ASRC Seat Harness
Version 2.0

Special Presentation to the
2019 ASRC Winter Retreat

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Revision 0.0
The ASRC Seat Harness was created in 1974 to provide a simple & superior tied webbing seat harness for SAR, Cave & Technical Rescue Missions & Operations.

The ability to build and use a validated tied webbing seat harness serves as a primary training Essential Skill, plus a Backup with Emergency Capabilities.

There were many existing tied webbing seat harnesses, but thorough research & assessments discovered that almost all were unreliable, unsafe, ineffective, and sometimes lethal!


Safe & Assured User Retention:: Assured Safe during Inverted Operations. Endure a Cut or Failure at any One Spot (Single Point Failure prevented).

Spanning over four decades, the ASRC Seat Harness (v1.0) has become the “Gold Standard” across the SAR, Cave, and other technical rescue communities!
ASRC Seat Harness – v1.0 Design

- There are several specific design features that were carefully selected and incorporated into the original ASRC Seat Harness (v1.0) in 1974.

- **Reliability through Redundancy::**
  - Multiple *independent* and *webbing* loops.
  - Minimizes impact of (otherwise) *Single Point Failures*, such as from cuts, abrasion...
  - *Primary Connection* (seat carabiner) provided with *multiple loops*

- **User Retention::**
  - *Reasonable User comfort* during *modest* periods for Rappels, Climbing & Technical Rescue
  - Redundant webbing loops retain User *even if the webbing is cut or fails at any area.*
  - Multiple firm Waist Loops ensure User easily & safely *can operate inverted*

- **Simple & Compact::**
  - Employs common ropework knots, familiar to all SAR, Cave & Technical Rescue Users.
  - Such as Bowline, Square Knot, Overhand, Halfhitch, Barrel...
  - Each seat harness is *custom fit* to the User, yet *easily adjusted* for anybody else.
  - When constructed in advance, User can easily (& always) carry in field & cave packs.
Semi-permanent seat harness using 1" wide tubular webbing:
1. Tie a firm bowline high on the left thigh with an excess of 12" to 18" on the short end.
2. Tie a second bowline high on the right thigh with a 2" to 3" crosspiece separating the leg loops, run over and retie the loops to move the crosspiece high in front.
3. Loop the remaining webbing around the hipsbone just below the crests, passing the end under the crosspiece each time. Tie the ends on the left hip with a squareknot backed up with overhand knots. Square excess.

1 inch tubular webbing,
About 24 feet long.

Simple Knots:
- Bowline, Square, Overhand...

Closely spaced Bowline Leg Loops.
- Bowlines provide reasonable loading across four directions.

Crosspiece is Main Load Point for
Primary Connection (carabiner).

Triple-wrap Waist Loops.
- Squat and Tighten Firmly before tie-off and loading.

Square Knot Tie-Off
- on side away from Rappel Rope.
- "Binder" knot holds tension in Waist Loops...

Overhand Backup Knots on each side of Tie-Off Knot prevents loosening of Tie-Off.
ASRC Seat Harness – v2.0 Update

- *The ASRC Seat Harness has been a proven success for over four decades!* And with ZERO reported failures!

- However, there have been a few issues noted and several improvements proposed. These features are employed in this proposed ASRC Seat Harness (v2.0) in 2019.

- As before, these design features have been carefully selected & incorporated.

- *ALL* of the original v1.0 strengths and capabilities have been retained!
  - Reliability through Redundancy:: Same!
  - Retension:: Same!
  - Simple & Compact:: Same!
ASRC Seat Harness – v2.0 Update

- PLUS, several features have been added, and capabilities have been improved!

- So what’s New and Why??
  - Replaced the Bowline, Square Knot & Overhand …
  - New Design uses Excellent Figure8 Family!
  - Plus Barrel, plus Halfhitch or Sheetbend…
  - Safety Issues:: Figure8 is much more reliable than a Bowline in a multiple force loading scenario, while always easy to untie afterwards. The Bowline has a potential to upset with a cut loop.
  - Tie-Off:: Much easier to tie-off under & retaining tension, using a Figure8 Side Loop!
  - Bonus! The Excellent (Releasable!) Barrel Backup secures the Tie-Off!
ASRC Seat Harness – v2.0 Design

- The following slides will illustrate the key features of the v2.0 design
- This includes the traditional one-piece design, plus an optional two-piece compact variant
- And showing the improved security Figure8 knots
- And easier tie-off, under & while retaining tension, using the Side Loop
- Plus an improved Barrel Backup (in webbing!!) that can also be released after loading!
1” Tubular Webbing, > 24 Feet
3 Figure 8s, 2 Leg Loops, 1 Side
ASRC Harness V2.0 - TWO-Piece
1" Tubular Webbing, > 12+14 Feet
4 Figure 8s, 2 Leg Loops, 2 Sides
Sheetbend & Slipped Barrel Backup
Building the ASRC Harness V2.0
Centered 6ft From End, Leg Loop ~20” Web
Leg Loop Figure 8, ~11” Loop
Very Close to Leg Loop Figure8, Side Loop ~12” Web
Side Loop Figure 8, ~3” Loop
Side Loop Figure 8, ~3” Loop
Sheetbend Tie-Off & Barrel Backup
Barrel Backup 1 – Formed & Loose
Barrel Backup 2 – Tail Slipped
Barrel Backup 3 – Slipped & Tight
Barrel Backup 5 – Slipped & Secured
ASRC Seat Harness – v2.0 Update

- **SUMMARY**

  - *The ASRC Seat Harness v1.0 has been a proven success for over four decades!* And with ZERO reported failures!

  - “It ain’t broke…!”

  - Right! AND it can still benefit from a few modest updates!

  - The performance of the proposed v2.0 equals or exceeds that of v1.0, while retaining ALL the simplicity, strengths & advantages.

  - The proposed ASRC Seat Harness v2.0 provides:
    - Stronger & more Reliable *Integrity under Multiple-Force Loading*
    - *Simpler & Easier* Tie-Off, under improved Waist Loop tension
    - *Stronger Secure* Tie-Off, with *Barrel Backup* (that releases!)
    - Option for very compact Two-Piece configuration

  - Hmmmm! Does this mean we need a New v2.0 Diagram??
QUESTIONS??

DEMONSTRATION?

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