



Deck General – Safety

Towing _ Shiphandling

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Fairleads perform the same function as _____.

chocks

Illustrations: DECKFITTINGS

The lead of a tow bridle is usually redirected with a _____.

chock

Illustrations: DECKFITTINGS

The best method to secure a tow line to a cleat is to _____.

take a turn around the cleat, then figure-eights, and a half-hitch

Illustrations: DECKFITTINGS

In towing, chocks are used to _____.

protect the towline from chafing

Illustrations: DECKFITTINGS

See REF790

A device used to tighten up remaining slack in wire rope when you are making up to a tow in inland waters is a

_____.

steamboat ratchet

Illustrations: RATCHET-LOADBINDER

See REF788

What is NOT considered "jewelry"?

Buttons

Illustrations: RATCHET-LOADBINDER

See REF788

In illustration D024DG below, which item is rigged to transmit the thrust from one barge to another barge when going ahead?

E

Illustrations: D024DG_WM_050218

In illustration D024DG below, what is the purpose of item "G"?

prevent the knee from shifting when the rudder is put hard over

Illustrations: D024DG_WM_050218

In illustration D024DG below, which item is rigged to transmit the thrust from one barge to another when backing down?

C

Illustrations: D024DG_WM_050218

In illustration D024DG below, which item refers to the facewire?

I

Illustrations: D024DG_WM_050218

Which item in illustration D024DG below, parting which item is one of the greatest hazards of pushing ahead?

I

Illustrations: D024DG_WM_050218

In illustration D024DG below what does item "A" represent?

lashing

Illustrations: D024DG_WM_050218

When towing astern, increased catenary will _____.

reduce shock stress on the towing hawser

Illustrations: TOW IN STEP

See REF292

The Honolulu (Christmas tree) tow was devised to _____.

keep the catenary to a minimum

Illustrations: TOW IN STEP

See REF292

What does "in step" refer to in regards to towing?

Both the towed and towing vessels reach a wave crest or trough at the same time.

Illustrations: TOW IN STEP

See REF292

In towing it is desirable for the tug and the tow to ride wave crests simultaneously because _____.

shock loading on the tow line is reduced

Illustrations: TOW IN STEP

See REF292

A towing vessel should be on the crest of a wave at the same time as its tow and in the trough at the same time. The term used to describe this is _____.

being in step

Illustrations: TOW IN STEP

See REF292

To reduce the amount of catenary you may _____.

shorten the hawser or increase the tug's speed

Illustrations: TOW IN STEP

See REF292

Yawing can be described as _____.

veering from side to side on the end of the towline

Illustrations: PITCH_ROLL_YAW

See REF291

Which statement describes the motion of a yawing tow?

The tow sheers to one side behind the tug and maintains a position in a line diagonal to the tug's forward movement

The tow snakes behind the tug

The tow twists, sometimes violently, astern of the tug

All of the above.

Illustrations: PITCH_ROLL_YAW

See REF291

The biggest problem you generally encounter while towing a single tow astern is _____.

yaw

Illustrations: PITCH_ROLL_YAW

See REF291

When towing astern, one way to reduce yawing of the tow is to _____.

trim the tow by the stern

Illustrations: PITCH_ROLL_YAW

See REF291

What will NOT reduce yawing of a tow?

Stowing deck loads forward

Illustrations: PITCH_ROLL_YAW

See REF291

A tow that veers to the side on the end of the towline is said to _____.

yaw

Illustrations: PITCH_ROLL_YAW

See REF291

"Hanging a barge off" means to _____.

moor a barge to the bank and leave

In towing, heaving lines are used for _____.

passing a messenger line

See REF791

Which factor(s) must you consider when making up a towing bridle?

The horsepower of the tug

The weight of the tow

The beam of the barge

All of the above.

A tow bridle is attached to the main tow hawser at the _____.

fishplate

When towing astern what equipment should be stowed ready for use near the towline?

Axe or cutting torch

When being towed by one tug, the towing bridle should be connected to towing _____.

bitts with figure eights

Under which condition is a tug likely to be tripped?

When the towing hawser leads forward of the quarter

The term "overriding" or "overrunning" when applied to towing, implies that _____.

the tow has overtaken its tug

Nylon rope is often used in the makeup of a towline because it _____.

stretches

Where is the best location to install a towing hook?

Just aft of amidships

An intermediate spring is _____.

generally located between the "fishplate" and the main towing hawser

Towing a structure using two tugs approximately side by side, each using one hawser, is referred to as a _____.

breasted tug tow

When towing another vessel, the length of the towing line should be _____.

such that the vessels will be in step

A long pole with a hook at one end, used to reach for lines, is known as a _____.

pike pole

Which structural members improve a towing vessel's chance of surviving punctured shell plating?

Transverse watertight bulkheads

See REF444

Which best describes a "fishplate" used in towing?

A triangular-shaped heavy steel plate with a round hole inset from each corner

On a light tow, what could you substitute for a fishplate?

heart-shaped shackle

An ocean tow is sinking in deep water. Attempts to sever the towing hawser are unsuccessful. Which action should now be taken?

Slip the towline and allow it to run off the drum.

You should attach a towline to a trailer eye bolt using a(n) _____.

bowline

Is tripping limited to harbor and coastal towing?

No. Forces tending to capsize a tug are as dangerous on the high seas as they are in harbor and coastal work.

A tow can override its tug as a result of _____.

a mechanical breakdown on the tug

the tug reducing its speed

adverse tidal current conditions

All of the above.

The disadvantage of using three strand nylon line for towing is its _____.

danger to crew if it parts

A heavy steel curved arch constructed athwartships and above the after deck on a towing vessel is sometimes called a _____.
texas bar

You would NOT secure a line to a _____.
stand pipe

You would be most likely to use a fishplate _____.
on a hawser tow

With a large ocean tow in heavy weather, you should NOT _____.
adjust the towline so the tug is on the crest when the tow is in the trough

A towing vessel becomes tripped while towing on a hawser astern. What factor is LEAST important when assessing the risk of capsizing?
Height of the towline connection

Fittings used for towing must be _____.
securely fastened

What is the effect of releasing the towline in a tripping situation?
It disconnects the capsizing force and allows the tug to recover from its list.

What safety precautions must you take when maneuvering on a towing hook?
Clear the afterdeck and fantail of personnel.

Your vessel is being towed and you are using a tripping rope. A tripping rope of fiber or wire is used to _____.
retrieve the outboard legs of the bridle where they are connected to the fishplate

A heavy steel curved arch constructed athwartships and above the after deck on a towing vessel is sometimes called a _____.
Dutch tow bar

Catenary as applied to tow lines denotes the _____.
dip of the line
See REF292

The tow makeup that is designed to keep the catenary of the tow hawser to a minimum is called the _____.
Christmas tree tow
See REF292

You would NOT secure a line to which item?
Stand pipe

The owner or Master of a vessel pushing ahead or towing alongside must ensure that each of the following is appropriate for the vessel's horsepower and tow arrangement EXCEPT _____.
hydraulic couplings

Where is a surge line placed in the towing hookup?
Connected between the main towing hawser and the towing bridle

When towing astern, you notice that another vessel is about to pass between the towing vessel and the tow. You should immediately _____.
slow down and pay out the main tow hawser

You have been towing astern and have just let go the tow. Your deckhands are pulling in and faking the towline by hand on the stern. The most dangerous action to take is to _____.

back down on your engines

When towing a small trailer-able boat, the sturdiest fitting available to attach a tow rig is the _____.

trailer eye

What could be used as fairleads on a towed vessel?

Double bits

Chocks

Roller chocks

All of the above.

Before leaving port on an ocean tow, a tug captain should assure himself of all the following EXCEPT _____.

an insurance underwriter has prepared a pre-sailing survey

How many legs does the bridle for an ocean tow have?

Two

Of which type of material may a towing hawser be constructed?

Polyester

Nylon

Wire rope

All of the above.

On a shallow water tow, the catenary of the towline should be _____.

small

See REF292

When tandem tug towing, the more powerful of the two tugs should be _____.

behind the lead tug

The section of each end of a barge which is heavily reinforced to take the pressure of pushing is called the _____.

headlog

In astern towing, a tow span, also called the "tow bar" or "towing arch", is used to _____.

prevent fouling of the hawser on deck gear located on the stern of the towing vessel

If the towing bridle legs are not of equal length _____.

the shorter leg may fail

excessive strain is placed on the shorter leg

the longer leg is slack

All of the above.

The MINIMUM acceptable size for a towing bridle would be that size in which the safe working load (SWL) of each leg of the bridle is equal to _____.

that of the main towing hawser

You are towing a large barge on a hawser. Your main engine suddenly fails. What is the greatest danger?

The tow will overrun tug.

A vessel brought alongside should be fended off the towing vessel by _____.

fenders

How do the height and location of a tug's towing bits relate to the danger of tripping?
The further forward and closer to amidships the more readily the tug will trip.

What is the equipment used to control, protect and connect a towline called ?
terminal gear

An ocean towing bridle should _____.
have equal legs of sufficient length

A towing hawser should be stowed _____.
in a sealed locker with adequate air circulation

Which statement is TRUE concerning hawser towing?
Shortening the tow hawser generally decreases the maneuverability of the tug.

Which statement concerning an automatic towing engine is FALSE?
As tension on the hawser increases, more line is taken in by the automatic towing engine.

The term "bollard pull" refers to a towing vessel's _____.
pulling ability under static conditions
See REF796

When barge headlogs do not meet or are not even with one another, the void or opening between them is called a _____.
notch

When connecting the tow bridle to a tug, the end of the bridle is passed with a _____.
messenger line

Which type of bridle is the most effective for a heavy ocean tow?
Stud link anchor chain for chafe resistance and strength

What is NOT suitable for use in making up the towing rig for a heavy, long ocean tow?
Ring

What is the greatest danger of an overriding tow?
Collision between the tow and the stern of the towing vessel

What imminent danger results from tripping?
Capsizing your tug

The connection to the towline must be secured with a _____.
shackle secured a nut and cotter pin

On a long ocean tow, the bridle should be made up of two equal lengths of _____.
chain

A towing hawser is readied for service by _____.
faking it on deck in a fore and aft direction

To obtain better steering control when you are towing alongside, your vessel should be positioned with its _____.
stern extending aft of the tow

When towing, the least amount of tension will be on each bridle leg when the two legs _____.
form a small angle with each other

A tug's horsepower available at the shaft is _____.
brake horsepower

To lead the towing hawser over the center of the stern when not under a strain you could _____.
fairlead it through a stern roller chock
hold it in the median position by a gob rope
lead it through the Norman pins
All of the above.

See REF792

A bridle for an ocean tow consists of _____.
two chains of equal length

You intend to tow a barge with one tug and expect continuous high winds from the north. To reduce the yaw of your tow, you should _____.
shorten one leg of the bridle

When towing, a tow hook is used to _____.
provide quick release of the hawser

Which factor(s) can affect the performance of a river towboat?
The presence of flanking rudders and Kort nozzles
The draft of the towboat and the draft of the barges under tow
The placement of the barges within the tow
All of the above.

The owner or Master of a towing vessel that tows astern must keep records of the towline(s) that include all of the following information EXCEPT _____.
an invoice showing the cost of the towline

A towing winch, that handles a wire towline, must have all of the following EXCEPT a _____.
source of emergency power to operate the winch

You are being towed by one tug. As you lengthen the bridle legs you _____.
reduce the yawing of your vessel

What does "end for end" mean in regard to a towing hawser?
To swap ends of the hawser to minimize wear

When you have a tow alongside, your stern should extend aft of the tow in order to _____.
obtain better steering control

When towing, what is the main reason for using a chain bridle on a wire hawser?
It gives a spring effect to cushion the shock.

Indicated horsepower refers to a towing vessel's power which is _____.
theoretically available

A tow consists of 8 barges: 6 jumbo barges made up 3 abreast and 2 long, with 2 standard barges abreast as lead barges. How long is this tow?
565 feet

It is NOT advisable to use nylon for alongside towing because it _____.
stretches too much

A chain bridle is used when towing astern because it _____.
provides an effective catenary and absorbs shock due to its weight
See REF292

While towing, bridle legs of unequal lengths may cause _____.
the shorter leg to fail

With a large tow astern, there is immediate danger to the tug in the event of the _____.
tug losing power

What shape barge offers the least resistance in river towing?
Barges with raked shaped bows

When should you conduct a visual inspection of your towline?
Whenever its serviceability is in doubt.
In accordance with the manufacturer's recommendation.
At least once a month.
All of the above.

A vessel that tows astern must have a/an _____.
method to easily release the towline

When a tow is trimmed by the stern it is said to _____.
drag

When paying out nylon line from around the bitts _____.
stand clear of the bitts and use two or more round turns under your figure eights

Where should a vessel being towed alongside be positioned for increased maneuverability?
Stern of the towed vessel forward of the stern of the towing vessel

Tugs sometimes shackle a length of chain in the towline in order to _____.
put spring in the towline

The measurement of the amount of force a towing vessel is capable of applying to a motionless tow is called _____.
bollard pull
See REF796

A tow of 9 barges is made up three abreast by three long. The towboat is faced up to the last barge of the center string. The outer two strings of barges are the _____.
drag strings

When towing astern, chafing gear should NOT be used on a hawser which is _____.
attached to an automatic towing engine

A chain bridle is preferable to a wire rope towing bridle on a long ocean tow because chain _____.
is less subject to wear and damage from abrasion
requires little maintenance
is more flexible and has the ability to absorb shock because of its weight
All of the above.

REF291

A ship at sea moves in six degrees of motion: heave, sway, surge, roll, pitch and yaw. The first three are linear motions. Heaving is the linear motion along the vertical Z-axis, swaying is the motion along the transverse Y-axis, and surging is the motion along the longitudinal X-axis. Rolling is a rotation around a longitudinal axis, pitching is a rotation around the transverse axis and yawing is a rotation around the vertical axis. HEAVE: The alternate rising and falling of a vessel in a seaway. SWAY: A vessel's motion from side to side. SURGE: A vessel's transient motion along her fore and aft axis. ROLL : Motion of the ship from side to side, alternately raising and lowering each side of the deck. The oscillating motion of a vessel from side to side due to ground swell, heavy sea, or other causes. PITCHING: The alternate rising and falling motion of a vessel's bow in a nearly vertical plane as she meets the crests and troughs of the waves. YAWING: To turn from side to side on an uneven course.

REF292

A catenary is the curve or dip in a line caused either by the line's own weight or by weight attached to the line. If a towline is stretched taut between two vessels any shock loading is transmitted directly through to both vessels.

REF444

Hull members that run athwartship (from one side to the other) are called "transverse." Those that run from the bow to the stern are called "longitudinal." A ship's inner bottom forms the tank top in the engine room. The double bottom is the space or tank between the inner bottom and the skin or the hull. Vertical transverse members in the double bottom are called floors. Stringer: A term applied to a fore-and-aft girder running along the side of a ship and also to the outboard strake of plating on any deck. The side pieces of a ladder or staircase into which the treads and risers are fastened. Stringer Plates: A term applied to the outboard plates on any deck, or to the plates attached to the top flanges of a tier of beams at the side of a vessel. Stiffener: An angle bar, T-bar, channel, etc., used to stiffen plating of a bulkhead, etc. A cofferdam is a void space between two tanks that prevents one tank from leaking directly into the other. TUMBLE HOME: The decreasing of a vessel's beam above the waterline as it approaches the rail. Opposite of flare. RUN: The underwater portion of a vessel aft of the midship section or flat of the bottom. That portion of the after hull that tapers to the stern post. MIDDLE BODY: That portion of the ship adjacent to the midship section. When it has a uniform cross section throughout, its length its waterlines being parallel to the centerline, it is called the parallel middle body. ENTRANCE: The forward underwater portion of a vessel at or near the bow. The angle formed between the center line of the ship and the tangent to the designed waterline is called the angle of entrance. CAMBER, ROUND OF BEAM : The weather decks of ships are rounded up or arched in an athwartship direction for the purpose of draining any water that may fall on them to the sides of the ship where it can be led overboard through scuppers. The arching or rounding up is called the camber or round of the beam and is expressed in inches in connection with the greatest molded breadth of the ship in feet, thus, "the main deck has a camber of 10 inches in 40 feet." It is measured at the center line of the ship at the greatest molded breadth and is the distance from the chord to the top of the arch. DEADRISE : The angle which the straight portion of the bottom of the floor of the midship section makes with the base line. It is expressed by the number of inches rise above the base line in the half-beam of the vessel. SHEER : The longitudinal curve of a vessel's rails, decks, etc. the usual reference being to the ship's side; however, in the case of a deck having a camber, its center line may also have a sheer. The amount by which the height of the weather deck at the after or forward perpendicular exceeds that at its lowest point. FLARE : The spreading out from a central vertical plane of the body of a ship with increasing rapidity as the section rises from the water line to the rail. COUNTER : That part of a ship's stern which overhangs the stern post, usually that part above the water line. FREEING PORTS : Holes in the lower portion of a bulwark, which allow deck wash to drain off into the sea. Some freeing ports have swinging gates which allow water to drain off but which are automatically closed by sea-water pressure. BUTT : That end or edge of a plate or timber where it comes squarely against another piece, or, the joint thus formed. The long edge of a plate is called the edge and the short edge is called the end. A ship's inner bottom forms the tank top in the engine room. The double bottom is the space or tank between the inner bottom and the skin or the hull. Vertical transverse members in the double bottom are called floors.

REF788

Operating a Ratchet Load Binder Before operating, be sure to check and follow your equipment's manual and all transportation regulations for the jurisdictions for which you'll be traveling. Attaching the Binder First, turn the pawl to the neutral position so that it is disengaged from the binder gears. Use your hand to unscrew and fully extend the binder hooks. Be sure that you do not exceed the maximum extension length. With your chain connected to the load at a 45 degree angle, attach the binder hooks to the chain while taking up as much slack as possible. Turn the pawl to the 'in' setting and begin ratcheting the chain to the desired tension needed. Wrap any remaining loose chain around the binder and use the zip tie to secure it into place. Wrap Chain Around Binder and Secure. Removing the Binder Unwrap the chain and turn the pawl to the 'out' setting. Begin ratcheting the binder until the chain becomes slack and the binder hooks can be removed from the chain.

REF789

Taking at least three turns around one timber head gives enough friction to check the barge or slack away the line if needed without jamming (fouling).

REF790

A chock is a heavy fitting with smooth surfaces through which mooring lines are led. Mooring lines are run from bitts on deck through chocks to bollards on a pier when the ship is moored. There are three types of chocks: An open chock is a mooring chock that is open at the top. A closed chock is a mooring chock, closed by an arch of metal across the top. A roller chock is a mooring chock that contains a roller for reducing friction.

REF791

A heaving line is a light line used to get a hawser ashore when mooring a ship to the dock or in passing a heavy line for any purpose. One end of the heaving line is fitted with a monkey fist to assist in getting distance when heaving. After making the heave, the other end of the heaving line is bent to the hawser with a bowline. The heaving line is coiled carefully with about two-thirds of the coil held in the right (casting) hand and the rest in the left hand. In heaving, the right arm should be held straight, and the line in the left hand allowed to run out freely. Frequently the problem in not getting a long heave is that the coil in the left hand is not arranged clearly for running. Prewetting the line is done to improve distance and handling. To become proficient in heaving, you must practice frequently. Every Seaman should practice making casts. A poor cast is always a reflection on the ability of the Seaman.

REF792

A 'gob rope' is used by a tug to change the position of the towing position from midships to the aft end of the tug. The purpose of this is to prevent the tug from capsizing caused by the direction of the towline 'girting' the tug.

REF793

A catenary is the curve or dip in a line caused either by the line's own weight or by weight attached to the line. If a towline is stretched taut between two vessels any shock loading is transmitted directly through to both vessels.

REF794

"in irons" describes a condition where the opposing moment of the towline is the same as or greater than the turning moment created by rudder and other hydrodynamic forces. The tug is then rendered incapable of steering (see Figure 6-6). Being in irons can be catastrophic for a tug, especially when maneuvering in confined waters or in a poor orientation with respect to the sea. A tug also can be rendered in irons when it cannot make headway under its own power because of the towline making contact with the bottom. In this case, the tug is effectively anchored by the stern. The tow, however, is not anchored and may close rapidly. To avoid being run down, the tug should shorten the wire and regain headway at once.

REF795

Back-up wires are installed to hold a towing bridle in the event of failure of the towing pad eye.

REF796

Bollard pull

REF797

catenary