

Technical Bulletin

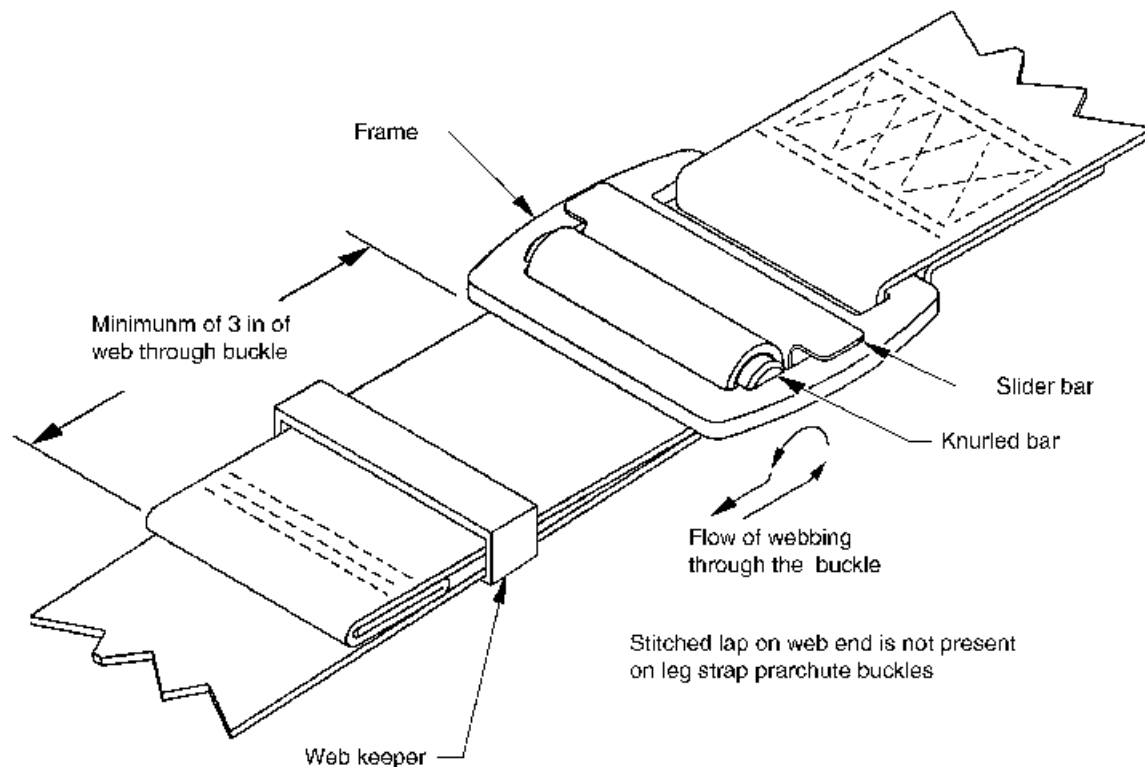
No. MISC008

***Subject:* Buckle Specifications and Operations**

DBI/SALA uses four types of buckles in full body harnesses, body belts and other fall protection equipment: parachute buckles, pass through buckles, tongue buckles, and quick connect buckles. Each of these types of buckles must be adjusted to a snug fit as described in its accompanying user's instructions to assure proper harness fit and performance. See specific product instructions for additional information on inspection, donning, use, care, and maintenance.

Correct operation, materials, strength, corrosion resistance and standards for each type are listed below.

Parachute Buckle Specifications



Buckle Operation: The parachute buckle works by capturing the webbing between a knurled bar and the buckle frame. A spring-loaded slider bar maintains constant tension on the knurled bar. The webbing is woven into the buckle by passing the webbing up through the center slot of the buckle, over the knurled bar, then back under the outer portion of the frame, folding back on itself. At least three inches of the free end of the webbing must extend out of the buckle, when used on leg straps, to maintain a safety factor in an impact situation. Pass the free end of the strap through a web keeper to allow the webbing to lay flat and be restrained. Do not cut excess webbing off the strap.

Buckle Adjustment: Pulling the free end of the webbing straight out away from the buckle will increase the tension on the strap. Tension can be released by pushing the free end of the webbing back toward the buckle and allowing the webbing to slip through the buckle. Loosening the strap can be facilitated by lifting the free edge of the buckle out to about a 90° angle from the body (to reduce friction on the knurled bar) and pulling it away from the body. Do not cut excess webbing off the strap.

Buckle Release: The buckle may be removed from the webbing by continuing the tension releasing action until the webbing travels all the way through the buckle. (Note: The webbing is permanently attached to some parachute buckles, such as shoulder straps, and may not be removed.)

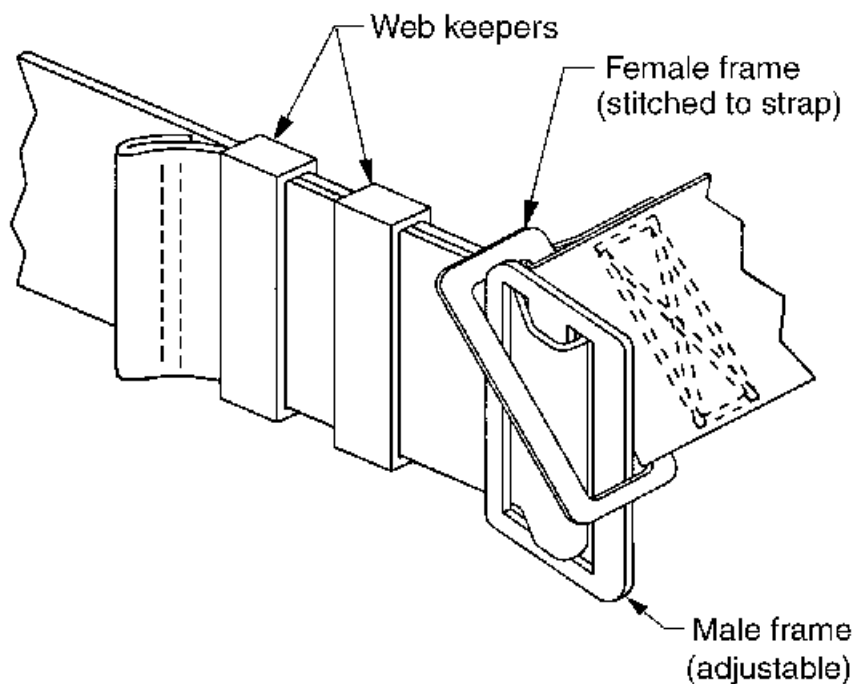
Material: Frame, slider and knurled bar: AISI 4130 or 4140 alloy steel, heat treat: 35-42 Rc, in accordance with SAE AMS-H-6875A.

Corrosion Resistance: Finish: zinc plate per ASTM B633-98, Type II, Class Fe/Zn 12, yellow.

Strength: Buckle is capable of withstanding a tensile load of 4000 lbs. (17.8Kn) without breaking.

Standards: OSHA 1910.66, OSHA 1926.502, ANSI A10.14-1991, ANSI Z359.1-1992.

Pass Through Buckle Specifications



Buckle Operation: The pass through buckle is composed of two mating flat metal frames. The female frame is an open rectangle that is permanently attached to a loop at the end of a strap. The male frame is permanently attached to the joining strap by weaving the webbing through two slots in the frame. To engage the buckle, turn the male buckle at an angle so that it will pass through the female frame. After it has passed through, turn it back so that the male frame lies directly on top of the female frame.

Buckle Adjustment: To adjust the tension on the straps to be joined by a pass through buckle, slide the male buckle frame up or down the webbing to lengthen or shorten the strap to the desired length. Adjust the excess webbing through the 3 bar keeper to keep the webbing flat. Do not cut excess webbing off the strap.

Buckle Release: To disengage a pass through buckle, force a portion of the male buckle strap up through the female frame until there is enough slack in the strap to allow the male frame to be turned to an angle that will allow it to pass back through and out of the female frame.

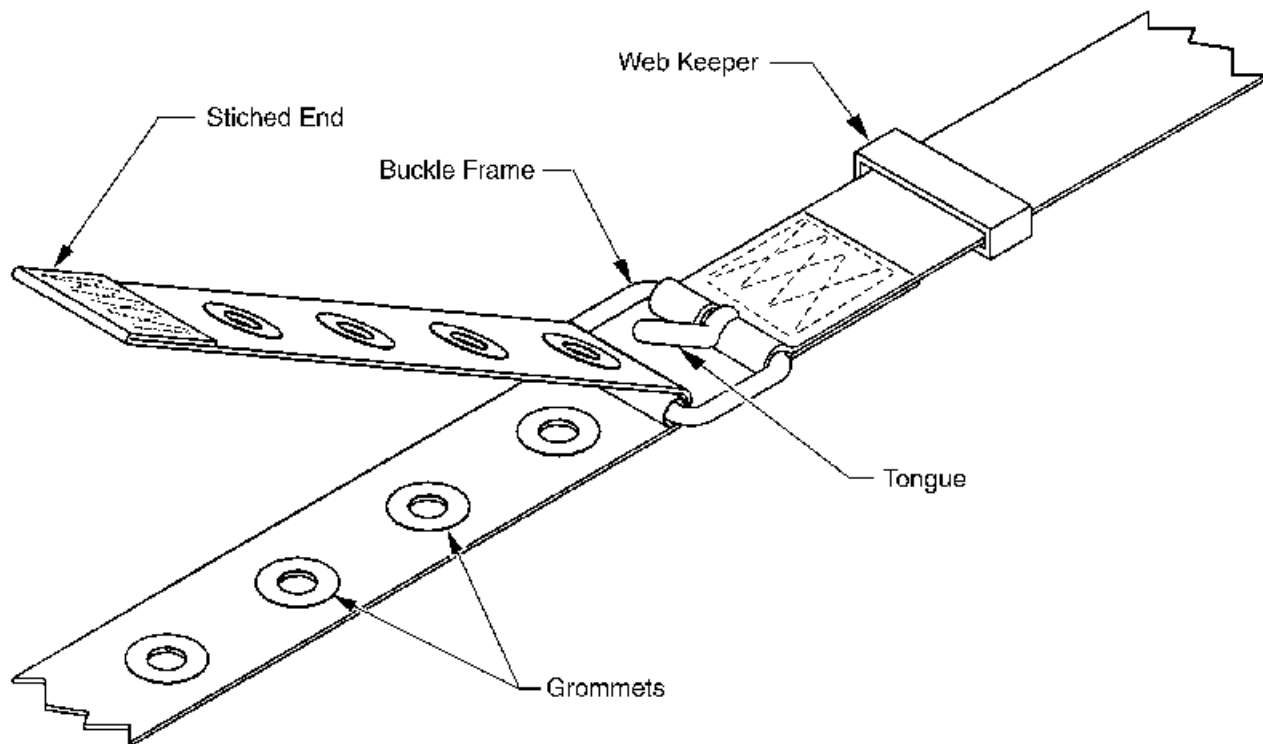
Material: AISI 4130 or 4140 alloy steel or AISI 1541 carbon steel. Heat treat: 35-42 Rc, in accordance with SAE AMS-H-6875A.

Corrosion Resistance: Finish: zinc plate per ASTM B633-98, Type II Class Fe/Zn 12, yellow or cadmium plate per Mil-QQ-P-416 F(2), Type II, Class 2, yellow chromate.

Strength: Buckle is capable of withstanding a tensile load of 4000 lbs. (17.8Kn) without breaking.

Standards: OSHA 1910.66, OSHA 1926.502, ANSI A10.14-1991, ANSI Z359.1-1992.

Tongue Buckle Specifications



Buckle Operation: The tongue buckle consists of a metal frame with a moveable tongue that lays down the middle of the frame. The frame is stitched into a loop at the end of a strap. The connecting strap is a piece of webbing that is pierced by grommets at regular intervals. To join the straps, pass the free end of the grommeted strap through the frame and pull the strap back at an acute angle to take up the slack in both straps. Allow the tongue to pierce the nearest grommet and tuck the free end of the strap through a web keeper. This will allow the webbing to lay flat and keep it from hindering movement or interfering with other equipment

Buckle Adjustment: To adjust the tension on the strap, remove the free end of the strap from the web keeper and pull the strap back at an acute angle from the metal frame to release the tongue from its grommet. Hold the tongue out of the way and allow the webbing to pass back through the strap to loosen or pull more webbing

through the frame to tighten the strap. When the desired tension is achieved, engage the tongue into the nearest grommet and tuck the free end of the strap back into the web keeper. Do not cut excess webbing off the strap.

Buckle Release: To disengage, remove the free end of the strap from the web keeper and pull the strap back at an acute angle to the frame to release the tongue from its grommet. Hold the tongue out of the way and allow the strap to pass back through the buckle frame until it exits completely.

Material: Frame: AISI 4130 or 4140 alloy steel or cold rolled sheet or strip steel UNS 641300 per ASTM A505-87. Heat treat: 35-42 RC, in accordance with SAE AMS-H-6875A.

Tongue: 1018 Co steel in accordance with ASTM A510-96. Heat treat: 35-42 RC, in accordance with SAE AMS-H-6875A.

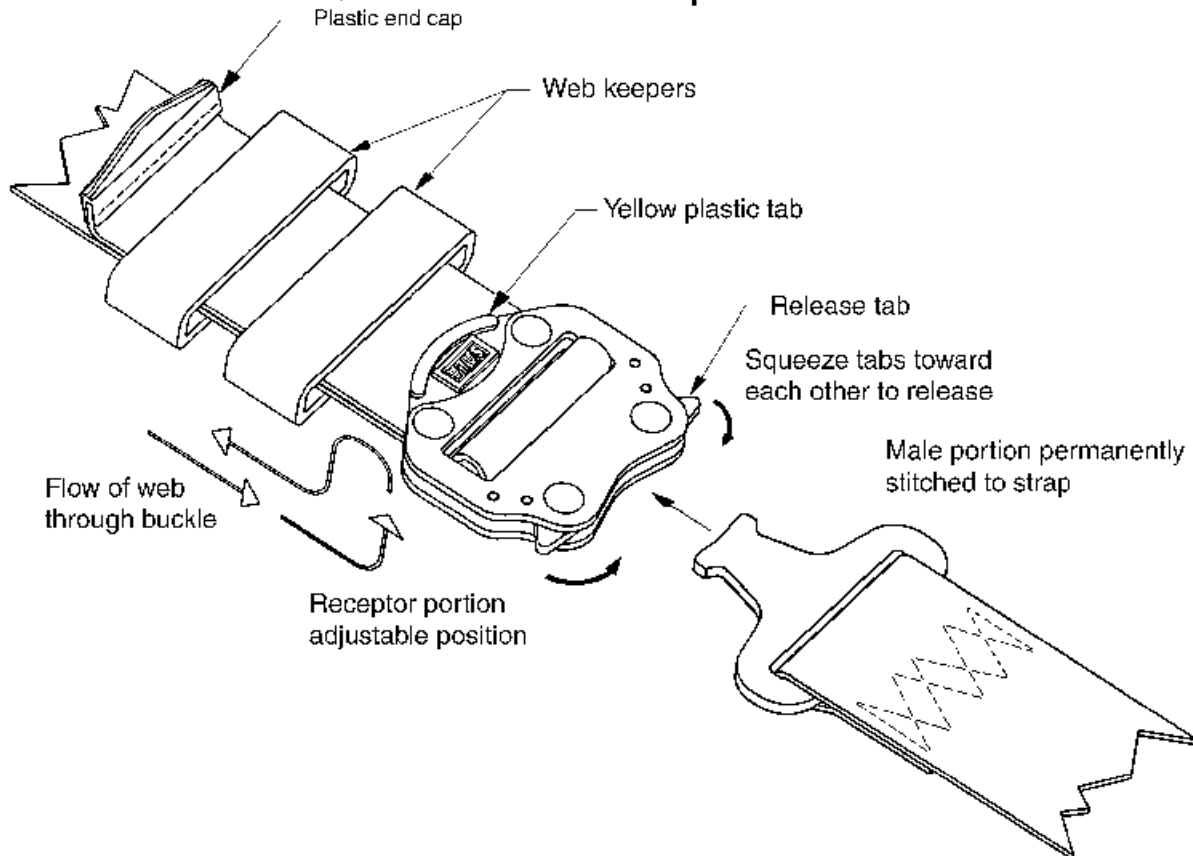
Roller: Cold rolled steel, commercial quality, in accordance with ASTM A366/A366M-97E1. Heat treat: 35-42 RC, in accordance with SAE AMS-H-6875A.

Corrosion Resistance: Finish: zinc plate per ASTM B633-98, Type II Class Fe/Zn 12, yellow, or Cadmium plate per QQ-P-416 F(2), Type II, Class 2 yellow chromate.

Strength: Buckle is capable of withstanding a tensile load of 4000 lbs. (17.8Kn) without breaking.

Standards: OSHA 1910.66, OSHA 1926.502, ANSI A10.14-1991, ANSI Z359.1-1992.

Quick Connect Buckle Specifications



Buckle Operation: The quick connect buckle consists of two parts. The male portion is a metal tongue with flanges on the end. This portion is permanently attached to the end of a strap. The joining strap is woven



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through the receptor half of the buckle so the buckle can be positioned along the length of the strap. A plastic end cap keeps the buckle captive on the strap. To operate, insert the male portion into the receptor half of the buckle until a distinct click is heard. The noise is created by spring loaded latches that capture the flanges on the tongue. A sharp tug on the strap will reveal whether the connection is complete.

Buckle Adjustment: To increase tension on the strap, while the buckle is engaged, lift the yellow plastic tab on the receptor away from your body with one hand while pulling the free end of the strap out from the buckle with the other hand. To decrease strap tension, pull the yellow plastic tab on the receptor out away from your body and allow the strap to slide back through the buckle. When the desired tension is achieved, tuck the free end of the webbing into the web keeper to keep it flat and to keep it from interfering with other equipment. Do not cut excess webbing off the strap.

Buckle Release: To release the buckle, simultaneously squeeze the spring loaded metal latches toward each other with one hand and pull the male portion out of the receptor with the other hand. Depressing only one of the latches will not release the buckle; drop tests have confirmed this. Constant extreme tension on the strap (much greater than in normal use) would be required in order to allow the buckle to release when the latches on each side are depressed separately.

Material: Top and bottom plates, release tabs and tongue: Cold rolled alloy steel UNS G41300 SAE AMS 6350. Heat treat 35-39 Rc.

Knurled bar: Round steel bar UNS G10100, cold drawn per ASTM A108

Spring: Diameter .018 in. stainless steel spring wire, hard drawn, bright finish typw 302 or 304 per ASTM A313/A313M.

Yellow plastic tab: Nylon, type 6.

Corrosion Resistance: Finish: Cadmium plated per QQ-P-416, Type I, Class 1, or Zinc with clear chromate per ASTM 8633, Type II, Class Fe/Zn 12.

Strength: Buckle is capable of withstanding a tensile load of 4000 lbs. (17.8Kn) without breaking.

Standards: OSHA 1910.66, OSHA 1926.502, ANSI A10.14-1991, ANSI Z359.1-1992.

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