MOBILEHOME PRODUCT SERVICING

Prepared by Members of MDNA Service School Faculty

MDNA Service School Faculty

Associated Specialties Co.

Atwood Vacuum Machine Co.

Bastian Blessing Co.

Bowen Water Heater Division

Coleman Co.

A-P Controls, Controls Company of America

Dayton Tire & Rubber Co.

Dixie Products

Duo-Therm Division, Motor Wheel Corp.

Electric Paint & Varnish Co.

Florence Stove Co.

Grand Rapids Varnish Co.

Hub Industries

International Oil Burner Co.

Jalousies of Ohio

Kennedy Mfg. Co.

Marsh Wall Products

Mobilehome Equipment Co.

Norge Sales Corp.

Payne Products

Philco Corp.

Silvercote Products

Warner Electric Brakes

Contents

Service Schools

MOBILEHOME owners throughout the country reap benefits from a school they never attend. It's the Dealer Service Training School sponsored by the Mobilehome Dealers National Association.

More than 5000 mobilehome dealers and service men have been trained at the unique school, where they learn in detail the many facets of mobilehome maintenance and repair.

A hot water heater that doesn't function properly, a window mechanism that sticks, an air conditioner that seems to run too much and cool too little—these are simple problems for the service school "graduates." Each of them has had demonstrated to him the detailed construction of the water heater, the window mechanism, the air conditioner and the many other components of the modern mobilehome. Most of these alumni have taken the opportunity presented at the school to "learn by doing," dismantling and reassembling various components from plumbing installations to wall switches.

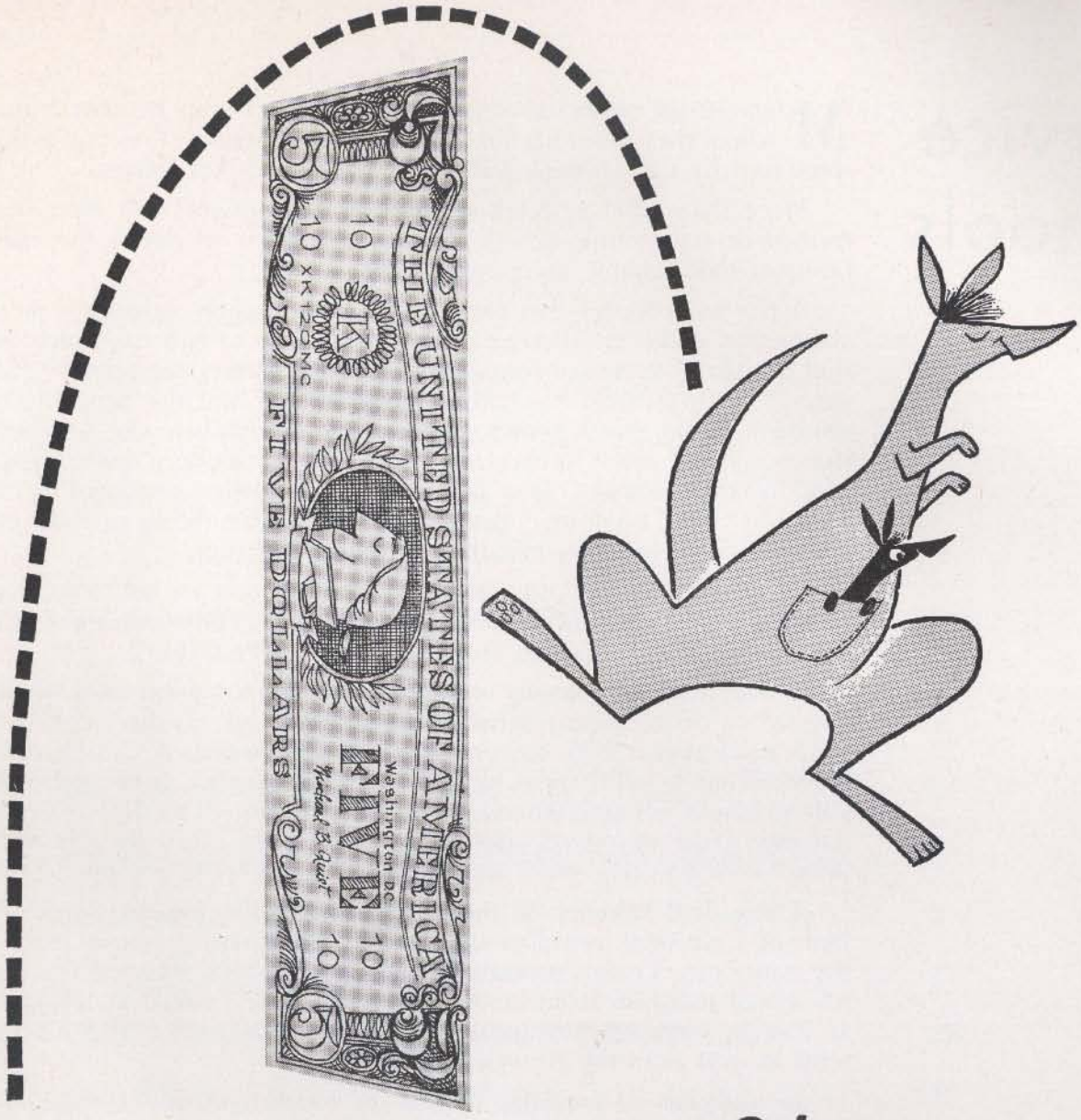
The increasingly popular MDNA service schools are held four times or more each year in various parts of the country. The training sessions have been held in 35 cities, from Seattle to St. Petersburg.

The business philosophy underlying the MDNA program is simple: proper servicing means satisfied customers, and satisfied customers mean more repeat sales, more referrals of new customers. The mobilehome owner benefits from having competent service personnel available to handle his maintenance or repair problems. The dealer benefits not only from improved sales volume but, even more directly, from lower servicing costs, more service business and fewer complaints.

These dual benefits—to the public and to the industry—were the basis of a national award to the dealers' association given in 1955 by the American Trade Association Executives, which selected the service school program from among scores of other association programs as "having rendered outstanding service to the industry which it represents as well as to the American public."

In addition to training dealers to handle routine maintenance problems, the school indoctrinates its students in the proper make-ready of new mobilehomes prior to delivery of the home to the customer. This phase of the MDNA training program is called "preventive maintenance," and is supplemented by an elaborate film. Proper preparation of the mobilehome for delivery, MDNA tells its "students," prevents many callbacks which are costly and annoying to the customer as well as to the dealer.

One result of the training program during the seven years that it has been in operation is a vast improvement in the merchandising of used mobilehomes. A large number of mobilehome dealers today have complete repair shops in which used units can be rebuilt and refurbished from hitch to tail light. This development also benefits both the public and the industry: the purchaser of a used mobilehome obtains a better product, often fully as livable as a brand new home, and at less cost; the purchaser of a new mobilehome finds, through the dealer, a readier market for his trade-in, and the dealer can offer more attractive trade-in allowances without fear of being "stuck" with a high inventory of slow-to-sell used mobilehomes.



Jump your coach sales with Coleman® comfort

Ask any baby kangaroo. After all, he ought to know the mobile home business. He'll tell you buyers like coaches better when they're equipped with Coleman mobile home furnaces and water heaters.

Why? Because everyone knows and recognizes the Coleman name. It has appeared on millions of products around the world. It's a name that means dependability.

Next, Coleman has the biggest and the best heater service system in the mobile home industry.

Across the U. S. there are 157 authorized Coleman service stations–staffed by factory-trained servicemen ready to make quick, economical repairs with factory parts. No other mobile home furnace is backed by this kind of service organization.

How about you? Want to jump ahead to more mobile home sales with Coleman quality, Coleman service, Coleman's world-wide reputation for dependability? Write us now.

FREE: Complete list of Coleman authorized service stations in the U. S. from coast to coast. Write the Coleman Company, Mobile Home Divison, Dept. 22, Wichita 1.

MOBILE HOME DIVISION

The Coleman Company, Inc. / Wichita 1, Kansas

Heating

By Coleman Company

Every year dealers in the Mobilehome industry spend hundreds of thousands of dollars on needless service calls—calls which could have been eliminated by either inexpensive preventative service or by better education of the mobilehome buyer.

Service—preventative service—and the knowledge of the product which goes with it is like money in the bank. It even draws interest. It accumulates customer satisfaction and pays off in dollars of additional sales.

What's the secret? No secret. Just good business practices and a minimum of technical background.

Let's take a look at typical "service calls" which have cost dealers money in time and travel:

Mrs. Customer, calling her dealer (from a town 100 miles away), says: "My new furnace is sooting and fuming something terrible. Get out here right away and shut it off before it burns the coach down."

Mr. Dealer is concerned, worried. Mrs. Customer is in obvious danger. There's nothing to do but leap in the truck and rush down the highway to Mrs. Customer's mobilehome—one hundred long miles away.

Mr. Dealer's thoughts are black. Besides the danger Mrs. Customer is in, there's the matter of a whole day lost, lost sales from not being at the lot—and think of the money lost!

And the horrible part of the whole situation, though Mr. Dealer doesn't realize it, is that the customer isn't in danger, there is no necessity to lose a whole day, there needn't be lost sales and the money he lost could really have been kept in the bank. This is true because there was nothing wrong with the furnace.

How can a furnace soot and fume and have nothing wrong with it? Very simple.

Mrs. Customer's furnace has just been lighted for the first time. It really didn't soot. When it heated up, the oil on the combustion chamber—put there in the manufacturing process when the furnace was made—simply burned off. Any furnace does it. Mr. Dealer knew it as well as anyone. Yet, in the heat of the telephone conversation with Mrs. Customer, he overlooked the obvious.

How could be have prevented it? That's easy. If he had lighted and checked the furnace while the coach was still on his lot, Mrs. Customer would never have called. Just a simple thing, but a smart, cost-eliminating business practice.

Think that one "service call" doesn't prove anything? Well, read these "service complaints." All of them actually happened. In each case, a service call was made. Could you have solved these problems over the phone and eliminated the expense of a service call?

Complaint: My gas furnace keeps going out. Even when it does run, it won't put out enough heat.

The dealer found the customer was using an LP gas furnace on natural gas. If the dealer had asked the customer to check the nameplate on the furnace for the type of gas to be used, he could have brought along a conversion kit to convert the gas furnace to natural gas.

Complaint: Sometimes my oil furnace puts out plenty of heat. At other times, it just won't put out enough heat though the outside temperature remains the same. The furnace also goes out every now and then.

The old storage tank was too low. When the tank was full, sufficient oil would flow to the furnace. As the oil was used up, and the oil level in the storage tank dropped, the flow of oil to the furnace was reduced till finally the pilot went out. The bottom of the oil storage tank should be at least 6″—preferably 18″—above the oil level in the fuel control valve on the furnace.

Complaint: I live in a mobilehome located in the mountains. My furnace keeps sooting. It certainly must be a defective furnace.

The furnace was located in a high altitude area, where there was not enough oxygen in the air to operate the furnace at maximum output. The furnace was equipped with a draft booster having an adjustable air delivery. When the booster was adjusted for high altitude operation, the furnace operated properly. If a furnace is not equipped with a booster, and none is available as an accessory, it would be necessary to operate the furnace at a reduced output or extend the flue above the coach in order to increase the draft.

Complaint: I can't get enough heat out of my oil furnace. I can turn the thermostat clear over to 90 degrees and it still doesn't make any difference.

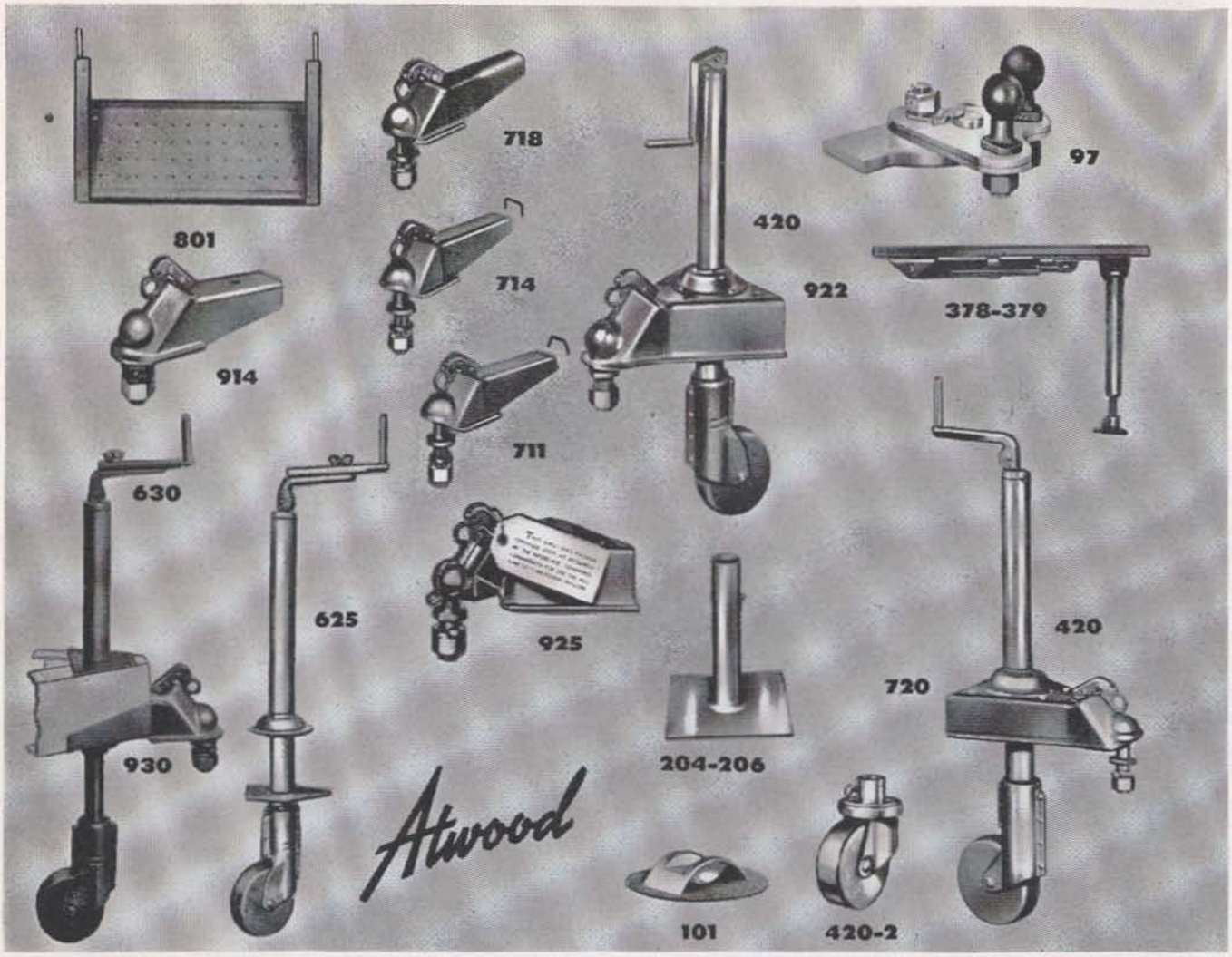
The dealer should have asked about the setting of the fuel control valve. Knowing the setting on the fuel control valve determines the output of the furnace, not setting the wall thermostat. Proper setting can be determined over the phone.

Complaint: When I first started using it, my furnace worked fine. Now it will go to high fire, run a little while, then go back to low fire for a while. It never runs long enough to really get the coach warm.

In this case, the blower needed cleaning. (If the furnace had been equipped with a filter, both the filter and the blower would probably have needed cleaning.) Whenever air being brought back into the furnace becomes restricted, it will cause the furnace to limit, reverting from high fire to low fire. When the furnace cools off, it will go back to high fire, then the process will repeat itself.

Complaint: My oil furnace seems to act up every now and then, usually in the evenings, while I'm watching television. The coach will be warm, and then, after a while, it will get cold. When I look at the furnace, it's on low flame. Turning up the wall thermostat doesn't seem to make any difference.

Always ask for the location of the thermostat. It so happened that the TV was put in a location where the wall thermostat was immediately above it. When the TV set was on for any length of time, heat from the set caused the thermostat to overheat, shutting the furnace down to low fire.



Atwood, the mark of quality in the Mobile Home Industry

The name that has become the mark of quality in the Mobile Home Industry is Atwood . . . a name recognized as symbolizing a standard, known for excellent performance and dependability.

Atwood . . . a pioneer organization in the development and manufacture of trailer equipment of the highest quality . . . the Atwood stamp on any mobile home equipment is your assurance of customer satisfaction.

Look for the name Atwood *before* you buy to insure years of use and service *after* you buy.

No. 801 Disappearing Step. Mounted in slides under trailer body. Pulls out and down into position. Tread can be embossed with the manufacturer's name, if desired.

No. 914, 921, 922 Couplers. No. 914 for single tongues, No. 922 welded and No. 921 bolted models for "V" frames; all for 5000 to 10,000 pound loads.

No. 930 underframe Coupler with 430 or 430F Jacks for mobile homes with smaller diameter tires. Specify 630 or 630F Jack with 930 Coupler for extra heavy duty use.

No. 625 Heavy Duty Jack. Will handle 10 wides, two-story mobile homes, and longer, heavier front-end models. Larger outer housing tube, adjustable extension handle, larger diameter bearings.

Nos. 711 thru 720 Standard Couplers to fit a wide variety of frames for bolted and welded installations. See coupler literature.

No. 925 Heavy Duty Coupler. To be used in combination with new No. 625 Heavy Duty jack. Welded model. Has larger hole required to handle No. 625 larger outer housing tube.

No. 204-206 Jack Foot. Used to replace casters. Swivel tilting base tested at over 3,000 lbs. pressure. No. 204 fits 420 Jack — No. 206 fits 625 Jack.

No. 420 Jack. Shown on No. 720 and No. 922 Couplers. Screw type telescoping sleeve with attached collapsible handle provides a 15 inch lift.

No. 101 Jack Base & Wheel Chock. Provides firm and broad foot for jack caster when parked. Can be used to block wheel on grade, or as car jack base.

No. 97 Dual-Ball Towing Unit. Can be switched from one ball size to the other in 30 seconds to accommodate various sizes and weights of mobile homes.

Nos. 378-379 Stabilizing Jacks. Used to prevent tilting and swaying of mobile home body when parked. Available in two lengths. Held up in clips for traveling.

No. 420-2 Horizontal Bearing Caster. Very compact in design, turns smoothly; reduces coupler-to ground clearance. An ideal unit for use on No. 420 Jack.

ATWOOD VACUUM MACHINE CO.

1400 EDDY AVE.
ROCKFORD, ILLINOIS

Couplers and Jacks

By Atwood Vacuum Machine Co.

The coupler has a tremendous responsibility. It is the vital link between two heavy loads and has stresses forward, backward, up and down. This unit is continually working all the time a mobilehome owner is traveling.

Be sure that standard parts are used—that the make of ball goes with the coupler to insure proper fit. Remember this point above everything else. Do not make the mistake of thinking any make of ball can be used.

Check coupler parts frequently for wear and keep well lubricated with grease to prevent any dry parts from cutting and wearing loose prematurely. Light tongue mobilehomes, under 300 lbs., often get an upthrust and chucking causing excessive wear and friction. This type must be checked oftener for locking lever parts and ball wear.

Make sure the coupler socket is all the way on and a reasonably snug fit on the ball before traveling, and also make sure that the locking lever parts are in place for safe towing performance.

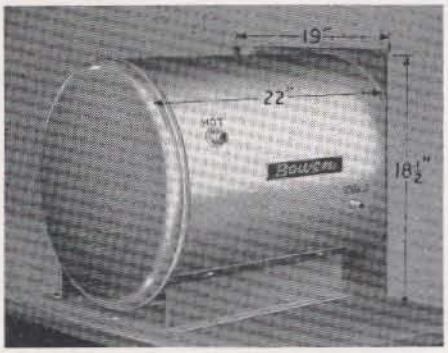
Please remember that as a safety feature most mobilehome couplers are manufactured so that the ball can be forced out of the socket when the mobilehome is on the way over, so that the car and human occupants will not be pulled over with it.

If a mobilehome or travel trailer has been in a collision, jack-knifed or ditched, twisting and forcing the ball out of the socket, the locking lever assembly must be replaced. The whole coupler must be replaced to insure safe towing if the socket has been distorted which makes it unsafe for further use even with replacement parts.

Great care must be exercised by the industry to be sure the right size and make of ball is used with the coupler installed on the mobilehomes. The great difference in size and design is easy to see. Please watch this.

NOTES

BOWEN WATER HEATERS

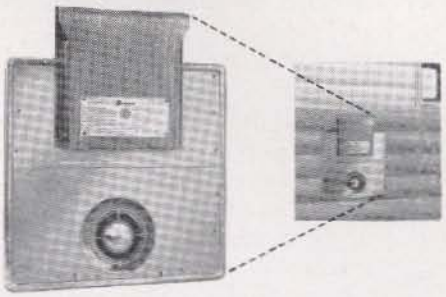


SPACE REQUIRED FOR MODEL P-112

BOWEN GAS
MODEL P-112

The original and still the standard of the industry. Economical, easily installed. Provides up to 350 gallons of HOT water every day. Electrically ignited—no continuous burning pilot. Patented outside venting. Fumes can never get into the home.

Gallons Capacity	Recovery	Gas Input	Approx. Weight Net	Shipping
11	15 gal. per hr.	13,000 B.T.U.	50 lbs.	56 lbs.



— TWO NEW MODELS —

Light it once — Forget about it!!! The improved thermostatic control maintains the temperature you choose, and years-ahead engineering assures you the utmost in economy and efficiency. ALL THE HOT WATER YOU WANT — quickly, — cleanly, — and at the lowest possible cost. The unique econo-pilot requires lighting only if the gas supply is exhausted. From then on it is completely automatic, absolutely fail-safe, and free of fumes or odor.

These two models embody all the fine construction features that made our P-112, electrically ignited unit, so very popular. Heavy gauge clad-lined aluminum tank, fully encased in two inches of Fiberglas, and scientifically baffled to prevent turbulence.

MODEL G-110

G-110

Ideal for travel trailers. Small, compact, efficient. 10 gallon storage capacity.

G-117

Designed for under-the-sink installation in mobile homes. Only 22½" high. 17 gallon storage capacity. Fast recovery.

MODEL G-117

BOWEN *Electric*

THE MOST ECONOMICAL WATER HEATER

The standard in the mobile home industry for quality and low cost operation. Priced low because of mass production techniques, modern conveyor systems and special machinery.

Each Bowen is individually water tested under extreme pressure, your assurance of long life and complete satisfaction.

Fiberglas insulation blankets entire inner tank. Minimum thickness, 2". Fireproof, odorless. Unexcelled heat retaining economy.

Bowen Water Heaters are easily and quickly installed with no special fittings required.

Model No.	Gallons Capacity	Voltage (A.C. Only)	Watts	Dimensions Dia.	Dimensions Ht.	Approx. Weight Net	Approx. Weight Shipping
A-18	18	110-220*	1000	20½"	22½"	40 lbs.	45 lbs.
A-12	12	110-220*	1000	18"	20½"	27 lbs.	33 lbs.
A-10	10	110-220*	1000	18"	17½"	24 lbs.	30 lbs.
S-6	6	110-220*	1000	15"	17"	19 lbs.	25 lbs.
R-50	5	110-220*	1000	15"	15"	17 lbs.	21 lbs.
SPECIAL DOUBLE ELEMENT FAST HEAT — MODEL A-182							
A-182	18	110-220*	1000-2000	20½"	22½"	40 lbs.	45 lbs.

*Available on request

BOWEN WATER HEATER DIVISION, HANDLING EQUIPMENT MANUFACTURING CO., WIXOM, MICHIGAN

Gas Water Heaters

By Bowen Water Heater Division

Question: The gas water heater in my mobile home is about eighteen months old, and it now fails to light occasionally. What could cause this?

This could be caused by any one of four things, or a combination of them:

1. Pressure regulator out of adjustment. Have service man check regulator with a reliable gauge, and set it for proper pressure.

2. Dirty, or obstructed orifices. Remove orifices, and clean with a wooden toothpick. Never use anything made of metal for this purpose.

3. Plugged pilot burner. Look for cocoons, spider nests, etc.

4. Weak ignitor coil. If coil glows, but pilot does not light, replace coil.

Question: My water heater seems to operate all right during the daylight hours, but it stops at night and there is no hot water in the morning. Why?

Your gas pressure is undoubtedly low, and the regulator at the gas bottles should be adjusted. If this is so, and your water heater attempts to light while you are using the range to get your evening meal, and the gas space heater is on, you will rob the water heater of its fuel supply and it will go out on "warp." See the inside cover of the service manual for an explanation of this, and have the regulator adjusted.

Question: The unit in the mobilehome is about 18 months old. Why does it fail to light occasionally?

This could be caused by one of four things or a combination of them. 1. Pressure regulator out of adjustment. Check regulator with a reliable gauge and set it for proper pressure. 2. Dirty or obstructed orifices. Remove orifices and clean with a wooden toothpick. Never use anything made of metal for this purpose. 3. Plugged pilot burner. Look for cocoons, spider nests etc. 4. Weak ignitor coil. If coil glows but pilot does not light, replace coil.

Question: The water heater seems to operate properly during daylight hours. Why does it stop at night so there is no hot water in the morning?

Undoubtedly the gas pressure is low and the regulator at the gas bottles should be adjusted. If this is true, the water heater attempts to light while the cooking range is in use for preparation of the evening meal and the space heater is on. This robs the water heater of its fuel supply and it will go out on "warp."

Question: Why does the wall of a mobilehome with a 'through-the-wall' gas water heater get black around the heater vent?

This is not normal. Smoke and soot always are the result of incomplete combustion which is caused by an unbalanced mixture of fuel and oxygen. Remedy this by adjusting the pressure regulator to the proper setting and then adjusting the air shutters on the main burner to give a clean, blue flame. It is never necessary to tolerate a smoky, smelly, gas water heater.

Question: A customer asks, "Why does my gas water heater use so much fuel? My gas bill is averaging about six dollars a month, and there are only three adults living in our mobilehome."

What standard does the customer use for his fuel consumption? If he makes a comparison with his next door neighbor, maybe the customer's family is a little cleaner than they are—taking more baths, washing more clothes, and, actually using more hot water. If the customer's water heater has a continuously burning pilot flame, he will use more fuel than if he had the electrically ignited type. With this latter type of unit, he will heat water for considerably less cost than with any other heating medium. If his gas pressure is correct, and the heater is operating satisfactorily otherwise, a very thorough leak-test should be made of the entire gas system. In a large percentage of cases where excessive fuel consumption is suspected, there has been at least one leak. Usually a loose fitting.

Question: A series of clicking, or chattering occurs when heater attempts to light. Sometimes it will light, and the noise will stop, but sometimes it doesn't light at all and the switch must be turned off to recycle the heater. Why?

Two causes that will produce this effect. 1. If the gas pressure is low, the pilot flame will not be hot enough to heat the capillary to the point where it will snap the switch in and give positive action to the main burner solenoid. 2. A partially plugged orifice or pilot burner will also keep the capillary from heating to the "snap-in" point.

Question: If a mobilehome is inadequately wired, particularly the lead-in cable, how would a voltage drop affect the electrically-ignited gas water heater?

If voltage should drop as much as ten percent (not unusual in such situations), the water heater just wouldn't work. There would not be enough voltage to open the pilot valve, nor enough to cause the ignitor to get hot enough to light the gas if the pilot valve should happen to open.

SUMMARY

In summing up these problems and their solutions, it is very evident that before it is decided that the trouble is in the water heater itself, the service man first should check the following items:

1. The setting of the pressure regulator.

2. The size of the gas lines feeding the appliances.

3. The electrical supply coming into the mobilehome (if the heater has electrical ignition).

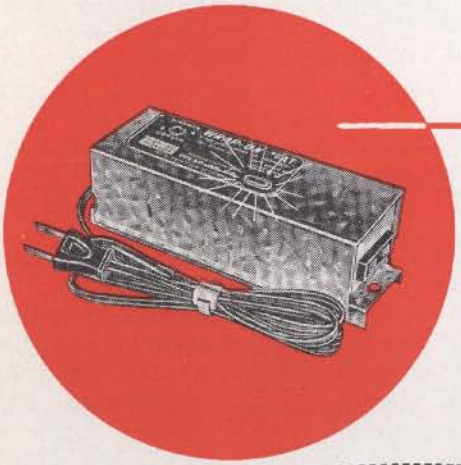
4. The conditions under which the heater is being used.

The service man should always keep in mind that the water-heater manufacturer is more than willing to assist him if he should run into a problem to which he does not have the answer.

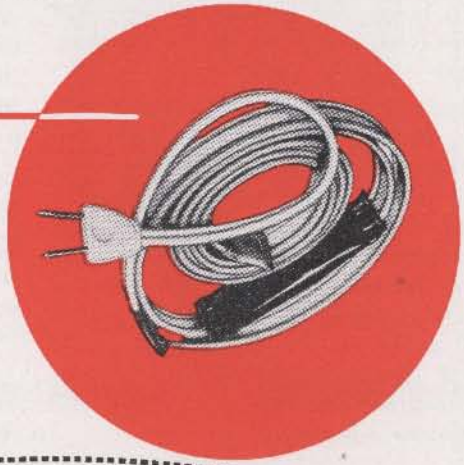
ASSOCIATED SPECIALTIES

"Pioneers in Anti-freeze Pipe Protection"

WRAP-ON TAPE positively eliminates water pipe and waste line freeze-ups even at extremely low temperature ranges. Easy to install, WRAP-ON's adhesive backing assures you that it will stay put. Flat surface, molded construction provides highest heating efficiency. WRAP-ON's genuine Geon insulation is the best available — weatherproof, vermin-proof and impervious to grease and oils. Available in lengths from 3 to 100 feet to meet all anti-freeze pipe protection requirements.



WRAP-ON THERMOSTATS are trouble-free and dependable on all makes of heating cables and tapes. Automatic pilot light shows at a glance when current is being used — no guessing. Precision construction provides close temperature control. Thermostats are factory adjusted to turn on current below 35° F. and turn it off above 40° F. Positive year 'round protection is assured in case of a sudden temperature drop.



EASY-HEAT AUTOMATIC HEAT BANDS are safe, simple, easy to install for winter-long **automatic** pipe protection. Built-in thermostat operates only when surface temperatures approach freezing. Thermostat and connections are hermetically sealed, durably built for extra-long service life. Completely moisture-proof vinyl construction holds properly-spaced heater wire in separate channels. Will not cause radio or TV interference. Available in lengths from 3 to 24 feet.

NO-SWEAT, NO-FREEZE FIBERGLASS INSULATION increases efficiency, reduces electricity requirements on all electrical pipe-heating installations. Properly insulated pipes require only 1/3 as much current for equal sub-zero protection. Fiberglass insulation is sealed on the pipes by a special Vapor Seal Tape which provides a clean, dry outer surface. No-Sweat, No-Freeze is non-combustible and verminproof. Each package contains sufficient insulation and tape to cover 20 feet of ½ inch pipe.

ASSOCIATED SPECIALTIES COMPANY

"Making Winter Mobilehome Living More Comfortable Since 1947"

24555 West Eight Mile Road **Detroit 19, Michigan**

Telephone: KEnwood 5-6211

Anti-Freeze Protection

By Associated Specialties Co.

Question: In order to protect my water pipes from freezing, is it necessary for me to spiral-wrap my anti-freeze tape, or is laying it along the pipe sufficient?

The answer depends on the climate in which you live. Both methods are used with success. However, when temperatures are expected to be below zero, it is a good precaution to spiral-wrap. Spiral-wrapping the pipe with spacing of about 2 inches or approximately 6 turns per foot and then covering the pipe and tape with insulation will give anti-freeze pipe protection to -50° F.

Question: Can I cut my anti-freeze tape to shorten it if it is too long?

Never alter any make of heating tape. Each anti-freeze tape has a specific electrical rating, and must not be altered by shortening or lengthening it in any way. If it is made shorter, it will overheat; if it is made longer, it will not give off sufficient heat to protect the water line.

If your tape is a little too long, you can let it hang free in your tile or bury it in the ground. Of course, you might spiral-wrap a little closer to use up the excess tape, being careful to maintain a spacing of at least 2 inches between wraps. The tape must not touch, cross itself, or overlap in any way because if it does, the unit may overheat and burn out.

Question: What advantage is there in using a thermostat in connection with my anti-freeze tape?

A thermostat more than pays for itself in current saved during a winter. It automatically turns on the heating tape when the temperature drops sufficiently to make anti-freeze protection necessary, and automatically turns it off again when the temperature rises.

If you were plugging the tape in and out by hand, you would often turn it on when you thought there was a possibility of cold weather and thus be running it when you actually had no need of it. Also, you would have to leave it plugged in when you were going to be away for awhile. The tendency would be to leave it plugged in rather than run the chance of forgetting it and having your pipe freeze.

Question: When is the best time to install anti-freeze tape on water pipes?

It is possible to install heating tape at any time. However, the best time is in the late summer or early fall, when the weather is pleasant. Most poor installations are made when the heating unit is installed in cold, wet weather. No one can do his best work while lying on his back under a mobilehome in freezing or wet weather.

Everyone in the mobilehome industry should encourage all users to have heating tapes installed.

Question: I have an unusually long pipe to protect. Could I purchase two tapes and connect them into one length in order to protect my pipe?

No, tapes cannot be connected end to end. When more than one tape is used, each one must be connected independently to the outlet. However, tapes are available in various lengths up to 100 feet. It would be best to purchase a tape of sufficient length to give you adequate anti-freeze pipe protection.

Question: Is it necessary for me to use insulation over my heating tape?

Because the wattage of the tape is low (only 5 watts per foot), it does not serve as a heater of the water, but merely maintains above-freezing temperatures.

If the installation is left exposed, the heat generated is quickly dissipated by contact with the outer air, and if the air temperature should drop sharply, it is possible that the heat produced by the tape might not be sufficient to maintain the temperature in the pipe, and the result would be freezing of the water.

If the installation is protected by wrapping an insulating material around it, however, the heat generated by the tape is trapped against the pipe and will maintain its temperature and thus make your installation more efficient. Even for mobilehomes in a moderate temperature zone, where there is sufficient cold weather to necessitate protection for water pipes, there always is the possibility of a sudden cold snap.

So adding insulation to anti-freeze-tape installation saves worry and any possibility of trouble with water pipes.

Question: A heating tape was installed on a water pipe last fall extending from the ground to the floor of a mobile home, and still the water froze. Why?

It is possible that the protection wasn't extended far enough. There are two places where freezing is most likely to occur. One is in the ground when the protection is not extended to the frost line. This line, of course, varies depending on the climate. In some areas it extends as far as 42 inches into the ground. The heating tape must extend below the ground level to the frost line.

Trouble may also occur in cases where the heating tape is not extended up through the floor into the mobilehome. Protection should extend about six inches above the floor.

Question: Should a heating tape be placed on the drain pipes as well as the water pipes?

Yes. A heating tape will prevent freezing in the drain pipes. It is also recommended that a heating tape be used on oil lines to facilitate the flow of oil.

WHY ARE 99% OF THE 50 AMPERE MOBILE HOMES FURNISHED WITH THE LIFE-LINE®?

TIME TESTED

BECAUSE . . .

***LOWEST COST* in purchasing price and installation time!**

More Features . . .

1. **LOWEST COST** . . . years and years of actual use prove *lowest cost*.
2. **"BILT-IN" GROUND** . . . the only one piece electrical power supply assembled with a "bilt-in" ground —automatically grounds every metal part of the mobile home, making the mobile home completely free from dangerous shorts.
3. **ALL-APPROVED** . . .
   (a) Cable and all connectors approved by the Canadian Standards Association for *50 ampere* mobile home service.
   (b) *All* male and female connectors U/L Approved.
   (c) Approved for California use for *50 ampere* service by the *State of California Division of Housing*.
   (d) Furnished as standard equipment on Gold Seal Mobilehomes now being produced by members of the Mobilehome Craftsmen's Guild.

CONSTRUCTION FEATURES:

- Insulation of conductors in outer jacket especially processed to be ozone resistant (10 times more resistant than lower-priced type "S" cable).
- "Bilt-in" ground.
- Polarized.
- Water-tite.
- Approved for rupturing current.
- Unbreakable connectors.

Mr. Park Operator:
When you rewire or build a new park, use the electrical park receptacle chosen as the standard for the mobile home industry . . .
The LIFE-LINE!

Write for prices and discounts.
Send $1.00 for a copy of the 38 page booklet on "The A B C's of Electrical Supply and Demand for Mobile Home Courts".

Manufactured by:
Mason Engineering & Designing Co.

Distributed by:

HUB INDUSTRIES, INC.
5410 N. Damen Avenue • Chicago 25, Illinois

LODESTAR CORP.
2625 S. Yates Avenue • Los Angeles, California

Electric Wiring and Grounding

By Hub Industries

Question: Is there any way to tell whether a mobilehome is wired safely and adequately?

Yes, there is. Quite a number of mobilehome manufacturers have been selling mobilehomes in the provinces of Canada. For that reason some three years ago the Approvals Division of the Canadian Standards Association wrote up a set of electrical standards and offered inspection and label service to the mobilehome manufacturers who desired such service. These electrical standards were quite stringent so that if you find a CSA Approval label to the right of the front door of the mobilehome in question, you can be assured that it is wired properly. In view of this, I have been told that quite a number of dealers who wanted to be certain of the wiring jobs in the mobilehomes they were purchasing, ordered their mobilehomes from the manufacturer with the CSA Approval label affixed to it. Please understand, however, that the lack of this label does not indicate that the mobilehome is improperly wired, because as I have said, only those mobilehome manufacturers who are shipping into Canada have found it necessary to spend the money for this label service. As you no doubt know, the State of California Division of Housing has also started inspecting mobilehomes and their standards are also quite rigid, and you can also look for the State of California label on the mobilehome. If neither of these labels are found on the mobilehome, then I would suggest you give consideration to the reputation and integrity of the manufacturer with whom you are dealing.

Question: Do I understand this correctly, that if the mobilehome has a tag or label on it indicating that it is either approved by the State of California Division of Housing or by the Approvals Division of the Canadian Standards Association that I can be assured that it is wired properly?

Yes, that is exactly what I meant. You see, the standards being used by both of these organizations are quite stringent, and the mobilehome conforming to such standards, you can be assured, is of excellent quality.

Question: What would you say are the most important safety features of these newly developed electrical standards?

I think that basically the three most important features of these standards are: number one, a factory engineered and installed "power supply assembly"; number two, the requirement that all of the metallic parts of the mobilehome, both electrical and non-electrical, be grounded; number three, the complete electrical wiring job must be done in an approved manner and with approved materials.

Question: Could you give us an explanation to further clarify the three points which you just mentioned. For example, let's start out with the number one point, "power supply assembly".

POWER SUPPLY ASSEMBLY

All right, let's divide the power supply assembly discussion into two different parts. Number one, the definition; and number two, a suggested standard for its specification. First of all, let's take number one, the definition. Here is what is generally considered to be a fairly well accepted definition of the term, "power supply assembly":

1. "Power Supply Assembly" means the conductors, including the grounding conductors, insulated from one another, the connectors, motor bases, attachment plug caps, and all other fittings, grommets, or devices installed for the purpose of delivering energy from the trailer park space or site supply system to the buses of the service equipment within the mobilehome."

2. The main power supply assembly **shall be factory-installed,** the cable shall be a minimum of 25 feet in length, of a Type S or SO, or equivalent, and the service conductors not less than three #8 conductors and one #10 ground wire. In no case shall the receptacles, connectors, and attachment plug caps be rated at less than 50 amperes. A second, or auxiliary power supply assembly, **shall be factory-installed** where a separately metered appliance is installed in the mobilehome, or if the demand load of the mobilehome exceeds 50 amperes. The receptacles, connectors, and attachment plug caps installed on the auxiliary power supply assembly, as well as the rated capacity of the supply conductors, shall be sufficient to carry the load based on a 100% demand factor. The main power supply assembly shall be attached or enter the mobilehome in the exterior wall or floor in the rear third section of the mobilehome on the left or road side. The second or auxiliary power supply assembly, when required, shall be located within twelve inches of the main power supply assembly and shall be properly labelled as to its purpose, such as, water heater or electric space heating, etc., and the rating of the circuit it is supplying shall also show on this label.

Question: It seems to me it is about time the manufacturers standardized on the power supply assembly, both from the standpoint of the construction specifications but also the the location and length or the positioning on the mobilehome. Is it your opinion that this 25 foot length located on the rear left third of the mobilehome will help the park operators now in laying out their park?

From what I have seen in the last few years of a great number of mobilehome park designs, it seems apparent that it is considered good practice today for the feeder terminal upon which the electrical park receptacle is installed to be located on the park site at the rear left side of the mobilehome. We have found in our experience that if all mobilehomes had this 25 foot power supply assembly located on the rear left third of the mobilehome, it is quite simple for the park designer to compute the precise spot on the park site to locate this receptacle, so that regardless of the length of the mobilehome or where the owner wants to spot it on the site, the 25 foot power supply assembly will reach the receptacle.

New Dayton 14.5" ALL-NYLON Low Boy is Super Safe Even at Sustained High Speeds

Dayton's ALL-NYLON construction provides longer tire life on all kinds of roads and takes the heaviest, longest, widest coaches along turnpikes at sustained high speeds without danger of tire failure.

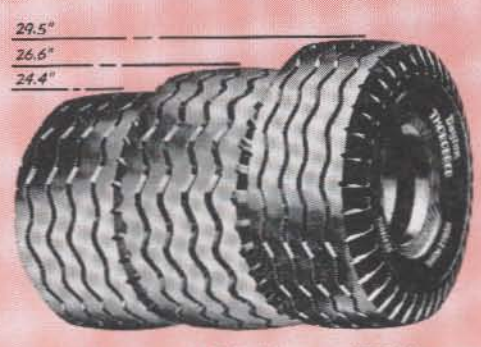
To absorb the severe strains of modern turnpike driving requires maximum tire strength and toughness. Only NYLON —strongest cord ever used in tires—provides the extra margin of safety that virtually eliminates tire failures—blowouts—resulting from impact, flex, heat and moisture-weakened tire bodies.

Dayton's exclusive method of electronically processing tire cord utilizes NYLON'S inherent qualities to the fullest extent . . . actually increases natural strength and toughness to a point never before thought possible, for greater protection against impact damage and bruise blowouts.

All new, ALL-NYLON 14.5" Low Boy tubeless tires provide *greatest impact resistance ever!* What a *safety* feature—what a *sales* feature!

Comparative Heights Of The Complete Line Of Dayton Mobile Home Tires

Dayton offers tires of three different heights to fit every type of coach design.



Dayton Thorobred Tires

Tire Care and Maintenance

By Dayton Tire & Rubber Co.

Question: How often should air pressures be checked?

Check air pressures weekly and make sure air pressure is checked before and during any over-the-road hauling.

Question: Why should air pressures be checked?

For the tire to do its job efficiently, there are exact air pressures required.

Question: What authority for air pressures should be used?

The manufacturer's rim and data charts.

Question: What are the dangers of over-inflation?

Hard ride; less tread contact with pavement; unusual and unwanted stress and strain on tire; less resistance to impact break, and less traction.

Question: What are the dangers of under-inflation?

More flexing generates excessive heat; tire is distorted; and very rapid tread wear.

Question: Why should tires be checked when cool?

Air pressures can be more accurately determined when tires are cool. Hot tires or tires that have been run any distance actually have gained air by temperature inrease, and, of course, when they cool, the temperature decreases and the pressure lowers.

Question: Is there a way to paint or preserve rubber to help prevent checking and cracking?

As tires grow older, it is a normal thing for them to show tiny cracks or checks. This is caused by chemicals in the air, itself. Sometimes an anti-ozinant paint will help to retard this checking. When tires have not been in use for extended periods of time, it is wise to have them inspected to determine their safety for travel.

Question: In parking for any length of time, how should tires be cared for?

Jack up mobilehome, remove tires and, if possible, store in dry, cool, dark area. Before removal of tires, check local regulations and state laws. If financed, check with the finance company.

Question: What kind of guarantees do mobilehome tires have?

The lifetime warranty on material and workmanship.

Question: Are original equipment tires of sufficient capacities to carry normal coachloads?

Yes, in most cases. However, consult your data charts and make sure your contemplated gross loads are not in excess of actual tire carrying capacities. When traveling, equal distribution of gross load is important to getting good tire service.

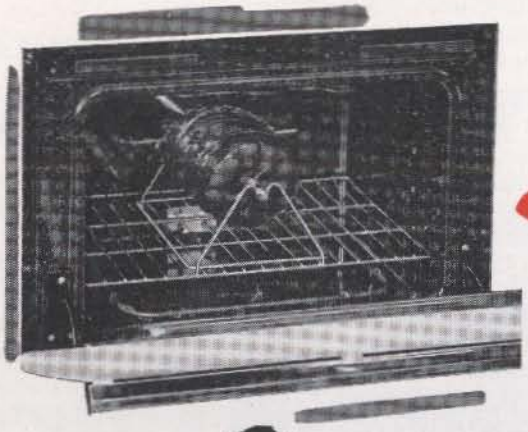
Question: Why are moderate speeds so vital to tire life?

Moderate speeds will keep tire heat down; eliminate usual strains and demands on the tires, and, all in all, will extend tire life and performance.

NOTES

Dixie opens sesame!

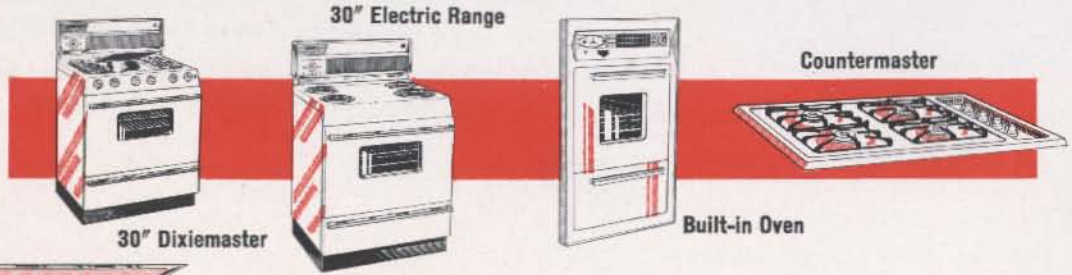
Dixie opens the door to modern... convenient cooking in mobile homes.



Barbecue rain or shine . . . in June or January with Dixie's Oven Rotisserie. You may add an automatic rotisserie to any Dixie range—built-in or free-standing.

Add more usable kitchen space to your mobile home with Dixie's Triumph in Space . . . the gas Foldaway. Folds down for cooking space. Folds up for counter space.

SEE THE FOLDAWAY & DIXIE ROTISSERIE AT THE TCA & MHMA SHOWS



DIXIE

DIXIE PRODUCTS, INC., CLEVELAND, TENN.

Only Dixie develops the newest ideas in cooking convenience to meet the unique requirements of modern mobile homes.

Gas Stoves

By Dixie Products and Florence Stove Co.

Question: Should the gas range be adjusted on the dealer's lot or after delivery is made to the customer?

It is much easier, less time consuming and eliminates driving several miles, to make the adjustments on the dealers sales lot before delivery of the mobilehome. There may be some minor adjustments on the air mixture after delivery is made to the customer.

Question: What is the best procedure to followi in adjusting a gas range so as not to overlook any part of the operation?

A good rule to remember is to start with the backguard, uppermost part of the range, and follow right down to the base of the unit, making each adjustment in order, such as clock and timer, then top burners, oven burner, etc.

Question: Explain the clock and timer operating instructions.

Most of them are combination electric clock and timers. The two work independently of each other. The clock operates like any ordinary electric clock. The timer signals the end of the cooking period.

The clock dial is always the outer dial and the inside dial is for the timer—please do not get the two confused. To set the clock, turn clock knob in a clockwise direction until clock hands are the proper hour. To set the timer, pull the knob outward and turn small pointer hand in a clockwise direction to the number of minutes desired. The buzzer will sound at the end of the timing period. To stop the buzzer, push straight in on the timer knob.

Qestion: Is the electrical wiring on each range the same?

No. All ranges have an electrical wiring diagram, usually located on the back of each range.

Question: What type of bulbs are used for backguard lighting?

The bulbs are of the type which may be purchased locally and do not require being ordered direct from range manufacturers.

Question: How high schould the top pilot flame be?

On the single-center type pilot the flame should not extend above the top of the cone. On the Thrifti-Kool pilot, where each burner has its own individual lighter, the pilot flames should be 1/8 inch in diameter. If the pilot is set too high it will cause soot formations on the bottom of the drip tray.

Question: How do you know when you have the proper adjustment on the top burners?

First make sure all burner heads are screwed down tight. If flame flashes back into mixer head, there is to much air in proportion to gas. If flame blows away from ports, there is too much gas, air or both.

On adjusting top burners, you have to regulate both the flow of gas and the air mixture. When the burner is properly adjusted the flames are clear and without yellow tips. Yellow tips denote too much gas; red flames denote insufficient air.

Most gas ranges are equipped with universal orifices and it isn't necessary to change orifices when switching from bottled gas to natural gas or vice versa. It only requires the readjustment of the orifices.

Operating a burner without a cooking utensil over it wastes gas. Place cooking utensil over burner before turning on gas—turn burner off before removing utensil—for economy and best results. Never remove grates and burner wells when using large utensils over burners.

CAUTION—ALL MODELS

Turn off gas to burner if any of the following occur:

1. The burner fails to light within four or five seconds.
2. The burner goes out after being lighted without the gas being turned off.
3. Gas has been escaping into the room from a leak.
4. In general, whenever you detect the odor of gas in the room.

Before attempting to light or relight the oven, thoroughly ventilate the oven and the room to dissipate the gas. Be sure to observe above precautions, otherwise, gas may accumulate and when ignited, the flames may puff out.

Question: How do you adjust the HI-LO valve on the "Griddle in the Middle" burner?

1. Turn valve to the high flame.
2. Loosen the screw on the top part of the valve.
3. Turn valve counter-clockwise, very slowly until a desired low flame is obtained.
4. Tighten screw.

Question: What is the proper height of the oven pilot flame?

The oven pilot flame should be approximately 3/4 inches high. This adjustment is made by turning the upper right hand set screw on the oven control. The oven should be 350° when adjusting the pilot. A complaint that usually arises with a gas range is the oven smoking. This is caused by the oven pilot being too high.

Question: What is the procedure for lighting automatic pilot in matchless oven?

Lighting procedure depends upon the type of control used. On the Robertshaw OVENTROL type, the oven pilot may be ignited by depressing dial firmly in at "off" position and holding lighted match at pilot burner. Continue to depress dial for approximately 30 seconds to allow automatic pilot to set.

(Continued on Page 19)

SPECIFY Florence GAS RANGES TO SELL YOUR MOBILE HOMES FASTER!

YOUR CUSTOMERS WILL SMILE . . .

YOUR SALES WILL JUMP!

Smart, modern, tops in performance, Florence means quality in mobile home kitchens. Assures you and your customers unbeatable value . . . long service, real dependability, complete satisfaction. You'll sell more mobile homes, faster, with Florence in the kitchen.

NEW! 30" Custom Deluxe Range with 3-way Top

Model 3-303. Modern Trim-Line back panel with incandescent lamp. 3-way top. Handy built-in cast aluminum griddle converts to fifth top burner or work space. "Chrome-Jet" top burners. "Baker's Arch" oven is full 25" wide, provides welcome extra capacity. Removable oven door window and oven light. Separate smokeless broiler.

MOBILEHOME DEALERS · MDNA · NATIONAL ASSOCIATION

Florence Built-In Gas Ranges

Built-in luxury and compactness . . . outstanding performance. Extra-easy to clean. Oven has electric clock with 60-minute timer. Removable oven door window, and oven light. Separate smokeless broiler. In Colorama colors or satin chrome.

ONLY FLORENCE OFFERS SUCH PERFORMANCE, BEAUTY, ECONOMY!

Florence
GAS RANGES

FLORENCE STOVE COMPANY

A division of

Geo. D. Roper Corporation, Kankakee, Illinois

Gas Stoves

By Florence Stove Co. and Dixie Products

(Continued from Page 17)

On some automatic controls there will be a red set button to be depressed while lighting pilot burner. Button must be held in firmly for approximately 30 seconds to light pilot, or until pilot will continue to burn after button is released.

To adjust automatic pilot on OVENTROL, the procedure is the same as the manually lighted pilot except turn pilot adjust screw to a point where only a trace of yellow tip remains on a small blue pilot flame. This will provide a constantly burning pilot which will give automatic ignition. Anytime the supply of gas to the range is interrupted, the above lighting procedure of pilot will be required.

Question: How do you set the By-Pass or Minimum oven flame?

1. Light the oven burner and turn dial to a position halfway between the gas on-and-off mark.
2. Remove the dial and bezel.
3. Turn the upper left hand set screw on the oven control until the oven flame is approximately 1/8 inch high.
4. Replace dial and bezel.

The purpose of the By-Pass flame is to keep the oven going at the desired temperature setting. If this isn't set, the oven will start cooling when it reaches the desired degree inside the oven and the oven burner will go out. On the other hand, if the By-Pass flame is set too high, it will cause the oven to overheat.

Question: How do you re-calibrate an oven control?

In checking the calibration of an oven by all means use an oven thermometer. This is the only way to do a proper job.

To check the calibration—

1. Place the oven thermometer inside the oven and turn oven control to 350° and allow to burn for approximately 15 minutes.
2. At the end of the time look at the oven thermometer and check it against the degrees on the dial. If the oven is over-heating or under-heating, the control needs re-calibrating.

To re-calibrate—

1. Remove the dial and bezel.
2. You will notice two small screws on the center small section on front of control. Loosen each of these screws.
3. The small disc has marks on the front. Each of these marks represents 25° and there is a high and low side.
4. If the oven thermometer showed, for example, 50° over what the dial setting was, then turn the pointer, where marks are, two marks to the low side. If case was reversed, 50° under, then pointer should be moved two marks to the high side.
5. Tighten the two screws which were loosened in step two.
6. Replace dial and bezel.

Then move dial setting from 350° to 400° and run your second test, which should check out the same on thermometer as on dial.

Question: Is there a warranty on gas ranges?

Yes. The warranty tag accompanies each range. Most warranties state: Any part or portion of the range which the company's examination shall disclose to be defective in workmanship or materials, **during a period of one year from date of purchase,** will be replaced free of charge except for labor and transportation expense incidential to replacement.

PORCELAIN ENAMEL WILL CHIP OR GRAZE IF NOT PROPERLY CARED FOR. WARRANTY DOES NOT APPLIE TO PORCELAIN ENAMEL FINISH.

Question: What special care is required for porcelain enamel?

This is a glass-like coating which is fused on to the steel at a very high temperature. It is the most durable finish known, and will not crack or chip because of cooking heat, but it must be given proper care and attention.

Do not strike porcelain enamel with hard or rough objects, slam parts when opening and closing, clean parts when hot, apply cold water to hot parts, or hot water to cold parts, use gritty soap or cleanser or allow dirt or liquids to remain on porcelain surfaces.

To clean porcelain, use warm water and a good cleanser recommended for porcelain enamel. Stubborn spots can be removed with kerosene.

Question: What may be used to clean chrome finishes?

Chrome is a very durable finish, it is subject to scratching and should not be cleaned with a gritty cleaning powder. On all chrome parts, use only a high-grade chrome cleaner or polish to retain the beautiful sheen.

Question: When ordering replacement parts what should we do to expedite their shipment?

Always give the complete model number of the range. This is found on the number plate which is located in the burner box bottom, or inside of the boiler door.

If a repair chart isn't handy, give a full description of the part desired.

If a part is being returned to the manufacturer, either as a sample or for repair, please enclose a letter regarding your wishes.

FULL LINE OF FURNACES FOR EVERY SIZE COACH

For 50′—10′ wides

Oil Model 558 Furnace (shown above). 43,000 BTU output. Completely built-in. Uses space 23″ x 20″. Has built-in automatic 2-speed blower.

Oil Model 560 Furnace. 43,000 BTU output. Completely built-in. Uses space 23″ x 20″. Has built-in automatic single-speed blower.

Gas Model 570 Furnace. 53,000 BTU input. Has the same features as oil model 558, adapted for use of LP or natural gas.

For up to 41′ x 8′ and 35′ x 10′ coaches

Oil Model 555 Furnace. 34,000 BTU output. Completely built-in. Uses space 23″ x 20″. Has built-in automatic 2-speed blower.

Gas Model 551. 40,000 BTU input. 14″ deep x 22″ wide x 48⅛″ high. Has built-in automatic 2-speed blower. Uses LP or natural gas.

For up to 35′ x 8′ coaches

Oil Model 540. 30,000 BTU output. 14″ x 22″ x 48⅛″. Has built-in automatic 2-speed blower. Designed for under-floor heating systems.

Oil Model 530. Same as Model 540 with 27,000 BTU output and single-speed built-in blower. Uses inside or outside fuel tank.

For up to 28′ x 8′ coaches

Oil Model 525-PA. 20,000 BTU output. 12″ x 24″ x 30″. Has built-in Power-Air Blower. Ideal for low draft flues.

11 sales features you get only with new Duo-Therm

MOBILE HOME FURNACES

MODERN STYLING

1 Built-in beauty. They're the only furnaces approved for fully-enclosed installation. No gaps—no unsightly "works"!

2 Modern lines. Only flush-mounted grille front is visible. Platinum finish blends with any interior. Unit takes only 20″ x 23″ x 59″ space!

3 Low silhouette. Low location of oil control permits use of standard low tank rack.

MODERN COMFORT

4 Even floor-to-ceiling temperature assured by unique counter-flow circulation. Re-uses warm ceiling air, mixes with fresh air.

5 Higher heat output. Heats 50′-10′s in sub-zero cold! Provides warm floors throughout your mobile home.

6 Even heat distribution in winter assured by powerful 2-speed blower. Circulates air for summer cooling.

7 Quieter operation. No irritating expansion-contraction noise.

8 Safety plus. Automatic control cuts fuel flow in case of power failure!

MODERN ECONOMY

9 Uses less fuel. Extra-large burner and oversize heat chamber cut costs by getting the most BTU's out of your fuel!

10 Two pilot settings. Low pilot saves fuel, won't overheat your coach in mild weather. Comfort setting provides even heat in colder weather.

11 Simple maintenance. All working parts are easy to get at—easy to check through front panel doors.

DUO-THERM

"The Name Mobile Home Owners Respect"

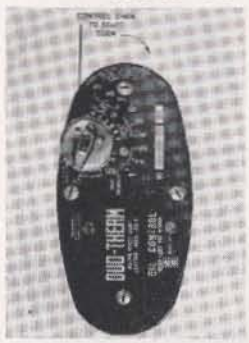
MOTOR WHEEL CORPORATION, LANSING 3, MICHIGAN

How to adjust the new DUO-THERM 558 Furnace

by Lowell Davis
Duo-Therm Products Service Manager
Motor Wheel Corporation, Lansing, Michigan

The new control system on the Duo-Therm 558 Furnace offers complete flexibility of adjustment to meet different heating conditions. To get maximum performance and lowest fuel consumption, the controls should be set as suggested. This is a simple operation requiring only the few steps explained in detail below.

HOW TO LIGHT THE FURNACE



1. Set the thermostat at 90°.
2. Turn the control knob **clockwise** until it will turn no farther.
3. Then turn the control knob **back** (counterclockwise) to position #6, or higher in severe weather. **Never** turn it to a position less than #6.
4. Then wait for two to three minutes and light burner.

HOW TO REGULATE THE TEMPERATURE

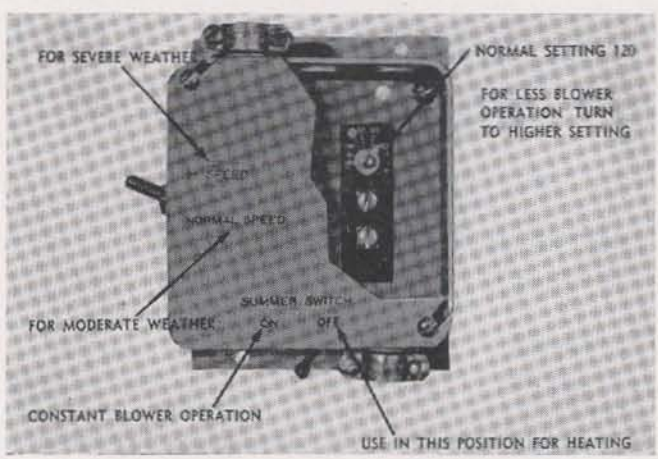
1. Set the thermostat at the desired room temperature.
2. The furnace operates most efficiently with the indicated lever set at "COLD." But, if coach overheats, reset the lever at the "MILD" position.

HOW TO ADJUST THE BLOWER

1. The "SUMMER SWITCH" should be at "OFF" position when the blower is used for heating. When this switch is at "ON" the blower operates constantly.

2. The blower has two speeds: "HI-SPEED" for severe weather, and "NORMAL SPEED" for moderate weather.

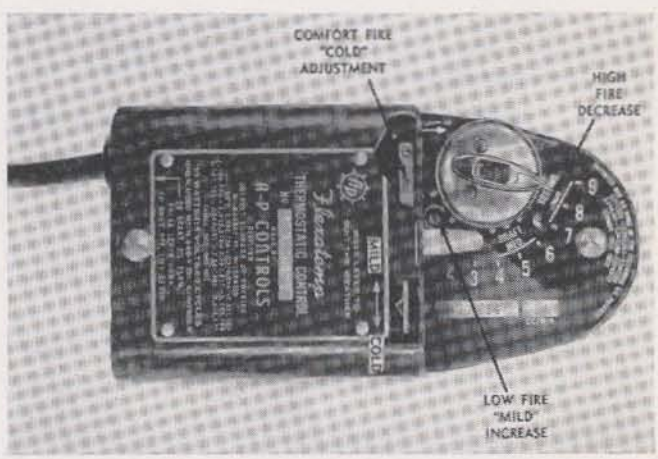
3. A dial indicator controls the frequency of blower operation. For normal conditions, the dial should be set at 120. For **less** blower operation, turn the dial to a higher setting; for **more,** turn it to a lower setting.



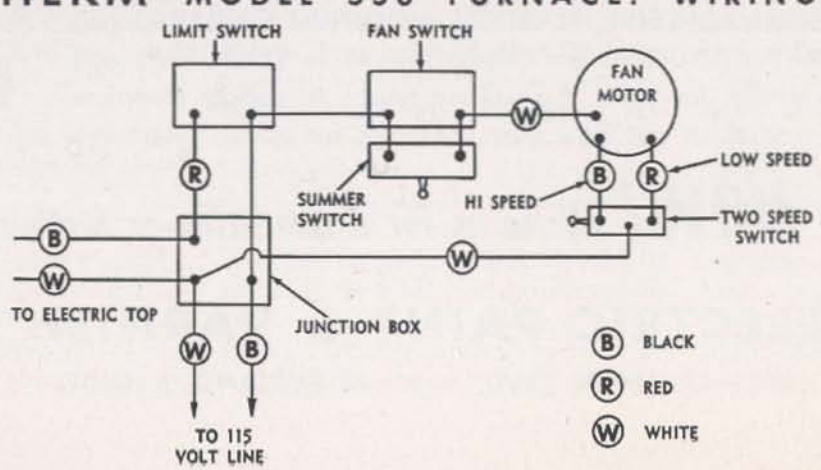
HOW TO ADJUST FOR PROPER OIL FLOW

Efficient, proper operation depends upon having the correct oil flow. Shown in the picture are the three screws that regulate the oil flow. Listed below are the correct oil flows for Duo-Therm Furnaces.

MODEL	CUBIC CENTIMETERS PER MIN.		
	HIGH FIRE	COMFORT FIRE "COLD"	PILOT "MILD"
555	20	5	1
558	24	6	1
560	24	6	1

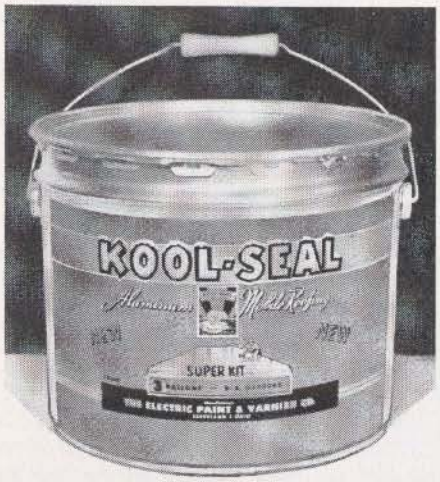


DUO-THERM MODEL 558 FURNACE: WIRING DIAGRAM



KOOL-SEAL

ALUMINUM MOBILEHOME ROOF COATING



Furnished in 1, 2, 3, 4 and 5 gallon containers — a container for every size mobilehome roof.

Sells Itself!

- It is the ORIGINAL mobilehome coating—oldest and best known brand in the field.
- It is used by MORE mobilehome owners than any other. They know that KOOL-SEAL means complete satisfaction and full value for their money.
- It is the ONLY coating *regularly* advertised in all major consumer magazines and papers. Your customers are "told and sold" KOOL-SEAL.
- KOOL-SEAL'S GUARANTEED quality relieves you of user complaints and adjustments—saves you time, headaches and money.
- Consumers demand it—will not accept so-called substitutes.
- KOOL-SEAL means faster stock turnover, more satisfied customers and bigger profits for you.

KOOL-SEAL furnishes you complete merchandising aids without charge . . .

1. COVERAGE CHARTS tell you and your customer the correct KOOL-SEAL container size for any roof.
2. CIRCULARS describe KOOL-SEAL and explain what it will do for your customer.
3. SAMPLES show your customer what KOOL-SEAL will look like after it has been applied.
4. KOOL-SEAL INSTRUCTION MANUALS give complete information for the care and repair of mobilehome roofs.
5. CATALOGUE SHEETS give a brief description of KOOL-SEAL and its companion products.
6. METAL DISPLAY SIGNS are attractive indoor or outdoor advertising.

KOOL-SEAL companion products are needed by your customer at the time KOOL-SEAL is applied. ELECTROSEAL ALUMINUM, MEMBRANE FABRIC, SPECIAL ADHESIVE, PLASTICEL ALUMINUM CAULKING and DELUXE SPRAY ALUMINUM are closely related to KOOL-SEAL and mean extra profits for you. We will be happy to supply complete information and show you how they will work for you.

Stock up NOW! ***Write us for a quotation or further information.***

THE ELECTRIC PAINT & VARNISH CO.

8311 FRANKLIN BLVD. • CLEVELAND 2, OHIO

Roof Repair and Maintenance

By Electric Paint & Varnish Co.

Question: Our new mobilehome seems to be a lot noisier than the coach we recently traded in on it. What is the reason, and can this noise be eliminated?

Very frequently nowadays the mobilehome dweller trades off his old coach for a new and larger one, with more living space, more convenience and better appointments, only to find it a much noisier coach than the old one.

Today, virtually all new mobilehomes are larger and have metal roofs. This larger roof area made of light gauge steel or aluminum tends to create a "sounding box" effect. In their effort to eliminate leaks in these metal roofs, many manufacturers do not anchor them to the roof members. The result is that an uncoated metal roof, particularly after it's been exposed to temperature extremes, has a tendency to buckle. Not only does this create possible leaky areas by splitting seams or pulling the roof away from stacks, vents and moldings, but even a breeze passing over it causes a rippling of metal, with resultant noise inside. In addition, rain and hail beating on the roof create another noise condition inside.

Coating this new metal roof with a good aluminum mobilehome coating will not only increase insulation value, but cut down buckling and provide a "cushion" against the beating of rain and hail, plus wind noise, thereby helping to insure a soundproof and leak-proof roof.

Question: Why is an aluminum roof coating recommended for metal roofs?

Much of the answer to this question is found in the above answer. Most modern roofs are construced of light gauge steel or aluminum. To eliminate rust and corrosion of the metal roof surface, an aluminum coating is necessary. It will cut down buckling of metal roofs from expansion and contraction caused by rapid and sometimes severe temperature changes. This cuts down roof noise and eliminates leak hazards. Last but not least, a good aluminum mobilehome coating will improve roof beauty and insulate the mobilehome interior against heat and cold.

Question: How often is it necessary to apply an aluminum roof coating?

The answer to this question varies greatly, depending on the quality of coating used, type of roof structure, weather conditions, location of the mobilehome, etc. Under average conditions, a properly applied good aluminum coating should last and effectively protect the roof surface for approximately 3 years. Periodic roof inspection, at least twice a year, will indicate whether the roof need be coated more or less frequently.

Periodic inspections will also show up weak spots or trouble points in the roof which demand attention. By repairing such areas, interior damage and consequent costly major repairs can be eliminated.

Question: What are the signs of roof trouble and how can they be corrected?

Obviously, the surest signs of roof leaks are stained panels on the interior of a mobilehome. Since this is the stage of roof trouble that is most critical, and requires immediate and too-often extensive and costly repairs, such a condition is unnecessary, and can be avoided by exercising the following few simple precautions:

First, every mobilehome roof should be inspected at least twice yearly. Accumulated dirt or debris should be removed, and all roof seams, stacks and vents should be inspected closely. Stacks, moldings and vents must be screwed down securely and well caulked. If there is any evidence of seams parting, they can most effectively be repaired by "bridging the gap" with membrane fabric imbedded in adhesive. Then, the entire roof should be coated with a good quality aluminum coating, to insulate and protect the roof from future damage.

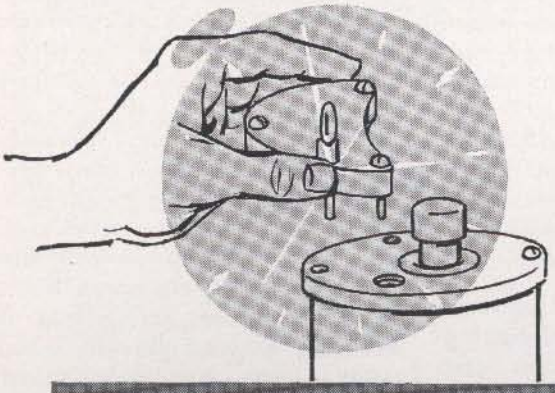
Care should also be taken to park the mobilehome in an area free of low hanging branches, and the coach should be leveled properly to avoid strain on the roof structure that may cause seams to part with consequent leakage.

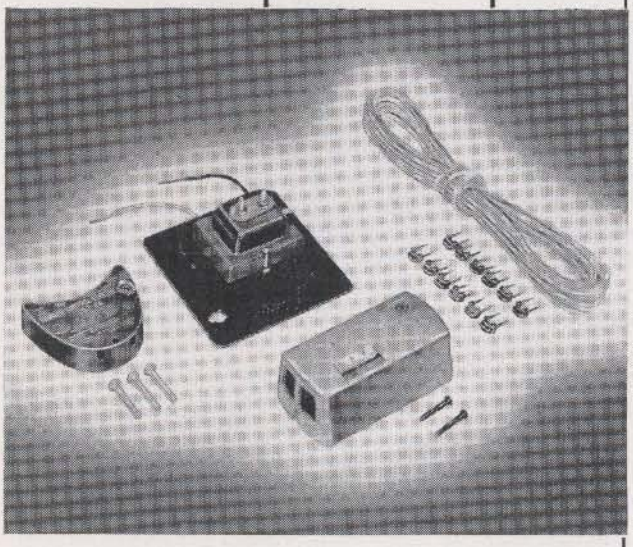
Question: Stained paneling in my ceiling indicates that I have leakage, but although I have inspected my roof carefully, the coating is in good shape and I can find no breaks or leaky spots anywhere. What is my problem, and how can I correct it?

The chances are 100 to 1 the stained paneling in this case is occurring in the immediate vicinity of stacks, vents or moldings. The water that has stained this paneling is not coming through the roof itself, but either at the joint where these roof appliances are affixed to the roof, or through the appliances themselves, and coming out through the paneling from the sub-roof.

One of two problems exists here. Either the screws holding down the stacks, vents or moldings have come loose, or these appliances are improperly caulked—or the appliances themselves are not functioning properly, and as a result water is entering the sub-roof and staining the paneling through or around the appliances. If inspection proves that the screws or caulking are faulty, repair them accordingly. If they are intact, then have a competent serviceman check these appliances, correcting their operation, thereby eliminating your leak problem.

Mobile home heaters become automatic in minutes with CC comfort control

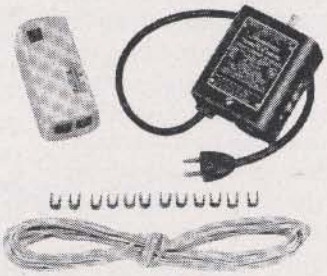




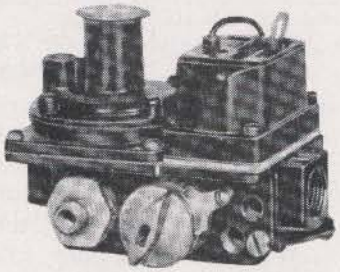
A Model 252 EA comfort control, a screwdriver and a few minutes are all that is needed to convert manual oil-fired heaters to thermostatic operation. Electric conversion top easily attaches to manual control. Kit is furnished complete with thermostat and plate-type transformer. No complex wiring, no worry over service problems. Write today for Bulletin TI-187.

MODEL 356 OILIFTER — A dependable unit designed to pump fuel oil quietly and efficiently from a storage tank to a self-contained reservoir or fuel chamber, thus providing a continual supply of fuel oil to the constant level valve. Can be used with vaporizing, rotary and gun-type burners.

MODEL 2400 OIL CONTROL VALVE — With exclusive steel-body, it safely maintains an even rate of oil flow to vaporizing type oil-burning space heaters, central and floor furnaces. Also available with an integral flame prover. One of a complete line of manual oil controls.



MODEL 2709 FLEXATEMP THERMOSTATIC CONTROL KIT — Easily converts AP 240Y series single metering stem valves to dependable automatic operation. Complete kit consists of thermostat, built-in transformer, cord, plug and staples. CC makes thermostatic control accessories to suit every heating need.



MODEL 5010 SINGLE UNIT GAS CONTROL — Compactly engineered for clothes dryers, wall heaters, space heaters, etc. Available with magnetic operator. Pressure regulator is optional. Maximum capacity 85,000 Btu/hr at 1" w.c.p.d. of 800 Btu/cu. ft. gas. Part of a complete line of single unit controls.

Creative Controls for Industry

CONTROLS COMPANY OF AMERICA

2400 N. 32nd Street • MILWAUKEE 10, WISCONSIN

COOKSVILLE, Ontario • NIJMEGEN, Holland

Heating Controls

By A-P Controls, Controls Company of America

Question: What methods are followed in cleaning the following: Control Strainer; Metering Stem and the Needle Valve Assembly?

Control Strainer: In most cases where control does not function properly, a clogged strainer is usually to blame. Cleaning the strainer is a simple matter. First shut off oil at the tank. Loosen control strainer nut and remove strainer assembly. Immerse screen (not the gasket) in boiling water for approximately 10 minutes, to melt the wax deposits.

Dry strainer thoroughly and shake out the loosened dirt and deposits by lightly tapping or brushing the strainer. Be sure the strainer is thoroughly dry. Clean out the strainer housing with a stiff brush such as a tooth brush. Flush oil line to make sure it is clean. Before replacing strainer, examine gasket and replace it if worn or damaged.

Metering Stem: If extension rod is used, disconnect and remove it from the manual handle of the control. Loosen screws, lift off cover and gasket assembly. Lift manual handle and bracket assembly to the vertical position. Next remove metering stem. The stem is held in position by a fountain-pen type clip or spring.

With folded piece of lint-free paper, clean the stem slot. Do not use a sharp instrument Clean metering stem guide with kerosene or fuel oil. Clean seat with toothpick or paper. In replacing metering stem and spring, be sure that the clip is in the slot on the guide so that the stem can move up and down freely.

Needle Valve Assembly: Lift the entire handle, bracket and float assembly out of the control body. Remove inlet needle valve and wipe clean with lint-free paper. Do not change needle setting by turning square nut. Flush out needle guide with kerosene and clean seat with toothpick. To clean out body of control, use syringe to remove oil remaining in control or take control off and dump. Wipe out bottom of control.

Question: What is the proper operation of the oil control when converted from mechanical to electricity?

After the oil control has been properly wired and the heating device is already in operation, it is only necessary to set the thermostat to desired temperature.

If a new installation, the following steps are suggested for putting the heating unit into thermostatic operation: (1) Set the thermostat. The desired temperature will be maintained within the room in which the instrument is located, but do not expect the thermostat or any other similar instrument to maintain the same temperature in some remote room, if air circulation is insufficient. (2) Turn on the oil supply at the tank shutoff valve. (3) Rotate manual latch until it drops into depression. (4) Ignite burner according to general operation instruction of burner manufacturer. (5) To shut off heater, turn manual regulator to OFF. . . .

NOTE: In case of current interruption, control goes to pilot operation automatically. By lifting and turning manual latch on electric top, oil control may be operated manually until current is resumed.

The thermostat provided incorporates a heat anticipator which makes the themrostate more sensitive to room temperature, allowing heat regulator unit to maintain a more uniform temperature. If oil flows were satisfactory when the control was operated manually, no flow adjustment need be made. However, if a heavy or light fuel oil is encountered, holes are provided to readjust the high and low adjustments.

Important—It is very necessary to have the control properly synchronized to insure control of the downward movement of the high fire lever. This prevents the lever from closing the metering stem entirely so that the fire does not fail at pilot position of the electirc top.

Question: How is the oil control calibrated?

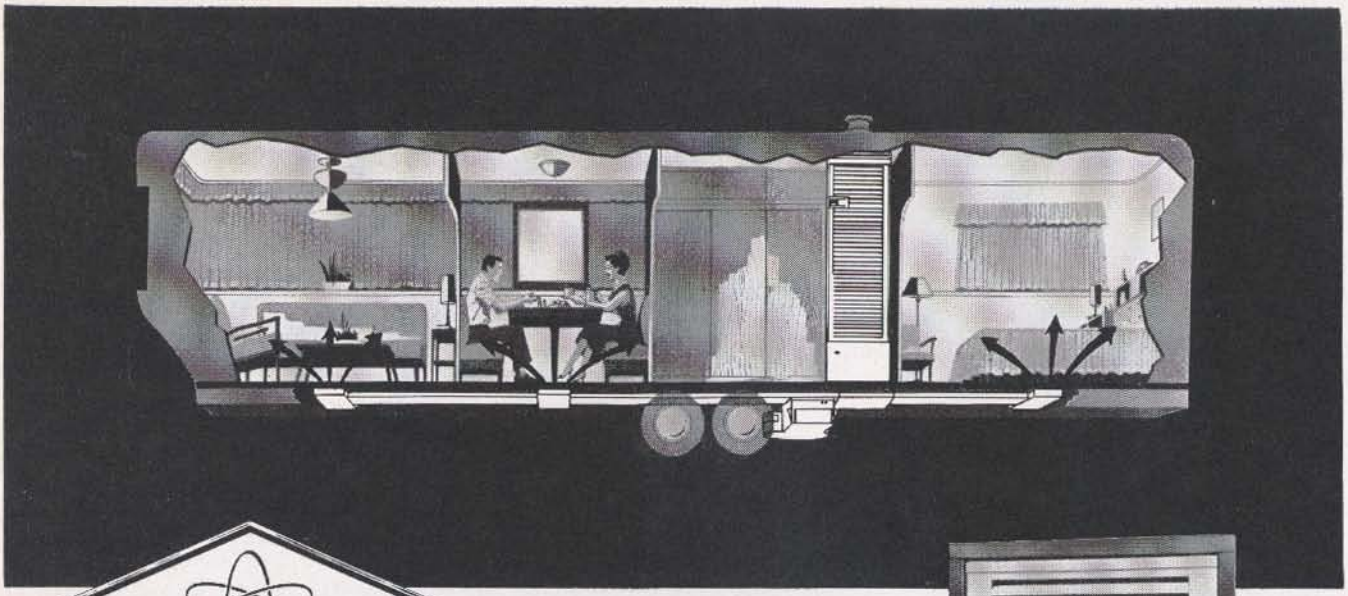
The final and most important job is calibration. The control must be level during this operation; level it end to end and side to side. To be sure the needle valve is open to allow oil flow, turn the control knob to the start position. Then turn the shutoff lever spring adjusting screw clockwise until the needle is held against the seat.

Now turn the shut-off lever spring adjusting screw counter-clockwise one full turn. To set the oil level in the constant level chamber, turn the control knob to the HIGH fire position. In order to adjust the needle valve opening for proper oil level there must be an approximate HIGH flow flowing through the control. To increase the flow of oil, turn the low fire screw clockwise. If the flow of oil is to be decreased, turn screw counter-clockwise. The oil level in the constant level chamber is important. Follow manufacturers instructions.

Oil level is made at the slot in the tope of the needle valve. If low, turn counter-clockwise; if high, turn clockwise. Flow rates are stamped on the nameplates. Check the low fire flow first. Next, back off the synchronizing screw counter-clockwise about 2 turns or until the high fire lever is free. To increase flow, turn low fire adjustment screw clockwise.

Between adjustment, turn knob to OFF and back to START again and allow time for flow to stabilize. When low flow has been properly set turn the synchronizing screw clockwise just enough to eliminate all free movement of the high fire lever.

Next, to check the high fire flow, turn the control knob to the high fire position and check the flow rate. Notice the Underwriters stop bushing around the high fire screw. The lower end of this bushing stops the rise of the high fire lever and metering stem at the maximum flow position approved by Underwriters. DON'T try to change this maximum flow setting. If high fire level does not strike the high fire bushing, high fire flow can be increased by turning the high fire down screw counter-clockwise.



WEATHERITE
HEATING AIR CONDITIONING
T.M.

International's combination unit for central heating and air conditioning gives you year-round living comfort

One underfloor duct system serves both heating and cooling. Designed as an integrated unit, WEATHERITE is built in a closet, conserving valuable space.

International's wonderful WEATHERITE has an amazing capacity and efficiency that makes it capable of heating and cooling the *largest mobile homes now made!*

The great new MAC 1060 furnace gives you 60,000 BTU's of clean, healthful heat, and the UF 2000 air conditioner (2 horsepower) gives you 22,500 BTU's of cool, exhilarating air all summer long. Extensive field tests have proved WEATHERITE in every climate . . . from 25° below zero to 115° above!

Write for complete information. Make sure your mobile home is equipped with WEATHERITE for year-round living comfort!

International

OIL BURNER COMPANY

3800 PARK AVENUE

SAINT LOUIS 10, MISSOURI

Member: MHMA • TCA • MDNA

Heating

By International Oil Burner Co.

Question: What could I do to avoid the many minor adjustments I now make in the field during the first year a mobilehome furnace is in operation?

You'll save yourself from many needless service calls in that first year of operation if you'll give the mobilehome furnace a thorough going over before it even leaves your sales lot. A few minor adjustments before your customer takes possession of the mobilehome will save you from major repairs after the furnace is put in operation. Check the fuel supply lines and oil control valve. Make sure that the duct work, combustion air intake and smoke pipe are correctly installed, with an airtight fit at all joints.

Fire the furnace and allow it to operate through one complete cycle so that you can see if the thermostat electric top, oil control valve, air circulator speed controls and limit controls are working properly. If you do this, your service calls should be limited to a few unavoidable repairs on rare occasions and your customers will be more pleased with their mobilehomes *and* with their mobilehome dealer.

Question: If I am servicing a mobilehome furnace which seems to be stuck on "high" or "low" fire, how can I make a positive check?

If the furnace constantly operates on "high" fire, make the following checks. Remove the two wires from your oil control valve electric top. If the furnace returns to "pilot" operation, the electric top is not defective and you may re-connect the wires. If the furnace stays on "high" fire, there is a defective electric top and it should be replaced.

Next, disconect the wires at the thermostat. If the furnace remains on "high" fire, there is a short in the thermostat wires which must be corrected. If the furnace returns to "pilot" fire when you remove the thermostat wires, the electric top and wires are in good condition and the trouble is in the wall thermostat. If the furnace is always on "pilot" fire, check for broken wiring, defective electric top or defective thermostat. Check the electric top by bridging the gap between the wire terminals on the electric top with a short piece of wire. If this causes the furnace to switch to "high" fire, the electric top is in good condition.

Check the thermostat-to-electric-top wiring by disconnecting the wires at the thermostat. Connect the exposed ends of these wires. If the furnace does not leave "pilot" fire, one of the thermostat wires is broken. Dirty contact points in the thermostat will also cause your furnace to stay on "low" fire. Correct this by removing the thermostat cover and drawing a piece of lint-free paper (an ordinary business card will do) between the contacts. If this does not eliminate your trouble, repair or replace the thermostat.

Question: My customers frequently ask why their heat registers are provided with adjustable dampers. They want to know why it wouldn't be better to have the registers wide open so that they would get the most heat possible from their furnaces.

Your customers would find that their mobilehomes were heated unevenly if they followed this practice. If all the registers were wide open, the rooms near the furnace would get most of the heat, since the heat had less distance to travel. Therefore, it is advisable to adjust the register dampers so that all the rooms receive equal heat.

When the proper balance is obtained, it is best not to make changes in individual registers. Changing one register will alter the air distribution balance of the entire heating system. It is permissible, however, to close off the bedroom registers at night if the registers are returned to their original positions for the balance of the day.

Question: Several of my customers have recently been troubled by water and rust in their fuel tank and lines. How did this water get into the tanks, and how can you prevent it?

..Your customers could probably have avoided this trouble if they had kept their fuel storage tanks full during the summer. If the storage tanks are constructed properly, water can get in the tanks only by condensation. Condensation takes place in the summer when the tank air space—all space in the tank not occupied by fuel oil—fills with moisture-laden warm air during the day. This air is cooled during the evening and the moisture condenses on the walls of the tank. This rusts the tank walls, causes sludge in the fuel lines and oil control valve, and in general prevents normal operation of the fuel supply system. All this can be avoided if your customers will take the simple precaution of filling their fuel storage tanks after the heating season is over and keeping them full all summer.

Question: Why do most furnace manufactures recommend that their mobilehome furnaces be used with No. 1 fuel oil only?

Mobilehome furnaces are specifically designed to burn No. 1 fuel oil. Fuel oil does not burn in the furnace as a liquid. It must first be vaporized by the heat generated in the burner. No. 1 fuel oil vaporizes at a temperature of 625° F. This temperature is acceptable for mobilehome furnaces.

Heavier grade—No. 2 fuel oil—requires much higher temperatures to vaporize completely. The mobilehome furnace will not fully vaporize this fuel. Only part of the fuel is vaporized and burned; the rest remains in the furnace burner pot as a gummy residue. This residue prevents the furnace from heating properly and results in loss of efficiency and frequent service calls.

the **UNITED STATES PATENT OFFICE**

recognized the unique features of

JALOUSIES of OHIO

FROST-FREE
CONDENSATION-FREE
JALOUSIE WINDOW

and issued U.S. Patent No.
2,873,827 February 17, 1959.

Jalousies of Ohio Company, Dayton, Ohio

Manufacturers of windows for the mobile home industry.

Jesse Philips, *President*

Lester Dunn, *Vice President Sales Manager*

Window Installation and Maintenance

By Jalousies of Ohio

Each winter more and more home owners are vitally interested in the problem of window condensation.

Strange as it seems, the growing condensation problems of the nation are caused by progress. Many of the problems of window condensation are caused by the "tight" modern mobilehomes which are much easier to heat, and also the widespread use of several labor-saving appliances that make life easier than it used to be.

The real condensation villain is invisible. It's water vapor. The best—usually the only way—to prevent this trouble is to get rid of excess water vapor.

What is humidity? Humidity, water vapor, moisture, steam, they're all the same. They are all one form of water which is carried by warm air. This moisture in the warm air tries to flow toward drier air and mix with it. This is referred to as "vapor pressure" which can force moisture through some materials such as wood, plaster, brick and cement. Some materials, however, have a tendency to stop this water vapor; for instance, glass, aluminum, some varnishes, and vapor-seal insulation.

Excessive moisture is partly due to more washing, more showers and bathing, more appliances, and unvented gas burners. Here is an illustration of the importance of the proper use of roof and side-wall vents: cooking for a family of four adds 4½ lbs. of moisture per day; each shower, ½ lb.; weekly laundry, 30 lbs.; human occupancy, 6 to 8 lbs. per day, etc. It is quite possible that an average family of three or four can easily release 150 lbs., or some 18 gallons of water per week in the home.

All of this moisture must eventually escape.

Most authorities agree that any inside relative humidity higher than 40 per cent is undesirable in winter. This humidity is based on an average inside temperature of 70° F. For higher inside temperature, lower humidities are required.

How to Reduce Humidity

1. Controlling sources of humidity. For instance, venting all gas burners, clothes dryers, etc., to the outdoors. Use of kitchen and bathroom exhaust fans.

2. Winter ventilation. Outside air usually contains less water vapor; it will "dilute" the humidity of inside air. This is where the use of roof vents and the "monitor" or vent windows is very important.

3. Heat. The process of heating your mobilehome will reduce the relative humidity—providing it's dry heat. It is very important that the proper amount of outside air is available to the heating unit.

4. Installation of storm windows. A dead air space is one of the best forms of insulation. The purpose of a storm window is to provide an insulating barrier between the outer frame and glass, and the inside frame and glass. This will keep the warm, moisture-laden air from coming in contact with a cold surface, which causes condensation to form. Also, we must not overlook the effectiveness of a storm window in preventing a large percent of heat loss which has been found to run as high as 50 percent through single glass.

The principle of a frost—or condensation—free window is to separate the outer metal frame from the inside frame. If this is designed and engineered correctly, the frost or cold will not be conducted to the inside frame.

Summary of Methods to Correct Condensation Problems

The basic principle of reducing window condensation is simple. When excessive condensation forms on the windows it means that the humidity is too high in your mobilehome. The windows are not always to blame, for in the moisture content of the inside air lies both the cause and the cure.

1. Install the proper storm windows.

2. Recognize that the ONLY way to stop condensation is to reduce the amount of moisture in the air in your mobilehome.

3. Be sure your mobilehome is equipped with the necessary ventilating equipment, such as kitchen and bathroom exhaust fans, roof and side vents, etc.

4. In winter provide more ways for inside air to get out—for dry outside air to get in—use the vents.

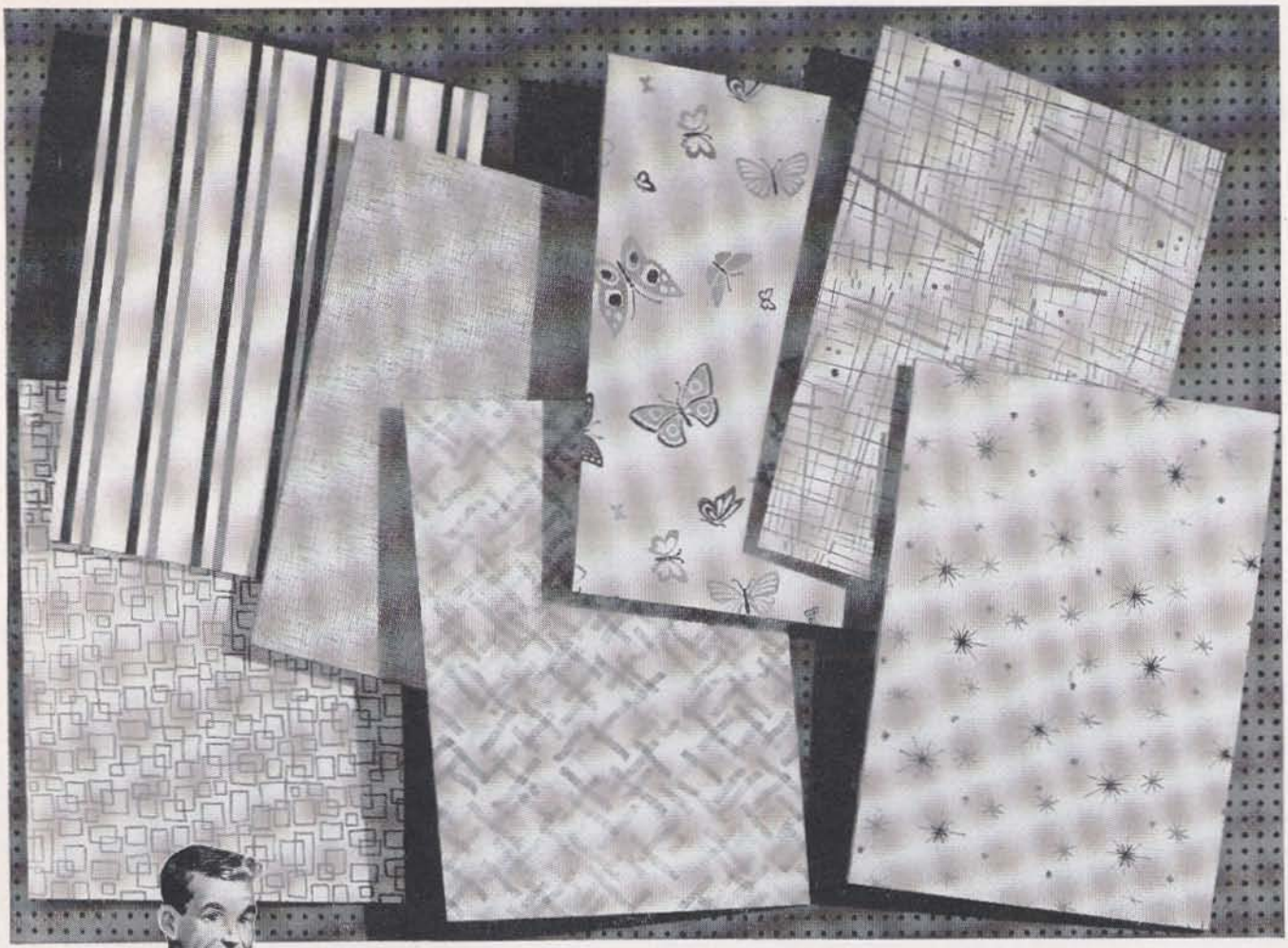
5. Be willing to try living in lower humidities. You will probably find it comfortable.

Improper Sealing of Windows

The improper sealing of jalousie and awning type windows is generally caused by faulty installation. The first step is to locate the place where the frames are not sealing. Working from the outside of the mobilehome, use a straight edge to determine if the frames have been distorted. This may be caused by pulling the mounting screws too tight, or an uneven exterior surface. If the flange mounting screws have been inserted at an angle this will cause the frame to bow. On a jalousie window this will cause the glass retainer clips to rub against the jamb, or if the jamb is bowed outward, the glass will be loose.

The remedy for a distorted outer frame is to loosen the mounting screws and insert a shim between the window frame and the exterior surface. If the mounting screws are installed at an angle they should be removed and replaced in their proper position.

If the glass louvers do not close to form the glass on glass seal, the retaining glass clips may be striking the jamb, or one of the louvers may not be properly secured in the glass clip. The seal between the window frames of the exterior surface should be checked periodically. Also, if the windows have a drip cap or rain shield mounted above the window, check this for a proper seal. If it is necessary to apply additional sealant, use a small hand caulking gun and an aluminum or similar liquid sealer.



Nationally advertised Marlite in beautiful decorator patterns adds sales appeal to mobile homes

Any one of the many customer-winning Marlite patterns will add more beauty and sales appeal to walls, ceilings, room dividers, doors, vanity and counter tops, back splashes. And for good reason, too. Their soilproof melamine plastic finish provides remarkable resistance to heat, moisture, grime and stains. Mobile home interiors paneled in Marlite stay like new for years with an occasional damp cloth wiping.

Of great importance to you, Marlite panels are *pre-expanded;* stabilized to control expansion and contraction. Patterns and colors produced especially for mobile homes by the oldest and largest manufacturer of prefinished panels assure you of highest quality in material and design. Nationally-advertised Marlite paneling insures customer satisfaction. Your customers know Marlite's reputation for durable beauty and easy maintenance. Insist on Marlite paneling for your mobile home interiors—it's a national brand name that acts as an added salesman for you. For complete information write Marlite Division of Masonite Corporation, Dept. 259, Dover, Ohio.

For beautiful soilproof interiors nothing measures up to...

Marlite®

plastic-finished paneling

ANOTHER QUALITY PRODUCT OF MASONITE® RESEARCH

5037

Wall Paneling

By Marsh Wall Products

Question: Where can predecorated hardboard panels be used in servicing mobilehomes?

The most popular use of such panels at present is for walls and ceilings of kitchen and bath areas. Here, panels which have a durable baked plastic finish are ideal because they stand up against moisture, wear, soap, cosmetics and various household materials that may harm ordinary finishes. The smooth, hard surface of the paneling is easily wiped clean with a damp sudsy cloth.

Question: Where else can predecorated hardboard be used?

Since it is available in authentic reproductions of select wood grains, imported marbels and other design patterns as well as handsome plain colors, this paneling can be used equally effectively for living room and bedroom area walls and ceilings. Its versatility is enhanced by availability in soft-lustre as well as high-gloss finish.

Still other uses are as low-cost counter tops, drawer facings, drawer bottoms and for surfaces of other built-in furniture, such as vanities, dressers and bed headboards.

As a matter of fact, in view of the wide selection of colors, patterns and sizes and unusual service ability, the use of predecorated hardboard is virtually unlimited wherever colorful, permanent surfaces are desired.

Question: What causes some predecorated hardboard (sometimes referred to as tileboard) to warp and buckle?

The hardboard base materials used as backing are wood products which normally contain a certain moisture content. During baking processes, the hardboard loses moisture and may contract slightly. Upon installation, moisture penetrating the backs of the panels cause them to expand and warp.

Question: How can this warping condition be prevented?

The panels must be pre-expanded before installation. One supplier does pre-expand and stabilize the panels at the factory.

Question: What can a dealer do to repair warped panels?

The panels should be removed and reapplied. However, before reapplying, the panels should be wet down by brushing water on the backs and stacking back to back approximately 12 hours. Then they should be trimmed slightly and reapplied without forcing in corners, mouldings, etc.

Question: How are these panels installed?

Predecorated hardboard can be applied directly to existing studs in coaches. A wallboard adhesive should be applied to the backs of the panels where they will meet the studs or crossbraces. Nails and pins should be used to secure the panels.

To avoid warping and buckling from normal expansion and contraction, a slight space (about 1/16") should be allowed in the moulding channels where panels join. A further safeguard is the selection of a hardboard paneling that has been especially factory-treated for the high-humidity conditions often arising in mobilehomes.

Question: Should new mouldings be used?

Any existing mouldings and metal trim should be removed before new paneling is installed. If the old mouldings and trim are still in useable condition and are suited to the hardboard's dimensions, they can be reapplied. Paneling should not be forced into mouldings.

New aluminum mouldings, designed specifically for the paneling's requirements and predecorated in colors and patterns to match or harmonize with the paneling, are available for a proper and finished-looking installation. Such mouldings normally are nailed, but may be applied with adhesive. In bath areas, metal division strips designed for the paneling should be used and joints sealed and caulked. In living areas, batten strips may be used to conceal joints.

Question: What special tips are indicated for applications other than walls and ceilings?

To apply the plastic-surfaced hardboard paneling for counter tops, the old surface material should be removed before bonding the new material in place. Ready-made sink rims and counter nosings are available for completing counter installations. For vanities, the panels can be applied to wood framing with adhesive to eliminate nailing through the surface of the paneling. For tops of new vanities or dressers, a piece of 3/4" thick plywood or other board material should be provided as a solid, sturdy base for bonding the predecorated hardboard. For drawer facings and drawer bottoms, the paneling can be used much like wood and regular hardboards.

Question: What are the chief production advantages to the dealer in using predecorated hardboard paneling?

This paneling has various qualities that make for fast, economical coach remodelings. Elimination of costly finishing operations is a chief benefit. Predecorated hardboard comes completely prefinished at the factory, a feature that saves time, materials and labor. They are easily cut and worked with regular carpenter's tools, hand or powered, for professional-looking installations.

Question: What sales advantage does predecorated hardboard offer the dealer?

Distinctive decorative treatments with wood grains, marble patterns, other designs or plain colors create interiors that appeal to customers on sight. Beyond this "self-selling" aspect of paneling, customers are impressed when the salesman mentions a baked plastic surface and the easy upkeep it provides. With only occasional washing and with no waxing or refinishing, the customer is assured of minimum care and long-lasting beauty.

Our Plumbing CERTIFICATE

your insurance against plumbing problems

Our plumbing is laboratory tested and expertly engineered to provide an efficient, smoothly functioning system that meets all normal requirements proved under hydrostatic tests.

There are no problems when you use our plumbing. It's guaranteed!

Also—
Our warranty label under your kitchen sink is your customer's further assurance that he is buying a good product.

Members: MHMA • MDNA

MOBILEHOME EQUIPMENT CO.

Formerly Chicago Trailer Equipment Co.

4430 So. Tripp Avenue • Chicago 32, Illinois

Plumbing and Sanitation

By Mobilehome Equipment Co.

Question: Why does dirty water back up into my bathtub?

Because of the faulty design that does not permit continuous flow of waste water from one of the other fixtures which are on a higher level to flow directly into the main 3" waste and drain under the water closet (toilet).

Question: Then why don't the manufacturers use a separate set of piping for the tub?

This is not necessary for, with proper consideration of the flow from other fixtures, it can be designed to flow quite satisfactorily. And, a better answer might be that adequate testing of the plumbing system before installing it in the coaches was not completed.

Question: Does the location of the vent affect the flow of water directly out of the system without affecting backflow into the tub?

Definitely it does. Without any vent at all there is likely to be a vacuum created which may do the opposite—suck the water seal completely out of the other traps, not only in the tub but in the other fixtures as well.

Question: What is the best method of testing the drainage system for proper performance?

Fill both wells of the kitchen sink and also the lavatory. Connect the water closet and fill the tank. Be sure that the closet bowl and the trap in the bowl are filled as well as the trap and the tub. Then go back to the kitchen sink and remove both stoppers, permitting full flow. Now walk directly back to the lavatory, pull the stopper in it and immediately flush the water closet.

If the tub trap fluctuates in level slightly there is quite a good balance in the drainage system. But if there is a gurgle or bubbling in this trap there is need for correction of the vent; obviously, if water flows back into the tub at all, the system is improperly designed. Also if the water is drawn out of the tub trap, indicated by a lower water level, the system is entirely unsatisfactory, thus defeating the purposes of water seal and the trap itself. If all is well in the tub, the water seal remaining in the lavatory and the water seal remaining in the kitchen sink requires checking. If there is a minimum water seal left of 1 inch, that is, if the level of the water is 1 inch higher than the lower bend in the trapway, your plumbing system is properly drained.

Question: How is it possible for a manufacturer to determine whether he has a good system?

There is obviously a systematic approach to any questionable subject and it is entirely possible for every manufacturer to have his plumbing system checked so that he is secure enough to certify its function.

Question: Is there any plumbing code for mobilehomes?

There is, but the requirements of the code are so irregular and unreasonable that it is impractical at this time to conform to the recommended code published by the American Standards Association. The reason is that a mobilehome can offer very good plumbing and supply it with materials far more economical and efficient than those required in the code.

Question: Has there ever been penalties and restrictions imposed because of plumbing in the mobilehome?

Yes there has. Because of our increasing population in mobilehomes, local plumbing inspectors are becoming evermore wary of the sanitation offered by mobilehomes and mobilehome communities.

Question: Is there ever going to be a code by which the manufacturers can conform?

Yes, we are rapidly approaching it. The American Society of Sanitary Engineering, an organization of plumbing inspectors from the United States and Canada, has been looking into this matter for several years and, with further cooperation from the manufacturers, will adjust the present standards and with this agreement the final hurdle will be made so that we in this industry may then free ourselves of the fear of the local plumbing inspector.

Question: How does the food waste grinder affect the plumbing system in the mobilehome?

It is sometimes quite dangerous because even a good mobilehome plumbing system is designed for the original installation and not for supplementary fixtures. There is likely to be a forcing in the drain system and possibly it will be strong enough, with the use of some food waste disposals, for the waste to pump itself right out through the vent onto the roof of the mobilehome.

Question: Does the food waste disposal harm the sewer or the septic system?

No, it does not. An authority on the subject, and not one of the food waste disposal manufacturers, has indicated that no more than 30% additional load is placed on the sewage treatment plant with the use of the food waste disposal, and an authority on septic tanks claims that a very nominal additional load is placed on the septic tank with the use of the food waste disposer.

Question: Can an automatic clothes washing machine be added to the ordinary plumbing system?

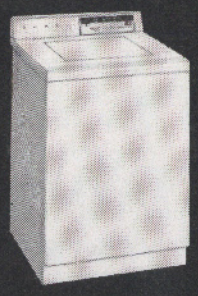
It is not advisable. The drain system is seldom designed to satisfy the rapid flow of a clothes washing device which pumps water at the rate of 25-40 gallons per minute. Water is likely to flow back into the tub or into the kintchen sink. Not only that, the water supply is quite inadequate as most mobilehomes are connected today.

Question: Is the park itself ever at fault?

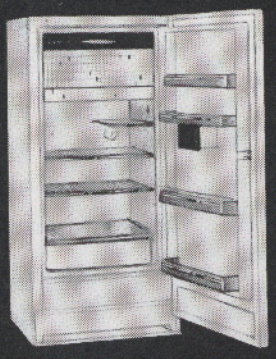
Indeed it is! "Do It Yourself" parks might have been constructed by individuals who were not aware of the problems in construction and the laying of the sewer lines could have been irregular or possibly did not have proper backfill; thus shifts are caused in the soil and the grade of the sewer is maladjusted causing a flow restriction or an air lock.

Want to Sell More Mobile Homes?

Check The Appliances!



Norge Automatic Washer...Dual Cycle...Dispenser Wheel...Wash & Rinse Temp. Selector...Super Rinse.



Norge Refrigerator...11 cu. ft. capacity with Cross-Top Freezer Chest, Double Deep Handidor Storage, Crisper, Chill Tray, Special Freezer Chest Door and Safety Latch.

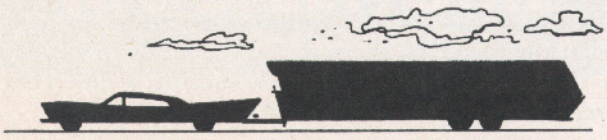
Norge Gas Range complete with Clock-Timer, Deluxe Surface Burners, Ful-Vue Controls, Balanced Heat Oven, Speed Broiler, Range Lamp.

Manufacturers Who Offer the Most Value

INSTALL NORGE!

Here's Why: You can always tell a quality-built mobile home by checking the quality of the appliances built into it at the factory. For it's only reasonable that the people who make the finest mobile homes also install the finest accessories.

That's how you can be sure the mobile home that features Norge Appliances is a better buy. Manufacturers know Norge has a record of performance and dependability unequaled in the industry. It's a fact, Norge Appliances require less service. So, before *you* buy a new mobile home, make it a point to check the appliances. Check for Norge...to be sure you're getting the best buy in mobile homes.



NORGE

NORGE SALES CORPORATION, Subsidiary of Borg-Warner Corporation, Merchandise Mart Plaza, Chicago 54, Illinois. Canada: Addison's Ltd., Toronto. Export Sales, Borg-Warner International, Chicago 3, Illinois.

Refrigeration

By Norge Sales Corp.

Question: What is the proper setting for the cold-control dial?

Generally speaking, the cold control should be set at the mid-position between the coldest and warmest settings. The adjustment is provided so that the user can vary the cabinet temperature to suit individual desires.

Question: What causes a refrigerator to "sweat" in the inside during hot, humid weather?

The general answer to this question is high relative humidity. More specifically, however, condensation, (commonly referred to as "sweating") on the inner surfaces of a refrigerator can be the result of several different factors:

1. Prolonged door openings during periods of high relative humidity of the atmosphere and high room temperature. When moisture laden air strikes a cold surface, the moisture condenses out of the air and collects in the form of droplets in the same manner as "sweat" forms on the outer surface of a glass of ice water on a warm humid day.

2. Too infrequent defrosting of the evaporator. When frost of more than ¼" in thickness is allowed to collect on the evaporator surface, the heat absorbing ability of the evaporator is impaired, due to the insulating effect of the frost. Also, a thick blanket of frost on the evaporator surface will retard air circulation around the evaporator. This results in less moisture being removed from the air in the refrigerator and more condensation will collect on the cool surfaces of the cabinet walls.

3. A poor door seal: If there are even minute openings between the door gasket and the front surface of the cabinet, with the door closed and operating in high relative humidity, the leakage of moisture-laden air into the cabinet will be sufficient to cause "sweating" of the cabinet interior.

Question: How often is it necessary to defrost the refrigerator?

When the frost builds up on the evaporator to a thickness greater than ¼", it is time to defrost. The reason is that frost consists of minute ice crystals in which air is trapped. This air acts as a very effective insulator against heat penetration. Therefore, as the frost builds up on the evaporator the cabinet temperature rises and other complications may enter, such as excessive condensation within the cabinet.

Question: What causes the motor overload protector to trip on occasion at the start of the running cycle?

This tripping of the motor overload protector is generally due to insufficient power of the motor to start the compressor against the imposed load. Some of the causes are:

1. Pulling the service cord from the wall outlet, when the compressor is running, and then attempting to restart the mechanism before the pressures within the system have had time to balance. Usually it requires 5 to 6 minutes time for the gas pressures to balance after the compressor is stopped.

2. The inlet, or electric service wire, to the mobilehome is of insufficient size to carry the load of the appliances being used. At anytime the voltage at the electric wall outlet to the refrigerator drops below 104 volts, tripping of the overload is apt to result at the start of each cycle.

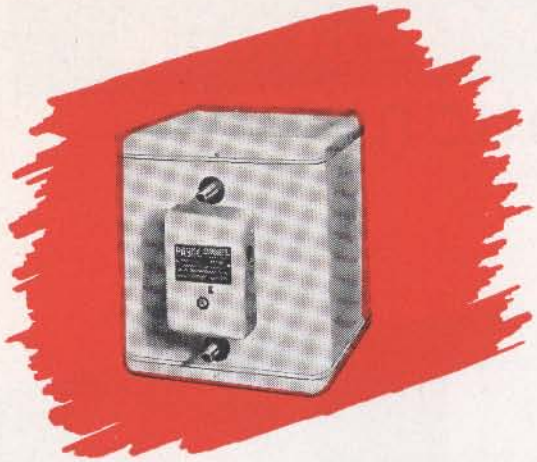
3. Improperly adjusted cold control. If due to a malfunction of the cold control, the "off" time of the refrigerator is less than 6 minutes tripping of the overload is apt to result when the motor compressor attempts to start.

4. Improper air circulation around the cabinet. If the refrigerator is installed into a mobilehome without sufficient air circulation underneath, at the back and at the top, it is possible for the temperature of the motor-compressor and condenser to rise to a point where the overload protector will trip.

5. It is of course possible to have a malfunction in the motor-compressor that would cause the overload protector to trip. A bad relay or the motor overload protector itself could be faulty, causing it to trip. Each case must be carefully checked to determine the exact nature of the difficulty. When replacing inoperative overload protectors always use the manufacturer's recommendations for replacements.

Question: How does a customer obtain service on a refrigerator when difficulties arise?

They only have to refer to the yellow pages of the phone book and call the nearest dealer for the make of refrigerator in question. If the dealer is unable to render service, then, refer to the list of distributors printed on the back of the warranty certificate, which is furnished with each refrigerator. A call to the nearest distributor will assure prompt service.



AUTOMATIC ELECTRIC WATER HEATERS

MODEL	CAPACITY	WATTS	VOLTS	SIZE IN INCHES
123	3½ Gal.	1000	115	12 Sq x 13 H
136	6 Gal.	1000	115	13 Sq x 14½ H

DOUBLE ELEMENT FAST RECOVERY

MODEL	CAPACITY	WATTS	VOLTS	SIZE IN INCHES
412	12 Gal.	1000-2000	115	27 x 13 x 13 H
415	15 Gal.	1000-2000	115	33 x 13 x 13 H
420	20 Gal.	1000-2000	115	41 x 13 x 13 H

Payne's New
Blue-Fired Glass Lining
is available
on all heaters
with a 5 year Guarantee.
Payne's Sturdy Galvanized Tanks
are available
with a 1 year Guarantee.

MODEL	CAPACITY	WATTS	VOLTS	SIZE IN INCHES
126	6½ Gal.	1000	115	12 Sq x 22 H
212	12 Gal.	1000	115	13 Sq x 27 H
320	20 Gal.	1500	115	13 Sq x 41 H

PAYNE PRODUCTS CO.
2450 W STADIUM BLVD.
ANN ARBOR, MICHIGAN

ORIGINATORS OF INVECTION HEATING

Electric Water Heaters

By Payne Products

Question: A customer has complained that his electricity bill is much too high. He has checked everything else and has found nothing wrong. Is his electric water heater to blame?

Look for possible trouble by checking the polarization of the wiring, the pipe "tee" installation, electrical continuity, manual wall switches and low or falling water pressure.

Question: The unit appears to be functioning properly but why doesn't it keep the water hot?

Check the polarization of wiring, the position of the heater and the electrical continuity.

Question: For some reason there is hot water in the cold water line. What's the cause?

Take a look at the pipe "tee" installation, check for high thermostat setting and low or falling water pressure.

Question: Heating elements have burned out in the unit. Why?

Check polarization of wiring, the position of the heater, electrical continuity. Also look for leaks, examine the tank for deformities. Go over the heating elements to see if they are loose.

Question: Why is the tank leaking?

Correct polarization of wiring will remedy this difficulty in nine out of ten cases. If this doesn't correct the problem then a glass-lined tank with correct polarization of wiring will take care of it.

Question: The trouble report states that the heater isn't working properly. Sometimes a guess is made as to the reason; other times the customer doesn't know. What is the trouble?

If the instructions listed below are followed properly, they will reveal and correct almost any trouble.

POLARIZATION OF WIRING—The "hot" wire must always go direct from the source of the electric power to the terminal of the thermostat. The "ground" or "neutral" wire must NEVER be connected directly to the thermostat.

PIPE "TEE" INSTALLATION—The side outlet of the pipe "tee" must always be connected to the cold water inlet of the water heater.

HEATER POSITION—Determine the type of heater involved. If it is a vertical water heater it MUST be installed in a vertical position. If the unit is of the horizontal type it MUST be installed in a horizontal position. Above all, no heater ever should be installed upside down.

ELECTRICAL CONTINUITY—First take a look at the electric current available. Make certain that it is of the proper voltage needed by the heater. Then check to see that the proper amount of current at the correct voltage flows while the unit is heating. Be sure the current flows through the heating element; if it doesn't, make an examination to see if the heating element needs replacing. If the current flows through the heating element but does not go through the heating element and the thermostat, then the thermostat may be in need of adjustment or in some cases, replacement. If current flows through the heating element and the thermostat but not through the heating element, thermostat and the hi-limit switch, the hi-limit switch may need resetting or replacement.

MANUAL WALL SWITCHES—No automatic water heater ever should be turned on and off by means of a manual switch. If this is the way the unit operates, then there is something radically wrong with the installation. The manual switch is to be used ONLY when the heater is drained and left out of service for lengthy periods of time.

NOTES

35,000 FACTORY-TRAINED SPECIALISTS

READY TO SERVICE PHILCO *IN MOBILE HOMES!*

PHILCO FITS!

Now at last, offer your customers a brand-new sales feature in a mobile home... *Both* automatic washer and dryer in the space of a washer alone. The new Philco-Bendix "Duomatic" Combination Washer-Dryer is only 26¾" wide. It is designed so that 95% of all service can be accomplished with no need to move the unit away from the wall.

PHILCO PREDICTA TV

Television for the "space" age!

Another outstanding sales feature from Philco. For the first time in history, the picture can be installed wherever you want it. The separate tube may be mounted on console, table top, on wall or completely built-in—with the controls in a stationary chair-side cabinet. Allows new luxury in mobile homes... available *only* from Philco.

SERVICE-PROTECTED BY

PHILCO
Factory-Supervised
Service

FREE SERVICE FOR MOBILE HOME OWNERS

Over 35,000 independent professional technicians, members of "Philco Factory-Supervised Service", a Philco-sponsored nationwide organization, are ready to service Philco products sold to manufacturers of mobile homes. In addition to the protection offered by the Philco Warranty on parts, Philco Corporation guarantees free service labor to the mobile home owner during the warranty period of the specific parts involved.

For Additional Information Write to
PHILCO CORPORATION
Special Sales Department, Philadelphia 34, Pa.

MDNA

Look Ahead... and you'll choose PHILCO®

Laundry Equipment

By Philco Corp.

In order to assure satisfactory operating results from an electric combination washer-dryer, there are a number of important questions to be considered concerning the installation and instructions to the customer.

Question: What kind of support is needed?

The combination washer-dryer must be installed on a **firm and stable** floor. A weak or unstable floor may cause excessive vibration—in such cases, the serviceman must be in a position to suggest corrective measures that should be taken to provide the necessary stability.

Question: What are the electrical requirements?

All electric combination washer-dryers are designed to operate on a 120-240 volt, 3-wire service. This must be brought to the junction box of the machine and should be connected in accordance with local and national electrical codes.

The unit must be operated on a separate circuit—remember, overloaded circuits cause voltage drop—with both hot lines protected with adequate amperage fuses as recommended by the manufacturer. If **plug type** fuses are used, the fuse receptacle must be made of brass rather than aluminum. Electrical connections must be made by an approved electrician (in accordance with local and national codes).

Question: What kind of wiring is needed?

A combination draws a heavy wattage load, and voltage drop in the line is a serious handicap to efficient operation. Therefore, the wiring should always be enough to deliver the necessary current with no appreciable voltage drop. In no instance should wire smaller than a No. 10 size be used. Recommended wire sizes are as follows: 0 to 60 ft., No. 10 wire—60 to 100 ft., No. 8 wire—and over 100 ft., No. 6 wire.

In some areas it is permissable to use a 30-amp., 3-wire appliance cord with a suitable receptacle. In other cases, conduit or iron cable may be used. Again, all wiring must be done in accordance with local and national codes, by qualified personnel. It is of upmost importance that all combination washer installations be properly grounded, and, in accordance with local and national codes.

Question: What are the plumbing requirements?

For the hot and cold water required, two threaded "garden hose type" faucets—one for the hot and the other for the cold water supply—should be within the length of the hoses supplied by the specific washer-dryer manufacturer.

Since a combination washer-dryer discharges water at a fast rate (to insure proper rinsing), an adequate drain must be provided. Standpipes when used should be at least 2 inches in diameter and should extend above the drain trap at least 20 inches. In some cases it may be necessary to drain into a sink; this is satisfactory if the drain water is carried off fast enough. Drain facilities should be within the reach of the drain hose supplied by the manufacturer.

Question: What installation checks should be made?

1. Check all the hose connections and gasket areas for water leaks; also inspect the spray nozzle during the "fill" period to be sure there is no "side spray" or water leak.
2. Check the drain to make sure that the drain water is carried off fast enough.
3. Inspect all electrical connections.
4. Check the combination for stability—make sure that it is resting on all four leveling legs and that the **locknuts** are **tightened.** Also check to be sure that the machine is level.
5. Run the washer-dryer combination through all its cycles and observe if all the operations are correct and all the controls and operating parts are functioning properly.

Question: What instructions should the customer receive?

Remember, the installation is not complete until the customer thoroughly understands the operation and the care of the product. The instructions are usually spelled out in great detail in the Users' Booklet which is normally supplied by the manufacturer with each combination washer-dryer. However, this is not sufficient in many cases and should be elaborated on by the serviceman or the home demonstrator.

It is important that the following points be stressed: the importance of filling out the warranty registration card and mailing it to the manufacturer promptly. This is important to assure future service and parts, if needed. Explain the terms under which the washer is warranted, service policy, etc. As for operating instructions, advise the customers of the proper load limit, the proper amount of soap or detergent, the use of bleaches and rinse conditioners, the distribution of wash in the wash tub, the function of the various "wash" controls and "dry" controls. It is also suggested that the circuit breaker location be pointed out to the customer and its function completely explained.

All of the elements discussed here are important for very good reasons. First of all, the number of problems that could arise are kept at a minimum when the product is properly installed and properly understood. And, the all-important customer will get a maximum performance and satisfaction from the product.

from

SILVERCOTE®

foremost name in mobilehome insulation

NEW SILVERCEL PINK BATTS

. . . the blanket
of comfort
for mobilehomes

Silvercote makes another contribution to the comfort of Mobile Home owners, with new Silvercel *Pink Batts*—a highly efficient combination of glass-fiber and Silvercote reflective surface. New Silvercel Batts are moisture-resistant, vermin-proof and odorless . . . will not sag, shake down, or dust in transit.

Also, there are three other types of Silvercote insulation. *Silvercote Simplex*—one coat of Kraft paper, with a coating of polished aluminum on both sides. *Silvercote Duplex*—two sheets of Kraft paper, coated with polished aluminum, bonded together with asphalt. *Silvercote Reflective Sheathing Liner*—one sheet of heavy Kraft paper coated with polished aluminum on one side. Used with new Silvercel Pink Batts, these keep mobilehomes warmer in winter, as much as 15° cooler in summer.

Always insist on Silvercote insulating materials—that make mobilehomes more liveable—and more saleable! T. M. Reg. U. S. Pat. Off.

SILVERCOTE

PRODUCTS, INC.

161 E. ERIE STREET · CHICAGO 11, ILLINOIS

Insulation

By Silvercote Products

Question: What type of insulation has proved the most effective for use in mobilehomes?

Generally speaking, the reflective insulations have proved the best. It is much more widely used than any other single type.

Question: Is all reflective insulation alike?

Not at all. There are many variations within this one classification. One leading manufacturer of reflective insulations, for example, manufacturers no less than three different types. This firm recently came out with a new glass fiber type.

Question: What are the characteristics and advantages of the reflective insulations?

All are surprisingly lightweight, easy to handle, and easy to install. Any worker who can handle a hammer or a stapler can easily install reflective insulations in a mobilehome. The material is simply rolled out to the desired length, cut with a knife or scissors and then nailed or stapled to the floor, wall or ceiling to be insulated.

These reflective insulations are noncorrosive, mold-resistant, and will not interfere with radio or TV reception. Yet the cost is no more than a few pennies per square foot.

The basic ingredient is a high-quality grade of heavy kraft paper which has been coated with aluminum particles. These particles are bonded to the kraft base with a waterproof adhesive. Then, as the particles are buffed and polished, excess adhesive is removed, leaving a smooth, highly reflective surface that repels radiant heat.

Question: What are the individual differences among reflective insulations?

One type is a single sheet of kraft paper with a coating of polished aluminum particles on both sides. It is a "breather" sheet, meaning that the sheet is porous enough to permit the freeing of moisture vapor in the walls. It can be used between the inner and outer skins of the mobilhome, or in addition to glass-fibre type insulation in the ceilings. Properly installed, it can make a mobilehome up to 15% cooler during hot weather.

Another type consists of two sheets of kraft paper, coated with polished aluminum particles and bonded together with asphalt. It has specially reinforced nailing and stapling areas to prevent ripping or tearing. Duplex is widely recognized as an efficient vapor barrier. It can be installed wherever a single sheet can be used. In addition, the installation of the double sheet in mobilehome floors has proved to be a valuable vapor barrier, protecting the floors from harmful mildew and moisture damage.

Another reflective sheathing liner is one sheet of heavy kraft paper, coated with polished aluminum particles on one side. It is a permeable sheet, thus allowing trapped moisture vapor to escape. This insulation meets all FHA requirements for "breather" type sheathing for regular houses, as well as proving equally effective when installed in mobilehomes.

Question: What are the features of the other type of insulation?

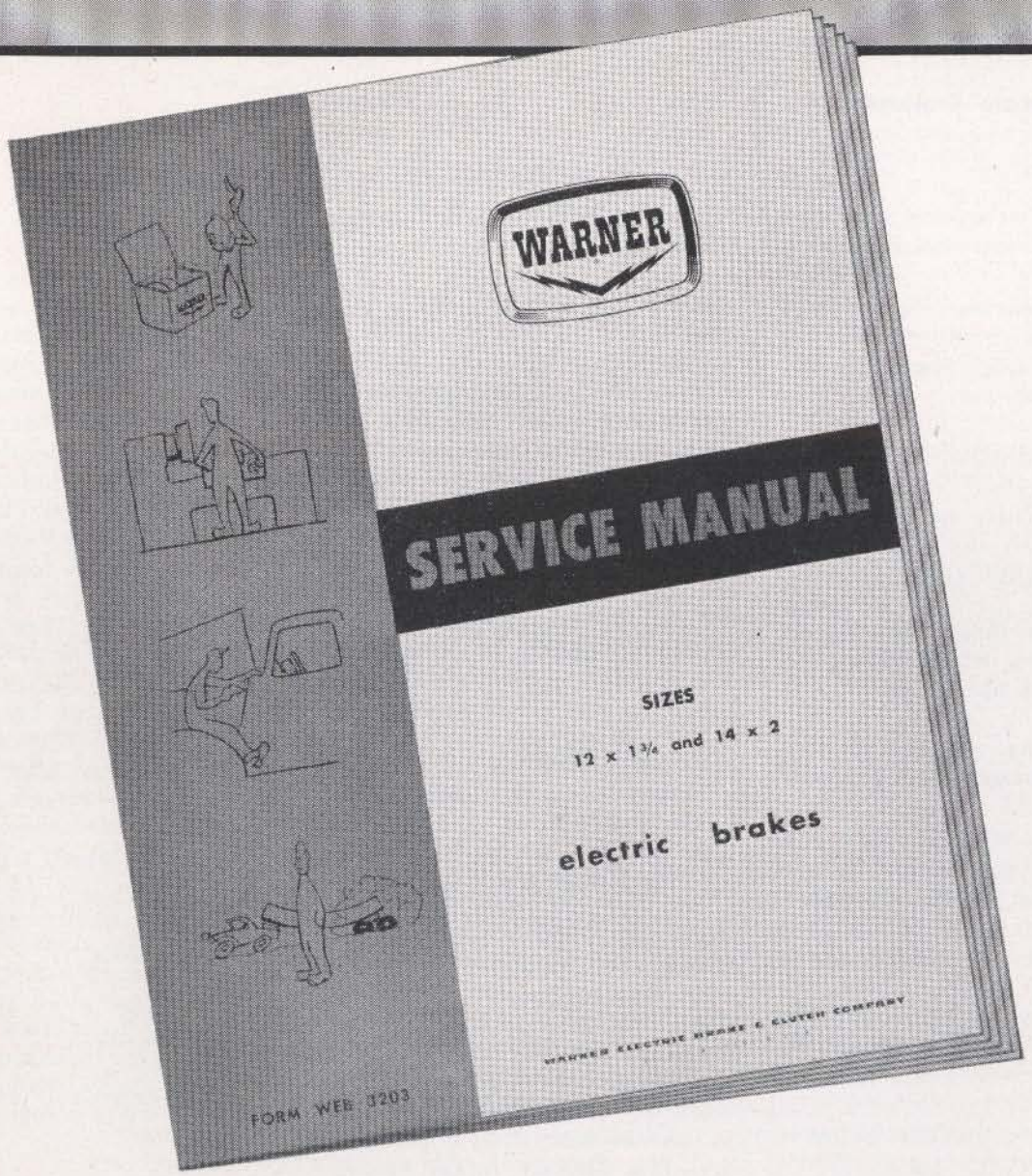
It is called "pink batts" and marks another major step forward in mobilehome insulation. During the past few years, the manufacturer has observed that a combination of glass fiber insulation and reflective insulation proves to be the most lastingly effective mobilehome insulation. It is particularly desirable, for example, in mobilehomes in which air conditioning has been installed. After considerable research, the manufacturer developed new pink batts to be used along with its reflective types. Because they are spun from glass fiber, they are moisture resistant, odorless, vermin-proof and will not shake down, dust or sag due to vibration in transit.

These new batts control heat flow up and down and all around in any kind of weather. Their conductance valve equals 0.26 at 75° F mean temperature, making them twice as effective as many other fiber insulations used in the mobilehome industry. Pink batts are available in sizes custom-cut to fit between studs. This, of course, makes them remarkably easy to install, as well as holding down manufacturing costs. In mobilehomes which have been insulated with these new type batts along with reflective insulation, inside temperatures have been reduced as much as 10° even on the hottest days. This means, too, that heat is retained more effectively in cold weather, reducing heating costs and adding to the owners' living comfort.

Question: Is reflective insulation long-lasting?

Yes. Even when it has been necessary to remove panels from a mobilehome for repair or replacement, this kind of insulation found inside has been in "good-as-new" condition. These insulating products will last as long as the mobilehome itself. Small wonder that more and more mobilehome dealers insist on mobilehomes insulated throughout with reflective insulation.

Carefreedom begins with trailer brakes they can trust



Do you have this newest Warner Electric Brake Service Manual?... complete instructions for installation, maintenance, and repair of Warner electric brakes and controllers. If you don't have Service Manual 3203, write today.

WARNER

ELECTRIC BRAKES

WARNER ELECTRIC BRAKE & CLUTCH CO., BELOIT, WISCONSIN

Electric Brakes

By Warner Electric

Question: How does an electric brake operate?

Basically, the electric brake is the same as any other drum-type wheel brake. That is, the actual braking is accomplished by forcing brake shoes or a brake band, lined with brake lining, against a brake drum. The primary difference then is the method by which the brake band is forced against the brake drum.

In the electric brake, a magnet and armature, which is actuated by an electric current supplied from the battery and/or generator of the towing vehicle, is used to force the brake band against the brake drum. The armature is, essentially, a metal disc which is bolted to the brake drum and rotates with the wheel.

The magnet is, to say, an annular horseshoe, containing a copper coil, and becomes a magnet only when an electric current is passed through the coil. It is mounted on the brake spider and limited to a small amount of rotation in either direction. When the magnet coil is energized, the magnet and armature are magnetically coupled. Since the armature is rotating with the wheel, it tends to rotate the magnet with it. The rotation of the magnet, which bears either directly against the band end or indirectly through a cam, forces the brake band against the brake drum. The amount of force applied to the band end is controlled by the amount of current which is metered to the magnet coil by the electril brake controller; just as the amount of force applied to the brake shoes in an automobile brake is controlled by the force with which we press on the brake pedal.

Question: What type of electric brake control is recommended?

All wheel brakes are designed to stop only that portion of the total vehicle weight carried by the wheel within which it is located. Therefore, it is essential that a brake be mounted in each wheel and that all brakes on both towing and trailing vehicles be used on all normal brake applications. Thus, a hydraulic-electric controller, which will apply electric trailer brakes whenever the brake pedal on the towing vehicle is depressed, would be desirable.

In the past, hand-operated electric brake controllers have served well, but it required that the driver remove a hand from the steering wheel in order to apply both car and trailer brakes together. The hand controller is, however, still a desirable feature since it affords an emergency trailer brake application in the event of brake failure on the towing vehicle and is also beneficial in negotiating curves and straightening the train on slippery surfaces.

Question: Can electric brakes be used for parking?

The electric brake can be used for parking if these precautions are observed. First, the brake controller should be full on or a simple on-off switch which by-passes the controller should be used. This is to prevent damage to the resistance element of the electric brake controller. Second, no unit should be parked using only the electric brakes for an extended period where there is danger of draining the battery and thus releasing the brakes. It is better to chock the wheels.

Question: How should my mobilehome be wired with a twelve-volt system and will twelve volts damage the brakes?

Since all electric brakes are designed to operate at peak efficiency on six volts, the problem is what to do with a twelve volt system has become more and more prominent. It is also true that the mobilehome manufacturer is faced with a wiring problem since he does not know the eventual owner. Thus, nearly all mobilehomes have the brakes wired in parallel so that they may be towed by vehicles having either six or twelve volt systems.

One of the accepted methods used on twelve volt systems is to use an external resistor on the towing vehicle in series with the brake controller to reduce the voltage to a maximum of six volts at the brakes. This resistor will be different for single, tandem and triple axle trailers. It also means that the mobilehome may be towed by any vehicle.

On multiple axle mobilehomes which are connected to twelve volt system, the brakes on each axle may be connected in series with the axles connected in parallel. With this method of coach wiring no external resistor is necessary; but the unit cannot be towed with a six volt system. On light, single axle mobilehomes, it is still considered best to wire the brakes in parallel and use an external resistor to maintain controllability.

Tapping a twelve volt battery for six volts would destroy the battery guarantee. If properly done, it has proved successful; but is not recommended.

Question: Why does brake lining wear unevenly and why do the brakes lose power on a long hill?

The pattern will differ depending upon the construction of the brake; brake lining seldom wears evenly over the full lining area. This is due to the differences in pressure between lining and drum at the heel, toe and intermediate points on the brake band or shoe. This uneven pressure is often times partially counteracted by using various lining combinations.

Brakes often appear to lose power when negotiating a long hill due to lining heat fade. Since all of the heat generated during a brake application must be dissipated by the brake drum, extreme temperatures at the surface of the lining and drum can be developed. Most all lining will fade somewhere between 400° and 750° F. and it is not at all uncommon to experience heat fade on long hills. However, there are some things which can be watched to prevent excessive temperatures. The first is overloading a brake by either excessive weight or by not using all brakes on each brake application. A second is to negotiate hills holding a light brake application and shifting down instead of pumping the brakes. The intervals between applications are not long enough to permit drum cooling and pumping action results in harder applications which develop higher temperatures than a light steady application.

A reminder when brakes are relined: Use the lining recommended by the brake manufacturer because its characteristics are a principal factor in the torque developed by the brake.


MOBILEHOME DEALERS
MDNA
NATIONAL ASSOCIATION