

How to Launch and Trailer Your Big Boat without Yelling!

Sandy Williamson

This PowerPoint file on web site:

WORDBoats.com

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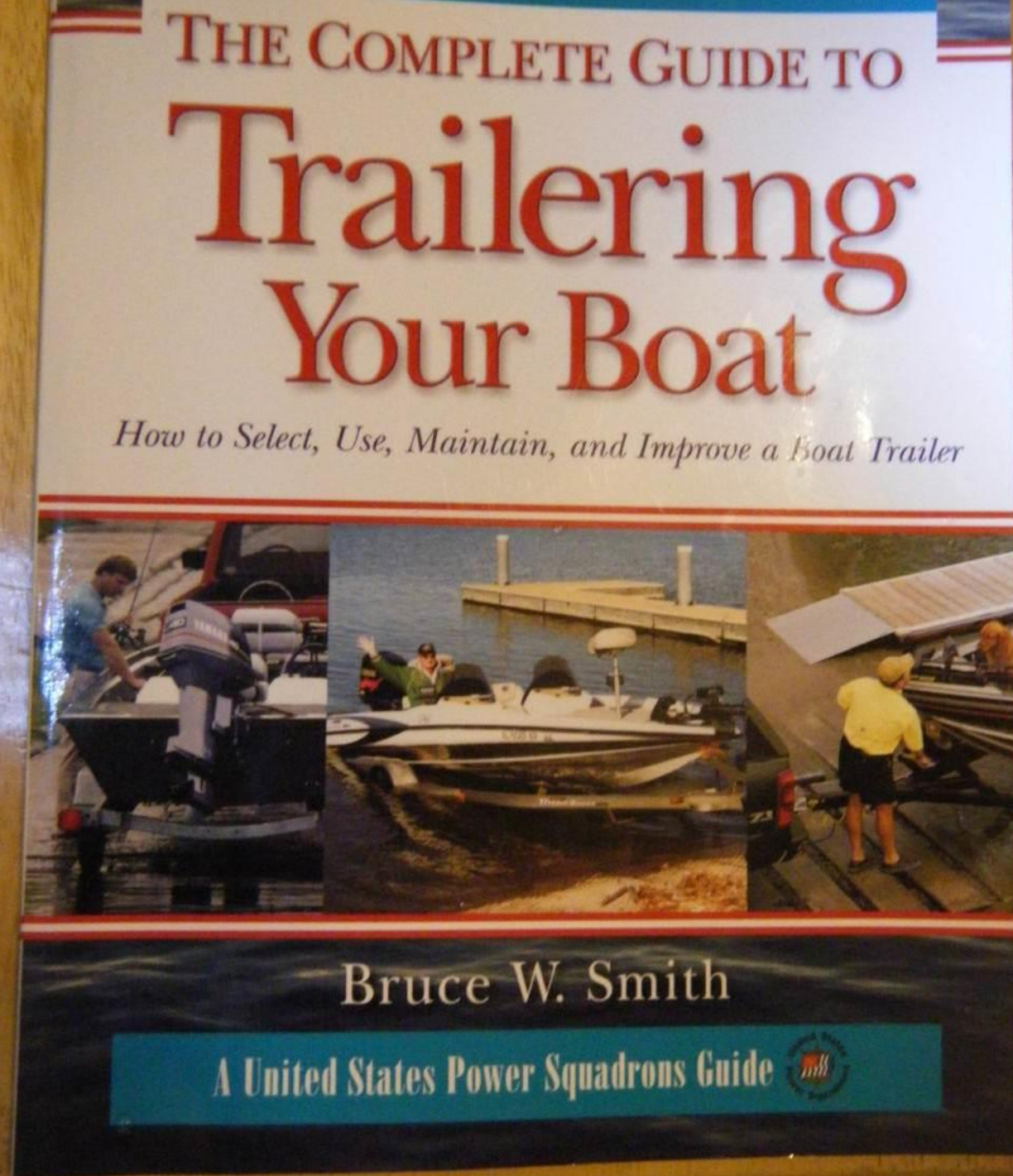
Our Trailering Bio/background

- Trailer boater, both power and sail for 44+ years
- Owned 19 trailerable boats, 400# to 10K lbs.
 - Towed 40k miles – Two 5k trips, Ten 2k trips,
 - Launched over 160 different boats, mostly by myself
 - Hired 250k miles of towing in 70 hauls
 - Lost 4 wheel bearings, 2 of them on paid hauls
 - Towed 14 ft. sailboat behind Prius <-San Diego @ 31 MPG
 - New aluminum boat trailer Dealer and have Sold 350+ to US, Canada, Australia, & Russia
 - **Wife & my boating retirement amusement plan-lawn chairs on boat ramp watching couples yell at each other**

Outline – Topics I will cover

- Backing trailer
- Launch tips
- Boat Load on trailer tips
- Long tow prep
- Annual maintenance
- Frame materials pros & cons
- Fitting a new trailer to a boat
- Car/Truck tow Capacity
- Brake types and pros/cons
- Bunks vs. rollers pros & cons
- Load guides – fore/aft up down types
- Tires – trailer specs, air pressure, bias, & radial
- Spare tires, jacks, bearings, safety chains, transom straps etc.
- Lights LED vs. Standard
- Winches – 1 or 2 speed manual and electric.

Thanks to the author for material I have used in this talk. One of the best books I have found, though I differ on a few points.



Trailer Backing Training

- Go to large empty parking lot with 2 cones- start with the longest trailer—easier! Take 1-2 hours with no pressure.
- Have a nice watcher person, likely not your spouse#*+!@#?
 1. Set up cones far behind trailer on drivers side.
 2. Pull forward until straight
 3. Bottom of wheel goes in desired direction of trailer
 4. After turn starts, follow the arc established by #3
 5. Repeat #3 for tighter or less tight cornering
 6. If trailer starts turning too tight, pull forward and straighten out, then try again. Take your time. Relax!

Overall
backup
turn
process –
bottom of
wheel in
direction you
want trailer to
go.

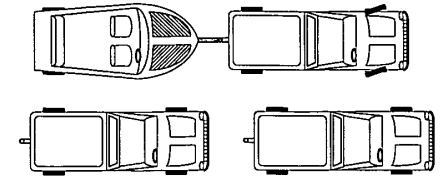
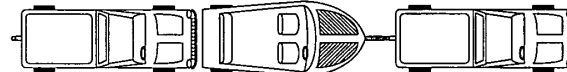
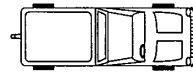
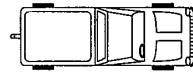
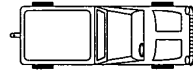
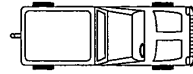


FIGURE 15A

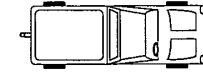
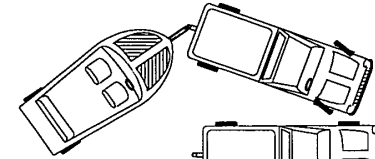


FIGURE 15B

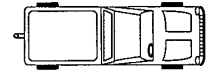
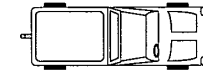
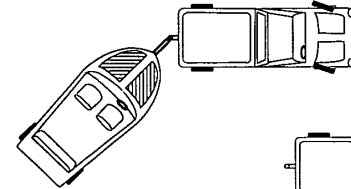


FIGURE 15C

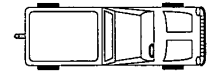
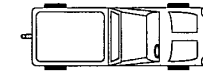
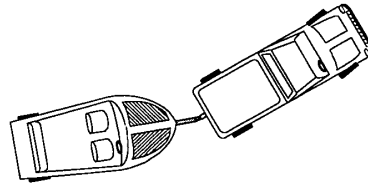


FIGURE 15D

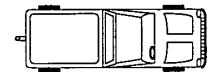
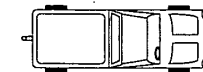


FIGURE 15E

Starting backup turn

FIGURE 15A

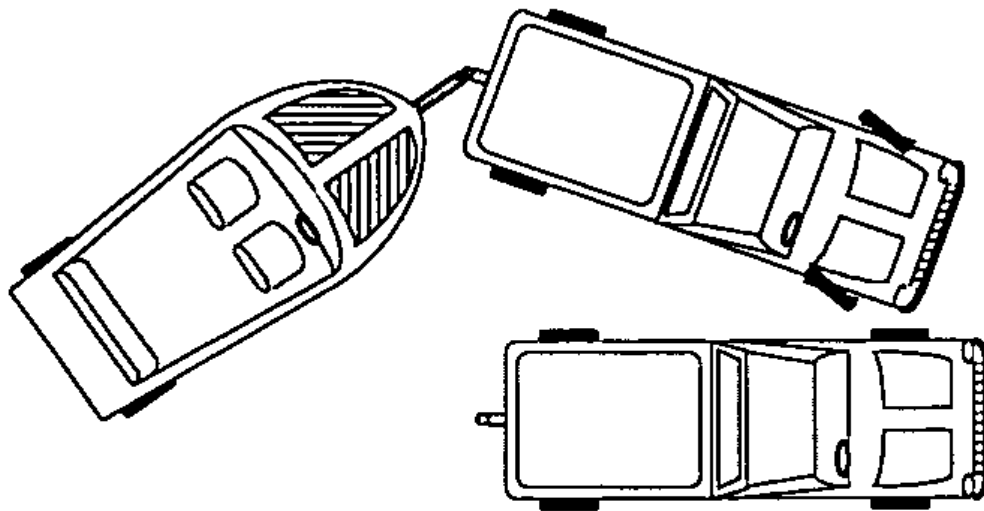
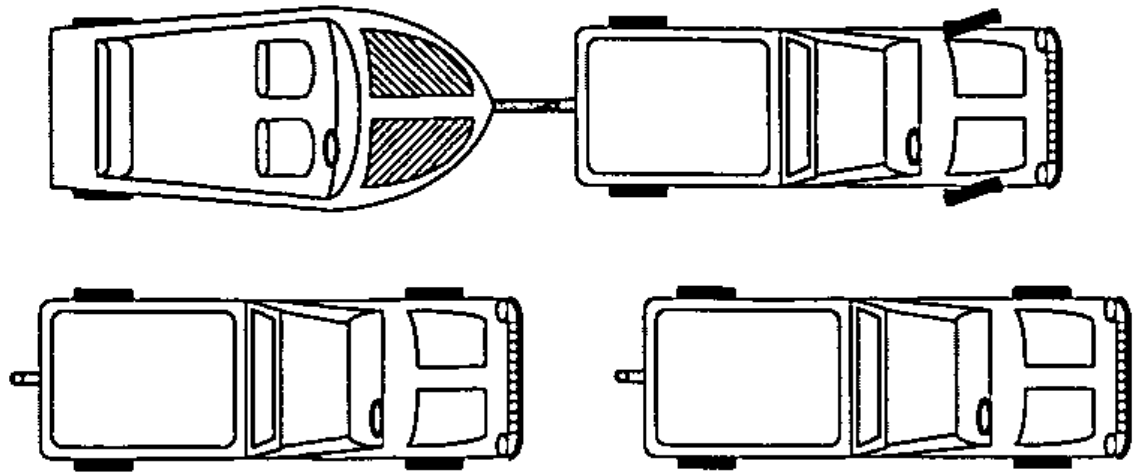


FIGURE 15B

Launch tips



1. At ramp: Unhook standard lights[LED leave hooked up], remove transom straps
2. Get straight on ramp before getting truck onto slope. Slowly start down ramp, especially if big boat, so it doesn't drag you, sliding until boat hits water.
3. When stern gets near water: drain plug in, bow safety chain off. Ladder bow or stern? Who is doing what?
4. Check clearance of bow pulpit/anchor at this load ramp angle.
5. Bow line to tow helper or bow stop, don't release till start motor
6. Two options : quick reverse stop or power off.

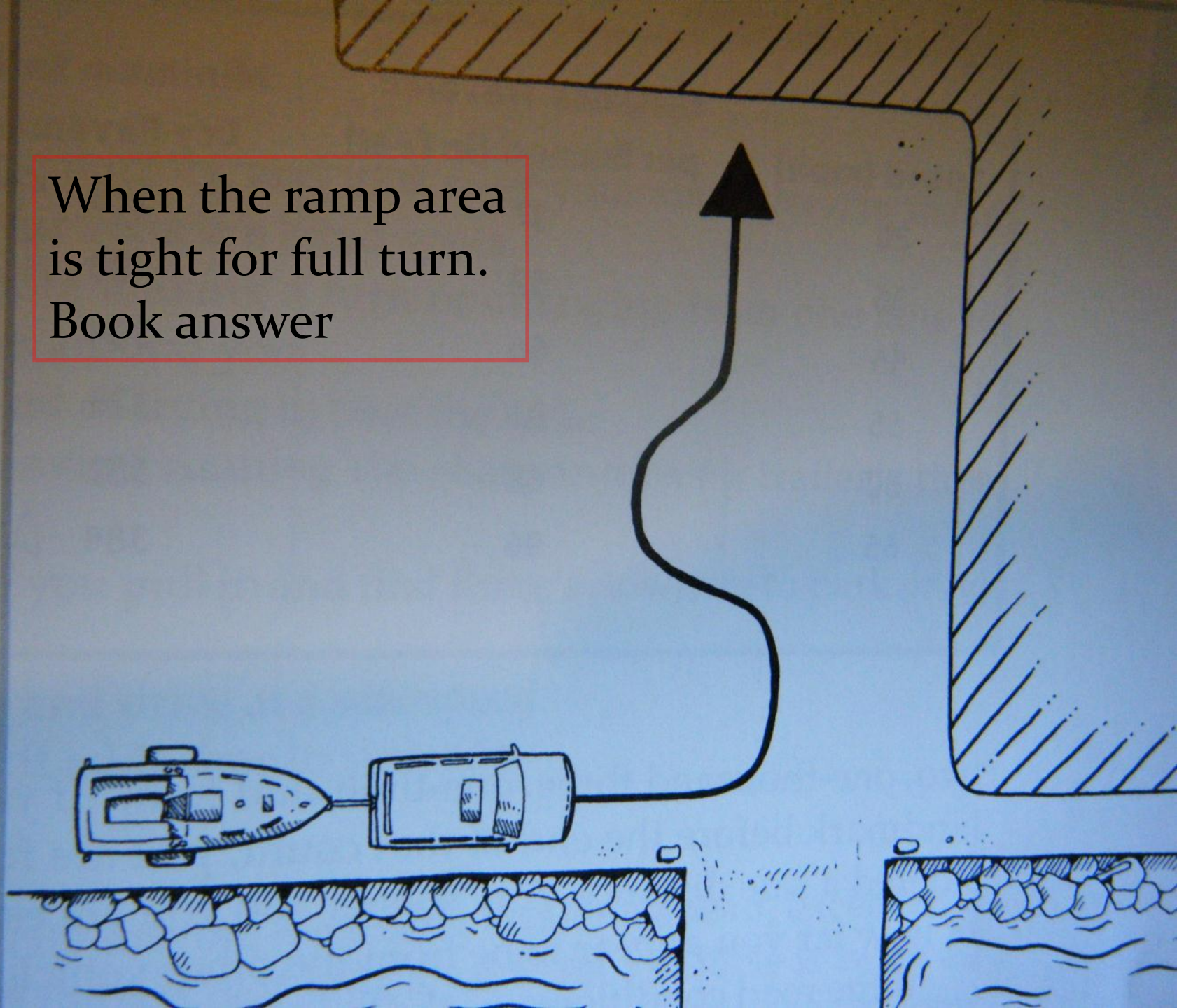
Why You don't release boat from winch until you get to the water.





OOPS, UNHOOKED
WINCH TOO SOON.

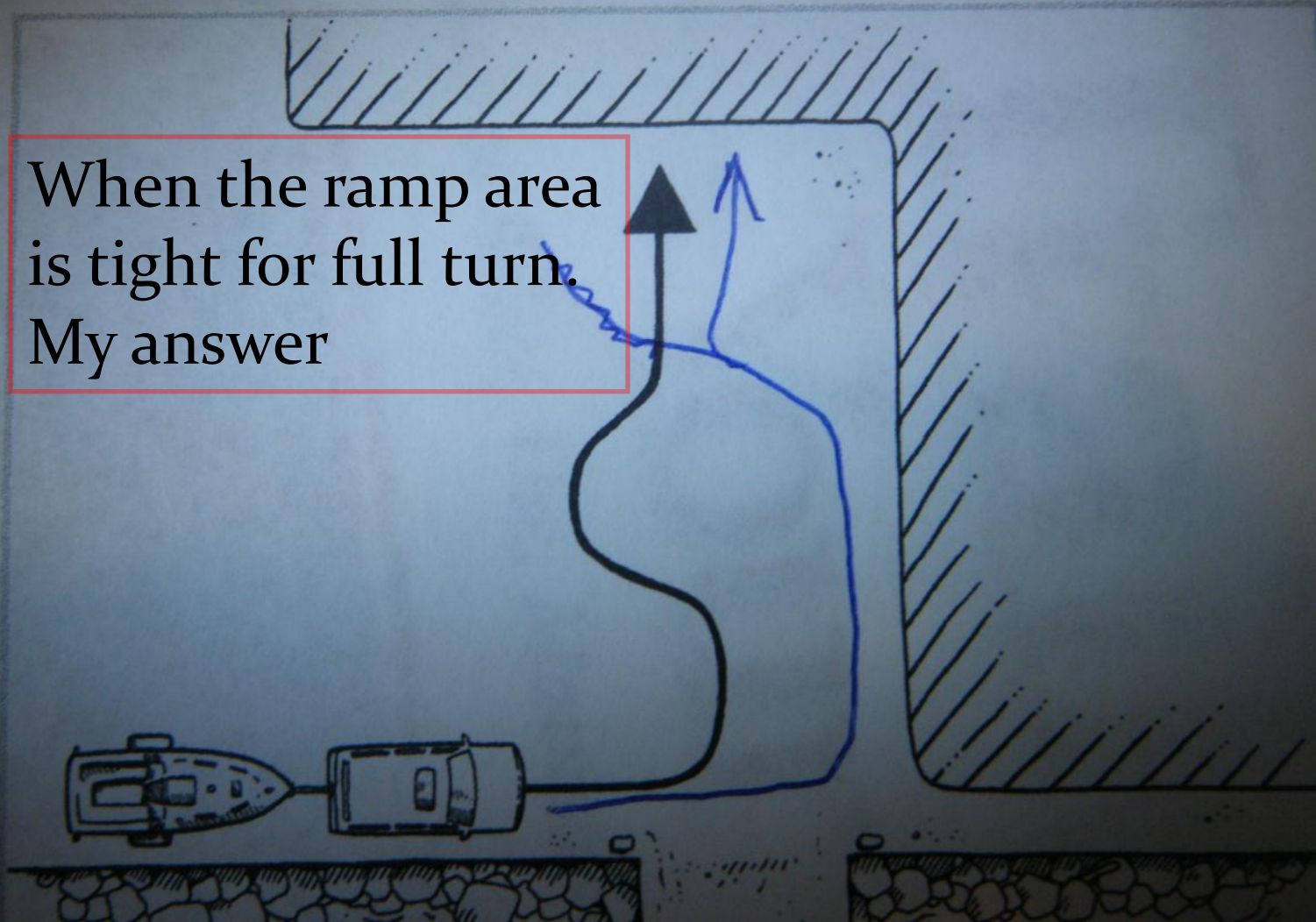
When the ramp area
is tight for full turn.
Book answer

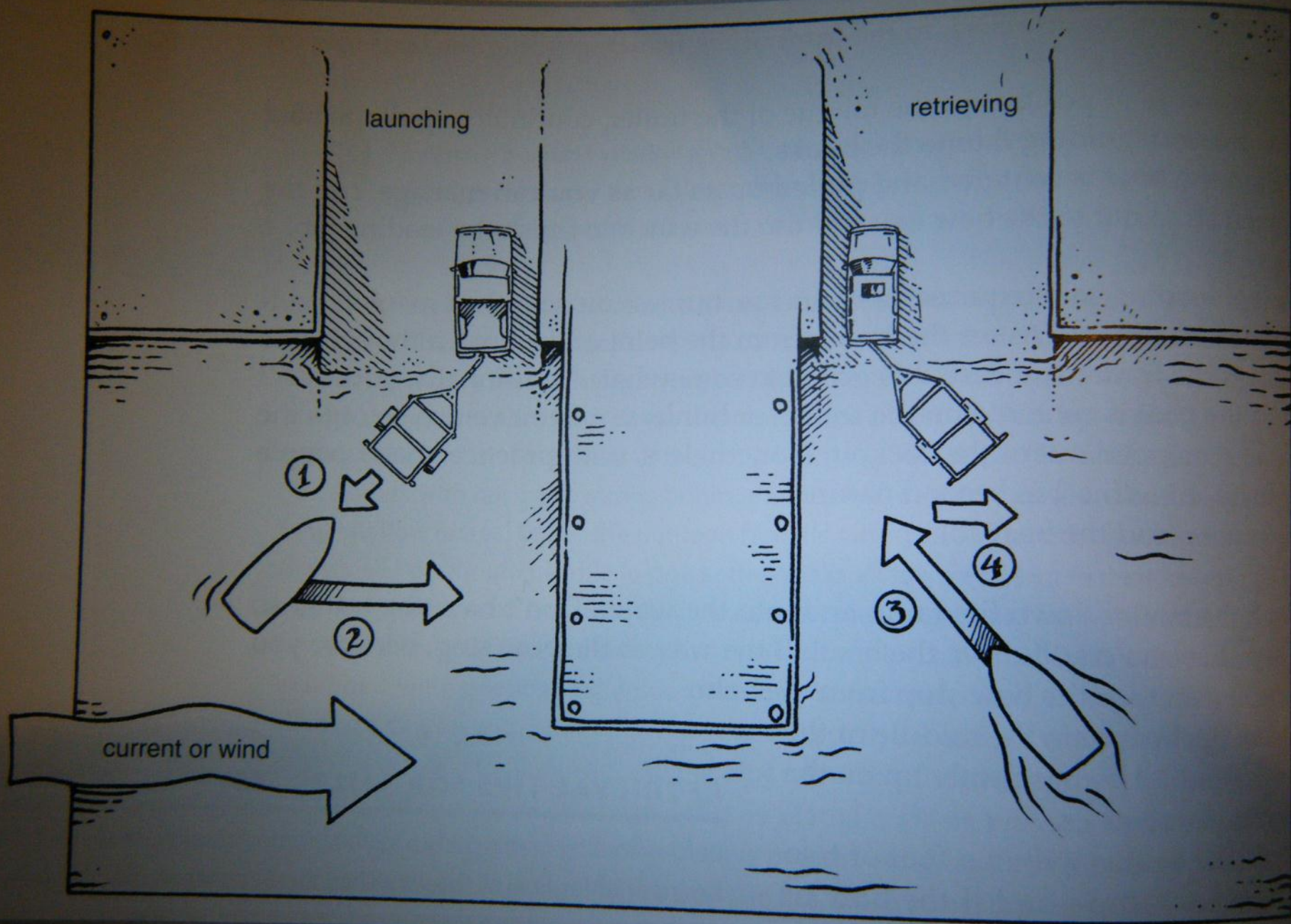


amp pro. It's even

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a parking lot will
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ramp for mid-
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fic is generally

When the ramp area
is tight for full turn.
My answer





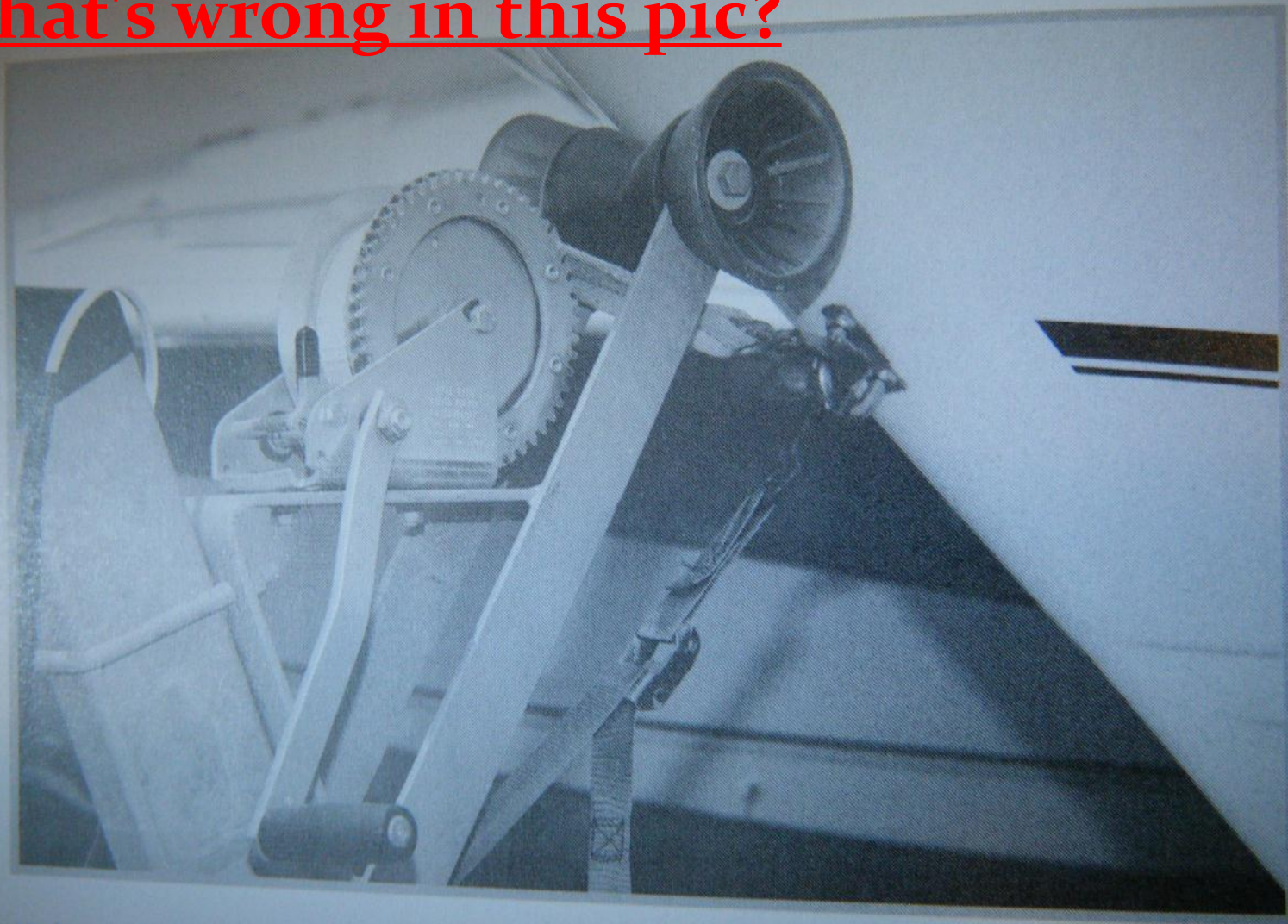
When launching, face the trailer toward the wind or current. (1) Come off the trailer into the

Boat ramp angle / slope

- Typical ramp is 1 inch in 1 foot=nearly flat roof slope or 8% - Each inch higher on trailer means 1 ft. down ramp.
- Lowering limitation is usually chines over fenders and wheels. To lower, must reduce gaps or tire height.
- Steeper ramp can make bow stop be in way of bow sprit and or anchor and make i



What's wrong in this pic?



Make sure the bow is up against the bow stop and the winch strap and bow

- Make sure all gear in the boat is secured and are simply resting on the cockpit seats or the floor.

What's wrong in this pic?



show
chain
on m
a su
win
from
It als
dow
I
chain
bow
Thes
style



**Bow stop
properly set and
Safety chain ARE
necessary – next
comes my story.**

Bow eye touching and below bow roller. Tow strap horizontal. Safety chain tight.



The fore-and-aft position of the bow stop, which is bolted to the winch stand

Scale. It costs about \$110 and has 1 percent accuracy. It looks like a Place the trailer

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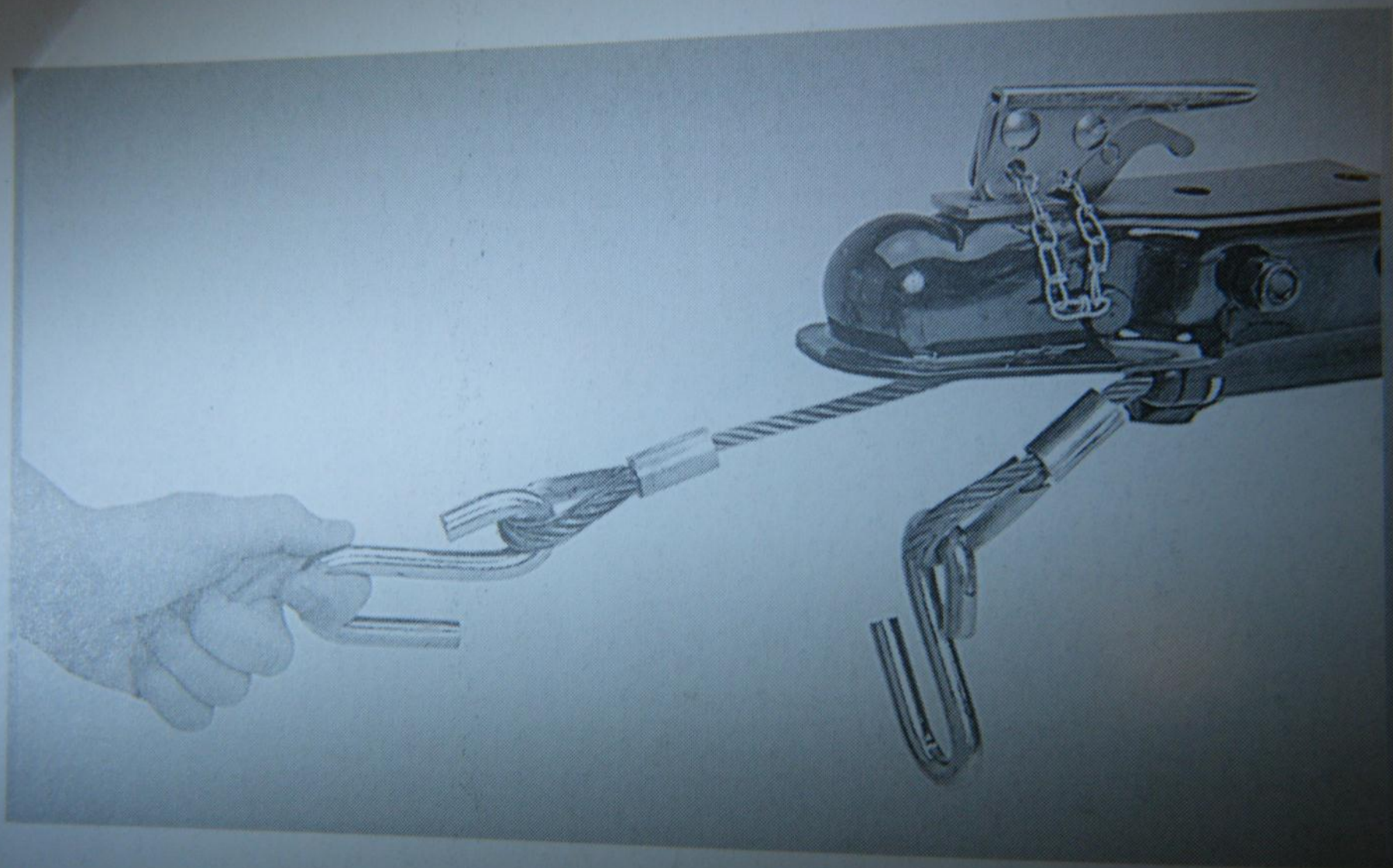
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This photo shows both correct and incorrect connection practices. Correct: The safety chains are installed properly—crossed and hooked into the loops from opposite sides. Incorrect: The chain on the right is hooked into the loops from the same side that actuates the parking brake.



These safety cables are a nice alternative to chains. They're spring-loaded, so they can't bounce off of the hitch loop, and they're easily retracted.



What's wrong in this pic?

axle trailer
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BACKING

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Backing

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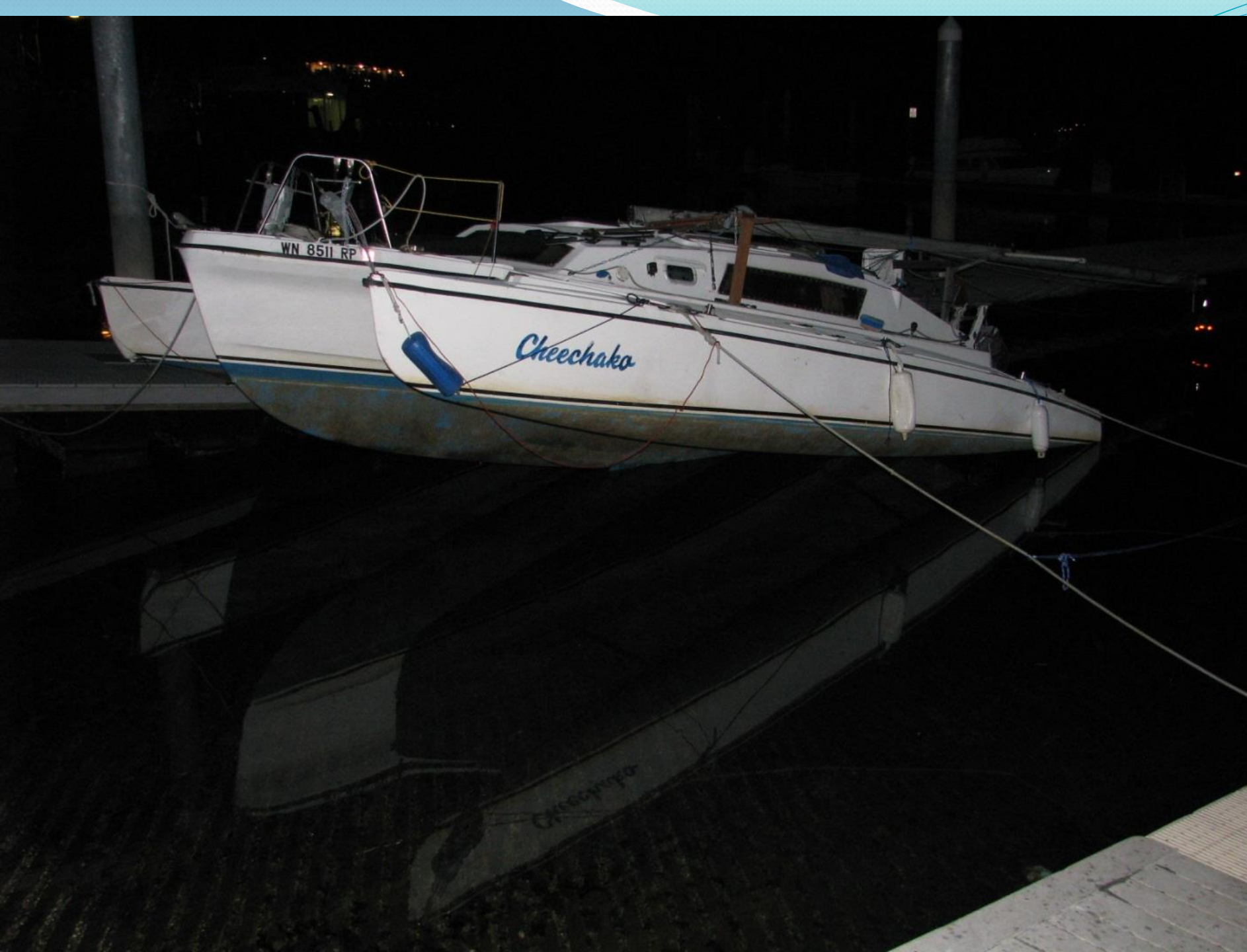
What's wrong in this pic?



ng
in
... the water too far. Note how this truck's wheel bearings and brakes

Boat Load on trailer tips

- **Load position of trailer is 4-6 feet higher up the ramp than for launching** – Pros:
 - Centering boat on bunks will be much easier, likely automatic
 - Its likely easier to get boat all the way up to the bow stop
- Use **MOSTLY neutral** in the boat as you approach to keep speed slow. Only use power for steering adjustments
- Get bow eye just under and touching bow roller **FOR SAFETY**
- *If you take a while watch for tide changes [here comes my funny stupid story]*



Long tow preparations / Annual maintenance

- Start prep at least one week ahead of the trip.
- Axle bearings repack or grease
- Bearing buddy usage vs. super lube hubs and oil-bath hubs
- Check bunks, rollers
- Look for rust and loose bolts
- Check lights
- Air up cold to max inflation pressure on tire sidewall
- Every stop feel tires & hubs.



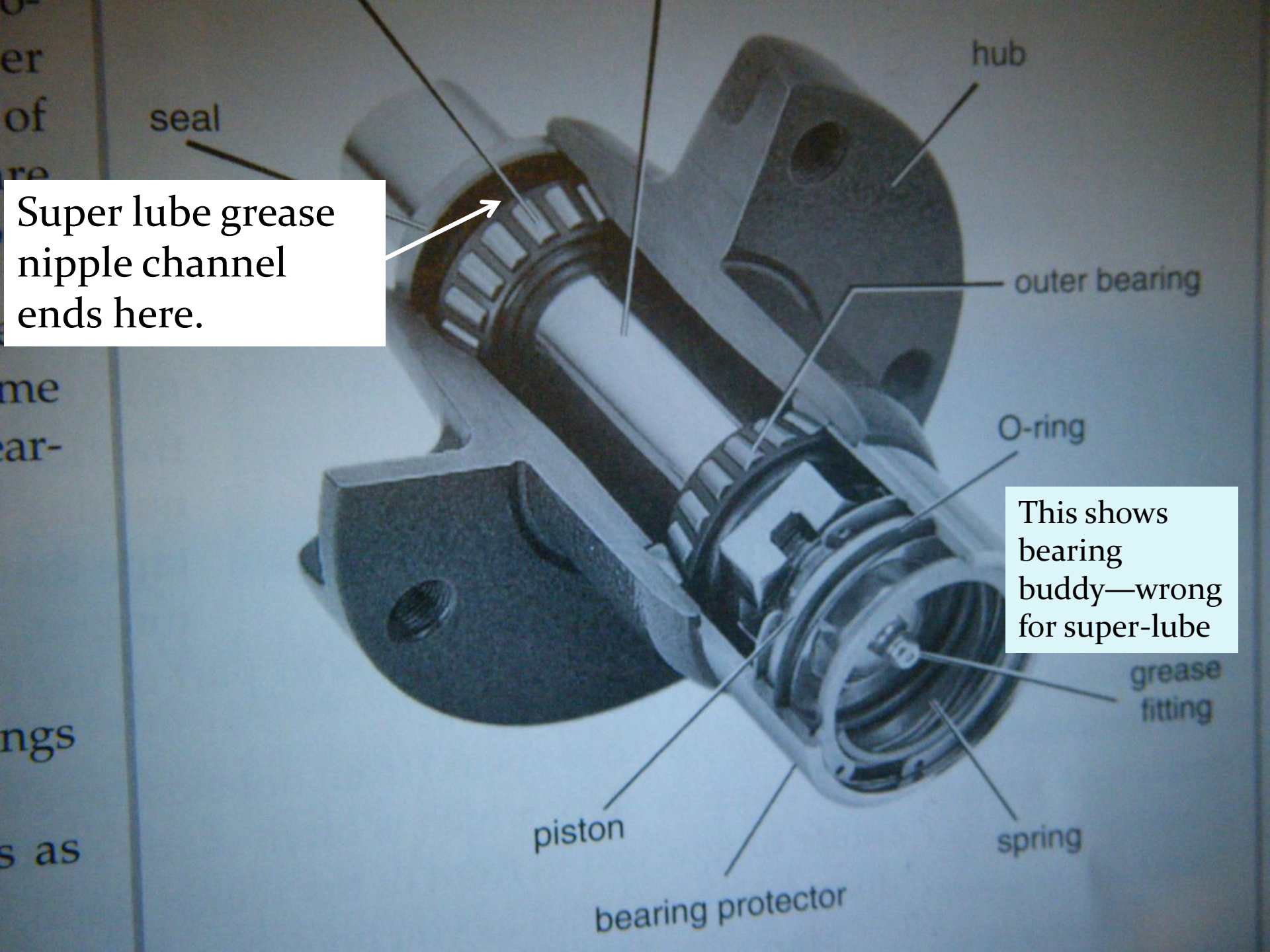
bearing protector

spring



Grease-reservoir bearing protectors keep grit and water out of the bearings, significantly

www.bearingbuddy.com



seal

hub

outer bearing

O-ring

grease fitting

This shows bearing buddy—wrong for super-lube

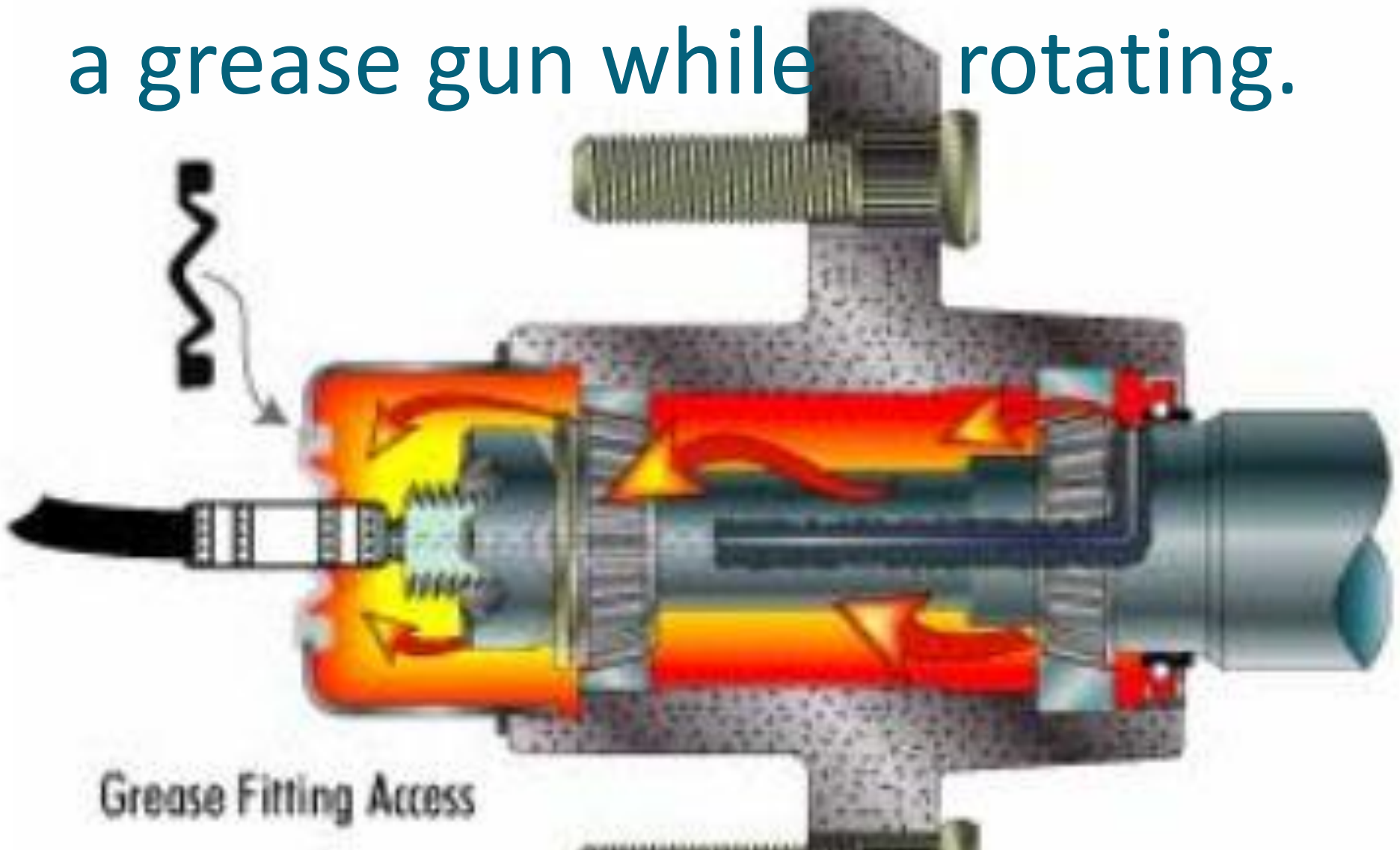
piston

spring

bearing protector

Super lube grease nipple channel ends here.

Super Lube Hubs – repack with a grease gun while rotating.



Completely sealed lubrication reservoir chamber permits maximum lubrication

Easy access internal lubrication port fitting

Internal lubrication channel allows for maximum flushing of the existing lubricant while flushing the system with new lubricant, when the time comes to change grease

Threaded cap

Hub Grease Manufactured by:

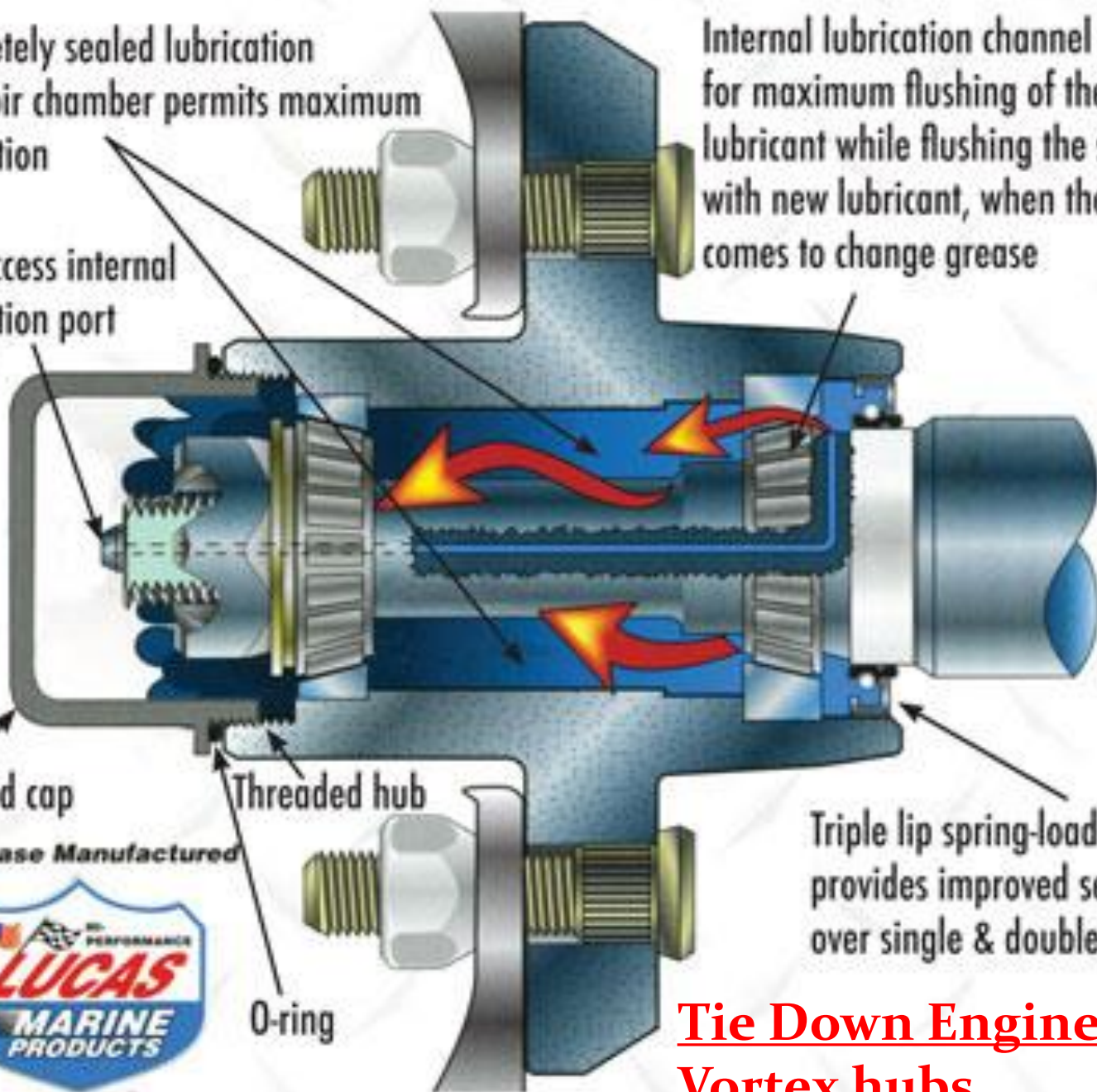


Threaded hub

O-ring

Triple lip spring-loaded seal provides improved sealing over single & double lip seals

Tie Down Engineering
Vortex hubs



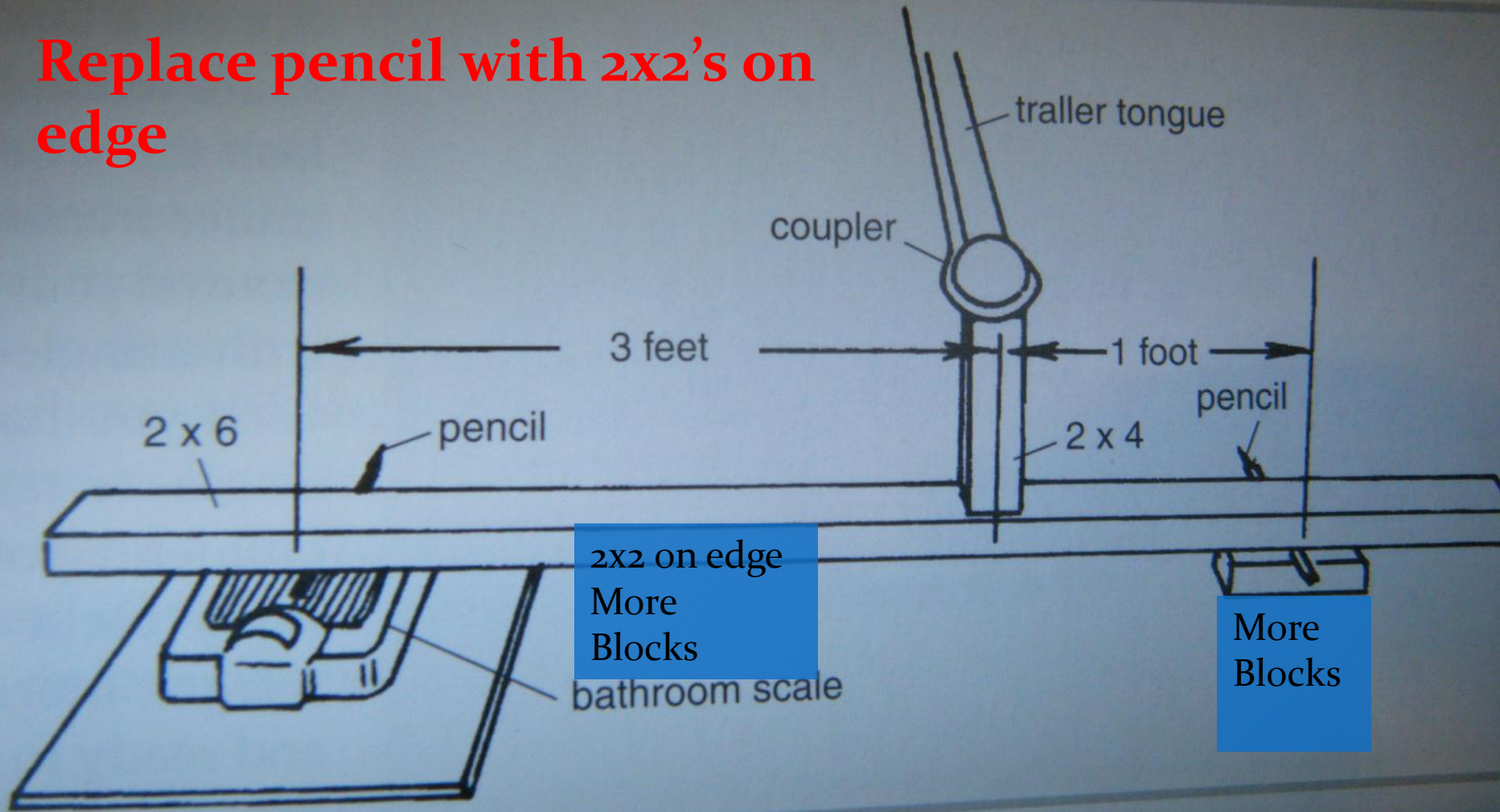
Fitting a new trailer to a boat

- Tongue weight 10% on small and 5-7% on large
 - Shown on next page how to weigh with bath scale
- Measure bow eye to transom—2nd most critical after weight
- bunk types and adjustment
 - Adjust up/down AND/OR in/out to get chine 1.5-2 inches over fenders. THIS IS THE CRITICAL HEIGHT TO LOWER YOUR BOAT ON THE TRAILER FOR EASIER LAUNCHING
 - Adjust in / out to avoid hull protrusions and ledges
 - Function of target bunks and keel/bow rollers.

Fitting boat to trailer

- Tongue weight adjusted by moving boat forward or back. If not on trailer now, look for pictures on the internet – image search “boat make model trailer” & note point on boat over centerline of axle[s]
- Bow stop position:
 - Transom 6-12 in off end of bunks
 - Bow eye up against and under the bow roller
- Winch strap should be horizontal.

Replace pencil with 2x2's on edge

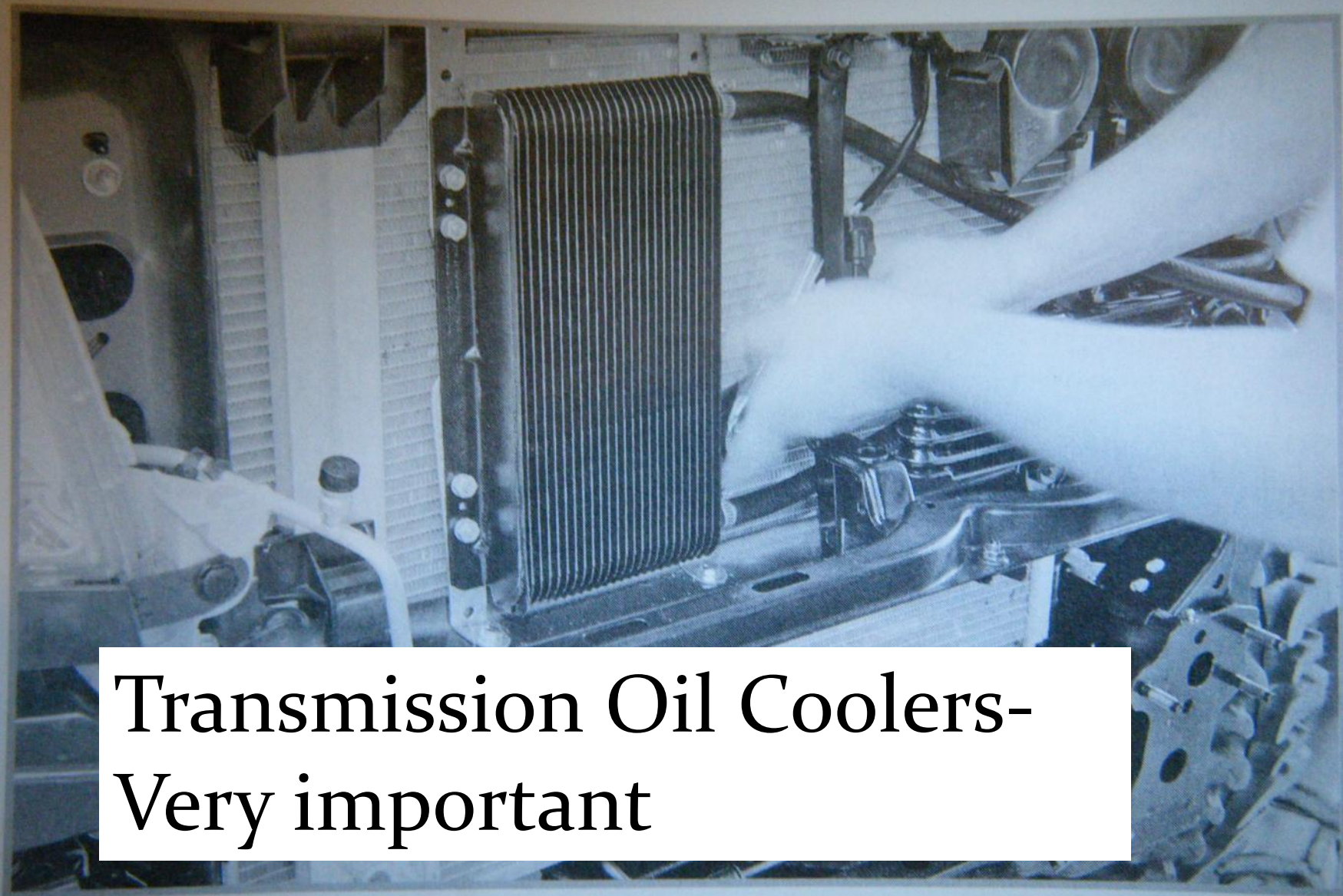


You can use a bathroom scale to measure virtually any boat trailer's TW, even over the scale's 300 pounds
weight on the scale. (JIM SOLLERS)



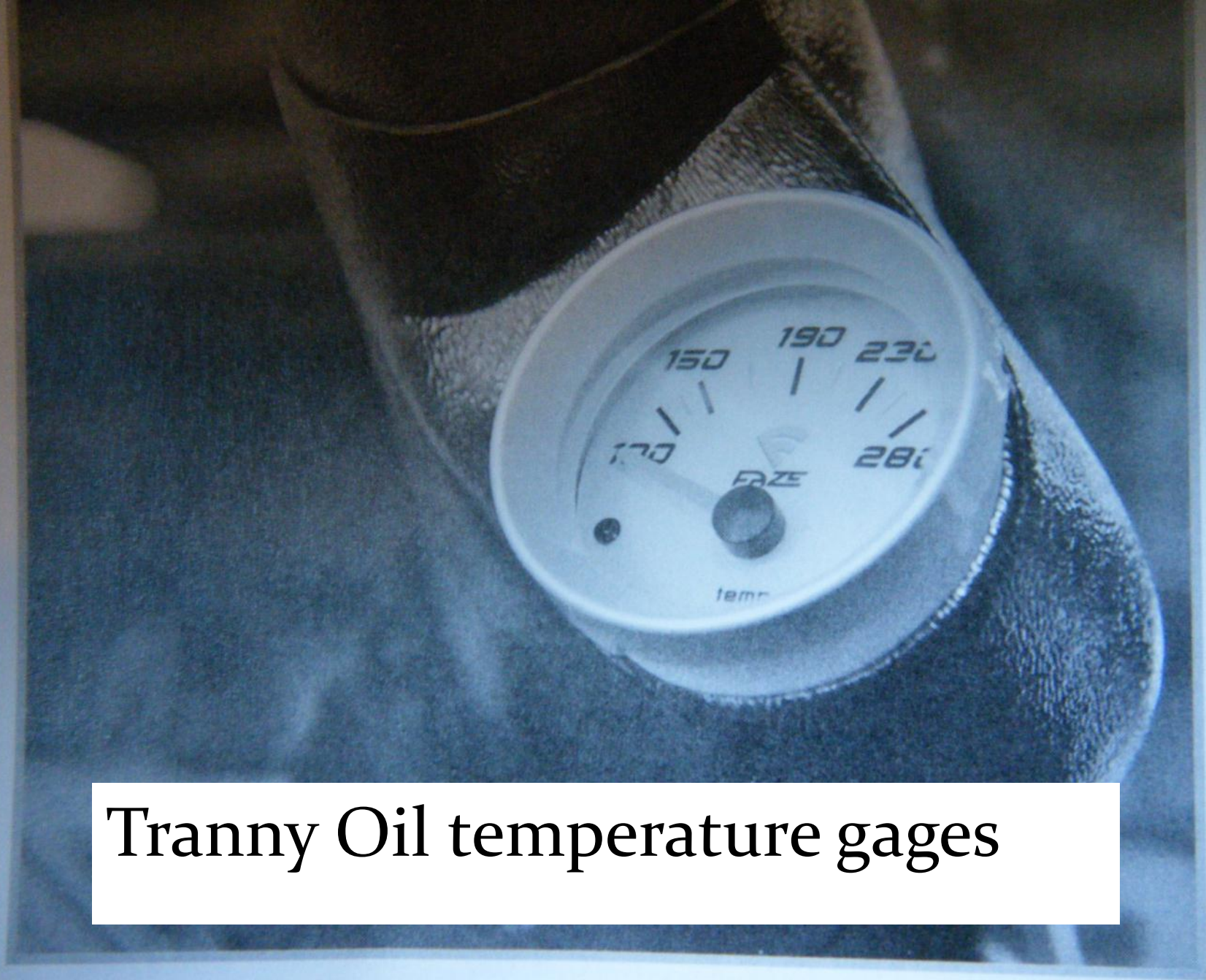
Car Tow Capacity

- See web site: <http://auto.howstuffworks.com/auto-parts/towing/towing-capacity/vehicle/towing-capacity-chart.htm>
- 4WD reduces tow capacity about 400#
- Gross boat weight = dry weight + [liquids volume in gal.] * 7.5 + gear + OBs if added
- OB weight: 50 hp=250#, 150hp= 450#, 300hp=650#
- Very Important when near tow capacity – working =disk Brakes, and Transmission oil cooler & gage.



Transmission Oil Coolers- Very important

Installing an auxiliary oil cooler is a viable job for most automotive do-it-yourselfers.



Tranny Oil temperature gages

The A-pillar (between the

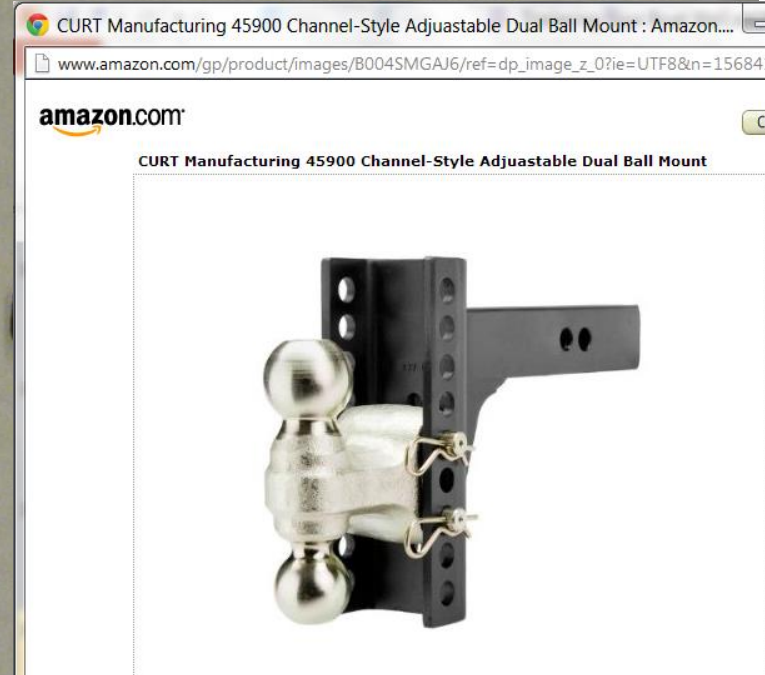
28 percent of cars are driven with at

Table 3.1**CAPACITY BY TOWING HITCH CLASSIFICATIONS (in pounds)**

	Class I	Class II	Class III	Class IV	Class V (not an official SAE class)
Maximum Weight-Carrying Capacity (gross trailer weight)	2,000	3,500	5,000	10,000	12,000–15,000
Maximum Tongue Weight (TW)	200	350	500	1,000	1,500



CURT Manufacturing 45900
\$159 Amazon 14k #



Anderson Ball Mounts - AM3290 \$120 at etrailer.com
 This all-steel, adjustable ball mount lets you tow up to 10,000 lbs. with the convenience of a 4" drop or 4" rise. Includes 2" and 2-5/16" steel hitch balls, and fits 2" trailer hitches.

Frame materials pros & cons

- Painted Steel – pretty on the showroom, but I would not own one, especially with box frame members that rust from inside out.
- Galvanized are longer lasting.
- Aluminum I-beam – longest lasting, are 40% lighter, look nicer.
- Aluminum wheels will last forever and not break your back.
- Aluminum makes the most difference in fenders since fenders tend to get dings that won't rust if aluminum



Brake types and pros/cons

Drum – worst kind but still sold– haven't been used on cars in 40 years. Enclosed spaces will rust enough to stick -> non-working in 1-2 years, even in fresh water, due to lack of heat to dry out the insides.

Disk - slightly more expensive but work much better and longer lasting. Vented Disks the best, just like cars.

Actuators:

Hydraulic surge – simple and work with any tow vehicle

Electric over hydraulic EOH – need controller in the tow vehicle, but work with tow brakes and individually controllable in low traction or in reverse on the boat ramp.

Bunks vs. rollers pros & cons

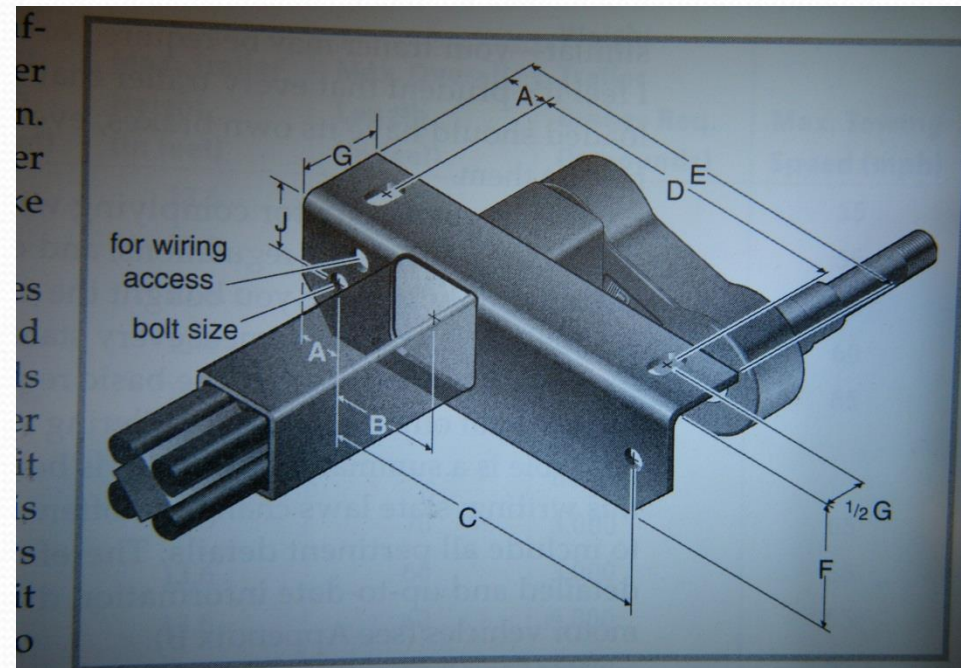
- Bunks have much more spread out support for the hull, especially on bumpy roads.
- Rollers [when they are working] make it easier to launch and pickup some small boats, but they need maintenance & repair—rusting-freeze, flat spots, etc.
- Rollers sometimes get bumped out of position by the boat which is a pain to fix.
- **Poly sleeve covered bunks** are the best of both worlds. Good support but slide much more easily than carpeted bunks

Bunk Cut Outs For Hoist Straps

- On many boats that fit their trailers, there is enough transom behind the bunk end to allow the lift strap to be on, if not all the way on. In that case an experienced operator can lift the boat a few inches, put in blocks of wood and then move the strap and continue the lift. Likewise the front strap can be in front of the bunk.
- On larger boats with marked lift points, bunks may need cutouts for frequent sling launching.
- Main bunks should be cut few times & only near cross members. 10 in x 2 in is the minimum size needed.

Springs vs. Torsion

- Spring pros:
 - Simple and repairable anywhere
 - Load equalizing between axles
 - Proven long life reliability
 - Cons: spindles not replaceable
- Torsion pros:
 - Can carry spare spindle
 - Greater road clearance
 - Independent
 - Cons: parts less available, axle enclosed with water.



Torsion-bar axles are a step up from leaf-spring suspensions, offering a degree of

Load Guide Types to center back of the boat

- Vertical poles at back. Good especially in side wind or current on a steep ramp. Makes trailer visible.
- Side long bunks. Too short for steep ramps.
- Side rollers or single bunks.

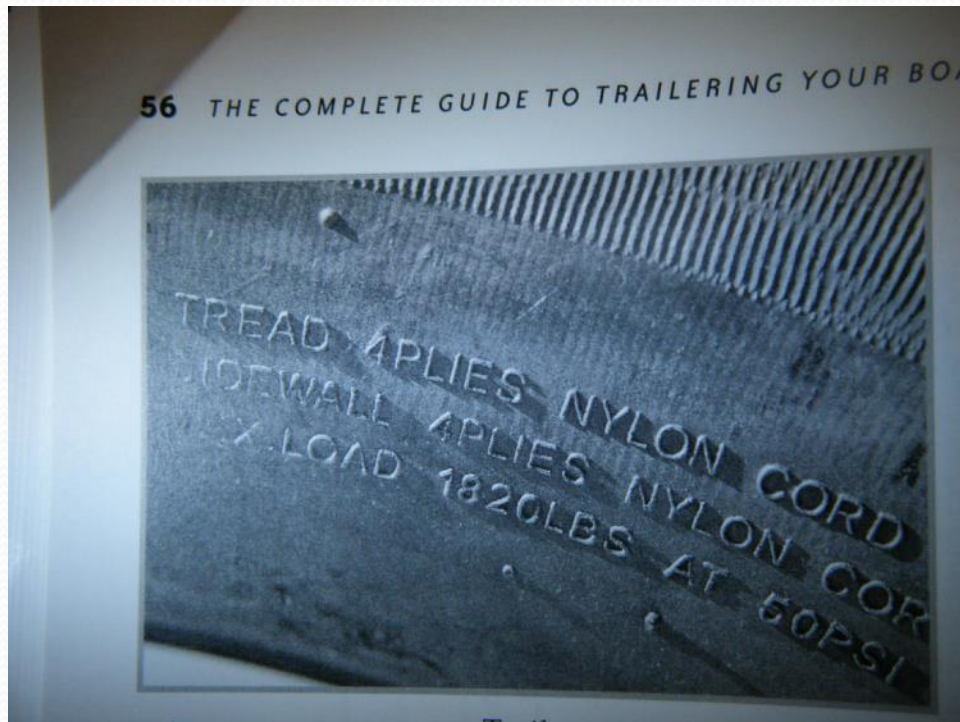


Target bunks guide to bow roller



Tires – trailer specs, air pressure

- Trailer tire size starts with ‘ST’ like ST205-70/14
- Load rating shown
- Higher air pressure than cars read on the tire [usually at least 50 psi up to 120 psi]
- Always keep cold air pressure at maximum allowed on the sidewall



Spare tires, jacks, bearings, safety chains, transom straps etc.

- You need a spare -- cover it to keep sun off
- Keep a scissor jack [most cars] or bottle jack in your tow rig, in case you have a flat.
- Must have snug safety chain on bow stop in case winch or strap fails.
- Make sure 2 safety chains go from bolt on trailer [not welded on] to car receiver
- Transom straps [2 in wide minimum] don't seem critical until you do an emergency maneuver at freeway speeds [which we have done] I use chain for long trips.

**SAFETY
CHAIN AND
TRANSOM
STRAPS
REALLY ARE
NEEDED !!!**

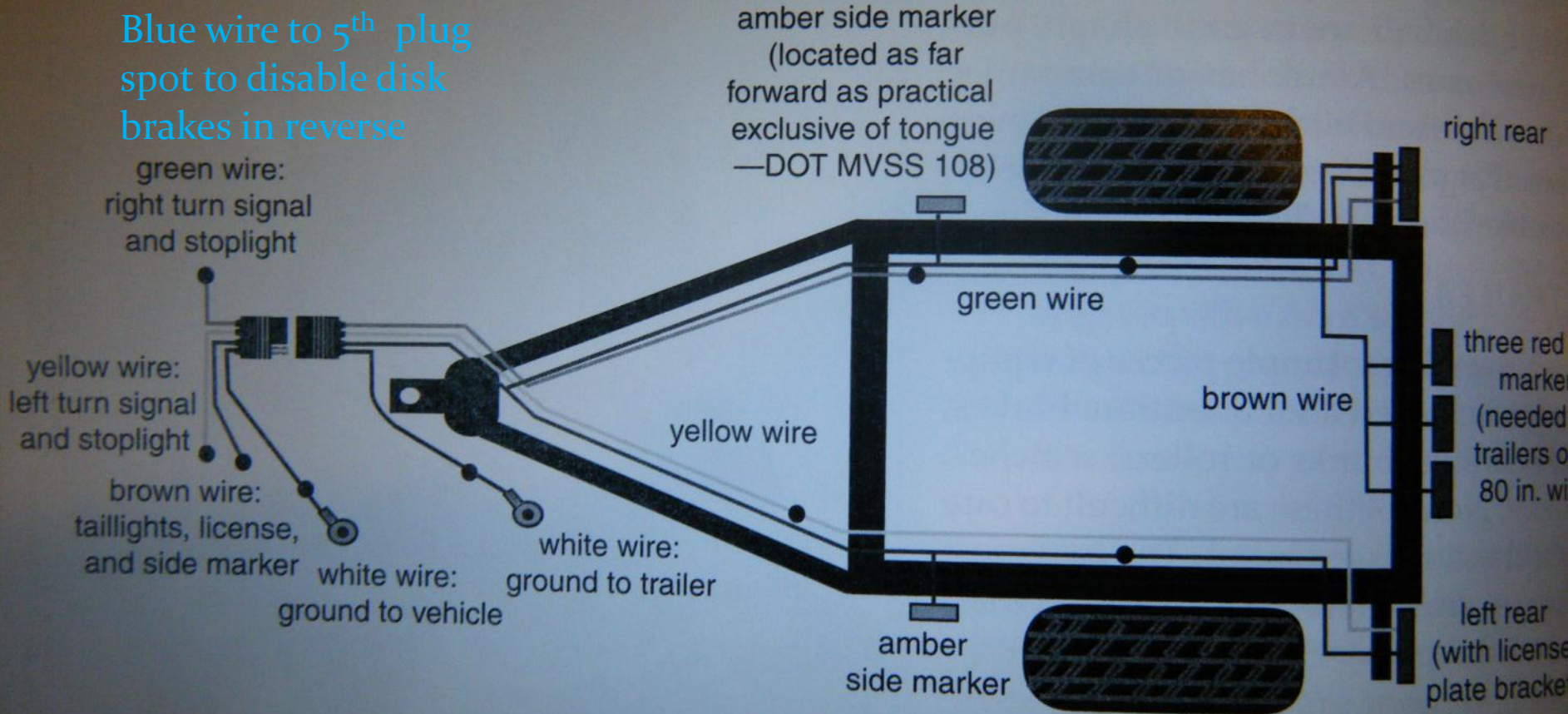


Make
sure
you
can see
the
tires in
your
mirror
!



Lights

- Types LED or standard incandescent
- LED are sealed and don't heat up
- Problems - ground, troubleshooting
- Tow Connectors - Round 7 [RV] flat 4 or flat 5[DISC BRAKES]
- flat 5 has extra pos. terminal [blue wire] hooked to backup lights on car that actuates solenoid behind surge brake controller to disable disk brakes when backing up hill or hitting a bump.
- Most towing vehicles have RV 7 Round. Walmart & auto parts stores sell “7 to 5” adapters – 7 round to 5 flat. Flat 4 and 5 are interchangeable for lights



Trailer wiring systems are basic, and troubleshooting is not difficult. (CEQUENT GROUP)

• Search out every

Winches – 1 or 2 speed manual and electric.

**1 speed:
5:1**

**2 speed:
4:1 & 12:1**



05.11.2009 14.08

Front mounted Hitches-I have 1

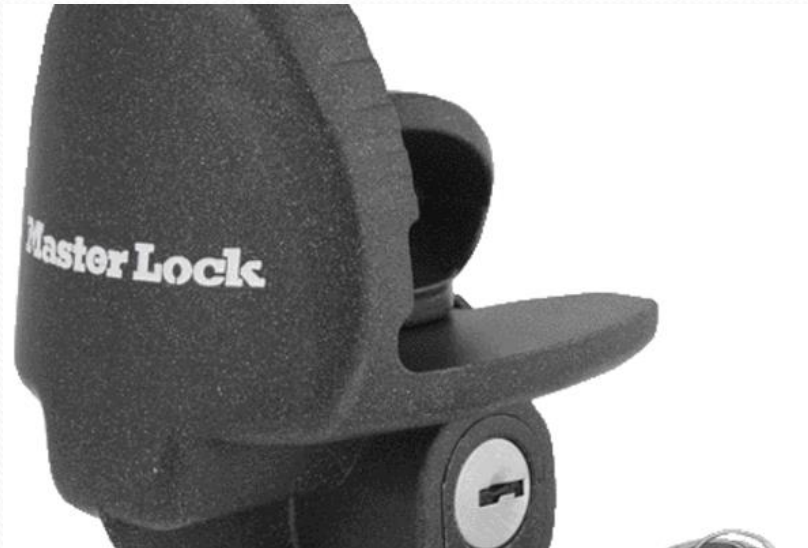
- For best parking maneuverability, but totally new learning on how to steer! Like using fork lift for trailers.
- \$400 installed by U-Haul or other dealer



TrailerValet.com \$400 Amazon



Trailer locks-my favs



Ladder is
handy and
necessary
if you
launch by
yourself.
Can use
spare if
mounted
in the
right
place.



**Tongue folding add on unit:
~\$150 plus cutting & drilling
up to 9,000 # GVWR**



Launching by yourself

- I have launched and retrieved over 100 different kinds of boats by myself, power and sail up to 29 feet
- Ladder? Or climb to bow from trailer using spare tire?
- Bowline to release boat from trailer – accessible from the boat. The release winch.
- The rest is the same.

#3

#3

Table 5.1

SAFE FOLLOWING DISTANCES WHEN TOWING

Speed (mph)	Distance Traveled per Second (in feet)	Minimum Safe Following Distance (in feet)	
		Dry Pavement	Marginal Conditions
25	37	148 4	222 6
35	52	208 A	312
45	66	264	396
55	81	324	486
60	88	352	528
65	96	384 A	576 6

two, one-thousand three, one-thousand four." If your vehicle has not passed the landmark before the end of that count, you are following too closely.

YOUR BOAT TRAILER MAY SAVE YOU!



The End

- Contact Info.: Sandy Williamson **WORDBoats.com**
WHERE YOU FIND THIS PPT
- 888-387-1963 free from Can & US goes to cell phone.
- Aluminum boat trailer dealer: VentureTrailers.com (Baltimore), TuffTrailers.com (Bellingham), and KokpelliTrailers.com (Phoenix) Genesis Pontoons MI
See Bus. Cards & me at table outside lecture hall after talk.
Or North Hall 134 rest of 2017 show.
- **tinyurl.com/sbs16** goes to:
- **www.seattleboatshow.com/seminarsurvey**