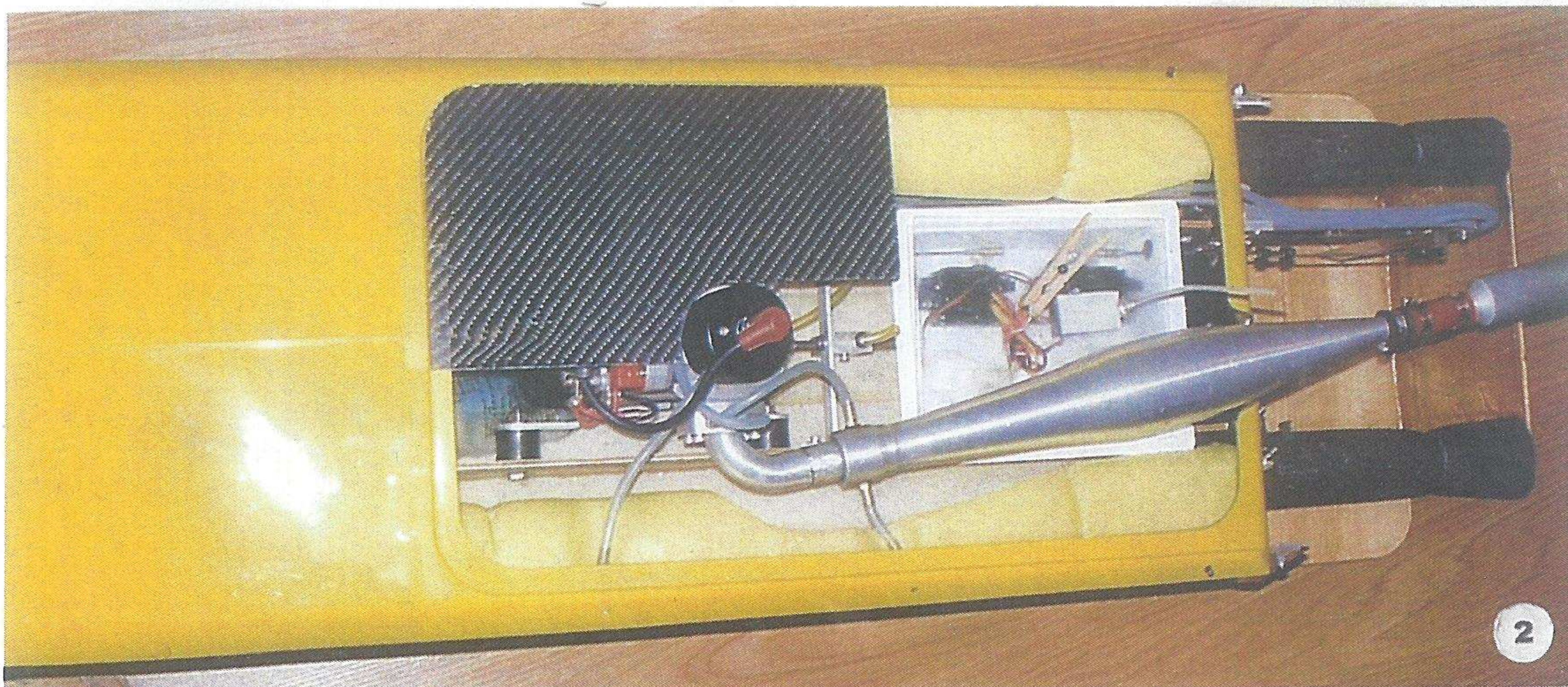


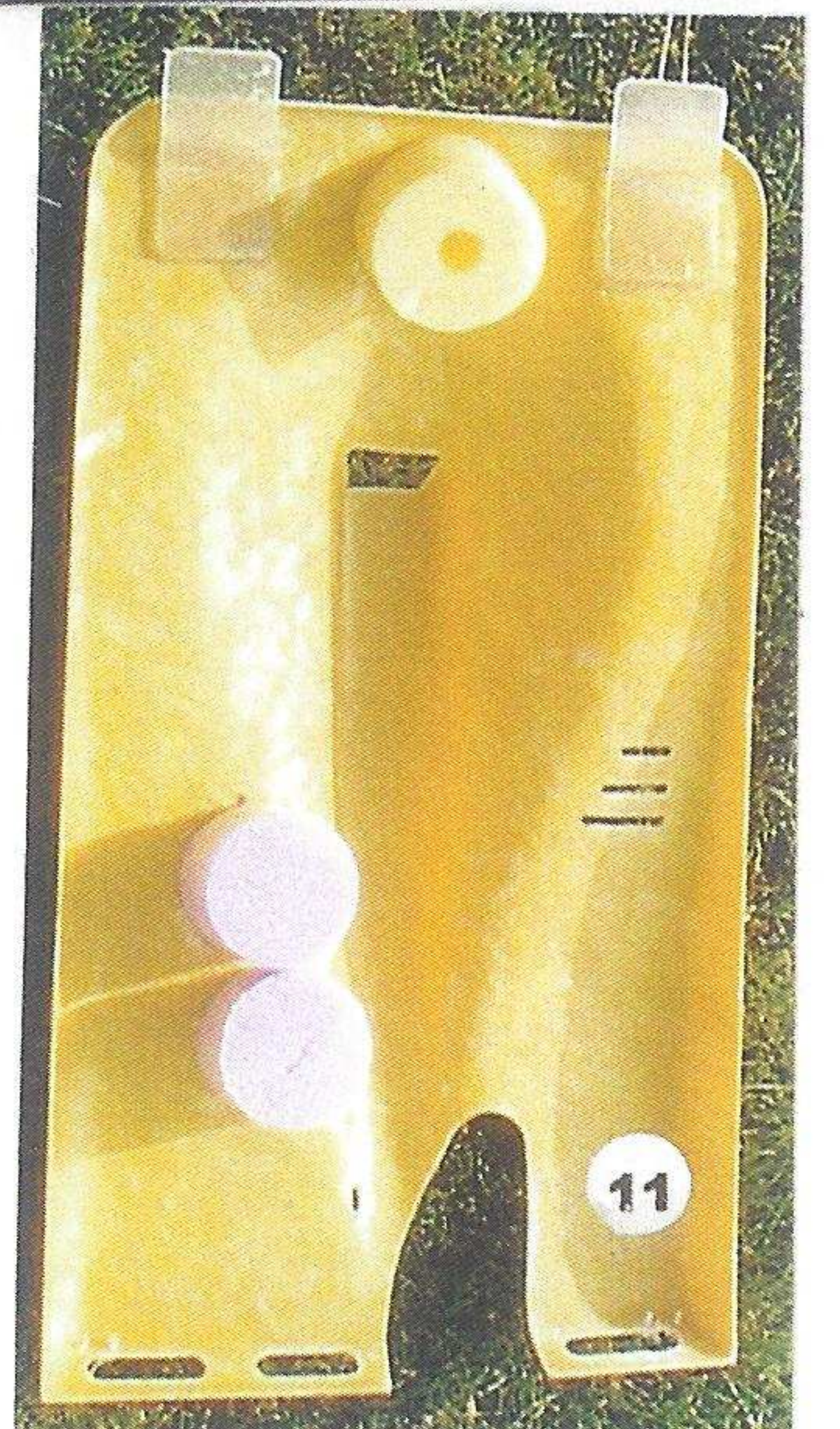
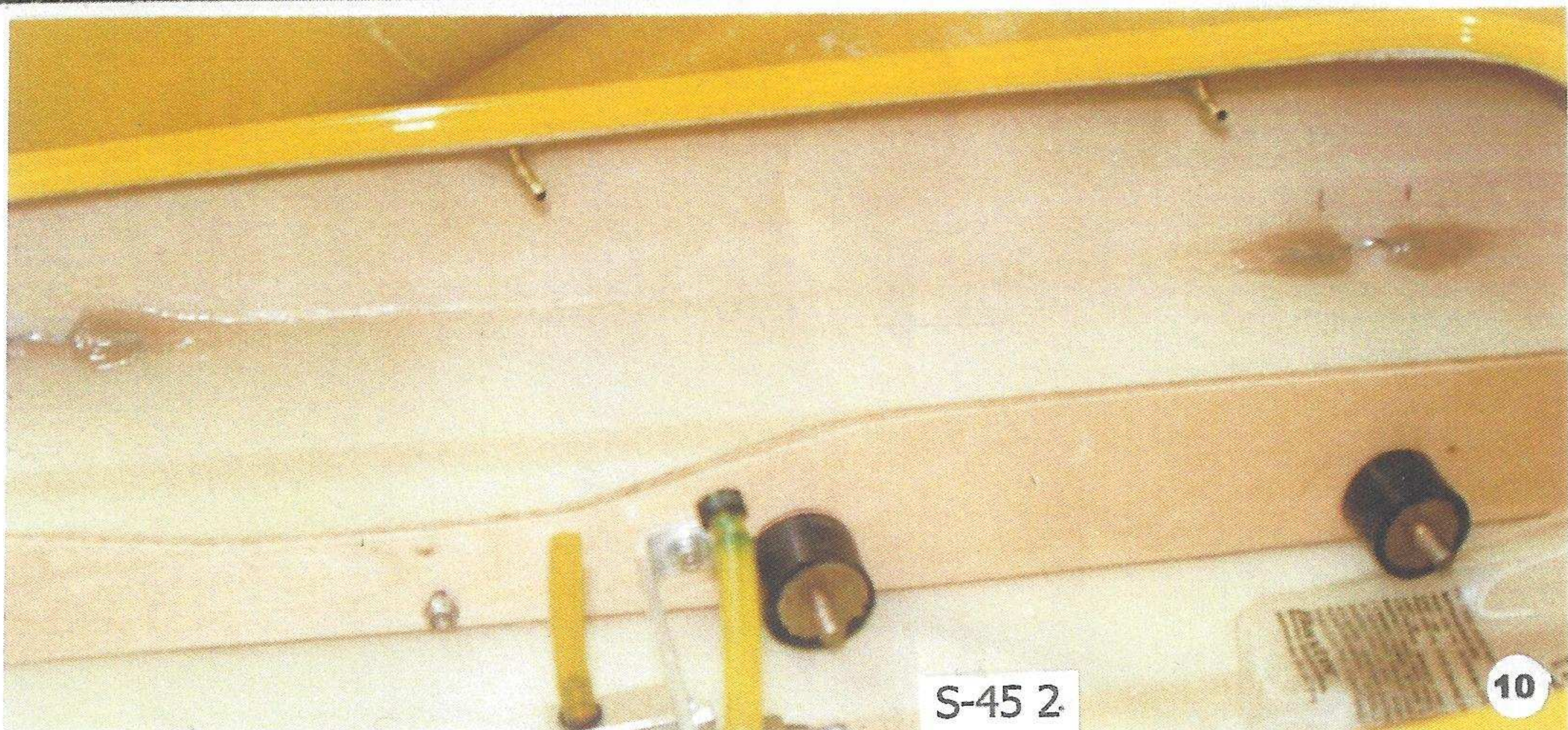
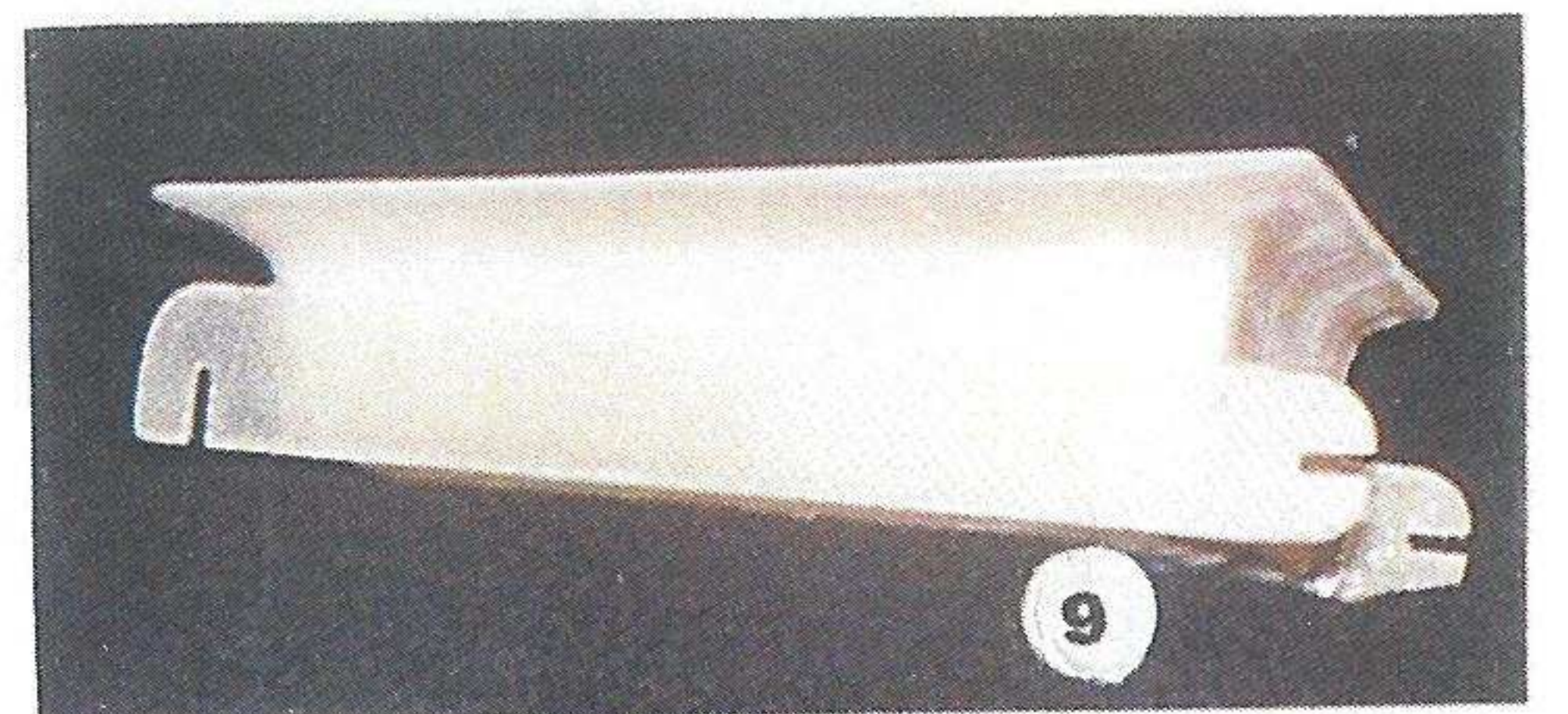
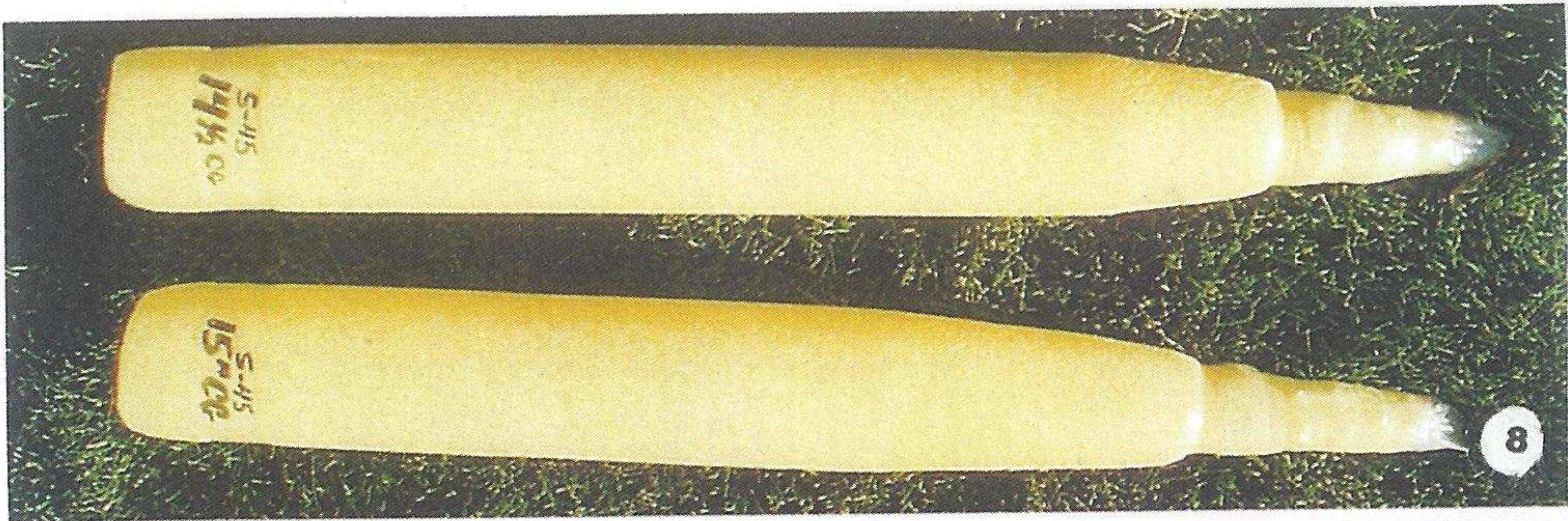
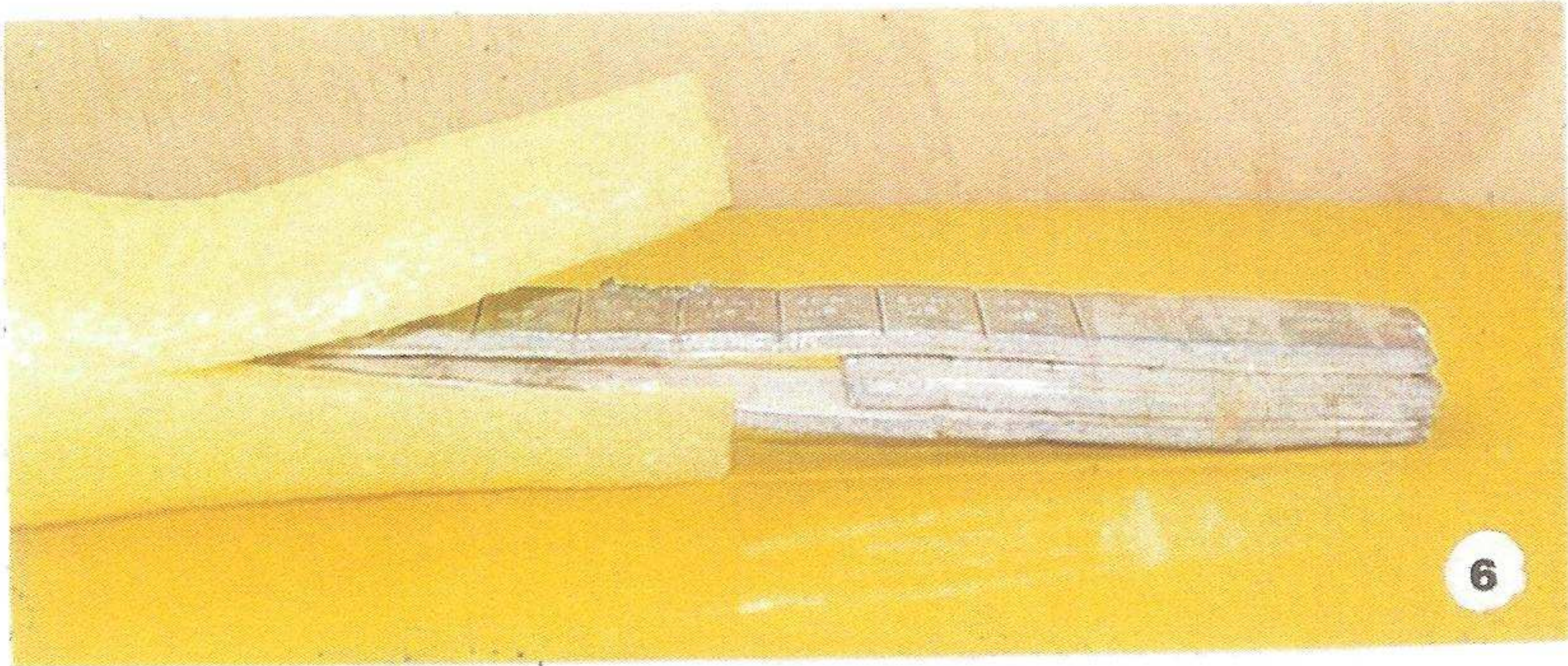
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S-45





Intro:

Thank you for purchasing the S-45, like all A.C. Model Boats you will find this to be an extremely high quality hull. When inspecting the hull, you will see the fit and finish is second to none. What you may not see, but is built into each and every A.C. Boat is the incredible strength the hull has. This strength and finish will ensure years of boating pleasure. The S in the S-45 is for speed, but this hull handles race water, and recovers quickly when crossing wakes.

The S-45 has a true running surface; here are a few tips to keep it perfect so your S-45 handles and performs excellent for years.

- Never paint the running surface;
- Never hold the boat on the stand with bungee cords, (use Velcro straps only), tension on the hull can cause warp;
- Store the hull on a dual beam stand with foam surround to prevent distortion.
- Do not expose the hull to hot direct sunlight for long periods of time, (cover with white towel);
- Do not bond anything thing to the inside of the hull running surface;
- Never lend your S-45 to someone that may copy it, our buy one from someone you suspect has copied an original.

When copying an original, the molding process will distort the running surface. A copy will still float and run, but because shrink is introduced in the copy process, the copy will lose the performance edge AC boats are known for. I hear modelers complain about this all the time, about how thier copies and clones never run the same as the original, but you only get what you pay for. Be proud of owning an original, if for nothing else, the performance.

Sealing the wood:

If you want your S-45 to last a long life, seal the wood where ever you make a holes, using quality THIN C.A. Glue. Even high quality wood will break-down over time from moisture. There are a lot of 15 to 20 year old A.C. Model Boats out there that are experiencing no softening of the wood because they were originally sealed using this method. The reason this method works is because of CAPILLARY ACTION, this is a wicking affect, and in tests I have found in transom wood, the C.A. if applied in three or more consecutive times will wick into the wood 3/16" or more. To achieve the best results, apply to the holes. You will notice a wet look at first, then turning dull. The dull means the

glue has wicked itself into the wood. Now repeat immediately at least three times, more is better, or until the glue stops wicking in. Next turn the hull $\frac{1}{4}$ turn so the side of the hole is now the bottom and repeat, then turn hull again. Repeat until the entire hole edge has been saturated with the CA glue.

The Build:

First build a boat stand; you will eventually need it, and the boat is easier to build on a stand.

1. Study the transom drawing and mark where the holes are to be drilled.
2. Drill pilot holes first, using a small drill bit.
3. Enlarge holes to the sizes needed.
4. Seal the wood with C.A. As described above.
5. Mount all the hardware

C.G. (center of gravity)

This has nothing to do with a measurement from the transom to the spark plug of the engine. Where the engine is placed is only part of the C.G. Equation. A proper C.G. is extremely important, a fast boat will spend a lot of time in the air, due to launching over wakes and waves, how the boat lands and recovers from this "air time" will depend on the balance of the boat. The boat should be balanced side to side, and there should be a point on the hull where it balances from front to back. This point of front to back balance is called the C.G. or Center of Gravity.

When we talk about the C.G, we talk about a point measured from the outside transom edge along the chine of the boat. When building the boat, you want to place all the gear in the hull so that the C.G. is at a certain distance. If using a stock 260 Zenoah engine the C.G should be at 13.5 inches from the transom. If using a high power modified engine, aim for a C.G. of 14.25 inches max. If pond conditions require a more forward C.G., this can be achieved by using pool noodles with lead weight in the bow, which is described later in the manual. See also pictures 6,7,8.

Once you have decided on the type of engine you are going to run, measure from the transom forward to the C.G. you chose, and mark the hull. I like to use a very thin piece of masking tape approx. $\frac{1}{8}$ " wide placed on the side of the hull, where the side and the bottom meet. That way when I pick the hull up to check the balance I do not have to look for the mark, instead I use my fingers

and slide them along the edge until I feel the tape.

Back to the build:

With the hardware all mounted to the transom, slide the flex cable through the stinger, have approx. 10 inches hanging out past the stinger, slide the prop on to the shaft (use a piece of masking tape so the prop does not fall off). Assemble the engine on the mount including the rubbers, ensure the header and tuned pipe are also attached.

Have everything in the radio box including batteries, and cover, if not using a A.C. /Q.C. (Quick change) radio box (see pic. 9), place all the hardware you are going to use for radio box mounting. DO NOT permanently mount anything just yet, just place the engine, and radio box in hull. Place fingers on your C.G. marks and pick up the hull, the hull should balance when picked up on the C.G. Marks. If the transom stays down move the engine or the radio box forward until the hull balances at the C.G. marks. If the bow stays down, move the engine or radio box back. Once you have the hull balancing on the C.G., mark the stringers where the engine and radio box are to be fastened.

Mounting the engine:

The lower the engine is mounted in the hull the better your S-45 will exit the corners, 1/8" is the best, but you will need firm mount rubbers, 3/16" up is the maximum for all out performance. I have found by removing some of the excess material on the engine mount will give you slightly more room to lower the engine. If you are into total performance every little thing counts . You will also need to notch the stringer to clear the carb,

Mounting the radio box:

If you have purchased a A.C.-Quick Change radio box this step will be quite easy. Apply some slow drying paint onto the small end of allen wrench, mark the stringer where the 6/32" fasteners will go through them. Repeat this step four times, let the paint dry. Remove the radio box and drill the four holes, where the paint dot is. (using a scribe as a center punch will help to keep the drill from wandering when starting the holes) Once an A.C.-Q.C. radio box is secure, to remove it all you need to do is loosen the 6/32" fasteners approx. 1/4 of a turn then lift up the front of the box and pull forward to remove the box. When mounting a normal radio box, most silicone adhesives will not last very long in a gas boat, bonding compounds can work, but put masking tape on the hull, so the bond is to the stringers, and NOT the hull. (bonding to the hull can cause distortion of the hull, that will affect performace.)

Radio Box Assembly:

There is no right way or wrong way, just take your time with this, it is a VERY important part of the boat. The only thing, I want to make crystal clear is NEVER EVER have a bend in the rudder rod. In pic. 4 you can see the placement of my servos and on-off switch. If you race, or care about cornering(where races are won or lost) use a low profile radio box, and mount every thing as low as possible.

I.V. bags:

For you that are new to fast R/C boating, Using I.V. bags for a fuel tank is the only way to go, although they do not last forever, keeping air out of the fuel will increase your chances of finishing that big race. The reason I.V. bags work so well is that they collapse as the fuel is drawn from the bag. This means that no air is drawn into the bag. With all the vibration and pounding a boat does on the water, any air in the tank quickly foams up the fuel. If this fuel / air mixture is drawn into the engine, you will lose power or stall, not to mention leaning the engine out which can be really hard on it.

For you new guys, to fuel an I.V. bag you will need a gear pump (ensure it is rated for gasoline). Start by pumping fuel into the I.V. bag, the bag will probably build an air bubble, To get rid of the bubble you want to "burp" the bag. To burp the bag - with the pump attached stand the hull on its bow, and push on the bag. The pushing will cause the air to pass back through the pump. Now pump more fuel into the bag. At this point if you get another air bubble press it out. Once you have been running, and there is no air in the bag, to fill it attach the fuel filler, have the bow of the hull down, turn the pump backwards until only fuel is in the line, then turn pump forwards. This way only fuel and no air goes into the bag.

Mounting the IV bag:

I like to use the 500-mil bags; they will give you good run time, and will not change the C.G. much from full to empty, if you have approx. half the bag under the engine. With half the bag under the engine, mark the stringers where the front of the bag will be. Mark, then drill the stringers. Using a zip tie (zap strap), fasten the bag by threading the zip tie through one stringer, then through the hole on the end of the I.V. bag where it would be hung then through the other stringer. Use another zip tie of the same size to hold the end of the original tie from going back through the hole.

Gas lines from the IV bag;

You will need to press a fitting in-to the IV bag, attach apx. 5 ½ inches of

Tygon gas line going to a T fitting. The straight part of the T should continue to the engine, using approx. 4 ½ inches. In this piece of line, I like to have some kind of a filter. I like to use the Sullivan large crap trap, it is see through and is easy to clean. The top of the T, this is where you are going to fill the bag from have about 2 ½ inches of line and then use some kind of stopper. (Sullivan makes nice aluminum stoppers)

T bar:

In my opinion using a T-Bar is the only way to mount the stuffing box. Do NOT bond anything to the hull, to hold the stuffing box in place, use a T bar. Place the T-Bar so that there is 1 inch of exposed drive cable between the end of the stuffing box and the collet.

WOW, it's starting to look like a boat.

Flotation, and flotation hooks:

I use pool noodles for flotation in all my boats, these can be purchased at most major retailers, get a few extras for C.G. adjuster weights when you are out shopping.

Flotation hooks are a little more work, and yes it will be easier with the engine out, but this is well worth the extra time. To have the flotation stay attached to the hull is important. I have cart-wheeled boats so hard, that I have almost thrown all the flotation out of the hull, to lose a boat this way would just be dumb. I like to bond thick aluminum or stainless steel wires into the hull as shown in pic. 10. This corner where the bottom meets the side of the hull is the only place any bonding should ever be done to a hull. Bonding should ideally be done with a mixture of fiberglass resin and short cut glass fibers and aerosil (or microballoons) mixed to paste consistency or bondo.

When placing these wires, do not place one where the carb. is, as the noodle will have to be cut there for clearance pic. 4. Slide the noodles down each side but do not push them all the way to the front. Leave about two inches clear from the point of the bow. This will allow the weighted noodles to slide as far forward as possible. To hold the noodles to the mounted wires use thin stainless steel safety wire, or zip ties.

Place engine back in the hull and cut out an air gap for the carb. as in picture 4.

Note in picture 4, I cut the flotation down to the same height as the rear of the deck.

Note: to smooth out flotation after you have cut it, use a hair drier, that kind of

melts the foam, getting rid of that fuzzy look.

NOTE: Pre installed flotation wires can be ordered as an option from A.C. Model Boats.

Stuffing box:

The stuffing box should be bent with as large a radius as possible, and as smooth as possible. Remember that the tube should end 1 inch from the collet. If the tube kinks when bending, you will have to start with a new tube.

Drive-cable:

Take your time with this. (measure lots, and make two cuts, the first being about 1/2 inch too long, then the second to get it exact). When the shaft is cut to final length, you will need 1/4" between the drive dog and the end of the stinger, do not go less than 1/4". (The cable will shorten when torque is applied by the engine, if there is not enough clearance, the drive dog will bind with the stinger, reducing performance) You will have to make small flats on the prop shaft where the drive dog grub screws are, to keep the drive dog in place and from spinning on the shaft. (remember there can be upwards of 7 horse power delivered by this thin shaft, so this is important). Cut the flats using a file or a Dremel tool with a cut off blade, do not make them too deep. When positioning the drive dog, leave enough room on the shaft to be able to run a long shank prop and still get the lock nut on.

Tuned-pipe bracket:

There are lots available on the market, but by using a piece of flat aluminum stock and a vice, and you can make one like in pic. 5

Mufflers:

Please use one; the pond you lose (by annoying neighbours with noise) may be your last one.

You can change the way your S-45 handles various water conditions with a two second change of a pool noodle. This is an quick and easy way to change the C.G. Have a look at pics. 6,7,and 8. Cut a vee into the flat end, The vee rests against the I.V. bag zip tie to hold it securely in the bow. If you are not familiar with this balancing method, try it. It sure beats thrashing with the hardware every time the water conditions change.

Hatches:

There are a few choices: the sexy gas hatch, as shown in pic. 1 looks great. For

sport running and racing, the short carb splash cover as shown in pic. 2. will give better aerodynamic performance. For the all out aerodynamic advantage the full carbon cover as shown in pic. 3 is the ultimate. The carbon hatches need to be cut out for the cylinder head, and when using the full cover, an air hole (larger for hot days) needs to be cut. NOTE try not to have holes forward of the carb. To hold the gas hatch to the hull make hatch tabs as in pic. 11, at the front. Then o-rings at the rear as in pic.5. This hatch will need some air holes, open the scoop, then look at pic. 5, for the rest of the holes. (NOTE: hatch tabs are an option from A.C. Model Boats). The carbon hatches are held on using radio box or clear hockey tape, two or three layers at the front, one layer near the back. When starting the engine just fold the hatch forward, once it starts fold down and press on the tape near the rear.

With any hatch flotation is a must check out pic. 11, they are cut noodles, and C.A. glued to the hatch. IMPORTANT sand hatch were the noodles are to be glued to get a good bond.

Props:

Propeller choice will depend on different things, stock / modified motor, altitude you are running at, water condition etc. The following list suggests propellers which would be a good starting point.

- ↑ ABC 2714/4blade chopper
- ↑ ABC 2814/3 bladechopper
- ↑ ABC 2914/3bladechopper
- ↑ ABC 2616/2blade
- ↑ ABC 2716/2 or 3 blade
- ↑ Octura X570/ 3blade
- ↑ X572/ 2 or 3blade
- ↑ Prather 275
- ↑ Bob Austin 6717/3blade with 430 pitch
- ↑ Bob Austin 6717/4blade with415 pitch
- ↑ Voodoo taterXX

An important note, if you race experiment with props. Some have great straight line speed, but are slow to accelerate, or handle the corners poorly. A good prop

will do every thing great, do not give up cornering, races are won and lost in the corners. The S-45 also likes low lifting props; they work the best in the corners.

Race props:

They are like the flavor of the mouth, and there is always something new. So if you like to be competitive, pay attention to what the fast guys are using. or experiment with props and the modification of them.

Note: Most of the props listed above come balanced and finished, DO NOT run an unbalanced propeller on your boat, it will shake the hardware apart and probably damage the hull.

Trimming the hardware:

The drive (stinger) set it at neutral (drive shaft parrallel to the bottom of the boat) to start with; you may like 1 to 1 1/2 degree down but it should not be more. If the hull runs too loose you will need more C.G. (Weight in the front)

Trim tabs, look at the transom drawing. The right side, have this one down; this is mostly to control the torque of the engine. The left down very little if any, usually this one will be straight.

Running:

Words of caution to the sport runners, (I can not stress this enough) DO NOT run where there are people or dogs in the water. (model boats running at speed can do a lot of damage to human or animal flesh and bone) There have been cases documented where AC model boats have penetrated the hulls of full size boats.

For you racers, (be safe) kick butt and have fun.

Thanks

Andy

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S-45

Speedmaster hardware used in this build

- SPDR-011-60-6 6" single pickup rubber assembly
- SPD SD G250 Gas stinger
- SPD TF-100 XLM Right Turn Fin
- SPD TF-100 LM Left Turn Fin
- SPD trim tabs # 200

S45-11

