

Marine Q&A

Q: What is a Turnbuckle?

A: A Turnbuckle is a metal coupling device consisting of right and left threaded members screwed into an internally threaded body which when rotated expands or contracts.



Q: What is a Machine Swage Fitting?

A: A Machine Swage Fitting is attached to the cable by a swage machine which cold forms the fitting directly to the cable. A swage fitting should not be confused with Hand Crimp fittings or other hand tool applied fittings. A specialized swaging machine is the only way to attach swage fittings to cable. Swage fittings cannot be Hand Crimped, welded, glued, hammered, or attached to a cable by any means other than a swage machine.



Q: What is a Hand Crimp Fitting?

A: Hand Crimp fittings were first designed and manufactured by C. Sherman Johnson Co., Inc. in 1969. Hand Crimp fittings are attached to the cable with a Johnson-made Hand Crimp Tool model #53-210 or #53-215. Hand Crimp fittings should not be confused with Nicopress fittings. Nicopress fittings have sleeves that are made from soft copper alloy and compress very easily. All Johnson Hand Crimp fittings are made from stainless steel and cannot be swaged, welded, glued, pressed in a vise or with vise grips, or attached to the cable by any means other than the Johnson tool #53-210, #53-215.



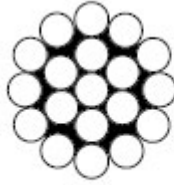
Q: What is a Mechanical Fitting?

A: A mechanical fitting is attached to the cable by the fitting compressing the cable with a cone inside the fitting or the cable. Mechanical fittings are assembled to the cable with simple hand tools. Mechanical fittings are larger in diameter than Swage and Hand Crimp fittings and can be reused with a new cone, but carry a hefty price tag.

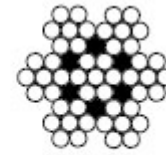


Q: What type of cable do I use?

A: Traditionally lifelines have been made of 7X7 white vinyl coated cable. This smooth cable is easy to grab onto and gives a traditional look. Boats racing under ISAF or ORC regulations must use uncoated stainless steel cable. 12 Strand Spectra or Dyneema line is becoming more popular for cruising boats and boats not racing under offshore regulations as it is very strong, UV resistant, easily installed (no tools required) and does not rust.



1 x 19



7 x 7

Q: Do I need a turnbuckle in my cable assembly?

A: Yes. In order to achieve proper tension in the lifeline and to remove any stretch in the cable, a turnbuckle is required.



Q: Does Johnson make cable assemblies?

A: No. Johnson manufactures the fittings but does not make complete cable assemblies. Our 45+ year history enables Johnson to provide you with a rigger near you.

Q: How much tension do I need?

A: Offshore regulations require that lifelines deflect no more than 50mm (2") when a force of 11.2lbf is applied midway between stanchions. This is a good guideline for the cruising sailor as well.

Q: What end attachments do I use?

A: Normally a turnbuckle on one end and a toggle jaw on the other. If you are terminating the lifeline on the deck, use a deck toggle. If a gate is involved - see below.



Q: What are the After Swage dimensions?

A: The table below shows the After Swage dimensions for machine swage fittings:

Terminal Wire Size	Thread Diameter	After Swage Dimension
1/8"	10-32, 1/4"	.219
5/32"	1/4", 5/16"	.250
3/16"	1/4", 5/16", 3/8"	.313
7/32"	3/8"	.375
1/4"	5/16", 3/8"	.375 or .438
5/16"	1/2", 5/8"	.563
3/8"	5/8"	.625

Q: When do I know when it is time to replace my lifelines?

A: Lifelines should be inspected yearly. Vinyl coated lifelines are particularly prone to corrosion where the wire meets the swage fitting. If the vinyl turns rusty in this area, it may be time to replace the lifelines.

Q: What is the best way to duplicate my present lifelines?

A: If your present lifelines fit correctly, the easiest and best way to replace the lifelines is to mark the position of the turnbuckles, remove the lifelines from the boat and bring them to a qualified rigger who can make up a new set. Existing turnbuckles and pelican hooks should be able to be reused.

Q: If I want to do it myself, what tools are required?

A:As swaging machines are very expensive, most do-it-yourselfers use our Hand Crimp fittings. When using these fittings YOU MUST USE our tool 53-215 or 53-210. The only other acceptable tool is the National Telephone Supply Company "Nicro Press" tool 64CGMP. Is you use this tool, use the "C" die for 1/8" cable and the "G" die for 3/16" cable. All other tools are designed to crimp copper fittings - not Stainless Steel.

Q: What is the easiest way to add a second lifeline?

A: If your stanchions are not drilled for a lower lifeline, the easiest solution is to use our pulpit anchor (part #29-501) and stanchion eye (part #29-502).

Q: What parts do I need if I want to add a gate?

Along with an additional stanchion you will need a couple of stanchion braces (our part # 40-200). In addition you will need one swivel single gate eye, one swivel interlocking gate eye and a pelican hook. To tension the short span of wire between the gate and the stern rail, a short adjuster is used.

Q: What grade of stainless steel does Johnson Use?

A: For all major components, Johnson uses Type 316 stainless steel. Type 316 is low-carbon "18-* chromium-nickel stainless steel modified by the addition of molybdeenum, which greatly increases its corrosion resistance.

Q: Does Johnson offer fittings in steel or galvanized?

A: No.

Manufacturing Materials

Type 302 & 304 Stainless Steel (also known as 18-8)

Used in most turnbuckle jaw studs and some toggle stampings. This material offers good corrosion resistance and high strength.

Type 316/316L Stainless Steel

Used on all swage terminals and most toggle stampings, turnbuckle bodies, and other components. This material offers better corrosion resistance with a slight trade-off in strength.

Naval Bronze

This material is used on all toggle nuts to facilitate the toggling action so that no "cold welding" of the two surfaces occurs.

Aluminum Silicon Bronze

Used in forged turnbuckle bodies and some machined turnbuckle jaw studs. Same physical properties as 300 series stainless steel. Excellent corrosion resistance.

6061 T-6 Aluminum

High strength alloy commonly used in the aerospace/marine industry, anodized for excellent corrosion resistance.

After Swage Dimensions

(for swage fittings)

(choose a drill bit size to allow clearance hole for after swage dimension)

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3/16"	1/4", 5/16", 3/8"	.313
7/32"	3/8"	.375
1/4"	5/16", 3/8"	.375 or .438
5/16"	1/2", 5/8"	.563
3/8"	5/8"	.625

Glossary of Terms

Turnbuckle: A device for tensioning cable or rod. Usually refers to the entire unit including the body, both right and left ends, nuts, and pins.

Turnbuckle Body: Center portion only.

Stud: Threaded rod that connects between the body and toggle end.

Terminal: Fitting for termination of cable, can be machine swage or hand crimp.

Clevis Pin: Removable pin for securing a toggle jaw or fork to an end post or rail.

Toggle Jaw: Articulating jaw terminal for attachment to cable. Toggled 180 degrees.

Turnbuckle Jaw: Threaded on one end for attachment to turnbuckle body with a clevis pin on the other end.

Link Plate: Flat plate with two or more holes used for extending the length of an assembly.

Ring Pin: Circular pin used in place of a cotter pin for securing a clevis pin.

Doing Business with C.S. Johnson

C. Sherman Johnson Co., Inc. sells to recognized wholesale accounts only, which includes: distributors, riggers, and OEMs. We are proud of our customer relationships within this extensive distribution network. For the boat or home owner, we are happy to refer you to a reliable source for cable assemblies or hardware. And to our customers: Johnson does not fabricate cable assemblies, we are in business to work with you, not against you!

Terms:

First time orders are C.O.D. or credit card only. (This applies even if you have applied for an Open Account status.) Open account status will be extended to marine/architectural related businesses engaged in wholesale/service activities with pre-approved credit. Credit can be obtained with a completed credit application and approval by our credit department. Unless otherwise specified, terms are Net 30 Days. Accounts 30 days past due will be placed on credit hold, with no goods being shipped until account becomes current. Failure to pay within terms will change terms to C.O.D. All international accounts must be paid in U.S. funds. A finance charge of 1 1/2% per month will be charged on all past due accounts. Overdue accounts sent to collections will incur collection fees that are the sole responsibility of that account.

Warranty:

C. Sherman Johnson Co., Inc. products are guaranteed to be free from defects in material and workmanship and if properly applied, are suitable for the purpose intended. However, we can accept no responsibility if our products are misapplied or are used in applications where their safe working loads are exceeded.