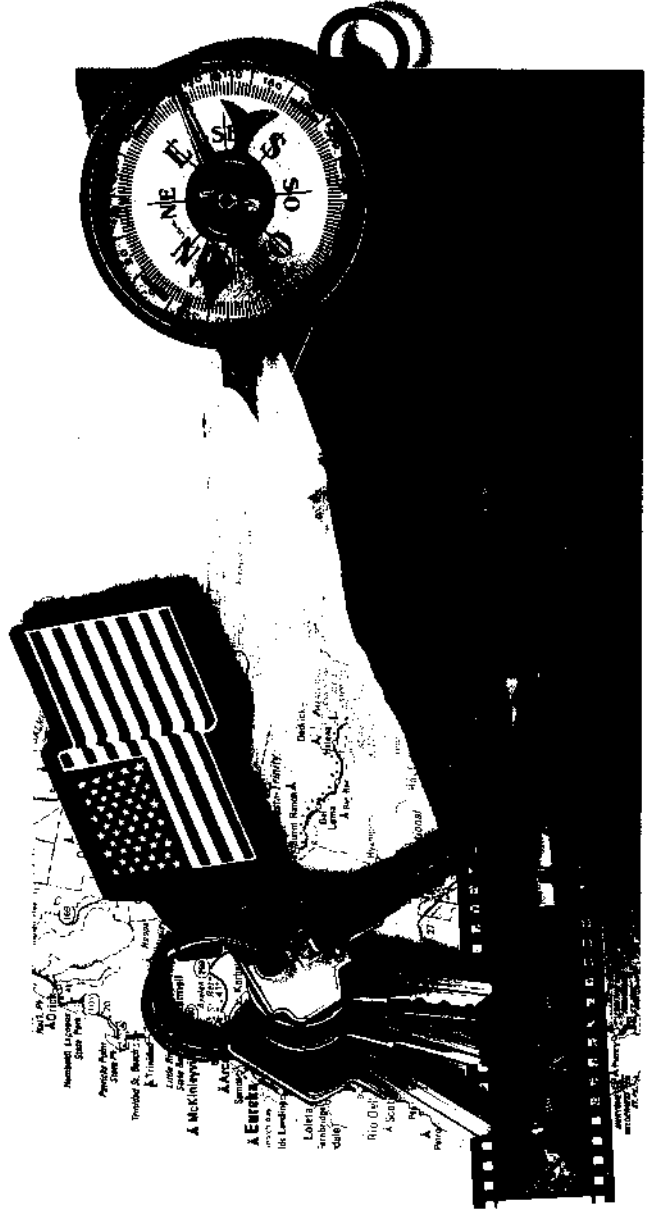


NEW MAR



OWNER'S GUIDE

1999 American Star

NEWMAR CORPORATION

OWNER'S GUIDE

Table of Contents

Chapter 1	General Information
Chapter 2	Towing & Safety Precautions
Chapter 3	Air Conditioning & Heating
Chapter 4	Appliances & Accessories
Chapter 5	Cabinets & Furniture
Chapter 6	Structure Features
Chapter 7	Electrical Features
Chapter 8	Slide Out Features
Chapter 9	Exterior Features
Chapter 10	Interior Features
Chapter 11	Plumbing & Bath Features
Chapter 12	Construction Features
Chapter 13	Windows, Awnings, Vents, & Doors
Chapter 14	Routine Maintenance
Chapter 15	Charts & Diagrams

Welcome to the exciting world of RV traveling and the growing family of recreational vehicle owners.

Congratulations on your purchase of a Newmar product. We sincerely thank you for choosing Newmar as your recreational vehicle. We trust this guide will help you to better understand and enjoy your new RV. We hope that you will enjoy many miles of traveling. Your new vehicle was built with care using today's technology and old world craftsmanship. We, at Newmar, strive to build vehicles that are safe, dependable, and comfortable to provide years of carefree, pleasant traveling.

This Owner's Guide, along with the Video Guide, should be kept in your vehicle for quick reference. Take time to get acquainted with your unit and how it operates. Carefully read both the instructions in this guide and the booklets supplied by the component manufacturers for important operation, safety, and maintenance information. Your dealer should be consulted should you have any questions. If your dealer is unable to answer the questions to your satisfaction he will refer you to our staff for help. Our customers are extremely important to us and we will make every effort necessary to ensure your satisfaction.

Again, thank you and welcome to our Newmar family.

Newmar Corporation



1999 American Star Towable

This guide, along with the Video Owner's Guide, has been provided by Newmar Corporation solely for the purpose of providing instructions about the operation and maintenance of this vehicle and its components. Nothing in this manual creates any warranty, either express or implied. The only warranty offered by Newmar Corporation is set forth in the written limited warranty that applies to this vehicle.

Instructions are included in this manual for operating some of the components that are standard on this vehicle. Instructions are also given for components that are options and may not appear on all vehicles. For more detailed information on components refer to the individual manufacturer's operating instructions contained in the Owner's Information Package.

The limited warranties issued by component manufacturers require periodic service and maintenance, and the owner's failure to provide this service and/or maintenance will result in the loss of warranty coverage. The owner should review the Newmar Corporation limited warranty and other manufacturers limited warranties of all components applicable to this vehicle. To activate the warranties on the components within your Newmar recreational vehicle, be sure to file the appropriate registration card with the component manufacturer as described with the individual instruction booklet.

Newmar Corporation has compiled the most current information available at the time of publication. If the components in your unit vary significantly from what is described within this manual, then consult the instructions provided by the component manufacturer found in the Owner's Package.

Throughout this guide, reference is made to the following terms: Warning, Caution, and Important. These terms indicate important information that must be understood and followed. The definitions of these terms are:

WARNING

Emphasizes an area in which personal injury or even death could result from failure to follow instructions properly. Mechanical damage may also occur.

CAUTION

Failure to observe a caution can cause damage to the equipment or unit. Personal injury is unlikely.

IMPORTANT

Provides additional information to make a step easier or clearer.

CHAPTER 1

GENERAL INFORMATION

Table of Contents

Delivery	1 - 1
Limited Warranty	1 - 2
Major Equipment Manufacturers	1 - 2
Owner's Information Package	1 - 3
Customer Relations	1 - 3
Reporting Safety Defects	1 - 3
Specification Label	1 - 4
Recommended Service Centers	1 - 5

DELIVERY

Throughout the manufacturing process, your vehicle has been inspected by our qualified technicians. However, our final inspection at the factory is not to be the last one. The pre-delivery inspection and systems check your dealer performs are the final inspections done to the unit prior to you receiving your new coach. Your dealer is also available to assist you in understanding the limited warranties and completing any necessary forms to activate the warranties for the various appliances and accessories installed in your unit.

Dealer Responsibilities

1. A pre-delivery inspection and systems check. Thoroughly inspecting the vehicle and the operation of the factory installed components.
2. A customer walk through. This is done to familiarize the customer with the vehicle, its systems and components, and their operation.
3. Delivery of the Owner's Information Package. This package contains the warranty cards and registrations for the vehicle and factory installed components that carry a separate warranty. The detailed operating and maintenance instructions on these components are also included in this package.
4. Assisting the customer in completing the component registration forms, at the customer's request. To avoid loss of warranty coverage, the dealer should review the limited warranty provisions with the customer stressing the importance of filing warranty cards and registrations to the component's manufacturers within the prescribed time limit.
5. Providing the customer with information regarding warranty and non-warranty work on the vehicle and its separately warranted components whether the customer is in or out of the area.

Customer Responsibilities

The customer is responsible for regular and proper maintenance of the vehicle. Properly maintaining your vehicle will prevent conditions arising from neglect that are not covered by your Newmar limited warranty. The maintenance guidelines in this manual and any other applicable manual should be followed. It is your responsibility and obligation to return the vehicle to an authorized dealer for repairs and service.

To assist you in avoiding problems with your vehicle, we recommend you do the following:

- a. Read the warranty. Go over it thoroughly with your dealer.
- b. Inspect the vehicle. Do not accept delivery until you have gone through the unit with the dealer. Newmar has provided a check list to be used during retail delivery. Check each item on the list and make sure he does the same. Do not sign this checklist until you have done this.
- c. Ask questions about anything that you do not understand concerning your recreational vehicle.
- d. When taking delivery, set an appointment for adjustments. This appointment should be approximately two (2) weeks after you accept delivery.

RECREATIONAL VEHICLE LIMITED WARRANTY

The Newmar Corporation Limited Warranty was provided to you by your selling dealer prior to purchase. Please refer to this document when inquiring about the Newmar Warranty. To receive an additional copy, please write to: Newmar Corporation, Warranty Department, P.O. Box 30, Nappanee, IN 46550-0030.

Major Equipment Manufacturers

AntennaTek	303-772-9591
Atwood (LP Detector)	800-847-7160
Audiovox (Radio)	800-688-3135
Carefree Awnings	800-621-2617
Dexter Axle	219-295-1900
Dometic, Duo Therm	800-544-4881
Excide Battery	800-537-9434
Fantastic Vents	800-521-0298
Flexsteel	319-556-7730
Goodyear Tires	800-227-1999
Gekotek	714-738-3551
Magnadyne	219-262-4479
Mor/Ryde Suspension	219-293-1581
Newmar Corporation	800-731-8300
Sealand Toilets	800-321-9886
Sears Washer & Dryer	800-359-2000
Sharp	800-237-4277
Suburban Furnace	800-659-2138
Thetford Toilet	800-521-3032
Michigan Residents	313-769-6000
Todd Engineering	219-293-8633
Ventline (Rangehood)	219-848-4491
Wedgewood Range (Atwood)	615-643-4556
Wilsonart Flooring	219-848-4408

Owner's Information Package

Included in this package are valuable documents about your vehicle and its components and systems. The Newmar Owner's Guide does not cover every possible detail of equipment, standard and/or option, installed on or in your vehicle. Consulting the booklets and instruction manuals in this package will help you safely operate, maintain, and troubleshoot these items.

Read all of the information and understand the safety and operating instructions included in the Owner's Information Package. To assure full warranty coverage, it is essential that all maintenance instructions are followed.

CUSTOMER RELATIONS

If you wish to schedule maintenance, service or to order parts, you should notify your local Authorized Newmar Service Center to set up an appointment. If you are unsure of the location of your closest Authorized Newmar Service Center, see the listing in the manual. You may also write to:

Newmar Corporation
Warranty Department
P.O. Box 30
Nappanee, IN 46550-0030

REPORTING SAFETY DEFECTS

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 Newmar Corporation.

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 Newmar.

To contact NHTSA, you may either call the Auto Safety Hotline toll free at 1-800-424-9393 (or 366-0123 in Washington, D.C. area) or write to: NHTSA, U.S. Department of Transportation, Washington, DC 20590. You can also obtain other information about motor vehicle safety from the Hotline.

SPECIFICATION LABEL

There are two main numbers used to identify the vehicle. The Vehicle Identification Number (VIN) is the legal identification of the completed vehicle. The VIN is the number used by the state for vehicle registration. The Newmar Serial Number (1) is a five digit number that is needed whenever making an appointment for service or ordering parts through your Newmar Dealer or Service Center. This number can be found on the placard in the kitchen overhead and on the Customer Care card received from Newmar. Below is a sample of the placard located in the kitchen.

1. The Newmar Serial Number.
2. Last five digits Vehicle Identification Number (VIN)
3. Model Number of the Unit
4. Model Year of the Unit
5. Manufacturer, Model Number, and Serial Number of factory installed appliances

SPECIFICATION LABEL					
SERIAL # XXXXX	VIN # XXXXXXXXXXXXXXXXX	MODEL # XXXXXXXXXXXXX			
DECOR # XXXXXX	WOODCOLOR XXXXX	MODEL YEAR XXXX			
HEIGHT XXXXXXX	DRY WEIGHT XXXXXXX	LENGTH XXXXXXXX			
APPLIANCE INFORMATION					
	MODEL #	SERIAL #		MODEL #	SERIAL #
FRONT A/C	59516.801	XXXXXX	REAR A/C		
FRONT TV			REAR TV		
FRONT FURN.	SF20	XXXXXX	REAR FURN.	SF35	XXXXXXX
WATER HEATER	SW10DE	XXXXXX	RANGE	CW30BP	XXXXXXX
GENERATOR			AUX HEATER		
FRONT RADIO	AWM524	XXXXXX	REAR RADIO		
WASHER	48182790	XXXXXXX	DRYER	88722890	XXXXXXX
CB RADIO			VCR		
CONVERTER	T0DD	XXX	MICROWAVE	R1850	XXXX
REFRIGERATOR	NOR1062	XXXXX	AWNING	839BJ11	XXXXX
MONITOR			AWNING HDW	8481000	XXXXX
ICE MAKER			DISHWASHER		
SAFE			CD PLAYER		

Notes

RECOMMENDED SERVICE CENTERS

ALABAMA

MADISON RV CENTER INC.
1707 Jordan Lane NW
Huntsville, AL 35816
(205)837-3881 Fax (205)830-4451

MILLICAN RV AMERICA INC.
36115 U.S. Highway 280
Sylacauga, AL 35150
(205)249-3773 Fax (205)249-3958

ALASKA

ALASKAN ADVENTURES RV CENTER
918 E. 73rd Street
Anchorage, AK 99523
(907)344-2072 Fax (907)344-1608

ARIZONA

AMERICAN PRIDE RV CENTER
2145 E. Main
Mesa, AZ 85213
(602)644-1500 Fax (602)644-0293

LA MESA RV CENTER
6651 Gila Ridge Road
Yuma, AZ 85364
(520)344-4900 Fax (520)317-9355

ARKANSAS

OUTDOOR LIVING CENTER
Highway 7 South, P.O. Box 1081
Russellville, AR 72801
(501)968-7706 Fax (501)968-4360

CALIFORNIA

ALPINE RECREATION SALES & SERVICE
19380 Monterey Road
Morgan Hill, CA 95037
(209)824-1437 Fax (209)824-1437

BARBER RV INC.
3650 E. Main Street, P.O. Box 3318
Ventura, CA 93006
(805)642-0276 Fax (805)642-9711

BRAWLEYS
5933 N. McHenry Ave., P.O. Box 2036
Manteca, CA 95336
(209)521-0170 Fax (209)521-9436

DAVE ALTMAN'S RV CENTERS
1201 Baldwin Park Boulevard
Baldwin Park, CA 91706
(626)960-1884 Fax (626)962-6906

DAVE ALTMAN'S RV CENTERS
1313 RV Center Drive
Colton, CA 92324
(909)422-0311 Fax (909)422-0450

DAVE ALTMAN'S RV CENTERS
22020 Recreation Road
Carson, CA 90745
(310)518-6182 Fax (310)513-0500

EL MONTE RV CENTER
12061 E. Valley Boulevard
El Monte, CA 91732
(626)443-6158 Fax (626)404-6386

EL MONTE RV CENTER
565 E. Redlands Boulevard
San Bernardino, CA 92402
(909)885-2000 Fax (909)888-0420

LA MESA RV CENTER
7430 Copley Park Place
San Diego, CA 92111
(619)874-8000 Fax (619)874-8032

LA MESA RV CENTER
5200 Chiles Road
Davis, CA 95616
(530)750-5070 Fax (530)750-5660

COLORADO

ALPINE TRAVEL TRAILERS, INC.
2487 Highway 6 & 50
Grand Junction, CO 81505
(970)242-5898 Fax (970)242-5898

HENRY'S AUTO & TRUCK CENTER
6601 Del Sol Drive
Alamosa, CO 81101
(719)587-0084

JDL TRAILER SALES
2734 Lake Avenue
Pueblo, CO 81004
(719)564-8056 Fax (719)564-0306

MOUNTAIN STATES RV, INC.
14300 E. Colfax Avenue
Aurora, CO 80011
(303)360-0252 Fax (303)363-9103

CONNECTICUT

DAVE'S RV CENTER
2 Industrial Plaza Road
Danbury, CT 06810
(203)730-1744 Fax (203)730-1741

FLORIDA

DICK GORE'S R.V. WORLD
14590 Duval Place West
Jacksonville, FL 32218
(904)741-5100 Fax (904)741-4905

INDEPENDENCE RV SALES & SVC. INC.
12705 W. Colonial Drive
Winter Garden, FL 34787
(407)877-7878 Fax (407)877-3806

LAND YACHTS INC.
1414 Commerce Lane, P.O. Box 1840
Jupiter, FL 33468
(561)745-0242 Fax (561)745-1725

LEISURE TYME RV, INC.
1490 Highway 98 W.
Mary Esther, FL 32569
(850)581-0880 Fax (850)581-2300

LEISURE TYME RV INC.
6428 Pensacola Boulevard
Pensacola, FL 32505
(850)476-6848 Fax (850)474-6392

NORTH TRAIL RV CENTER
5270 Orange River Boulevard
Ft Myers, FL 33905
(941)693-8200 Fax (941)693-9702

TRAVEL EASY RV INC.
4299 Highway 441 S.
Okeechobee, FL 34974
(941)467-0400 Fax (941)467-9396

TRI AM RV CENTER INC.
5441 N.E. Jacksonville Road
Ocala, FL 34479
(352)732-6269 Fax (352)368-7992

GEORGIA

C.S.R.A. CAMPERLAND INC.
3844 Washington Road
Martinez, GA 30907
(706)863-6294 Fax (706)860-5728

COACH & CAMPERS RV SERVICE CENTER
7656 Old Covington Highway
Lithonia, GA 30058
(770)482-4666 Fax (770)482-2026

IDAHO

AMERICAN WAY RV CENTER
dba Northwest Recreational Vehicle, Inc.
4033 Chinden Boulevard
Boise, ID 83714
(208)345-6644 Fax (208)345-5540

ILLINOIS

ALL SEASONS CAMPING INC.
260 W. Grand Avenue
Elmhurst, IL 60126
(630)832-0800 Fax (630)832-0838

COLLIER RV CENTER
3510 Merchandise Drive
Rockford, IL 61109
(815)874-7188 Fax (815)874-9426

LARRY'S TRAILER SALES INC.
Highway 148 N., P.O. Box 98
Zeligler, IL 62999
(618)596-6414 Fax (618)596-6344

OZARK COACH SALES
707 Macomb St., P.O. Box 354
Colchester, IL 62326
(309)776-3182 Fax (309)776-3183

R & S SALES & SERVICE, INC.
218 S. Lake of the Woods Road
Mahomet, IL 61853
(217)586-2055 Fax (217)586-2382

INDIANA

DON'S CAMPER SALES INC.
U.S. 41 S, Box 373
Boswell, IN 47921
(765)869-5009 Fax (765)869-5009

HART CITY RV SERVICE INC.
2301 S. Nappanee Street
Elkhart, IN 46517
(219)295-5793 Fax (219)295-6190

INDY RV CENTER INC.
State Rd. 37, S. Smith Valley Rd., P.O. Box 447
Greenwood, IN 46142
(317)881-0300 Fax (317)881-0431

PREMIER RV INC.

1400 Leisure Way
Clarksville, IN 47129
(812)284-1400 Fax (812)283-3465

THE RV CENTER INC.

3360 E. Lincolnway
Columbia City, IN 46725
(219)244-3414 Fax (219)244-3898

TERRY'S RV SALES & SERVICE

dba Terryman Inc.
2900 East CR 350 North
Muncie, IN 47303
(765)289-9704 Fax (765)289-9737

TOM STINNETT HOLIDAY RV CTR. INC.

520 Marriott Drive
Clarksville, IN 47129
(812)282-7718 Fax (812)285-7578

WETNIGHT RV SALES & SERVICE INC.

4401 U.S. 41 N., P.O. Box 5197
Terre Haute, IN 47805
(812)466-3961 Fax (812)466-6851

IOWA**HEROLD TRAILER SALES**

1806 W. 2nd Ave., Highway 92 W.
Indianola, IA 50125
(515)961-7405 Fax (515)961-3674

WALKER TRAILER SALES, INC.

Highway 18 W., Box 633
Nora Springs, IA 50458
(515)749-2321 Fax (515)749-2321

KANSAS**HARPER CAMPERLAND INC.**

1200 E. 10th, P.O. Box 1993
Great Bend, KS 67530
(316)792-5170 Fax (316)792-8466

HARPER CAMPERLAND INC.

117 W. 14th
Harper, KS 67058
(316)896-2862 Fax (316)896-2858

JAYHAWK CAMPER SALES

24105 W. 43rd
Shawnee, KS 66226
(913)422-5677 Fax (913)422-7147

WILCOX HOMES & RV CENTER

835 N.E. Highway 24
Topeka, KS 66608
(913)357-5111 Fax (913)232-1574

KENTUCKY**HALL ENTERPRISES, INC.**

975 Beasley Street, P.O. Box 55038
Lexington, KY 40555
(606)233-1777 Fax (606)254-1073

YOUNGBLOOD RV CENTER INC.

2132 St. Rt. 45 N.
Mayfield, KY 42066
(502)247-8591 Fax (502)247-0604

LOUISIANA**JACKIE EDGAR RV CENTER INC.**

3018 N.E. Evangeline Thruway
P.O. Box 90274
Lafayette, LA 70507-3425
(318)232-1941 Fax (318)232-1950

MILLER RV

12912 Florida Boulevard
Baton Rouge, LA 70815
(504)275-2940 Fax (504)275-6807

MAINE**MOUNTAIN ROAD RV**

R.F.D. #1, Box 2620
Sabattus, ME 04280
(207)375-4091 Fax (207)375-4014

MARYLAND**BECKLEY'S CAMPING CENTER**

11109 Angleberger Road
Thrumont, MD 21788
(301)898-3300 Fax (301)898-1017

MICHIGAN**BEECH GROVE TRAILER SALES**

51439 M40 North
Marcellus, MI 49067
(616)646-7845 Fax (616)646-2012

GAYLORD RV SALES & SERVICE

271 W. Johnson Road
Gaylord, MI 49735
(517)732-6141 Fax (517)731-2735

GENERAL TRAILER SALES

5300 Highland Road
Waterford, MI 48327
(248)674-0346 Fax (248)674-3809

GENERAL TRAILER SALES

48500 12 Mile Road
Wixom, MI 48393
(248)349-0900 Fax (248)349-7965

HILLTOP RV

2905 N. Lincoln Road
Escanaba, MI 49829
(906)786-7986 Fax (906)786-3421

KITSMILLER RV INC.

1211 N. Cedar
Mason, MI 48854
(517)694-7500 Fax (517)694-3542

MIDWAY MOTORHOMES INC.

5590 S. Division Avenue
Grand Rapids, MI 49548
(616)534-9641 Fax (616)534-6869

MODERN TRAILER SALES, INC.

3449 S. Division Avenue
Wyoming, MI 49548-2110
(616)241-2925 Fax (616)241-5451

MINNESOTA**HILLTOP TRAILER SALES**

4560 Center Avenue N.E.
Minneapolis, MN 55421
(612)571-9103 Fax (612)571-2536

SHOREWOOD RV CENTER

8390 Highway 10 N.W.
Anoka, MN 55303
(612)421-2505 Fax (612)421-6076

MISSISSIPPI**RV REPAIR & SALES, INC.**

4749 Highway 80 W.
Jackson, MS 39209
(601)922-9425 Fax (601)922-5153

MISSOURI**THOMAS BILL CAMPER SALES INC.**

5217 N. Lindbergh
St Louis, MO 63044
(314)731-2217 Fax (314)731-0269

CAPETOWN RV SALES

I-55 & Airport Road, P.O. Box 1985
Cape Girardeau, MO 63702
(573)334-7152 Fax (573)334-9059

COACHLIGHT RV SALES INC.

5327 S. Garrison Ave.
Carthage, MO 64836
(417)358-7444 Fax (417)358-0856

FRANK REED RV INC.

Hwy 47 North, P.O. Box 212
St. Clair, MO 63077
(314)583-2244 Fax (314)583-2147

KC TRAILER SALES, INC.

11520 S. 71 Highway
Kansas City, MO 64137
(816)761-1393 Fax (816)761-7722

MONTANA**BRETZ RV & MARINE**

2045 Mullen Road
Missoula, MT 59802
(406)721-4010 Fax (406)549-8078

NEBRASKA**RICH & SON'S CAMPER SALES**

5112 S. Antelope Drive
Grand Island, NE 68803
(308)384-2040 Fax (308)384-2043

NEVADA**MC KINNISH AUTO SALES & LSN INC.**

5130 Highway South east
Carson city, NV 89706
(702)883-7834 Fax (702)883-8196

WHEELERS LAS VEGAS RV

13175 Las Vegas Boulevard S.
Las Vegas, NV 89124
(702)896-9000 Fax (702)896-4504

WINKEL PONTIAC GMC RV CENTER

900 Kietzke Lane
Reno, NV 89502
(702)329-0831 Fax (702)323-6272

NEW HAMPSHIRE

C. H. DANA RV SALES & SERVICE
628 Woodsville Road
Monroe, NH 03771-3328
(603)638-2200 Fax (603)638-2066

CAMP AMERICA INC.
222 Plaistow Rd., Rte. 125
Plaistow, NH 03865
(603)382-9296 Fax (603)382-1060

CAMPERS INN OF KINGSTON
146 Route 125
Kingston, NH 03848
(603)642-5555 Fax (603)642-9931

MOUNTAIN VALLEY RECREATION
410 Main Street
Gorham, NH 03581
(603)466-3868 Fax (603)466-2416

NEW JERSEY

SCOTT MOTOR COACH SALES INC.
1133 Route 88
Lakewood, NJ 08701
(732)370-1022 Fax (732)905-0993

NEW MEXICO

ALOHA RV INC.
11200 Central S.E., P.O. Box 53250
Albuquerque, NM 87123
(505)298-8444 Fax (505)275-7687

AMERICAN RV & MARINE
11810 Central S.E.
Albuquerque, NM 87123
(505)293-1983 Fax (505)293-6991

AMERICAN RV & MARINE
200 N. Telshore Boulevard
Las Cruces, NM 88011
(505)522-5512 Fax (505)522-3781

NEW YORK

BALLARDS CAMPING CENTER, INC.
S-5849 Southwestern Blvd.
Hamburg, NY 14075
(716)649-9654 Fax (716)648-0340

FREEDOM RV OUTLET
103 Sitterly Road
Clifton Park, NY 12065
(518)581-7701 Fax (518)581-0037

NORTHWAY TRAVEL TRAILERS INC.
2570 Route 9, P.O. Box 2110
Ballston Spa, NY 12020
(518)899-2526 Fax (518)899-6735

SEVEN O'S
7917 Devaul Road
Kirkville, NY 13082
(315)687-9342 Fax (315)687-7992

WES TRAILER SALES
6166 Route 25
Wading River, NY 11792
(516)727-5852 Fax (516)727-5396

WILKENS RV INC.
1099 Almond Road
Hornell, NY 14843
(607)324-1313 Fax (607)324-1082

WRATTEN TRAILER SALES
9209 Route 11 S., P.O. Box 5
Adams, NY 13605
(315)232-4535 Fax (315)232-3445

NORTH CAROLINA

HOWARD RV CENTER
6811 Market Street
Wilmington, NC 28405
(910)791-5371 Fax (910)392-0672

INDEPENDENCE RV SALES LOT #2
6600 Reames Road
Charlotte, NC 28216
(704)596-5600 Fax (704)597-7400

OLD TOWN CAMPER SALES, INC.
5109 N. Causeway Drive
Winston-Salem, NC 27106
(336)924-9864 Fax (336)922-1458

RANDYS RV'S INC.
4904 T.V. Tower Road
Garner, NC 27529
(919)779-5445 Fax (919)772-8142

NORTH DAKOTA

CAPITAL RV CENTER, INC.
1900 N. Bismarck Expressway
Bismarck, ND 58501
(701)255-7878 Fax (701)255-1678

OHIO

AMOS MOTOR & RV, INC.
109 S. Main St., P.O. Box 555
Bradner, OH 43406
(419)288-2700 Fax (419)288-3273

BEGGS MOTOR HOMES, INC.
11197 Cleveland Ave. N.W., P.O. Box 545
Uniontown, OH 44685
(330)499-9755 Fax (330)499-6002

COLERAIN TRAILER CENTER INC.
3491 Struble Road
Cincinnati, OH 45251
(513)923-3600 Fax (513)245-5145

FARBER MOTORS INC.
5858 Scarborough Blvd.
Columbus, OH 43232
(614)864-7878 Fax (614)864-7899

OKLAHOMA

DAVE'S CLAREMORE RV INC.
1400 S. Lynn Riggs
Claremore, OK 74017
(918)341-0114 Fax (918)341-8936

LEE'S RV CITY INC.
13111 N. Broadway Ext., P.O. Box 6250
Edmond, OK 73083-6250
(405)936-9300 Fax (405)936-9323

LEWIS TRAVEL TRAILER SALES
11518 E. 66th Street
Owasso, OK 74055
(918)272-1353 Fax (918)272-5451

OREGON

AL'S TRAILER SALES OF SALEM
4843 Portland Road N.E.
Salem, OR 97305
(503)393-3365 Fax (503)393-1525

CURTIS TRAILERS, INC.
21525 S.W. T.V. Highway
Aloha, OR 97006
(503)649-8528 Fax (503)649-3974

CURTIS TRAILERS, INC.
10177 S.E. Powell
Portland, OR 97266
(503)760-1363 Fax (503)760-1482

EUGENE RECREATION SALES INC.
1700 Highway 99 N.
Eugene, OR 97402
(541)688-4849 Fax (541)688-1885

HOST RV SERVICE & SALES CENTER
90712 Huntley Court
Coburg, OR 97408
(541)345-6790 Fax (541)345-6713

OLINGER TRAVEL HOMES, INC.
6503 Alexander
Hillsboro, OR 97123
(503)649-2141 Fax (503)642-9579

OLINGER TRAVEL HOMES, INC.
9401 South East 82nd
Portland, OR 97266
(503)771-2121 Fax (503)771-4638

RV ROUNDUP
2790 Crater Lake Hwy.
Medford, OR 97504
(541)770-5887 Fax (541)770-5589

TRIPLE A RV CENTER, INC.
938 Chevy Way
Medford, OR 97504
(541)772-1938 Fax (541)779-1460

PENNSYLVANIA

ANSLEY & LEWIS, INC.
1280 Route 764, P.O. Box 239
Duncansville, PA 16635
(814)695-9817 Fax (814)695-9814

COUNCIL CUP TRAILER SALES
Route 239
Wapwallopen, PA 18660
(717)379-3751 Fax (717)379-2913

HAROLD'S RV CENTER
7514 Beth Bath Pike
Bath, PA 18014
(610)837-9880 Fax (610)837-9473

ROLLING WHEELS RV
2314 Lycoming Creek Road
Williamsport, PA 17701
(717)322-1894 Fax (717)322-1902

RHODE ISLAND

ARLINGTON RV SUPER CENTER, INC.
966 Quaker Lane
East Greenwich, RI 02818
(401)884-7550 Fax (401)885-4566

SOUTH CAROLINA

CAROLINA RV SALES, INC.
3590 Savannah Highway
Johns Island, SC 29455
(843)556-3449 Fax (843)402-9462

TONY'S RV PARTS & SERVICE INC.
130 Pond Branch Road
Lexington, SC 29073
(803)894-3071 Fax (803)894-5385

SOUTH DAKOTA

SCHAAP'S TRAVELAND INC.
3100 W. Russell
Sioux Falls, SD 57107
(605)332-6241 Fax (605)332-5422

TENNESSEE

AMERICAN RV CENTERS
4050 N. Thomas
Memphis, TN 38127
(901)353-1999 Fax (901)353-1888

BENTON RV CENTER, INC.
7264 Georgetown Rd. NW
Cleveland, TN 37312
(423)614-7800 Fax (423)478-2383

COACH & CAMPER OF KNOXVILLE
10260 Cogdill Road
Knoxville, TN 37932
(423)966-6135 Fax (423)671-6160

TEXAS

ATHENS RV SALES INC.
Route 7, Box 7285A
Athens, TX 75751
(903)675-9092 Fax (903)675-9332

CAMPER COACHES, INC.
1701 S. Loop 289
Lubbock, TX 79423
(806)748-7274 Fax (806)748-7277

EAST TEXAS RV SALES
Drawer J, Highway 96 South
Kirbyville, TX 75956
(409)423-4032 Fax (409)423-5824

HILLTOP TRAVEL TRAILERS
850 W. Red Oak Rd., P.O. Box 723
Red Oak, TX 75154
(972)299-5074 Fax (972)617-7065

PROFESSIONAL SALES INC.
1809 John McCain Rd., P.O. Box 1018
Colleyville, TX 76034
(817)488-9542 Fax (817)488-1523

RON HOOVER CO. OF BOERNE INC.
29277 Interstate Highway 10 W.
Boerne, TX 78006
(830)755-2252 Fax (830)755-8644

RON HOOVER CO. OF CORPUS CHRISTI INC.
5029 Columbia Street
Corpus Christi, TX 78416
(512)854-5383 Fax (512)851-9578

RON HOOVER CO. OF HOUSTON INC.
5715 N. Freeway (I-45)
Houston, TX 77076-4504
(713)695-2244 Fax (713)695-2288

RON HOOVER CO. OF ROCKPORT INC.
1510 W. Market Street, P.O. Box 747
Rockport, TX 78382
(512)729-9695 Fax (512)729-9698

VOGT MOTOR HOMES
5624 Airport Freeway
Fort Worth, TX 76117
(817)831-4222 Fax (817)838-5574

UTAH

JENSEN BLAINE & SONS RV CENTERS
780 North 900 West
Kaysville, UT 84037
(801)544-4298 Fax (801)544-3685

VERMONT

PETE'S RV CENTER
4016 Williston Road
S. Burlington, VT 05403
(802)864-9350 Fax (802)862-4806

VIRGINIA

CAMP-A-RAMA INC.
1107 N. George Washington Hwy.
Chesapeake, VA 23323
(757)487-8113 Fax (757)485-2736

KOOGLER SALES & SERVICE, INC.
Route 2, Box 193
Fishersville, VA 22939
(540)942-5556 Fax (540)943-0853

RAINBOW ACRES CAMPING RESORT INC.
Route 2, Box 16
King & Queen Courthouse, VA 23085
(804)785-9441 Fax (804)785-2608

WASHINGTON

FAMILY FUN RV
6722 Pacific Hwy. East
Tacoma, WA 98424-1541
(253)472-5040 Fax (253)926-6375

THE MILESTONE RV CENTER
6722 East Sprague Ave.
Spokane, WA 99212
(509)924-6446 Fax (509)891-4131

RUSS DEAN FORD INC.
dba RUSS DEAN'S AUTOMOTIVE FAMILY
1225 N. 32nd Place
Pasco, WA 99301
(509)545-9500 Fax (509)545-8229

WEST VIRGINIA

BRAND TRAILER SALES
2045 Fairmont Avenue
Fairmont, WV 26554
(304)366-7104 Fax (304)363-9345

SETZER'S WORLD OF CAMPING
5840 Davis Creek Road
Barboursville, WV 25504
(304)736-5287 Fax (304)736-5992

WISCONSIN

FINNEGAN'S RV
205 Park Avenue
Beloit, WI 53511
(608)365-2306 Fax (608)365-3569

HORN'S SALES & SERVICE INC.
8120 S. Frontage Rd.
Sheboygan, WI 53081
(920)564-2381 Fax (920)564-2385

ALBERTA

MAJESTIC RV WORLD
Woody Paylor Enterprises Ltd.
2777 Surridge Blvd. N.E.
Calgary, AB T1Y 3R2
(403)291-1203 Fax (403)291-9561

VELLNER LEISURE PRODUCTS LTD.
1890 - 49 Ave.
Red Deer, AB T4R 2N7
(403)343-1464 Fax (403)340-8135

BRITISH COLUMBIA

MIDTOWN RV LTD.
64 Industrial Avenue W.
Penticton, BC V2A 6M2
(250)492-5705 Fax (250)492-0430

TRAVELAND LEISURE VEHICLES LTD.
20529 Langley Bypass
Langley, BC V3A 5E8
(604)530-8141 Fax (604)530-9576

TRIANGLE RV CENTRE LTD.
10299 McDonald Park Rd.
Sidney, BC V8L 5X7
(250)656-1122 Fax (250)656-2161

MANITOBA

WALT'S TRAILER SALES LTD.
5195 Portage Avenue
Headingley, MB R4M 1E1
(204)837-8388 Fax (204)831-8674

NEW BRUNSWICK

CAMPERS ALLEY LTD.
11 Rue Bourque, P.O. Box 929
Bouchouche, NB E0A 1G0
(506)743-8404 Fax (506)743-8495

ONTARIO

FRONTIER RV
4131 Hwy. 115/35
Orono, ON L0B 1M0
(800)983-7878 Fax (905)983-5746

WILLIAM PATTERSON RV SALES LTD.
R.R. # 1
Dutton, ON N0L 1J0
(519)762-2125 Fax (519)762-3386

QUEBEC

RAYMOND LE BLANC INC.
1275 Des Laurentides Boulevard
Vimont Laval, PQ H7M 2Y2
(514)663-7941 Fax (514)663-2213

SASKATCHEWAN

DJS RV CENTRE LTD.
Thatcher Dr. E. & #1 Hwy., P.O. Box 308
Moose Jaw, SK S6H 4N9
(306)694-6048 Fax (306)694-1221

CHAPTER 2

TOWING & SAFETY PRECAUTIONS

TABLE OF CONTENTS

Safety Precautions	2 - 1
Towing	2 - 1
LP Gas	2 - 2
LP Gas System	2 - 2
LP Regulator	2 - 3
LP Distribution Lines	2 - 3
Fire Safety	2 - 4
Fire Extinguisher	2 - 4
Smoke Detector	2 - 5
Emergency Exit Window	2 - 5
Weight Information	2 - 5
Weighing the Unit	2 - 6
Hitching	2 - 8
Campsite Parking	2 - 9

SAFETY PRECAUTIONS

WARNING

Prior to towing your vehicle, be sure you have read this entire owner's guide and that you understand your vehicle's equipment completely and how to use the equipment safely.

Read and understand all of the instructions and precautions in this owner's guide before towing your new travel trailer or fifth wheel. Listed below are some safety precautions that must be adhered to while your vehicle is in motion. These precautions, as well as others that involve possible damage to equipment, are also listed in the appropriate areas in this manual.

General Warning

WARNING

Portable fuel-burning equipment, including wood and charcoal grills and stoves, shall not be used inside the recreational vehicle. The use of this equipment inside the recreational vehicle may cause fires or asphyxiation.

- The fire extinguisher should be inspected monthly for proper charge and operating condition. The smoke alarm should also be tested on a regular basis. In addition to the recommended inspection, these should also be checked prior to a vacation or extended trip.
- Any part of this vehicle, including the sleeping facilities, must not be used while the vehicle is in motion. It is not safe to ride in a towed vehicle and in most states it is illegal.
- Become familiar with the operation of the escape window, but use this window strictly as an emergency exit.

Towing

- While driving on slippery surfaces, use care when accelerating or decelerating. Skidding and loss of vehicle control may be the result of abrupt changes in speed.
- Driving through water deep enough to wet the brakes may affect the stopping distance or cause the vehicle to pull to one side. If you have driven through deep water, check the brake operation in a safe area to be sure they have not been affected. Never operate a vehicle if a difference in braking efficiency is noticeable.
- Extreme terrain and adverse weather may affect the handling and/or performance of your vehicle.

LP Gas

WARNING

LP gas containers, gasoline or other flammable liquids shall not be placed or stored inside the vehicle because fire or explosion may result. LP gas containers are equipped with safety valves that relieve excessive pressure by discharging gas into the atmosphere.

- While the LP tanks must be removed before refilling, it is recommended that all pilot lights are extinguished and appliances turned off. Smoking is also prohibited at this time.
- Exhaust gases, which contain carbon monoxide (an odorless, colorless, and poisonous gas) are produced by burned gasoline, diesel or LP gas in items such as the range, tow vehicle engine, generator engine, refrigerator, furnace, and water heater. These fumes should not be inhaled.
- An open flame is never to be used to test for LP gas leaks. All protective covers and caps must be replaced after filling the LP system. Once the LP valve is closed, securely latch the LP door.
- LP gas and natural gas are not interchangeable. Never connect natural gas to the LP gas system.
- The use of equipment such as wood and charcoal grills and stoves inside this recreational vehicle may cause fires or asphyxiation.

LP GAS SYSTEM

General Information

A warning label has been located near the LP gas container. This label reads:

WARNING

DO NOT FILL CONTAINER(S) TO MORE THAN 80 PERCENT OF CAPACITY.

Over filling the LP gas container can result in uncontrolled gas flow, which can cause fire or explosion. A properly filled container will hold approximately 80 percent of its volume as liquid LP gas.

The LP gas system components in your unit have been approved for use in camping vehicles by a nationally recognized testing laboratory. LP gas is a clean-burning dependable fuel when properly handled. The LP gas tank(s) mounted on your unit contain liquid petroleum gas under high pressure. The liquid gas vaporizes as the fuel is used and passes through the tank valve to a regulator that automatically reduces the pressure. The low-pressure gas is then distributed to the appliances through the pipe manifold system. Appliance lighting problems are commonly caused by an improperly adjusted gas regulator. Never attempt to reset the

regulator yourself. Have an authorized service technician make any necessary adjustments. We recommend that you have the LP gas system checked by an authorized service technician at least once a year, and after every extended trip. Although the manufacturer and dealer test carefully for leakage, travel vibrations could loosen fittings. Leaks can be easily found by applying leak detector solutions at the connections. If leak detector solution is not available, a soapy water solution made with dish soap can be used. Tightening the fitting usually stops any leaks. If this does not work, shut off the main gas valve at the tank and immediately consult an authorized technician for repairs. If a leak is suspected, the identifying odor smells similar to rotten eggs (sulfur). Never test for a leak by lighting a match or have an open flame where you suspect leaking gas.

WARNING

Shut off the main gas valve at the tank when the camping vehicle is not in use. Also, shut off the valve when refueling to avoid potential danger from pilot lights igniting fuel fumes. Some appliances, such as the refrigerator, water heater, and furnace, have DSI (direct spark ignition) boards so it is important that you turn the appliances off when the LP gas is off. The ignition in the appliances will continue to spark even if there is no LP gas available.

LP Regulator

The regulator acts as the heart for the LP gas system. The LP gas in the tank is under high pressure. The regulator reduces the pressure of this gas so that it is safe to use with the various appliances in your unit. If corrosion is noticed, contact a qualified LP gas service technician. Do not adjust the regulator. It is factory preset. Adjustments are to be made by a qualified LP service technician using specialized equipment.

LP gas regulators must always be installed with the diaphragm vent facing downward. Regulators that are not in compartments have been equipped with a protective cover. Make sure that the regulator vent faces downward and that the cover is kept in place to minimize the vent blockage that could result in excessive gas pressure causing fire or explosion.

Distribution Lines

The primary manifold is a black steel pipe running the length of your unit. Most secondary lines leading to gas appliances are made of copper tubing with flare fittings. If any of the gas lines rupture, do not attempt to splice them. Always run a new line. We recommend gas distribution work be performed by an authorized service technician. The main valve at the LP tank must be closed when removing or servicing any gas appliance. This will prevent dangerous gas leakage that could result in an explosion and possibly serious injury. If a leak is suspected, have the system inspected and repaired by a qualified service technician.

Precautions and Recommendations

- Inspect the LP fill valve for foreign materials before refueling.
- Shut the pilot lights off prior to refueling LP gas tanks.
- Never check for gas leaks with an open flame (match, etc.).
- Gas lines should be visually inspected periodically.
- Have the gas system inspected yearly and before and after extended trips.
- The gas system should be inspected and repaired by qualified technicians only.

WARNING

The LP system in your recreational vehicle is designed for liquefied petroleum gas only. Never attempt to connect natural gas or butane gas in this system.

FIRE SAFETY

The possibility of fire exists in all areas of life, and the recreational life-style is no exception. Recreational vehicles are complex machines. They are made up of many materials, some of which are flammable. Like most hazards, the possibility of fire can be minimized, if not totally eliminated. This is done by recognizing the danger and practicing common sense safety and maintenance habits. For safety reasons, your unit is furnished with both a fire extinguisher and a smoke alarm.

Fire Extinguisher

The fire extinguisher is rated for Class B (grease, gasoline, diesel fuel, flammable liquids) and Class C (electrical) fires. These are the most common types of fires in vehicles. Read the operator's manual and the instructions on the fire extinguisher. Be sure to know how and when to use the extinguisher and where it is located.

Fire extinguishers are mechanical, pressurized devices. Care must be exercised when they are handled. They must be maintained as the operator's manual instructs for proper and safe operation. The extinguisher should be inspected at least once a month. More frequent inspections may be required if the extinguisher is exposed to the weather or to possible tampering. Do not test the extinguisher by partially discharging. Doing this will cause a loss of pressure.

If a fire occurs in the vehicle, evacuate the vehicle as quickly and as safely as possible. Consider the cause and the severity of the fire and the risk involved before trying to extinguish it. If the fire is major or fuel fed, move away from and stand clear of the vehicle and wait for emergency assistance to arrive.

Smoke Detector

The battery powered smoke detector is mounted on the ceiling in the living area of the unit. Read the operating instructions for details on the testing and care for this important safety device. Test the smoke detector after the unit has been in storage, before each trip, and at least once a week during use. The detector should never be disabled because of nuisance or false alarm from cooking smoke or a dusty furnace. Ventilate the unit with fresh air and the alarm will shut off. Never disconnect or remove the battery from the smoke alarm. The battery should be replaced once a year or when the low battery signal sounds.

Emergency Exit Window

In the bedroom or slide out of the unit, there may be an emergency exit (egress) window. This window is designed to be used as an additional exit in emergency situations. It can be easily identified by the red handle and the red "EXIT" label. To open the egress window, lift the handle and push outward on the window. The window can be closed by pulling the window shut and lowering the handle in the down or locked position.

WEIGHT INFORMATION

Below is a sample of a weight information label which may appear in your unit.

TOWABLE WEIGHT INFORMATION	
Newmar Serial Number	XXXXX
Model	XXXXXXXXXX
GVWR	XXXXX
UVW	XXXXX
NCC	XXXX
GVWR (Gross Vehicle Weight Rating) means the maximum permissible weight of this trailer. The GVWR is equal to or greater than the sum of the Unloaded Vehicle Weight plus the Net Carrying Capacity.	
UVW (Unloaded Vehicle Weight) means the weight of this trailer as built at the factory. If applicable, it includes full generator fuel, engine oil and coolants. The UVW does not include cargo, fresh water, LP gas, or dealer installed accessories.	
NCC (Net Carrying Capacity) means the maximum weight of all personal belongings, food, fresh water, LP gas, tools, dealer installed accessories, etc., that can be carried by this trailer. (NCC is equal to or less than GVWR minus UVW)	
This trailer is capable of carrying up to XXX gallons of fresh water (including water heater) for a total of XXXX pounds.	
Reference: Weight of fresh water is 8.33 lbs/gal.	
CONSULT OWNER'S MANUAL FOR SPECIFIC WEIGHING INSTRUCTIONS AND TOWING GUIDELINES.	

Weighing the Unit

The following definitions are given to help in communications of issues of weight and your unit.

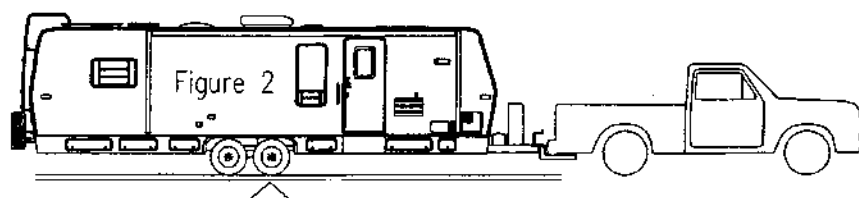
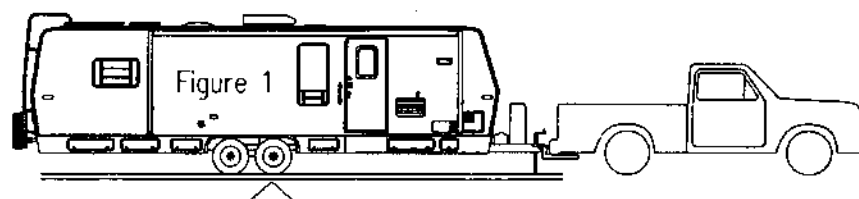
- GAWR: Gross Axle Weight Rating means the maximum permissible weight for an axle. This takes into consideration the weakest link in the tire, wheel, brakes, hubs, axle, springs, and attaching parts. For example, if the axle is rated at 6,000 pounds and the tires are rated at 2,540 pounds each, the maximum GAWR would be 5,080 pounds.
- GVWR: Gross Vehicle Weight Rating means the maximum permissible weight of this trailer. The GVWR is equal to or greater than the sum of the Unloaded Vehicle Weight plus the Net Carrying Capacity.
- UVW: Unloaded Vehicle Weight means the weight of the trailer as built at the factory. If applicable, it includes full generator fuel, engine oil, and coolants. The UVW does not include cargo, fresh water, LP gas, or dealer installed accessories.
- NCC: Net Carrying Capacity means the maximum weight of all personal belongings, food, fresh water, waste water, LP gas, tools, dealer installed accessories, etc., that can be carried by the trailer. NCC is equal to or less than the GVWR minus the UVW.
- GVW: Gross Vehicle Weight is the weight of the unit with all items and supplies that are loaded into the unit at any point in time.

To assure the accuracy of your weights be sure the unit is always level during weighing.

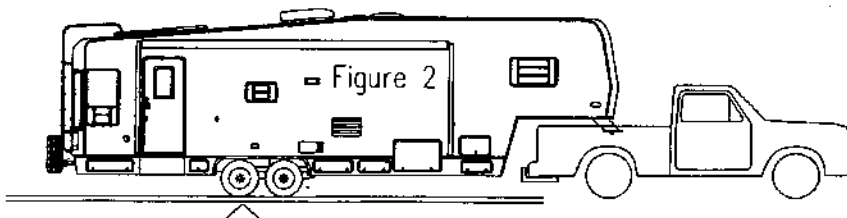
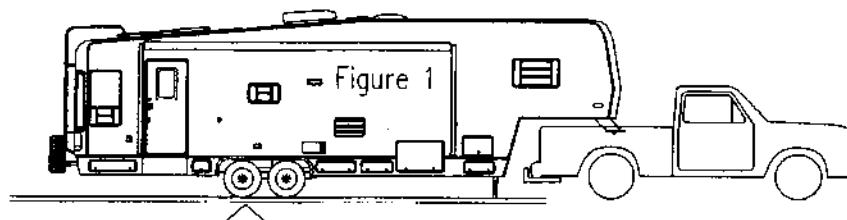
The unit has been built to comply with the component suppliers recommended limits and give you a realistic NCC. When loading the unit, distribute the items so that not all of the weight is added to one area of the unit. If you have questions as to what the weight of the unit is after it has been loaded, take the unit to a drive on scale, or use individual wheel scales and verify that the weights are within the limits of those specified for the unit. When weighing the unit follow these instructions. Failure to follow these instructions may give an erroneous weight reading.

Notes

Travel Trailers



Fifth Wheels



1. Pull the unit onto the scales shown in Fig. 1. This is the total weight of the unit. To do this, put the front jacks down far enough to take all of the weight off of the tow vehicle and onto the scales. Make sure that only the trailer is on the scales. Record the weight. This is the GVW and should not exceed the GVWR supplied by Newmar for the unit.
2. Hook up to the unit and be sure, again, that there is no part of the tow vehicle on the scales as shown in Fig 2. Weigh the unit with only the trailer tires on the scales. Record the weight. This is the total weight on the axles. When this amount is subtracted from the GVW (first reading), the difference is the hitch weight. To achieve the approximate weight on each axle, divide the weight from Fig. 2 by the number of axles. This amount should not exceed the GAWR of the unit. For example 9,360 pounds with 2 axles is 4,680 pounds per axle or approximately 2,340 pounds per tire.

Hitching

IMPORTANT

Your trailer is equipped with electric trailer brakes. Make sure the proper brake controls are installed and in working order before traveling.

Trailer

Hooking up the travel trailer will become quite simple after a little practice. Follow the steps listed below.

1. Crank the tongue jack until the hitch coupler is high enough to clear the hitch ball on the tow vehicle.
2. Position the tow vehicle so that until the hitch ball is directly under the coupler on the trailer. This part of the hitching procedure will take practice. If possible, ask another person to assist guiding the tow vehicle. When the ball is under the coupler, set the parking brakes. Raise the locking latch on the tongue coupler. Lower the coupler down onto the ball by lowering the jack. Move the locking latch down to the locked position on the ball.
3. Engage the lock and retainer clip.
4. Raise the tongue by cranking the jack down. The tow vehicle will come up with it if the hitch coupler is properly latched. This also allows for easy installation of the equalizing hitch bars. Adjust the equalizer bars so the trailer and tow vehicle are level. Refer the equalizer hitch manufacturer Operation Instructions for more details on this procedure.
5. Hook-up the safety chains.
6. Connect the electrical pigtail from the travel trailer to the tow vehicle.
7. Hook-up the break away switch. Be sure the break away switch cable is not attached to any part of the tow vehicle hitch assembly. Make sure there is enough slack in the break-a-way cable to allow for turning.
8. Fully retract the tongue jack and store the jack foot.
9. Adjust the mirrors on the tow vehicle.
10. Check all of the lights on the trailer and the tow vehicle (running lights, brake and tail lights, turn signal lights, and back up lights).
11. Check the inside of the trailer to verify that everything is stored properly, vents are closed, all of the doors and drawers are shut, and the TV antenna lowered. Close the entrance door and retract the steps.
12. Pull the travel trailer forward and apply the hand control for the trailer brakes to be sure they are operating properly.

IMPORTANT

Your fifth wheel is equipped with electric trailer brakes. Make sure the proper brake controls are installed and in working order before traveling.

Fifth Wheel

Hooking the fifth wheel will become quite simple after a little practice. Follow the steps listed below.

1. Adjust the fifth wheel jacks until the trailer is at the height level for hooking to the tow vehicle.
2. Place wheel chocks behind the wheels of the coach.
3. Release the fifth wheel lock handle.
4. Align the tow vehicle so the fifth wheel will accept the kingpin.
5. Back the tow vehicle slowly into the fifth wheel until the kingpin engages in the fifth wheel lock, automatically locking.
6. Verify that the lock is closed.
7. Connect the electrical pigtail between the fifth wheel and the tow vehicle.
8. Connect the break away switch line. Be sure the break away switch cable is not attached to any part of the tow vehicle hitch assembly. Make sure there is enough slack in the break-a-way cable to allow for turning.
9. Adjust the mirrors on the tow vehicle.
10. Check all of the lights on the fifth wheel and the tow vehicle (running lights, brake and tail lights, turn signal lights, and back up lights).
11. Pick up and store the wheel chocks.
12. Check the inside of the coach to verify that everything is stored properly, vents are closed, all of the doors and drawers are shut, and the TV antenna lowered. Close the entrance door and retract the steps.
13. Raise the fifth wheel jacks so the entire hitch load is on the tow vehicle. The jacks should be about 2" off of the ground. Do not raise the jacks completely until you have tested the brake control. This will also test the hook-up.
14. Pull the unit forward and apply the hand control for the trailer brakes to be sure they are operating properly.
15. Completely raise the fifth wheel jacks.

Campsite Parking

If the campground does not have drive through sites, it is recommended to stop near the site and inspect it for slopes or uneven areas. Back into the site carefully. Watch for low-hanging limbs, posts, large rocks or other obstacles. Back in so the site is on the driver's left. This will enable the driver to watch the rear of the unit. Maneuver the vehicle into position before backing into the site. Back up slowly, using the side mirrors as a guide or with the assistance of another person outside, guiding the parking procedure.

Notes

[illegible]

CHAPTER 3

AIR CONDITIONING & HEATING

Table of Contents

Air Conditioning	3 - 1
Furnace	3 - 2
LP Bottles	3 - 3
LP Bottle Filling	3 - 3
LP Regulator	3 - 4
LP Detector	3 - 4

AIR CONDITIONER(S) (OPTIONAL)

The optional roof mounted air conditioner(s) installed on your unit will operate only when the unit is supplied with 120 volt AC power from the power cord. The air conditioner circuit breaker must be in the ON position for the A/C to work.

To assist the air conditioner in cooling the unit, park the vehicle in the shade and keep the drapes or blinds closed. Set the thermostat to the desired temperature and keep the doors and windows closed.

Air conditioners can use a large portion of the available electric power. RV parks may experience low voltage on days with high heat or humidity. This is commonly referred to as a "brown out." A brown out may trip the air conditioner circuit breaker. The circuit breaker protects your air conditioner from damage and is necessary during low voltage conditions. The tripping breaker is not a fault in your electrical system.

If an air conditioner is optionally installed, the cool air would enter the unit directly from the air conditioner or may be optionally routed throughout the coach through ceiling ducts. Below is the thermostat that controls the air conditioner. It also controls the furnace. Simple select the desired temperature. The blower will cycle automatically, or you may choose low, medium or high fan settings.

Step One: Move power switch to ON

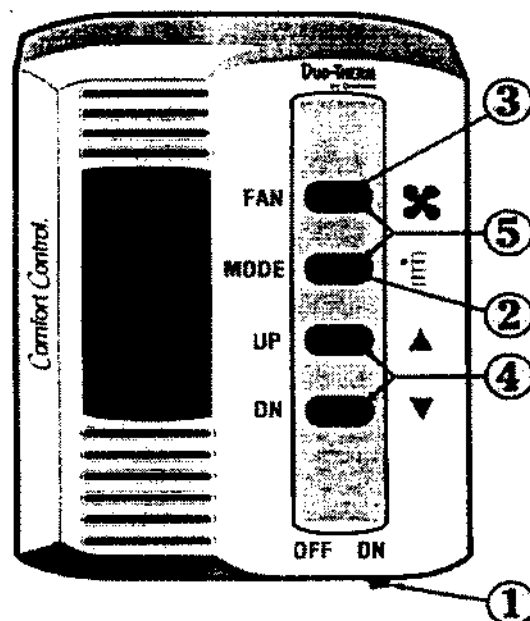
Step Two: Press MODE button to select function. (COOL*, FURNACE, FAN ONLY, etc.)

* There is an approximate 2-minute time delay after selecting cooling function for refrigerant compressor to start.

Step Three: Press FAN button to select fan speed or automatic operation.

Step Four: Press UP or DN button to set your desired temperature for the zone.

Step Five: If your vehicle contains more than one zone, depress FAN and MODE simultaneously to select zone 2, and repeat procedures from step 2 above. Repeat entire procedure for each additional zone.



Shutdown: If you turn the Comfort Control off, or if there is a power interruption for any reason, the system will resume operation on the last settings when power returns.

FURNACE

WARNING

Never attempt to modify this furnace. Fire, explosion, asphyxiation, or carbon monoxide poisoning may occur. If the furnace malfunctions, consult a trained service technician.

The furnace(s) installed in your unit is a forced-air furnace fueled by LP gas. If your unit is equipped with two furnaces, the living area furnace is controlled by the air conditioner wall thermostat that controls both the heating, and cooling of the unit. If installed, the furnace in the bath/bedroom area is controlled by the thermostat in the bedroom.

The heat is supplied to the unit through ducts in the floor. The furnace will not operate properly if the air flow at the floor registers, or the air return to the furnace, is blocked by personal or storage items. Storage under the cabinets should be done carefully to prevent crushing or damaging the furnace ducting or blocking of the warm air return.

Smoke and fumes may be created as a result of the residual burn off of the manufacturing compounds that are sometimes present the first time the furnace is used. This is normal. To minimize the smoke and fumes, the initial lighting of the furnace should be done with the windows and doors open. Continue until the residue is completely "burned off."

To operate, set the thermostat to the desired temperature setting and turn the thermostat to the on position. Allow 60 seconds for the furnace to begin operating. To shut down the furnace, turn the thermostat to the off position. After the furnace has been turned off, the fan will run for approximately 60 seconds to cool down.

For your safety, do not use gasoline or other flammable liquids in the vicinity of the furnace or any other appliance. Clean the complete furnace and air tube passageways periodically to remove dust, lint, etc. Check the gas system for leaks at least once a year. Check and clean the blower wheel annually.

On the exterior of the coach you will find a furnace cover. There are no owner serviceable parts on the furnace. This cover should be removed by authorized service technicians only.

WARNING

Use caution when washing the exterior of your vehicle. Water should not be sprayed directly into the furnace vent. If water is forced beyond the rain baffles into the furnace vent, rusting of the furnace could occur. This could also cause improper combustion.

The furnace should be thoroughly cleaned before the start of each heating season. Any debris in the system may restrict air flow for combustion, bind the combustion air impeller, or prevent the blower motor from running properly. Also, check the burner pilot orifices for debris. Lint accumulations may cause the blower to become unbalanced, vibrate, restrict the ability of the blower to move air. If lint is blown into the heat exchanger, it may cause odors or create a fire hazard. Contact an authorized service technician for annual cleaning. Consult the manufacturer's operating instructions in your Owner's Package for further information.

WARNING

Portable fuel burning appliances are not safe for heating inside the recreational vehicle. Asphyxiation or carbon monoxide poisoning can occur.

LP BOTTLES

This unit is equipped with two 30# LP bottles. These bottles are controlled with an automatic pressure regulator. The LP bottles contain liquid petroleum gas under high pressure. As the fuel is used, the liquid gas vaporizes and passes through the tank valve to a regulator that automatically reduces the pressure. The low-pressure gas is then distributed to the appliances throughout the pipe manifold system. Improperly adjusted regulators are the major cause of appliance lighting problems. Never attempt to reset the regulator. This is to be done by a qualified service technician. While in high altitudes or extreme cold weather a gas shortage may be experienced. Using one appliance at a time can help adjust to this problem.

It is recommended to have the LP system inspected by an authorized service technician at least once a year, and after every extended trip. This system is tested by both the manufacturer and the dealer. Leaks can be caused by travel vibrations, therefore routine inspections are recommended.

The primary gas manifold is a black steel pipe running the length of the unit. All secondary lines leading to the gas appliances are made of copper tubing with flare fittings. If any of these lines rupture do not attempt to splice them. Always have a new line ran. Gas distribution work must be performed by an authorized service technician. When removing or servicing any gas appliance, close the main gas valve at the LP bottles. This will prevent dangerous gas leakage that could result in an explosion and possible serious injury. If a gas leak is suspected, have the system inspected and repaired by a qualified service technician as soon as possible.

WARNING

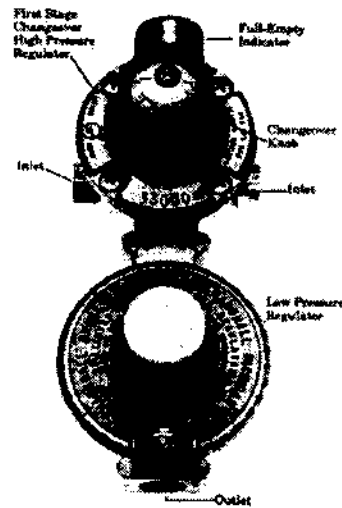
The main gas valve must be shut when the vehicle is not in use. Shut the valve off when refueling to avoid potential danger from pilots lights igniting fuel fumes. Gas valves on appliances with direct spark ignition (DSI) should also be in the off position. Do not store LP, gasoline, diesel, or other flammable liquids inside the vehicle. Fire or an explosion could be the result of ignoring this warning.

LP Bottle Filling

Do not fill the bottles to more than 80 percent of capacity. Fire or explosion may be the result of uncontrolled gas flow from an overfilled tank.

LP Regulator

The regulator is the heart of the LP system. The regulator reduces the pressure of the gas so it is safe to use with various appliances. Regulators are equipped with a vent. In the event excess pressure builds up in the body of the regulator, a relief mechanism vents it to the atmosphere. It will vent until the pressure returns to the normal range. The vent must be kept clean and clear of obstructions or corrosion. A clogged vent could cause the failure of components. Contact a qualified LP technician if corrosion or obstruction is noticed.



The presence of moisture in LP fuel causes the regulators to freeze. The moisture will pass through the cylinder valve and into the regulator where freezing occurs. To help prevent the regulator from freezing, always keep the tank control valve closed when not in use, even when the tank is empty, to prevent moisture from collecting on the inside.

If moisture becomes a problem, consult an authorized LP service center for assistance.

LP Gas Detector

WARNING

Never check gas lines for leaks with an open flame. Do not check for leaks using ammoniated or chlorinated household type detergents. These detergents can cause cracks to form on the metal tubing and brass fittings. Take the unit to a qualified LP gas service technician to find and repair the leak. Keep the tank valve closed and all of the appliances turned off when the unit is stored. If any of the LP gas valves do not close leak-tight by hand, consult a service technician.

Liquid Propane (LP) Gas is heavier than air and will settle to the lowest point of the room, which is generally on the floor of your coach. Because of this, the LP detector installed in your coach is located near the floor. The detector is also sensitive to other fumes, such as hair spray, which contain butane as the propellant. Butane, like propane, is heavier than air and will settle to the floor level where it may be detected.

CHAPTER 4

APPLIANCES & ACCESSORIES

Table of Contents

Refrigerator	4 - 1
Microwave	4 - 2
Range Hood	4 - 2
Range	4 - 2
Television Antenna	4 - 3
Television	4 - 4
Cable Jack	4 - 4
Telephone Jack	4 - 4
Stereo	4 - 4
Water Heater	4 - 4
Water Heater Storage	4 - 5
Water Heater Relief Valve	4 - 6

MAJOR APPLIANCES

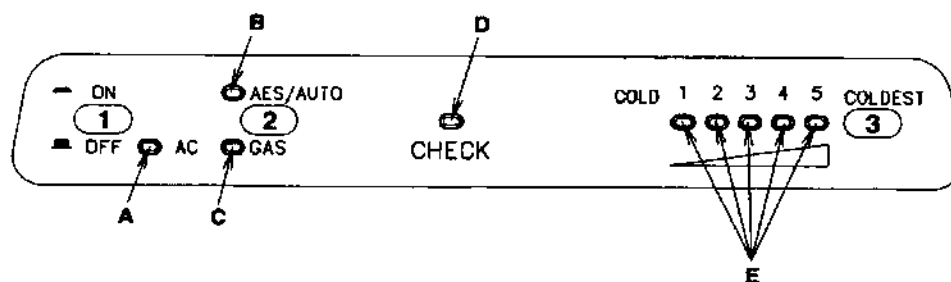
Refrigerator

Before starting the refrigerator, verify that the main LP gas valve is in the on position. The refrigerator is equipped with eye-level automatic-manual electronic controls with automatic LP ignition system. It can be set to select either 120 volt or LP gas operation, automatically, if desired.

WARNING

Most LP gas appliances used in recreational vehicles are vented to the outside of the vehicle. When parked close to a gasoline pump it is possible that the gasoline fumes could enter this type of appliance and ignite the burner flame causing a fire or explosion. Use caution when refueling.

A 12 volt power supply must be available for the electronic control panel to function. The shore line must be plugged in to operate in the 120 volt mode. The main LP gas valve must be open for operation in the LP mode. To start the refrigerator, press the main power ON/Off button to the ON position.



LEGEND 2-WAY AES Model

1. Main Power Button ON/OFF
2. AES/AUTO/GAS Mode Selector Button
3. Temperature Selector Button

- A. AC Mode Indicator Lamp
- B. AES/AUTO Mode Indicator Lamp
- C. GAS Mode Indicator Lamp
- D. CHECK Indicator Lamp
- E. Temperature Indicator Lamps

To use the 2-way Auto Mode, push the AUTO/GAS mode selector into the ON position. If 120 volt is available, the AC mode indicator light will be illuminated designating AC operation. If 120 volt is not available, the gas mode indicator light will be illuminated. The control system will automatically switch to gas operation. To operate on gas only, push the AUTO/GAS mode selector until the gas indicator light has lit. After 45 seconds, the burner should be ignited and operating normally. The initial start up may take longer than 45 seconds in order to allow the air to be purged from the gas line. If the gas does not ignite within 45 seconds, the check indicator light will illuminate and the gas mode light will go off. If the check indicator light illuminates and the gas mode indicator light is off, then the controls have failed to ignite the burner in the gas mode. When the check indicator light is on, press the main power ON/OFF button to the off position to reset. Do not continue to reset the gas operation if the check indicator light continues to illuminate after several tries.

The thermostat on the refrigerator controls the gas and electric operation. This eliminates the necessity of resetting the temperature each time a different energy source is used. Press the temperature selector button until the light at the desired setting is illuminated. After the initial start up, the thermostat should be moved from the coldest setting to the desired setting, which is usually mid range.

Microwave (Prep)

Your unit has been prepared for the installation of a microwave oven. If you install a microwave, please be certain to use a surge protector prior to plugging the microwave into the electrical outlet. This will help protect the microwave in case of an electrical surge. For instructions on how to operate the special features on the microwave oven, please refer to the microwave Owner's Manual in your Owner's Package.

Range Hood

The range hood is a separate appliance installed above the range, below the microwave, if installed. The range hood has both a fan and a light for your convenience. It is operated by turning the switch for the light either on or off, and the switch for the fan to low, high, or off. Consult the range hood Owner's Manual for further instruction on the hood operation.

Range

The range installed in your unit contains both a range top and an oven. There is no pilot light for the stove top. The burners are controlled by a spark ignition. There are different models used in the Newmar product line with different types of controls. To light the burners on some models, turn the control knob to turn the gas on. Wait a couple of seconds, then push the red spark button until a flame appears. On other models, after the gas control has been turned on, turn the spark control knob until a flame appears. All burner controls operate counter clockwise and have to be pushed inward in order to turn. The oven control must also be pressed inward before turning. To light the oven, push in the oven control knob and rotate counter clockwise to the PILOT ON position. Light the oven pilot light which located at the back, left hand side of the oven burner. The oven pilot may be slow in lighting due to initial air in the gas line. The oven pilot has been factory adjusted. No further adjustments are necessary. To extinguish the oven pilot, push in the oven control knob and turn clockwise to the Off position. For further instructions, please refer to the oven manufacturer Owner's Manual in your Owner's Package.

The following warning label has been located in the cooking area to remind the user to provide an adequate supply of fresh air for combustion:

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 an exhaust fan. 2. Open a window.

Unlike homes, the amount of oxygen supply is limited due to the size of the recreational vehicle. 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 the 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 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 until the odor clears.
6. Have the gas system checked and leakage source corrected before using again.

TELEVISION OPERATION

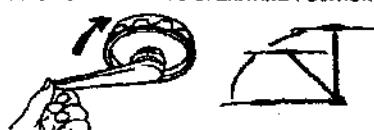
AntennaTek Television Antenna

The TV antenna in your unit is designed for reception of all color and black-and-white channels. If the reception is poor, you should verify that the power switch is in the "ON" position and that all of the connectors are tight. If poor reception still occurs, consult your authorized dealer.

To raise the antenna into the operating position, rotate the elevation handle clockwise. A clicking sound will occur when the antenna is completely extended. Switch on the main power supply. Note the red LED indicator illuminated. This indicated amplified reception. Switch on the television and tune in a suitable station. Pull the rotation handle down to disengage the gear from the ceiling plate and rotate the antenna until the picture and sound are the clearest.

To lower the antenna, pull the rotation handle down to disengage the gear from the ceiling plate and rotate the antenna until the pointer on the ceiling plate is aligned with the pointer on the rotation handle. Rotate the elevation handle counter-clockwise until you hear the antenna touch the roof. Resistance will be felt in the handle.

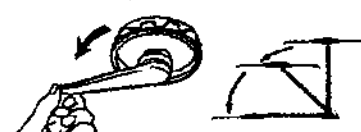
RAISING ANTENNA TO OPERATING POSITION



ROTATING ANTENNA FOR BEST PICTURE



LOWERING ANTENNA TO TRAVEL POSITION



CAUTION

Lowering the antenna with the pointers misaligned will damage the gears or the elevating handle.

You may want to switch your main power supply off. Amplified reception is possible if the antenna is in the full down position.

Television

With the installation of the antenna, the unit is ready for the addition of a television. The television would be located in the entertainment center of the living room. Most televisions are powered by 120 volt electricity. Your unit must be plugged into shore power in order for the television to work. There are two jacks installed for televisions to receive the antenna signal.

Telephone Jack

One option on this unit is to have a telephone connection installed. If installed, this would include the connector for the incoming telephone line and one outlet inside the unit.

Stereo (Optional)

The optional stereo that may have been installed in your unit is an AM/FM cassette player. There are speakers located throughout the unit for listening pleasure. The operation of the stereo is similar to that of many car stereos. It operates on 12 volt electricity from the coach batteries. For further information on the operation of this stereo, consult the stereo Owner's Manual in the Owner's Package.

WATER HEATER

WARNING

Do not light the water heater until it is filled with water. There is a switch on the exterior of the water heater labeled "Electric." This switch must be in the "ON" position for the water heater to work in the electric mode.

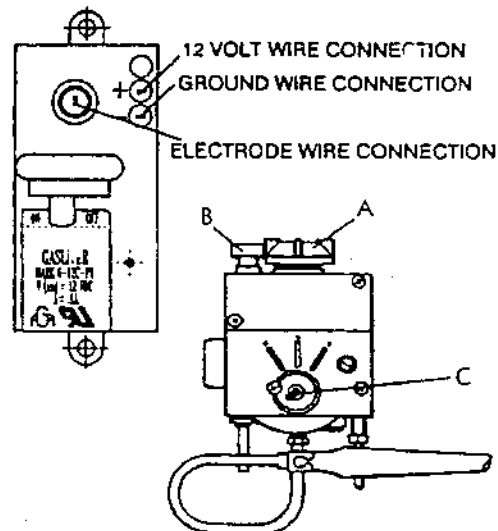
Before lighting the water heater fill the fresh water system. Purge any air from the water heater by opening all hot water faucets until water flows steadily from each one. The standard water heater installed in this unit is a six gallon gas/electric model with a re-ignitor. This water heater operates on either LP gas or 120 volt electricity.

It is important to read all of the safety information provided in the water heater manufacturer Operation Manual in the Owner's Package. At the water heater, place the re-ignitor control in the "OFF" position.

Turn the gas cock (A) clockwise to the "OFF" position and the temperature indicator to the lowest setting.

Turn off all electrical power to the water heater. Wait five (5) minutes for gas to clear the area. If you smell gas, STOP. Follow the instructions in the safety information sections of the Operation Manual. If no gas odor is present, continue to the next step. Turn on the gas supply. Turn on the electrical power to the water heater. Turn the gas cock (A) counter clockwise to the "PILOT" position. Press the reset button (B) and

switch the electric re-ignitor module to the "ON" position. The re-ignitor will start to spark between the electrode tip and the pilot hood. When the pilot lights, the spark will stop. Continue depressing the reset button (B) for approximately one minute or until the pilot light remains lit. On the initial start-up, it may take several minutes before the pilot light ignites in order to purge the air from the gas lines. Turn the gas cock (A) counter clockwise to the "ON" position. Set the temperature dial (C) to the desired setting. When the re-ignitor is in the on position, it will operate automatically if the pilot flame is accidentally extinguished. The re-ignitor is equipped with an alarm that will sound when the pilot light is extinguished or if the LP supply is turned off. The alarm will serve as a reminder to turn the re-ignitor off.



WARNING

Do not store any combustible materials or liquids near or adjacent to the water heater.

Storage

When storing your unit for the winter months, the water heater must be drained to prevent damage from freezing. The first step is to turn off all electrical power and LP gas going to the water heater. The water pump must also be turned off. Open both the hot and cold water faucets to drain the lines. Open the drain on the water heater. Drain the entire water system. When preparing the unit for use after it has been stored, make certain the water system, including the water heater has been filled before re-lighting the water heater. Failure to fill the water heater before lighting may damage the water heater and void the warranty.

Pressure Relief Valve

The temperature and pressure relief valve is designed to open if the temperature of the water within the heater reaches 210° F, or if the water pressure in the heater reaches 150 pounds. Recreational vehicle water systems are closed systems and during the water heating cycle the pressure build-up in the water system may reach 150 pounds. When this pressure is reached, the pressure relief valve will open and water will drip from the valve. This dripping will continue until the pressure is reduced to below 150 pounds, and the valve closes. This condition is normal and does not indicate a defective relief valve.

WARNING

Do not plug the relief valve under any circumstances.

Washer/Dryer (Optional)

The plumbing and/or the installation of a washer and dryer may be part of the various option packages available depending on the floor plan of your unit. The washers and dryers used by Newmar function as those in a home, operating on 120 volt electricity. For more detailed information on the operating instructions, read the appliance Owner's Manual in the Owner's Package.

CAUTION

The gray tank valve must be in the "open" position when operating the optional washing machine.

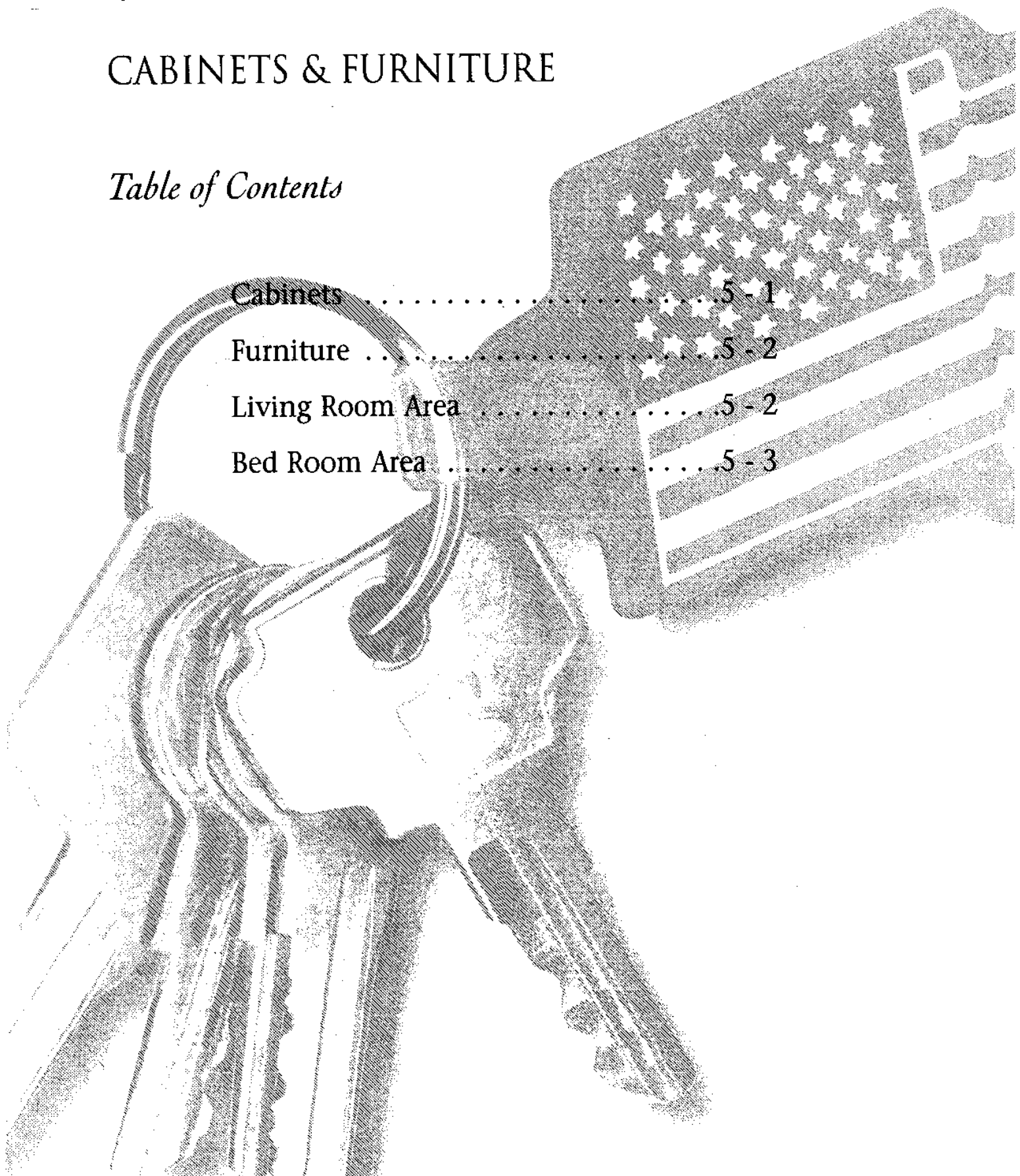
Notes

CHAPTER 5

CABINETS & FURNITURE

Table of Contents

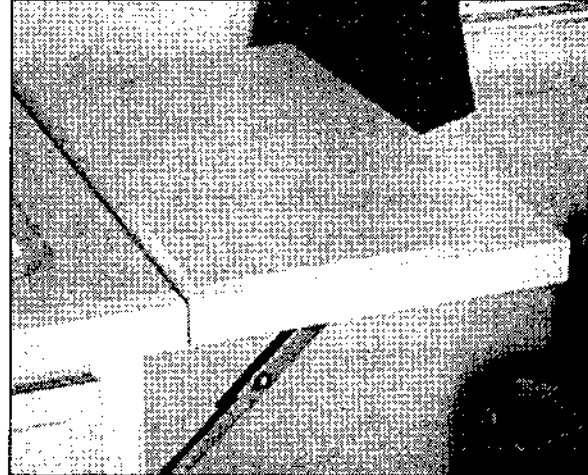
Cabinets	5 - 1
Furniture	5 - 2
Living Room Area	5 - 2
Bed Room Area	5 - 3



CABINETS

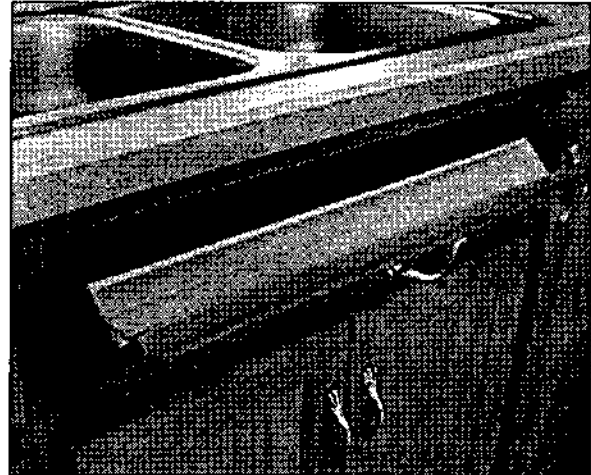
The cabinets in this unit are constructed on site, at the Newmar production facility. Hardwood frame doors are standard throughout the unit. Brass door and drawer pulls give the interior an added touch of class. The door panels in the living room entertainment center are mirrored with etched designs.

Some models have the optional countertop extension in the kitchen. This provides additional counter space while cooking, and folds out of the way while entertaining. The silverware drawer contains a molded silverware divider tray for added storage.



Storage is an important factor to all RV owner's. Keeping this in mind, the cabinetry is structured to provide as much storage as possible. Some models have pantry style cabinets in the kitchen for added storage. In the bedroom on all models, the bed platform lifts for convenient storage. This platform is held open by gas struts to allow hands-free access.

The countertop in the kitchen and bath is made of a decor matching laminate. The "drawer" directly in front of the kitchen and lavatory sink does not pull out, but rather flips down. This provides a storage tray for dish cloths, scouring pads, wash cloths, etc.



All of the cabinetry can be easily cleaned with any commercial furniture cleaner or polish. As with any wood product, do not saturate these cabinets with water or any other liquid. Be sure to wipe up spills as they occur to avoid staining.

FURNITURE

Living Room Area

A standard feature in the kitchen area is the free-standing dinette. On units with a slide out, this would include a hardwood table and four chairs. The chair seats and backs are designed with a decor matching upholstery fabric. A booth dinette may be standard on non-slide out units.

One popular option on units with a slide out is the built in dinette booth. The built in dinette would be installed in place of the free standing table and chairs. The dinette provides added storage under the seat area of the booth, along with an extra sleeping area. The sleeping area is made by dropping the table top and re-arranging the cushions.



In the living room, the standard sofa is a Flexsteel, jack-knife sofa. In order to convert this sofa into a sleeping area, first remove the arm rests. Next, pulling up on the seat part of the sofa while pushing down on the back, will cause the sofa mechanism to "unfold." The sofa is upholstered in decor-matching fabric. If you have any questions regarding the warranty on this sofa, contact Flexsteel, the sofa manufacturer.

A popular sofa option on models with a slide out is the Flexsteel Hide-a-Bed sofa. This sofa is a traditional hide-a-bed. Before converting the sofa, extend the slide out (See Chapter 8 for slide out instructions.) to make room for the bed. Once the room is extended, remove all of the seat cushions. Next, take hold of the handle on the bed mechanism and pull to extend. Expand the bed to the fully open position by unfolding the foot portion of the bed.





Bedroom Area

The standard mattress in the bedroom is a 60" x 75", unless the unit is equipped with twin beds, which would have two 32" x 75". There are some floor plans that have two bedrooms. On these models, there will be both full and twin mattresses. The twin size mattress on these units may be narrower than the standard twin.

One option in the bedroom is the luxurious pillow top mattress, in place of the standard mattress. The bedspread that is standard in the unit will conform to either mattress size.

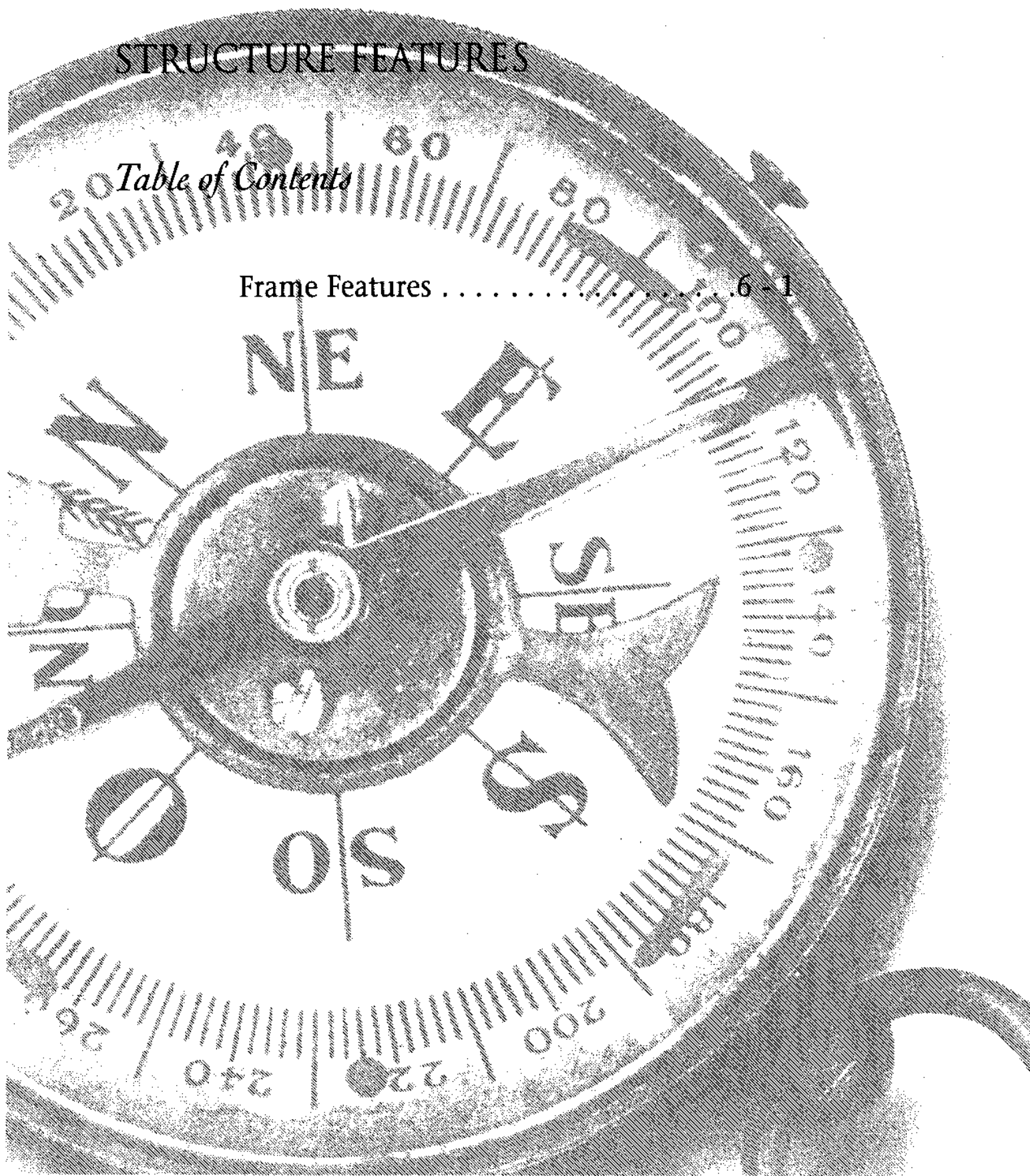
Notes

CHAPTER 6

STRUCTURE FEATURES

Table of Contents

Frame Features	6 - 1
--------------------------	-------



STRUCTURE FEATURES

Models with slide outs have 12" I-Beam steel frame construction while models without slide outs have tube steel frame construction. These frames are manufactured at the Newmar production facility. Doing this ensures the control of quality that Newmar insists upon.

The travel trailers have safety chains installed as standard equipment. These are to be used at all times when towing the vehicle. Skid bars are installed on travel trailers and fifth wheels as a standard feature. These will help prevent accidental damage when encountering dips or steep inclines.

The tires installed on the unit are 15" radials. The spare tire and spare tire carrier may be installed as an optional feature. The standard steel wheel installed on these units measures 15" x 6". The bolt pattern on the wheel is 6 on 5½". Another option, on some models, is a set of four 16" E Range tires. When this option is installed, the spare tire and carrier for the 16" E Range tires can also be installed. With the larger size tire, the wheel size is also larger. The wheel size for the optional tires is 16" x 6" with a bolt pattern of 8 on 6½". The number of axles, brake size, axle type, axle capacity varies per model.

Shock absorbers are an optional feature. Installation of these will help cushion the trailer when pulled on rough, uneven roads. They also help stabilize the unit.

Notes

[illegible]

CHAPTER 7

ELECTRICAL FEATURES

Table of Contents

General Information	7 - 1
Breaker Boxes	7 - 1
Batteries	7 - 1
Battery Inspection & Care	7 - 2
120 Volt Receptacles	7 - 3
GFCI Receptacles	7 - 3
Wiring Connector	7 - 4
Resettable Breakers	7 - 5

ELECTRICAL SYSTEMS

General Information

There are two electrical systems in your coach. They are the 12 volt DC system and the 120 volt AC system. Most standard appliances require the 120 volt system while the majority of the lighting used in recreation vehicles is powered by 12 volt. The power for the 12 volt system is supplied by the coach batteries. The power for the 120 volt systems is supplied by the power cord when the unit is connected to an outside power source or by the generator, if so equipped. When connected to shore power, the standard 40 amp power converter will automatically charge the batteries as well as convert 120 volts into 12 volts.

To connect the unit to 120 volt shore power, first make sure all of the breakers are in the off position. This is done to avoid a power surge. Unwind the power cord from the electrical compartment. The standard electrical service in this unit is 30 amps. A 50 amp service can be optioned in place of the standard. Check to make sure the pins in the outlet are oriented correctly, that they match the power cable, and that they are in good condition. If there is a circuit breaker switch at the plug, it should be turned OFF before making the connection. Insert the plug completely into the outlet and turn the circuit breaker on. Close, and lock the electrical compartment door to keep the contents clean, dry, and secure. Close the cover on the power box, if equipped, to avoid an unintended disconnection, and to keep contents clean. Switch the main breaker to the 'ON' position. The 120 volt system will energize all 120 volt circuits and outlets when the main breaker is turned on.

Breaker Boxes

The 120 volt and 12 volt breaker boxes are generally installed in a bedroom or bathroom cabinet. Circuit breakers and fuses are installed to protect the electrical system from overloading. Do not attempt to change the circuitry or add appliances yourself. Please consult an authorized Newmar Service Center.

Batteries

The battery on your unit is installed by Newmar Corporation. This battery is warranted by the battery manufacturer. It is used to operate the 12 volt items in the unit. The battery also operates the water heater's electronic ignition, landing jacks, etc. In-line breakers protecting these circuits are found near the battery. If the tow vehicle is equipped with a charge line, the tow vehicle's electrical system will charge the coach battery while in transit. The power converter automatically charges the coach batteries when the unit is connected to a 120 volt outside power source.

Battery Inspection & Care

WARNING

Remove rings, metal watch bands and other metal jewelry before working around batteries. Use caution when using metal tools. If a tool contacts a battery terminal or metal connected to it, a short circuit could occur which could cause personal injury, explosion or fire.

CAUTION

Disconnect the 120 volt electrical power cord and the negative terminal from the coach batteries before working on the electrical system.

Remember, when a battery is not used for an extended period of time, it may lose its charge. Periodic charging of the battery during storage of the unit will increase the life of the battery. Check the external condition of the battery periodically. Look for cracks in the cover and case. Check the vent plugs and replace them if they are cracked or broken. Keep the battery clean. Accumulations of acid film and dirt may permit current flow between the terminals, which could drain the battery.

To clean, wash the battery with a diluted solution of baking soda and water to neutralize any acid present. Rinse thoroughly with clean water. Foaming around the terminals or on top of the battery is a sign that acid is being neutralized. Avoid getting the baking soda solution in the battery. Secure all vent caps. Dry the battery cables and terminals. Do not use grease on the bare metal inside the cable terminals to prevent corrosion. Grease can act as an insulator. Electricity will not flow through it. A plastic ignition spray will protect the terminals after they have been cleaned.

WARNING

Do not allow the battery fluid to contact your skin, eyes, fabric, or painted surfaces. The fluid could cause serious personal injury or property damage. Wear eye protection when working with any battery.

The battery should be removed and stored in a warm place, when not using your unit for an extended period of time. Mark the cables, positive and negative, for easy identification. Batteries are not to be stored on concrete floors. The battery may require periodic charging during storage. If the unit is to be stored for a long period of time, it is recommended that all the batteries inside the unit be removed from clocks, radios, smoke alarms, etc. This will prevent unnecessary drain and corrosion of the batteries. The coach battery is a deep cycle RV/marine battery. This type of battery consumes water and must be filled periodically. Consult the owner's manual supplied by the battery manufacturer. This can be found in the Owner Information Packet received with this unit.

120 Volt Receptacles

For your convenience, there are 120 volt receptacles located throughout the interior of the unit. There are also exterior outlets located on the curbside of the coach. These receptacles require the three-pin plugs that provide proper grounding to protect you from electrical shock. Do not use an adapter, cheater, or extension cord that breaks the continuity of the ground circuit to the ground pin. Never remove the ground pin from a plug in order to connect it to a two pronged ungrounded outlet. Never operate the camping vehicle with an electrical short. An electrical short may cause the exterior of the unit to shock you when touched. If you feel even the slightest shock, disconnect the unit from the 120 volt power source and locate the fault. It is usually a break in the grounding circuit. The grounding circuit must be continuous from the frame to the distribution panel, to the power cord, to the earth ground.

Ground Fault Circuit Interrupt Receptacle

The 120 volt electrical outlets in the kitchen and bath area are ground fault circuit interrupt (GFCI) receptacles. The GFCI outlets provide an overload and short circuit protection. The electrical outlets located in the slide out are wired through the kitchen GFCI. The exterior electrical outlets are wired through the bathroom GFCI. If an item plugged into a slide out or outside receptacle is not working, check for a tripped GFCI in the kitchen or bathroom. In addition, these outlets protect the user from ground faults between a hot wire and ground. The GFCI will not reduce the shock hazard if the short is between a neutral and hot wire, or two hot load wires.

The GFCI should be tested at least once a month. The 120 volt electrical system must be on in order to test the GFCI. The reset button needs to be pushed in all of the way before starting the test. Push the test button. This will cause the reset button to pop out which means that the protected circuits have been disconnected. Push the reset button back in until a click is heard. This will reactivate the protected circuit. If the GFCI is working properly the reset button will remain in the 'IN' position.

Electrical Diagrams

Typical electrical diagrams can be found in chapter 15.

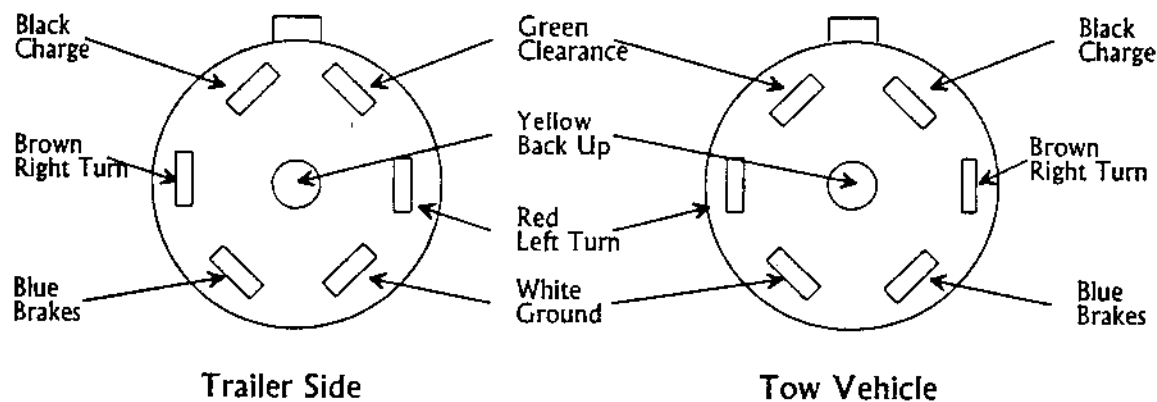
Notes

Wiring Connector

The wiring connector installed on all Newmar travel trailers and fifth wheels is the standard seven pin connector. The 12 volt battery in the tow vehicle supplies power to the trailer's electric brakes, tail lights, brake lights, turn lights, etc. through this connector. The color scheme for the wiring pigtail is as follows:

Left Turn Signal	Red	Clearance	Green	Charge	Black
Right Turn Signal	Brown	Ground	White	Brakes	Blue
		Back Up Lights	Yellow		

Below is the diagram of both the trailer and tow vehicle side of the pigtail. As stated above, this is a standard seven pin pigtail.



Notes

RESETTABLE BREAKERS

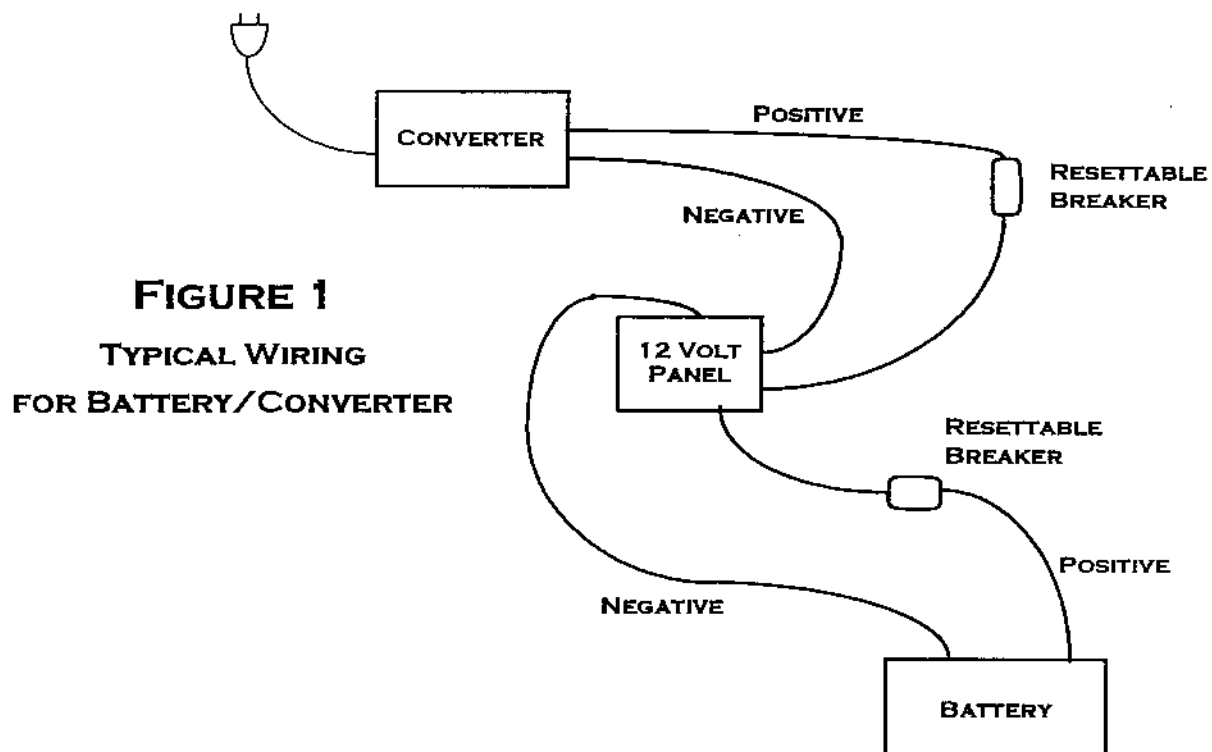
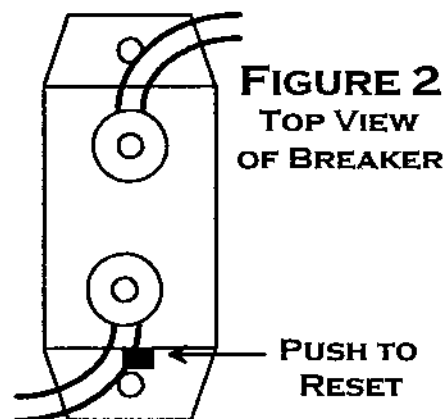
The resettable breakers are located within 18 inches of the source of power. This is the converter and the battery. (Figure 1)

When either of the breakers are shut down they must be manually reset.

To find the breakers, follow the line from the battery or converter approximately 18 inches.

This may lead to a junction box or to a cabinet inside the unit or similar location.

Manually reset the breaker as shown at right in Figure 2.

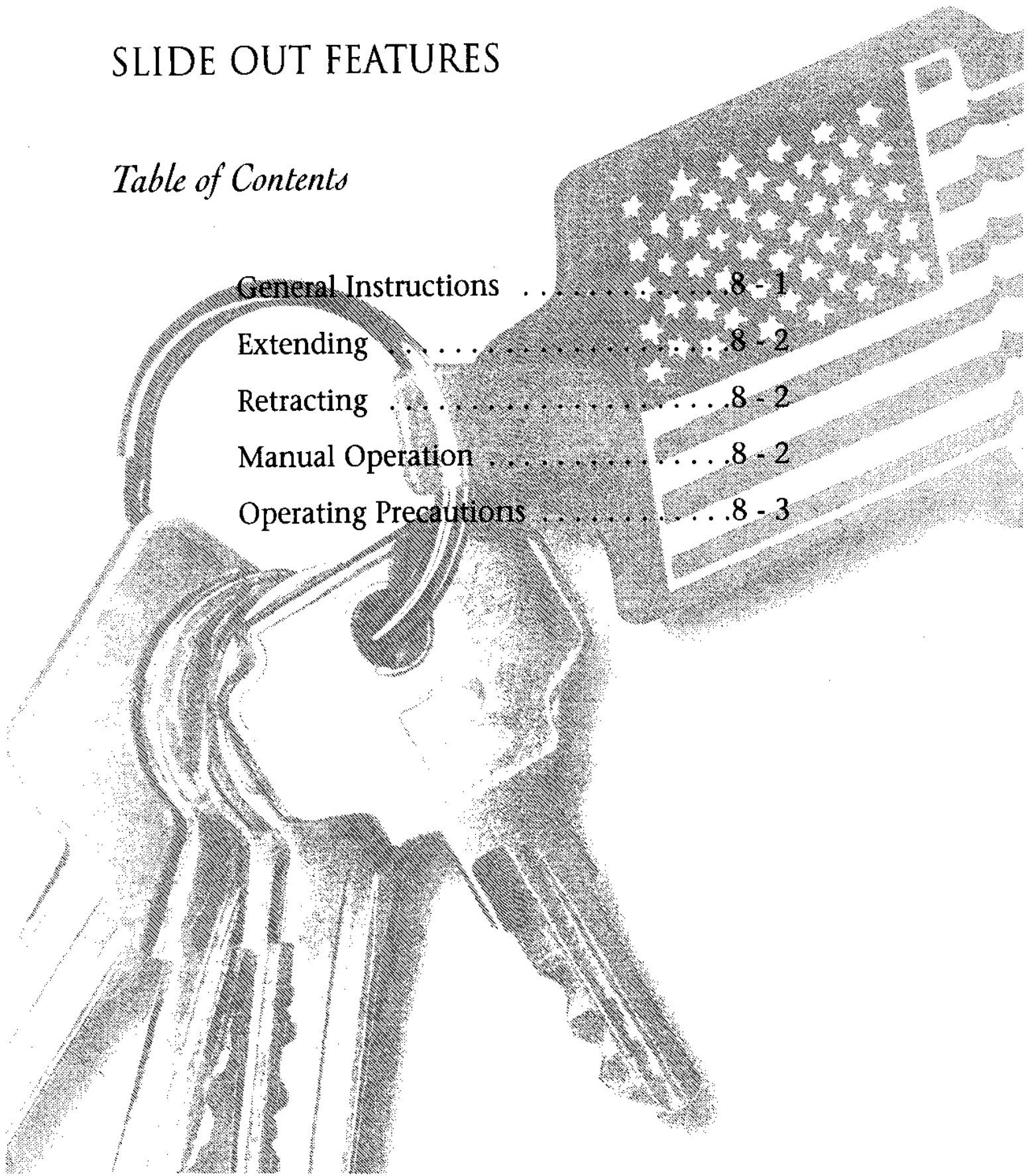


CHAPTER 8

SLIDE OUT FEATURES

Table of Contents

General Instructions	8 - 1
Extending	8 - 2
Retracting	8 - 2
Manual Operation	8 - 2
Operating Precautions	8 - 3



WARNING

READ THE FOLLOWING SLIDE OUT ROOM INSTRUCTIONS BEFORE ACTIVATING THE SWITCH.

IMPORTANT

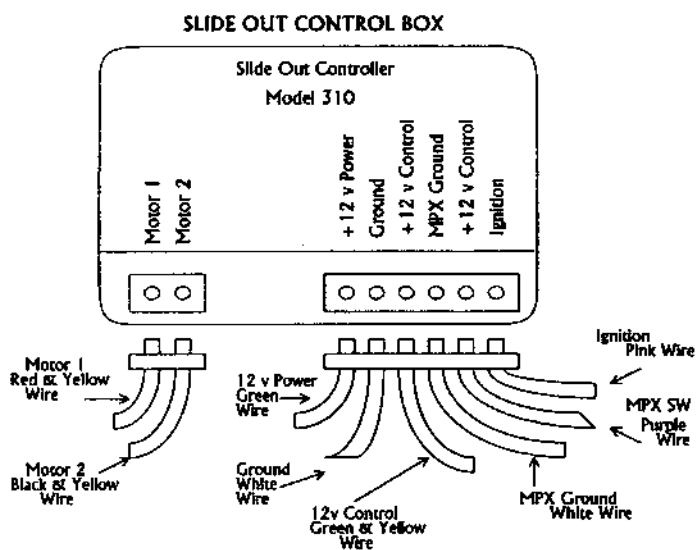
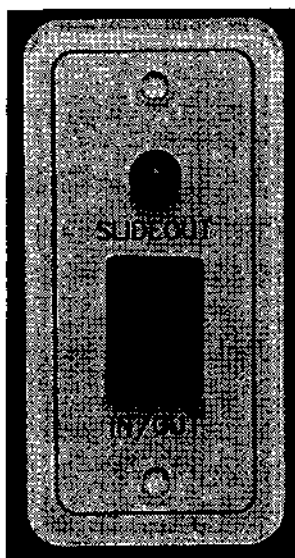
The slide out room should be inspected for alignment every six (6) months. If alignment is necessary, have the room adjusted.

GENERAL INSTRUCTIONS

1. The slide out room can be stopped at any time by activating the slide out switch. The room will reverse directions each time the switch is activated.
2. If the slide out room stops before reaching the full 'OUT' or 'IN' position, the slide out controller may need adjustment.
3. To adjust the slide out controller, turn the adjustment screw clockwise to increase the power and counter-clockwise to decrease the power.

CAUTION

Move the adjustment screw in small increments. Try moving the slide out room again. Use caution. There is a potential for component or structural damage if the screw is adjusted too high.

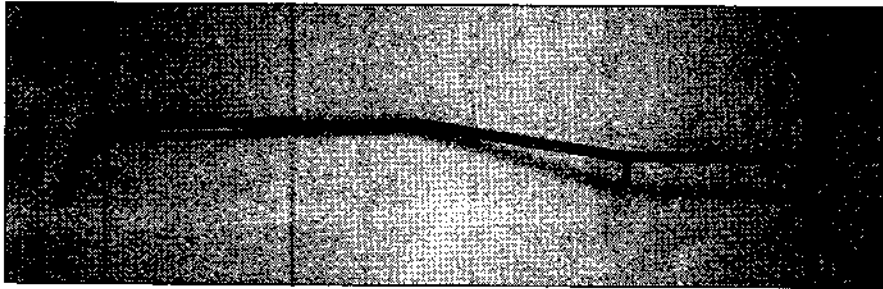


IMPORTANT

This screw does not adjust the slide out room speed. It sets the amount of power required to move the room against the mechanical stops.

Extending the Slide Out Room

1. The windows on the end of the slide out room must be closed before moving the room in either direction.
2. Before extending or retracting the room, look for and remove any obstructions.
3. Move the driver's chair forward before moving the slide out room in either direction.
4. Disengage the lock arms by pulling down on the center of the arm using the lock arm release tool, as required.
5. Activate the slide out switch. Once fully extended, the room will automatically stop. The indicator light will be lit while the room is traveling.



Retracting the Slide Out Room

1. Activate the slide out switch. When fully retracted, the room will automatically stop. The indicator light will be lit while the room is traveling.
2. Before moving the coach, engage the lock arms by pushing the arm up into the locked position using the lock arm tool, as required.

Manual Extension and Retraction

SHAFT END-MOUNTED MOTORS

If the motor is mounted on the ends of the slide out shaft, use the following directions:

1. Access must be gained to the TRANS-TORQUE bushing coupling at the end of the slide out gear motor.
2. Using a $\frac{1}{2}$ " drive – $1\frac{1}{2}$ " open end crows foot wrench and a supplied $\frac{1}{2}$ " drive ratchet wrench, loosen the $1\frac{1}{2}$ " nut. This will require approximately $1\frac{1}{2}$ turns. The nut is a standard right hand thread. After the initial release, the nut will turn for a partial turn, then will release again as you turn the wrench. This second release is required to loosen the TRANS-TORQUE bushing from the shaft.

SHAFT CENTER-MOUNTED MOTORS

If the unit is equipped with the K-900 slide out motor which is mounted near the center of the slide out room, use the following directions:

1. Access must be gained to the slide out motor located in the center of the slide out room.
2. The manual extension or retraction requires only a $\frac{3}{8}$ " socket and ratchet wrench. By placing the socket on the $\frac{3}{8}$ " hex nut located on the gear box of the K-900 motor, the slide out can be moved in either direction by turning the hex nut.
3. If the slide out does not move by using the hex nut, the room can also be extended or retracted by using the procedure described for the SHAFT END-MOUNTED MOTORS.

Slide outs with either the center or end mounted motors can be moved by pushing the room the full length of its travel in either direction. This method will require the assistance of at least two people.

IMPORTANT

The TRANS-TORQUE bushing must be re-tightened to re-couple the slide out gear motor, and the lock arm must be engaged before moving the coach. This will hold the slide out room in place.

CAUTION

The correct torque on the $1\frac{1}{4}$ " TRANS-TORQUE is 110 foot pounds maximum.

Operating Precautions

Before extending the slide out, make sure that the unit is level.

WARNING

Before extending the slide out, make certain that there is a minimum of five (5) feet of clear space on the slide out side of the unit. Prior to extending the room, be sure to unlock the slide out locking arms.

Make sure there are no obstructions either inside or outside the unit that may interfere with the slide out extension. Tree branches, bushes, or telephone poles can cause extensive damage to the exterior of the unit.

Notes

CHAPTER 9

EXTERIOR FEATURES

Table of Contents

Exterior Sides	9 - 1
Jacks	9 - 1
Roof	9 - 2
Bumper Storage	9 - 2
Steps	9 - 2

EXTERIOR FEATURES

Exterior Sides

The sides of this unit are constructed of ribbed aluminum. The paint is a baked on enamel. This is a standard feature on these models. An option for the exterior sidewall is Filon or gel-coated fiberglass. Clean either material with a mild cleanser and warm water. Use only soft cloths. Using stiff bristle brushes may cause scratches in the surface.

Jacks

Optional on these units are the 12 volt electrical jacks. Before using the jacks, read and closely follow the operation instructions in the jack manufacturer instructions.

Fifth Wheel

To lift the unit for uncoupling, drop the pad tube by removing the lock pin. Re-pin the hole that places the foot pad closest to the ground. Push the toggle switch to the "DOWN" position and hold until the jack raises the unit to the desired height.

CAUTION

Before raising the jacks, make sure the hitch is securely latched by applying the trailer brakes and slowly pulling the tow vehicle forward. The unit should prevent the tow vehicle from moving.

To raise the jacks after coupling, push the toggle switch to the "UP" position and hold until the jacks are fully retracted. Release the toggle switch as the lock pin in the inner ram tube nears the end of the outside tube to avoid unnecessary wear on the motor clutch. Remove the lock pins and raise the pad tubes, re-pinning them in the highest possible position.

CAUTION

When the jacks reach their maximum extended or retracted length or maximum load, you will hear a clicking noise. This is the slip clutch built into the motor to prevent jack overextension or retraction. Release the toggle switch as soon as you hear the clicking. Continued operation with the clutch slipping can damage the jacks.

These jacks can be operated manually, if necessary. Insert the hand crank into the alignment tube until the end engages with the crank shaft. Turn the crank handle counter clockwise to raise the trailer. Remove and store the crank handle. To raise the jacks after coupling, rotate the crank handle clockwise. Retract as far as possible with the crank handle, then remove the lock pin and raise the pad tube and re-pin it in the highest possible position. Please refer to the jack manufacturer Operation Instructions for further assistance.

The snaps for the fifth wheel jacks are a standard feature on this model.

Travel Trailers

To lift the unit for uncoupling, re-pin the foot pad to the jack shaft. Push the toggle switch to the "DOWN" position and hold until the jack raises the unit to the desired height.

CAUTION

Before raising the jacks, make sure the hitch is securely latched by applying the trailer brakes and slowly pulling the tow vehicle forward. The unit should prevent the tow vehicle from moving.

To raise the jacks after coupling, push the toggle switch to the "UP" position and hold until the jacks are fully retracted. Release the toggle switch as the jack foot nears the end of the outside tube to avoid unnecessary wear on the motor clutch. Remove the pin and store the jack foot.

CAUTION

When the jacks reach their maximum extended or retracted length or maximum load, you will hear a clicking noise. This is the slip clutch built into the motor to prevent jack overextension or retraction. Release the toggle switch as soon as you hear the clicking. Continued operation with the clutch slipping can damage the jacks.

These jacks can be operated manually, if necessary. For detailed instruction on the manual operation of these jacks, please refer to the jack manufacturer Operating Instructions.

Roof

Standard on this unit is the seamless aluminum roof. As an option, a roof rack and ladder can be installed. The ladder will assist you in gaining access for routine roof inspections. A rubber roof is optional in place of the standard aluminum roof.

Bumper Storage

The bumper on this unit is equipped for sewer hose storage. When traveling or parked the hose conveniently stores in the bumper and is easily accessed when needed.

Steps

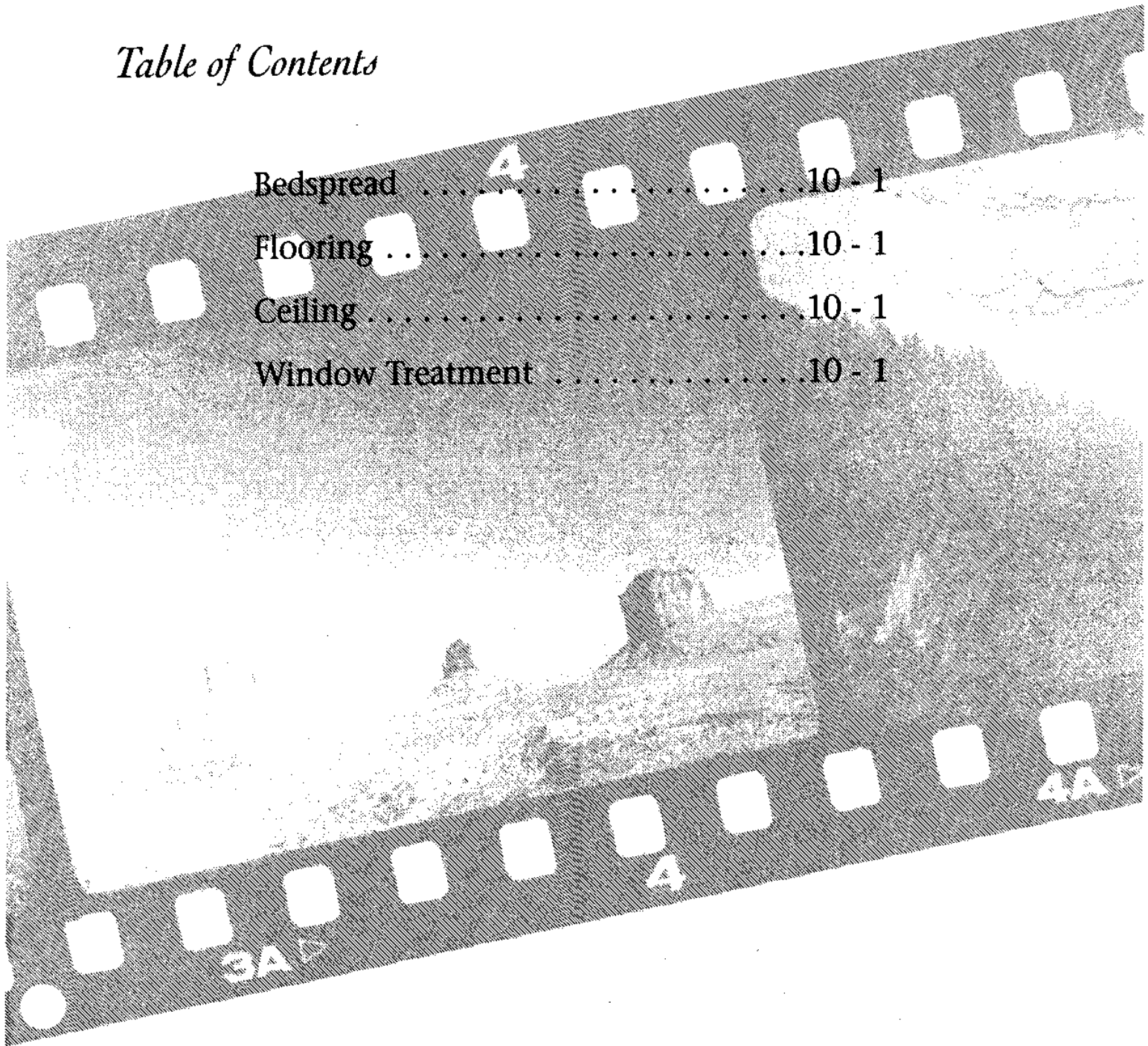
The entrance door steps on your unit are fold down steps. Units without a slide out will have the 24" double steps, while the units with a slide out will have the 24" triple steps. To extend the step, first release the locking latch. Once the latch is released, pull the step pivot section out and down by the step cross member bar. NOTE: Be careful not to get any fingers or clothing near the pivot action of the step. Next, release the second step by pulling the step up and straight outward until it locks into position. Then pivot the third and final step out and down. For retracting the step, reverse the procedure. Keep all step pivot points lubricated with a quality grease based spray lubricant for smooth operation.

CHAPTER 10

INTERIOR FEATURES

Table of Contents

Bedsread	10 - 1
Flooring	10 - 1
Ceiling	10 - 1
Window Treatment	10 - 1



INTERIOR FEATURES

Bedsread

All units have a decor matching fitted bedsread enclosed as part of the standard package. The recommended cleaning instructions for this spread are Dry Clean Only. The materials that make up the spread may have been treated and dry cleaning will preserve this treatment.

Flooring

The floor covering in the living room and bedroom of the unit is carpet. In the Owner's Package you will find literature supplied by the carpet manufacturer. This information will be helpful in maintaining and extending the life of the carpet. Please refer to this information for the carpet care and cleaning instructions. The floor covering in the bath, kitchen and foyer area is a vinyl linoleum. The cleaning procedures for this flooring are the same as with any linoleum. Use a mild soap with warm water and a soft cloth or mop. There are two options for the floor covering in the kitchen and foyer area. They are the Wilson Art 15" floor tile or simulated plank. This flooring is cleaned the same as linoleum. Do not saturate with water; this could damage the flooring.

Ceiling

The ceiling in this unit is vinyl covered paneling. To clean, wash with warm water, mild detergents, and a soft cloth.

Window Treatment

The window treatment throughout the unit is mini blinds. The mini-blinds allow the owner to select the position of the blind – open, closed, or semi-closed. The window can be open and the blind semi-closed allowing fresh air to enter the unit while maintaining privacy inside the unit. The optional window treatment in this unit is to have pleated day/night shades installed. These would be installed on all but the kitchen window.

Notes

CHAPTER 11

PLUMBING & BATH FEATURES

Table of Contents

Kitchen Sink	11 - 1
Bath Sink, Shower & Accessories	11 - 1
Monitor Panel	11 - 1
Monitor Panel Calibration	11 - 1
Water Pump	11 - 2
City Water Hook-Up	11 - 2
Fresh Water Tank Fill	11 - 3
Sanitizing	11 - 3
Water Heater By-Pass	11 - 4
Fresh Water Line	11 - 4
Waste Water System	11 - 4
Toilet	11 - 4
P-Traps	11 - 5
Black Water Holding Tanks	11 - 5
Gray Water Holding Tanks	11 - 5
Waste Water Disposal	11 - 6
Camping with Sewer Hook-Up	11 - 7

FRESH WATER SYSTEM

Kitchen Sink

The kitchen sink installed is a double bowl stainless steel sink. The unit has a sink cover to provide additional counter space when not using one side of the sink. Stainless sinks do not rust or chip. Cleaning care consists of washing with mild detergents and a soft cloth. Avoid using "S.O.S." type cleaning pads because they may scratch the stainless steel surface. The faucet in the kitchen is an 8" chrome single handle faucet.

Bath Sink, Shower & Accessories

The sink in the bathroom is vacuum formed durable white plastic. Use care when cleaning, to prevent from scratching the surface. The bathroom accessories include two towel bars and a tissue holder. The faucet in the bathroom is a decor matching white dual handle faucet. The shower installed is an ABS tub/shower combination with enclosure. The white tub faucet with shower head, hose and bracket coordinate with the sink faucet.

Monitor Panel

The monitor panel allows you to check the approximate levels in the fresh, gray, and black water holding tanks, and the battery condition. The monitor panel is generally located in the bathroom. Simply press the button of the item to check its status. The empty indicator light will always light when the button is pressed. If the tank is full, all of the lights will be on. Lights are sequential, and indicate the level in approximately $\frac{1}{4}$ tank increments. For example: If the tank selected is approximately $\frac{3}{4}$ -full, then the indicator lights E, $\frac{1}{4}$, and $\frac{3}{4}$ will be lit. On the right hand side of the monitor panel is the water pump switch. This switch controls the power going to the water pump, turning it either on or off.

Monitor Panel Calibration

The monitor panel comes to you factory calibrated for accuracy and should not need to be adjusted. In the event that the system does not read accurately, then re-calibration may be necessary. The procedure for re-calibration is simple: First fill the tank to be re-calibrated. Second, using the adjustment tool enclosed in the Owner's Package (or any small flat-bladed screw driver) simultaneously push the button for that tank and rotate the adjustment screw located above the button and behind the face plate counter-clockwise until some of the lights turn off in sequence. Then slowly rotate the adjustment screw clockwise until the full light is completely on. Repeat this procedure as necessary for the remaining tanks. The system is now calibrated properly.

Water Pump

The water pump is self priming and totally automatic, operating on demand whenever water is required. The water pump is used to pressurize the fresh water system when the unit is not connected to city water. To start the pump follow these instructions:

1. Fill or partially fill the fresh water supply tank.
2. Open the kitchen and bathroom faucets.
3. Turn the water pump switch on and allow the water to fill the water line and the hot water heater.
4. Close each faucet after it delivers a steady stream of water (close the cold water first). Leave the hot water faucets on until they also deliver a steady stream of water. This will ensure that the water heater is filled with water.
5. The water pump should stop running once all faucets are closed.
6. The pump is now ready for automatic operation. The pump will run when a faucet is opened and stop when a faucet is closed.
7. Never allow the pump to run for long periods of time without water in the supply tank. Pump damage or blown fuses may result.

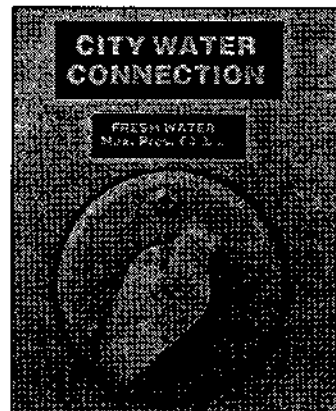
If water doesn't flow when a faucet is turned on while using the demand system, use the following trouble shooting chart.

SITUATION	SOLUTION
Pump running - no water	1. Fill tank 2. Clear the water line to the pump
Pump doesn't run	1. Check the pump switch 2. Check the 12 volt fuses 3. Check the electrical connections 4. Check the battery

All of the water should be drained from the fresh water system when the unit is not in use for more than one week. For more detailed information regarding the water pump, refer to the water pump manufacturer's brochure in your Owner's Package.

City Water Hook-Up

When connecting your unit to city water, be certain to use a water hose manufactured and labeled for potable water. This will ensure that the hose will not alter the taste of the water. To hook the city water supply to the unit, connect one end of the hose to the city water supply. This will usually be a faucet or valve similar to your garden hose valve at home.



Turn the city water supply on for a few seconds in order to clear the line. Once the hose has been flushed, turn the supply off. Connect the other end of the hose to the city water connections. Turn on the water supply and open all of the faucets to clear the air from the lines in the unit. Once air pockets have been purged from the water lines and water flows freely, close all of the faucets. The city water supply is under pressure, therefore the water pump is not necessary when connected to city water. Once the city water fill valve is opened, water is supplied to the fresh water system including the hot water heater, faucets, and stool. To disconnect from the city water supply, close the valve and remove the hose from the city water supply. Disconnect the hose from the city water connection and store the hose in the water compartment.

Fresh Water Tank Fill

The fresh water tank is filled through the water fill located on the door side of the unit. There are two ways to fill the fresh water tank. One would be with buckets and a funnel. Place the funnel in the water fill port and pour the water from buckets, jugs, etc. The other way would be with a water hose. When filling the tank, be sure to use a water hose manufactured and labeled for potable water. Place the hose in the water fill port and turn the water on. When the tank is full excess water will flow from the screened vent located below and to the right of the water fill port. All of the water should be drained from the fresh water system when the unit is not in use for more than one week. Whenever possible, drain the fresh water tank before traveling. Water in the tank will reduce the carrying capacity of the unit.

SANITIZING

To assure complete disinfecting of your fresh water system, it is recommended that the following procedure be followed on a new system, on one that has not been used for a length of time, or one that may have become contaminated. This procedure is also recommended before long periods of storage such as over the winter months:

1. Drain the fresh water tank by opening the drain valves. There is one valve per water tank. All of the faucets should be in the closed or off position.
2. Prepare a chlorine solution using one gallon of water and $\frac{1}{4}$ cup of chlorine bleach (5% sodium hypo-chlorite solution). Prepare enough of the chlorine solution to administer one gallon of solution for every 15 gallons of tank capacity. For sanitizing this unit, prepare 3 gallons of the chlorine solution. This mixture puts a 50 PPM (parts per million) residual chlorine concentration in the water system that will act as a quick kill dosage for harmful bacteria, viruses and slime forming organisms. Concentrations higher than 50 PPM may damage the water lines and/or tank.
3. Once the fresh water tank is empty, close the drain valves on the water tank. Pour the chlorine solution into the tank when the fresh water tank is empty. This is done by placing a funnel in the fresh water port and pouring in the chlorine solution. Once the solution is in the tank, completely fill the fresh water tank with water.
4. Open each faucet in turn including the kitchen faucet, bath faucet, inside and outside shower, turning on both the hot and cold, and flushing the stool until all of the air has been purged from the pipes and the water runs freely. The entire system will then be filled with the sanitizing solution.

5. Allow the 50 PPM disinfecting solution to stand in the system at least four hours.
6. Drain the system and flush with fresh water. The water system needs to be flushed with clean water repeatedly, if necessary, until there is no chlorine taste or smell left in the system. To remove any excessive chlorine taste or odor that might remain, prepare a solution of one quart vinegar to five gallons of water. Allow this solution to agitate in the tank for several days by vehicle motion. Drain the solution and refill the tank with clean water.

Water Heater By-Pass System

The water heater by-pass valve is located at or near the water heater. By closing the water heater supply valve and opening the by-pass valve you can divert water away from the water heater. This is done when winterizing your unit. Using the by-pass will keep antifreeze out of the water heater when winterizing the system.

Fresh Water Lines

Vibration and flexing during traveling can cause pipes and fittings to work loose. Check all of the plumbing connections for leaks on a yearly basis. If the water pump runs when all faucets are turned off, check for a leak. Be sure the drain valves are closed. Connections at the kitchen and bathroom faucets normally seal with hand tightening and a half turn with a wrench. If a fitting leak persists, disconnect it completely and check for mineral deposits or foreign material on the sealing surfaces. Clean the surfaces thoroughly and reinstall the fitting. Take the coach to an authorized service center for repairs if the system continues to leak. Follow the winterizing instructions given in Chapter 14 to reduce the risk of leaks caused by cracks from freezing pipes. Freezing damage can be extensive and expensive.

WASTE WATER SYSTEM

General Information

The waste drainage system was designed to provide adequate and safe storage and/or disposal of waste materials. All of the material used in the making of this system are tested by a nationally recognized testing laboratory. The drainage system uses ABS plastic piping and fittings connected to the sinks, toilet, and holding tanks. This provides for their drainage to an outside termination. The unit should be reasonably level for best operation of the system. There are two separate waste systems. The gray water system is for waste water from the sinks and shower. The black water system is generally for sewage waste from the stool. Each tank has its own control valve and both tanks drain through the sewer drain hose.

Toilet

The stool operates with water from either the fresh water tank with the water pump on or the city water supply. Before using the stool, add water to the bottom of the tank. Refer to the 'BLACK WATER TANK' instructions in this chapter. The stool flushes wastes directly into the black water holding tank. The stool uses high velocity water injection to produce a swirl

effect in the bowl. The greatest problem that causes stool solids to build up in the holding tank is lack of liquids. When using your stool, it is wise to fill the stool $\frac{3}{4}$ full of water. This will help to wash the solids away from directly below the stool and to ensure complete dumping of the holding tank. Depending upon the model installed, water can be added to the stool bowl by lifting up on the lever. To flush the stool, push down on the lever until water swirls.

The stool requires little maintenance. Use an approved non-abrasive cleaner to clean the bowl. Spraying the bowl sealing blade with a silicone spray will retain the original smooth operating condition.

Check the complete instruction and trouble shooting guide in the stool manufacturer's Owner's Manual provided in the Owner's Package.

P-Traps

Each of the sink drains, the shower drain, and the washing machine drain (if equipped) has a water trap (P-Trap) to prevent holding tank odors from entering the coach. These traps must have water in them in order to work. While traveling, the water may splash out of the sink and shower drains. While stored, the water may evaporate allowing an odor to enter the coach. If this occurs, run water from the faucet into the drain, allowing water to fill the trap.

Black Water Holding Tank

The black water, or sewage, holding tank is located directly beneath the toilet. Before using the stool, you will need to treat the tank with water that is mixed with an odor controlling chemical. These chemicals are readily available at any RV supply store. Be careful not to spill the chemical on your hands, clothing or the carpet because it may cause a permanent stain. Pull the toilet levers forward to allow the chemical to mix with the toilet water. Continue pulling the toilet levers until at least one inch of solution is directly under the toilet. Release the levers and the waste tank is ready for use.

CAUTION

Use only approved RV odor controlling chemicals in the holding tanks. Products containing ammonia and petroleum will damage the ABS plastic holding tanks and seals.

Gray Water Holding Tank

The gray water holding tank is located in the underbelly of the unit. It is primarily used for the drainage from the kitchen and bath sinks and the shower.

Waste Water Disposal

Both of the holding tanks terminate in a valve arrangement that permits draining each tank separately or together. It is recommended to drain the black water tank before the gray water tank. This will allow the water from the gray tank to wash the black water residue from the drain lines and hose. The valves that open to release the water are called gate valves. The blade that closed the opening in the sewer drain pipes is connected to the T-handle to release the contents of the tank(s) when pulled. The sewer line must be securely capped during self-containment use to prevent leakage of waste material onto the ground or pavement. Do not pull the holding tank gate valve open when the protective cap is installed on the pipe. Always drain the tank into an acceptable sewer inlet or dump station.

WARNING

Holding tanks are an enclosed sewer system and must be drained into an approved dump station. Both black and gray water holding tanks must be drained and rinsed thoroughly on a regular basis in order to prevent the accumulation of harmful or toxic materials.

Whenever possible, drain the holding tanks prior to traveling. The carrying capacity of your unit will be reduced if water is left in the black or gray tanks.

The holding tanks should only be drained when they are at least $\frac{3}{4}$ full. Doing this will provide sufficient water to allow the complete flushing of waste materials in the drain lines and hose. If the tanks are not $\frac{3}{4}$ full, add enough water to allow for sufficient flushing.

To empty the waste water tanks, connect the adapter to the drain hose. Use the adapter supplied with your unit. If the adapter is lost or broken, one can be purchased from most RV supply stores. Once you have placed the adapter on the drain hose, it can remain there for the life of the hose. Unscrew the cap off the drain. Connect the hose with the adapter in place to the drain fitting. Open the gate valve all the way by pulling on the T-handle. The tank will start to drain as soon as the T-handle is pulled. After you have drained the black water tank, immediately drain the gray water tank. Doing this helps to flush the black water from the sewage hose.

When both of the tanks are empty, flush them with a fresh water rinse before you close the valves. The gray tanks are easily flushed by pouring a couple of gallons of water into a sink drain. Prime the system with an odor control chemical following the directions above for preparing the system for use. The drain outlet is engineered for quick release of the drain hose adapter. Always close the gate valves and secure the end cap to prevent leakage while in transit. After draining, add enough water to the black water tank to cover the bottom.

When using dump stations for draining the holding tanks, keep other travelers in mind. Practice good housekeeping. Leave the dump stations in good order. Above all, do not pollute.

Camping with Sewer Hook-Up

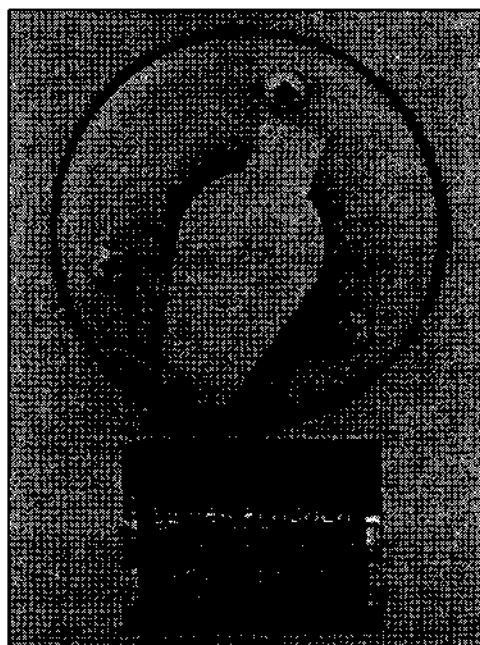
When camping at parks with sewer hook-up, it is important to keep the black water holding tank gate valve closed at all times, except when dumping. The gray tank can be kept open while hooked to a sewer connection but again, the black water tank must be kept closed. This is done so that an ample supply of liquid remains in the tank to provide a smooth flow through the gate and drain valve when dumping. Sufficient liquid in the tank causes a swirling action that should take any accumulated solid wastes with it. Accumulation of solid wastes in the black water tank can be avoided by keeping the gate valve closed when connected to the sewer hook-up. If the valve is left open, solid wastes may accumulate in the tank. This may eventually result in costly repairs.

CAUTION

The gray tank valve needs to be in the open position when operating the optional washing machine.

No Fuss Flush (Optional)

This unit may be equipped with a flushing system for the holding tanks. When draining your sewer tank, attach a water hose to the Sewer Spray hookup. After the tank is drained, leave the gate valve open, and open the water valve to allow water to spray inside the sewage tank. This will clean the inside of the tank of any debris that may be left inside the tank. After this is done, disconnect the water hose and close the gate valve. When unsure if any solids are still left inside the tank, fill the sewage tank with approximately ten gallons of water through the stool. Then, as you travel, the agitation of the water should help liquefy any solids left in the tank. You can dump the sewage tank again at your next destination.



CAUTION

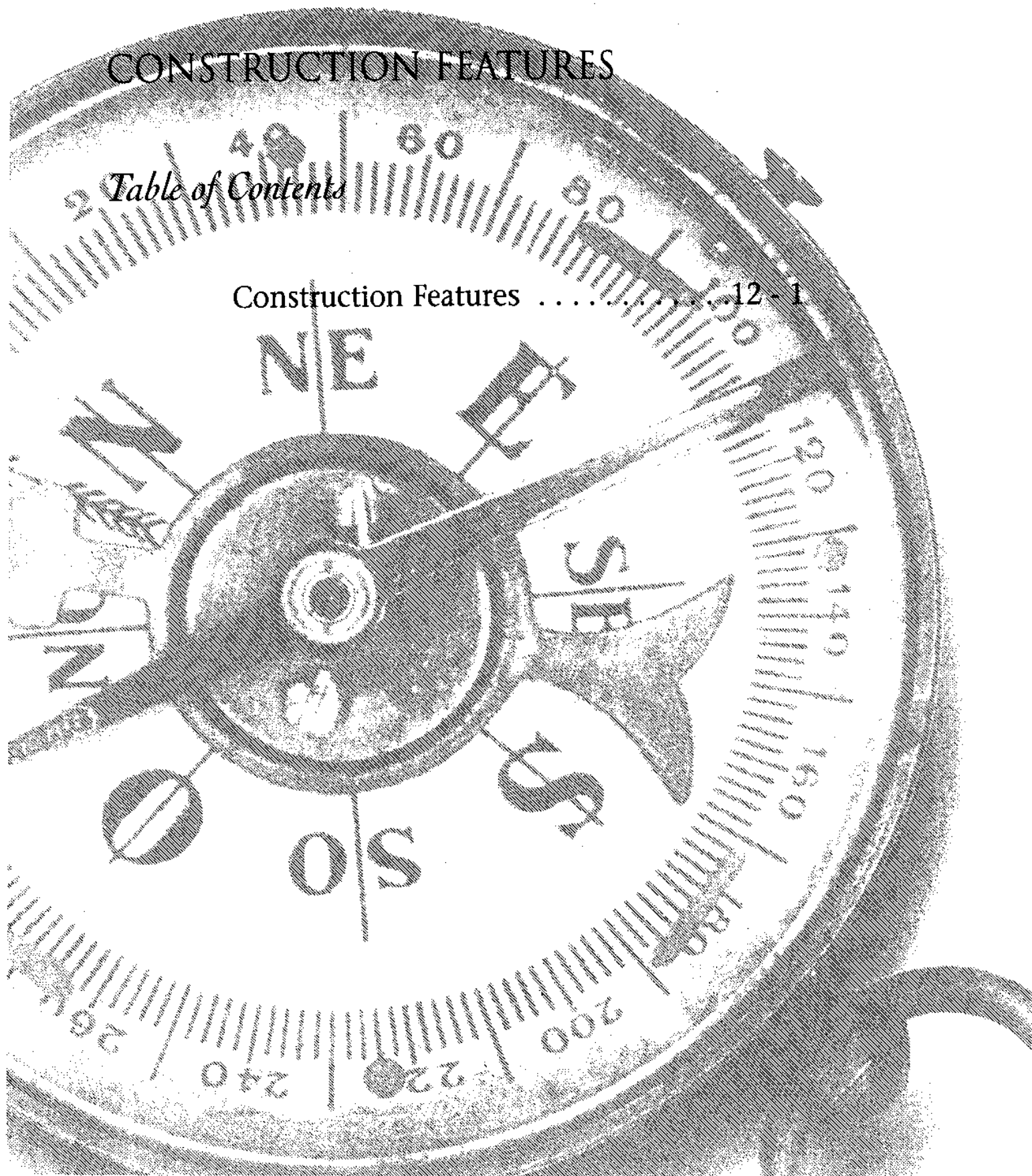
Do not use the same hose for the No Fuss Flush that is used for filling the fresh water tank.

CHAPTER 12

CONSTRUCTION FEATURES

Table of Contents

Construction Features	12 - 1
---------------------------------	--------

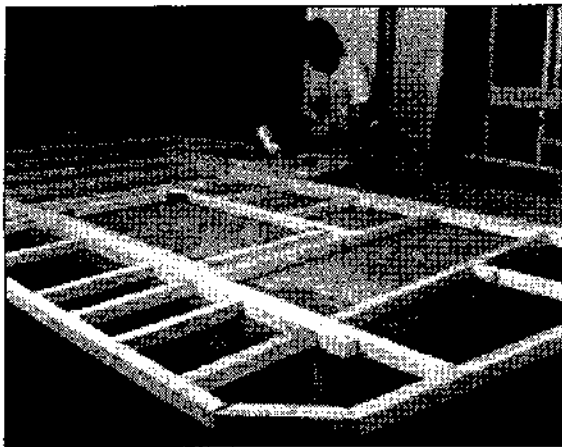


CONSTRUCTION FEATURES

The floor decking is constructed of durable $\frac{19}{32}$ " structure wood. The fiberglass insulation in the floor is rated at R17. Some models have the underbelly of the unit enclosed with fiberglass insulation.

The side walls are constructed with strong wooden framing. This framing will maintain its structural integrity for years. The sidewalls are built with 16" on center construction that are designed to last. A blanket of rolled insulation is added to the sidewalls, roof, and slide out to provide a greater efficiency and consistency of climate control. This will assist the furnace in the winter by keeping the warm in and the cold out. In the summer months, it will assist the air conditioning by keeping the cool air in and the hot air out.

Below are examples of the framing and insulation that your unit is constructed with.



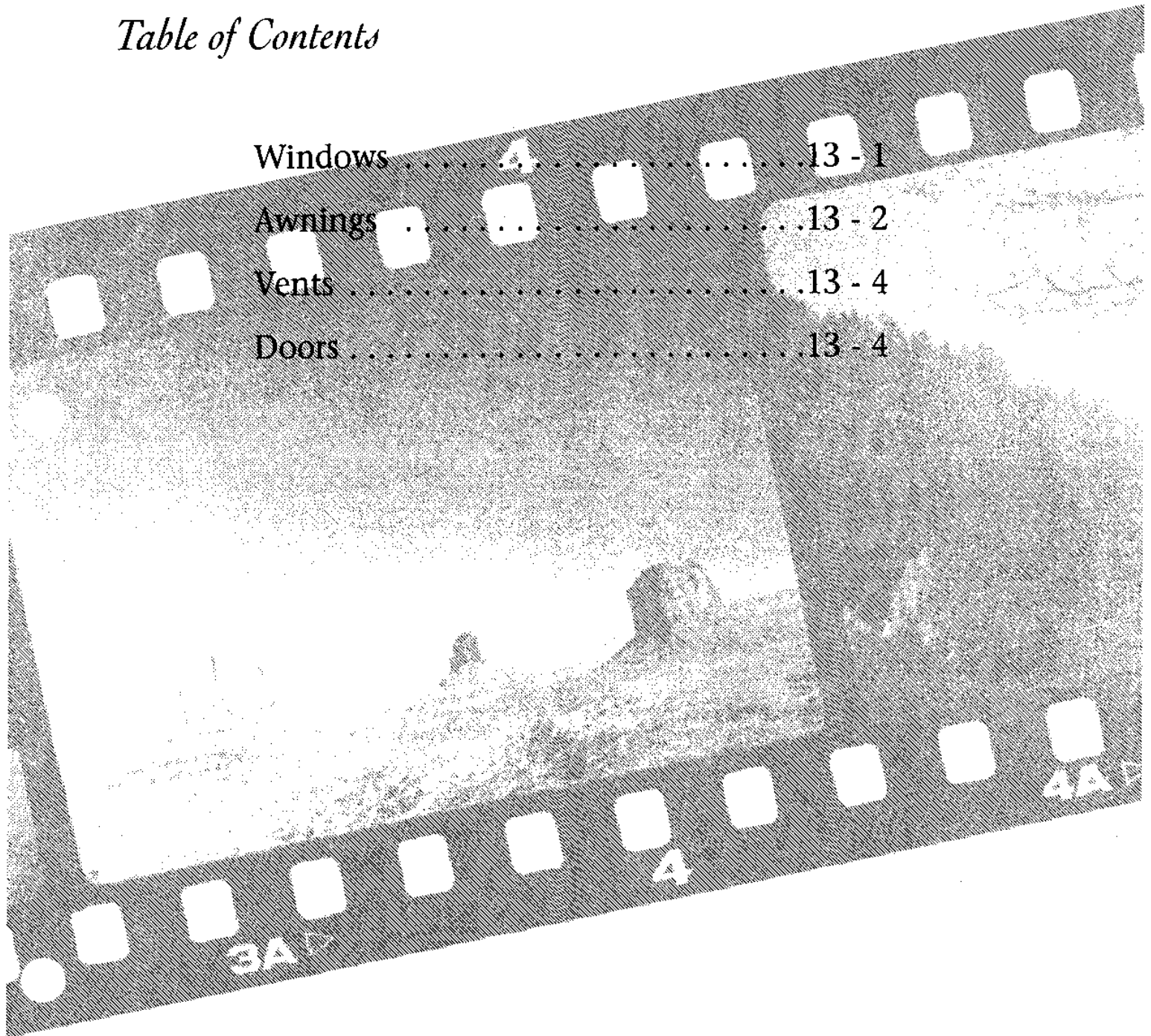
Notes

CHAPTER 13

WINDOWS, AWNINGS, VENTS & DOORS

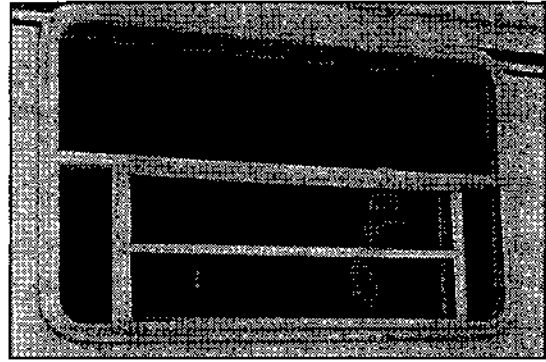
Table of Contents

Windows	13 - 1
Awnings	13 - 2
Vents	13 - 4
Doors	13 - 4

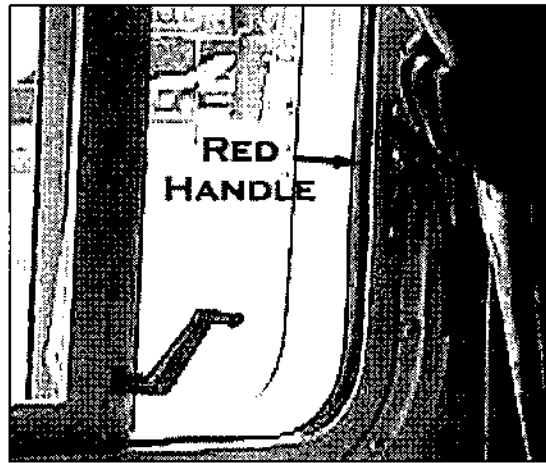


WINDOWS

The windows installed in this unit are the radius torque style. These windows are also referred to as jalousie windows. They open with the simple turn of a crank.



In the bedroom of the unit one window may be marked "EXIT." This window is an emergency escape, or egress, window. To open in case of an emergency, lift the red handles at the bottom of the window and push out. If there is a door in the bedroom of the unit, there will not be an egress window.



Notes

[illegible]

AWNINGS

Side Awnings (Optional)

The side awning is available in one of the preferred equipment packages. With this optional awning, the side tension rafter can also be added.

EXTENDING

1. Loosen the black locking knob behind each main arm. Flip the travel lock latches up. **IMPORTANT:** Failure to loosen the black knobs will prevent the awning from fully retracting.
2. Lift the arm storage locks, located on each of the upper arms, to the unlocked position. (Fig. 1)
3. Place the hook end of the provided pull wand over the brake lever and pull downward to the open position. (Fig. 2)
4. Hook the loop of the center pull strap with the pull wand and draw the awning away from the vehicle to the desired extension.
5. Slit the braces to the top of each arm until the slider spring catch firmly latches into the slot in each arm end plug.

Fig. 1

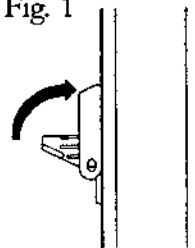
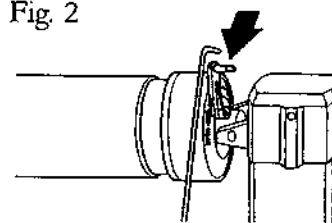


Fig. 2



WARNING

Braces left in the down position will not prevent the awning from retracting inadvertently. Personal injury or property damage may occur that will not be covered by warranty.

6. Raise the arm handles and lift the front of the awning to the desired height. While supporting the weight of the awning with one hand, lower the handles to engage the height adjustment holes.
7. Slide the center pull strap to one end of the awning and store.

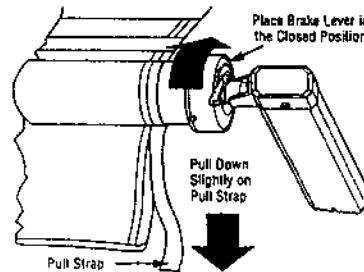
CAUTION

To prevent damage to the awning canopy, the awning must be raised high enough to clear the open entrance door of the vehicle. Also, whenever heavy or prolonged rain or wind is anticipated or you will leave the awning unattended, it is best to close the awning. Damage as a result of weather is not covered by warranty.

RETRACTING

1. While supporting the weight of the awning with one hand, carefully raise the handle until it is disengaged from the adjustment hole.
2. Lower the front of the awning down until the arms are resting on the lower arm stop bolts. (This is required on both the front and rear arms.)
3. Loosen the black locking knobs.
4. Release the slider catch on the top of the arm plug by pushing it slightly to the right while simultaneously sliding the brace down to the stored position.
5. Slide the pull strap to the front end of the roller assembly.
6. While pulling down slightly on the pull strap, move the brake lever upward into the closed position. (Fig. 3)

Fig. 3



WARNING

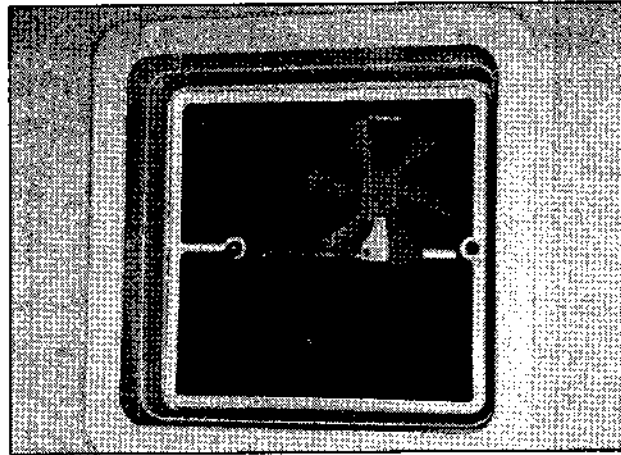
The awning is now under full spring tension. If released from this point it will abruptly roll up to the stored position, possibly causing personal injury or damage to both the awning and the RV.

7. Snap the arm storage locks into the down position and tighten the black locking knobs.

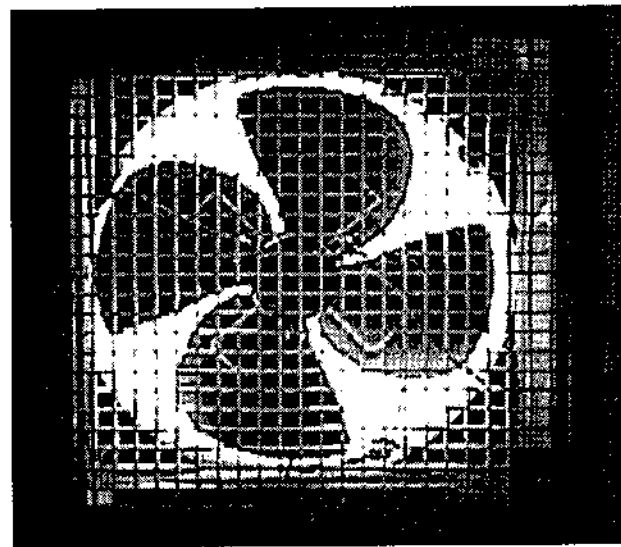
Notes

Vents

There is one standard vent in the unit. It is located in the bath area. This vent operates on 12 volt electricity. The vent is controlled by an on/off switch on the wall. An optional vent of this style may have been added at time of production.



In the kitchen, a possible option would be the installation of a 12 volt Carefree Super Fan. This vent is controlled by the wall thermostat. When on, it will run until the desired temperature is reached. If, while the unit is on, it starts to rain, the sensor will automatically shut the unit off and the vent cap on the roof will close.



Doors

The entrance door is a radius door with a dead bolt lock for added security. The door can be held open with the door stop. With the door open, simply lift the "T" section on the door and place it in the holder on the exterior sidewall of the unit. Next to the entrance door you will find the standard lighted grab handle. This handle will assist anyone entering the unit.



CHAPTER 14

ROUTINE MAINTENANCE

Table of Contents

Washing	14 - 1
Waxing	14 - 1
Seals	14 - 2
Proper Sealants	14 - 2
Striping and Decals	14 - 2
Carpet	14 - 3
Fabrics	14 - 3
Walls and Ceiling	14 - 4
Woodwork	14 - 4
Counter Tops	14 - 4
Accessories	14 - 5
Detectors	14 - 5
Condensation	14 - 5
Routine Maintenance	14 - 6
Winterizing	14 - 7

EXTERIOR CARE

IMPORTANT

Damage caused by improper or unapplied maintenance is not covered by your Newmar Limited Warranty.

Washing

The exterior of your new camping vehicle is made of pre-finished aluminum and/or fiberglass. Frequent washings and thorough cleanings are required to prevent damage to the vehicle finish after exposure due to damaging salts, calcium chloride, road tar, tree sap, insects and other foreign material. Damage caused by exposure to these items is not covered by your Newmar Limited Warranty. Never wash the vehicle in direct sunlight, while the vehicle is hot or with hot water. Build up of mud and dirt under the body can cause damaging rust on steel parts. Corrosive materials, such as those used for ice and snow removal and dust control, also accumulate on the underside of the vehicle. These materials should be removed by spraying the underbelly regularly with water, especially areas where mud and other foreign materials collect. The chance of corrosion can be minimized by frequent washings of the vehicle. When washing the vehicle, make certain that the undercarriage and the wheel wells are cleaned, as well as the exterior of the coach. Do not use strong soaps or detergents for washing the vehicle. Always use a mild soap in warm water, a commercially prepared product for automotive finishes or your local car wash. Be careful when using a pressure-type washer to avoid loosening any exterior decals or sealants, etc. After washing, carefully inspect the caulking around window frames and vents and any other joints that may have separated. Recaulking, if necessary, is relatively simple, and is considered routine maintenance which is the responsibility of the owner.

IMPORTANT

Never use a strong solvent, such as lacquer thinner or harsh abrasives, on any of the exterior painted surfaces.

Waxing

The exterior finish will require a routine waxing. When water will not bead and roll off a freshly washed vehicle, a new coat of wax is needed. Wax not only improves the appearance of the vehicle, but it also protects the finish against oxidation and corrosive materials. The recommended type of wax is one that is compatible with painted or gel-coated fiberglass finishes, and contains a UV (ultra-violet) inhibitor. Buffing with a polishing compound will improve a dull or discolored finish.

IMPORTANT

When using a polishing compound that does not contain a wax preservative, reapplying a coat of hard wax after polishing is recommended.

Seals

The seals around doors, windows, vents, slide out trim and external seams should be checked at least twice a year. In addition, the roof seams should be inspected twice a year for cracking or peeling. If deterioration is noted during a routine maintenance inspection, reseal the seams or seals with an approved sealant to prevent leaks. Your dealer can perform the resealing inspections and work for you. It is recommended that a Newmar Authorized Service Center perform these inspections, and reseal when necessary.

Proper Sealants for Application

Plas-T-Cote Metal or fiberglass roof

Surebond #SB-140 All Skylights

Carlisle #502-LSW Rubber roof
Self Leveling Sealant

Silicone Sealant To cover butyl and other sealants, not to
be used as the main sealant

Parbond To seal across tops of windows, etc. on
exterior where silicone is not used

Striping and Decals

The striping and decals on your vehicle require little maintenance. Treat these as you would any painted surface on your vehicle. Wash them with mild soap and warm water, or any retail car soap. Never wash the vehicle in direct sunlight, while the vehicle is hot or with hot water. Rinse thoroughly to prevent soap residue accumulation. Use caution with high pressure wash nozzles. Keep them at least 18 inches from the edge of the decals. High pressure water may cause the decals to loosen and peel. Test small sections of decals when using any type of cleaning solution.

IMPORTANT

Do not use solvents such as acetone, MEK, toluene, etc. on the decals. Any solvent including alcohol may soften or smear colors. Do not use lacquer thinner or paint on decals. Do not overcoat the decals with clear paint. Do not allow gasoline or other fuels to drip or stay on the decals for any length of time. If this occurs, immediately flush the area with water.

INTERIOR CARE

WARNING

Urea-formaldehyde is used in the productions of particle board, hardwood plywood, and most paneling. Urea-formaldehyde resin may release formaldehyde vapors into the air, which may cause headaches, and in some people, eye, nose and throat irritation. Formaldehyde may intensify some allergies or upper respiratory problems like asthma. Proper ventilation should reduce the risk of such problems.

IMPORTANT

The fading of upholstery, carpet and other interior fabrics is generally caused by excessive sunlight. The drapes, blinds or shades should be kept closed when the vehicle is parked for an extended period of time to minimize the fading. Normal deterioration of appearance items due to wear and/or exposure is not covered by the Newmar Limited Warranty.

Carpet

A weekly routine of vacuuming the carpet and fabrics, throughout the vehicle is recommended. Doing this will prevent an accumulation of dirt that can detract from the materials appearance and shorten its life.

Included in the Owner's Information Package is the carpet manufacturer's Carpet Care Guide. The Carpet Care Guide lists detailed information on cleaning soiled areas and removing stains from the carpet installed in the unit.

Fabrics

The fabrics used in this unit for the bedspread, draperies, headboard and valances may contain fire-retardant additives that can be damaged by use of improper cleaning products. **Water-based products are not recommended for cleaning the fabrics in your new unit.** Most water-based household cleaning products are not formulated for use on these fabrics and may cause excessive shrinkage or fading. Always test any cleaning product on a hidden

area of fabric before using on visible areas. For best results, the fabrics in this unit should be cleaned by a professional carpet and upholstery cleaner.

Spills, spots or stains should be treated as soon as possible to avoid permanent damage. If a spill occurs, blot the fluid with a dry towel. Do not rub the spill. Rubbing may cause the liquid to "set" in the fabric. When attempting to clean a spot or stain, always start from the outside and work inward to avoid spreading it further. Some stains or soils are extremely difficult or impossible to be removed completely. These should receive immediate, professional attention. Spills, spots, stains or soils are the responsibility of the owner, and are not covered by the Newmar Limited Warranty.

WARNING

When cleaning the upholstery and fabric in the unit, do not use lacquer thinner, nail polish remover, laundry soaps or bleach. Never use carbon tetrachloride or gasoline for cleaning purposes. These items may cause damage to the materials being cleaned, and most are highly flammable.

Walls and Ceiling

The wall and ceiling coverings should be cleaned periodically to maintain a new appearance. Use a non-abrasive cleaner with a soft cloth. Do not use solvents of any kind. Solvents may damage the surface of the vinyl.

Woodwork

The wood cabinetry should be cared for with furniture polish to sustain the natural beauty and luster of the wood. This will also keep your cabinetry looking new, and prevent the wood from drying. The optional, simulated plank flooring should be protected from dents, scratches and nicks by installing protective pads on the bottom of chairs and tables. Use of area rugs and floor mats by the entrance door is recommended to trap dirt. To clean the flooring, begin by vacuuming the floor to remove loose dust and dirt. Then, damp mop the floor with one ounce of Wilsonart Flooring Cleaner diluted in one gallon of clean, warm water (or use a non-abrasive, soap-free cleaner). The mop should be damp, not dripping. Do not use soap-based cleaners, scouring powders, steel wool, abrasive cleaners, wax or polish on the floor. To remove stubborn spots like shoe polish, oil, tar, markers, scuffs, etc., use a household solvent, acetone or nail polish remover, then wipe with a damp cloth. To remove chocolate, grease, juice or wine, use warm water and a non-abrasive cleaner. To remove candle wax or chewing gum, carefully scrape off when the material has hardened. For further tips, please see the manufacturer's information sheet in your Owner's Information Packet.

Counter Tops

To properly care for the laminated counter top in your new unit, always use a heat pad or trivet to protect the surface from hot objects that may mar or damage the surface. Wipe the counter top with a damp cloth to remove water spots. For stains, wipe with soapy water or ammonia-based cleaners.

Accessories

The brass light fixtures, bath accessories and faucets can be cleaned by wiping with a soft, damp cloth. Washing with warm water will remove dry water spots. Do not use cleaners that contain harsh or abrasive chemicals. Alcohol or similar solvents should never be used.

Detectors

The LP detector is self-contained and DOES NOT require any maintenance other than normal cleaning and dusting. When cleaning the exterior of the case use a damp cloth or paper towel. Do not spray cleaners or wax directly into the case as it may cause false alarms.

Condensation

IMPORTANT

Since surface condensation within the coach cannot be controlled by the manufacturer, damage caused by condensation is not covered by your Newmar Limited Warranty.

Damage may occur to your unit if excessive condensation exists. Accumulation of condensation on surfaces within your unit occurs when warm, moist air contacts a cool surface. It is most evident on the inside of windows. This problem can be controlled by:

1. Slightly opening a window or roof vent to allow the moisture to escape from the unit.
 2. A small dehumidifier is also very effective in removing moisture from the air.
- Condensation levels are highest during times when a person is cooking or taking a shower in the unit, but these are not the only times condensation is present.
 - Condensation can migrate through ceiling panels and saturate the fiberglass insulation in your ceiling cavity. This condition often causes the occupants to believe the recreational vehicle has a roof leak. Walls and ceiling panels may also become wet when the moisture accumulates on these surfaces.
 - Newmar Corporation does not recommend the use of un-vented catalytic heaters.

Notes

ROUTINE MAINTENANCE

All routine maintenance is the responsibility of the owner and is not covered by the Newmar Limited Warranty. Use the maintenance record found in Chapter 15 to record all performed maintenance as required. Please note that damage caused by improper or unapplied maintenance is not covered by the Newmar Limited Warranty.

Items supplied by other manufacturers may require specific individual maintenance not listed herein. Please refer to the manufacturers' suggested maintenance guidelines in the Owner's Information Packet.

IMPORTANT

Cosmetic adjustments and alignments must be performed within the first three (3) months from date of original purchase for warranty consideration. Thereafter, these items are considered routine maintenance.

Every Trip

- Check brake operation prior to towing.
- Check the tire pressure of all tires.
- Torque all wheel lug nuts.

Every Three (3) Months

- Clean exhaust fan filter and blades.
- Test smoke alarm and LP gas detector.
- Check operation of windows, latches and hinges.
- Clean the roof-ducted air conditioner filter(s).
- Clean and inspect all door and window seals, reseal when necessary.
- Inspect and reseal around the tub and shower area, when necessary.
- Lubricate the exterior door hinges and latches with a graphite (silicone) lubricant.
- Check, clean and tighten battery cables, and inspect battery for proper fluid level.

Every Six (6) Months

- Inspect the slide out for proper seal. If realignment is necessary, please contact an Authorized Newmar Service Center.
- Inspect the exterior rubber slide out seals and apply a UV inhibitor, such as 303 Protectant.
- Rotate tires as recommended by the tire manufacturer.
- Check all gas appliances for proper operation.
- Have the LP system inspected by a qualified technician.
- Lubricate the moveable parts on the entrance step.
- Check the wheels and lug nuts for cracks, and check the torque of the lug nuts.

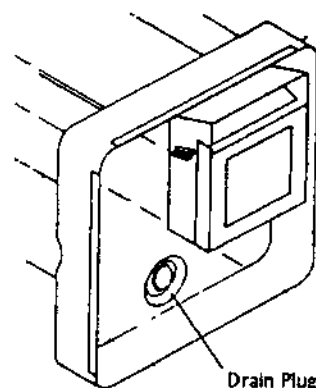
Annually

- Inspection of roof seams and joints should be performed by an Authorized Newmar Service Center. If resealing is necessary, it is the owner's responsibility and is not covered by the Newmar Limited Warranty.
- Sanitize the fresh water system.
- Have the axle bearings re-packed, wheel seals replaced and brakes inspected.
- Wax the vehicle as previously described in this chapter.

Winterizing

To store your unit for the winter months, it is necessary to winterize the water system to help prevent freezing. To do this, follow these instructions:

1. The water heater must remain off during this process. Shut off the water pump and make sure the water supply valves are closed. Disconnect the city water fill.
2. To drain the fresh water tank, open the drain valves.
3. Open the low point drain valves. There is one drain valve for each water line, one cold and one hot. This is done to drain all of the water out of the system.
4. After the water heater has cooled off, remove the drain plug to drain the water from the water heater. In the exterior compartment beside the water heater there are two water heater shut off valves and a by-pass valve. The shut off valves must be closed and the by-pass valve must be open, prior to winterizing to prevent the antifreeze solution from entering the water heater.
5. Close the low point drains to prevent the antifreeze from draining through the lines onto the ground.
6. Close the water supply valve that flows from the pump to the tank.
7. Use only non-toxic antifreeze that has been approved for use in drinking/potable water systems. Place the in-take hose into the antifreeze supply. Open the antifreeze valve to allow the solution to flow freely. Once the water pump is turned on, proceed to the kitchen faucet, bath faucet, inside and outside shower, turning on the hot and cold, and flushing the stool until the antifreeze solution flows freely. This forces the antifreeze through all of the water lines and faucets. It also allows the antifreeze solution to enter the drain lines and prevent the P-traps from freezing. Check the antifreeze solution from time to time to make sure there is an adequate supply.
8. Close the antifreeze valve when the winterizing process is complete. Store the in-take hose, and turn the water pump off.



- ## Notes

[illegible]

CHAPTER 15

CHARTS & DIAGRAMS

Table of Contents

Model Numbers	15-1
Maintenance Record	15-2
Fuel & Mileage Log	15-5
12 Volt Distribution Panel	15-7
30 Amp Electrical Panel	15-9
Optional 50 Amp Electrical Panel	15-11
Wiring Color Scheme	15-13
Typical 110 Volt Wiring Diagram	15-17
Typical 12 Volt Wiring Diagram	15-19
TV / VCR Wiring Diagram	15-21
Typical Fresh Water Diagram	15-23
Typical Drain Line Diagram	15-25
Slide Out Mechanism	15-27
Parts Listing	15-29

IMPORTANT INFORMATION **ABOUT YOUR AMERICAN STAR** **TRAVEL TRAILER OR FIFTH WHEEL**

Coach: Year 1999 Model _____ Serial # 3 _____

Appliance	Brand	Model	Serial
Refrigerator	_____	_____	_____
Water Heater	_____	_____	_____
Range	_____	_____	_____
Converter	_____	_____	_____
Washer	_____	_____	_____
Dryer	_____	_____	_____
Microwave	_____	_____	_____
Icemaker	_____	_____	_____
Television, front	_____	_____	_____
Television, rear	_____	_____	_____
Radio	_____	_____	_____
CD Player	_____	_____	_____
Generator	_____	_____	_____
Air Conditioner, front	_____	_____	_____
Air Conditioner, rear	_____	_____	_____
Video Cassette Recorder (VCR)	_____	_____	_____
Furnace, front	_____	_____	_____
Furnace, rear	_____	_____	_____

MAINTENANCE RECORD

[illegible]

MAINTENANCE RECORD

[illegible]

MAINTENANCE RECORD

[illegible]

FUEL, OIL & MPG RECORD

[illegible][illegible]

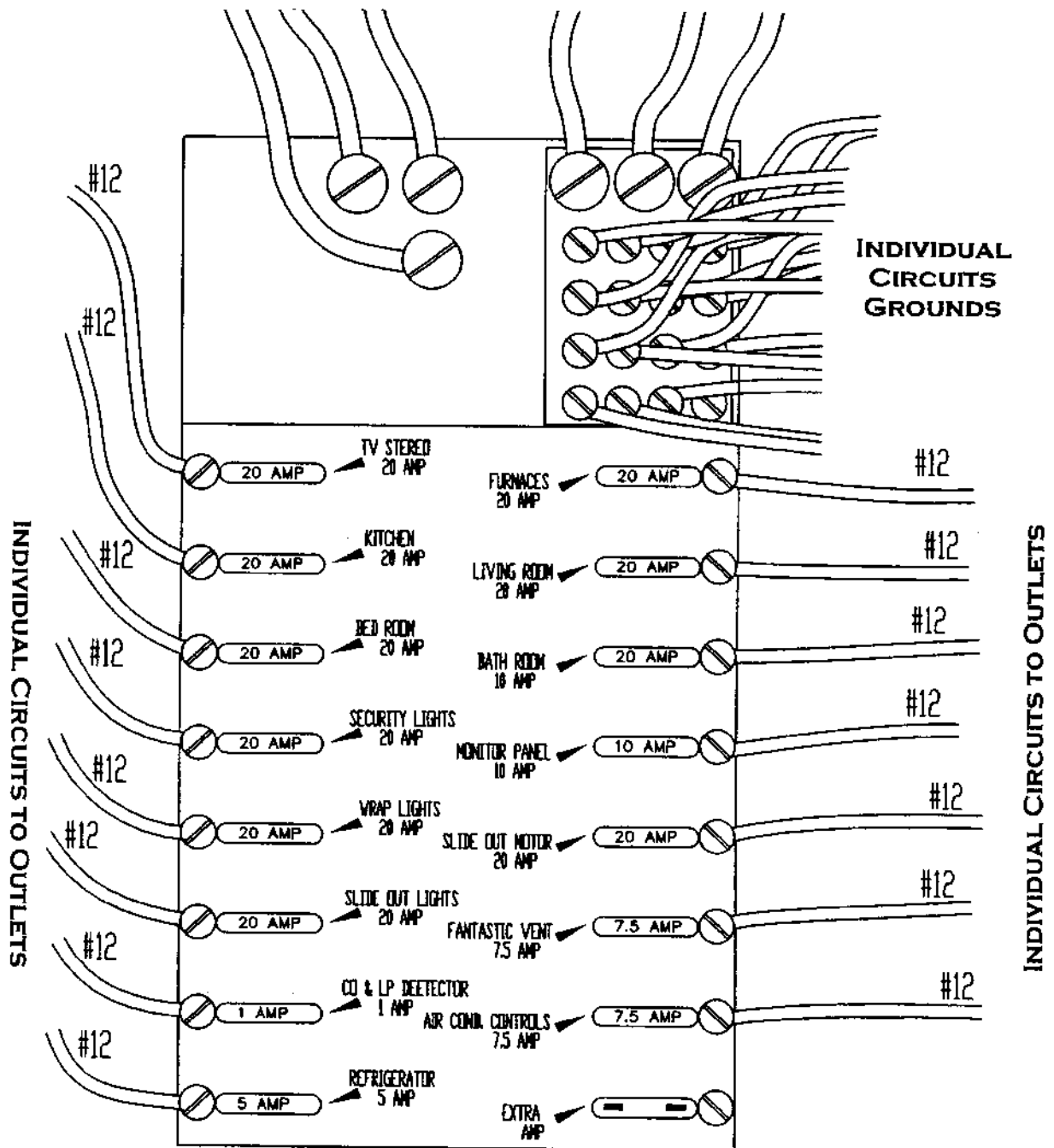
FUEL, OIL & MPG RECORD

[illegible][illegible]

12 VOLT DISTRIBUTION PANEL

HOT FEED LINES FROM BATTERIES
AND CONVERTER, WITH
OVERCURRENT PROTECTION

GROUND TO CHASSIS,
CONVERTER AND BATTERIES
MINIMUM SIZE #8



WIRE OVER CURRENT PROTECTION IS PER THIS CHART

WIRE SIZE	AMPACITY	WIRE SIZE	AMPACITY
# 6	55	# 8	40
#10	30	#12	20
#14	15	#16	8
#18	6		

30 AMP ELECTRICAL PANEL

load	protection
30 AMP MAIN	
AIR CONDITIONER	# 1
	20 AMP
MICROWAVE	# 2
	15 AMP
WATER HEATER	# 3
	15 AMP
REFRIGERATOR	# 4
& 8 RECEPTS	15 AMP
CONVERTER	# 5
& 8 RECEPTS	15 AMP

30 AMP 110 SERVICE

30 Amp lead in cord & wire = 10/2 w/ground
 20 Amp circuit wire = 12/2 w/ground
 15 Amp circuit wire = 14/2 w/ground

Maximum of 10 outlets (lights and recepts) on
 any 15 amp circuit with no other appliance on
 that line. Circuits 3 and 4 may have recepts
 as noted at left. NOTE: A duplex recept is
 counted as 1 recept.

Not all units will get all of these items
 This diagram is a typical only

50 AMP ELECTRICAL PANEL

load		protection	50 AMP MAIN		protection	load
1st		# 1			# 13	MAY HAVE
AIR COND.		20 AMP			15 AMP	10 RECEPTS
MICROWAVE		# 2				
		15 AMP				
2nd		# 3			# 14	MAY HAVE
AIR COND.		15 AMP			15 AMP	10 RECEPTS
WATER HEATER		# 4				
		15 AMP				
REFRIGERATOR		# 5			# 15	MAY HAVE
FOOD CENTER		15 AMP			15 AMP	10 RECEPTS
& 5 RECEPTS						
CONVERTER		# 6			# 16	DISHWASHER
& 5 RECEPTS		15 AMP			15 AMP	
DRYER		# 7				
		15 AMP				
WASHER		# 8				
		20 AMP				

This is a 50 Amp 220 service

50 Amp lead in cord to box = 6/3 w/ground
 20 Amp circuit wire = 12/2 w/ground
 15 Amp circuit wire = 14/2 w/ground

Maximum of 10 outlets (lights and recepts) on any 15 amp circuit with no other appliance on that line. Circuits 3, 4, and 16 may have recepts as noted at left. NOTE: A duplex recept is counted as 1 recept.

This is a fully loaded system for which there has been a calculation done. Not all units will get all of these items. This diagram is a typical only

WIRING COLOR SCHEME

16 GAUGE

Grounds	.White
Back-up Lights	.Yellow
Ignition to Power Step	.Pink
Clearance & Running Lights	.Green
Right Turn Lights	.Brown
Left Turn Lights	.Red
Ignition to Slide Out Motor	.Pink w/Green
Class A Blower Fan (in holding tank area)	.Orange
Slide Out Switch	.Purple
Courtesy Lights (hot to switch)	.Grey
Courtesy Lights (switched)	.Grey w/White
Detectors, CO & LP	.Red w/Black
Rear Center Brake Light	.Blue
LP Fuel Gauge	.Red w/Yellow
Air Conditioner Controls	.Pink w/Black
Monoplex Water Pump Switch	.Yellow w/Black
Vent Thermostats	.Black

Water Heater DSI Switch Harness	{ Red w/White*
	{ Green w/White*
	{ Blue w/White*
Onan Generator	{ Red w/White*
	{ Green w/White*
	{ Blue w/White*
	{ Brown*
Powertech Generator	{ Blue*
	{ Gray*
	{ Yellow*
	{ White*

* - multiple applications for this color

WIRING COLOR SCHEME (CONT.)

12 GAUGE

Grounds	White
Living Room & Entryway Lights (hot to switch)	Red
Living Room & Entryway Lights (switched)	Red w/White
Bedroom Lights (hot to switch)	Orange
Bedroom Lights (switched)	Orange w/White
Bathroom Lights (hot to switch)	Brown
Bathroom Lights (switched)	Brown w/White
Kitchen Lights (hot to switch)	Green
Kitchen Lights (switched)	Green w/White
Wrap & Storage Compartment Lights	Black
TV and Stereo	Pink
Furnaces	Green w/Black
3 Way Switches (commons)	Red w/Black
Electric Brakes (tandem axle)	Blue
Fantastic Vent and Water Heater	Brown w/Black
Monitor Panel	Yellow
Refrigerator Controls	Purple w/White
Security Lights (hot to switch)	Purple
Security Lights (switched)	Purple w/White
Slide Out Module (hot feed)	Green/Yellow
Slide Out Motor & Voice Module	Black w/Yellow & Red w/Yellow
Slide out Lights	Grey
Water Pump	Yellow w/Black
Power Step Switch	Black w/White

WIRING COLOR SCHEME (CONT.)

10 GAUGE

Grounds	.White
Living Room Entry Lights (hot feed)	.Red
Bedroom Lights (hot feed)	.Orange
Kitchen Lights (hot feed)	.Green
Bathroom Lights (hot feed)	.Brown
Power Rear Awning & Freezer	.Purple w/Yellow
Power Step (hot feed)	.Green w/Black
Power Jacks	.Yellow
Electric Brakes (tri-axle)	.Blue
100 Watt Inverter	.Red w/White

8 GAUGE

Grounds	.White
Battery	.Red
Converter	.Black
Solar Prep	.Green

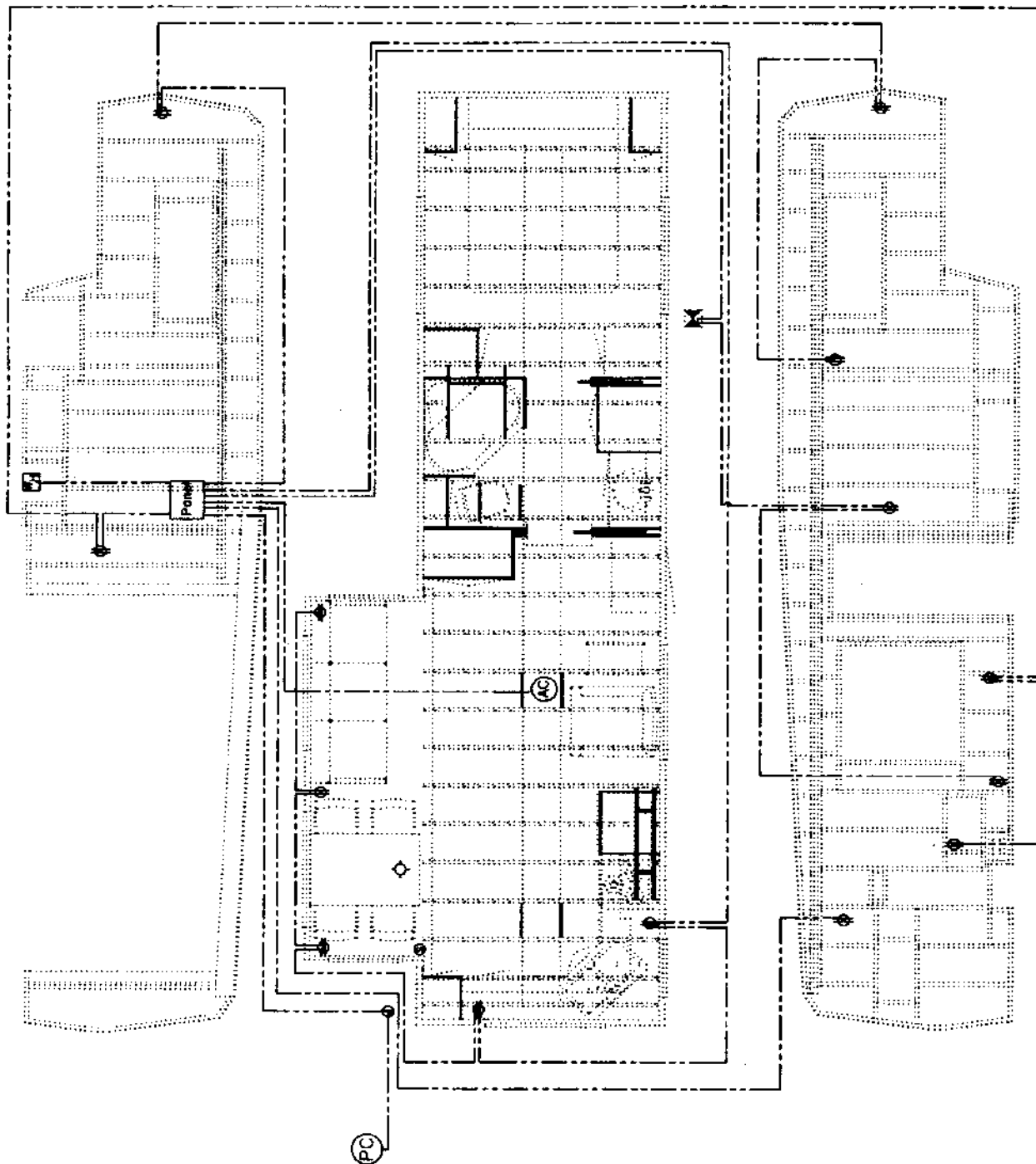
16 GAUGE

MONITOR PANEL TANK HARNESS

Fresh Water Tank	{ White* Grey w/Black (replaces Red tank lead) * Black w/Yellow (replaces Blue tank lead) *
Grey Water Tank	{ White* Green w/White (replaces Red tank lead) * Blue w/Black (replaces Blue tank lead) *
Black Water Tank	{ White* Red w/White (replaces Red tank lead) * Blue w/White (replaces Blue tank lead) *

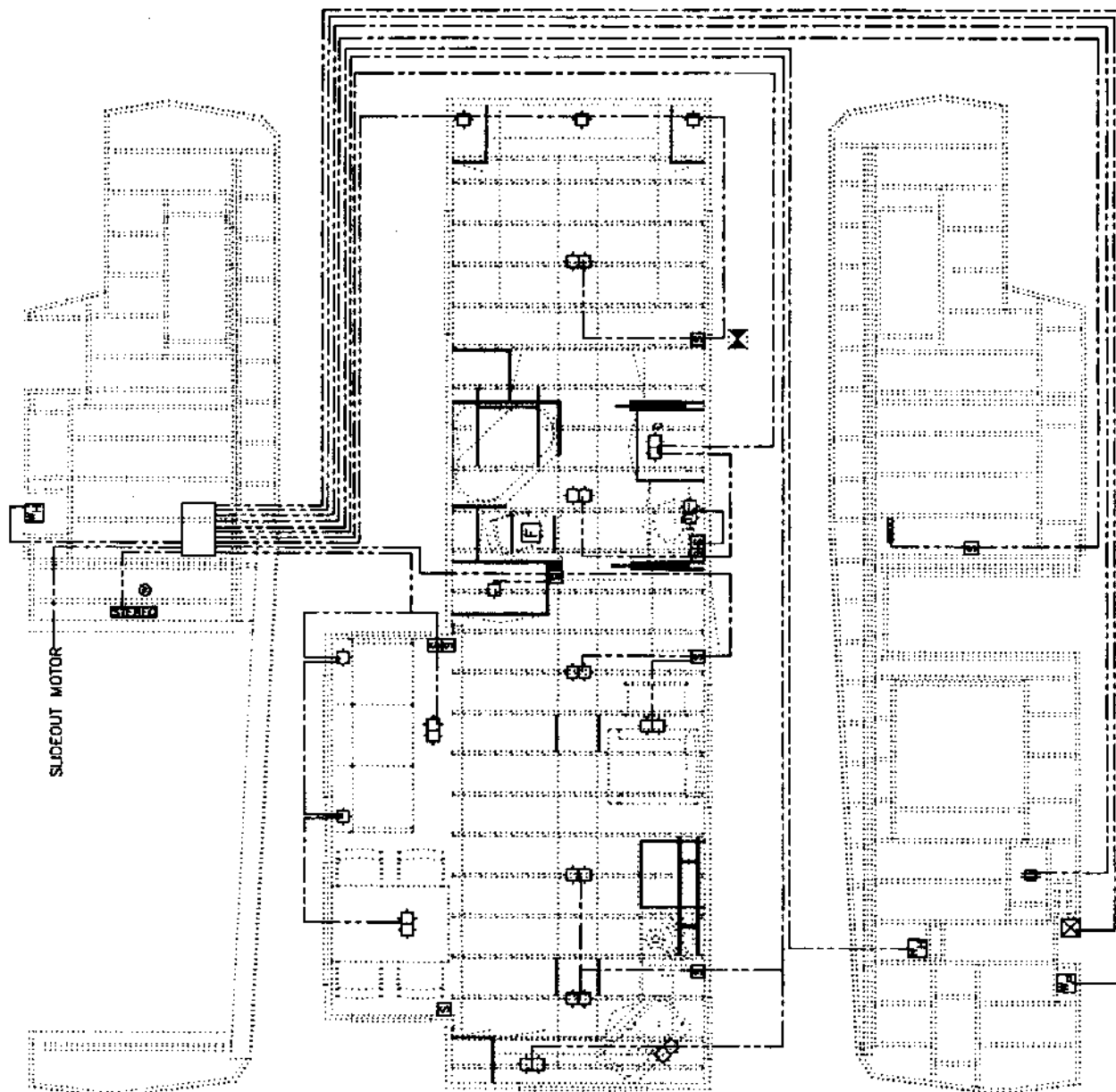
* - multiple applications for this color

TYPICAL 110 VOLT WIRING DIAGRAM



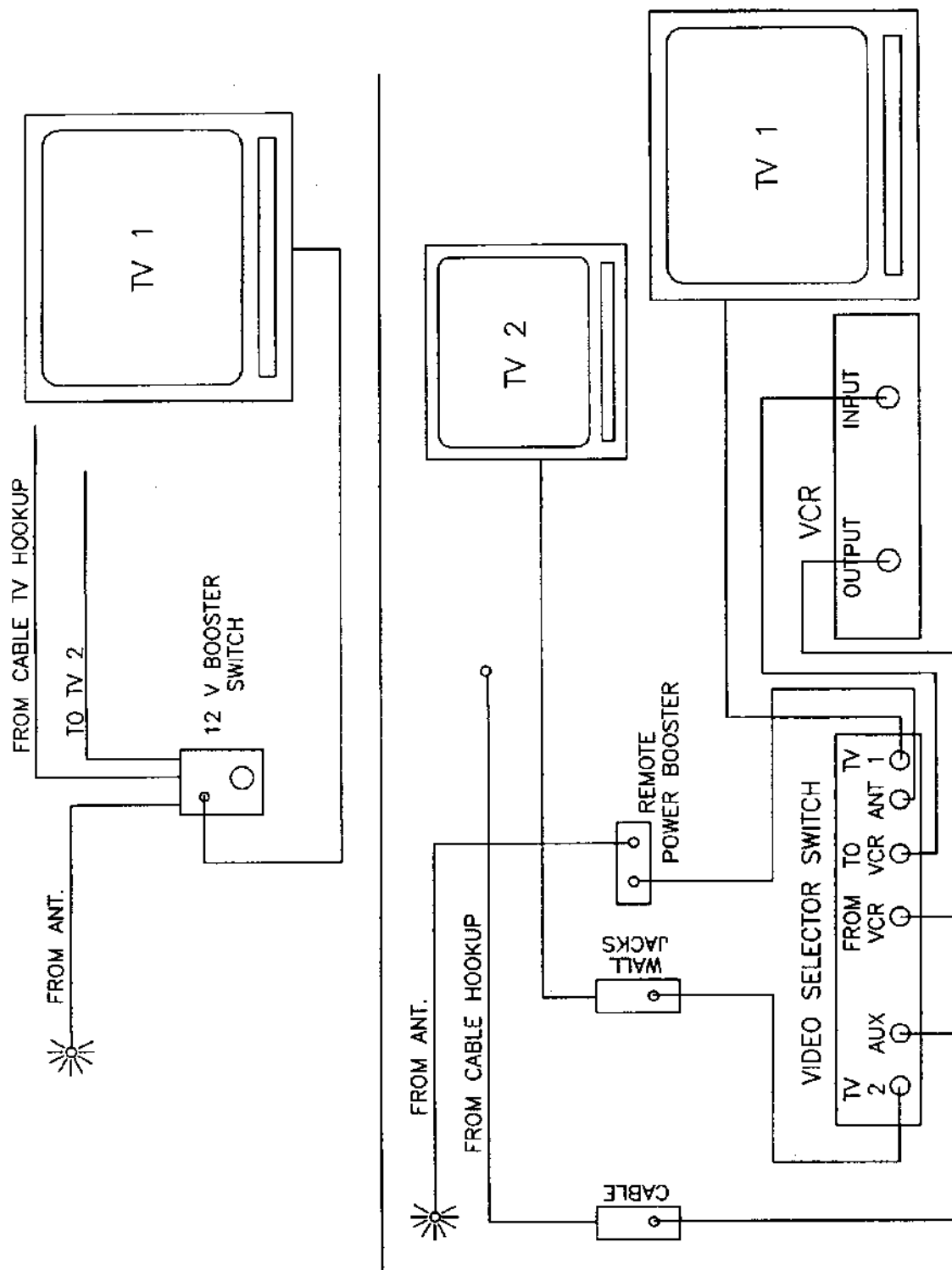
**WIRES ARE ROUTED ACROSS THE ROOF
AND IN THE TOP SIDE WRAP OF THE UNIT.
THE WIRES ARE ROUTED TO KEEP
THE SHORTEST PRACTICAL LENGTH.**

TYPICAL 12 VOLT WIRING DIAGRAM

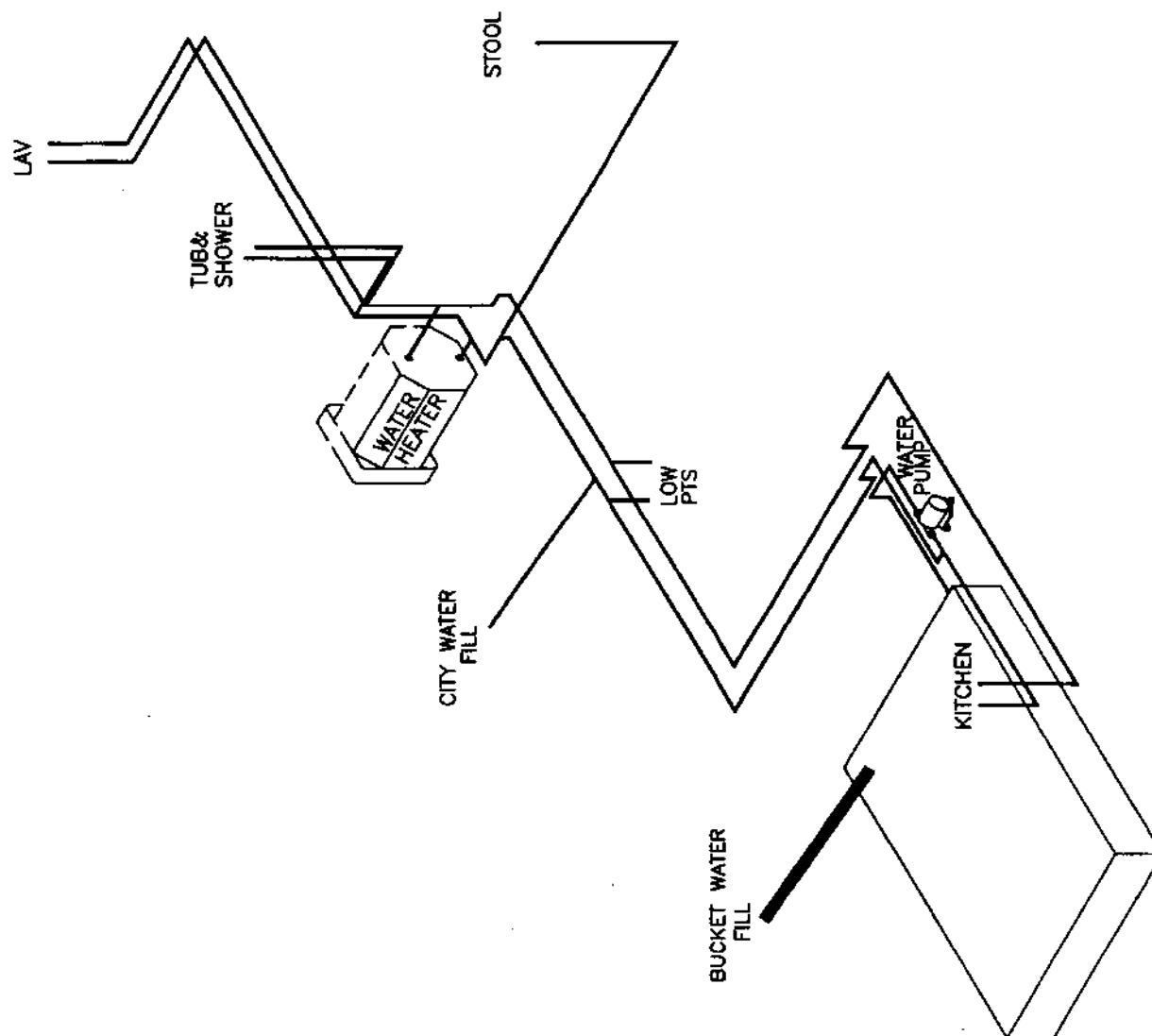


**WIRES ARE ROUTED ACROSS THE ROOF
AND IN THE TOP SIDE WRAP OF THE UNIT.
THE WIRES ARE ROUTED TO KEEP
THE SHORTEST PRACTICAL LENGTH.**

TV / VCR WIRING DIAGRAM



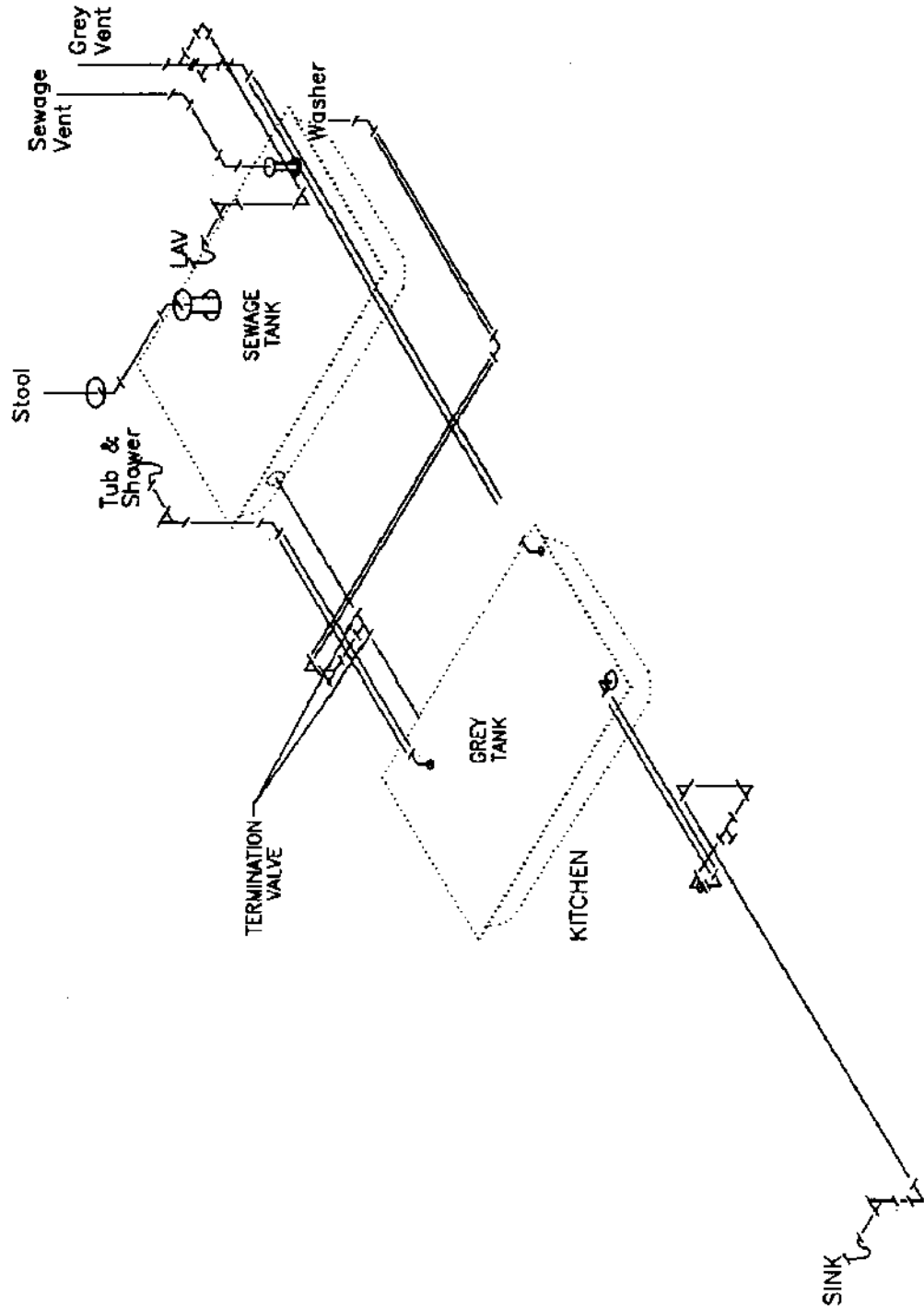
TYPICAL FRESH WATER DIAGRAM



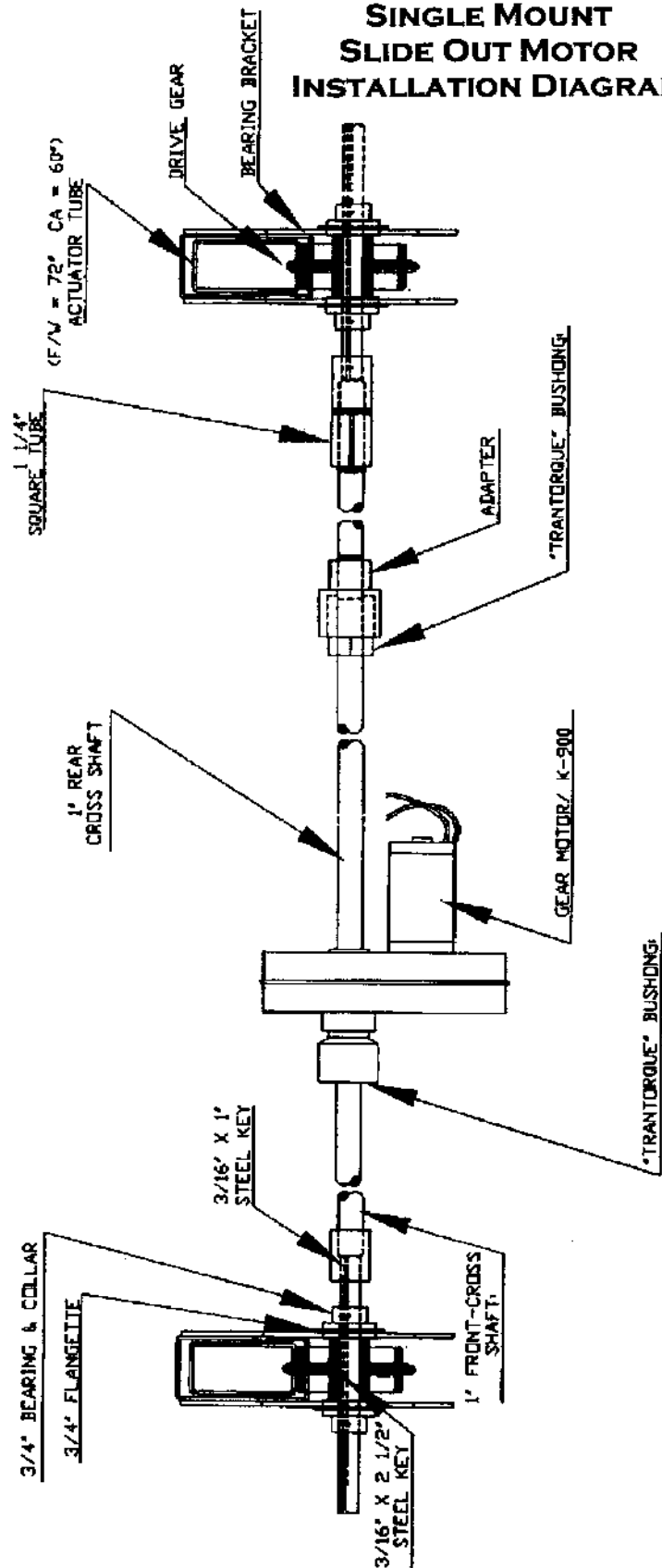
TYPICAL DRAIN LINE DIAGRAM

NOTE:

All materials used in the drainage system conform to ANSI A119.2 4-7.1
 Drain grade set at 1/8 inch per foot minimum
 Drain lines are supported at a maximum interval of 4 feet
 Trap arm grade set at 1/4 inch per foot minimum (total slope does not exceed pipe diameter)
 Maximum trap arm length is 54"
 All traps are a minimum required size of 1 1/4" except the washer (if applicable) requires 1 1/2"
 All traps are removable for use as a cleanout access



SINGLE MOUNT SLIDE OUT MOTOR INSTALLATION DIAGRAM



1999 AMERICAN STAR TOWABLE

[illegible][illegible]