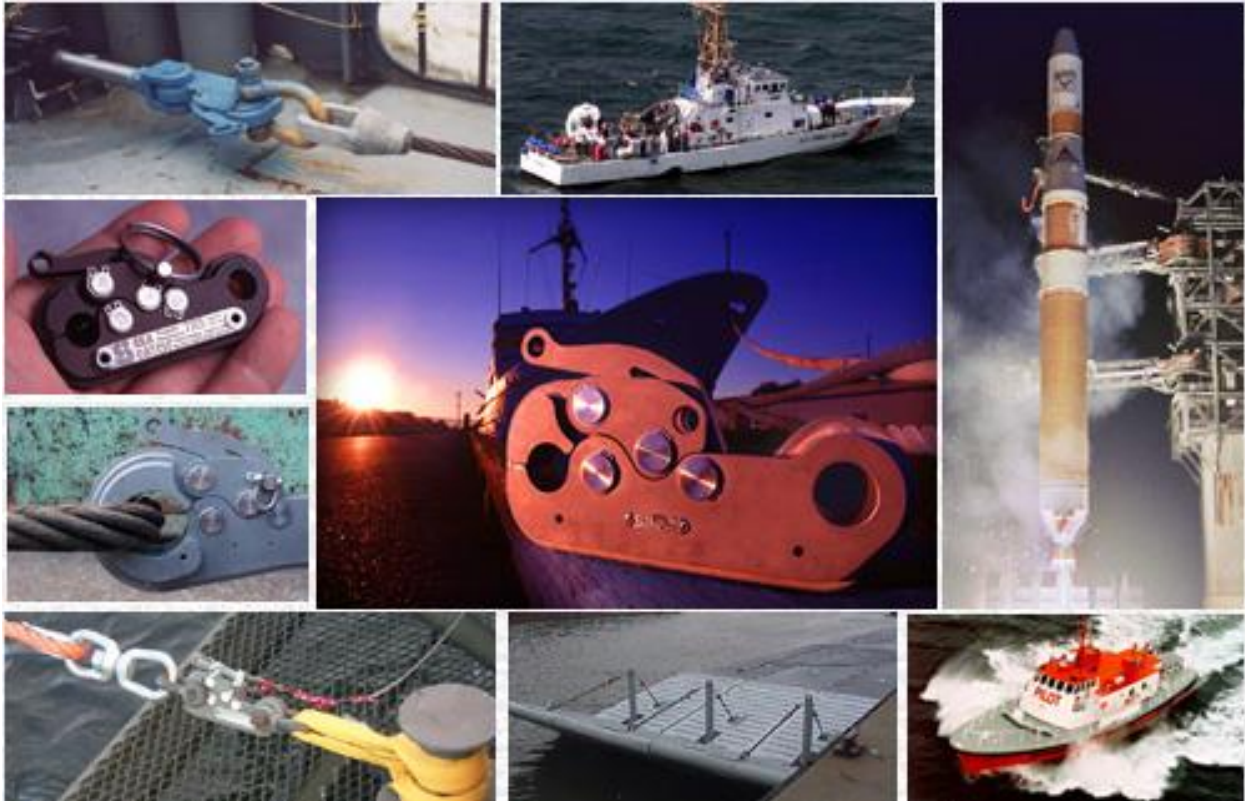
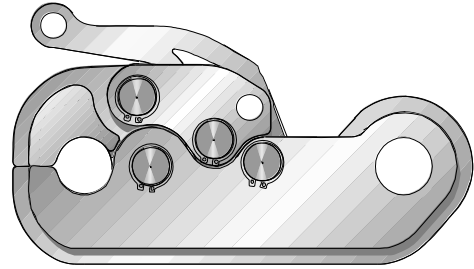


SEA CATCH®



Sea Catch Product Catalog

What makes the Sea Catch so revolutionary?

The Sea Catch Toggle Release is the simplest and most innovative design in quick release history. It is a device designed exclusively for safe release of a line or object under load.

Its multi-purpose design offers a combination of features never seen before in a quick release: multi-directional releasing capabilities, on-load and off-load releasing, a hitch pin safety lock to prevent inadvertent release, lanyard-style release for maximum user safety, parts made from aerospace-grade stainless plate, easy connection to common shackles, no springs, and a user-friendly size.

The design anticipates reality: heavy sea conditions, corrosive marine environment, quick release kickback, inadvertent release, and the occasional shock and lock-ups of unanticipated overload. The key to its success is the combination of a proven toggle linkage principle, low friction, computer-generated parts, and a lot of thinking about its many uses and applications.



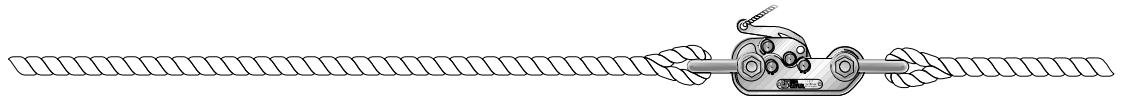
– Sea Catch inventor, John McMillan

Quick releases have to be specific. Movie special effects, tug-tow operations, rescue launch deployment, anchors – each release poses a very different challenge. Sea Catch meets these challenges with models ranging from 1 to 600-ton capacities. Since 1994, Sea Catches have played significant roles in safe releasing operations in 14 major industries around the world. Some units have exceeded 5,000 cycles and are still in service. All feedback has been positive – nothing but praise from engineers and users worldwide.

Releasing an object under load need not be a daunting task any longer.

Release yourself of unnecessary hazards.

Release with Sea Catch.



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Product Design and Specifications

All product dimensions and specifications are cataloged with the intent to provide complete and accurate information for general requirements and convenient product selection. Product design and specification changes may occur after printing due to normal product improvements. McMillan Design, Inc. reserves the right to make changes and improvements without prior notice.

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February 2019

General Policies

Prices: Call your dealer or McMillan Design, Inc. for current prices.

Dealer Prices: Available on request.

Proof Load Certification: Provided on a case-by-case basis. Call for current prices.

Proof Load with ABS Witness Document: Call for current prices.

To Order: Call, email or fax purchase order, item(s), billing and shipping addresses, and shipping instructions.

Delivery: Within 2 weeks of date of order if item is in stock. If not, delivery may be 6 – 8 weeks or more depending on material availability.

Terms: Net 10 days on invoice unless otherwise agreed upon. Major credit cards also accepted.

Overseas Shipments: All overseas shipments require prepayment prior to shipping. Receiver responsible for outgoing bank charges when payment is made by wire transfer or foreign draft. Receiver responsible for duty and taxes.

Dear Sea Catch User:

As owner of McMillan Design, Inc. and inventor of the Sea Catch Toggle Release, I am committed to the design and development of the Sea Catch from concept through field testing, FEA, production, sales, and design and engineering services. Quality customer service is assured by McMillan Design and its staff. For modifications and unique applications, the Sea Catch design is computer generated and easily modified to suit most user's needs.

As the optimum design solution to many conventional quick release problems and with thousands of units in service, the Sea Catch Toggle Release has received nothing but praise from engineers and users worldwide.

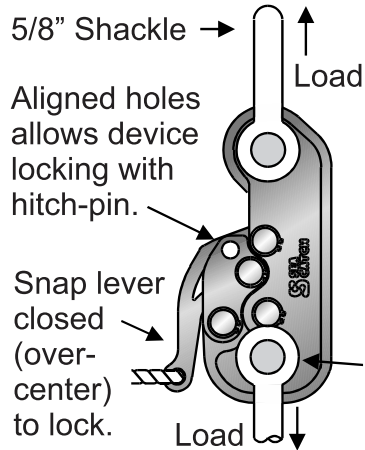
Feel free to contact us if you have questions, need more technical data, wish to discuss your project or with feedback on the Sea Catch line of products. We welcome JPG photos or videos of the Sea Catch product in use.

Good luck with your project.

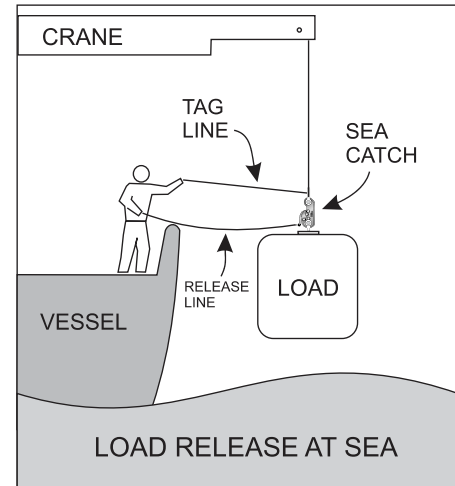
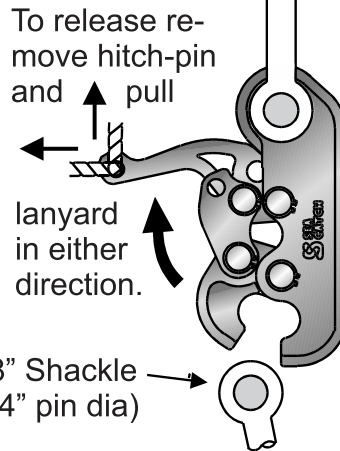
*Best regards,
John McMillan*

Sea Catch Operation

LOCKED:



RELEASED:



Before operating the Sea Catch device, please carefully read and understand this document for your safety and the safety of others.

Operational Tips:

Device Locking

Having secured the recommended shackle to the rear end of the Sea Catch, fully open the jaw by removing the hitch pin and prying up the release lever. Insert the pin of the shackle to be released into the jaw opening.

Secure the shackle by closing the release lever to the locked position and firmly lock the toggle pin over center with a vice-grip-like snap.

The shackle is now held firmly locked even with no load on the device. The hitch pin can be reinserted to prevent inadvertent release.

The Sea Catch is now ready to be loaded. Once the hitch pin is removed, the Sea Catch is armed and ready to be released.

Device Releasing

Release of the loaded Sea Catch is activated by first removing the hitch pin and then pulling firmly on the release lanyard connected to the end of the release lever. The release lanyard can be activated in any direction within the 90 degrees perpendicular and parallel to the line of load. The Sea Catch can be released with or without load on the device.

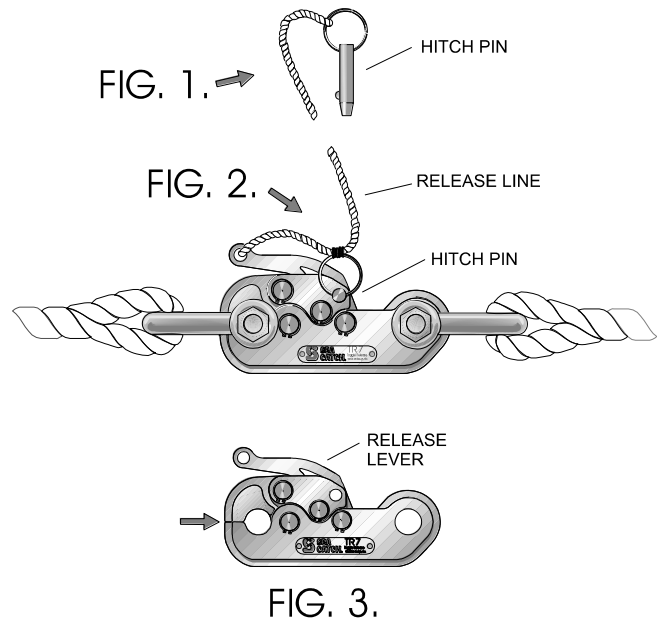
The use of the hitch pin is not required to secure the device in the locked position. It is an added safety measure preventing inadvertent release. A hitch pin is provided with each unit.

Additional User Tips

Sea Catch Hitch Pin Securement

To prevent the loss of the hitch pin, three methods of securing it to the release lanyard are suggested as follows:

1. The first option is to tie the hitch pin to the outer end of the release lanyard as shown in **FIG. 1**.
2. The second method is to secure the hitch pin at a point near the inner end of the release lanyard as shown in **FIG. 2**. This method not only provides hitch pin securement but may facilitate its removal at the time of release.
3. The third is an option available for purchase called the Spring Safety Pin (SSP) for securing and remotely releasing the hitch pin as shown on page 5.



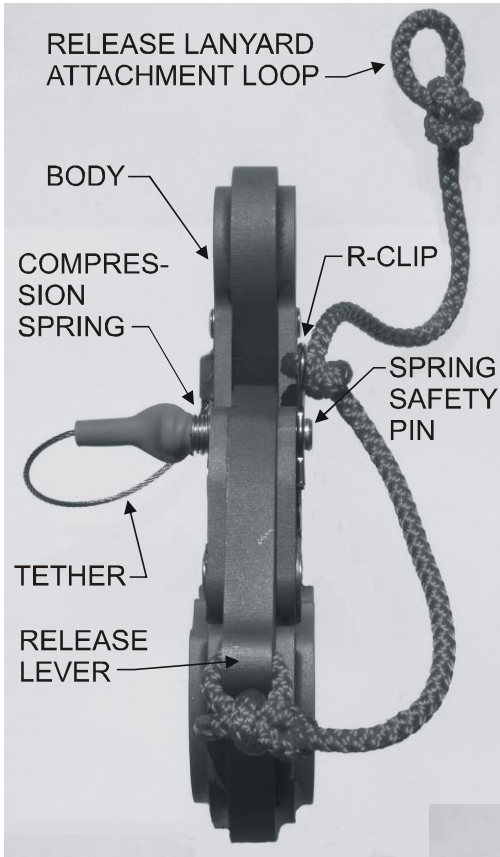
Sea Catch Over Center Pressure Adjustment

Ample material has been left at the tip of the movable jaw (see arrow on **FIG. 3**) where the jaw and body come in contact. This aids in holding the device securely over center in the locked position even when no load is applied to the device. It also helps prevent inadvertent release of the device.

Should the user require that the effort to lock the release lever of the device over center be reduced, a suggestion is to locate the area where the surface of the jaw tip comes in contact with the body tip and lightly file or grind off material in that area. It is important to test the effort frequently after some material has been removed so as to prevent the removal of too much material.

Should the user require that the effort to lock the release lever of the device over center be increased, a suggestion is to increase the thickness of the material between the two surfaces by applying a center punch mark in the area of the jaw where the surfaces meet. Should there still be insufficient material to ensure the positive locking integrity of the device, the contact area of the jaw will need to be lightly welded. This welding material will then need to be ground to the appropriate thickness.

Sea Catch: Spring Safety Pin (SSP)



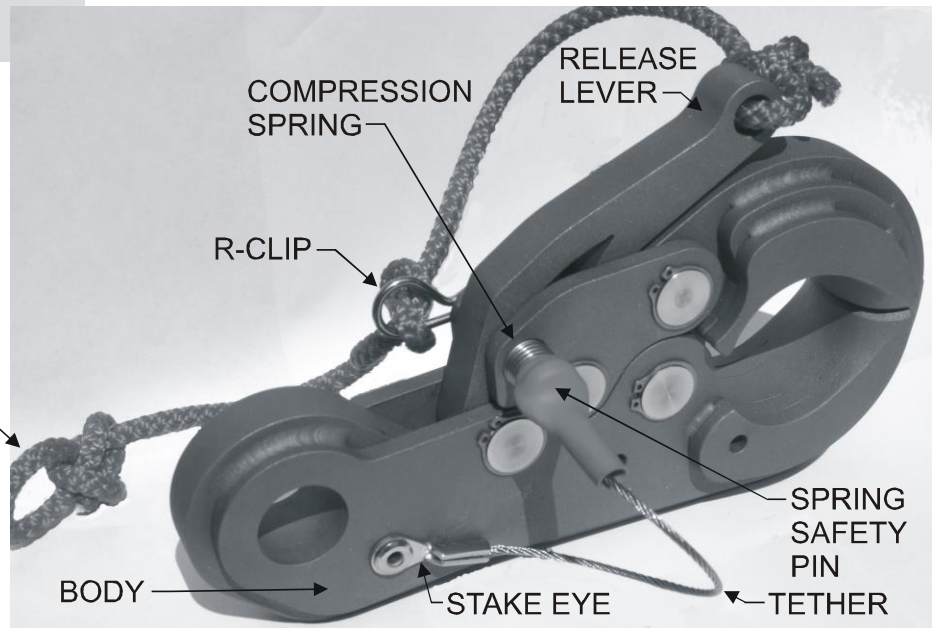
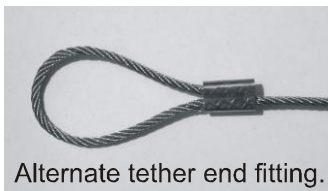
The purpose of the Spring Safety Pin (SSP) option is to allow the user to pull (eject) the pin from a distance and do so using the release lanyard (when attached to release lanyard attachment loop).

The SSP option is available on all new Sea Catch release hooks or as a retro-fit on customer-owned units.

As shown, the pin is fitted with a compression spring that ejects the pin when the R-clip (tied to the lanyard) is pulled from the outer end of the pin. The pin is firmly tethered by wire cable to the body of the Sea Catch with a stake eye fitting (as shown) to prevent it being lost. Thus, the first pull on the release lanyard removes the R-clip (and the Safety Pin) and the second pull activates the release lever to release the load.

All metallic SSP components are stainless steel. SSP pins can be ordered directly from McMillan Design or through your dealer. Please specify the SSP option with your order. The SSP option is comprised of a Safety Pin, an R-Clip, a tether cable, an end fitting, and a short red release lanyard.

RELEASE LANYARD ATTACHMENT LOOP



TIPS: The release lanyard is never to be used as a tag line. Doing so may cause the R-clip to be pulled inadvertently and rendering this safety measure ineffective. Rigging the SSP as shown using the release lanyard rather than a separate line dedicated to the R-clip prevents the release lanyard from binding the SSP and preventing its ejection. In addition, 2 lines (as separate tag line rigged to the lifting shackle and the release lanyard) are easier and safer to manipulate than 3 lines.

Warnings

Warnings !!

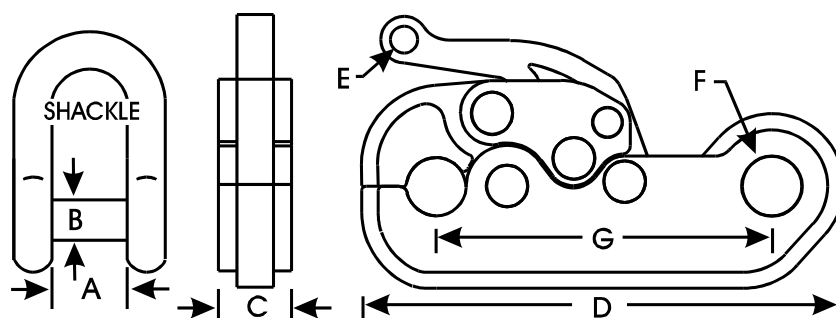
Before operating the Sea Catch device, please carefully read and understand this document for your safety and the safety of others.

- Improper use and improper care of the Sea Catch device may cause injury.
- Hitch-pin must be used to prevent inadvertent release.
- On a fully loaded Sea Catch with the hitch-pin removed, do not use the release line as a tag line or put any tension on it until time to release. An additional tag line secured to the upper shackle (as illustrated on page 3) and kept taught at all times is highly recommended to maintain a slack release line and prevent load rotation.
- Stay clear of all objects released under load.
- Do not exceed load capacity of this device.
- Choose the proper size Sea Catch so that it is not loaded with or releasing more than its rated load.
- Do not side load the Sea Catch as it may cause loss of retainer rings and other parts or permanently damage the device.
- While in its loaded position, do not obstruct the Sea Catch so as to prevent its body being aligned straight with the line of load. Misalignment may prevent the movable jaw from releasing the connected member even with the device in the released position.
- Do not mount the Sea Catch such that the mounting fixture damages the unit while in use. This could cause loss of parts and unit malfunction.
- Before welding on the body of the device (if needed for mounting purposes, e.g.), first remove the two pivot pins on the body and take off the moving parts of the device to prevent distortion and possible unit malfunction.

Maintenance

- Inspection of the Sea Catch device is advised after each use. Should the device be held in a static state under load, inspection should occur every 3-6 months depending on the severity of its corrosive environment.
- Ensure every retainer ring is free of corrosion, properly installed and securely seated in its groove. Corroded retainer rings are an early sign of improper care.
- While in use in heavy marine environments or stored for long periods, a quick fresh water rinse and a coating of WD40 or other suitable corrosion retardant is advised. Always store the device in its closed and locked position.
- Pivot pins may require periodic re-lubrication. AQUALUBE is recommended for general marine use. Higher capacity models such as the TR15 and up require a NLGI #2.5 grease with moly added such as the McMaster-Carr item #1335K45. Pivot pin diameters and lengths can vary, therefore each pin must be marked and returned to its original hole.
- Should the device become "soft" (little or no effort to open or close it), it is unsafe to use and should be returned to McMillan Design for refurbishment which includes surface cleaning, attending to any issue with function (cost of replacement parts are additional) and re-lubrication.

Sea Catch: General Specifications



Mod.	Shackle Size (in)	A in(mm)	B	C	D	E	F	G	SW Load lb (sh ton)	Break Ld. lb (sh ton)	Weight lb (kg)
TR3	1/4	.47 (11.93)	.31 (7.87)	.41 (10.41)	2.85 (73.39)	.18 (4.57)	.37 (9.39)	1.96 (49.78)	1,302 (.65)	6,510 (3.2)	.31 (.14)
TR5	7/16	.75 (19.05)	.50 (12.7)	.69 (17.52)	4.5 (114.3)	.25 (6.35)	.55 (13.97)	3.13 (79.50)	3,323 (1.6)	16,618 (8.3)	1.3 (.58)
TR7	5/8	1.06 (26.92)	.75 (19.05)	1 (25.40)	6.62 (168.14)	.38 (9.65)	.81 (20.57)	4.56 (115.82)	7,042 (3.52)	35,210 (17.6)	4 (1.81)
TR8	3/4	1.25 (31.75)	.87 (22.09)	1.19 (30.22)	7.68 (195.07)	.43 (10.92)	.93 (23.62)	5.53 (140.46)	9,574 (4.78)	47,870 (23.93)	6.3 (2.85)
TR10	1	1.69 (42.92)	1.13 (28.70)	1.63 (41.40)	9.75 (247.65)	.56 (14.22)	1.21 (30.73)	6.87 (174.49)	15,840 (7.92)	79,200 (39.6)	12.5 (5.67)
TR11	1-3/8	2.25 (57.15)	1.50 (38.1)	2.12 (53.84)	13.15 (334.01)	.75 (19.05)	1.63 (41.40)	9.15 (232.41)	28,000 (14)	140,000 (70)	32 (14.5)
TR12	1-1/2	2.38 (60.45)	1.62 (41.14)	2.25 (57.15)	14.25 (361.95)	.81 (20.57)	1.78 (45.21)	9.92 (251.96)	32,860 (16.43)	164,300 (82.15)	40 (18.14)
TR15	1-3/4	2.88 (73.15)	2 (50.8)	2.75 (69.85)	17.56 (446.02)	1 (25.4)	2.16 (54.86)	12.21 (310.13)	50,200 (25.1)	251,000 (125.5)	69 (31.29)
TR16	2	3.25 (82.55)	2.25 (57.15)	3.13 (79.5)	19.73 (501.14)	1.12 (28.44)	2.46 (62.48)	13.75 (349.25)	63,380 (31.69)	316,900 (158.45)	108 (48.98)
TR17	2-1/2	4.15 (104.90)	2.75 (69.85)	3.88 (98.55)	24.13 (612.90)	1.37 (34.79)	3.01 (76.45)	16.81 (426.97)	94,740 (47.37)	473,700 (236.85)	197 (89.35)
TR18	3	5 (127)	3.25 (82.55)	4.75 (120.65)	30.79 (782.06)	1.75 (44.45)	3.85 (97.79)	21.43 (544.32)	154,240 (77.12)	771,200 (385.6)	360 (163.2)
		inch (mm)							lb (ton)	lb (ton)	lb (kg)

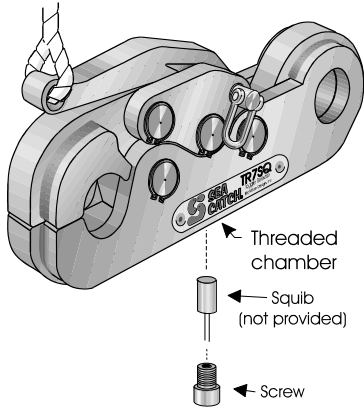
SWL (capacity) is a ratio of 5:1 to breakload.

Products are constantly being improved. Designs, dimensions, capacities and weights are subject to variation.

General Sea Catch Features

- Perpendicular or parallel release directions
- Hitch pin lock for device locking safety
- Computer generated parts precision-cut from aerospace grade stainless steel plate
- Low friction, low effort lanyard-style release for maximum user safety
- On Load / Off Load Releasing
- All parts 100% stainless steel
- No springs

Squib-Fired and Cartridge-Fired Sea Catch Units



Squib-Fired Sea Catch Units

The Sea Catch TR5SQ and TR7SQ models are standard units with a hole drilled through the base below the release lever. The opening is formed into a $\frac{1}{4}$ " diameter threaded chamber.

A squib is inserted into the chamber.

A threaded thumb screw, provided with a hole for the squib wires, is threaded into the opening to secure the squib.

When the squib is electrically activated (1 amp) it causes the Sea Catch to release its load. Manual backup release is maintained by means of the standard lanyard pull on the release lever.

Cartridge-Fired Sea Catch Units

The Sea Catch TR5SQT and TR7SQT models (not shown) are standard units with a hole drilled through the base below the release lever. The opening is formed into a $\frac{1}{4}$ " diameter chamber.

A CAD Thruster is inserted or threaded into the chamber. The TR5SQT is formed to receive CAD Thruster P/N 055069-1. The TR7SQT is formed to receive CAD Thruster P/N 055078. For more information on the CAD Thrusters, contact Cartridge Actuated Devices, Tel. 973-575-1312.

When the squib is electrically activated (1 amp) it causes the Sea Catch to release its load. Manual backup release is maintained by means of the standard lanyard pull on the release lever.

Pros & Cons

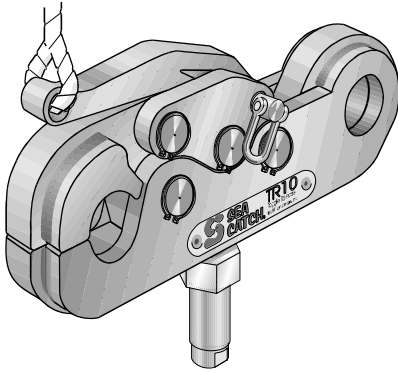
- Squibs are much less expensive than CAD Thrusters.
- Squibs are electric firecrackers made of paper and are prone to moisture contamination. As such, they are prone to failure if not kept completely dry.
- Activation is caused by the expanding gas of the exploding squib.
- Obtaining squibs requires purchaser to have an explosives license.
- Squibs can only be shipped under restricted shipping procedures.

- CAD Thrusters are more reliable since they are sealed, metal containers that prevent moisture contamination. Each cartridge has its own extension pin that breaks a metal seal when activated to push the release lever open.
- CAD Thrusters have less shipping restrictions than squibs. An explosives license is not required to purchase CAD Thrusters.

Only TR5 and TR7 models are available with squib or cartridge activation.
Call for more details.

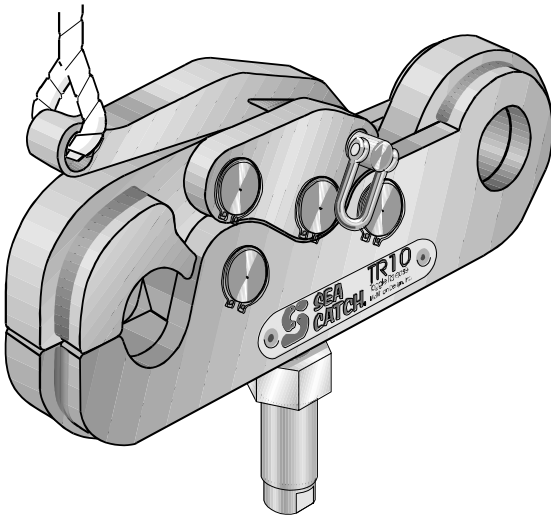
Hydraulic (RAM) - Fired Sea Catch Units

Sea Catch TR7RAM Specifications



- Overall Length: 6.62 inches
- Weight: 5 lbs
- Breakload: 35,210 lbs.
- Capacity (SWL 5:1): 7,042 lbs.
- Hydraulic Cylinder (Single-Acting): Enerpac CST4131
- Thrust: 980 lbs.
- Stroke: .51 inches
- Recommended Shackle: Size 5/8"

Sea Catch TR10RAM Specifications



- Overall Length: 9.75 inches
- Weight: 16 lbs
- Breakload: 79,222 lbs.
- Capacity (SWL 5:1): 15,840 lbs.
- Hydraulic Cylinder (Single-Acting): Enerpac CST9131
- Thrust: 1950 lbs.
- Stroke: .51 inches
- Recommended Shackle: Size 1"

Sea Catch RAM units are standard units fitted with a hydraulic cylinder mounted below the unit. Above the cylinder is an extension pin which penetrates through a hole in the body below the toggle pin. When hydraulically activated, the cylinder pushes the pin and the toggle pin which causes the unit to release. Manual backup release is maintained with a lanyard pull on the release lever.

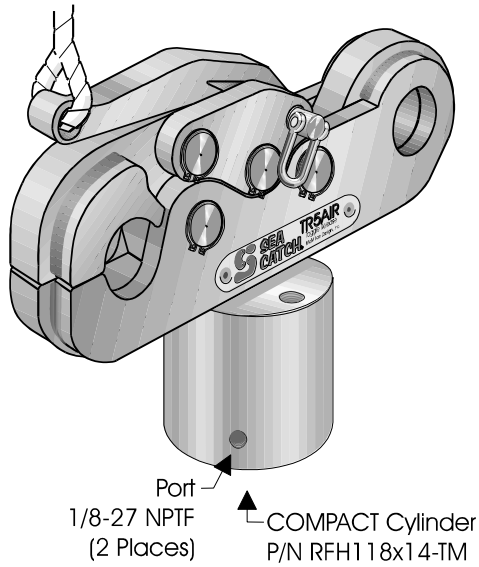
Sea Catch RAM units can be operated remotely via a hydraulic hand pump, air/hydraulic foot pump, or electric pump such as the Enerpac Electric Pump PUD 1101B.

RAM cylinders are limited to 5,000 psi.

RAM option is available on all Sea Catch Toggle Release models.

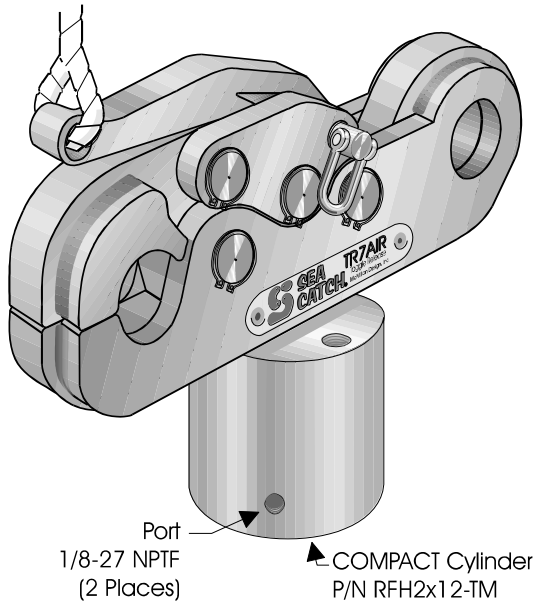
Air (AIR) - Fired Sea Catch Units

Sea Catch TR5AIR Specifications



- Overall Length: 4.5 inches
- Weight: 1 lb, 9.9 oz
- Breakload: 16,618 lbs.
- Capacity (SWL 5:1): 3,323 lbs.
- Air Cylinder: Compact or Nason brands
- Recommended Shackle: Size 7/16"

Sea Catch TR7AIR Specifications



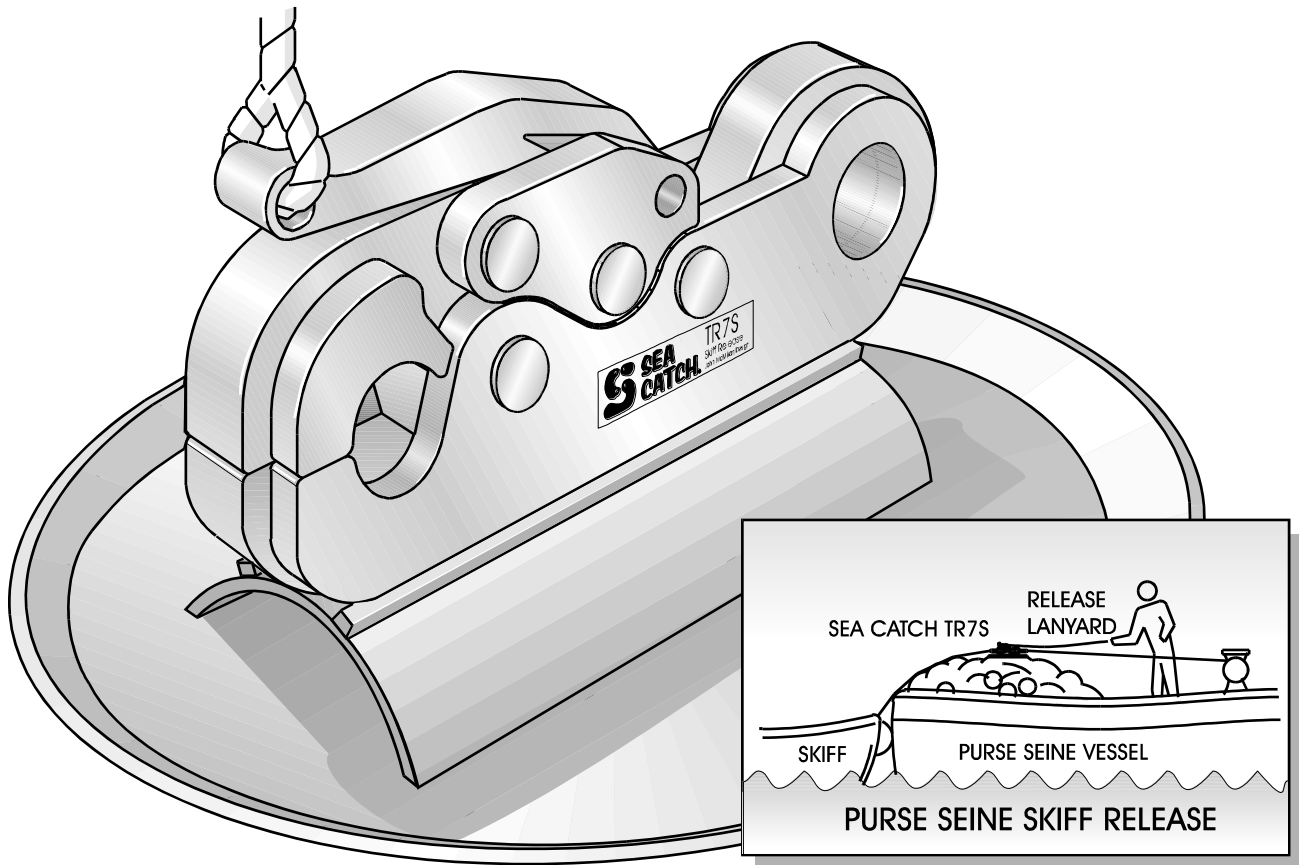
- Overall Length: 6.2 inches
- Weight: 4 lbs, 11.3 oz
- Breakload: 35,210 lbs.
- Capacity (SWL 5:1): 7,042 lbs.
- Air Cylinder: Compact or Nason brands
- Recommended Shackle: Size 5/8"

Sea Catch AIR units are standard units fitted with a hole in the body below the release lever and mounting nuts welded to the body. The rod end of an air cylinder is inserted into the hole and the cylinder is mounted to the mounting nuts with thru-mounting screws.

Sea Catch AIR units operate at 60-100 psi. Manual backup release is maintained with a lanyard pull on the release lever.

AIR option is available on all Sea Catch Toggle Release models.

Sea Catch TR7S (Purse Seine Skiff Release) Units



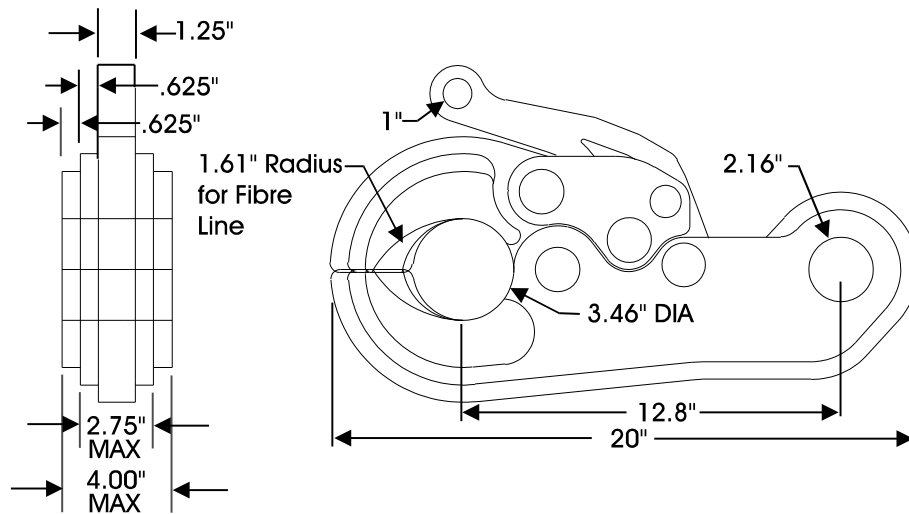
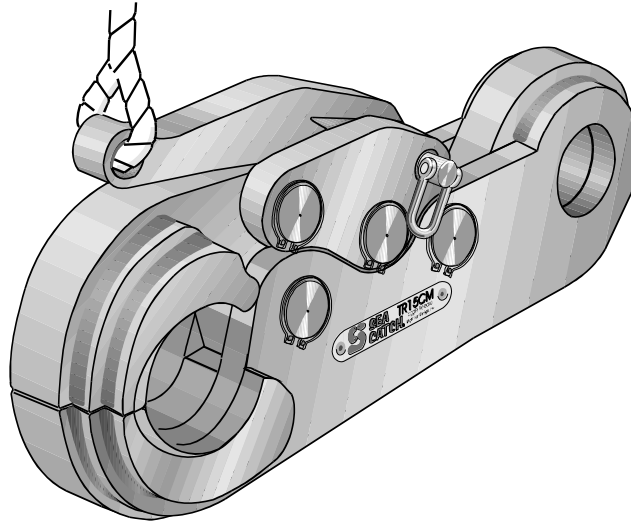
The Sea Catch TR7S – The “Cape-seining-tough” Skiff Release

The Sea Catch TR7S is a standard TR7 securely mounted to a stainless steel dish. This stable base allows the unit to function dependably on top of stacked gear without obstruction. It is lightweight, easy to handle, and releases with virtually no kickback.

Catch TR7S Specifications

- Unit Dimensions: 3-3/4” x 1” x 6-5/8 inches
- Stainless Steel Plate Diameter: 10 inches
- Weight: 5 lbs.
- Capacity (SWL 5:1): 7,042 lbs.
- Recommended Shackle: Size 5/8” (Rear hole)
- Recommended Connecting Link: Stainless steel oval link. (Jaw hole)

Sea Catch TR15LM (Large Mouth) and TR15DM



Sea Catch TR15LM Specifications

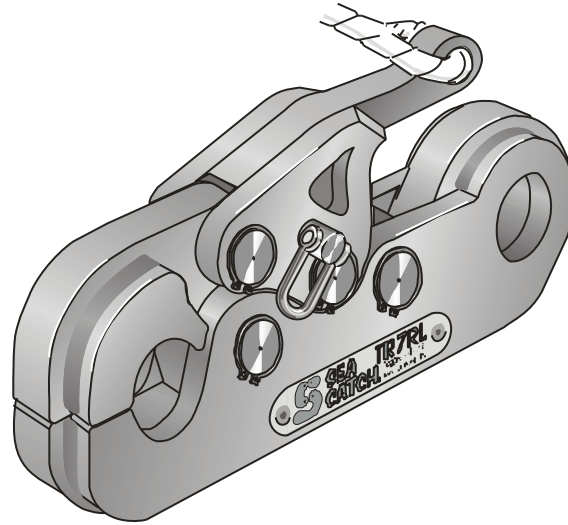
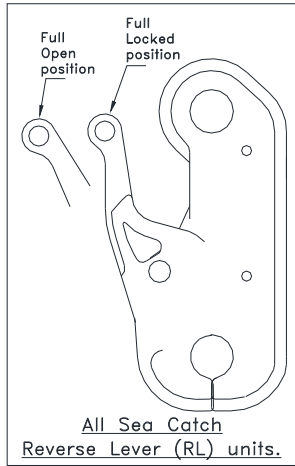
- Overall Length: 20 inches
- Weight: 85 lbs.
- Capacity (SWL 5:1): 52,493 lbs.
- Recommended Rear Connecting Shackle: Size 1-3/4"
- Recommended Front Connecting Fiber Line Size: Up to 2.98 inches diameter

The Sea Catch TR15LM is a modified TR15 formed with a front jaw enlarged to receive a fiber line or strap. Additional side plates at the jaw area are provided to spread the load and reduce line wear.

The **Sea Catch TR15DM** has a front jaw enlarged to receive up to 3.3" fiber line.

Other "Large Mouth" or "M" Series models are available.

Sea Catch TR7RL (Reverse Lever)



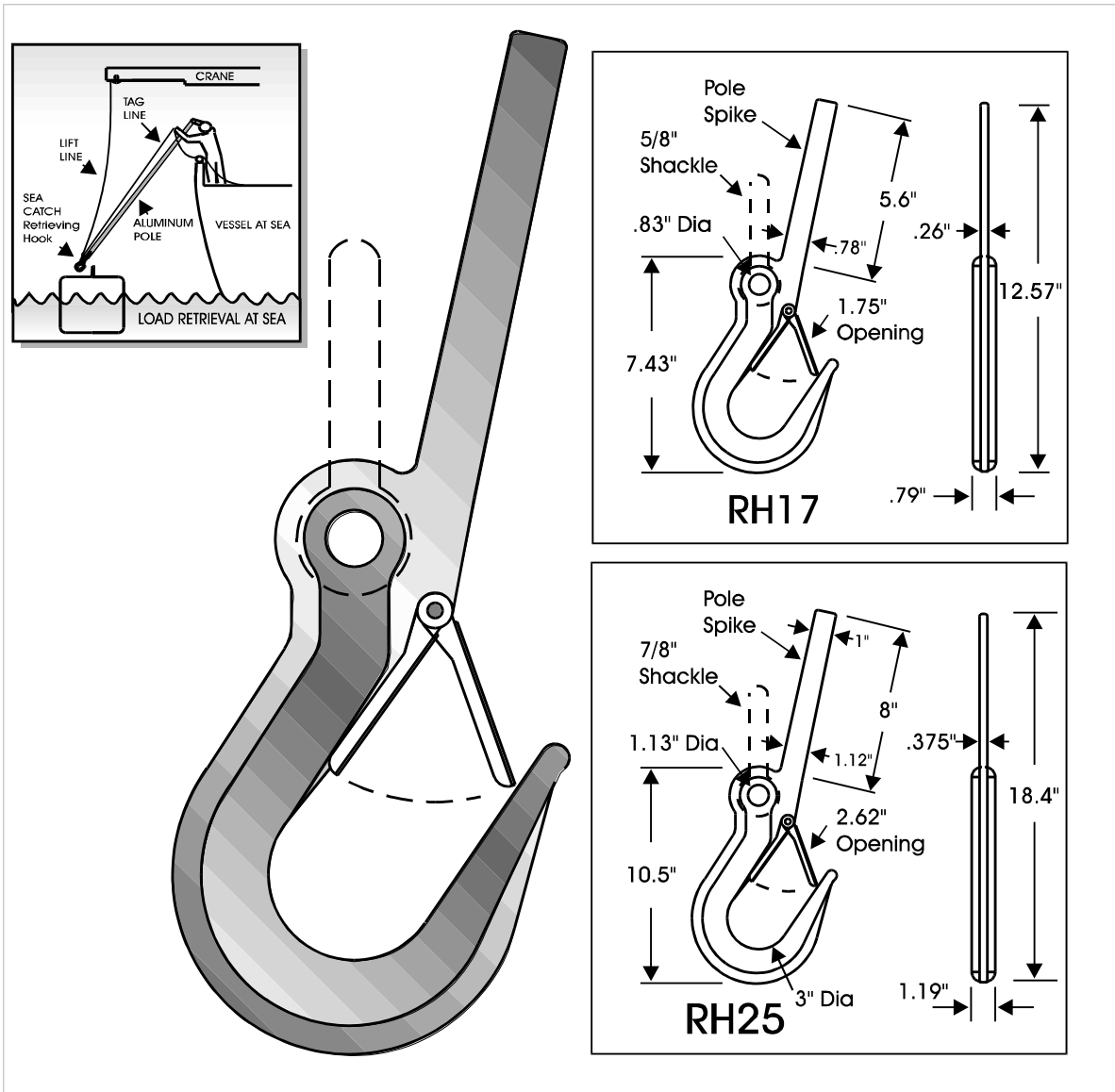
The Sea Catch TR7RL is a standard TR7 modified with the release lever reversed. For suspended release operations this allows the operator to release it from a safe position below the device.

Extra caution must be taken during release since the operator is put closer to the load being released.

The RL version is available in sizes from TR3 to TR16 and each size retains the safe working load (SWL) of the standard unit of that same model.

Call for more details.

Sea Catch Retrieving Hooks



Sea Catch Retrieving Hook Specifications

MODEL	MATERIAL	WEIGHT	BREAKLOAD	CAPACITY (SWL)
RH17	Heat-treated SS Plate	2 lbs, 14 oz	35,280 lbs (17.64 tons)	7,056 lbs (3.52 tons)
RH25	Heat-treated SS Plate	8 lbs, 10 oz	50,400 lbs (25.2 tons)	10,080 lbs (5.04 tons)

Operation

The Sea Catch Retrieving Hook is connected to the lifting line by a shackle. The pole spike on the hook is inserted into one end of an aluminum pole and the user holds the hook in place by means of a tag line secured to the shackle. When the hook is safely connected to the object being retrieved, the pole is quickly withdrawn so as not to interfere with the lifting process. The tag line serves to control the load until it is secured.

Sea Catch Offload Hooks

...designed to safely lower a load to the seabed and automatically release the load upon reaching the seabed.

Model OLH25 Specifications

Material: Heat Treated Stainless Plate
 Weight: 14 lbs (not incl. counterweights)
 Capacity (SWL): 10,080 lbs (5.04 Tons)

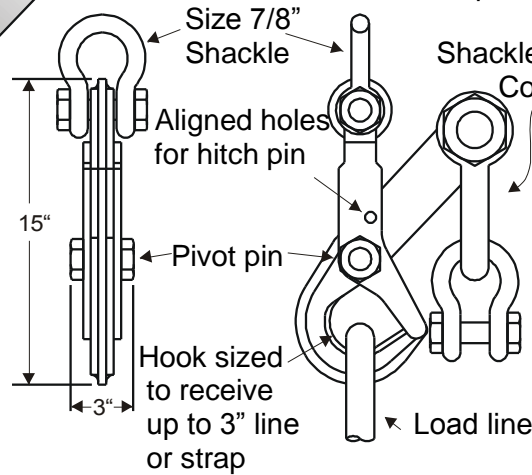
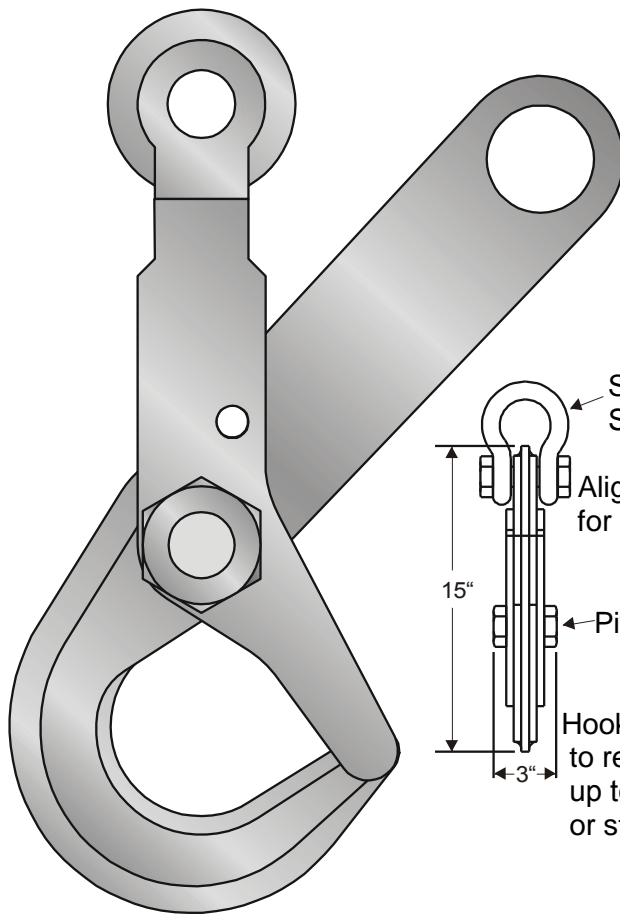


FIG. 1

Shackle size and weight:

- 1-1/2" – 20.8 lbs (9.43 kgs)
- 1-3/8" – 15.83 lbs (7.18 kgs)
- 1" – 6.12 lbs (2.77 kgs)
- 7/8" – 4 lbs (1.81 kgs)
- 3/4" – 2.72 lbs (1.23 kgs)

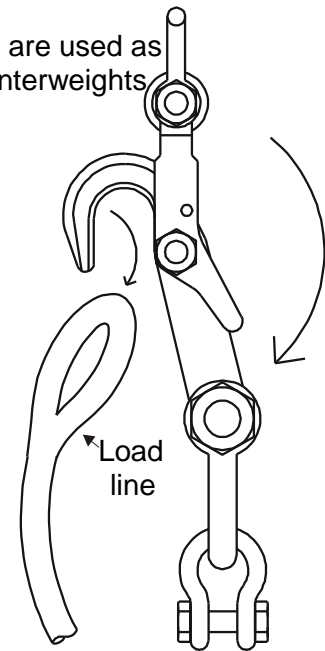


FIG. 2

Operation

FIG. 1 shows the Sea Catch OLH25 which has a pivoting hook sized to receive up to 3-inch (7.62 cm) diameter load line or strap. Aligned holes are provided as shown to lock both parts with a hitch pin in order to prevent inadvertent opening of the hook. Counterweight hole is sized to receive up to size 1-1/2" shackle or any other heavy object. The OLH25 is secured to a size 7/8" lifting shackle as shown. Once the load is safely in the water, the hitch pin is removed. The load is slowly lowered to the seabed. Once its weight is transferred from the hook to the seabed, the counterweight hook rotates on the pivot pin as shown in FIG. 2, thereby releasing the load line. The hook is then lifted to the surface.

Recommended Test: With the full weight of the load line on the hook, the weight of the counterweight should be sufficient to fully rotate the hook and release the load line.

Disclaimers: This device must not be used in high seas where the hook may be subjected to extreme load fluctuations or encounter a zero-load condition. Excessive current, side loading, and irregular bottom conditions may adversely affect the intended function of the device.

Other sizes: Several other sizes (larger and smaller) are available. Call for details.

Sea Catch Certification

Material Credentials and Product Testing

Product Material / Specifications All Sea Catch parts are longitudinally cut from aerospace-grade 15-5 PH stainless steel plate. Pins are turned from 15-5 stainless steel round stock. All material is aircraft quality, grade XM-12 and meets the following specifications: AMS 5659, BMS 7-240, AMS 5862, and ASTM-A564.

Manufacturing McMillan Design, Inc. is the only manufacturer of the Sea Catch product. It is made and assembled at Cutting Technology, Inc. of Auburn, Washington. Manufacturing processes at CTI follow rigid, national-level standards of precision-jet cutting, machining, welding, heat treating, and final assembly.

Welding, Heat Treatment, and Lubrication All welding is with 17-4 SS wire only. All welded parts and pins are thoroughly cleaned and heat treated to H-1025 which increases the rating of the welding by 20-30% and the parts by 15 %. Heat treating also results in improved mechanical, fatigue and corrosion properties across the board. Final assembly of the product includes the light application of a lubricant to each pin such as AQUA Lube, to protect the pin surfaces from pitting during extended marine use and aid in smooth mechanical function of the device. For higher capacity units, an NLGI #2.5 grease with moly added and a temperature range from 0 to 425F is applied. Customer may request lubrication material of choice.

Product Testing and FEA Initial prototype testing of the Sea Catch TR7 was conducted on September 2, 1994 by the testing engineering staff at West Coast Wire Rope & Rigging, Inc. in Seattle and was witnessed by the owner. Multiple pulls to breakload occurred on three units. The final unit, made from 17-4 stainless plate, was proof loaded to 5,000 lbs and released, then to 10,000 lbs and released under load, and finally, pulled to ultimate destruction at 35,210 lbs. The effort to release the device at both the 5,000-lb and the 10,000-lb loads was about the same, around 40 lbs. Certificate of Testing No. 05611A was then issued to document this test.

FEA was conducted in April, 1996 on the Sea Catch TR7 jaw portion, the critical, load-bearing portion of the device. This analysis was conducted to confirm the load carrying capacities of this design. The primary area of concern, as demonstrated by the lab test-to-failure, was the pin area of the jaw. All recommendations resulting from the FEA are followed in the production of each Sea Catch product.

Product testing in the field continues throughout the world and includes heavy marine use at ocean depths of 2,500 feet and cyclical uses of well over 5,000 releases over a three-year period with no sign of product failure or user dissatisfaction.

Quality Control McMillan Design, Inc. assumes the responsibility of inspecting each production unit for function, specifications, and appearance. Any unit not meeting the above rigid requirements is rejected.

Normal Certification options are available on a case by case basis as follows:

1. Proof load Test and Certificate: In this test the actual device is serial numbered and pull-tested to twice the Safe Working Load, then held for one minute. After inspection for damages or deformations, Test Certificate is issued. Call for current prices.

2. Proof load Test with ABS Test Witnessing Certificate: In this test an ABS (American Bureau of Shipping) representative witnesses the actual device being proof load tested. Both the Test Certificate and ABS Witness document are issued. Call for current prices.

Methods of Release / Effort to Release Load

Alternative Methods of Release

The methods currently in use for releasing the Sea Catch are as follows:

1. Manually, pulling a long release line. No modification of the Sea Catch is required. This method is used with lower capacity models, offers the lowest cost, and has many satisfied users.
2. Hydraulically, using a winch and cable, such as used with a deck-mounted crane, to pay out the load against a secured release line. No modification of the Sea Catch is required for this method.
3. Hydraulically, paying out the load against a fixed-length, bulkhead-mounted release cable. Using a clevis instead of a shackle, a bulkhead-mounted hydraulic ram is attached to the rear end of the horizontally positioned Sea Catch to pull it back after the unit is locked. The release cable is then secured to the bulkhead and when release is desired, the hydraulic ram is actuated, allowing the Sea Catch to move toward the load and eventually against the secured release cable and the load releases the unit. This method allows the installment of a pressure gauge into the hydraulic system to determine the actual tensile load being released. No modification of the Sea Catch is required. Sea Catch TR18s are currently being fitted in this manner for push tug applications.
4. Explosive electric squib thrusters inserted into a special chamber below the toggle pin are used to activate the Sea Catch TR5SQ and the TR7SQ. The TR10SQ will be made available soon.
5. Hydraulic pressure to drive a hydraulic cylinder to actuate the release lever of the Sea Catch is now being used with the Sea Catch TR7RAM, TR10RAM, and TR16RAM. These units can be activated by hydraulic hand pump, air-hydraulic foot pump, or electric pump.
6. Air cylinders provide another method of release and are fitted to TR5AIR, TR7AIR, and TR10AIR for activation using shop air from 60 to 100 PSI.

Effort (estimated) to Release Load

The estimated effort (to pull on the release line) to release a capacity load for Sea Catch is calculated as follows:

<u>Models</u>	<u>SWL</u>	<u>Effort to Release</u>
TR3	.65 tons	9 lbs / 4 kgs
TR5	1.66 tons	30 lbs / 13.6 kgs
TR7	3.52 tons	40 lbs / 18 kgs
TR8	4.78 tons	88 lbs / 40 kgs
TR10	7.92 tons	145 lbs / 65 kgs
TR11	14.08 tons	258 lbs / 117 kgs
TR12	16.42 tons	301 lbs / 136 kgs
TR15	25.10 tons	460 lbs / 208 kgs
TR16	31.68 tons	580 lbs / 263 kgs
TR17	47.37 tons	867 lbs / 394 kgs
TR18	77.11 tons	1411 lbs / 640 kgs

Sea Catch Customers

Selected Customer List:

Harbor Branch Oceanographic Institute
Monterey Bay Aquarium Research Institute
Korea Ocean Research & Development Inst.
Battelle Ocean Sciences
Institute of Ocean Sciences
Bedford Institute of Oceanography
Woods Hole Oceanographic Institute
Woods Hole Marine Systems
Moss Landing Marine Lab
NIWA
Proudman Oceanographic Lab
IRPEM-CNR
CSIRO Marine Research
CSIR Environmentek
Center for Great Lakes Studies, U. of Wisconsin
Texas A&M University
University of Alaska
University of Miami
University of Washington
University of S. Carolina
ARL, University of Texas
APL, Johns Hopkins University
Oregon State University
Rutgers University
University of Maryland
University of New Hampshire
University of Puerto Rico
University of South Florida
NURC, University of Connecticut
Virginia Tech Mechanical Eng. Dept.
US Geological Surveys
Stolt Comex Seaway
Western Atlas
Fugro GEOS
UDI - Wimpol
C & M Technology
Oceaneering International
ROV Technologies
Datasonics / Benthos
MORS
International Submarine Engineering
Maritrans
Crowley Maritime
Tidewater Marine
Great Lakes Dredge & Dock
Blue Water Marine
CGG Marine
Panama Canal Commission
Namibian Ports Authority
General Dynamics
BP Exploration / Kvaerner RJ Brown
Enserch Exploration / Kvaerner RJ Brown
Saipem / SaiBos
Lockheed Martin
Esso Standard Oil
Colfexip Stena Offshore
Boeing North America, Delta IV
SPACE-X
Northrop Grumman
Mitsui Engineering & Shipbuilding Co.
Shell Pipe Line Corporation
Allseas
Seaflex
NOAA (Several research vessels)
US Navy
Naval Research Laboratory
Defense Supply Center Richmond
Naval Surface Warfare Center
NAVOCEANO
PMRF, Kauai
Naval Post Graduate School
SAIC (Several centers)
Carderock NSWC
USCGCs *Papaw, Polar Star, Manta, Marlin, Mustang, Hammerhead, Blackfin, Tarpon, Osprey, Kittiwake, Ridley and many others.*
USNS *Sumner* (T-AGS 61) Military Sealift Com
USCG-MLCPAC
Canadian Coast Guard
Peches et Oceans
Spanish Navy
Government of Israel
Government of Canada
DBC Marine Safety Systems
Zodiak Hurricane Technologies
Bolinger Shipyards
MARCO Shipyard Seattle
Warner Brothers Studios, *Batman & Robin*
Walt Disney Pictures, *Dinosaur*
Pacific Renaissance Pictures, *Hercules*
20th Cent. Fox Film, *X-Men, Unfaithful*
Image FX
EFEX Rentals
Scottish Office of Agriculture
Department of Agriculture, N. Ireland
Chartered Ammunition Industries
Cirque du Soleil, Las Vegas

Sea Catch Uses

Sea Technology: oceanography, NOAA research, ROV deployment, fuel tank emergency ejection, geophysical surveys, cable release, buoy and anchor release

Offshore Hydrocarbon Industry: oil field production, rig tender operations, emergency rig/FPSO release, buoyancy module release, oil spill cleanup operations, towed boom release, semisubmersible mooring release

General Maritime: tug and tow operations, salvage operations, port operations, anchor chain stopper, deck operations, skiff launch, ship launching, anchor deployment

Testing: scientific research, laboratory testing, drop testing, pull test release, product development

Navy/Coast Guard: anchor chain stopper, deck operations, painter release, instrument deployment, submarine testing operations, buoy and anchor release, launch deployment, davit release, stern launch rescue boat release

Fisheries: research, commercial fishing, aquaculture, seine release and skiff release, submerged set net release, mooring deployment

Movie Special Effects: Movie and stunt effects, object dropping or launching

Aerospace: testing, ground support equipment release, rocket launching operations

Onshore Hydrocarbon Industry: pump station repairs, counterweight release

Others: aviation, air force, military operations, cargo bay releases, helicopter release, hot air balloon release, ballast release, amusement park release, catapult launching, rides effects, recreational boating, yacht/towed vessel linkage release, animal rescue release

And much more...

As you can clearly see, the Sea Catch is a multipurpose device.