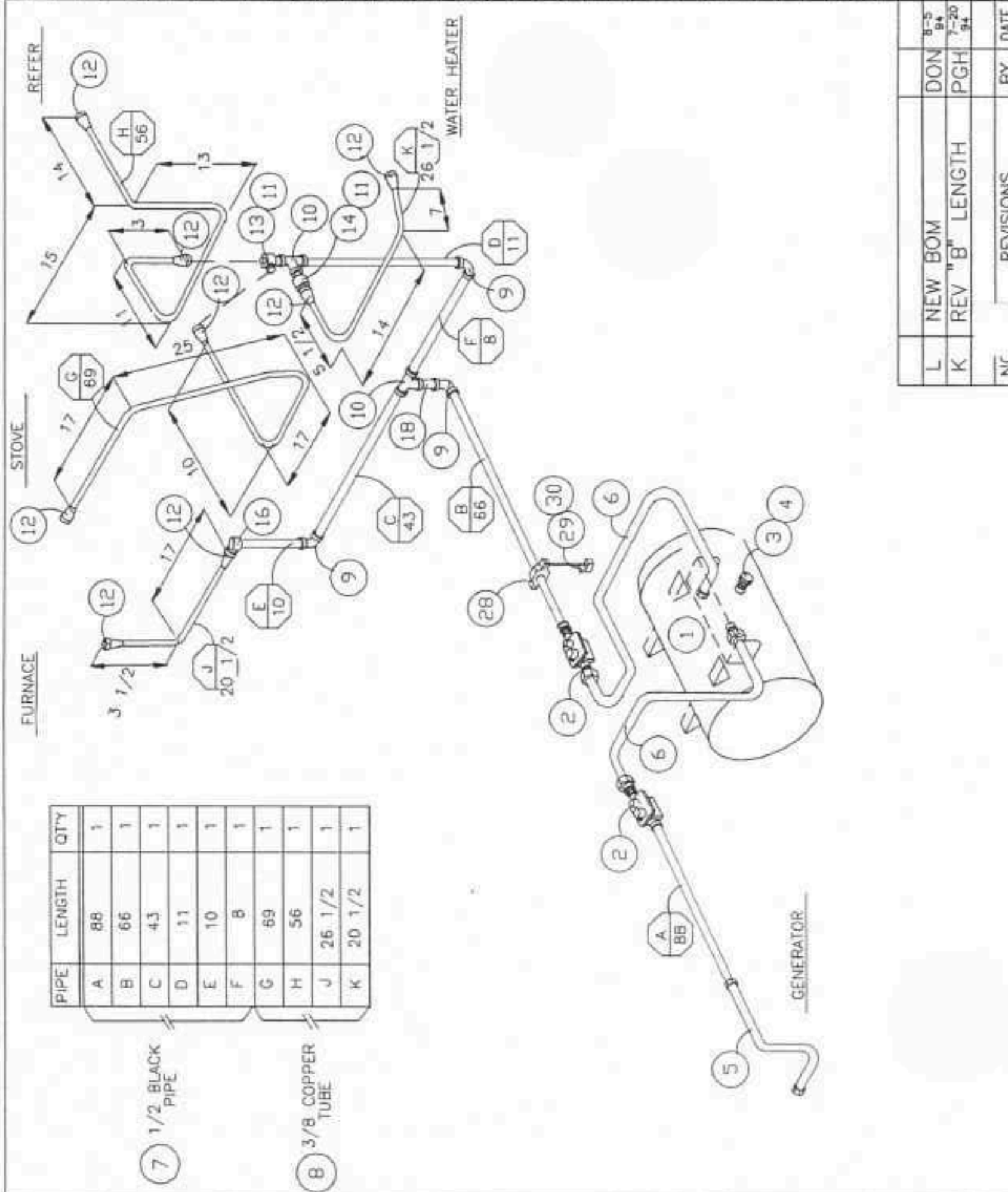


WIDE BODY MODEL 632
 OPPOSING SOFA'S



WIDE BODY MODEL 634
 OPPOSING SOFA'S

| ITEM | DESCRIPTION | RO'D | PART NO. |
|------|---------------------------------|------|----------|
| 1 | LPG TANK W/SHUT-OFF GAL 43.4 | 1 | #105562 |
| 2 | REGULATOR w/POL ADPT | 2 | #105664 |
| 3 | DIAL CHAMBER | 1 | #100707 |
| 4 | DIAL CHAMBER (REMOTE) | 1 | #10070B |
| 5 | FLEX HOSE 3/8 FFL | 1 | #101910 |
| 6 | FLEX HOSE HIGH PRESSURE 3/8 FFL | 2 | #105637 |
| 7 | BLACK PIPE 1/2 OD | 1 | #101377 |
| | X 277 | | |
| 8 | COPPER TUBE 3/8 OD | 1 | #100630 |
| | X 108 | | |
| 9 | ELBOW 1/2 BLACK | 3 | #101025 |
| 10 | TEE 1/2 BLACK | 2 | #101027 |
| 11 | CLOSE NIPPLE 1/2 BLK | 2 | #100622 |
| 12 | FLARE NUT 3/8 BRASS | 8 | #100612 |
| 13 | TEE 3/8 MFL 1/2 MIP | 1 | #100619 |
| 14 | ADPT 1/2 FFL X 3/8 FFL | 1 | #100617 |
| 16 | ELBOW 1/2 FFL X 3/8 FFL | 1 | #100618 |
| 18 | NIPPLE 2 BLK | 1 | #100623 |
| | | | |
| 28 | GROUND CLAMP 1/2 BLK PIPE | 1 | #100400 |
| 29 | GROUND CLIP | 1 | #100399 |
| 30 | BARE COPPER WIRE #8 | 1 | #100371 |
| | | | |
| 35 | PLUMBERS TAPE | | #100621 |
| 36 | PLST LOOP CLAMP | 20 | #300317 |
| | | | |
| 38 | BOLT-1/2 CARRAGE X 2 1/4 | 4 | |
| 39 | NUT - 1/2 HEX | 4 | |
| 40 | WASHER-1/2 FENDER | 4 | |
| 41 | WASHER - FLAT | 4 | |



| NEW BOM | BY | DATE |
|---------|-----|---------|
| L | PGH | 7-20-94 |
| K | PGH | 7-20-94 |
| NC | | |

| REVISIONS | BY | DATE |
|-----------|----|------|
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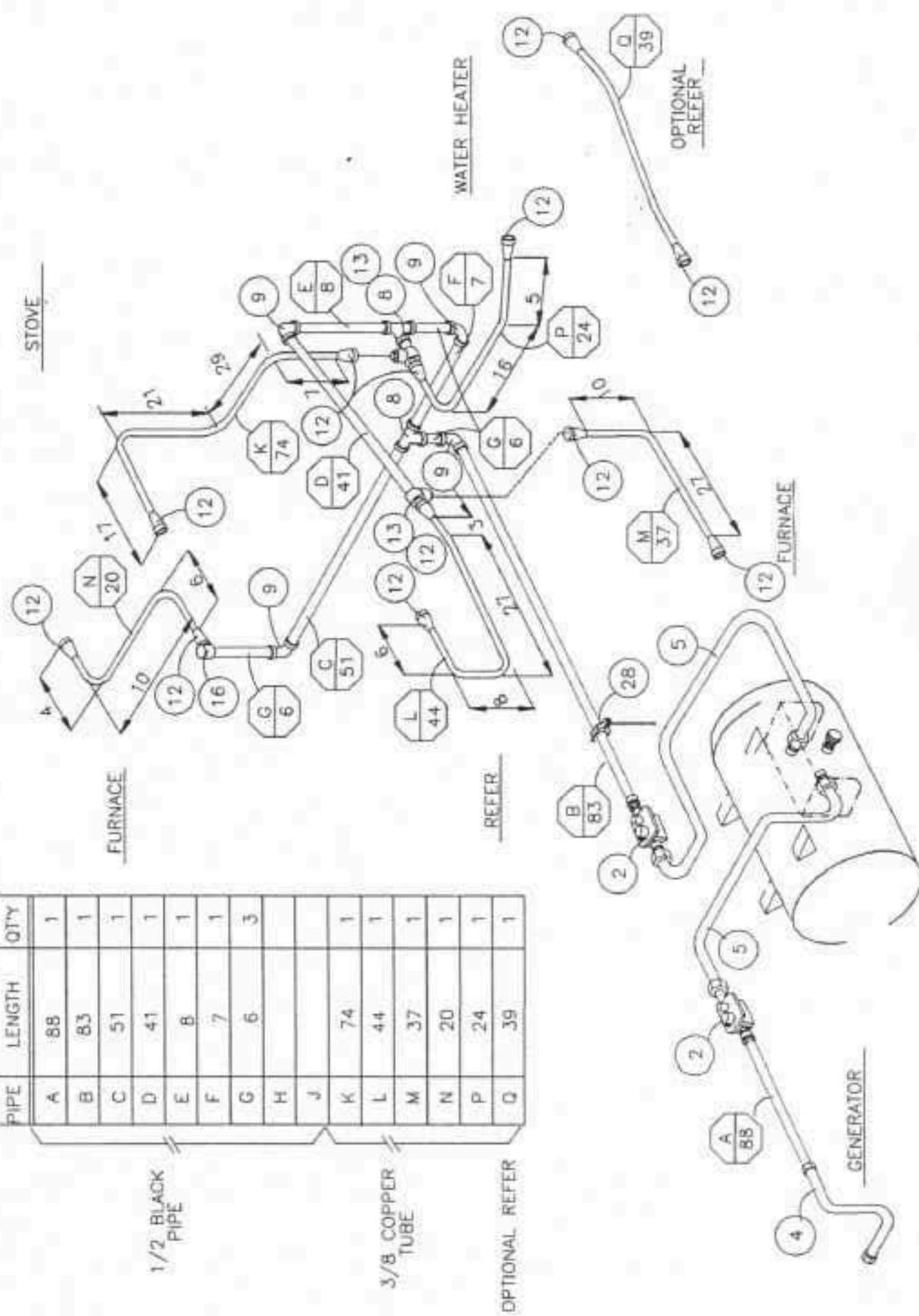
SCALE

DATE

MODEL: 32-D

11-17-94

| PIPE | LENGTH | QTY |
|------|--------|-----|
| A | 88 | 1 |
| B | 83 | 1 |
| C | 51 | 1 |
| D | 41 | 1 |
| E | 8 | 1 |
| F | 7 | 1 |
| G | 6 | 3 |
| H | | |
| J | | |
| K | 74 | 1 |
| L | 44 | 1 |
| M | 37 | 1 |
| N | 20 | 1 |
| P | 24 | 1 |
| Q | 39 | 1 |

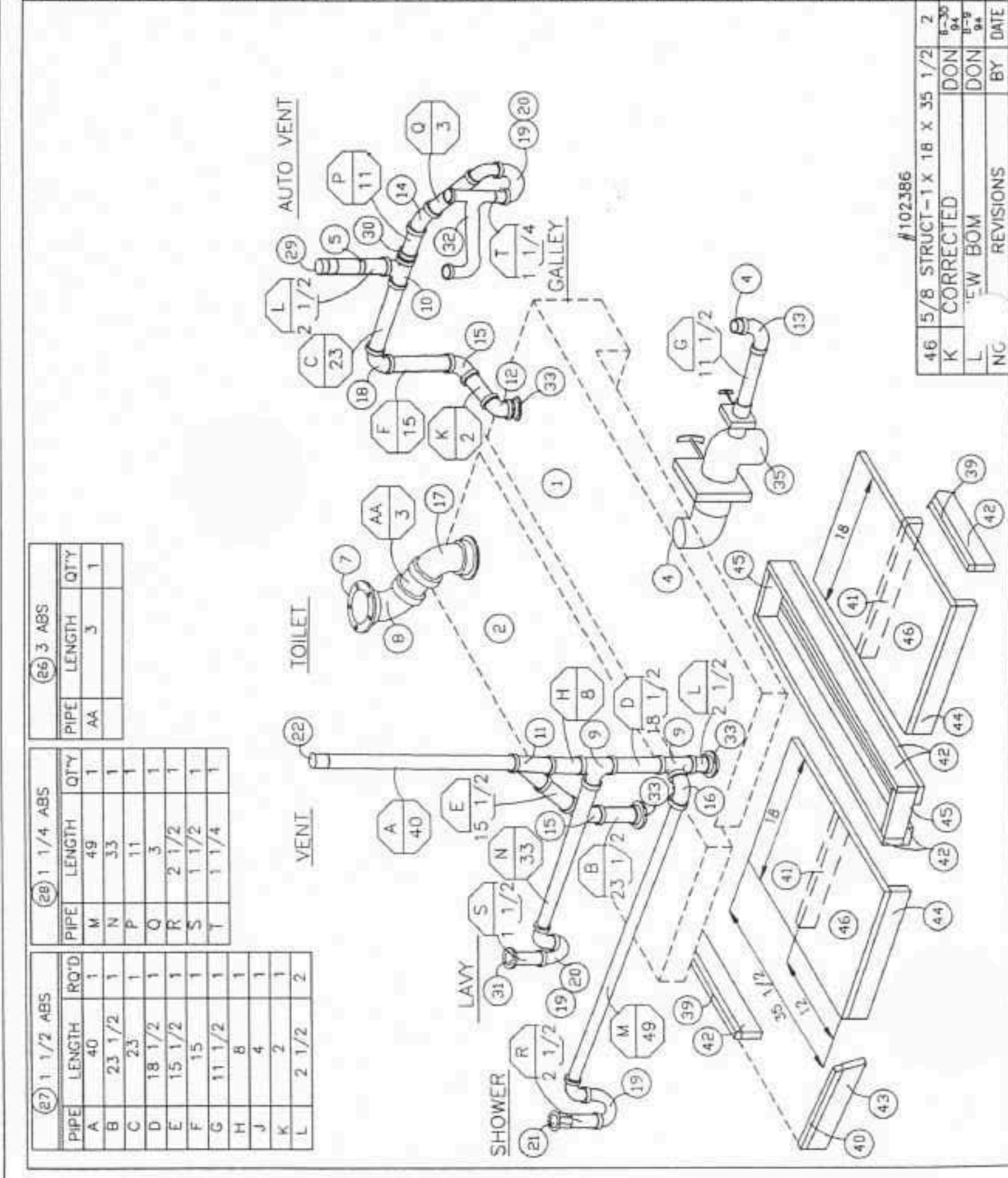


| ITEM | DESCRIPTION | QTY | RO'D | PART NO. |
|------|----------------------------------|-----|------|----------|
| 1 | LPG TANK W/SHUT-OFF GAL | 1 | 1 | #105562 |
| 2 | REGULATOR w/POL ADPT | 1 | 1 | #102063 |
| 3 | DIAL CHAMBER (REMOTE) | 1 | 1 | #100707 |
| 4 | FLEX HOSE 3/8 F-FL | 1 | 1 | #101910 |
| 5 | FLEX HOSE 1/2 FIP-48 | 1 | 1 | #105637 |
| 6 | BLACK PIPE 1/2 OD | 1 | 1 | #101377 |
| 7 | COPPER TUBE 3/8 OD | 1 | 1 | #100630 |
| 8 | TEE 1/2 BLACK | 2 | 2 | #101027 |
| 9 | ELBOW 1/2 BLACK | 4 | 4 | #101025 |
| 10 | CLOSE NIPPLE 1/2 BLK | 2 | 2 | #100622 |
| 11 | | | | |
| 12 | FLARE NUT 3/8 BRASS | 10 | 10 | #100612 |
| 13 | TEE 3/8 MFL 1/2 MIP | 2 | 2 | #100619 |
| 16 | ELBOW 1/2 FIP X 3/8 T.F.L. BRASS | 1 | 1 | #100618 |
| 28 | GROUND CLAMP 1/2 BLK PIPE | 1 | 1 | #100400 |
| 30 | BOLT-1/2 CARRAGE X 2 1/4 | 4 | 4 | |
| 31 | NUT - 1/2 HEX | 4 | 4 | |
| 32 | WASHER-1/2 FENDER | 4 | 4 | |
| 33 | WASHER - 1/2 LOCK | 4 | 4 | |
| 33 | WASHER -- FLAT | 4 | 4 | |
| 35 | PLUMBERS TAPE | | | #100621 |
| 36 | PLST LOOP CLAMP | 20 | 20 | #300317 |

| REVISED PART #'S | DATE | BY | DATE |
|------------------|------|-----|------|
| D | 3-3 | DON | |
| E | 6-28 | PGH | |
| F | 7-20 | PGH | |
| NC | | | |

| SCALE | DATE |
|--------------|-------|
| GAS PLUMBING | 4-1-9 |
| MODEL: 34-D | |

| ITEM | DESCRIPTION | RO'D | PART NO. |
|------|--|------|----------|
| 1 | LIQUID WASTE TANK INCA #RE35 P-204 | 1 | #104853 |
| 2 | SOLID WASTE TANK INCA #RE35 P-203 | 1 | #104854 |
| 4 | ADJ CLAMP - 2 3/4 | 2 | #301641 |
| 5 | 1 1/2 COUPLER | 1 | #100653 |
| 7 | 3" FEM CLOSET FLANGE | 1 | #100534 |
| 8 | ELBOW 1/8 BEND x 3 | 1 | #104600 |
| 9 | 1 1/2 x 1 1/2 x 1 1/4 SAN TEE | 2 | #100645 |
| 10 | 1 1/2 x 1 1/2 x 1 1/2 SAN TEE | 1 | #100658 |
| 11 | WYE x 1 1/2 x 1 1/2 x 1 1/2 | 1 | #100647 |
| 12 | ELBOW 1/8 BEND x 1 1/2 45° STR | 1 | #100648 |
| 13 | ELBOW 1/4 BEND x 1 1/2 | 1 | #100659 |
| 14 | ELBOW 1/8 BEND x 1 1/4 | 1 | #100656 |
| 15 | ELBOW 1/8 BEND x 1 1/2 | 2 | #100651 |
| 16 | ELBOW 1/8 BEND x 1 1/4 45° STR | 2 | #100654 |
| 17 | ELBOW 1/8 BEND x 3 45° STR | 1 | #100638 |
| 18 | ELBOW 1/4 BEND x 1 1/2 90° | 1 | #100659 |
| 19 | P-TRAP 1 1/4 SLIP FEMALE ADPT x 1 1/4 SWIVEL | 3 | #104833 |
| 20 | TRAP ADPT-1 1/2x1 1/4 | 2 | #104834 |
| 21 | BASKET STRAINER 2 1/2 | 2 | #102582 |
| 22 | ROOF VENT CAPS | 1 | #100671 |
| 23 | TOILET | 1 | #102105 |
| 24 | GALLEY SINK ENAMEL | 1 | #104855 |
| 25 | SHOWER STALL | 1 | |
| 26 | 3" ABS x 1 FT. | 1 | #100596 |
| 27 | 1 1/2" ABS x 27 FT. | 1 | #100595 |
| 28 | 1 1/4" ABS x 8 FT. | 1 | #100594 |
| 29 | AUTO-VENT | 1 | #100650 |
| 30 | REDUCER 1 1/2 TO 1 1/4 | 1 | #100655 |
| 31 | LAVY w/A-56-C DRAIN | 1 | #100670 |
| 32 | CONT WASTE SYSTEM | 1 | #100666 |
| 33 | 1 1/2 ADPT FSMPT | 3 | #104755 |
| 35 | 3 TERM VALVE ASSEMBLY | 1 | #104053 |
| 39 | A PINE x 3/4 x 3/4x B4 3/4 | 2 | #101565 |
| 40 | X 50 | 1 | |
| 41 | B PINE x 3/4 x 1 1/4 x 18 | 2 | #101566 |
| 42 | D PINE x 3/4 x 2 X B4 3/4 | 6 | #101940 |
| 43 | X 50 | 1 | |
| 44 | X 18 | 2 | SCALE |
| 45 | X 6 3/4 | 2 | |

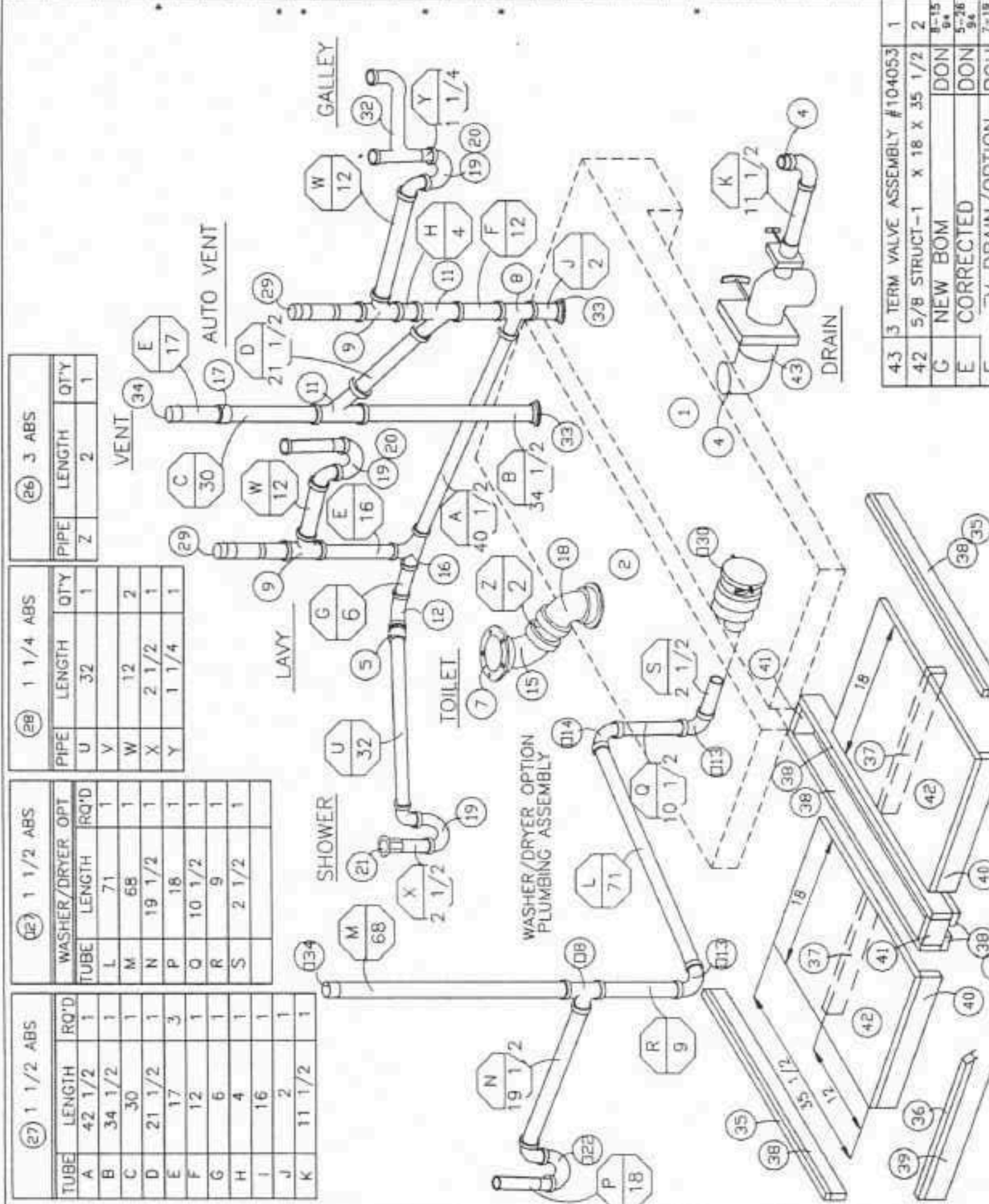


| (27) 1 1/2 ABS | | | | (28) 1 1/4 ABS | | | | (26) 3 ABS | | | |
|----------------|--------|------|-----|----------------|--------|-----|-----|------------|--------|-----|-----|
| PIPE | LENGTH | RO'D | QTY | PIPE | LENGTH | QTY | QTY | PIPE | LENGTH | QTY | QTY |
| A | 40 | 1 | 1 | M | 49 | 1 | 1 | AA | 3 | 1 | 1 |
| B | 23 1/2 | 1 | 1 | N | 33 | 1 | 1 | | | | |
| C | 23 | 1 | 1 | P | 11 | 1 | 1 | | | | |
| D | 18 1/2 | 1 | 1 | Q | 3 | 1 | 1 | | | | |
| E | 15 1/2 | 1 | 1 | R | 2 1/2 | 1 | 1 | | | | |
| F | 15 | 1 | 1 | S | 1 1/2 | 1 | 1 | | | | |
| G | 11 1/2 | 1 | 1 | T | 1 1/4 | 1 | 1 | | | | |
| H | 8 | 1 | 1 | | | | | | | | |
| J | 4 | 1 | 1 | | | | | | | | |
| K | 2 | 1 | 1 | | | | | | | | |
| L | 2 1/2 | 2 | 2 | | | | | | | | |

| NO | REVISIONS | BY | DATE |
|----|----------------------------|-----|---------|
| 46 | 5/8 STRUCT-1 X 18 X 35 1/2 | 2 | 6-30-94 |
| K | CORRECTED | DON | 9-9-94 |
| L | NEW BOM | DON | 9-9-94 |
| NC | | | |

#102386
 DRAIN PLUMBING
 MODEL: 32-D
 SCALE
 DATE
 11-16-94

| ITEM | DESCRIPTION | QTY | ROTD | PART NO. |
|------|--|-----|------|----------|
| 1 | DRUID WASTE TANK #H-526 | 1 | 1 | #104905 |
| 2 | SOLID WASTE TANK #H-526 | 1 | 1 | #104906 |
| 4 | ADJ CLAMP - 2 3/4 | 2 | 2 | #301641 |
| 5 | 1 1/2 TO 1 1/4 REDUCER | 1 | 1 | #100655 |
| 7 | 3" FEM CLOSET FLANGE | 1 | 1 | #100534 |
| 8 | 1 1/2 X 1 1/2 X 1 1/2 | 1 | 1 | #100658 |
| 9 | 1 1/2 X 1 1/2 X 1 1/4 | 1 | 1 | #100645 |
| 10 | LAVY w/A-56-C DRAIN | 1 | 1 | #100670 |
| 11 | WYE X 1 1/2 X 1 1/2 X 1 1/2 | 2 | 2 | #100646 |
| 12 | ELBOW 1/8 BEND X 1 1/2 | 1 | 1 | #100651 |
| 13 | ELBOW 1/4 BEND X 1 1/2 | 1 | 1 | #100659 |
| 14 | ELBOW 1/4 BEND X 1 1/2 | 0 | 0 | #100651 |
| 15 | ELBOW 1/8 BEND X 3 | 1 | 1 | #104600 |
| 16 | X 1 1/2 X 1 1/2 X 1 1/2 | 1 | 1 | #100647 |
| 17 | COULPER X 1 1/2 | 1 | 1 | #100653 |
| 18 | ELBOW 1/8 BEND X 3 | 1 | 1 | #100638 |
| 19 | P-TRAP 1 1/4 SLIP FEMALE ADPT X 1 1/4 SWIVEL | 3 | 3 | #104833 |
| 20 | TRAP ADPT-1 1/2 X 1 1/4 | 2 | 2 | #104834 |
| 21 | BASKET STRAINER 2 1/2 | 2 | 2 | #102582 |
| 22 | P-TRAP 1 1/2 SLIP FEMALE ADPT X 1 1/2 SWIVEL | 1 | 1 | |
| 23 | TOILET | 1 | 1 | #102105 |
| 24 | GALLEY SINK ENAMEL | 1 | 1 | #104855 |
| 25 | SHOWER STALL | 1 | 1 | |
| 26 | 3" ABS X 1 FT. | 1 | 1 | #100596 |
| 27 | 1 1/2" ABS X 2.7 FT. | 1 | 1 | #100595 |
| 28 | 1 1/4" ABS X 8 FT. | 1 | 1 | #100594 |
| 29 | AUTO-VENT | 2 | 2 | #100650 |
| 30 | 5" TO 1 1/2" REDUCER/ASSM'LY | 1 | 1 | #40733 |
| 32 | CONT WASTE SYSTEM | 1 | 1 | #100666 |
| 33 | 1 1/2 ADPT FSMPT | 2 | 2 | #104755 |
| 34 | ROOF VENT CAPS | 2 | 2 | #100671 |
| 35 | A PINE 3/4 X 3/4 X 84 3/4 X 50 | 1 | 1 | |
| 36 | B PINE X 3/4 X 1 1/4 X 18 | 2 | 2 | |
| 38 | D PINE X 3/4 X 2 X 84 3/4 X 50 | 6 | 6 | |
| 39 | X 50 | 1 | 1 | |
| 40 | X 18 | 2 | 2 | |
| 41 | X 7 3/4 | 2 | 2 | |



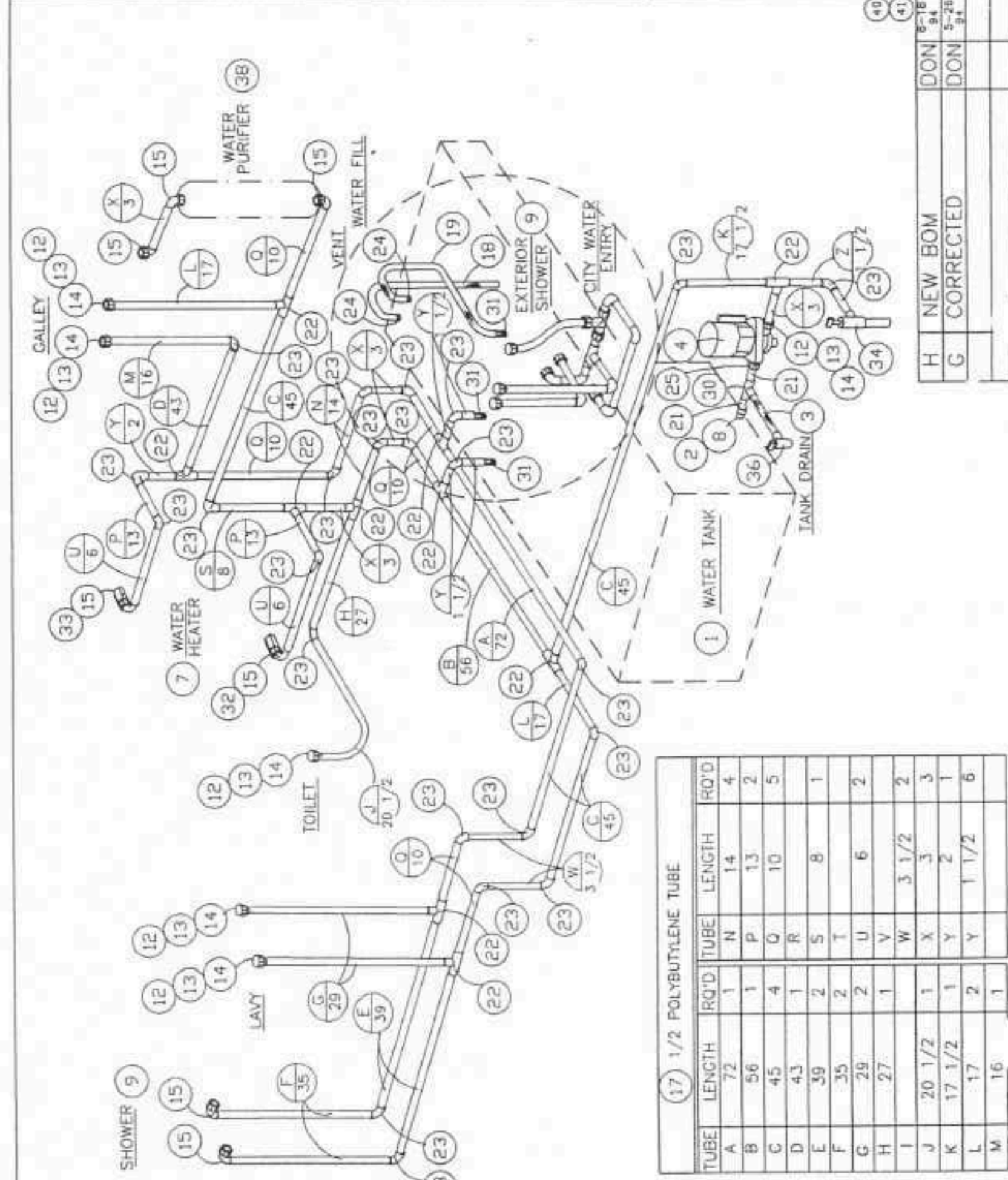
| (27) 1 1/2 ABS | | | (28) 1 1/4 ABS | | | (26) 3 ABS | | |
|----------------|--------|-----|----------------|--------|-----|------------|--------|-----|
| TUBE | LENGTH | QTY | PIPE | LENGTH | QTY | PIPE | LENGTH | QTY |
| A | 42 1/2 | 1 | U | 32 | 1 | Z | 2 | 1 |
| B | 34 1/2 | 1 | V | 12 | 2 | | | |
| C | 30 | 1 | W | 2 1/2 | 1 | | | |
| D | 21 1/2 | 1 | X | 1 1/4 | 1 | | | |
| E | 17 | 3 | Y | 1 1/4 | 1 | | | |
| F | 12 | 1 | | | | | | |
| G | 6 | 1 | | | | | | |
| H | 4 | 1 | | | | | | |
| I | 16 | 1 | | | | | | |
| J | 2 | 1 | | | | | | |
| K | 11 1/2 | 1 | | | | | | |

| (22) 1 1/2 ABS | | |
|------------------|--------|-----|
| WASHER/DRYER OPT | LENGTH | QTY |
| L | 71 | 1 |
| M | 68 | 1 |
| N | 19 1/2 | 1 |
| P | 18 | 1 |
| Q | 10 1/2 | 1 |
| R | 9 | 1 |
| S | 2 1/2 | 1 |

| NO. | REVISIONS | BY | DATE |
|-----|-------------------------------|-----|---------|
| 43 | 3 TERM VALVE ASSEMBLY #104053 | | 1 |
| 42 | 5/8 STRUCT-1 X 18 X 35 1/2 | | 2 |
| G | NEW BOM | DON | 8-15-94 |
| E | CORRECTED | DON | 5-26-94 |
| F | V DRAIN/OPTION | PGH | 7-19-94 |

DRAIN PLUMBING
MODEL: 34-D
DATE
4-7-97

| ITEM | DESCRIPTION | QTY | PART NO. |
|---------------------|---------------------------------------|-----|----------|
| 1 | WATER TANK INCA. #1219 | 1 | # 104995 |
| 2 | WATER FILTER | 1 | # 100565 |
| 4 | WATER PUMP - 12V | 1 | # 103727 |
| 7 | WATER HEATER 6 GAL | 1 | # 101077 |
| 8 | COUPLING (WHT) 1/2" BARB x 1/2" MPT | 2 | # 104009 |
| 9 | SHOWER TELEPHONE HEAD w/ 1/2" HOSE | 2 | # 104999 |
| 10 | LAVY FAUCET | 1 | # 100563 |
| 11 | SHOWER FAUCET | 2 | # 104998 |
| 12 | 1/2" TERM FITTING | 6 | # |
| 13 | 1/2" PLST WASHER | 6 | # 100603 |
| 14 | 1/2" PLST NUT | 6 | # 100604 |
| 15 | STREET EL 1/2" BARB x 1/2" SWIVEL FPI | 6 | # 105111 |
| 17 | 1/2" POLYBUTYLENE TUBE x 71 FT | 1 | # 100592 |
| 18 | 1/2" FLEX HOSE x 36 | 1 | # 100784 |
| 19 | x 22 | 1 | |
| 20 | x 3 | 1 | |
| 21 | x 2 | 2 | |
| 22 | TEE -1/2" BRASS | 10 | # 105112 |
| 23 | ELBOW -1/2" BRASS | 23 | # 105113 |
| 24 | ELBOW (WHT) x 1/2" BARB | 2 | # 100569 |
| 25 | FITTING 1/2" BARB x 1/2" SWIVEL | 1 | # W/PUMP |
| 30 | TEE 1/2" BARB x 1/2" BARB x 1/2" BARB | 1 | # 100571 |
| 31 | FIT 1/2" BARB x 1/2" MPT | 3 | # 100609 |
| 32 | CHECK VALVE 1/2" MPT x 1/2" MPT | 1 | # 100669 |
| 33 | COUPLING 1/2" MPT x 1/2" MPT | 1 | # 100668 |
| 34 | LOW-POINT DRAIN VALVE 1/2" MPT | 1 | # 100610 |
| 36 | 1/2" DRAIN COCK | 1 | # 102580 |
| 38 | WATER PURIFIER KIT | 1 | # 106076 |
| 40 | 1/2" CRIMP RINGS | 86 | # 105115 |
| 41 | ADJ CLAMP -7/16-25/32 | 8 | # 103915 |
| HOT & COLD PLUMBING | | | SCALE |
| MODEL: 32-D PUSHER | | | DATE |
| | | | 11-25-9* |

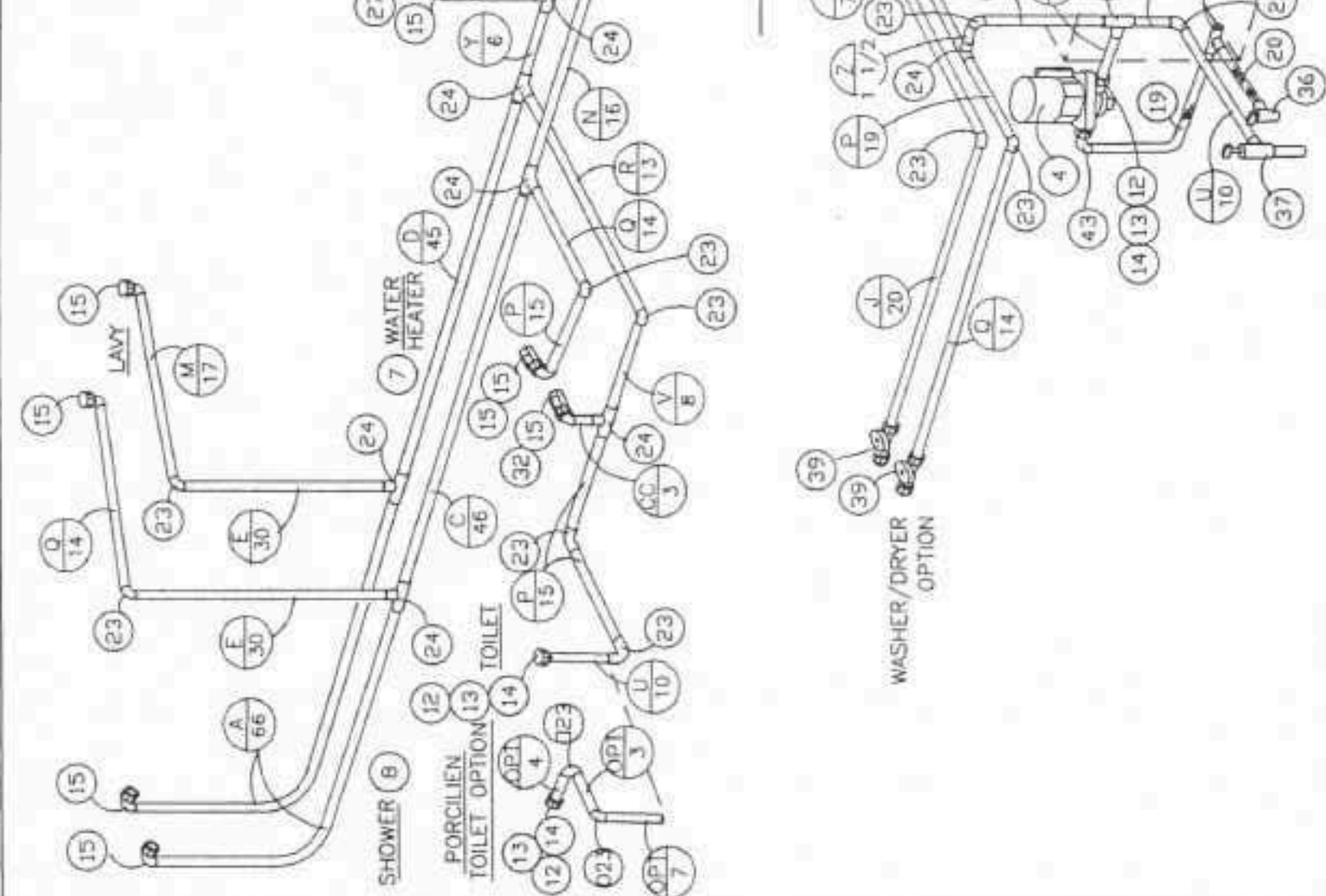


| NO. | REVISIONS | BY | DATE |
|-----|-----------|----|-------------|
| H | NEW BOM | | DON 8-16-94 |
| G | CORRECTED | | DON 5-28-94 |

| ITEM | DESCRIPTION | QTY | PART NO. |
|---------------------|-------------------------------------|------|----------|
| 1 | WATER TANK INCA #1219 | 1 | #104852 |
| 2 | WATER FILTER | 1 | #100568 |
| 4 | WATER PUMP - 12V | 1 | #103727 |
| 7 | WATER HEATER 6 GAL | 1 | #101077 |
| 8 | SHOWER TELEPHONE HEAD w/ 49 HOSE | 2 | #104999 |
| 9 | ELBOW (WHT) 1/2" BARB 1/2" MPT | 1 | #100569 |
| 10 | LAVY FAUCET | 1 | #100663 |
| 11 | SHOWER FAUCET | 2 | #104998 |
| 12 | 1/2 TERM FITTING | 7 | #100602 |
| 13 | 1/2 PLST WASHER | 7 | #100603 |
| 14 | 1/2 PLST NUT | 7 | #100604 |
| 15 | STREET EL 1/2" BARB SWIVEL FPI | 8 | #105111 |
| 17 | 1/2 POLYBUTYLENE TUBEX 70 FT | 1 | #100592 |
| 18 | 1/2 FLEX HOSE X 36 | 1 | #100784 |
| 19 | | X 22 | |
| 20 | | X 16 | |
| 21 | | X 12 | |
| 22 | 1/4 POLY TUBE X 36 | 1 | #302291 |
| 23 | ELBOW -1/2 BRASS | 16 | #105113 |
| 24 | TEE -1/2 BRASS | 13 | #105112 |
| 27 | WTR PURIFIER KIT | 1 | #106076 |
| 28 | VALVE 1/2 X 1/8 | 1 | #302283 |
| 30 | TEE 1/2 BARB X 1/2 BARB 1/2 MPT | 1 | #100606 |
| 31 | FIT 1/2 BARB X 1/2 MPT | 3 | #100609 |
| 32 | CHECK VALVE 1/2 MPT 1/2 MPT | 1 | #100669 |
| 33 | COUPLING 1/2 MPT 1/2 MPT | 1 | #100668 |
| 35 | CITY WATER CONNECTION | 1 | #100601 |
| 36 | 1/2 DRAIN COCK | 1 | #102580 |
| 37 | LOW POINT DRAIN VALVE | 1 | #100610 |
| 39 | W/D VALVE | 2 | #104936 |
| 41 | ADJ CLAMP-7/16-25/32 | 6 | #103915 |
| 42 | 1/2 CRIMP RINGS | 70 | #105115 |
| 43 | ELBOW 1/2 FPI-PLST | 1 | # W/PUMP |
| HOT & COLD PLUMBING | | | SCALE |
| MODEL: 34-D | | | DATE |
| | | | 3-15-93 |

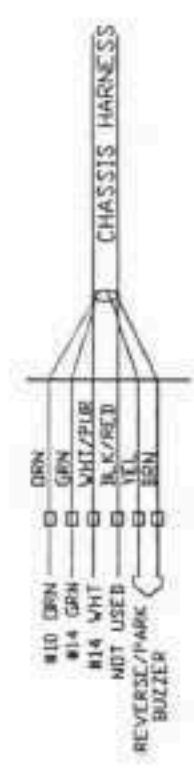
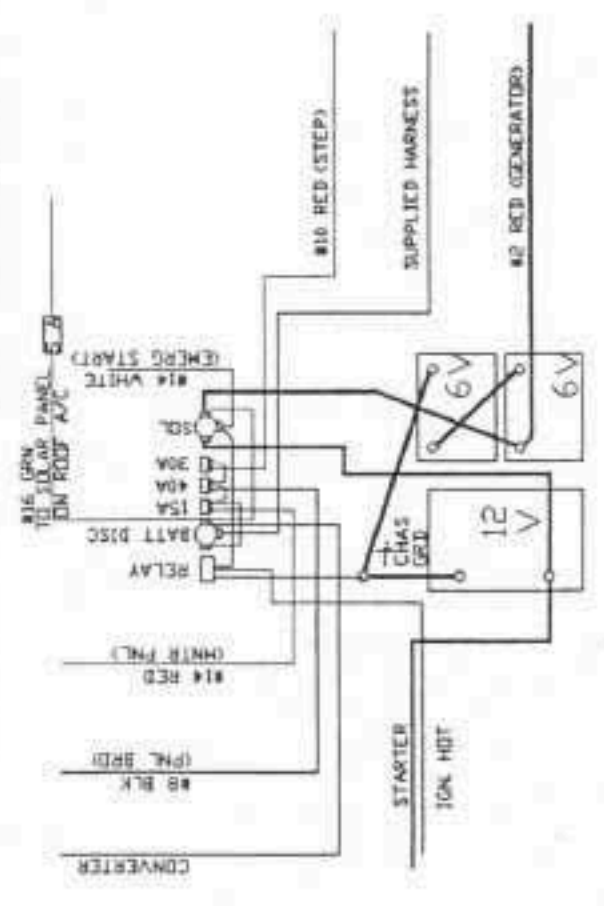
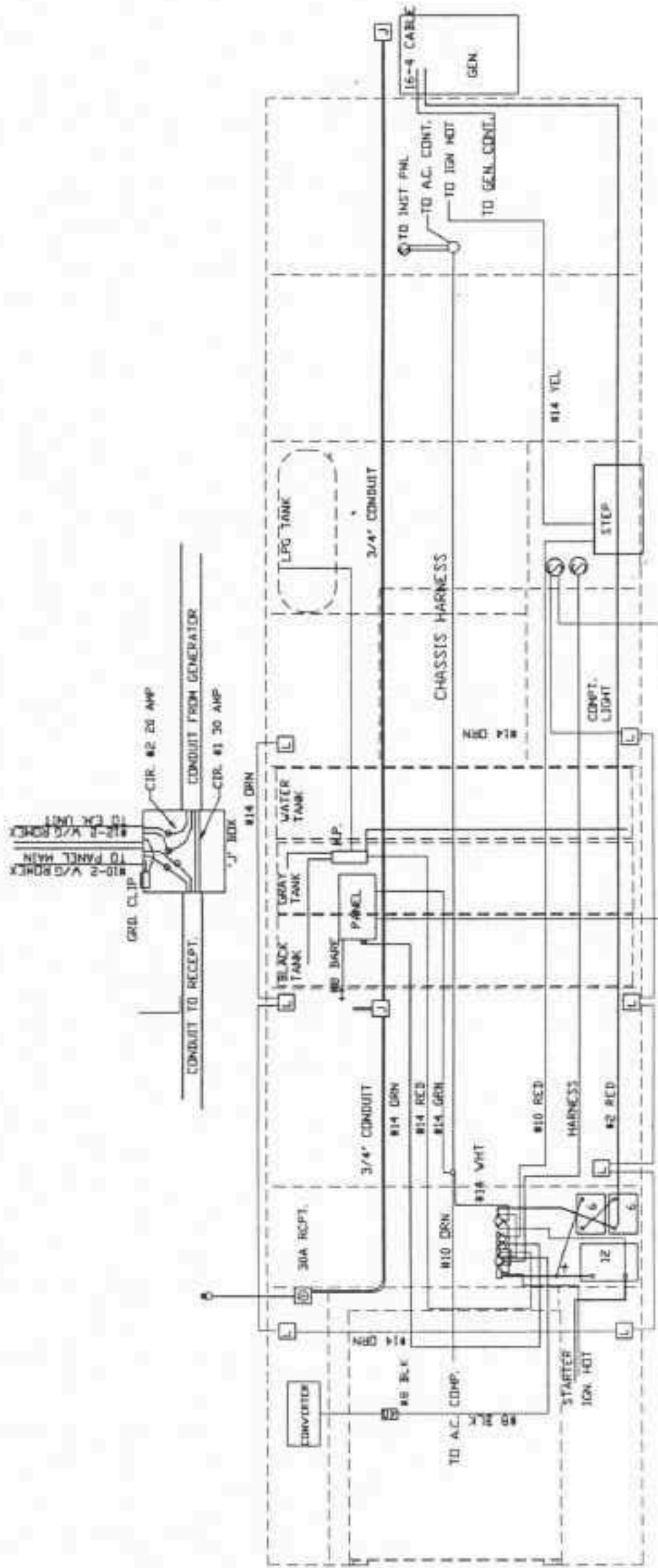
(17) 1/2 POLYBUTYLENE TUBE

| TUBE | LENGTH | QTY | TUBE | LENGTH | QTY |
|------|--------|-----|------|--------|-----|
| A | 73 | 1 | T | 10 1/2 | 1 |
| B | 53 | 1 | U | 10 | 2 |
| C | 46 | 1 | V | 8 | 1 |
| D | 45 | 1 | W | 5 | 1 |
| E | 30 | 2 | X | 7 | 2 |
| | | | Y | 6 | 1 |
| | | | Z | 1 1/2 | 5 |
| | | | AA | 4 | 1 |
| | | | BB | 3 | 3 |
| | | | CC | | |
| | | | DD | 2 | 4 |

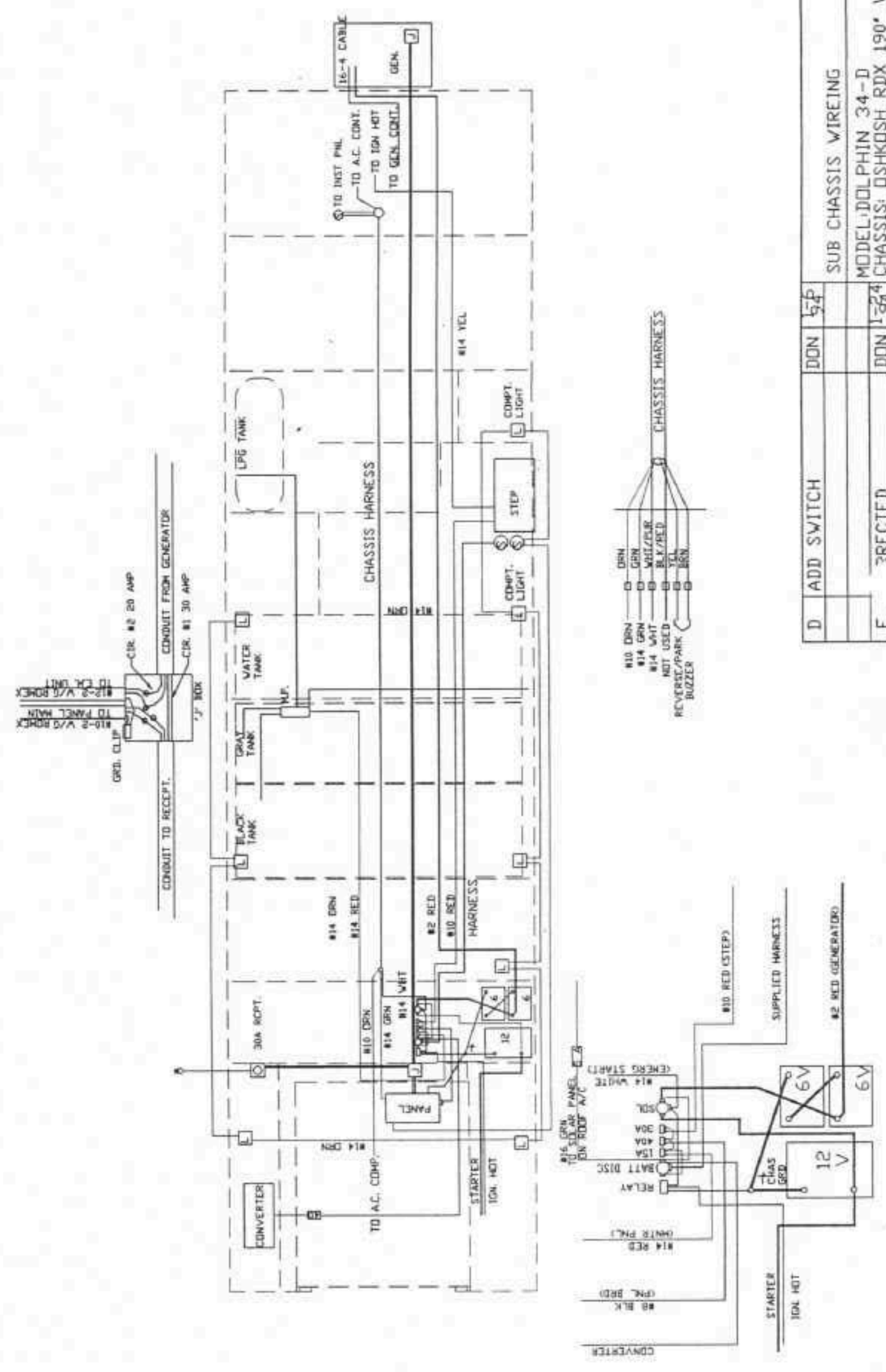


| NO. | REVISIONS | BY | DATE |
|-----|-----------|----|------|
| F | NEW BOM | 94 | 94 |
| E | CORRECTED | 94 | 94 |

| NO. | REVISIONS | BY | DATE |
|-----|-----------|----|------|
| F | NEW BOM | 94 | 94 |
| E | CORRECTED | 94 | 94 |

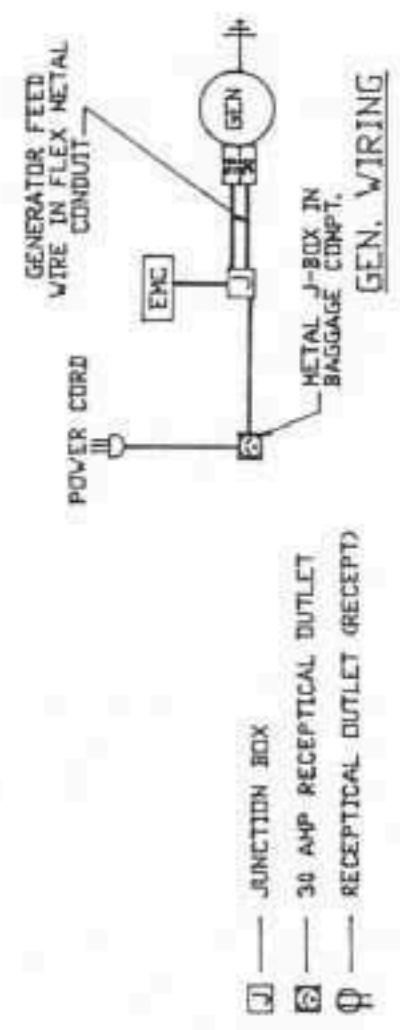
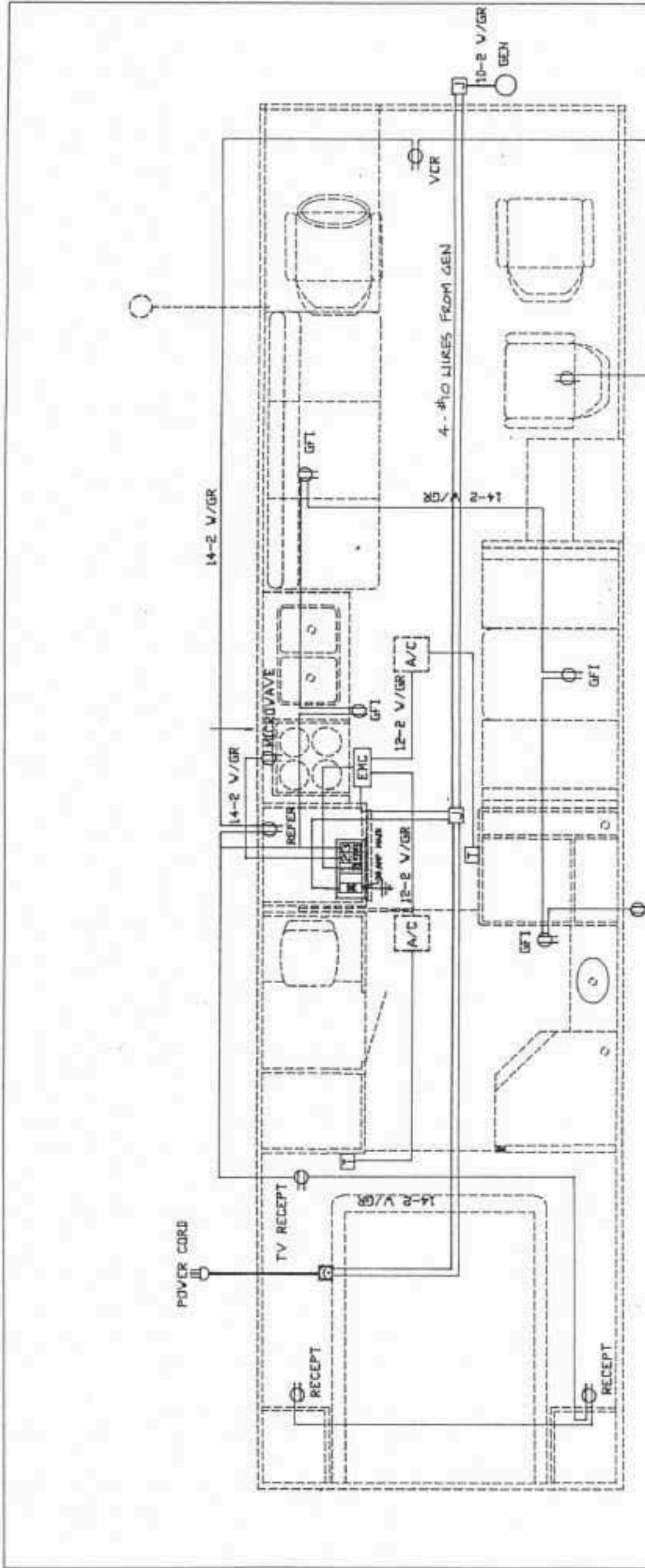


| | | | | |
|-----|------------|-----|---------|---|
| D | ADD SWITCH | DDN | 1/5/54 | MODEL: DOLPHIN 32-D CHASSIS: DSHKOSH RDX 190" W.B. |
| E | RECTED | DDN | 1/24/54 | SUB CHASSIS WIRING |
| NO. | REVISIONS | BY | DATE | |



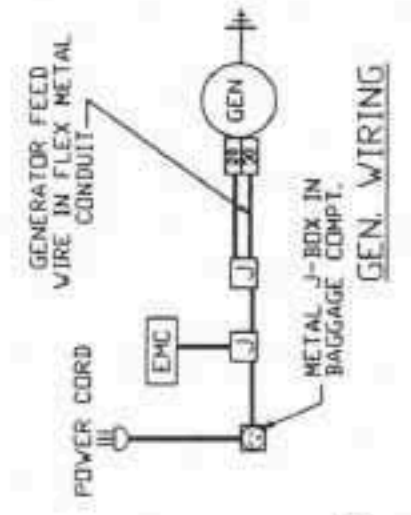
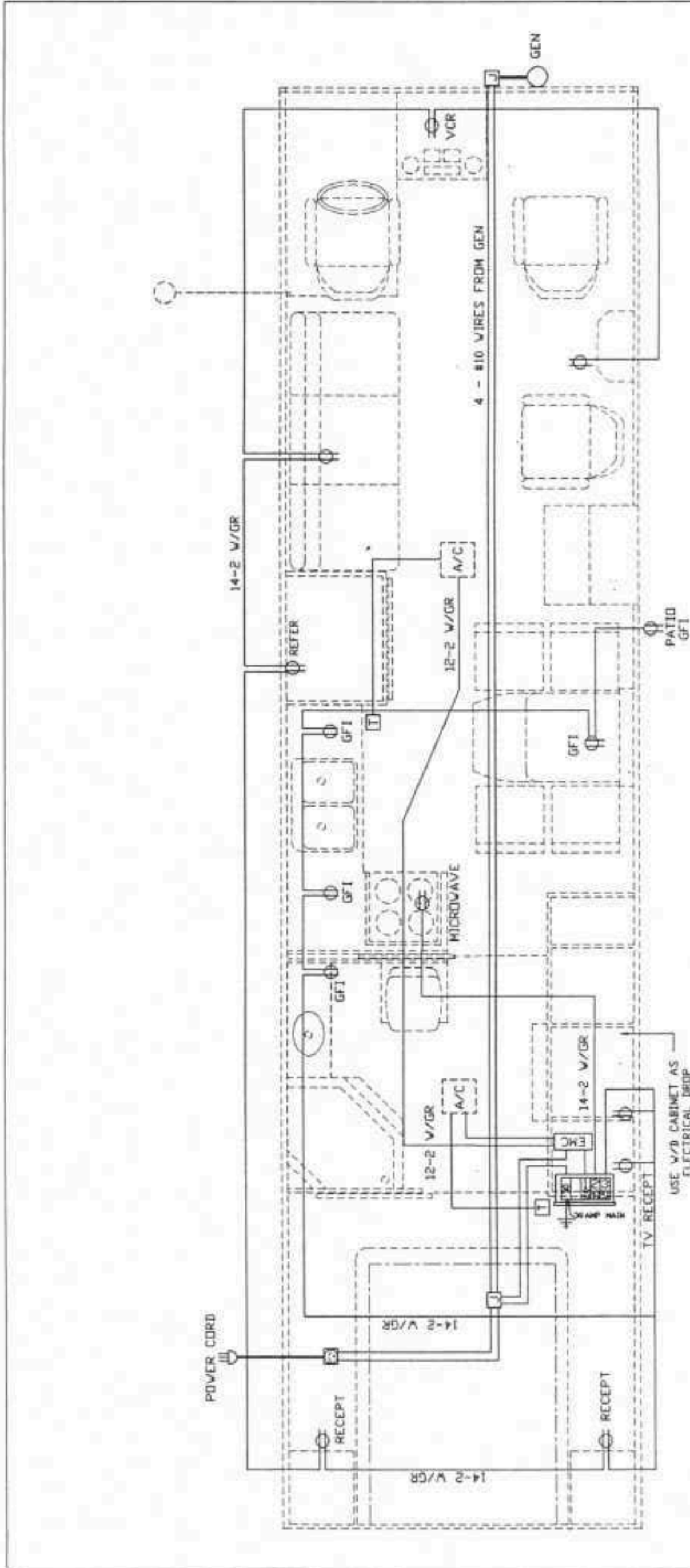
| | | | |
|-----|------------|-----|------|
| D | ADD SWITCH | DON | 5/74 |
| E | RECTED | DON | 1/74 |
| NO. | REVISIONS | BY | DATE |

SUB CHASSIS WIRING
 MODEL DOLPHIN 34-D
 CHASSIS: DSKHSH RDX 190* W.B.



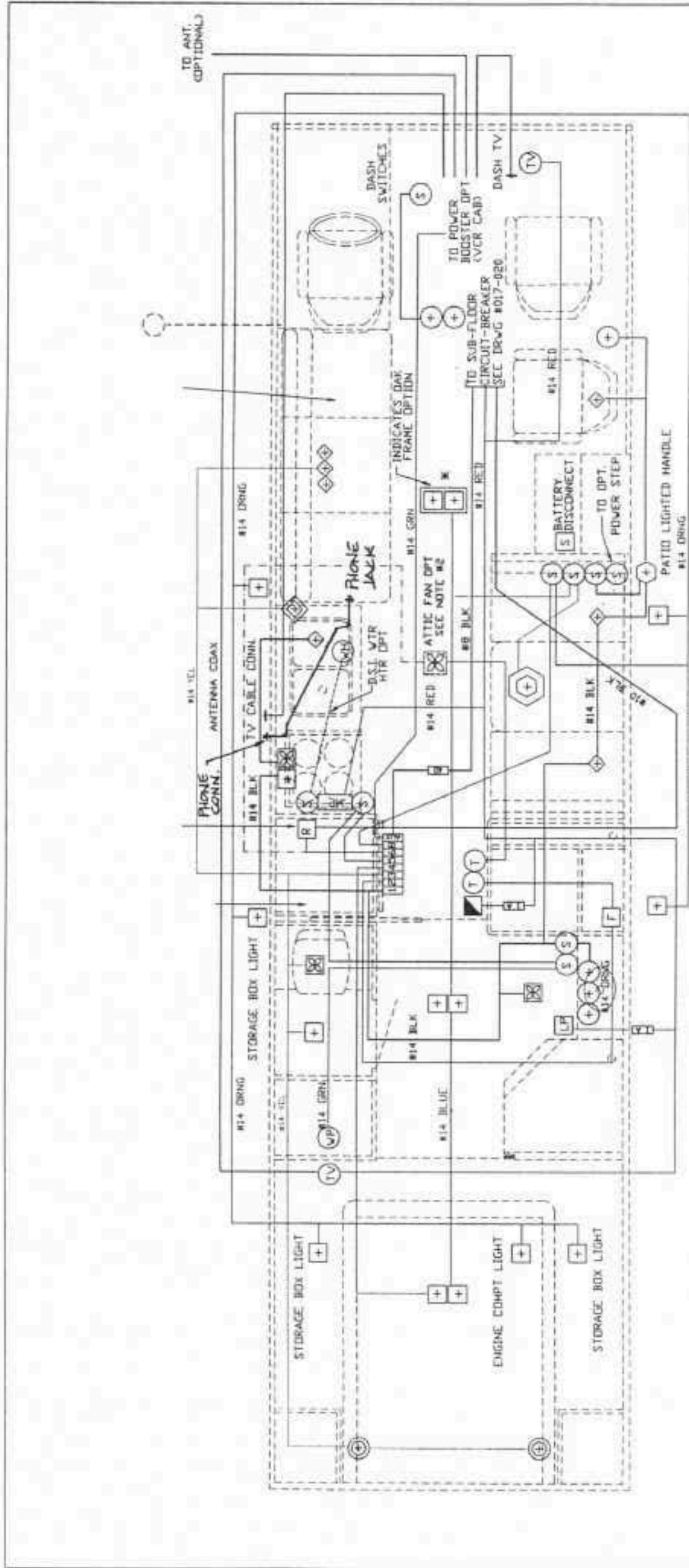
- J — JUNCTION BOX
- Ⓜ — 30 AMP RECEPTICAL OUTLET
- Ⓜ — RECEPTICAL OUTLET (RECEPT)

| | | | | | |
|----|--|-----------|-----|------------------------|---------|
| A | | TV DRWG | DDN | 1-28 | BY DATE |
| NC | | REVISIONS | | | |
| | | | | 110 V. HOUSE SCHEMATIC | |
| | | | | MODEL: 32D | |



- ⌋ — JUNCTION BOX
- Ⓜ — 30 AMP RECEPTICAL OUTLET
- Ⓜ — RECEPTICAL OUTLET (RECEPT)

| | | | | | |
|----------|------|-----------|----|------------------------|--------------|
| NEW DRWG | | REVISIONS | | 110 V. HOUSE SCHEMATIC | |
| BY | DATE | DO | BY | DATE | MODEL J 34-D |
| | | | | | |



| LEGEND | AMPS | LEGEND | AMPS | CIRN | WIRE | LOAD | BOXR | LOAD CALCULATION | AMPS |
|--------|--------------------------|--------|--------------------------|-------|----------|------|--------|-----------------------|------|
| (S) | SWITCH | (MP) | MONITOR PANEL | 1 | #14 BLK | 13.0 | 15 AMP | 131.20 AMP @ 100% | |
| (TV) | TV JACK | (V) | POWER VENT | 2 | #14 DRNG | 8.2 | 15 AMP | 240.20 AMP @ 50% | |
| (T) | THERMOSTAT | (L) | LIGHTED VENT | 3 | | 14.8 | 15 AMP | BALANCE @ 25% | |
| (WP) | WATER PUMP | (LH) | LIGHTED VENT HOOD | 4 | #14 BLUE | 13.8 | 15 AMP | CALCULATED CONV. LOAD | |
| (WH) | WATER HEATER | (+) | PATIO LIGHT | 5 | #14 GRN | 7.0 | 15 AMP | CONV. RATING | |
| (+) | SPOT LIGHT | (+) | BATH LIGHT | 6 | | | 15 AMP | | |
| (+) | DECOR LIGHT | (+) | SINGLE BULB INCANDESCENT | 7 | | | 15 AMP | | |
| (F) | FURNACE | (+) | DOUBLE BULB INCANDESCENT | 8 | #14 DRNG | 9.8 | 15 AMP | | |
| (R) | REFER | (+) | CHANDLIER | AUX | | -0- | 15 AMP | | |
| (+) | SINGLE BULB INCANDESCENT | (+) | DECOR LIGHT | BATT | | -0- | 40 AMP | | |
| (+) | DOUBLE BULB INCANDESCENT | (LH) | LPG DECS | TOTAL | | | CONV | | |
| (+) | MAP LIGHT | (+) | CARBON DECT | | | | | | |

12V HOUSE SCHEMATIC

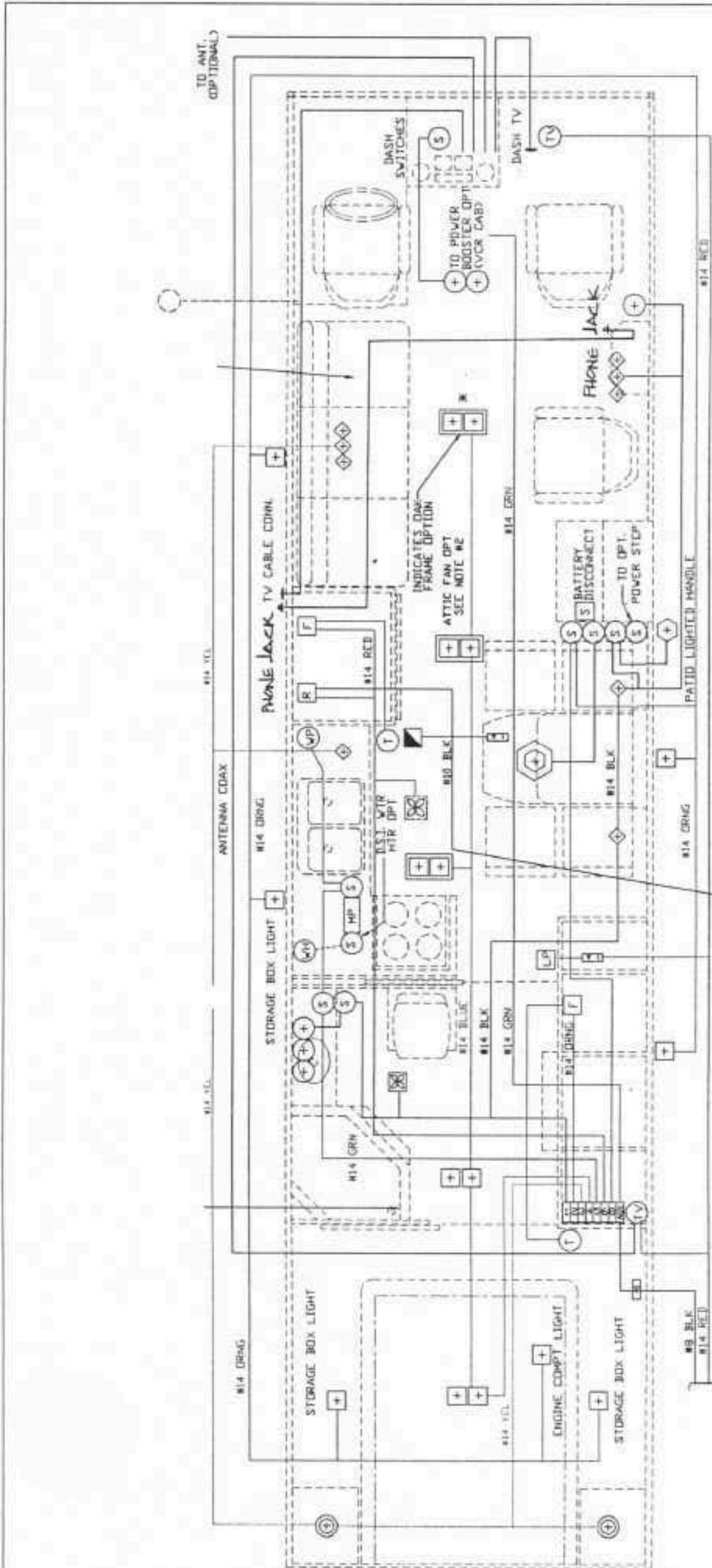
NO. _____ REVISIONS _____

BY _____ DATE _____

DDN 5/11

DDN 12/29

MODEL: 32-D



★ REPLACE THIS LIGHT FOR FLUORESCENT OPTION

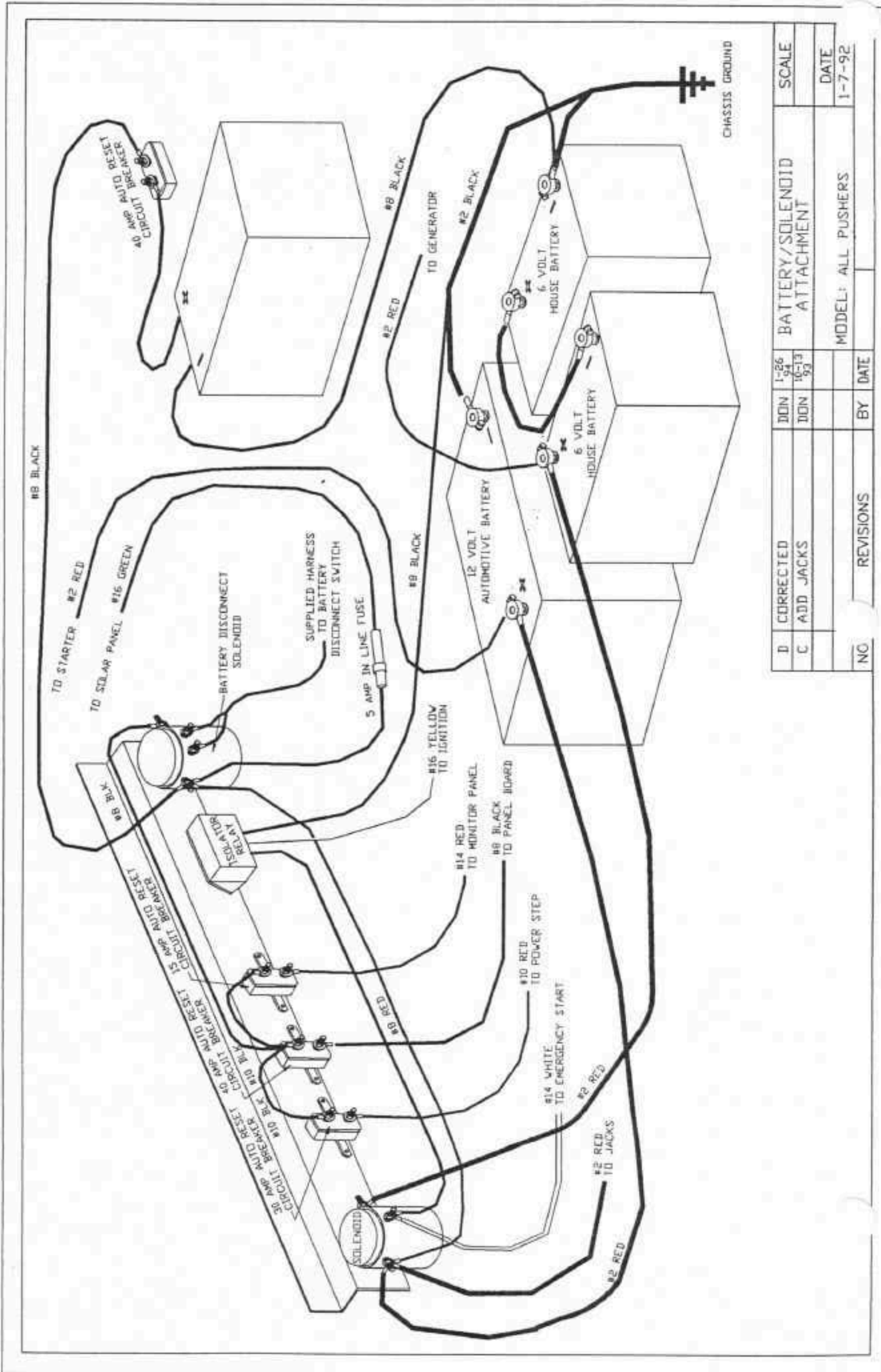
| LEGEND | AMPS | LEGEND | AMPS | LOAD CALCULATION | AMPS |
|--------------------------|------|--------------------------|------|-----------------------|------|
| SWITCH | 0 | MONITOR PANEL | 1.0 | 1# 20 AMP @ 100% | |
| TV JACK | 0 | POWER VENT | 1.0 | 2# 20 AMP @ 50% | |
| THERMOSTAT | 0 | LIGHTED VENT | | BALANCE @ 25% | |
| WATER PUMP | 7.0 | LIGHTED VENT HOLD | 3.6 | CALCULATED CONV. LOAD | |
| WATER HEATER | 0 | PATIO LIGHT | 1.0 | CONV. RATING | |
| SPOT LIGHT | 1.0 | BATH LIGHT | 3.0 | | |
| TABLE LAMP | 3.2 | SINGLE BULB INCANDESCENT | 1.0 | | |
| FURNACE | 8.2 | TRIPLE BULB INCANDESCENT | 2.8 | | |
| REFER | 20.0 | CHANDLER | 5.4 | | |
| SINGLE BULB INCANDESCENT | 1.4 | CARBON RECT | 0.0 | | |
| DOUBLE BULB INCANDESCENT | 2.8 | LPG RECT | 0.0 | | |
| MAP L.L. | 2.0 | | | | |

| CIR# | WIRE | LOAD | BRKR | AMPS |
|-------|----------|------|--------|------|
| 1 | #14 BLK | 16.2 | 15 AMP | |
| 2 | #14 DRNG | 8.2 | 15 AMP | |
| 3 | #14 BLK | 10.6 | 15 AMP | |
| 4 | #14 BLK | 14.0 | 15 AMP | |
| 5 | #14 GRN | 7.0 | 15 AMP | |
| 6 | #14 RED | 9.2 | 15 AMP | |
| 7 | | | | |
| 8 | #14 DRNG | 9.8 | 15 AMP | |
| AUX | | -0- | 15 AMP | |
| BATT | | -0- | 40 AMP | |
| TOTAL | | | CONV | |

12V HOUSE SCHEMATIC

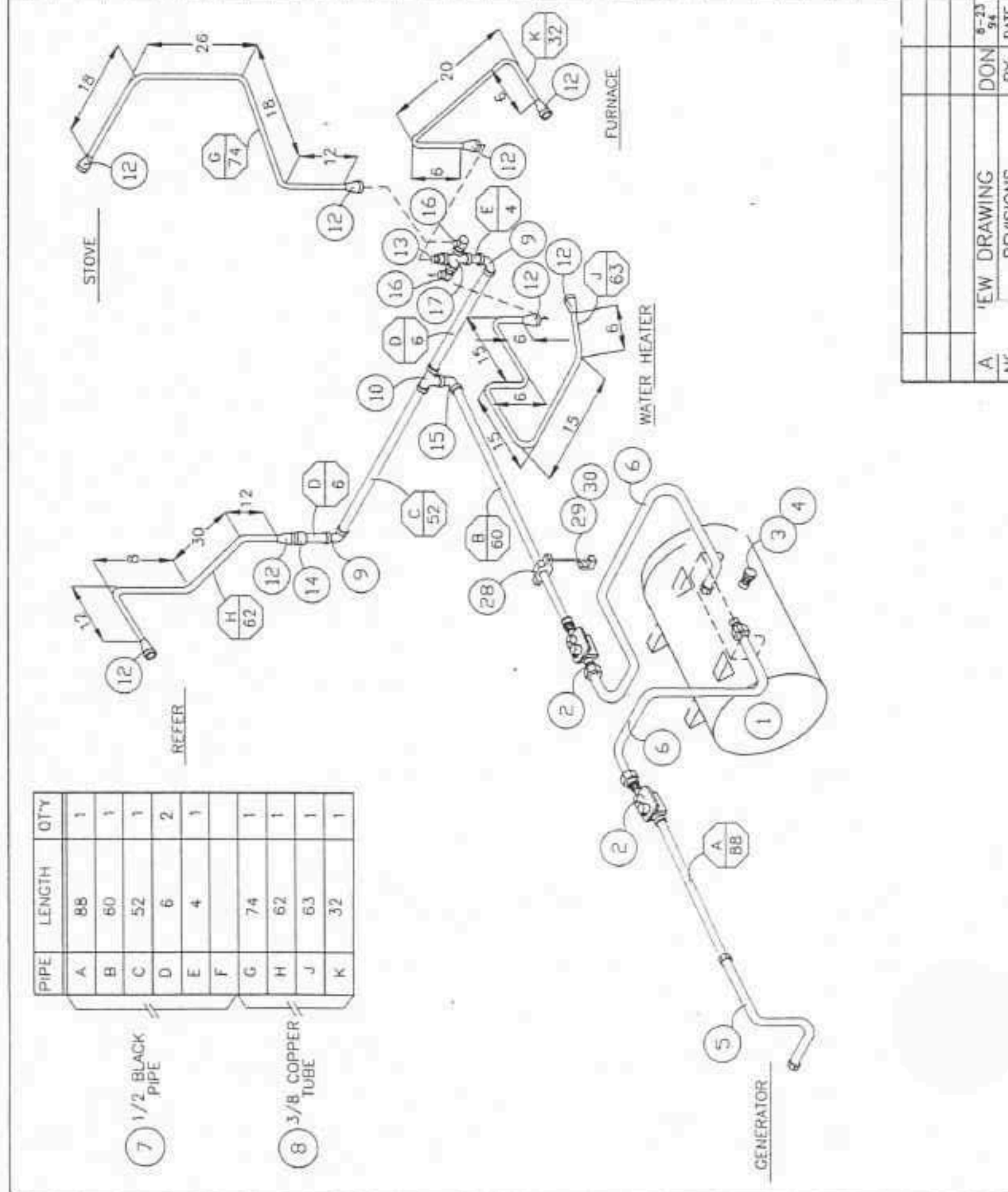
| REVISIONS | BY | DATE |
|------------|------|------|
| ADD LITES | 5/11 | 5/11 |
| ADD SWITCH | 5/11 | 5/11 |

MODEL 34-D

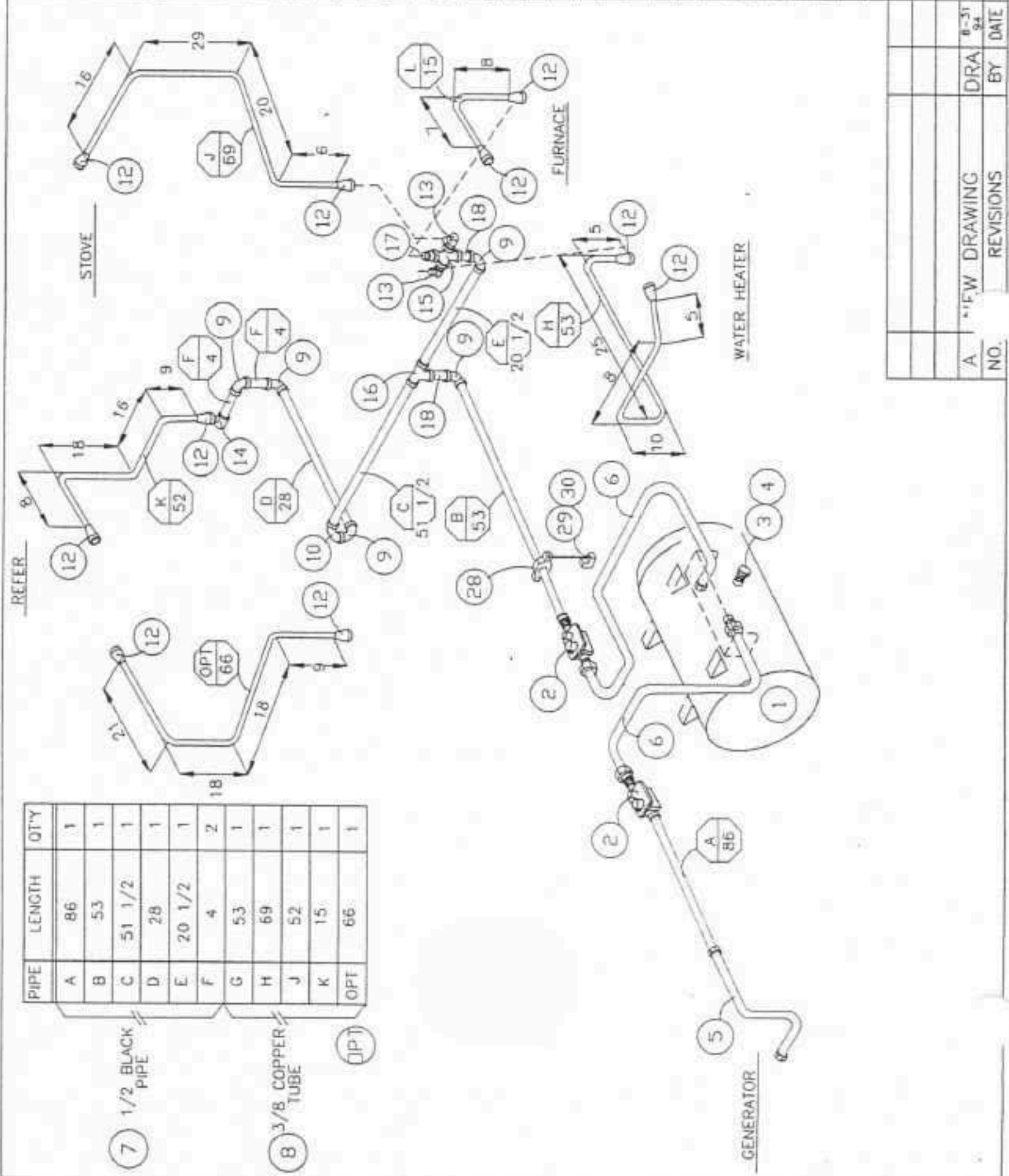


| | | | | | | | |
|---|-----------|----|-----------|----|------|-----------------------------|--------|
| D | CORRECTED | NO | REVISIONS | BY | DATE | BATTERY/SOLENOID ATTACHMENT | SCALE |
| C | ADD JACKS | | | | | | |
| | | | | | | MODEL: ALL PUSHERS | DATE |
| | | | | | | | 1-7-92 |

| ITEM | DESCRIPTION | QTY | PART NO. |
|------|-----------------------------|-----|----------|
| 1 | LPG TANK W/SHUT-OFF VALVE | 1 | #105562 |
| 2 | REGULATOR W/POL ADPT | 2 | #102063 |
| 3 | DIAL CHAMBER | 1 | #100707 |
| 4 | DIAL CHAMBER (REMOTE) | 1 | #100708 |
| 5 | FLEX HOSE 3/8 F-FL | 1 | #101910 |
| 6 | FLEX HOSE 1/2 F-FL | 2 | #105637 |
| 7 | BLACK PIPE 1/2 OD | 1 | #101377 |
| | X 277 | | |
| 8 | COPPER TUBE 3/8 OD | 1 | #100630 |
| | X 231 | | |
| 9 | ELBOW 1/2 BLACK | 2 | #101025 |
| 10 | TEE 1/2 BLACK | 1 | #101027 |
| 12 | FLARE NUT 3/8 BRASS | B | #100612 |
| 13 | ADPT 1/2 M.P.X. 3/8 M.F.L. | 1 | #100616 |
| 14 | ADPT 1/2 F.P.X. 3/8 F.T.L. | 1 | #100617 |
| 15 | ELBOW 1/2 BLK STREET | 1 | #101026 |
| 16 | ELBOW 1/2 M.P.X. 3/8 M.F.L. | 2 | #100615 |
| 17 | CROSS 1/2 BLACK | 1 | # |
| 28 | GROUND CLAMP 1/2 BLK PIPE | 1 | #100400 |
| 29 | GROUND CLIP | 1 | #100399 |
| 30 | BARE COPPER WIRE #8 | 1 | #100371 |
| 35 | PLUMBERS TAPE | | #100621 |
| 36 | PLST LOOP CLAMP | 20 | #100380 |
| 38 | BOLT-1/2 CARRAGE X 2 1/4 | 4 | |
| 39 | NUT - 1/2 HEX | 4 | |
| 40 | WASHER-1/2 FENDER | 4 | |
| 41 | WASHER - 1/2 LOCK | 4 | |
| 42 | WASHER - FLAT | 4 | |



| ITEM | DESCRIPTION | QTY | PART NO. |
|------|-------------------------------|-----|----------|
| 1 | LPG TANK W/SHUT-OFF VAL | 1 | #105562 |
| 2 | REGULATOR w/POL ADPT | 2 | #102063 |
| 3 | DIAL CHAMBER | 1 | #100707 |
| 4 | DIAL CHAMBER (REMOTE) | 1 | #100708 |
| 5 | FLEX HOSE 3/8 F-FL 1/2 FIP-48 | 1 | #101910 |
| 6 | FLEX HOSE 3/8 F-FL 1/2 FIP-18 | 2 | #105637 |
| 7 | BLACK PIPE 1/2 OD | 1 | #101377 |
| | X 247 1/2 | | |
| 8 | COPPER TUBE 3/8 OD | 1 | #100630 |
| | X 211 | | |
| 9 | ELBOW 1/2 BLACK | 5 | #101025 |
| 10 | ELBOW 1/2 BLK STRT | 1 | #101026 |
| 12 | FLARE NUT 3/8 BRASS | 8 | #100612 |
| 13 | ELBOW 1/2 MFL 3/8 MFL | 2 | #100615 |
| 14 | ELBOW 1/2 FFL 3/8 MFL | 1 | #100618 |
| 15 | CROSS 1/2 BLACK | 1 | # |
| 16 | TEE 1/2 BLACK | 1 | #101027 |
| 17 | ADPT 1/2 MFL 3/8 MFL | 1 | #100616 |
| 18 | NIPPLE 2" BLK | 2 | #100623 |
| | | | |
| 28 | GROUND CLAMP 1/2 BLK PIPE | 1 | #100400 |
| 29 | GROUND CLIP | 1 | #100399 |
| 30 | BARE COPPER WIRE #8 | 1 | #100371 |
| | | | |
| 35 | PLUMBERS TAPE | | #100621 |
| 36 | PLST LOOP CLAMP | 20 | #100380 |
| | | | |
| 38 | BOLT-1/2 CARRAGE X 2 1/4 | 4 | |
| 39 | NUT - 1/2 HEX | 4 | |
| 40 | WASHER-1/2 FENDER | 4 | |
| 41 | WASHER - 1/2 LOCK | 4 | |
| 42 | WASHER - FLAT | 4 | |

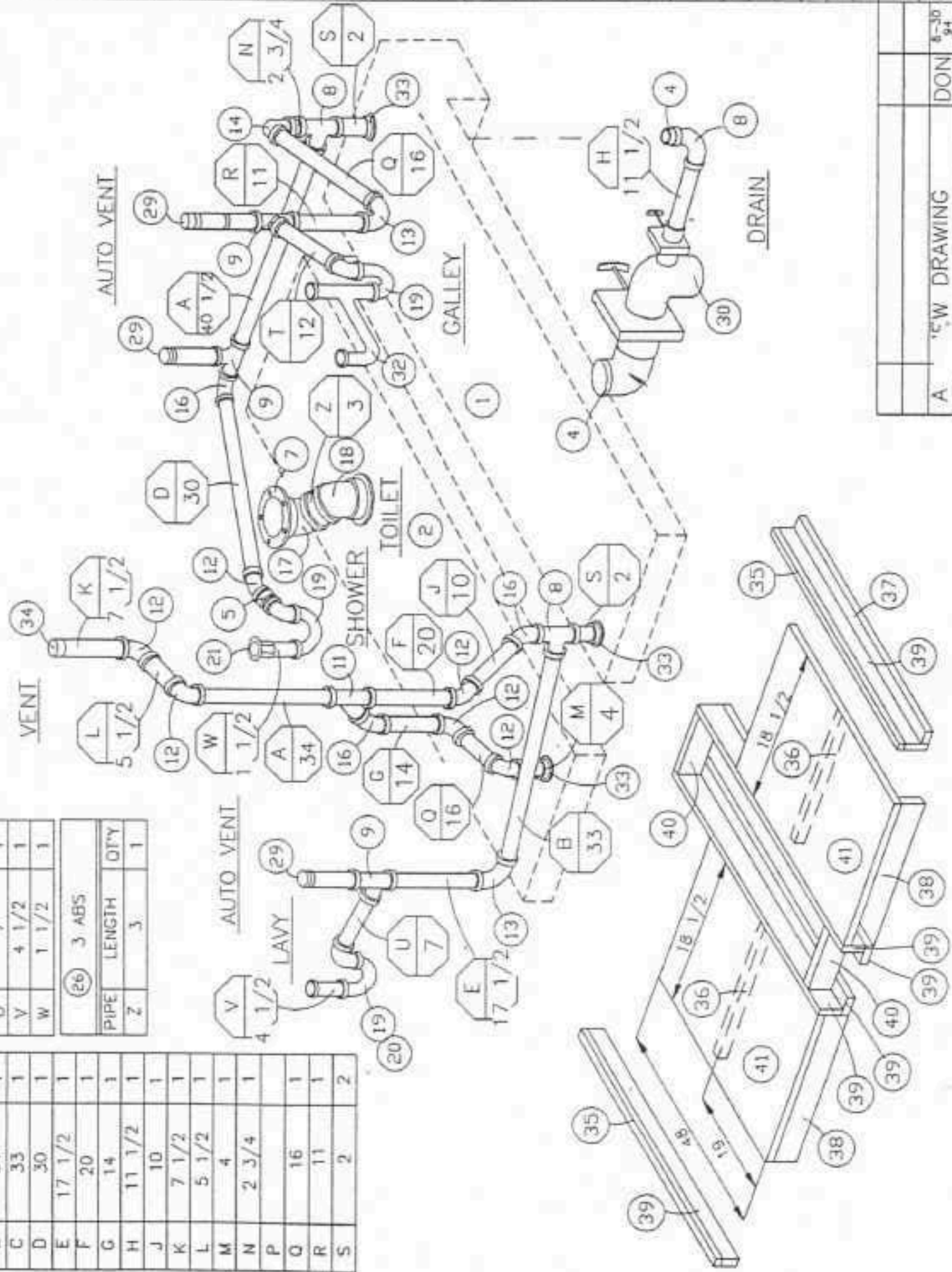


| (27) 1 1/2" ABS | | | |
|-----------------|--------|-------|--|
| TUBE | LENGTH | REQ'D | |
| A | 40 1/2 | 1 | |
| B | 34 | 1 | |
| C | 33 | 1 | |
| D | 30 | 1 | |
| E | 17 1/2 | 1 | |
| F | 20 | 1 | |
| G | 14 | 1 | |
| H | 11 1/2 | 1 | |
| J | 10 | 1 | |
| K | 7 1/2 | 1 | |
| L | 5 1/2 | 1 | |
| M | 4 | 1 | |
| N | 2 3/4 | 1 | |
| P | 16 | 1 | |
| Q | 11 | 1 | |
| R | 11 | 1 | |
| S | 2 | 2 | |

| (28) 1 1/4" ABS | | | |
|-----------------|--------|-----|--|
| PIPE | LENGTH | QTY | |
| T | 12 | 1 | |
| U | 7 | 1 | |
| V | 4 1/2 | 1 | |
| W | 1 1/2 | 1 | |

| (26) 3" ABS | | | |
|-------------|--------|-----|--|
| PIPE | LENGTH | QTY | |
| Z | 3 | 1 | |

AUTO VENT CAN BE USED AS A CLEAN-OUT



| ITEM | DESCRIPTION | QTY | ROTD | PART NO. |
|------|--------------------------------------|-----|------|----------|
| 1 | LIQUID WASTE TANK #1-635 P-307 | 1 | | #106121 |
| 2 | SOLID WASTE TANK #1-635 P-308 | 1 | | #106123 |
| 4 | ADJ CLAMP - 2 3/4 | 2 | | #301641 |
| 5 | 1 1/2 TO 1 1/4 REDUCER | 1 | | #100655 |
| 7 | 3" FEM CLOSET FLANGE | 1 | | #100534 |
| 8 | 1 1/2 x 1 1/2 x 1 1/2 SOU TEE | 2 | | #100658 |
| 9 | 1 1/2 x 1 1/2 x 1 1/4 SOU TEE | 3 | | #100645 |
| 10 | LAVY w/A-56-C DRAIN | 1 | | #100670 |
| 11 | WYE x 1 1/2 x 1 1/2 x 1 1/2 | 1 | | #100646 |
| 12 | ELBOW 1/8 BEND 45° x 1 1/2 | 6 | | #100651 |
| 13 | ELBOW 1/4 BEND 90° x 1 1/2 | 2 | | #100659 |
| 14 | ELBOW 1/4 BEND 90° x 1 1/2 | 1 | | #100651 |
| 16 | ELBOW 1/8 BEND 45° STR x 1 1/2 | 3 | | #100648 |
| 17 | ELBOW 1/8 BEND 45° x 3 | 1 | | #104600 |
| 18 | ELBOW 1/4 BEND 90° x 3 | 1 | | #100638 |
| 19 | P-TRAP 1 1/4 SLP FEMALE ADPT x 1 1/4 | 3 | | #104833 |
| 20 | TRAP ADPT-1 1/2 x 1 1/4 | 2 | | #104834 |
| 21 | BASKET STRAINER 2 1/2 | 1 | | #102582 |
| 23 | TOILET | 1 | | #102105 |
| 24 | GALLEY SINK ENAMEL | 1 | | #104855 |
| 25 | SHOWER STALL | 1 | | |
| 26 | 3" ABS x 1 FT. | 1 | | #100596 |
| 27 | 1 1/2" ABS x 24 FT. | 1 | | #100595 |
| 28 | 1 1/4" ABS x 2 1/2 FT. | 1 | | #100594 |
| 29 | AUTO-VENT | 2 | | #100650 |
| 30 | 3 TERM VALVE ASSEMBLY | 1 | | #104053 |
| 32 | CONT WASTE SYSTEM | 1 | | #100666 |
| 33 | 1 1/2 ADPT FSMPT | 3 | | #104755 |
| 34 | ROOF VENT CAP | 1 | | #100671 |
| 35 | A PINE 3/4 x 3/4 x 84 | 2 | | #101565 |
| 36 | x 18 1/2 | 2 | | |
| 37 | C PINE 3/4 x 1 1/2 x 84 | 1 | | #101567 |
| 38 | x 18 1/2 | 2 | | |
| 39 | D PINE 3/4 x 2 x 84 | 6 | | #101940 |
| 40 | x 6 1/2 | 2 | | |
| 41 | 5/8 STRUCT-1 x 18 1/2 x 48 | 2 | | #102386 |

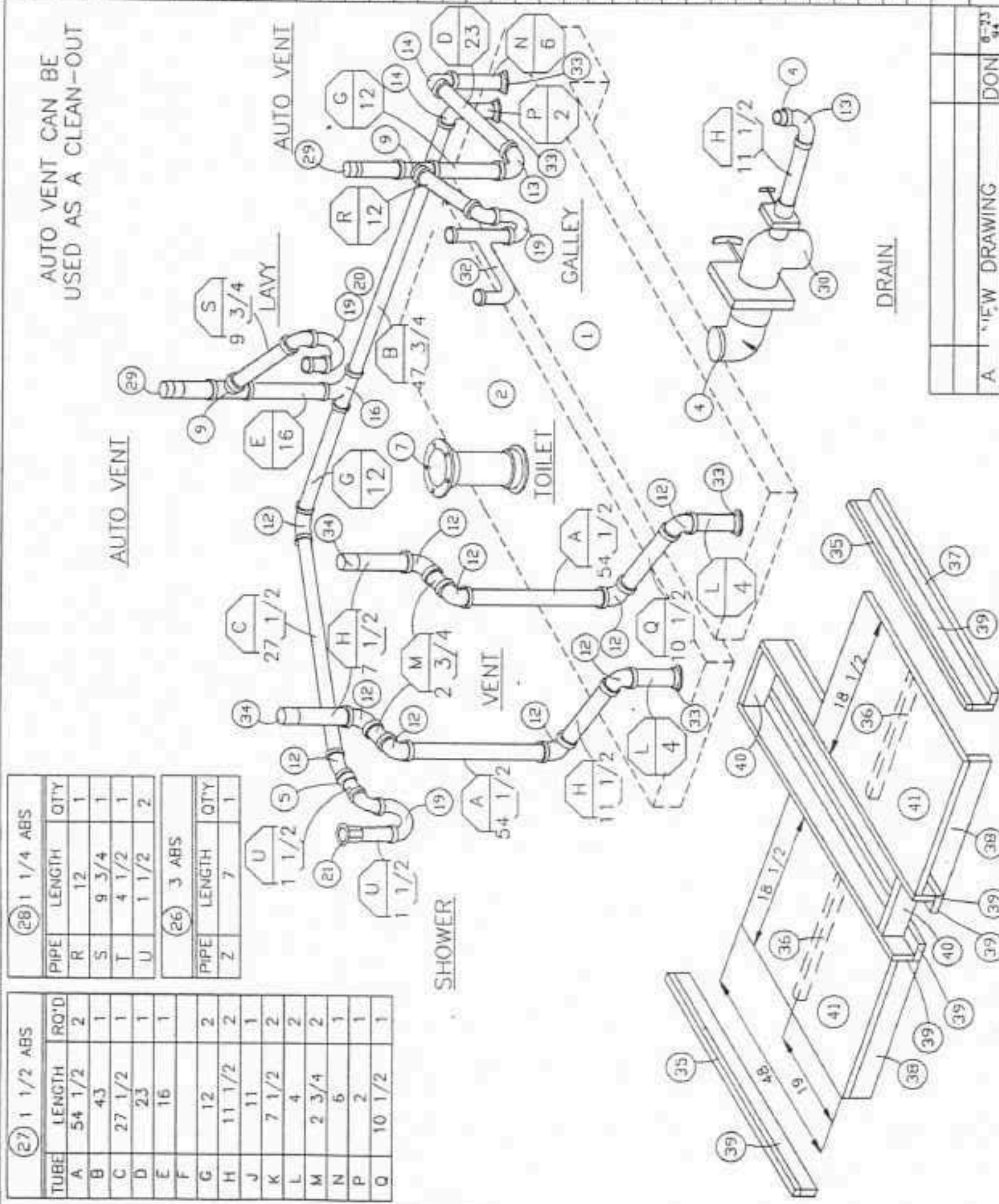
| NO | DESCRIPTION | BY | DATE |
|----|-------------|-----|---------|
| A | CSW DRAWING | DON | 5-30-94 |
| | REVISIONS | | |

DATE
4-7-97

MODEL: 632 DOLPHIN W.B.

DRAIN PLUMBING

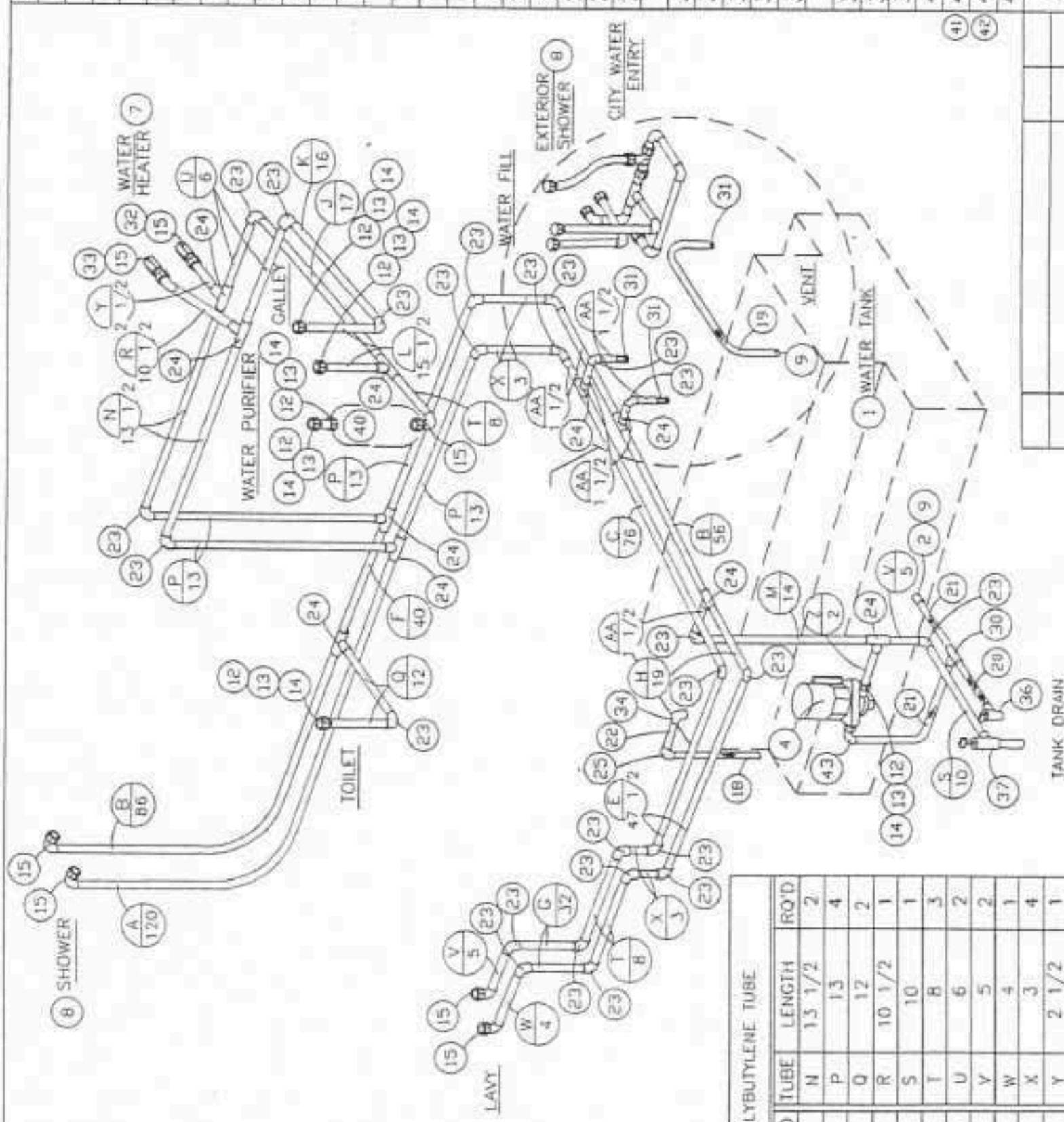
| ITEM | DESCRIPTION | QTY | PART NO. |
|------|--|-----|----------|
| 1 | LIQUID WASTE TANK #1-635 | 1 | #106124 |
| 2 | SOLID WASTE TANK #1-636 | 1 | #106122 |
| 4 | ADJ CLAMP - 2 3/4 | 2 | #3016A1 |
| 5 | 1 1/2 TO 1 1/4 REDUCER | 1 | #100655 |
| 7 | 3" FEM CLOSET FLANGE | 1 | #100534 |
| B | | | |
| 9 | 1 1/2 x 1 1/4 x 1 1/4 SAMTEE | 2 | #100645 |
| 10 | LAVY w/A-56-C DRAIN | 1 | #100670 |
| 11 | WYE x 1 1/2 x 1 1/2 x 1 1/2 | 1 | #100646 |
| 12 | ELBOW 1/4 BEND x 1 1/2 | 10 | #100651 |
| 13 | ELBOW 1/4 BEND x 1 1/2 | 1 | #100659 |
| 14 | ELBOW 1/4 BEND x 1 1/2 | 2 | #100651 |
| 16 | x 1 1/2 x 1 1/2 x 1 1/2 WYE | 1 | #100647 |
| 17 | | | |
| 18 | | | |
| 19 | P-TRAP 1 1/4 SLIP FEMALE ADPT x 1 1/4 SWIVEL | 3 | #104833 |
| 20 | TRAP ADPT-1 1/2 x 1 1/4 | 2 | #104834 |
| 21 | BASKET STRAINER 2 1/2 | 2 | #102582 |
| 22 | | | |
| 23 | TOILET | 1 | #102105 |
| 24 | GALLEY SINK ENAMEL | 1 | #104855 |
| 25 | SHOWER STALL | 1 | |
| 26 | 3" ABS x 1 FT. | 1 | #100596 |
| 27 | 1 1/2" ABS x 27 FT. | 1 | #100595 |
| 28 | 1 1/4" ABS x 2 1/2 FT. | 1 | #100594 |
| 29 | AUTO-VENT | 2 | #100650 |
| 30 | 3 TERM VALVE ASSEMBLY | 1 | #104053 |
| 32 | CONT WASTE SYSTEM | 1 | #100666 |
| 33 | 1 1/2 ADPT FSMPT | 4 | #104755 |
| 34 | ROOF VENT CAPS | 2 | #100671 |
| 35 | A PINE 3/4 x 3/4 x 84 | 2 | #101565 |
| 36 | x 18 1/2 | 2 | |
| 37 | C PINE x 3/4 x 1 1/2 x 84 | 1 | #101567 |
| 38 | x 18 1/2 | 2 | |
| 39 | D PINE x 3/4 x 2 x 84 | 6 | #101940 |
| 40 | x 6 1/2 | 2 | |
| 41 | 5/8 STRUCT-1 x 18 1/2 x 48 | 2 | #102386 |



MODEL: 634 DOLPHIN W.B.

DATE: 4-7-93

DRAIN PLUMBING



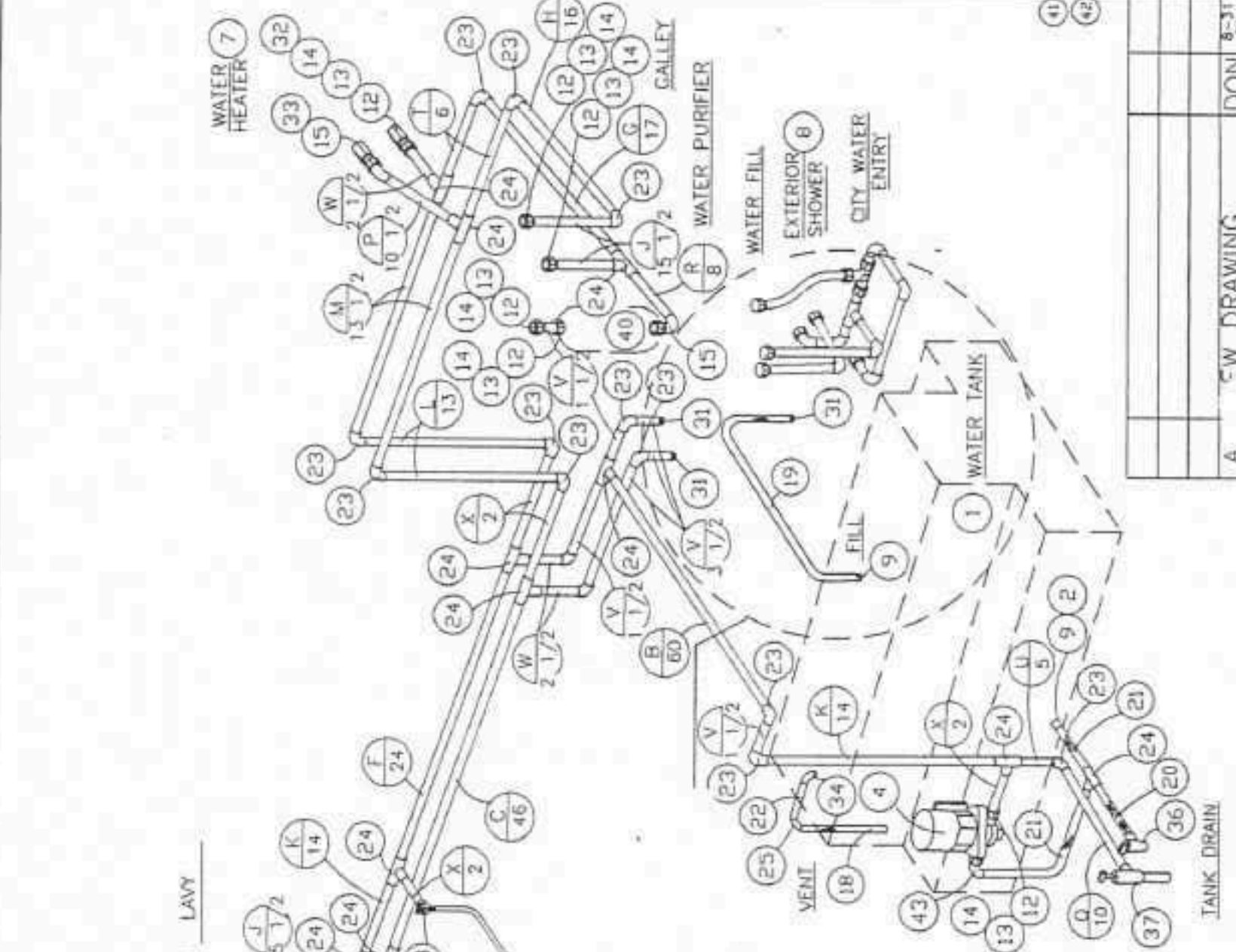
(17) 1/2 POLYBUTYLENE TUBE

| TUBE | LENGTH | RO'D | TUBE | LENGTH | RO'D |
|------|--------|------|------|--------|------|
| A | 120 | 1 | N | 13 1/2 | 2 |
| B | 86 | 1 | P | 13 | 4 |
| C | 76 | 1 | Q | 12 | 2 |
| D | 56 | 1 | R | 10 1/2 | 1 |
| E | 47 1/2 | 2 | S | 10 | 1 |
| F | 40 | 1 | T | 8 | 3 |
| G | 32 | 2 | U | 6 | 2 |
| H | 19 | 1 | V | 5 | 2 |
| J | 17 | 1 | W | 4 | 1 |
| K | 16 | 1 | X | 3 | 4 |
| L | 15 1/2 | 2 | Y | 2 1/2 | 1 |
| M | 14 | 1 | Z | 2 | 1 |
| | | | AA | 1 1/2 | 7 |

| ITEM | DESCRIPTION | RO'D | PART NO. |
|-------------------------|-----------------------------------|------|----------|
| 1 | WATER TANK INCA # | 1 | # |
| 2 | WATER FILTER | 1 | # 100568 |
| 4 | WATER PUMP - 12V | 1 | # 103727 |
| 7 | WATER HEATER 10 GAL | 1 | # 101077 |
| 8 | SHOWER TELEPHONE HEAD w/ 49 HOSE | 2 | # 104999 |
| 9 | COUPLING (WHT) 1/2 BARB 1/2 MPT | 2 | # 104009 |
| 10 | LAVY FAUCET | 1 | # 100663 |
| 11 | SHOWER FAUCET | 2 | # 100664 |
| 12 | 1/2 TERM FITTING | 7 | # |
| 13 | 1/2 PLST WASHER | 7 | # 100603 |
| 14 | 1/2 PLST NUT | 7 | # 100604 |
| 15 | STREET EL 1/2 BARB 1/2 SWIVEL FPL | 6 | # 105111 |
| 17 | 1/2 POLYBUTYLENE TUBEX 70 FT | 1 | # 100592 |
| 18 | 1/2 FLEX HOSE X 20 | 1 | # 100784 |
| 19 | X 72 | 1 | |
| 20 | X 13 | 1 | |
| 21 | X 9 | 2 | |
| 22 | X 3 | 1 | |
| 23 | ELBOW - 1/2 BRASS | 24 | # 105113 |
| 24 | TEE - 1/2 BRASS | 10 | # 105112 |
| 25 | ELBOW 1/2 BARB BSB | 1 | # 100572 |
| 30 | TEE 1/2 BARB 1/2 BARB X 1/2 BARB | 1 | # 100571 |
| 31 | FITTING 1/2 BARB 1/2 MPT | 3 | # 100609 |
| 32 | CHECK VALVE 1/2 MPT 1/2 MPT | 1 | # 100669 |
| 33 | COUPLING 1/2 STUB 1/2 BARB | 1 | # 100668 |
| 34 | ELBOW 1/2 BARB 1/2 MPT | 1 | # 100569 |
| 36 | 1/2 LOW POINT DRAIN | 1 | # 100510 |
| 37 | 1/2 DRAIN COCK | 1 | # 102580 |
| 39 | | | |
| 40 | WTR PURIFIER KIT | 1 | # 105075 |
| 41 | ADJ CLAMP-7/16-25/32 | 7 | # 103915 |
| 42 | 1/2 CRIMP RINGS | 92 | # 105115 |
| 43 | ELBOW 1/2 SWIVEL 1/2 PL-PLST | 1 | W/PUMP |
| HOT & COLD PLUMBING | | | |
| SCALE | | | |
| DATE | | | |
| MODEL: 632 DOLPHIN W.B. | | | |
| 7-15-94 | | | |

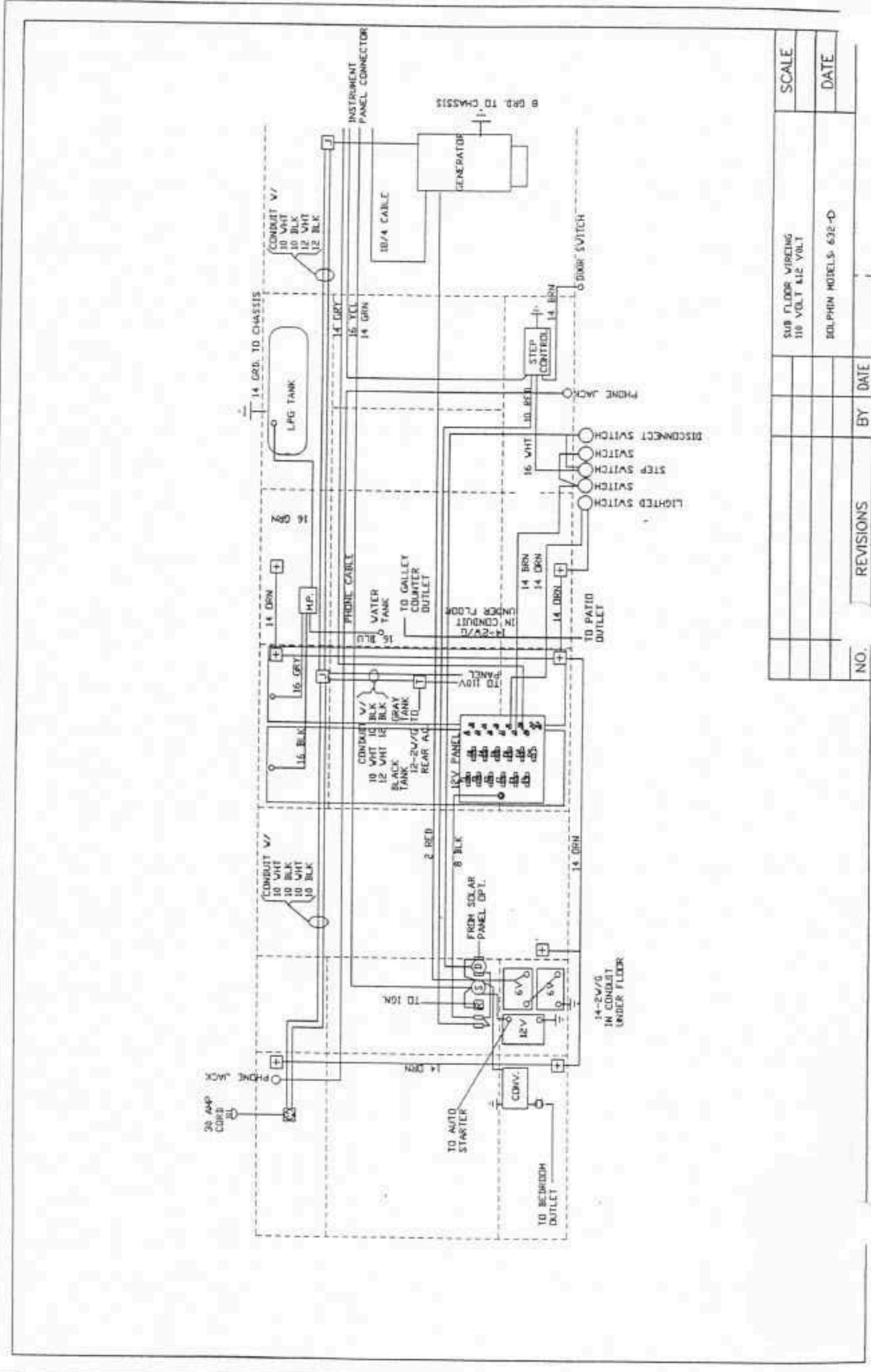
| NO | REVISIONS | BY | DATE |
|----|-----------|-----|---------|
| A | W DRAWING | DON | 8-30-94 |

| ITEM | DESCRIPTION | RO'D | PART NO. |
|-------------------------|-----------------------------------|------|----------|
| 1 | WATER TANK INCA #1231 P-508 | 1 | # 100568 |
| 2 | WATER FILTER | 1 | # 103727 |
| 4 | WATER PUMP - 12V | 1 | # 101077 |
| 7 | WATER HEATER 10 GAL | 2 | # 104999 |
| 8 | SHOWER TELEPHONE HEAD w/ 48 HOSE | 2 | # 104009 |
| 9 | COUPLING (WHT) 1/2 BARB 1/2 MPT | 1 | # 100663 |
| 10 | LAVY FAUCET | 2 | # 100664 |
| 11 | SHOWER FAUCET | 7 | # 100603 |
| 12 | 1/2 TERM FITTING | 7 | # 100604 |
| 13 | 1/2 PLST WASHER | 6 | # 105111 |
| 14 | 1/2 PLST NUT | 1 | # 302291 |
| 15 | STREET EL 1/2 BARB SWIVEL FPI 1/2 | 1 | # 100592 |
| 16 | 1/4 POLY TUBE X 120 | 1 | # 100784 |
| 17 | 1/2 POLYBUTYLENE TUBEX 54 FT | 1 | |
| 18 | 1/2 FLEX HOSE X 20 | 1 | |
| 19 | X 72 | 1 | |
| 20 | X 13 | 1 | |
| 21 | X 9 | 2 | |
| 22 | X 3 | 1 | |
| 23 | ELBOW - 1/2 BRASS | 17 | # 105113 |
| 24 | TEE - 1/2 BRASS | 11 | # 105112 |
| 25 | ELBOW 1/2 BARB | 1 | # 100572 |
| 26 | VALVE 1/2 TO 1/4 | 1 | # 302283 |
| 30 | TEE X 1/2 BARB 1/2 BARB | 1 | # 100571 |
| 31 | FITTING 1/2 BARB 1/2 MPT | 3 | # 100609 |
| 32 | CHECK VALVE 1/2 MPT | 1 | # 100669 |
| 33 | COUPLING 1/2 STUB 1/2 BRS | 1 | # 100668 |
| 34 | ELBOW 1/2 BARB 1/2 MPT | 1 | # 100567 |
| 36 | 1/2 LOW POINT DRAIN | 1 | # 100610 |
| 37 | 1/2 DRAIN COCK | 1 | # 102580 |
| 40 | WTR PURIFIER KIT | 1 | # 106076 |
| 41 | ADJ CLAMP-7/16-25/32 | 5 | # 103915 |
| 42 | 1/2 CRIMP RINGS | 75 | # 105115 |
| 43 | ELBOW 1/2 SWIVEL FPI-PLST | 1 | W/PUMP |
| HOT & COLD PLUMBING | | | |
| SCALE | | | |
| MODEL: 634 DOLPHIN W.B. | | | |
| DATE 3-15-93 | | | |

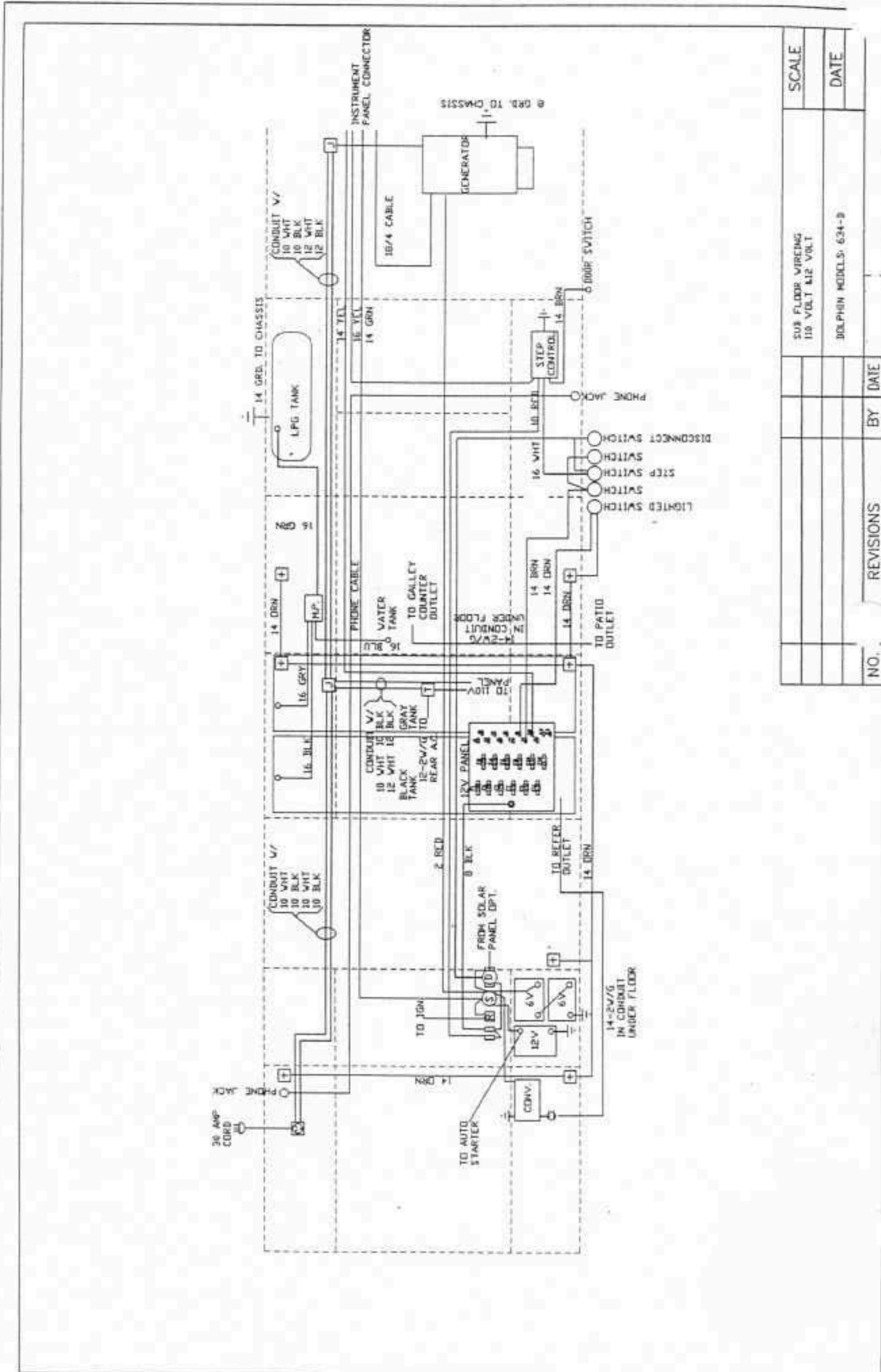


| TUBE | LENGTH | RO'D | TUBE | LENGTH | RO'D |
|------|--------|------|------|--------|------|
| A | 92 | 1 | N | 11 | 1 |
| B | 60 | 2 | P | 10 1/2 | 1 |
| C | 46 | 1 | Q | 10 | 1 |
| D | 34 | 1 | R | 8 | 1 |
| E | 31 | 1 | S | 6 1/2 | 1 |
| F | 24 | 1 | T | 6 | 3 |
| G | 17 | 1 | U | 5 | 1 |
| H | 16 | 2 | V | 3 1/2 | 3 |
| J | 15 1/2 | 3 | W | 2 1/2 | 3 |
| K | 14 | 3 | X | 2 | 4 |
| L | 13 1/2 | 2 | Y | 1 1/2 | 4 |
| M | 13 | 2 | Z | | |

| NO | REVISIONS | BY | DATE |
|----|------------|-----|---------|
| A | SW DRAWING | DON | 8-31-94 |

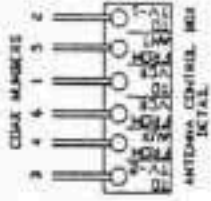
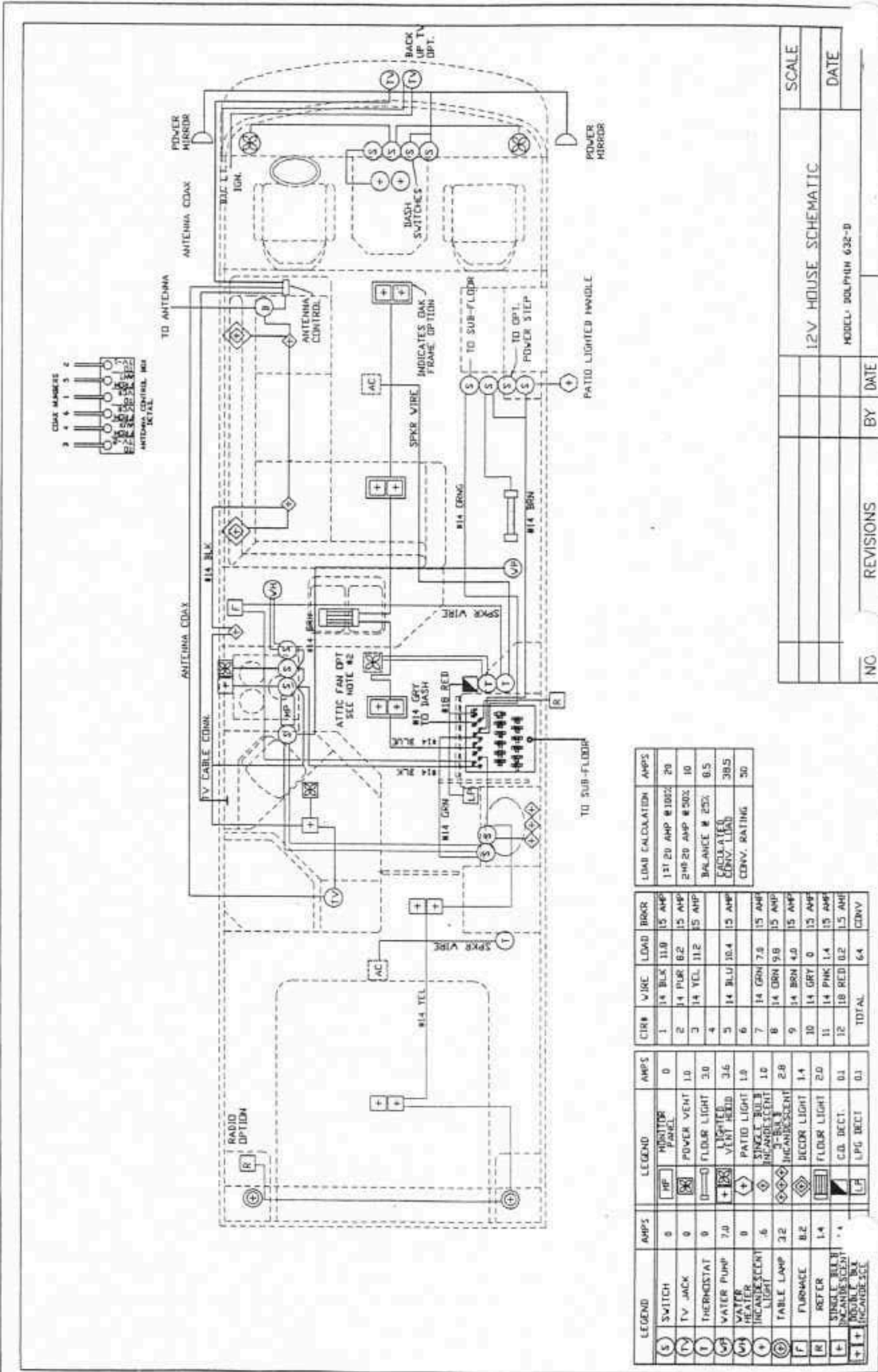


| NO. | REVISIONS | BY | DATE | SCALE | DATE |
|-----|-----------|----|------|---------------------------------------|------|
| | | | | SUB FLOOR WIRING 110 VOLT 612 VOLT | |
| | | | | DOLPHIN MODEL-S 632-D | |



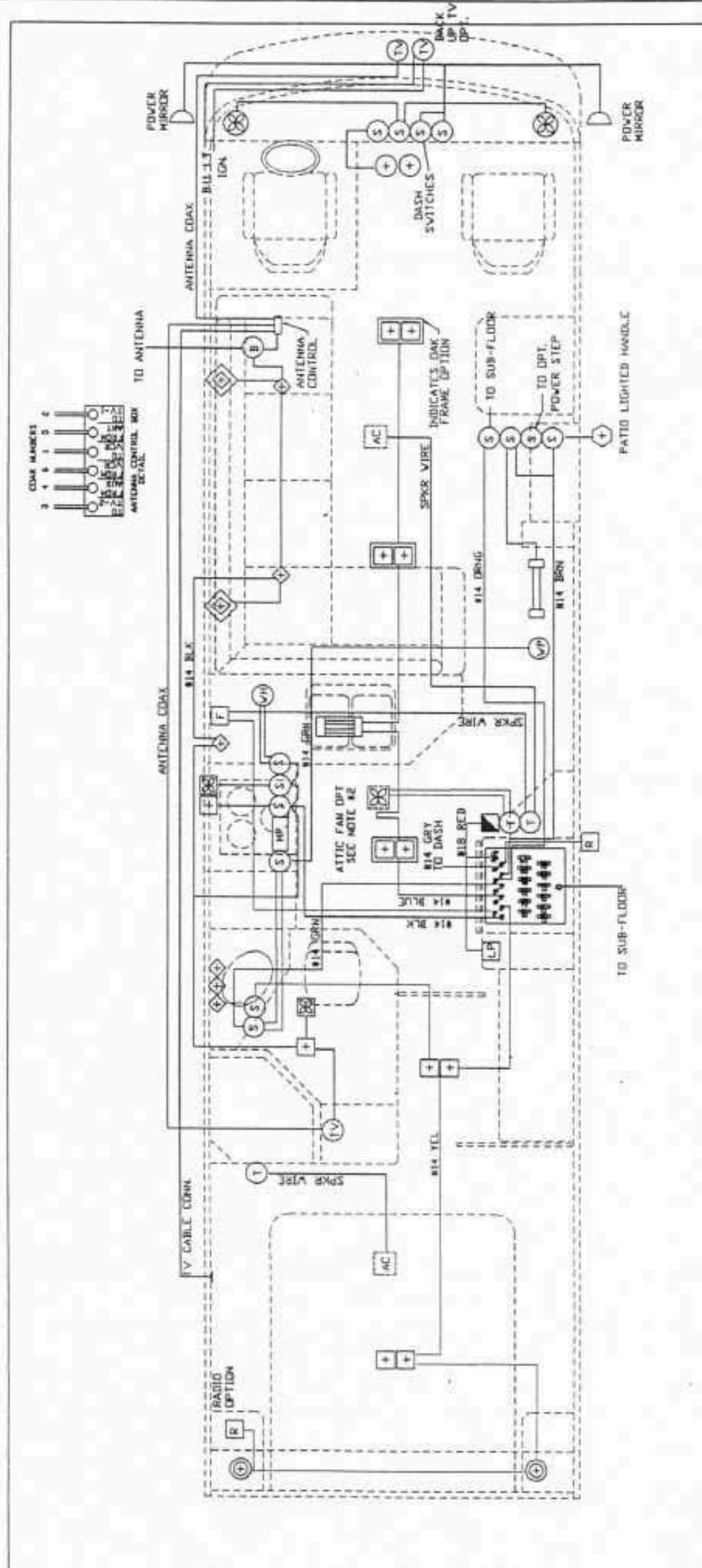
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| SCALE | DATE |
|------------------------------------|-----------------------|
| SUB FLOOR WIRING 110 VOLT 60 HZ | DOLPHIN MODEL 5-634-B |



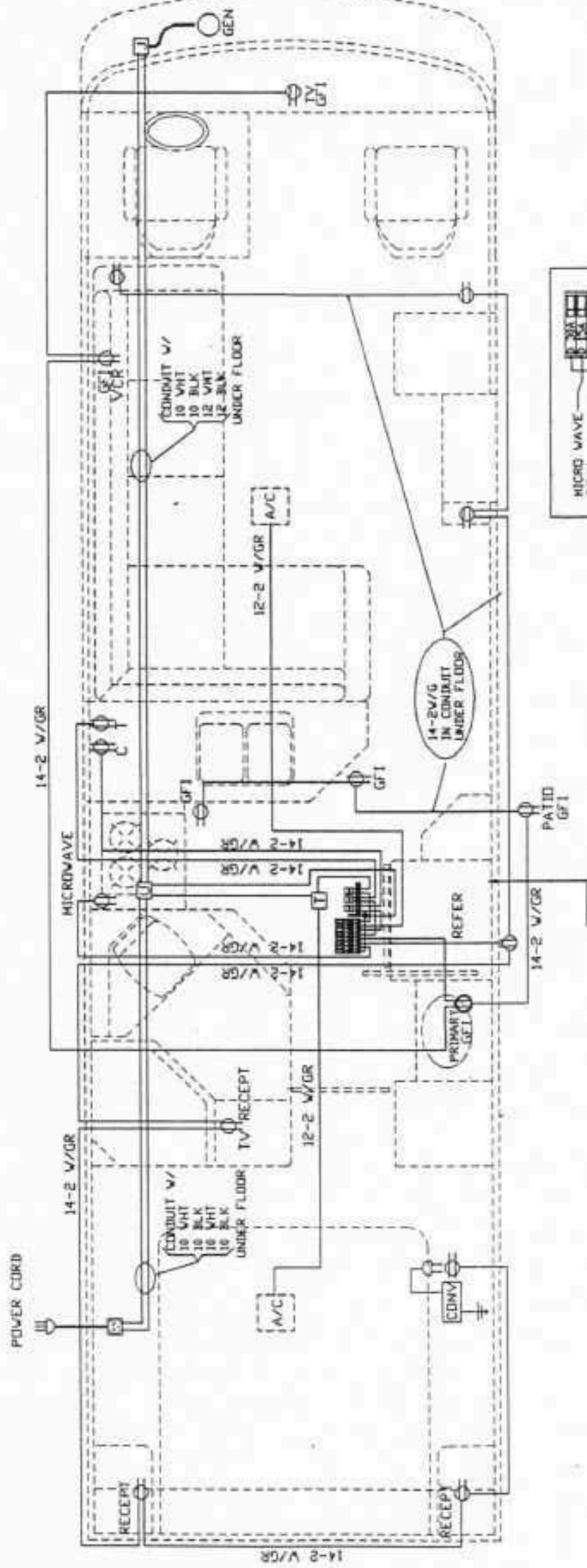
| LEGEND | AMPS | LEGEND | AMPS | CTR# | WIRE | LOAD | BRKR | LOAD CALCULATION | AMPS |
|--------------------------------------|------|--------------------------------|------|------|--------|------|--------|-----------------------|------|
| (S) SWITCH | 0 | MF MONITOR PANEL | 0 | 1 | 14 BLK | 11.0 | 15 AMP | 1x1 20 AMP @ 100% | 20 |
| (TV) TV JACK | 0 | POWER VENT | 1.0 | 2 | 14 PUR | 6.2 | 15 AMP | 2x5 20 AMP @ 50% | 10 |
| (T) THERMOSTAT | 0 | FLOOR LIGHT | 3.0 | 3 | 14 YEL | 11.2 | 15 AMP | BALANCE @ 25% | 8.5 |
| (WP) WATER PUMP | 7.0 | LIGHTED VENT HEAD | 3.6 | 4 | 14 BLU | 10.4 | 15 AMP | CALCULATED CONV. LOAD | 38.5 |
| (WH) WATER HEATER | 0 | PATIO LIGHT | 1.0 | 5 | 14 GRN | 10.4 | 15 AMP | CONV. RATING | 30 |
| (+) INCANDESCENT LIGHT | .6 | SINGL. BULB INCANDESCENT LIGHT | 1.0 | 6 | 14 GRN | 7.8 | 15 AMP | | |
| (L) TABLE LAMP | 3.2 | 3-BULB INCANDESCENT | 2.8 | 7 | 14 GRN | 9.8 | 15 AMP | | |
| (F) FURNACE | 8.2 | DECOR LIGHT | 1.4 | 8 | 14 BRN | 4.0 | 15 AMP | | |
| (R) REFER | 1.4 | FLOOR LIGHT | 2.0 | 9 | 14 GRY | 0 | 15 AMP | | |
| (+ +) SINGLE BULB INCANDESCENT LIGHT | .4 | C.B. DECT. | 0.1 | 10 | 14 PNK | 1.4 | 15 AMP | | |
| (+ +) DOUBLE BULB INCANDESCENT | .8 | LPG DECT. | 0.3 | 11 | 14 GRN | 0.2 | 15 AMP | | |
| (+ +) TOTAL | | | | 12 | 18 RED | 64 | | | |

| | | | |
|----------------------|-----------|-------|------|
| NO | REVISIONS | BY | DATE |
| | | | |
| 12V HOUSE SCHEMATIC | | | |
| MODEL: DOLPHIN 632-B | | | |
| | | SCALE | DATE |

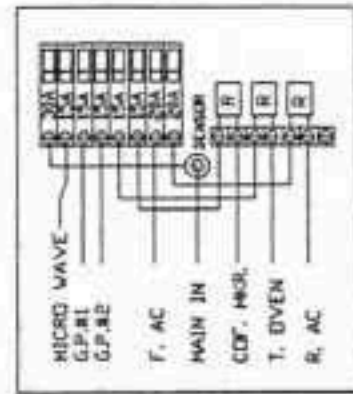


| LEGEND | AMPS | LEGEND | AMPS | CIR# | WIRE | LOAD | BOOK | LOAD CALCULATION | AMPS |
|--------|---------------------------------|--------|------|------|--------|------|--------|--------------------|------|
| (S) | SWITCH | (HP) | 0 | 1 | 14 BLK | 11.8 | 15 AMP | 157.20 AMP @ 100.2 | 20 |
| (TV) | TV JACK | (V) | 0 | 2 | 14 PUR | 8.2 | 15 AMP | 240.20 AMP @ 50% | 10 |
| (T) | THERMOSTAT | (D) | 0 | 3 | 14 YEL | 11.2 | 15 AMP | BALANCE # 25% | 8.5 |
| (VP) | WATER PUMP | (P) | 7.0 | 4 | 14 BLU | 10.4 | 15 AMP | CALCULATED | 26.5 |
| (VH) | WATER HEATER | (+) | 0 | 5 | 14 GRN | 7.0 | 15 AMP | CONV. RATING | 30 |
| (+) | INCANDESCENT LIGHT | (R) | 0 | 6 | 14 BRN | 9.8 | 15 AMP | | |
| (+) | INCANDESCENT LIGHT | (F) | 3.2 | 7 | 14 BRN | 4.0 | 15 AMP | | |
| (F) | FURNACE | (R) | 0.2 | 8 | 14 GRY | 6 | 15 AMP | | |
| (R) | REFR | (+) | 1.4 | 9 | 14 PNC | 1.4 | 15 AMP | | |
| (+) | SINGLE BLK B INCANDESCENT LIGHT | (+) | 1.4 | 10 | 18 RED | 0.2 | 15 AMP | | |
| (+) | DOUBLE BLK B INCANDESCENT LIGHT | (+) | 1.4 | 11 | TOTAL | 64 | CONV | | |
| (+) | INCANDESCENT LIGHT | (L) | 0.1 | 12 | | | | | |
| (L) | LPG DECT | | 0.1 | | | | | | |

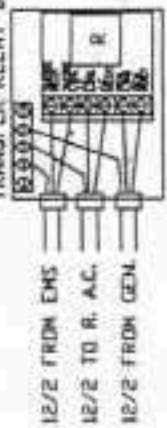
| NO. | REVISIONS | BY | DATE | SCALE |
|-----|-----------|----|------|----------------------|
| | | | | 12V HOUSE SCHEMATIC |
| | | | | MODEL: DOLPHIN 634-D |
| | | | | DATE |



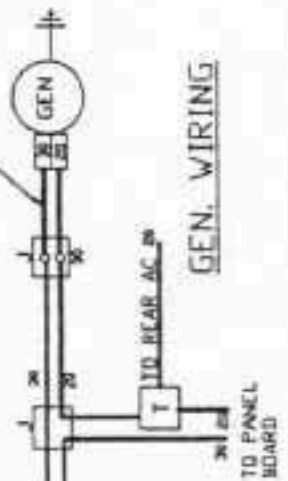
ENERGY MANAGEMENT SYSTEM
110 VOLT CIRCUIT CONNECTION
DETAIL



REAR AIR CONDITIONER,
TRANSFER RELAY DETAIL



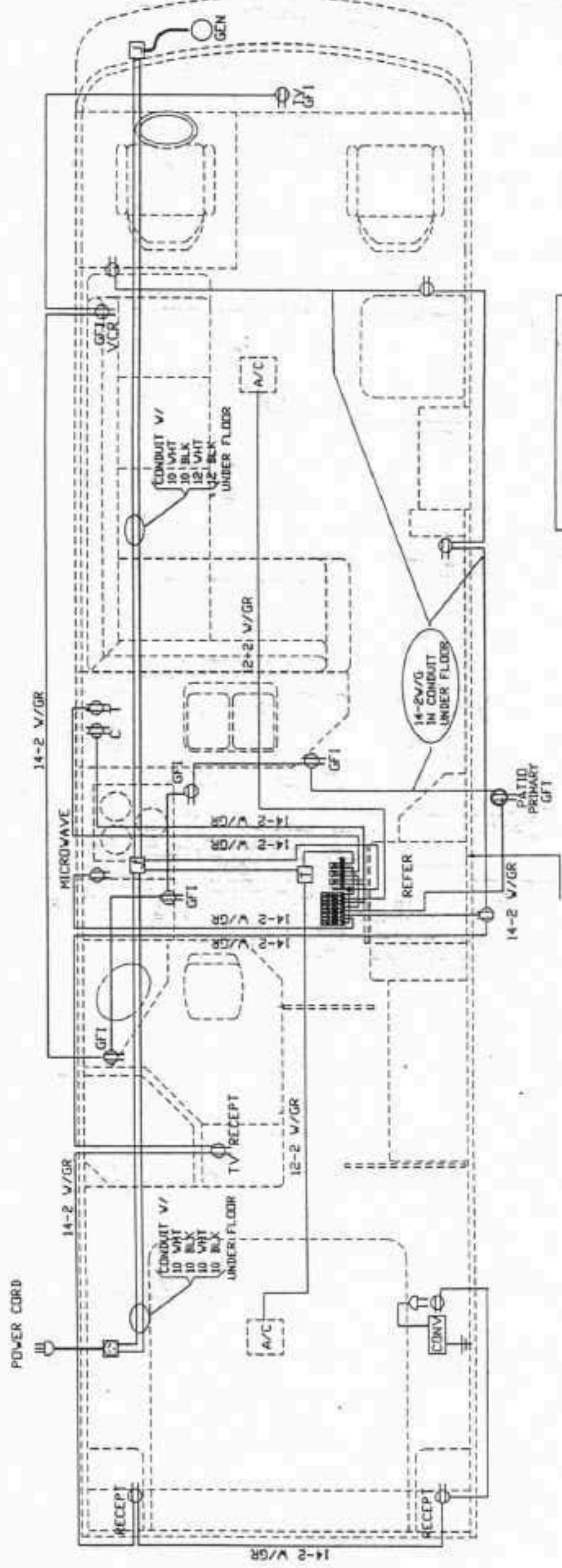
GENERATOR FEEDERS
IN FLEXIBLE
CONDUIT



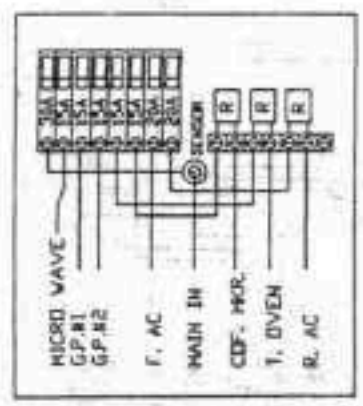
- TRANSFER SWITCH
- CONV CONVERTER
- JUNCTION BOX
- 30 AMP RECEPTICAL OUTLET
- ⊕ RECEPTICAL OUTLET (RECEPT)

| NO. | REVISIONS | BY | DATE | SCALE |
|------------------------|-----------|----|------|-------|
| | | | | |
| 110 V. HOUSE SCHEMATIC | | | | |
| MODEL: DOLPHIN 632-B | | | | |
| DATE | | | | |

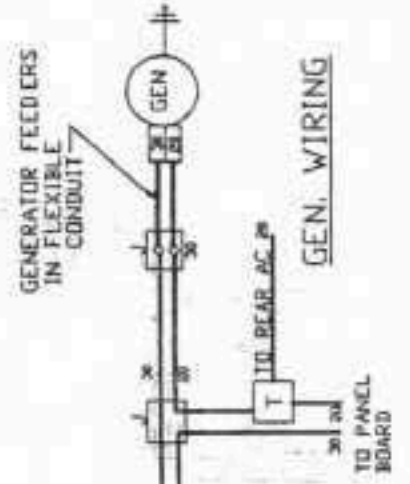
NC



ENERGY MANAGEMENT SYSTEM
110 VOLT CIRCUIT CONNECTION
DETAIL



REAR AIR CONDITIONER
TRANSFER RELAY DETAIL



- [T] — TRANSFER SWITCH
- [CONV] — CONVERTER
- [J] — JUNCTION BOX
- [30] — 30 AMP RECEPTICAL OUTLET
- [RECEPT] — RECEPTICAL OUTLET (RECEPT)

| NO. | REVISIONS | BY | DATE | SCALE |
|-----|-----------|----|------|-----------------------|
| | | | | 110 V HOUSE SCHEMATIC |
| | | | | DATE |
| | | | | MODEL: DOLPHIN 634-D |

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